

Degelman

"BEST IN THE FIELD ---- WHERE IT COUNTS"

**OWNERS
&
PARTS MANUAL

HI LIFT
ROCK PICKER**

MANUAL PART # 142022

farm

DEGELMAN INDUSTRIES LTD.

implements

BOX 830 REGINA, SASK. CANADA

CONGRATULATIONS ON THE PURCHASE OF YOUR NEW DEGELMAN ROCK PICKER. THIS MACHINE WAS CAREFULLY DESIGNED, PROFESSIONALLY ENGINEERED, TESTED AND MANUFACTURED WITH QUALITY MATERIALS AND SKILLED WORKMANSHIP. IT WILL REWARD YOU WITH SUPERIOR RESULTS AND YEARS OF DEPENDABLE SERVICE IF PROPER MAINTENANCE, CARE AND ADJUSTMENTS ARE PERFORMED.

TO KEEP YOUR ROCK PICKER WORKING EFFICIENTLY, READ AND FOLLOW THE INSTRUCTIONS CONTAINED IN THIS OWNER'S MANUAL. THE TABLE OF CONTENTS WILL ASSIST YOU TO FIND THE REQUIRED INFORMATION.

RIGHT-HAND AND LEFT-HAND SIDES ARE DETERMINED BY FACING IN THE DIRECTION OF MACHINE FORWARD TRAVEL.

RECORD AND KEEP HANDY YOUR 'ROCK PICKER' SERIAL NUMBER. THIS INFORMATION IS NEEDED BY YOUR AUTHORIZED DEGELMAN DEALER TO PROVIDE YOU WITH REPLACEMENT PARTS, ATTACHMENTS AND REPAIR SERVICES IN A PROMPT AND EFFICIENT WAY.



THIS SAFETY ALERT SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY, THEREFORE, PLEASE CAREFULLY READ THE MESSAGE THAT FOLLOWS.

DEGELMAN INDUSTRIES LTD.

BECAUSE WE ARE CONSTANTLY STRIVING TO IMPROVE OUR PRODUCTS, WE RESERVE THE RIGHT TO INCORPORATE ANY CHANGES RELATED TO DESIGN, MATERIALS AND SPECIFICATIONS AT ANY TIME, WITHOUT NOTICE OR OBLIGATION.

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DEGELMAN INDUSTRIES LTD. WARRANTS ITS PRODUCTS TO THE ORIGINAL OWNER FOR A PERIOD OF ONE YEAR FROM DATE OF PURCHASE. ALL MATTERS RELATED WITH THE WARRANTY OF OUR PRODUCTS MUST BE HANDLED THROUGH THE AUTHORIZED SELLING DEALER. WARRANTY DOES NOT COVER NORMAL WEAR OF THE MACHINE COMPONENTS OR DAMAGES CAUSED BY LACK OF MAINTENANCE OR MISUSE, AND IS SUBJECT TO THE FOLLOWING PROVISIONS:

* TIRES:

WILL BE ADJUSTED FOR WARRANTY BY THE TIRE MANUFACTURER.

* REPLACEMENT PARTS:

WILL BE WARRANTED FOR A PERIOD OF 90 DAYS.

* LABOUR:

ANY LABOUR SUBJECT TO WARRANTY MUST BE AUTHORIZED BY A DEGELMAN INDUSTRIES LTD. REPRESENTATIVE, BEFORE WORK IS STARTED. WARRANTY LABOUR ALLOWANCE AND RATES WILL BE HANDLED ACCORDING TO ESTABLISHED SERVICE WARRANTY POLICY.

* WARRANTY PARTS:

DEFECTIVE PARTS ARE TO BE STORED AT THE DEALERSHIP AND WARRANTY WILL BE SUBJECT TO INSPECTION BY A DEGELMAN INDUSTRIES LTD. REPRESENTATIVE.

* WARRANTY ON MACHINES USED FOR CUSTOM WORK, RENTAL OR INDUSTRIAL USE:

WARRANTY ON MACHINES USED FOR CUSTOM WORK, RENTAL OR INDUSTRIAL USE SHALL BE AS STATED ABOVE, WITH THE EXCEPTION THAT IT SHALL BE FOR A PERIOD OF 90 DAYS ONLY.

* GOVERNMENT LEGISLATION:

WARRANTY TERMS AND CONDITIONS ARE SUBJECT TO PROVINCIAL OR STATE LEGISLATION.

* WARRANTY WILL BE VOID IF ANY ROCK PICKER COMPONENT IS ALTERED OR MODIFIED, UNLESS WRITTEN AUTHORIZATION IS GRANTED BY DEGELMAN INDUSTRIES LTD.

* WARRANTY APPLIES ONLY TO THE DEGELMAN ROCK PICKER. DEGELMAN INDUSTRIES LTD. WILL NOT ASSUME ANY RESPONSIBILITY FOR WHATEVER DAMAGE MAY OCCUR TO EQUIPMENT TO WHICH THE ROCK PICKER MAY BE ATTACHED.

THE SAFETY OF THE OPERATOR WAS ONE OF THE PRIME CONSIDERATIONS IN THE MINDS OF THE ENGINEERS WHEN THIS ROCK PICKER WAS DESIGNED. SIMPLE ADJUSTMENTS AND SAFETY FEATURES WERE BUILT INTO THE MACHINE WHEREVER POSSIBLE. NEVERTHELESS, ORDINARY CAUTION MUST BE TAKEN WHEN OPERATING THE ROCK PICKER. THERE IS NO SUBSTITUTE FOR A CAREFUL AND SAFETY-MINDED OPERATOR.

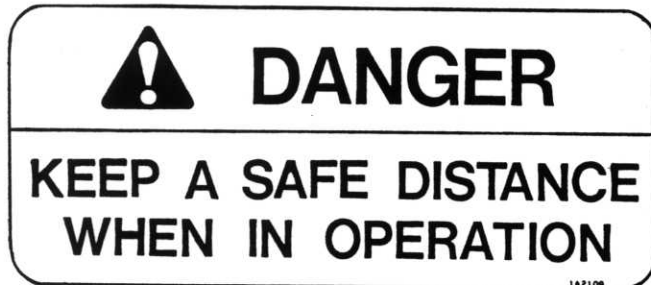


- * BEFORE OPERATING THE ROCK PICKER, BE SURE NO ONE IS STANDING NEAR IT.
- * ALL POWER DRIVE SYSTEM SAFETY SHIELDS MUST BE KEPT IN PLACE.
- * ONLY ONE PERSON, THE OPERATOR, SHOULD BE ALLOWED ON THE MACHINE-TRACTOR COMBINATION WHILE IT IS BEING OPERATED.
- * LOWER THE GRILL TO THE GROUND, MAINTAIN THE HOPPER BOX IN RESTED POSITION AND SHUT OFF THE TRACTOR ENGINE BEFORE ADJUSTING, SERVICING, OR LUBRICATING THE MACHINE. NEVER ALLOW ANYONE TO WORK UNDER A RAISED GRILL OR HOPPER BOX.
- * NEVER OPERATE THE ROCK PICKER EXCEPT FROM THE TRACTOR SEAT.
- * DO NOT OPERATE THE TRACTOR-ROCK PICKER COMBINATION ON STEEP SIDE HILLS. USE TRACTOR LOW GEAR WHEN OPERATING OVER STEEP INCLINES.
- * WHEN OPERATING THE ROCK PICKER, BE SURE TO AVOID CATCHING HYDRAULIC HOSES ON SHARP OBJECTS. ESCAPING FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE THE SKIN CAUSING SERIOUS PERSONAL INJURY. BEFORE DISCONNECTING LINES, BE SURE TO RELIEVE ALL PRESSURE TO THE SYSTEM, BE SURE ALL CONNECTIONS ARE TIGHT AND THAT LINES, PIPES AND HOSES ARE NOT DAMAGED. FLUID ESCAPING FROM A VERY SMALL HOLE CAN BE ALMOST INVISIBLE.
- * IF INJURED BY ESCAPING FLUID, SEE A DOCTOR AT ONCE. SERIOUS INFECTION OR REACTION CAN DEVELOP IF PROPER MEDICAL TREATMENT IS NOT ADMINISTERED IMMEDIATELY.
- * BE VERY CAREFUL WHEN CLEANING THE GRILL OF LODGED OR JAMMED ROCKS; THE REEL PADDLES COULD BE UNDER EXTREME PRESSURE FROM THE REEL SPRINGS. THEREFORE, WHEN UNJAMMING THE REEL PADDLES, MAKE SURE YOUR BODY MEMBERS OR ANYONE ELSE'S ARE CLEAR AND AWAY FROM THE REACH OF MACHINE COMPONENTS THAT COULD SUDDENLY INITIATE A KICKBACK MOTION LIABLE TO PRODUCE PINCHING, STRIKING OR INJURING SITUATIONS.
- * WHEN TRANSPORTING THE ROCK PICKER ON A ROAD OR HIGHWAY, BE SURE THE TRANSPORT BLOCKS ARE IN PLACE AND HAVE THE HITCH POLE FACE INWARD (TRANSPORT POSITION). DO NOT EXCEED SAFE TRAVELLING SPEED OF 32 KPH (20 MPH), OR LESS DEPENDING ON ROAD CONDITIONS. CHECK LOCAL GOVERNMENT REGULATIONS REGARDING THE USE OF ACCESSORY LIGHTS AND SAFETY DEVICES FOR ADEQUATE WARNING TO OPERATORS OF OTHER VEHICLES. THIS EQUIPMENT IS AVAILABLE AT DIFFERENT SOURCES.
- * DO NOT EXCEED RECOMMENDED TIRE PRESSURE. USE CARE AND CAUTION WHEN SERVICING AND INFLATING TIRES TO PREVENT PERSONAL INJURY FROM BLOW-OUT.
- * FREQUENTLY CHECK AND RETIGHTEN BOLTS TO SPECIFIED TORQUES SHOWN IN SERVICE AND REPAIR SECTION.

SAFETY SUGGESTIONS

SAFETY DECALS

SOME OR ALL OF THE FOLLOWING SAFETY DECALS MAY BE FOUND AT STRATEGIC LOCATIONS ON THIS MACHINE. THESE DECALS ARE INSTALLED WITH THE PURPOSE OF ALERTING EVERYONE OF POTENTIAL DANGER OR DAMAGE, IF DECAL WARNINGS ARE NOT FOLLOWED.



THIS DANGER DECAL IS LOCATED ON THE HOPPER BOX SIDE PANELS AS WELL AS AT THE BACK PANEL.

THE PURPOSE OF THE DECAL LEGEND IS TO PREVENT EVERYONE FROM BEING NEAR THE MACHINE WHEN IN OPERATION, WHERE ROCKS MAY BE KICKED OUT OF THE HOPPER BOX WITH SUFFICIENT FORCE TO CAUSE SEVERE BODY INJURY.



THIS DECAL IS PLACED ON THE PTO DRIVEN MACHINES, AFFIXED TO THE GEAR BOX SHIELD.

THIS WARNING IS TO ALERT EVERYONE TO MAINTAIN HANDS, FEET AND CLOTHING AWAY FROM THIS AREA, SINCE THE POWER TRAIN COMPONENTS ARE IN MOTION WHEN THE MACHINE IS BEING OPERATED.



THIS CAUTIONARY DECAL IS ATTACHED TO THE PTO DRIVEN MACHINES, ON THE GEAR BOX SHIELD.

WHENEVER THE TORQUE LIMITER NEEDS TO BE ADJUSTED, PLEASE READ AND FOLLOW INSTRUCTIONS CONTAINED IN THE OWNER'S MANUAL.

SAFETY DECALS (CONTINUED)



DANGER

ROTATING DRIVE LINE

FAILURE TO HEED THESE WARNINGS MAY
RESULT IN PERSONAL INJURY OR DEATH

KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR

DO NOT OPERATE MACHINE UNLESS PTO
GUARDS, TRACTOR MASTER SHIELD AND
IMPLEMENT GUARDS ARE IN PLACE

PTO SHAFT GUARDS MUST TURN AND
BE PROPERLY ATTACHED AND MAINTAINED

U-JOINT YOKES MUST BE SECURELY
LOCKED AT ALL LOCATIONS

BE SURE TRACTOR DRAWBAR AND HITCH
POLE ARE ADJUSTED CORRECTLY

GREASE TELESCOPING SHAFT REGULARLY
TO MINIMIZE THRUST FORCES

NEVER SIT, STAND OR STEP ON GUARDS
OR ON DRIVE SHAFT

THIS DECAL IS FOUND IN THE PTO DRIVEN
MACHINES, ON THE SLIDER SHAFT SHIELD.

IT LISTS SEVERAL RULES THAT MUST BE
OBSERVED TO PERFORM SAFE OPERATIONS.



WARNING

- 1 READ AND UNDERSTAND THE OWNER'S
MANUAL BEFORE OPERATING
- 2 KEEP ALL SAFETY SHIELDS IN PLACE
- 3 MAKE SURE EVERYONE IS CLEAR OF
MACHINE BEFORE STARTING OPERATION
- 4 KEEP HANDS, FEET AND CLOTHING
AWAY FROM ALL MOVING PARTS
- 5 LOWER MACHINE TO GROUND OR REST
POSITION AND STOP TRACTOR ENGINE
BEFORE SERVICING OR CLEANING

THIS WARNING DECAL IS INSTALLED ON THE
REEL CHAIN SHIELD.

IT PROVIDES YOU WITH MOST IMPORTANT
SAFETY PRECAUTIONS THAT SHOULD BE
ENFORCED WHEN OPERATING THE MACHINE.

FOREWORD:

THE DEGELMAN HI-LIFT ROCK PICKER IS BASICALLY A GROUND DRIVEN MACHINE, WITH CHOICE OF A THREE OR A FOUR PADDLE PICKING REEL.

AN OPTIONAL THROW-OUT CLUTCH TO CONTROL THE PICKING REEL MOTION IS AVAILABLE AND IT CAN BE OBTAINED AND INSTALLED AT THE TIME THE MACHINE IS PURCHASED OR, IT MAY BE PURCHASED AS A UNIT AND INSTALLED ANY TIME AFTERWARDS.

THERE IS ALSO A PTO DRIVE OPTIONAL PACKAGE AVAILABLE TO POWER THE ROCK PICKER REEL. THIS PTO OPTIONAL PACKAGE IS AVAILABLE IN TWO DIFFERENT KINDS:

- * FOR TRACTORS EQUIPPED WITH 540 RPM POWER TAKE-OFF OR,
- * FOR TRACTORS EQUIPPED WITH 1000 RPM POWER TAKE-OFF.

IN VIEW OF THE AFOREMENTIONED OPTIONS, THE ASSEMBLY PROCEDURE OF THE HI-LIFT ROCK PICKER WILL BE SUBDIVIDED INTO GROUND DRIVEN MACHINES AND PTO DRIVEN MACHINES.

ASSEMBLY PROCEDURE

AS RECEIVED, PLACE THE ROCK PICKER ON TOP OF TWO 4 X 4 IN. WOODEN PLANKS LAID LENGTHWISE ON LEVELLED GROUND.

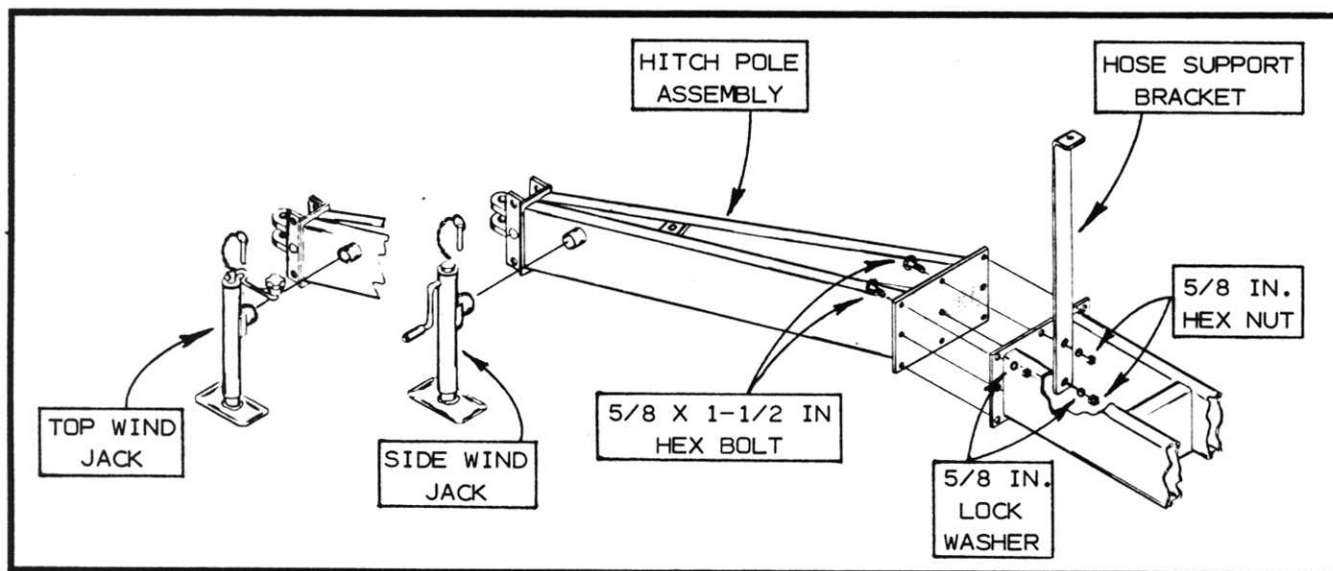


FIGURE # 1

I - INSTALLING THE HITCH POLE

THE HITCH POLE MAY BE INSTALLED IN TWO DIFFERENT POSITIONS:

- * OFFSET TO THE CENTRE, RECOMMENDED WHEN THE MACHINE IS TO BE HAULED FOR LONG DISTANCE OR ON THE HIGHWAY.
- * OFFSET TO THE LEFT HAND SIDE, REQUIRED FOR FIELD OPERATION.

INSTALL THE HITCH POLE TO THE MACHINE FRAME FRONT MOUNTING PLATE, USING SOME WOODEN BLOCKS TO MAINTAIN AN APPROPRIATE HEIGHT. MAKE THE ATTACHING HOLES COINCIDE AND INSTALL NINE 5/8 X 1-1/2 IN. HEX BOLTS, LOCK WASHERS AND HEX NUTS. WHILE INSTALLING THE TWO UPPER CENTRE BOLTS, ATTACH THE HOSE SUPPORT BRACKET, AS SHOWN IN FIGURE # 1.

II - INSTALLING THE TELESCOPIC JACK

THERE ARE ALSO TWO TYPES OF HITCH POLE TELESCOPIC JACK ASSEMBLIES:

- * THE TOP WIND, USED FOR GROUND DRIVEN MACHINES, AND
- * THE SIDE WIND, USED FOR PTO DRIVEN MACHINES.

IN FULLY RETRACTED POSITION ATTACH THE TELESCOPIC JACK TO THE MOUNTING SOCKET ON THE LEFT SIDE OF THE HITCH POLE AND SECURE WITH THE CHAINED PIN. REFERENCE FIGURE # 2 THEN, EXTEND THE JACK FOOT STAND TO TOUCH THE GROUND.

APPLY A FEW STROKES OF BEARING GREASE TO FITTING OF SIDE WIND JACKS ONLY.

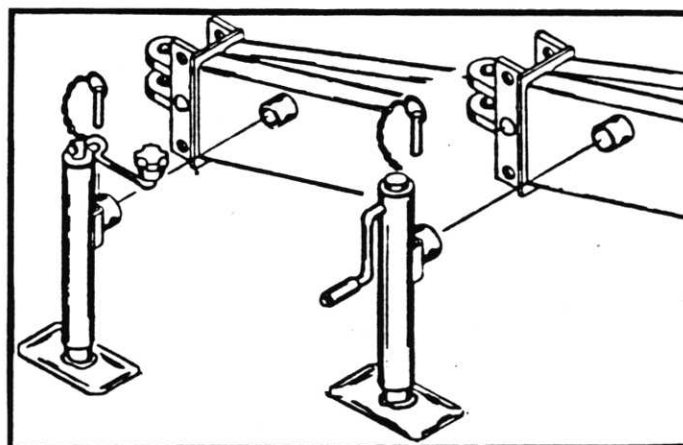


FIGURE # 2

SECURING HYDRAULIC HOSES

CUT OFF PLASTIC TIES USED FOR SHIPPING PROTECTION AND UNFOLD HOSES TOWARD THE HITCH POLE CLEVIS. PAIR GRILL CYLINDER HOSES AND HOPPER BOX CYLINDER HOSES TO ATTACH THEM TO THE HOSE SUPPORT BRACKET (1) USING TWO HOSE CLIPS (2) AS SHOWN IN FIGURE # 3. FASTEN CLIPS (2) TO BRACKET (1) WITH A 5/16 X 2-1/2 IN. HEX BOLT (3), LOCK WASHER (4) AND HEX NUT (5).

NOTE: FOR SHIPPING PURPOSES, THE HOSE SUPPORT BRACKET (1) IS TIED TO THE LEFT DUMP ARM ASSEMBLY.

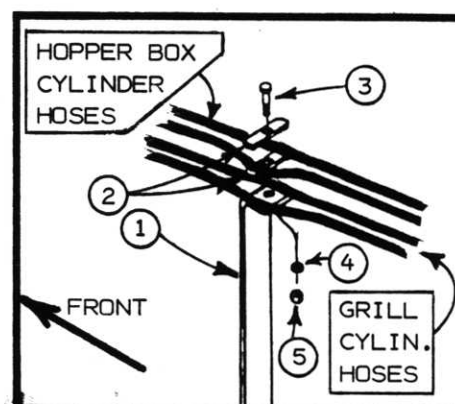


FIGURE # 3

INSTALL THE HOSE HANGER (6) TO THE HITCH POLE WITH A 5/8 X 1-1/2 IN. HEX BOLT (7), FLAT WASHER (8), LOCK WASHER (9) AND HEX NUT (10), AS SHOWN IN FIGURE # 4.

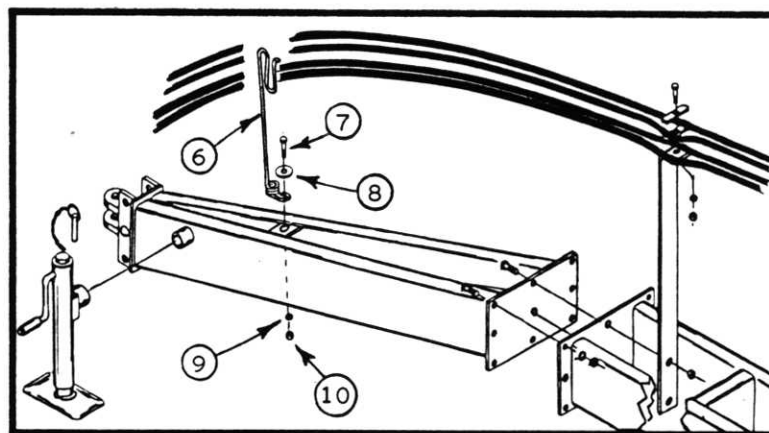


FIGURE # 4

ASSEMBLY

III - INSTALLING THE WHEEL, HUB AND SPINDLE ASSEMBLIES



BEFORE INSTALLING THE WHEEL, HUB AND SPINDLE ASSEMBLIES, BLOCK UP THE ROCK PICKER FRAME TO A HEIGHT OF 14 INCHES EVENLY, AS SHOWN IN FIGURE # 5. OTHER ALTERNATE METHODS OF LIFTING THE MACHINE MAY BE USED, AS LONG AS THEY PROVIDE SAFE OPERATIONS.

BEFORE INSTALLATION, ALSO CHECK SPINDLES FOR TRANSPORTATION DAMAGES AND/OR PAINT EXCESS AND CORRECT AS REQUIRED. CLEAN FRAME SPINDLE TUBES INSIDE AND LOOSEN 5/8 X 1-1/2 IN. SET SCREWS AND LOCKING NUTS.

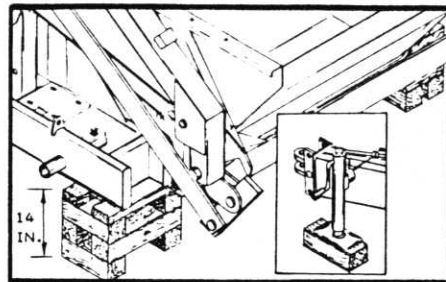


FIGURE # 5

RIGHT HAND SIDE HUB & SPINDLE INSTALLATION

FULLY INSERT THIS 2 IN. DIA. HUB SPINDLE ASSEMBLY INTO FRAME SPINDLE TUBE AND SECURE WITH SET SCREWS AND LOCKING NUTS. REFERENCE FIGURE # 6. THEN, INSTALL RIM AND TIRE TO SPINDLE HUB USING SIX 9/16 X 1-1/16 IN. WHEEL BOLTS AND TIGHTEN TO 105 FT-LB. TORQUE.

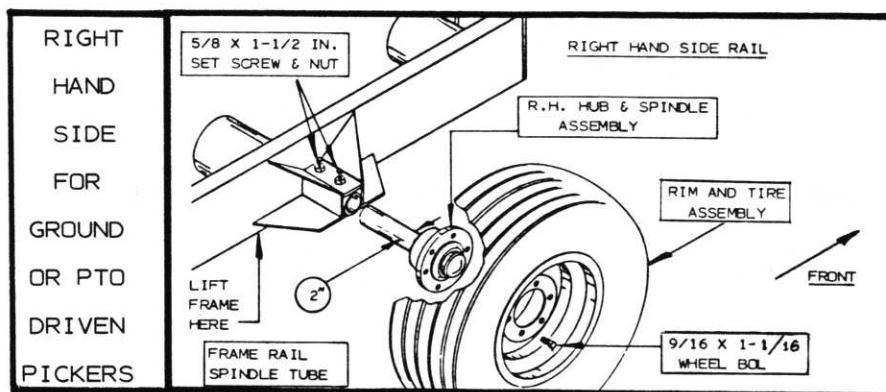


FIGURE # 6

LEFT HAND SIDE GROUND DRIVE TYPE SPINDLE INSTALLATION.

THIS 2-1/4 IN. DIA. SPINDLE HAS A SPACER AND A 30 TOOTH DRIVE SPROCKET ATTACHED TO THE HUB. REFERENCE FIGURE # 7.

FOR EASE OF INSTALLATION, ATTACH RIM AND TIRE ASSEMBLY TO HUB WITH SIX 9/16 X 1-3/4 IN. WHEEL BOLTS TIGHTENED TO 105 FT-LB. TORQUE. REFERENCE FIGURE # 7. INSERT SPINDLE INTO FRAME SPINDLE TUBE AND FINGER TIGHTEN SET SCREWS. ALIGNMENT WITH CLUTCH OR REEL SPROCKET WILL BE MADE LATER.

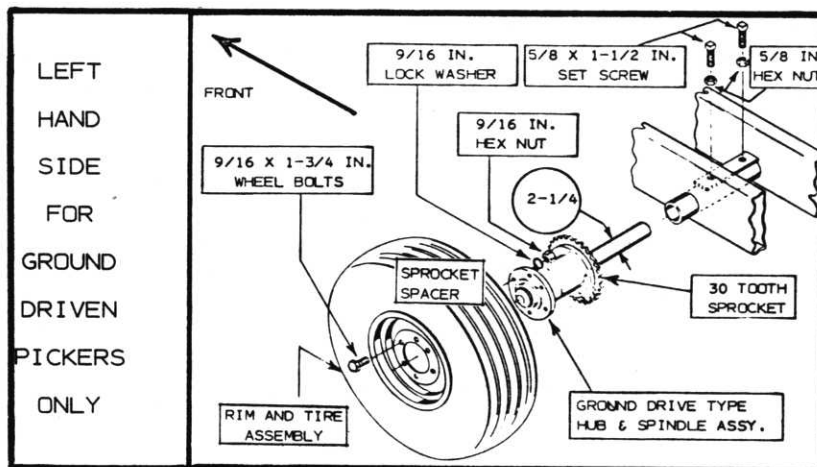


FIGURE # 7

III - INSTALLING THE WHEEL, HUB AND SPINDLE ASSEMBLIES (CONTINUED)

LEFT HAND SIDE PTO DRIVE TYPE SPINDLE INSTALLATION

FULLY INSERT THIS 2-1/4 IN. DIA. SPINDLE ASSEMBLY AND SECURE WITH SET SCREWS AND LOCK NUTS. REFERENCE FIGURE #8. THEN, INSTALL RIM AND TIRE ASSEMBLY TO SPINDLE HUB USING SIX 9/16 X 1-1/16 IN. WHEEL BOLTS TIGHTENED TO 105 FT-LB. TORQUE.

LEFT
HAND
SIDE
FOR
PTO
DRIVEN
PICKERS
ONLY

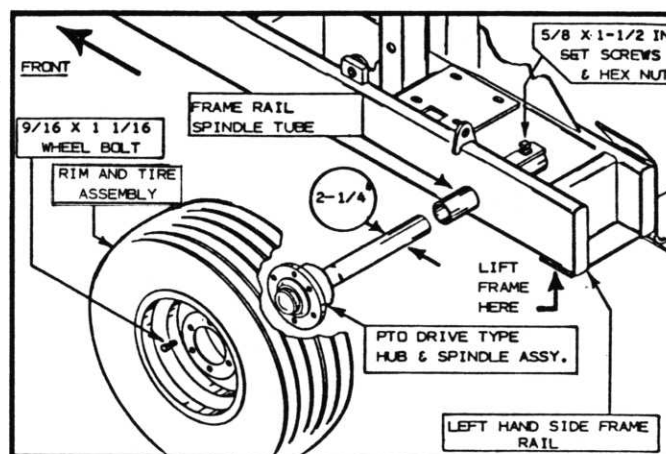


FIGURE # 8

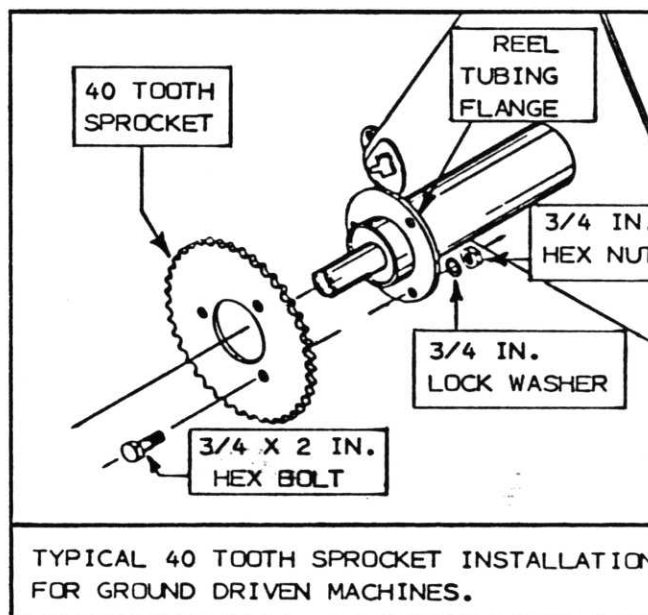
IV - INSTALLING THE DRIVE TRAIN COMPONENTS

REEL SPROCKET TYPES AND APPLICATIONS

THERE ARE TWO TYPES OF SPROCKETS TO DRIVE THE REEL AND PADDLE ASSEMBLIES, EITHER EQUIPPED WITH THREE OR FOUR PADDLES.

A - THE STANDARD SPROCKET HAS 40 TEETH AND IS FACTORY INSTALLED TO ALL ROCK PICKERS, WHETHER GROUND DRIVEN OR PTO DRIVEN.

ON ALL GROUND DRIVEN ROCK PICKERS, WITH OR WITHOUT THE OPTIONAL THROW-OUT CLUTCH, THE 40 TOOTH SPROCKET STAYS DIRECTLY BOLTED TO THE REEL TUBING FLANGE WITH THREE 3/4 X 2 IN. HEX BOLTS, LOCK WASHERS AND HEX NUTS, AS INSTALLED AT THE FACTORY.



TYPICAL 40 TOOTH SPROCKET INSTALLATION FOR GROUND DRIVEN MACHINES.

FIGURE # 9

B - ON THE 540 RPM-PTO DRIVEN MACHINES,

THE 40 TOOTH SPROCKET HAS TO BE OFFSET ONE HALF INCH FROM THE FACTORY INSTALLED POSITION. TO ACCOMPLISH THIS, THREE SPACER WASHERS 1/2 IN. TH. X 2 IN. OD MUST BE INSTALLED BETWEEN THE REEL TUBING FLANGE AND THE SPROCKET. THEREFORE, THE 3/4 X 2 IN. ATTACHING HEX BOLTS SHOULD BE REPLACED WITH NEW 3/4 X 2-1/2 IN. HEX BOLTS. REFERENCE FIGURE # 10. SPACER WASHERS AND NEW LONGER BOLTS ARE PROVIDED WITH THE OPTIONAL PTO PACKAGE HARDWARE.

ASSEMBLY

INSTALLING THE DRIVE TRAIN COMPONENTS (CONTINUED)

REEL SPROCKET TYPES AND APPLICATIONS (CONTINUED)

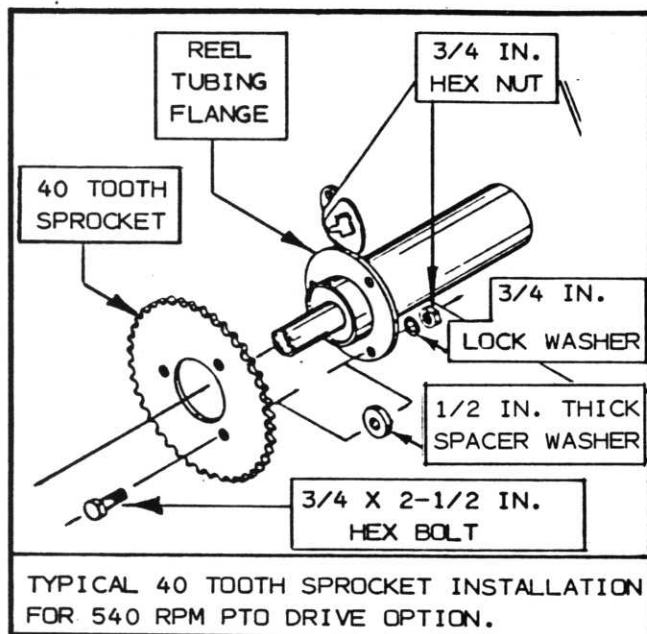


FIGURE # 10

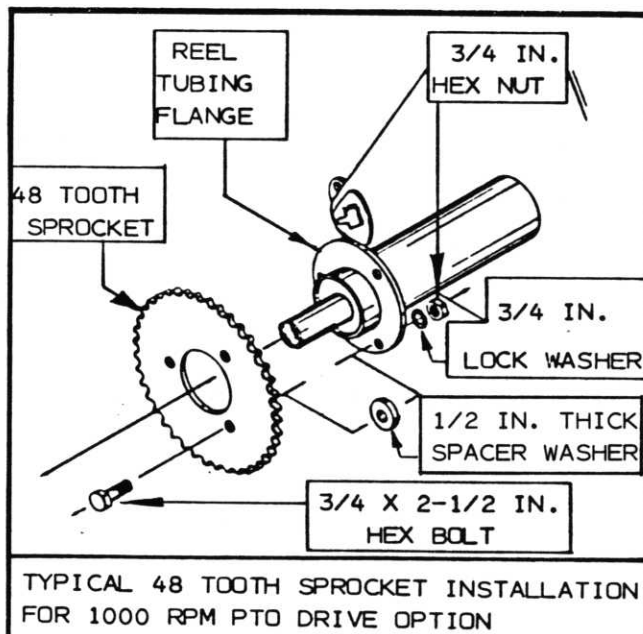


FIGURE # 11

ON THE 1000 RPM-PTO DRIVEN MACHINES ONLY, THE FACTORY INSTALLED 40 TOOTH SPROCKET MUST BE REMOVED AND REPLACED WITH A 48 TOOTH SPROCKET AND IN ADDITION, IT HAS TO BE OFFSET ONE HALF INCH FROM THE REEL TUBING FLANGE. SHOULD THE REEL SPROCKET BE CHANGED, PLEASE REFER TO THE REEL REMOVAL PROCEDURE, ON PAGE # 34 OF THIS MANUAL.

C - WHEEL HUB MOUNTED DRIVE SPROCKET ALIGNMENT (GROUND DRIVEN MACHINES ONLY)

TO PROPERLY ALIGN THE HUB SPROCKET TO THE REEL SPROCKET, THE FOLLOWING OPERATIONS SHOULD BE PERFORMED.

- RAISE LEFT REAR END OF FRAME TO HOLD THE LEFT WHEEL OFF THE GROUND.
- LOOSEN LOCK NUTS AND SET SCREWS AT SPINDLE TUBE.
- A MASONRY STRING OR CHALK LINE WILL AID IN DETERMINING THE HUB SPROCKET ALIGNMENT. REFERENCE FIGURE # 12.
- BLOCK REEL ASSEMBLY TO PREVENT ROTATION AND CLAMP ONE END OF THE LINE TO REEL SPROCKET FRONT OUTER EDGE, JUST ABOVE THE ATTACHING BOLT CIRCLE.
- MAKE THE LINE RUN PARALLEL TO REEL SPROCKET OUTER FACE (3) AND THROUGH TIGHTENER, TOUCHING THE SPROCKET OUTER FACE (4).
- PULL LINE BACK TO BEHIND HUB DRIVE SPROCKET, PASSING ALONG THE OUTER FACE (5).
- AS REQUIRED, SLIDE SPINDLE ASSEMBLY IN OR OUT UNTIL ALL THREE SPROCKETS ARE ALIGNED.
- THEN, TIGHTEN SPINDLE TUBE SET SCREWS (1) AND LOCKING NUTS (2); LOWER THE MACHINE AND REMOVE THE CHALK LINE.

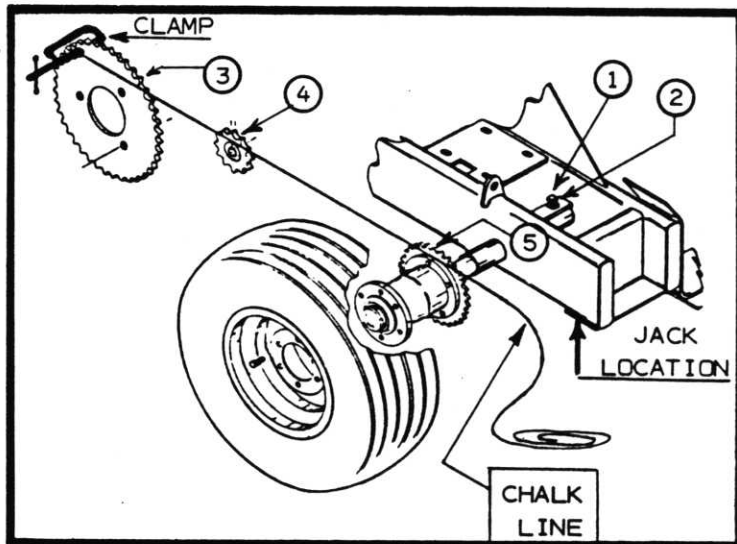


FIGURE # 12

IV - INSTALLING THE DRIVE TRAIN COMPONENTS (CONTINUED)

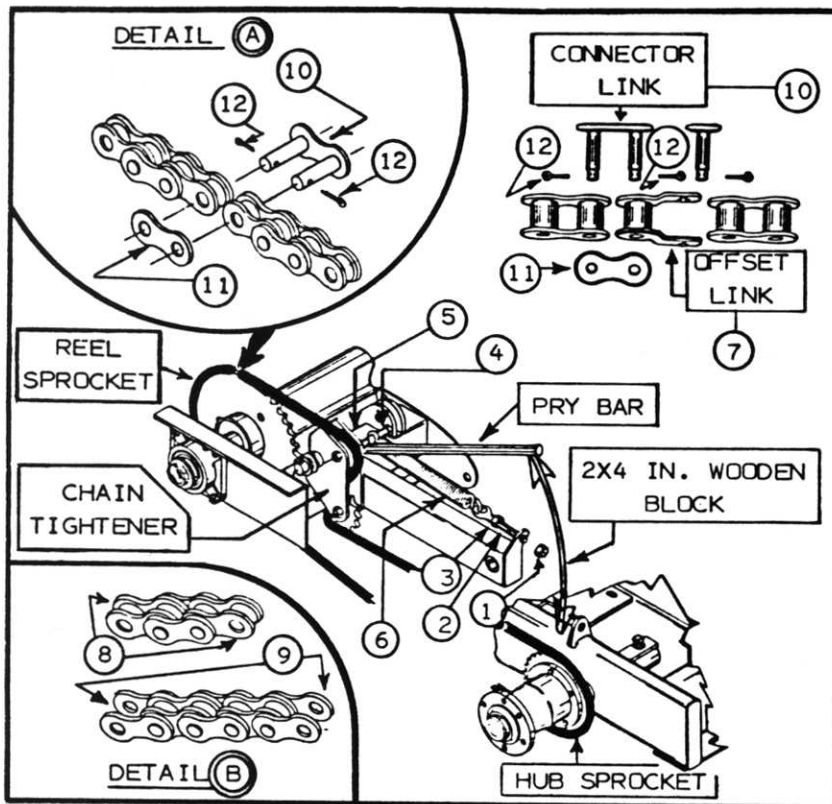


FIGURE # 13

2 X 4 WOODEN PIECE TO BLOCK PRY BAR AS SHOWN IN FIGURE # 13. ALSO, TEMPORARILY BLOCK THE REEL ASSEMBLY FROM TURNING, TO FACILITATE THE CHAIN INSTALLATION.

- THIS SET-UP SHOULD HELP TO DETERMINE THE EXACT CHAIN LENGTH REQUIRED. NOW, PROCEED TO THREAD THE PREPARED CHAIN AROUND AND THROUGH THE SPROCKETS AS SHOWN IN FIGURE # 13.

E - CHAIN LENGTH ADJUSTMENT

- IF CHAIN ENDS MEET EACH OTHER WITHIN ONE LINK LENGTH SEPARATION, AS SHOWN ON DETAIL (A) OF FIGURE # 13, THIS INDICATES THAT THE TOTAL CHAIN LENGTH IS CORRECT.
- IF THE CHAIN ENDS MEET EACH OTHER WITH TWO OR THREE LINK LENGTHS APART, IT INDICATES THAT ONE OR TWO OFFSET LINKS (7) SHALL BE ADDED TO EITHER END OF THE CHAIN, TO OBTAIN THE TOTAL REQUIRED CHAIN LENGTH.
- SHOULD THE ENDS OVERLAP EACH OTHER, REMOVE THE NECESSARY LINKS TO MEET THE REQUIRED CONDITIONS. HOWEVER, WHEN REMOVING LINKS, BEWARE THAT THE NEW CHAIN END MUST BE A ROLLER (8) AND NOT TWO SIDE LINKS (9). REFERENCE DETAIL (B) OF FIGURE # 13. IF NECESSARY, REMOVE ONE LINK IN EXCESS, SINCE AN OFFSET LINK (7) MAY BE USED INSTEAD, TO MAKE THE CHAIN LENGTH REQUIRED.
- ONCE THE CHAIN LENGTH HAS BEEN ADJUSTED, INSTALL A CONNECTOR LINK (10) TO TIE BOTH ENDS AND SECURE WITH A CONNECTOR PLATE (11) AND TWO COTTER PINS (12) SPLITTING THEIR LEGS. REFERENCE DETAIL (A).
- UNBLOCK THE REEL ASSEMBLY AND REMOVE THE PRY BAR.
- TIGHTEN THE EYE BOLT ADJUSTING NUT (1) TO ABOUT CENTRE POSITION TO INITIALLY PRELOAD THE CHAIN TIGHTENER. ALSO, TIGHTEN THE EYE BOLT LOCKING NUT (3). FURTHER SPRING TENSION ADJUSTMENT MAY BE REQUIRED BASED UPON WORK AND FIELD OPERATION CONDITIONS. FIGURE # 14 SHOWS THE DRIVE CHAIN COMPLETELY INSTALLED AND ADJUSTED.

D - INSTALLING THE DRIVE CHAIN (DIRECT GROUND DRIVEN MACHINES ONLY)

PRIOR TO CHAIN INSTALLATION, ALL SPROCKETS SHOULD HAVE BEEN CHECKED FOR ALIGNMENT AND ADJUSTED IF REQUIRED, FOLLOWING PROCEDURE DESCRIBED IN PARAGRAPH C.

- MAKE SURE THE GRILL IS IN TRANSPORT POSITION, THIS MEANS, THE TRANSPORT BLOCKS MUST BE INSTALLED.
- LOOSEN THE EYE BOLT NUT (1) UNTIL TWO THREADS ARE ENGAGED AND PLACE LOCKING NUT (3) NEAREST TO EYE BOLT (2) EYE. REFERENCE FIGURE # 13.
- CONNECT ONE END OF CHAINS SUPPLIED WITH CONNECTOR LINKS (10).
- APPLY A PRY BAR BETWEEN CHAIN TIGHTENER SUPPORT (4) AND SUPPORT YOKE FRAME (5) TO HOLD SPRING (6) SLIGHTLY STRETCHED. USE A

ASSEMBLY

IV - INSTALLING THE DRIVE TRAIN COMPONENTS (CONTINUED)



FIGURE # 14

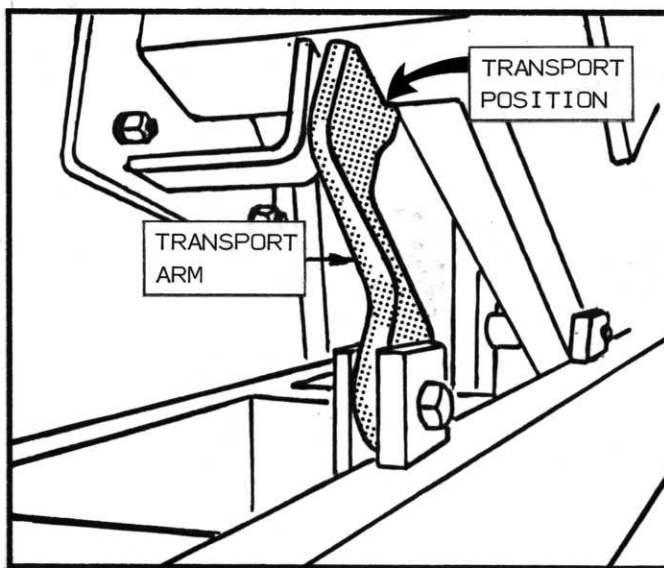


FIGURE # 15

F - TRANSPORT ARM RELEASE (ALL MACHINES)

- HITCH THE ROCK PICKER TO THE TRACTOR AND CONNECT THE HYDRAULIC SYSTEM HOSES TO THE TRACTOR REAR OUTLETS.
- RAISE THE PICKING GRILL TO THE HIGHEST POSITION AND TILT THE TRANSPORT ARM FORWARD. REFERENCE FIGURE # 15.

CAREFUL IF THE ROCK PICKER HYDRAULIC SYSTEM IS BEING HOOKED-ON AND OPERATED FOR THE FIRST TIME, AIR MAY BE TRAPPED IN THE LINES AND THEREFORE, PARTIAL GRILL DROPPAGE MAY OCCUR WHILE TILTING THE TRANSPORT ARM.

- BLEED HYDRAULIC SYSTEM BY RAISING AND LOWERING THE GRILL SEVERAL TIMES.
- THE MACHINE IS NOW READY TO PICK ROCKS, HOWEVER, PLEASE SEE THE OPERATION INSTRUCTION SECTION, WHICH WILL ASSIST YOU WITH A FEW RECOMMENDATIONS.

OPTIONAL EQUIPMENT INSTALLATION

V - INSTALLING THE THROW-OUT CLUTCH OPTION PACKAGE (GROUND DRIVEN MACHINES ONLY)

THIS OPTION MAY BE INSTALLED TO BRAND NEW GROUND DRIVEN ROCK PICKERS OR TO MACHINES THAT HAVE BEEN IN OPERATION.

TO PROCEED WITH THE INSTALLATION OF THE THROW-OUT CLUTCH OPTIONAL PACKAGE, IT IS NECESSARY TO HAVE THE TRANSPORT ARM INSTALLED, WHETHER IT IS A NEW MACHINE OR A USED ONE. TO INSTALL THE TRANSPORT ARM . FOLLOW THE RELEASE PROCEDURE DESCRIBED ABOVE, BUT IN REVERSE SEQUENCE.

V - INSTALLING THE THROW-OUT CLUTCH - OPTIONAL EQUIPMENT (CONTINUED)

ON USED MACHINES ONLY, THE FOLLOWING OPERATIONS MUST BE PERFORMED, BEFORE CLUTCH INSTALLATION:

- LOOSEN CHAIN TIGHTENER TENSION SPRING LOCKING NUT (3) AND TURN IT CLOCKWISE UP AGAINST THE EYE BOLT EYE. REFERENCE FIGURE # 13, PAGE # 11.
- UNTHREAD AND REMOVE THE TENSION SPRING ADJUSTING NUT (1) REFERENCE FIGURE # 13.
- BREAK THE DRIVE CHAIN AT ONE OF THE CONNECTOR LINKS (10) AND REMOVE COMPLETE CHAIN FROM THE MACHINE. SINCE THIS CHAIN IS COMPOSED OF TWO LENGTHS, ALSO REMOVE THE OTHER INTERCONNECTING LINK (10).
- CHECK THE FOLLOWING ITEMS AND ADJUST IF REQUIRED:
 - . REEL SPROCKET SHOULD BE WELL SEATED TO REEL FLANGE AND BOLTS EVENLY TIGHTENED.

A - THROW-OUT CLUTCH INSTALLATION

- REMOVE 5/8 IN. HEX NUT (1) FROM CLUTCH BASE WELDED STUD (2). FROM HARDWARE BOX OBTAIN A 5/8 X 5-1/4 IN. EYE BOLT (3). INSERT THIS EYE BOLT ONTO CLUTCH STUD AND REINSTALL 5/8 IN. HEX NUT (1) FINGER TIGHT ONLY. REFERENCE FIGURE # 16.
- INSTALL ANOTHER 5/8 IN. HEX NUT (4) TO EYE BOLT (3) THREADING IT UP NEAREST TO EYE. REFERENCE FIGURE # 16.

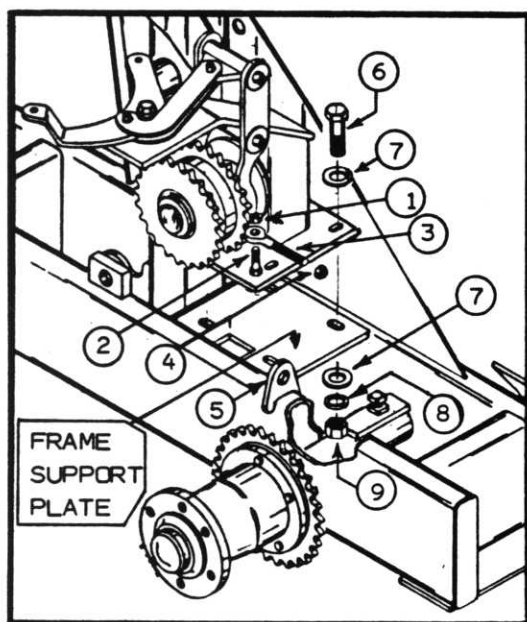


FIGURE # 16

- PLACE THROW-OUT CLUTCH ASSEMBLY ON TOP OF LEFT HAND SIDE FRAME SUPPORT PLATE, MAKING SURE TO INSERT CLUTCH ASSEMBLY BASE EYE BOLT INTO FRAME LUG (5) FIRST.
- FROM HARDWARE BOX OBTAIN FOUR 5/8 X 2 IN. HEX BOLTS (6), EIGHT 5/8 IN. FLAT WASHERS (7) (ONE OVER AND ONE UNDER), FOUR 5/8 IN. LOCK WASHERS (8) AND FOUR 5/8 IN. HEX NUTS (9).
- ATTACH ABOVE DESCRIBED HARDWARE FINGER TIGHT ONLY. ALSO, SET THE CLUTCH ASSEMBLY TO THE REAR MOST POSITION, PREPARING FOR DRIVE CHAIN INSTALLATION LATER ON.

B - THROW-OUT CLUTCH ALIGNMENT

- BLOCK THE REEL ASSEMBLY TO PREVENT ANY ROTATION.
- ALIGN CLUTCH INNER SPROCKET TO REEL AND TO CHAIN TIGHTENER SPROCKETS USING A MASONRY STRING OR CHALK LINE AS SHOWN ON FIGURE #17.
- NOTE: CLUTCH ASSEMBLY MUST BE IN FULL ENGAGED POSITION.
- SCRIBE A REFERENCE LINE ON THE FRAME OUTER RAIL ALONG THE THROW-OUT CLUTCH BASE PLATE OUTER EDGE, TO DETERMINE ITS IN-BOARD/OUT-BOARD ALIGNMENT POSITION.

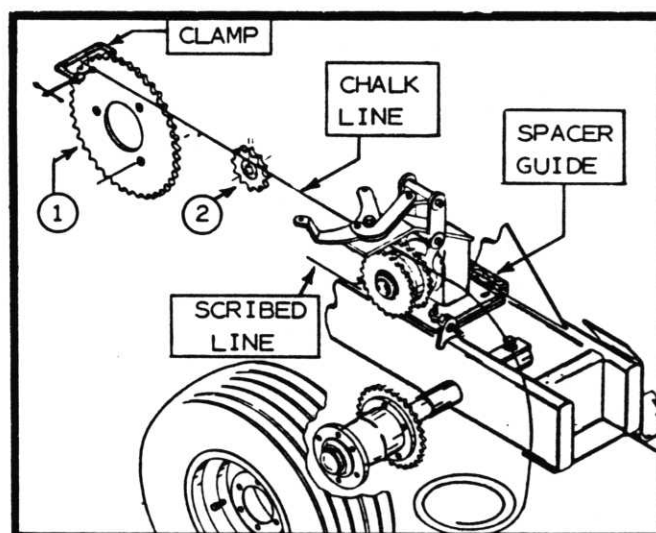


FIGURE # 17

ASSEMBLY

V - INSTALLING THE THROW-OUT CLUTCH - OPTIONAL EQUIPMENT (CONTINUED)

- THEN, TO BE ABLE TO SLIDE THE CLUTCH ASSEMBLY FORWARD WITHOUT MISALIGNMENT POSSIBILITIES WHEN ADJUSTING THE WHEEL HUB ASSEMBLY TO CLUTCH SPROCKET CHAIN, IT IS RECOMMENDED THAT A ONE INCH SQUARE BAR STRIP BE USED AS SPACER GUIDE BETWEEN CLUTCH BASE PLATE INNER EDGE AND FRAME WALL, AS SHOWN ON FIGURE # 17.

C - DRIVE WHEEL HUB SPROCKET ALIGNMENT

- THE WHEEL HUB SPROCKET HAS TO BE ALIGNED TO THE CLUTCH ASSEMBLY OUTER SPROCKET, REFERENCE FIGURE # 18.
- JACK UP THE MACHINE NEAREST TO HUB DRIVE SPROCKET AND LOOSEN THE TWO SPINDLE SHAFT SET SCREW LOCKING NUTS (1) AND THEN THE SET SCREWS (2).
- WITHOUT DISTURBING THE THROW-OUT CLUTCH POSITION, WITH THE AID OF A TRUE STRAIGHT EDGE OR CARPENTER'S SQUARE, ALIGN THE HUB DRIVE SPROCKET TO THE THROW-OUT CLUTCH OUTER SPROCKET AS SHOWN ON FIGURE # 18.
- ONCE THE HUB DRIVE SPROCKET ALIGNMENT IS SET, TIGHTEN SECURELY THE TWO SPINDLE SHAFT SET SCREWS (2) AND THEN THE TWO LOCKING NUTS (1).

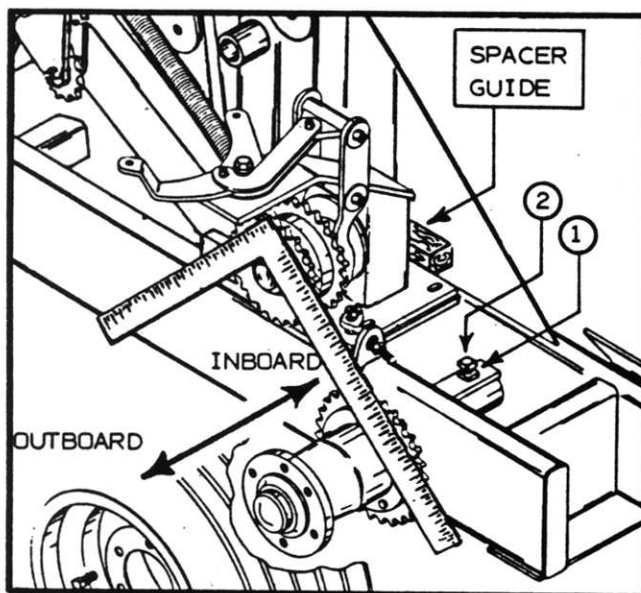


FIGURE # 18

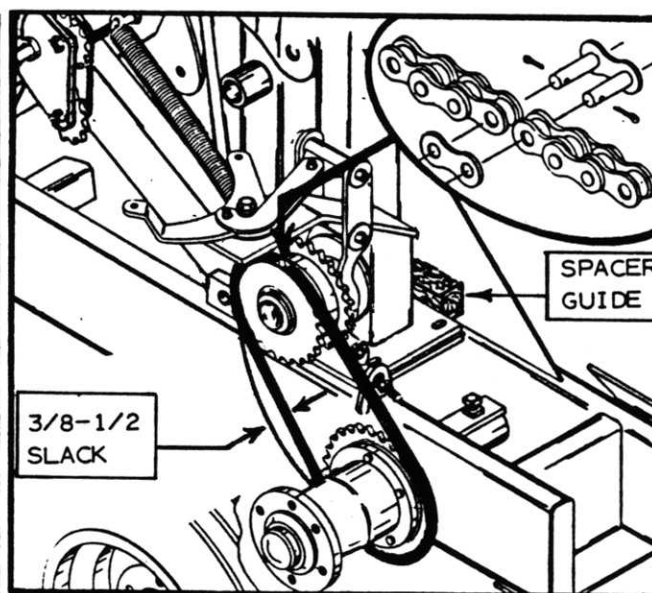


FIGURE # 19

D - WHEEL HUB TO CLUTCH SPROCKETS DRIVE CHAIN INSTALLATION AND ADJUSTMENT

- OBTAIN A 55 LINK ROLLER CHAIN EITHER FROM SPLITTING THE REMOVED LONG DRIVE CHAIN AT THE CONNECTOR LINK IF THE INSTALLATION IS BEING PERFORMED ON A USED MACHINE, OR FROM THE HARDWARE BOX IF IT IS A NEW ONE.
- MOUNT THE 55 LINK ROLLER CHAIN SURROUNDING THE HUB DRIVE SPROCKET AND THE CLUTCH OUTER SPROCKET, SUCH THAT THE CHAIN ENDS MEET EACH OTHER WITHIN ONE LINK SEPARATION AT THE CLUTCH SPROCKET. REFERENCE FIGURE # 19. THIS WAY IT IS EASIER TO EVALUATE THE CHAIN LENGTH AND TO INSTALL THE CONNECTOR LINK.
- THE CHAIN SLACK ADJUSTMENT SHOULD BE 3/8 TO 1/2 IN. THIS IS ACCOMPLISHED BY SLIDING THE CLUTCH ASSEMBLY TOWARDS THE FRONT, SINCE THEIR FASTENERS ARE STILL FINGER TIGHT. MAKING REFERENCE TO FIGURE # 20, USING EYE BOLT NUT (3) AND A PRY BAR AIDED WITH A SMALL WOODEN BLOCK, THE CLUTCH ASSEMBLY BASE CAN BE SLID PARALLEL TO THE LINE PREVIOUSLY SCRIBED, AVOIDING SPROCKET MISALIGNMENT.

V - INSTALLING THE THROW-OUT CLUTCH - OPTIONAL EQUIPMENT (CONTINUED)

D - WHEEL HUB TO CLUTCH SPROCKETS DRIVE CHAIN INSTALLATION & ADJUSTMENT (CONTINUED)

- IF THE CLUTCH BASE HAD BEEN SLID COMPLETELY FORWARD AND THERE IS STILL EXCESSIVE CHAIN SLACK, BUT NOT ENOUGH AS TO REDUCE THE CHAIN LENGTH, FLAT WASHERS MAY BE INSTALLED AS SHIMS UNDER BOTH SIDES OF CLUTCH ASSEMBLY REAR EDGE. THESE SHIMS MUST BE INSERTED ON THE ATTACHING HEX BOLTS.
- IF THE CHAIN SEEMS TO BE TOO SHORT, ADD ONE OFFSET LINK AT A TIME TO ONE OF THE CHAIN ENDS.

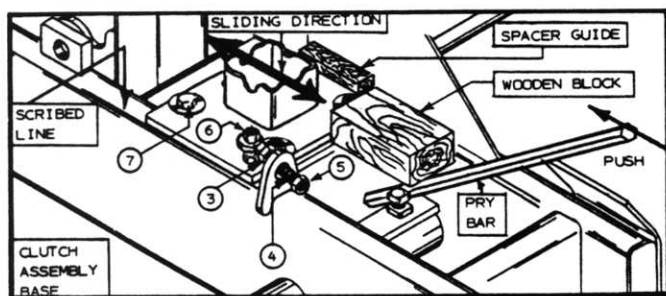


FIGURE # 20

- ONCE THE DRIVE HUB TO CLUTCH CHAIN IS PROPERLY ADJUSTED, TIGHTEN THE FOUR CLUTCH BASE ATTACHING BOLTS (7) SUFFICIENTLY. INSTALL A 5/8 IN. HEX LOCKING NUT (5) TO THE CLUTCH BASE EYE BOLT (4) AND ALSO TIGHTEN THE CLUTCH EYE BOLT TIE DOWN HEX NUT (6).

E - THROW-OUT CLUTCH TO REEL SPROCKET CHAIN INSTALLATION

- THE DRIVE CHAIN THAT CONNECTS THE THROW-OUT CLUTCH TO THE REEL IS COMPOSED OF TWO CHAIN LENGTHS INTERCONNECTED. AN 83 LINK ROLLER CHAIN MAY BE OBTAINED EITHER FROM THE REMAINDER OF THE REMOVED LONG DRIVE CHAIN, IF THE INSTALLATION IS BEING MADE TO A USED MACHINE; OR FROM THE HARDWARE BOX IF IT IS A NEW ONE. THE SECOND LENGTH IS SUPPLIED WITHIN THE CLUTCH OPTIONAL PACKAGE AND IS 33 LINKS LONG. CONNECT THE CHAIN LENGTHS WITH A CONNECTOR LINK.

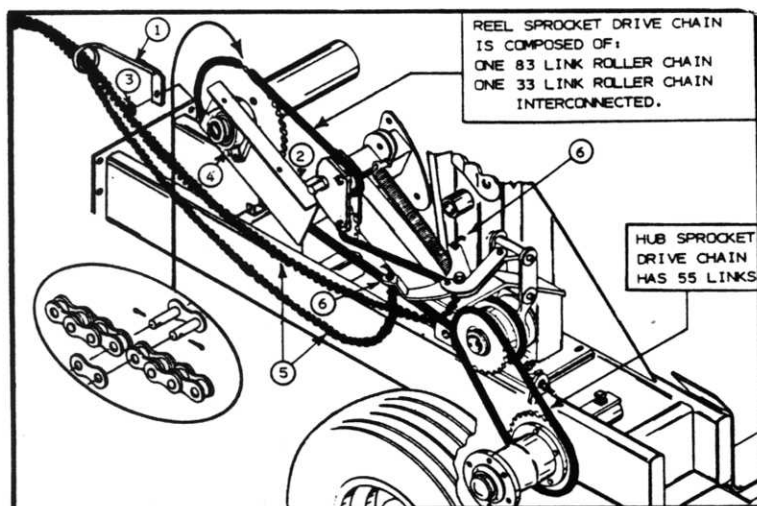


FIGURE # 21

- THREAD THE PREPARED CHAIN AROUND AND THROUGH THE SPROCKETS AS SHOWN ON FIGURE # 21. THEN FOLLOW THE CHAIN INSTALLATION AND CHAIN LENGTH ADJUSTMENT PROCEDURES DESCRIBED ON PAGE # 11 PARAGRAPH D AND E, WHICH FOR ALL PRACTICAL PURPOSES ARE ALSO APPLICABLE TO THE CLUTCH TO REEL DRIVE CHAIN INSTALLATION AND ADJUSTMENT.

ASSEMBLY

V - INSTALLING THE THROW-OUT CLUTCH - OPTIONAL EQUIPMENT

F - THROW-OUT CLUTCH OPERATING CONTROLS INSTALLATION

- FROM HARDWARE BOX OBTAIN THE ROPE GUIDE AND THE 50 FEET LONG ROPE, REFERENCE FIGURE # 20. THE ROPE GUIDE (1) SHOULD BE ATTACHED TO THE REEL SUPPORT YOKE (2). FROM THE FOUR HEX NUTS (3) FASTENING THE FLANGE BEARING UNIT (4), REMOVE THE ONE LOCATED ON THE UPPER FRONT CORNER. INSERT THE ROPE GUIDE (1) TO THE PROTRUDING HEX BOLT AND REINSTALL THE HEX NUT (3).
- TIE THE END OF THE ROPE (5), ONE EACH TO THE HOLES OF THE CLUTCH ASSEMBLY CONTROL ARM (6). THE FOLDED END OF THE ROPE HAS TO BE FASTENED ON TO THE TRACTOR, WHERE THE OPERATOR CAN HANDLE IT THE EASIEST.
- AFTER FINISHING WITH THE CHAIN ADJUSTMENTS, FOLLOW THE PROCEDURE OUTLINED ON PAGE # 12, PARAGRAPH F FOR TRANSPORT ARM RELEASE.
- THE MACHINE IS NOW READY TO BE HOOKED TO A TRACTOR AND START OPERATING, HOWEVER, PLEASE SEE OPERATING INSTRUCTIONS SECTION WHICH WILL ASSIST YOU WITH A FEW RECOMMENDATIONS.

VI - INSTALLING THE PTO DRIVE SYSTEM OPTIONAL PACKAGE

A - RECOMMENDATIONS BEFORE INSTALLATION

THIS OPTION MAY BE INSTALLED TO GROUND DRIVEN ROCK PICKERS EQUIPPED WITH OR WITHOUT THE THROW-OUT CLUTCH AND WHETHER THE MACHINE IS BRAND NEW OR USED.

NOTE: BEFORE ASSEMBLING ANY PTO PACKAGE COMPONENT TO A NEW OR USED REEL TYPE ROCK PICKER, MAKE SURE THAT THE TRANSPORT ARM TO HOLD THE GRILL ASSEMBLY ARE INSTALLED AS DESCRIBED IN THE SERVICE AND REPAIR PROCEDURE SECTION.



ON USED MACHINES ONLY: THE FOLLOWING OPERATIONS MUST BE PERFORMED BEFORE PROCEEDING WITH THE PTO OPTION PACKAGE INSTALLATION:

- LOOSEN THE CHAIN TIGHTENER TENSION SPRING LOCKING NUT (3) AND TURN IT CLOCKWISE UP NEAR THE EYE BOLT EYE. REFERENCE FIGURE # 13 ON PAGE # 11.
- UNTHREAD AND REMOVE THE TENSION SPRING ADJUSTING HEX NUT (1).
- BREAK THE DRIVE CHAIN AT ONE OF THE CONNECTOR LINKS (10) AND REMOVE THE COMPLETE CHAIN FROM THE MACHINE. SINCE THIS CHAIN IS COMPOSED OF TWO LENGTHS, ALSO REMOVE THE OTHER INTERCONNECTING LINK (10).
- REMOVE THE DRIVE HUB SPROCKET TO CLUTCH DRIVE CHAIN, IF THE MACHINE HAS A THROW-OUT CLUTCH INSTALLED.
- REMOVE THE THROW-OUT CLUTCH ASSEMBLY IF THE MACHINE IS SO EQUIPPED.

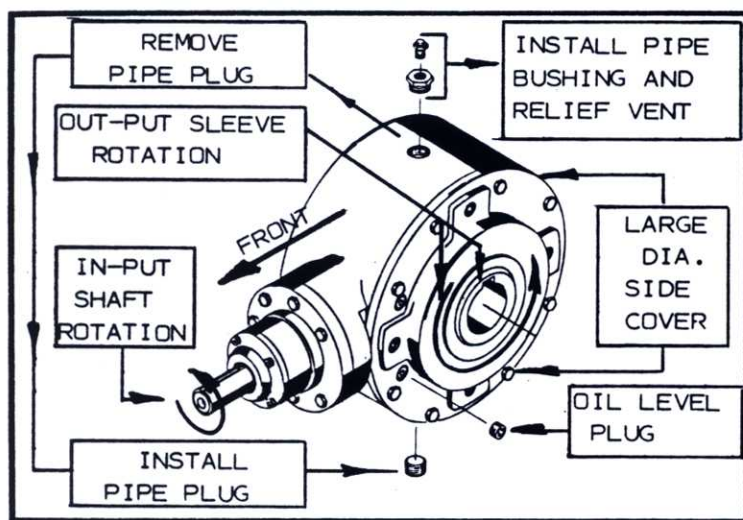
ON NEW OR USED ROCK PICKERS: THE FOLLOWING OPERATIONS MUST BE PERFORMED BEFORE THE PTO OPTIONAL DRIVE LINE CAN BE INSTALLED.

- INSTALLATION OF THE PTO TYPE HITCH POLE ASSEMBLY INCLUDING THE SIDE WIND JACK, AS DESCRIBED ON PAGES # 6 AND # 7.
- INSTALLATION OF THE PTO TYPE LEFT HAND SIDE HUB AND SPINDLE ASSEMBLY, AS DESCRIBED ON UPPER PART OF PAGE # 9. THIS IS APPLICABLE TO NEW MACHINES; ON USED MACHINES, THE GROUND DRIVE TYPE HUB AND SPINDLE ASSEMBLY IS UTILIZED.
- TO THE REEL SPROCKET FOR PTO DRIVE:
 - * CHECK THAT REEL PADDLE TEETH ARE CENTERED TO THE GRILL TEETH. ADJUST IF REQUIRED, AS DESCRIBED ON PAGE # 35, PARAGRAPH 5.
 - * FOR 540 RPM PTO: THE 40 TOOTH REEL SPROCKET HAS TO BE OFFSET, AS DESCRIBED ON PAGE #9, PARAGRAPH B.
 - * FOR 1000 RPM PTO: THE 40 TOOTH REEL SPROCKET MUST BE REPLACED FOR A 48 TOOTH SPROCKET WHICH ALSO HAS TO BE OFFSET AS DESCRIBED ON PAGES #35 TO 37.

VI - INSTALLING THE PTO DRIVE SYSTEM - OPTIONAL PACKAGE (CONTINUED)

B - PTO GEAR BOX AND SUPPORT BRACKET INSTALLATION

- OBTAIN GEAR BOX FROM HARDWARE CONTAINER AND PLACE IT BESIDE THE LEFT HAND WHEEL, ON TOP OF A CLEAN CARDBOARD. SET GEAR BOX SUCH THAT THE INPUT SHAFT POINTS TOWARD THE HITCH POLE AND THE GEAR BOX LARGE DIAMETER SIDE COVER FACES OUTBOARD, AS SHOWN ON FIGURE # 22.
- TO ASSURE THAT THE REEL WILL ROTATE IN THE PROPER DIRECTION, CHECK THAT WHEN TURNING THE GEAR BOX INPUT SHAFT IN COUNTER CLOCKWISE DIRECTION, THE OUTPUT SLEEVE WILL ALSO ROTATE COUNTER CLOCKWISE, AS VIEWED IN FIGURE #22.



- VERY IMPORTANT:

SOME GEAR BOXES MAY HAVE A 1/2 IN. PIPE PLUG AT THE TOP HOLE. REPLACE IT WITH A 1/2 X 1/8 IN. PIPE THREAD BUSHING AND THE PRESSURE RELIEF VENT. INSTALL THE REMOVED PIPE PLUG TO THE GEAR BOX BOTTOM HOLE. REFERENCE FIGURE # 22.

FIGURE # 22

USING TWO 3/4 X 4 IN. HEX BOLTS (3), LOCK WASHERS (4) AND HEX NUTS (5), PROCEED TO PREASSEMBLE THE GEAR BOX SUPPORT STRAPS (2) TO THE GEAR BOX SUPPORT BRACKET (1) TOP HOLES. REFERENCE FIGURE # 22. TO ATTACH THE REAR SUPPORT STRAP, THERE ARE TWO SETS OF HOLES. FOR THIS PARTICULAR APPLICATION, USE THE HOLES LOCATED NEAREST TO THE CENTRE. ALSO, MAKE SURE THE STRAP ANGLE CUT CORNERS POINT UPWARDS AND FACE EACH-OTHER. TO EACH HEX BOLT, INSERT A LOCK WASHER AND THREAD-ON A HEX NUT. SADDLE MOUNT THE PRE-ASSEMBLED SUPPORT BRACKET OVER THE OUTER FRAME RAIL, JUST FORWARD OF THE LEFT HAND SIDE TIRE. REFERENCE FIGURE # 22. NOW, INSTALL TWO MORE 3/4 IN. HEX BOLTS (2) LOCK WASHERS (3) AND HEX NUTS, THROUGH THE SUPPORT BRACKET AND STRAP LOWER HOLES. THERE MUST BE A 5/8 IN. MINIMUM CLEARANCE LEFT BETWEEN THE BRACKET AND THE TIRE WHEN INFLATED TO 45 POUNDS. THEN TIGHTEN THE HARDWARE.

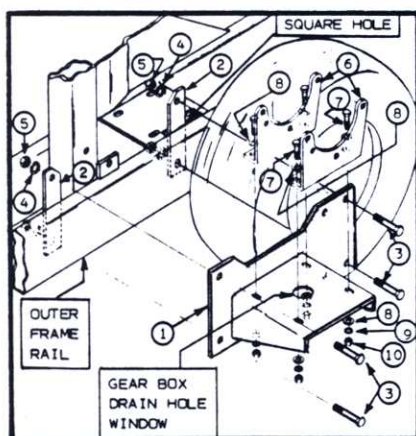


FIGURE # 23

ATTACH TWO GEAR BOX SUPPORT PLATES TO THE SUPPORT BRACKET, MAKING THE 'L' SHAPE EDGES POINT TOWARD THE FRAME RAILS. FASTEN THE SUPPORT PLATES FINGER TIGHT WITH FOUR 5/8 X 2 IN. HEX BOLTS (7), EIGHT FLAT WASHERS (8) (ONE ABOVE AND ONE UNDER EACH) FOUR LOCK WASHERS (9) AND FOUR HEX NUTS (10). REFERENCE FIGURE # 23.

ASSEMBLY

VI - INSTALLING THE PTO DRIVE SYSTEM - OPTIONAL PACKAGE (CONTINUED)

MOUNT THE GEAR BOX BETWEEN THE TWO SUPPORT PLATES (6) AND FASTEN IT WITH SIX 1/2 X 1-1/4 IN. HEX BOLTS (11) LOCK WASHERS (12) AND FLAT WASHERS (13). MAKE SURE THE OIL LEVEL INSPECTION HOLE ON THE GEAR BOX IS COINCIDENT WITH THE CORRESPONDING HOLE ON THE SUPPORT PLATE. REFERENCE FIGURE # 24.

INSTALL THE 5/8 IN. SQUARE KEY (15) ONTO THE 2-7/16 IN. OD GEAR BOX SHAFT GROOVE, MAKING SURE BOTH COMPONENTS ARE CLEAN. ALSO, CLEAN THE HOLLOW CENTER OF THE GEAR BOX HUB AND INSERT THE SHAFT, SUCH THAT THE THREADED END HOLE FACES OUTBOARD. TO THIS END, INSTALL THE 4 IN. OD END WASHER (16) SECURED WITH A 5/8 X 1-1/2 IN. HEX BOLT (17) AND LOCK WASHER (18), AS SHOWN ON FIGURE # 24. THERE ARE TWO TYPES OF GEAR BOX DRIVE SPROCKETS:

THE 20 TOOTH SPROCKET FOR 540 RPM TRACTOR PTO AND
THE 16 TOOTH SPROCKET FOR 1000 RPM TRACTOR PTO.

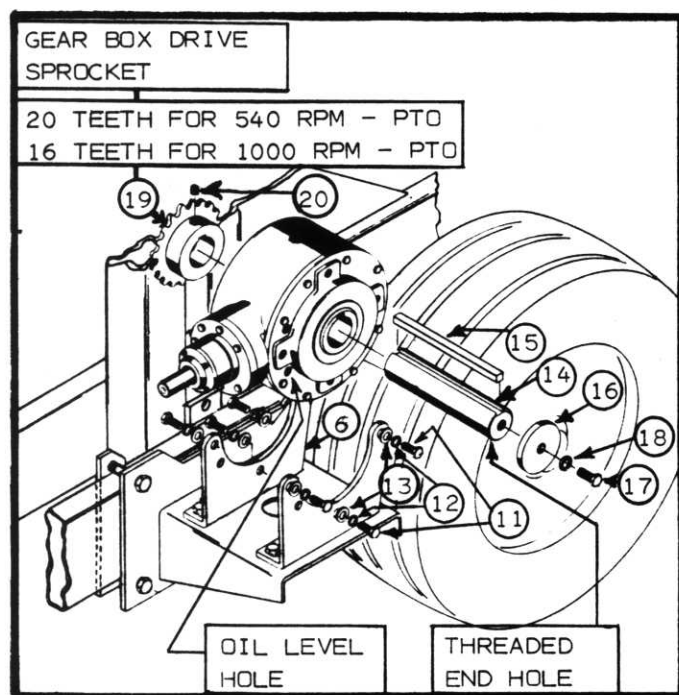


FIGURE # 24

INSTALL THE GEAR BOX DRIVE SPROCKET (19) TO THE INBOARD END OF THE 2-7/16 IN. SHAFT, SLIDING THE HUB SIDE AGAINST THE GEAR BOX. BEFORE THE SPROCKET IS SECURED TO THE SHAFT, MAKE SURE THAT THE SHAFT END WASHER IS WELL FASTENED AND ALSO FULLY SEATED AGAINST THE GEAR BOX HUB. NOW, TIGHTEN THE SPROCKET ALLEN SET SCREW (20). REFERENCE FIGURE # 24.

FILLING THE GEAR BOX WITH OIL

REMOVE THE PRESSURE RELIEF VENT AND PIPE BUSHING PREVIOUSLY INSTALLED AND ALSO, REMOVE THE OIL LEVEL PLUG WHICH IS LOCATED ON THE LARGE DIAMETER SIDE COVER THAT FACES OUTBOARD. REFERENCE FIGURE # 25.

VERY IMPORTANT:

ONLY USE 'EP' GEAR OIL TO LUBRICATE THE GEAR BOX. THE CAPACITY IS APPROXIMATELY 2.5 LITRES (5 PINTS). OIL GRADE MUST

BE SELECTED ACCORDING TO AMBIENT TEMPERATURE:

- FROM 5 TO 38 DEG. CENTIG. (40 TO 100 DEG. F.) USE SAE 90 GRADE GEAR OIL.
- BELOW 5 DEG. CENTIG. (40 DEG. F.) USE SAE 80 GRADE GEAR OIL.
- ABOVE 38 DEG. CENTIG. (100 DEG. F.) USE SAE 120 GRADE GEAR OIL.

POUR THE APPROPRIATE OIL THROUGH THE GEAR BOX TOP HOLE, UNTIL IT STARTS DRIPPING AT THE OIL LEVEL HOLE. THEN, REINSTALL THE OIL LEVEL PLUG AND THE THREADED PIPE BUSHING WITH THE RELIEF VENT TO THEIR CORRESPONDING HOLES AND TIGHTEN GENTLY.

CAREFUL - DO NOT OVERFILL THE GEARBOX WITH OIL. ALWAYS USE CLEAN OIL AND AVOID DIRT ENTERING THE GEAR BOX.

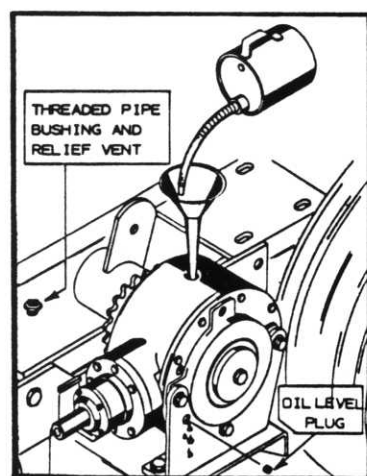


FIGURE # 25

VI - INSTALLING THE PTO DRIVE SYSTEM - OPTIONAL PACKAGE (CONTINUED)C - GEAR BOX DRIVE SPROCKET ALIGNMENT

AS A RESULT OF THE PTO PACKAGE INSTALLATION THE REEL SPROCKET HAS TO BE OFF-SET FROM THE REEL TUBING FLANGE USING THREE SPACER WASHERS AS IT IS DESCRIBED ON PAGE #9 PARAGRAPH B FOR 540 RPM PTO, OR PARAGRAPH C FOR 1000 RPM PTO, ON PAGE #10.

- THE GEAR BOX SPROCKET IS REQUIRED TO FOLLOW THE REEL SPROCKET ALIGNMENT. FOR THIS REASON, THE GEAR BOX SUPPORT PLATES MAY BE SLID IN-BOARD OR OUT-BOARD ALLOWING MEANS FOR PROPER GEAR BOX DRIVE SPROCKET ALIGNMENT.
- USING A TRUE STRAIGHT EDGE OR A CHALK LINE, IT IS POSSIBLE TO OBTAIN THE NECESSARY ALIGNMENT. REFERENCE FIGURE #26.
- ONCE THE ALIGNMENT IS SET, CAREFULLY TIGHTEN THE HARDWARE THAT HOLDS THE GEAR BOX SUPPORT PLATES TO THE SUPPORT BRACKET, MAKING SURE THAT THE ALIGNMENT HAD BEEN MAINTAINED.

D - INSTALLING THE DRIVE CHAIN

NOTE: PRIOR TO CHAIN INSTALLATION, ALL SPROCKETS SHOULD HAVE BEEN CHECKED FOR ALIGNMENT AND ADJUSTED IF REQUIRED. REFERENCE FIGURE #26.

- MAKE SURE THE GRILL IS IN TRANSPORT POSITION, THAT IS, THE TRANSPORT ARM SHOULD BE APPLIED AS INDICATED IN PARAGRAPH 'A' OF THIS SECTION.
- THEN, TURN NUT (1) IN COUNTER CLOCKWISE DIRECTION, UNTIL ONLY TWO THREADS ARE ENGAGED ON THE SPRING EYE BOLT (2). ALSO, PLACE LOCKING NUT (3) NEAREST TO THE EYE BOLT (2) EYE. REFERENCE FIGURE #27.
- FROM PTO HARDWARE BOX, OBTAIN THE 87 LINKS LONG DRIVE CHAIN, WHICH MEETS THE 1000 RPM PTO PACKAGE REQUIREMENT. FOR 540 RPM PTO APPLICATION, THE CHAIN HAS TO BE CUT DOWN TO 85 LINKS LONG.

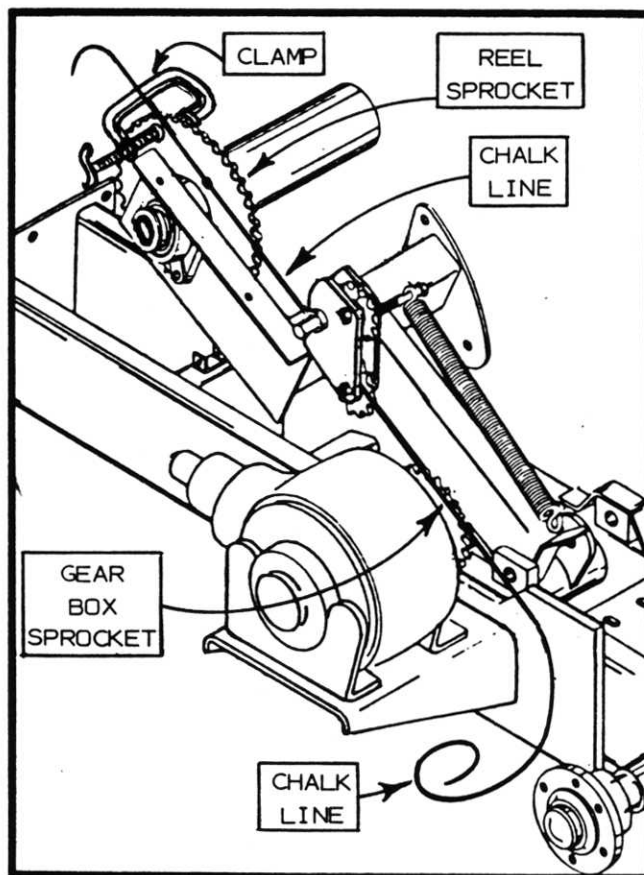


FIGURE # 26

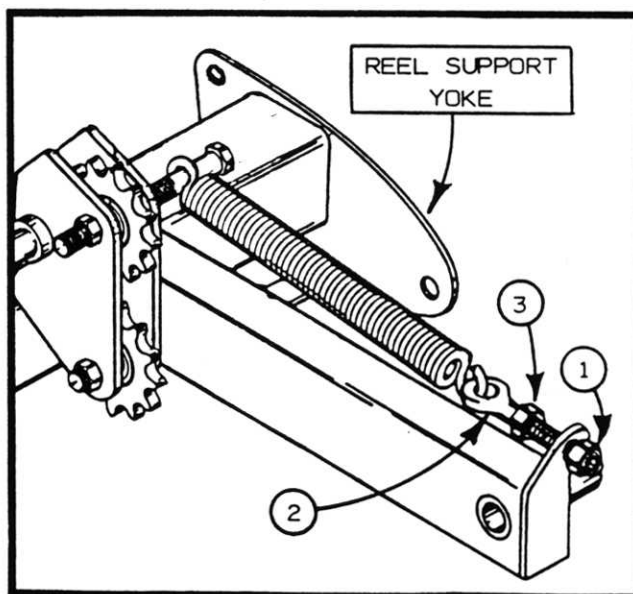


FIGURE # 27

ASSEMBLY

VI - INSTALLING THE PTO DRIVE SYSTEM OPTIONAL PACKAGE (CONTINUED)

D - INSTALLING THE DRIVE CHAIN (CONTINUED)

- APPLY A PRY BAR BETWEEN THE CHAIN TIGHTENER SPRING SUPPORT (4) AND THE YOKE SUPPORT FRAME (5) TO HOLD SPRING (6) SLIGHTLY STRETCHED. IT IS ADVISABLE TO TEMPORARILY BLOCK THE REEL FROM TURNING, TO EASE CHAIN INSTALLATION.
- THIS SPROCKET SET-UP HELPS TO DETERMINE THE EXACT CHAIN LENGTH REQUIRED. NOW, PROCEED TO THREAD THE CHAIN AROUND AND THROUGH THE SPROCKET AS SHOWN IN FIGURE #29.

E - CHAIN LENGTH ADJUSTMENT

- IF THE CHAIN ENDS MEET EACH OTHER WITHIN ONE LINK LENGTH SEPARATION OVER THE REEL SPROCKET, IT INDICATES THAT THE CHAIN LENGTH IS CORRECT. REFERENCE FIGURE #28. IF THE CHAIN ENDS MEET EACH OTHER WITH TWO OR THREE LINK LENGTHS APART, IT INDICATES THAT ONE OR TWO OFFSET LINKS (7) SHALL BE ADDED TO EITHER END OF THE CHAIN, TO OBTAIN THE TOTAL REQUIRED CHAIN LENGTH.
- SHOULD THE ENDS OVERLAP EACH OTHER, REMOVE THE NECESSARY LINKS TO MEET THE REQUIRED CONDITIONS. HOWEVER, WHEN REMOVING LINKS, BEWARE THAT THE NEW CHAIN END MUST BE A ROLLER (8) AND NOT SIDE LINKS (9). REFERENCE DETAIL (B) OF FIGURE #28. IF NECESSARY, REMOVE ONE LINK IN EXCESS, SINCE AN OFF-SET LINK (7) MAY BE USED INSTEAD, TO MAKE THE CHAIN LENGTH REQUIRED.
- ONCE THE CHAIN LENGTH HAS BEEN ADJUSTED, INSTALL A CONNECTOR LINK (10) TO TIE BOTH ENDS SECURING WITH A CONNECTOR PLATE (11) AND TWO COTTER PINS (12), SPLITTING THEIR LEGS. SEE DETAIL (A).
- UNBLOCK THE REEL ASSEMBLY AND REMOVE THE PRY BAR.
- TIGHTEN THE EYE BOLT ADJUSTING NUT (1) TO ABOUT CENTRE POSITION TO INITIALLY PRELOAD THE CHAIN TIGHTENER. ALSO, TIGHTEN THE EYE BOLT LOCKING NUT (3). FURTHER SPRING TENSION ADJUSTMENT MAY BE REQUIRED BASED UPON WORK AND FIELD OPERATION CONDITIONS. FIGURE #29 SHOWS THE CHAIN INSTALLED AND ADJUSTED.

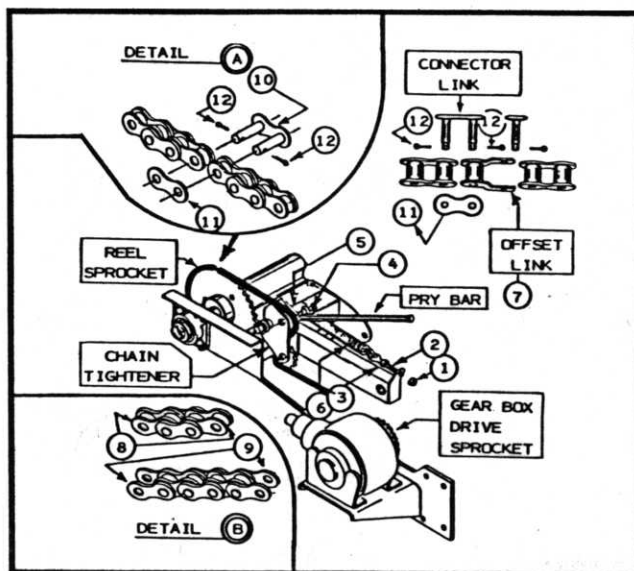


FIGURE # 28

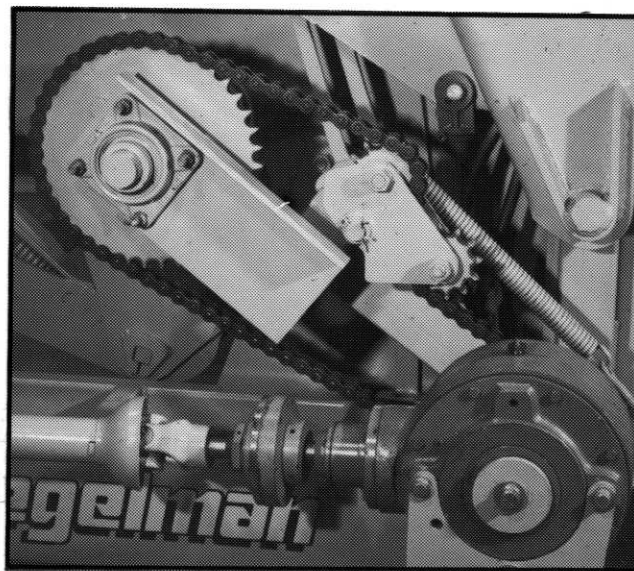


FIGURE # 29

VI - INSTALLING THE PTO DRIVE SYSTEM OPTIONAL PACKAGE (CONTINUED)

F - TRANSPORT BLOCKS REMOVAL

AFTER FINISHING WITH THE CHAIN ADJUSTMENTS, FOLLOW THE PROCEDURE OUTLINED ON PAGE # 12 PARAGRAPH F FOR TRANSPORT BLOCK REMOVAL.

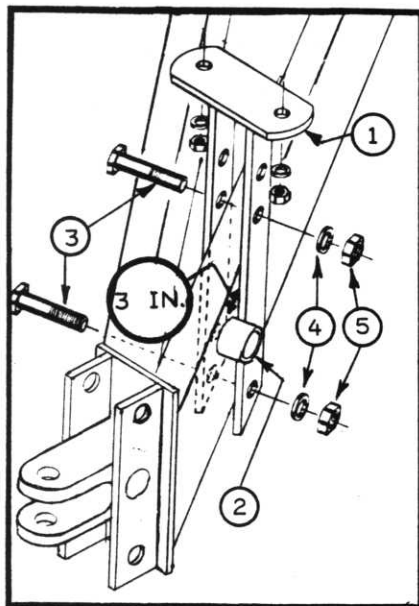


FIGURE # 30

G - INSTALLING THE PTO DRIVE LINE COMPONENTS

- OBTAIN THE DRIVE LINE BEARING SUPPORT (1) AND LOCATE IT IN A 'SADDLE MOUNTED' FASHION OVER THE HITCH POLE OUTER RAIL, ABOUT 3 IN. REARWARD OF THE SIDE WIND JACK MOUNTING BRACKET (2). USE TWO 5/8 X 4 IN. HEX BOLTS (3) LOCK WASHERS (4) AND HEX NUTS (5) AND JUST FINGER TIGHTEN THEM FOR NOW. FOR MOST APPLICATIONS THE BEARING SUPPORT (1) WOULD BE SET IN THE RAISED POSITION. THIS IS, THE UPPER BOLT (3) INSERTED IN THE SECOND HOLE FROM THE TOP. REFERENCE FIGURE # 30.
- OBTAIN THE MIDSHIP SHAFT AND REMOVE THE PROTECTION PAINT FROM THE SPLINED END AND FROM THE UNIVERSAL JOINT FLANGE INNER BORE, TO AVOID FITTING INTERFERENCE.

ALSO OBTAIN THE PILLOW BLOCK TYPE BEARING UNIT AND INSERT IT OVER THE MIDSHIP SHAFT SPLINED END, SUCH THAT THE INNER RACE PROTRUSION FACES TOWARD THE FRONT. USE A PIECE OF SOFT STEEL PIPE ABOUT 1-1/2 IN. X 6 IN. LONG TO POUND THE BEARING INNER RACE INTO POSITION ON THE MIDSHIP SHAFT. REFERENCE FIGURE # 31.

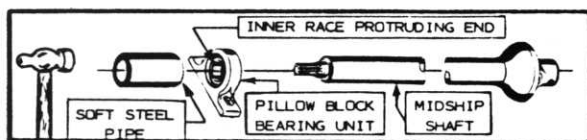


FIGURE # 31

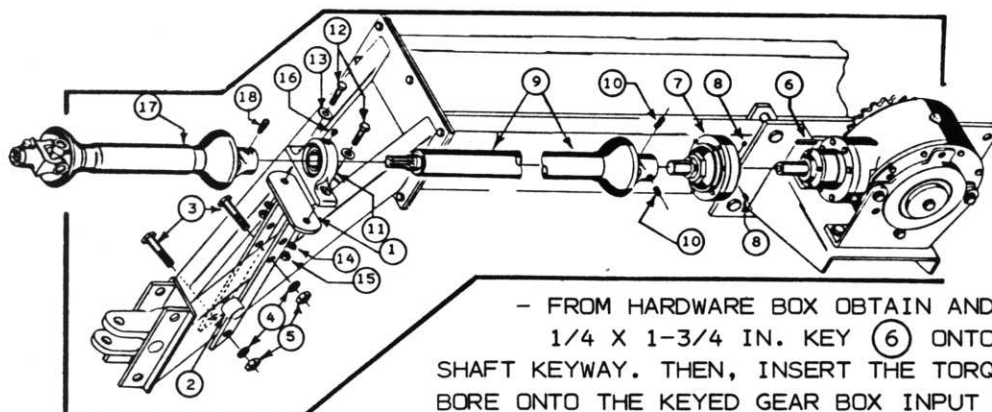


FIGURE # 32

- FROM HARDWARE BOX OBTAIN AND INSTALL A 1/4 X 1/4 X 1-3/4 IN. KEY (6) ONTO THE GEAR BOX INPUT SHAFT KEYWAY. THEN, INSERT THE TORQUE LIMITER (7) REAR BORE ONTO THE KEYED GEAR BOX INPUT SHAFT TO FULL ENGAGEMENT. SECURELY TIGHTEN WITH THE TWO 5/16 X 1/2 IN. ALLEN SET SCREWS (8) LOCATED ON THE TORQUE LIMITER REAR FLANGE.

REFERENCE FIGURE # 32.

- TAKE THE MIDSHIP SHAFT (9) WITH THE PILLOW BLOCK BEARING UNIT INSTALLED AND INSERT ITS UNIVERSAL JOINT YOKE BORE ONTO THE TORQUE LIMITER (7) KEYED SHAFT, UNTIL FULL ENGAGEMENT OCCURS, BUT NOT ALLOWING THE TORQUE LIMITER SHAFT TO PROTRUDE THROUGH THE YOKE. THEN TIGHTEN THE TWO 3/8 X 1/2 IN. ALLEN TYPE SET SCREWS (10) SECURELY.

ASSEMBLY

VI - INSTALLING THE PTO DRIVE SYSTEM - OPTIONAL PACKAGE (CONTINUED)

G - INSTALLING THE PTO DRIVE LINE COMPONENTS (CONTINUED)

- PLACE THE PILLOW BLOCK BEARING (11) OVER THE BEARING SUPPORT PLATE (1) AND OBTAIN TWO 1/2 X 2 IN. HEX BOLTS, FLAT WASHERS (13) LOCK WASHERS (14) AND HEX NUTS (15). MAKE SURE TO INSERT THE FLAT WASHERS (13) TO THE HEX BOLTS (12), BEFORE INSTALLING THE HEX BOLTS THROUGH THE PILLOW BLOCK BEARING CASTING (11) AND SUPPORT PLATE (1). NOW INSTALL THE LOCK WASHERS (14) AND HEX NUTS (15). MAKE SURE THAT THE BEARING CASTING IS CENTERED TO THE SUPPORT PLATE (1) AND THEN TIGHTEN SECURELY. INSTALL THE GREASE FITTING (16) TO THE BEARING CASTING (11) AND CAREFULLY LUBRICATE, APPLYING ONLY ONE GREASE GUN STROKE OF BEARING GREASE.
- NOW CHECK THAT THE PILLOW BLOCK BEARING SUPPORT LEGS ARE IN A VERTICAL POSITION AND THEN PROCEED TO TIGHTEN THE HARDWARE EVENLY.
- INSTALL THE SLIDER DRIVE SHAFT (17) ONTO THE MIDSHIP SHAFT (9) SPLINED END, BUT FIRST, TAKE CARE OF THESE IMPORTANT ITEMS:
 - * ROTATE THE MIDSHIP SHAFT SPLINED END AND FIND THE COUNTERSUNK INDEX.
 - * FROM THE SPLINED SLIDER DRIVE SHAFT FLANGE BORES, REMOVE THE PROTECTION PAINT.
 - * INSERT THE SLIDER DRIVE SHAFT YOKE COUPLING THAT HAS A SET SCREW HOLE ONTO THE MIDSHIP SHAFT SPLINED END, SUCH THAT THE COUNTERSUNK INDEX OF THE SPLINED END COINCIDES WITH THE YOKE FLANGE HOLE. REFERENCE FIGURE # 32.
 - * OBTAIN AND INSTALL A 1/2 X 3/4 IN. ALLEN TYPE SET SCREW (18) TO THE YOKE FLANGE AND TIGHTEN SECURELY.

CAUTION: THE FRONT YOKE AND SLIDER SHAFT PORTION MAY SLIDE OUT IF LEFT HANGING. THE AID OF A WOODEN STAND IS RECOMMENDED TO AVOID POSSIBLE DAMAGE TO SAID PARTS.

- LUBRICATE THE SLIDER DRIVE SHAFT AND MIDSHIP SHAFT CROSS ASSEMBLIES APPLYING ONE GREASE GUN STROKE OF BEARING GREASE TO EACH AT THIS TIME. THEN, COLLAPSE THE SLIDER DRIVE SHAFT AND ROTATE ITS SAFETY SHIELD TO FIND THE GREASE FITTING OF THE TELESCOPIC DEVICE AND LUBRICATE APPLYING SIX GREASE GUN STROKES FOR THIS FIRST TIME. PLEASE REFER TO THE LUBRICATION PROCEDURE SECTION, PAGE # 27 FOR FURTHER RECOMMENDATIONS.

H - INSTALLING THE SAFETY SHIELDS

INSTALLING THE PTO SLIDER DRIVE SAFETY SHIELD

- LOOSEN AND REMOVE THE TWO 1/2 X 2 IN. HEX BOLTS, FLAT WASHERS, LOCK WASHERS AND HEX NUTS USED TO ATTACH SELF-CENTERING BEARING UNIT OF THE DRIVE SHAFT TO THE BEARING UNIT SUPPORT, LOCATED ON THE HITCH POLE. REFERENCE FIGURE # 33.
- INSERT THE SAFETY SHIELD ONTO THE MIDSHIP SHAFT FRONT END, JUST BEHIND THE BEARING UNIT. THE SHIELD SLANTED SIDE MUST FACE FORWARD, AS SHOWN ON FIGURE # 33.
- SLIDE THE SHIELD TOWARD FRONT, SUCH THAT THE SHIELD LOWER EDGES ARE LOCATED BETWEEN THE BEARING UNIT AND THE BEARING UNIT SUPPORT, UNTIL THE ATTACHING HOLES LINE UP WITH THE BEARING UNIT AND THE SUPPORT HOLES.
- REINSTALL THE TWO 1/2 X 2 IN. HEX BOLTS AND RELATED HARDWARE, MAKING SURE TO TIGHTEN THEM SUFFICIENTLY.

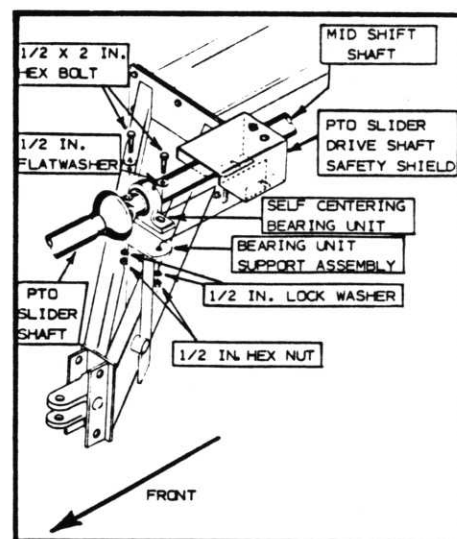


FIGURE # 33

VI - INSTALLING THE PTO DRIVE SYSTEM OPTIONAL PACKAGE (CONTINUED)

INSTALLING THE PTO GEAR BOX SAFETY SHIELD

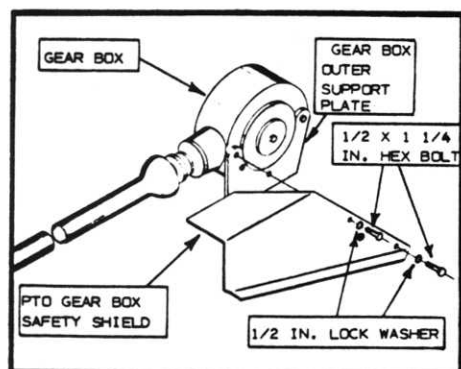


FIGURE # 34

TEMPORARILY REMOVE TWO OF THE 1/2 X 1-1/4 IN. HEX BOLTS, LOCK WASHERS AND FLAT WASHERS USED TO FASTEN THE GEAR BOX OUTER SIDE TO THE OUTER SUPPORT PLATE, AS SHOWN IN FIGURE # 34.

ATTACH SAFETY SHIELD TO THE SUPPORT PLATE SUCH THAT THE LARGEST SLANTED EDGE FACES REARWARD. MAKE THE HOLES COINCIDE TO REINSTALL THE HEX BOLTS AND LOCK WASHERS PREVIOUSLY REMOVED, DISCARDING THE FLAT WASHERS.

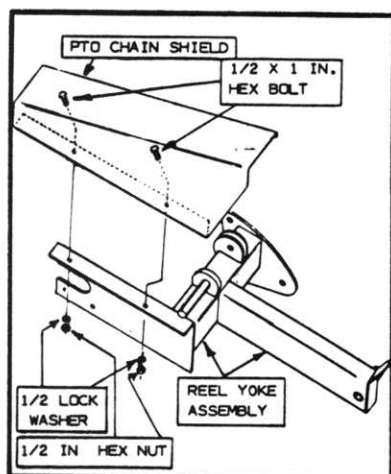


FIGURE # 35

INSTALLING THE PTO CHAIN SHIELD TO REEL YOKE

SOME REEL YOKES MAY BE FOUND WITHOUT THE TWO ATTACHING HOLES. SHOULD THIS BE THE CASE, PROCEED TO DRILL TWO 17/32 IN. HOLES IN THE LOCATION SHOWN ON THE SKETCH OF FIGURE # 36.

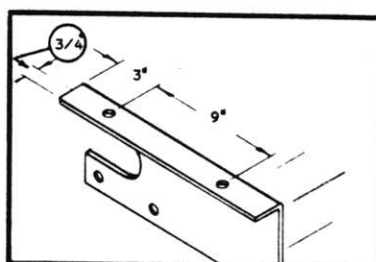


FIGURE # 36

PLACE THE SHIELD ON TOP OF THE REEL YOKE UPPER EDGE, ALIGN THE HOLES AND INSERT THE TWO 1/2 X 1 IN. HEX BOLTS LOCK WASHERS AND HEX NUTS PROVIDED, TO FIRMLY SECURE THE SHIELD TO THE YOKE. REFERENCE FIGURE # 35.

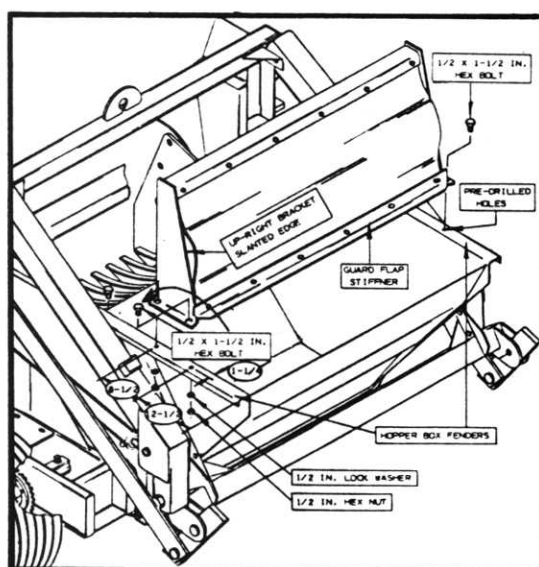


FIGURE # 37

VII - OPTIONAL ROCK GUARD INSTALLATION

THE ROCK GUARD OPTIONAL KIT IS FACTORY ASSEMBLED AND SHOULD BE ATTACHED TO THE ROCK PICKER HOPPER BOX FENDERS WHICH HAVE PRE-DRILLED HOLES AT BOTH SIDES.

PLACE THE ROCK GUARD ASSEMBLY ON TOP OF THE HOPPER BOX FENDERS, SUCH THAT THE GUARD UPRIGHT BRACKET SLANTED EDGES FACE TOWARD THE REAR SIDE OF THE MACHINE.

MAKE THE BRACKET HOLES COINCIDE WITH THE FENDER HOLES AND THEN FASTEN WITH FOUR 1/2 X 1-1/4 IN. HEX BOLTS, LOCK WASHERS AND HEX NUTS.

MAKE SURE THE GUARD FLAP SWINGS TOWARDS THE REAR, NOT TOWARDS THE FRONT. REFERENCE FIGURE # 37.

BEFORE STARTING OPERATIONS: (FOR ALL HI-LIFT ROCK PICKERS EXCEPT AS NOTED)

- SET THE TIRE AIR PRESSURE TO 45 POUNDS.
- MAKE SURE THE ROCK PICKER IS PROPERLY LUBRICATED ACCORDING TO INSTRUCTIONS PROVIDED IN THE LUBRICATION PROCEDURE SECTION. THIS IS VERY IMPORTANT ESPECIALLY WHEN STARTING SEASONAL OPERATIONS.

FOR GROUND DRIVE ONLY

THE TRACTOR DRAW BAR MAY BE SET AT ANY DESIRED POSITION, HOWEVER, THE FURTHER OFF-SET TO THE RIGHT HAND SIDE, THE MORE CLEARANCE WOULD BE AVAILABLE FOR THE GRILL TO PICK-UP. ONCE THE DRAW BAR POSITION IS DETERMINED, IT IS VERY IMPORTANT TO BLOCK SAME WITH A SAFETY PIN.

FOR PTO DRIVE ONLY

EXTEND OR RETRACT THE TRACTOR DRAW BAR TO OBTAIN 14 IN. FROM THE CENTRE OF THE DRAW BAR HOLE TO THE PTO SHAFT END. THE TRACTOR DRAW BAR MUST BE SET ON THE CENTRE POSITION AND LOCKED WITH SAFETY PINS.
HITCH THE ROCK PICKER TO THE TRACTOR USING A SAFETY PIN.

- HOOK-UP THE ROCK PICKER HYDRAULIC HOSES TO THE TRACTOR REAR OUTLET CONNECTIONS AS FOLLOWS:

CONNECT THE HOSES THAT OPERATE THE GRILL LIFTING CYLINDERS TO THE HYDRAULIC CONTROL OPERATED NEAREST TO THE OPERATOR'S SEAT (LEVER # 1), SUCH THAT WHEN THE LEVER IS MOVED FORWARD, THE GRILL WILL LOWER.

CONNECT THE HOSES TO OPERATE THE HOPPER BOX TO A SECOND HYDRAULIC CONTROL (LEVER # 2), SUCH THAT WHEN THE LEVER IS OPERATED FORWARD, THE HOPPER BOX WILL LOWER.

- CHECK THAT THE TRANSPORT ARM IS RELEASED. IF IT IS STILL APPLIED, PROCEED AS DESCRIBED IN PAGE #12 PARAGRAPH F, FOR RELEASING.
- START THE TRACTOR ENGINE AND OPERATE THE HYDRAULIC CONTROL LEVERS JUST TO CONFIRM THAT THEY WERE HOOKED-UP AS OUTLINED ABOVE. THEN, PRACTISE THE FOLLOWING OPERATIONS TO BECOME FAMILIARIZED:

WITH LEVER #1, LOWER THE PICKING GRILL TO THE GROUND AND HOLD UNTIL THE HOPPER BOX FRONT EDGE IS RAISED ABOUT ONE INCH.

WITH LEVER #2, RAISE THE HOPPER BOX TO DESIRED HEIGHT.



CAUTION - FOR DUMPING THE HOPPER BOX FIRST SEE IF IT HAS REACHED AT LEAST FOUR FEET HIGH, THEN, OPERATE LEVER #1 AGAIN IN SAME DIRECTION WHEN THE PICKING GRILL WAS LOWERED.

AFTER DUMPING ACTION IS COMPLETED, OPERATE LEVER #1 IN OPPOSITE DIRECTION. THIS WILL FIRST RAISE THE PICKING GRILL FROM THE GROUND AND THEN SWING THE HOPPER BOX BACK TO NORMAL POSITION.

OPERATE LEVER #2 TO LOWER THE HOPPER BOX TO RECESS POSITION.

NOTE ANY VARIATIONS TO OPERATE THE HOPPER BOX FROM THE ABOVE OUTLINED MAY RESULT IN SEVERE DAMAGE TO THE MACHINE.



CAUTION - WHEN PERFORMING THE LIFTING AND DUMPING OPERATIONS WITH THE HOPPER BOX, DO NOT ALLOW ANYBODY TO STAND CLOSE BY.

- CHECK THE TRACTOR HYDRAULIC FLUID RESERVOIR LEVEL AND ADD TO COMPENSATE WHATEVER AMOUNT OF FLUID WAS UTILIZED TO FILL THE ROCK PICKER HYDRAULIC CYLINDERS AND HOSES.

BEFORE STARTING OPERATIONS: (CONTINUED)

FOR CLUTCH DRIVE ONLY

ARRANGE THE CLUTCH OPERATING ROPES SUCH THAT:
THEY WILL HAVE THE NECESSARY SLACK WHEN THE TRACTOR-MACHINE COMBINATION TURNS AROUND CORNERS.
THE ROPE ENDS ARE FASTENED INDEPENDANTLY TO A SUITABLE LOCATION ON THE TRACTOR AND WOULD ALSO BE EASY TO REACH FROM THE OPERATORS' SEAT.

FOR PTO DRIVE ONLY

CHECK THE PTO GEAR BOX OIL LEVEL AS DESCRIBED IN THE LUBRICATION PROCEDURE SECTION.
IF TRACTOR IS NOT EQUIPPED WITH A TACHOMETER, OR IF IT IS OUT-OF-ORDER, DETERMINE THE THROTTLE LEVER POSITION TO OBTAIN THE REQUIRED PTO SHAFT SPEED OF 540 RPM OR 1000 RPM.
WITH THE TRACTOR ENGINE STOPPED, HOOK THE ROCK PICKER SLIDER DRIVE SHAFT FRONT YOKE ONTO THE TRACTOR PTO SHAFT, MAKING SURE THE QUICK DISCONNECT LOCKING DEVICE SNAPS INTO POSITION. CHECK THAT ALL SET SCREWS ON THE DRIVE LINE ARE TIGHT.

- MAKE SURE THAT ALL GUARDS AND SHIELDS ARE INSTALLED PROPERLY.
- RAISE THE TELESCOPIC HITCH POLE JACK AND SWING IT TO THE HORIZONTAL POSITION.

ROCK PICKER TRANSPORTATION

WHEN TRANSPORTING THE ROCK PICKER ON ROADS OR HIGHWAYS:

- ALWAYS INSTALL THE TRANSPORT ARM. FOR INSTALLATION PROCEDURE REFER TO THE SERVICE AND REPAIR PROCEDURE.
- REVERSE THE HITCH POLE OFF-SET POSITION TOWARDS THE MACHINE CENTRE LINE.
- DO NOT EXCEED 32 KPH (20 MPH) ROAD SPEED.



FIELD OPERATIONS

- BEGIN THE ROCK PICKING OPERATIONS AND OBSERVE THE MACHINE'S PERFORMANCE REGARDING THE PARTICULAR FIELD CONDITIONS BEFORE ATTEMPTING ANY ADJUSTMENTS.
- ON NEW MACHINES, IT IS ADVISABLE TO MAKE A COMPLETE CHECK AFTER ONE OR TWO HOURS OF OPERATION. VERIFY THAT ALL FASTENERS ARE TIGHT ENOUGH, ESPECIALLY WHEEL BOLTS AND SET SCREWS. ALSO, RECHECK THAT ADJUSTMENTS ARE MAINTAINED AS SET.
- REMEMBER THAT ROCK PICKERS ARE DESIGNED AND BUILT TO REMOVE ROCKS AND OTHER DEBRIS FROM THE GROUND SURFACE, BUT NOT TO PULL-OUT BURIED MATERIAL.
- THE BEST ROCK PICKING CONDITIONS ARE WHEN THE ROCKS LAY ON THE GROUND SURFACE AND IT IS REASONABLY FIRM AND DRY.

OPERATING PROCEDURE

BEFORE STARTING OPERATIONS: (CONTINUED)

FIELD OPERATIONS: (CONTINUED)

- THE GRILL DEPTH SHOULD BE SUCH THAT THE GRILL TEETH WILL SKIM THE GROUND.
- THE NORMAL OPERATING TRAVEL SPEED SHOULD BE FROM 6 TO 10 KPH (4 TO 6 MPH).
AT HIGHER SPEED THE ROCKS MAY FLY OVER THE HOPPER BOX AND AT LOWER SPEED THE ROCKS MAY ACCUMULATE AT THE HOPPER BOX FRONT EDGE AND ROLL BACK ONTO THE GRILL TEETH, REDUCING PICKING EFFECTIVENESS.
- IF THE GROUND SURFACE IS BUMPY, DO NOT LOAD THE MACHINE TOO HEAVY AND REDUCE MACHINE'S TRAVEL SPEED.
- THE HITCH POLE CLEVIS IS NORMALLY LOCATED IN THE HITCH POLE BRACKET CENTRE POSITION. THIS SETTING ALLOWS THE ROCK PICKER FRAME AND POLE ASSEMBLY TO RIDE PARALLEL TO THE GROUND. HOWEVER, IF THE SOIL IS FOUND TO BE RATHER SOFT, ADJUST THE CLEVIS CASTING AT THE HITCH POLE BRACKETS, SUCH THAT THE FRAME AND POLE ASSEMBLY WOULD BE LEVELLED TO THE GROUND.

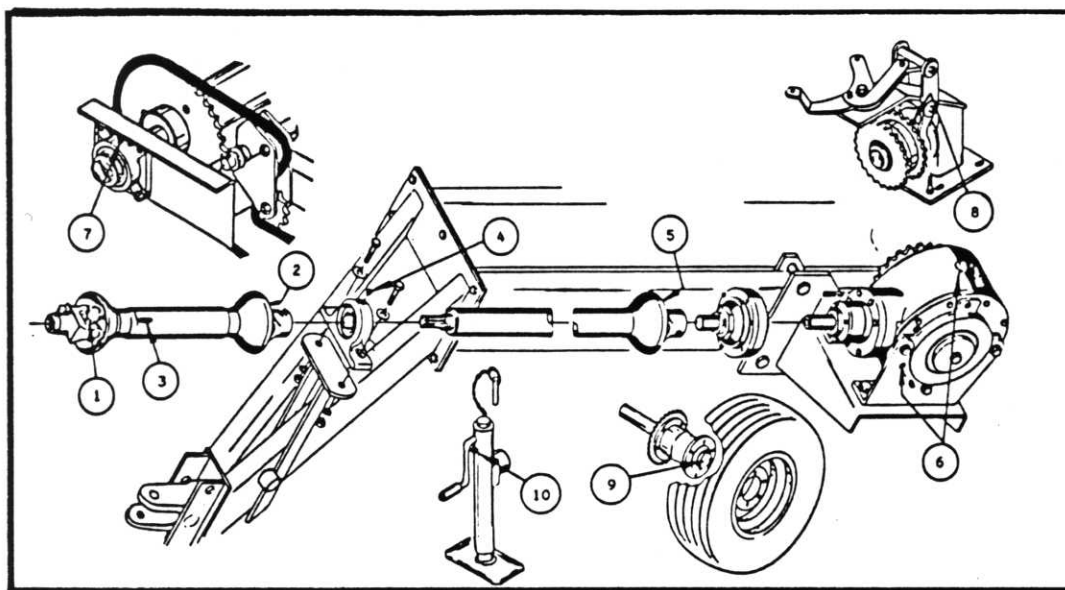
CAUTION: VERY LARGE OR ODD SHAPED ROCKS MAY JAM THE PADDLES.



REEL PADDLES COULD BE UNDER EXTREME PRESSURE FROM THE REEL SPRINGS. THEREFORE, WHEN UNJAMMING THE REEL PADDLES, MAKE SURE YOUR BODY MEMBERS OR ANYONE ELSE'S ARE CLEAR AND AWAY FROM THE REACH OF MACHINE COMPONENTS THAT COULD SUDDENLY INITIATE A KICKBACK MOTION LIABLE TO PRODUCE PINCHING, STRIKING OR INJURING SITUATIONS.

- WHEN SPOT PICKING ROCKS, DISENGAGE THE THROW-OUT CLUTCH OR THE PTO WHILE THE MACHINE IS TRAVELLING.
- PICKING WINDROWED ROCKS:
 - * PTO DRIVEN ROCK PICKERS ARE RECOMMENDED FOR PICKING WINDROWED ROCKS; HOWEVER, IF A GROUND DRIVEN MACHINE HAS TO BE USED, MAKE WINDROWS RATHER LIGHT TO AVOID ACCUMULATION OF ROCKS AT THE GRILL AND OVERLOADING THE PADDLES.
 - * WHEN PICKING WITH A PTO DRIVE MACHINE, IF ROCKS ACCUMULATE AT THE GRILL, DECREASE MACHINE TRAVEL SPEED AND MAINTAIN REEL SPEED.
- FOR INFORMATION REGARDING COMPONENT ADJUSTMENTS, MAKE REFERENCE TO THE ADJUSTMENT PROCEDURES SECTION.

LUBRICATION RECOMMENDATIONS CHART



KEY	POINT OF LUBRICATION	FREQUENCY	METHOD	AMOUNT
1	PTO SLIDER DRIVE SHAFT FRONT CROSS	WEEKLY	GREASE GUN	ONE STROKE
2	PTO SLIDER DRIVE SHAFT REAR CROSS	WEEKLY	GREASE GUN	ONE STROKE
3	PTO SLIDER DRIVE SHAFT SLID- ING DEVICE	WEEKLY	GREASE GUN	THREE STROKES
4	PILLOW BLOCK BEARING	MONTHLY	GREASE GUN	ONE STROKE
5	MIDSHIP SHAFT REAR CROSS	WEEKLY	GREASE GUN	ONE STROKE
6	GEAR BOX OIL LEVEL	WEEKLY	REACH OIL LEVEL	AS REQUIRED
7	REEL SHAFT FLANGE BEARING UNITS	MONTHLY	GREASE GUN	ONE STROKE
8	CLUTCH SLIDING SPROCKET	BIWEEKLY	GREASE GUN	ONE STROKE
9	WHEEL BEARINGS	SEASONALLY	REPACK	AS REQUIRED
10	HITCH POLE JACK(SIDE WIND ONLY)	MONTHLY	GREASE GUN	ONE STROKE

RECOMMENDED LUBRICATION MATERIALS

USE BEARING GREASE TO LUBRICATE ALL GREASE FITTINGS WITH SUITABLE GREASE GUN AND TO REPACK WHEEL BEARINGS.

USE GEAR OIL TO LUBRICATE THE GEAR BOX AS RECOMMENDED IN PARAGRAPH C - PAGE # 17.

NOTE: GEAR BOX OIL MUST BE CHANGED AT THE END OF THE FIRST 100 HOURS OF OPERATION AND THEREAFTER EVERY 200 HOURS OR LESS, DEPENDING ON OPERATING CONDITIONS.

NOTE; DURING PROLONGED STORAGE PERIODS, COAT EXPOSED HYDRAULIC CYLINDER RODS WITH LIGHT OIL TO PREVENT POSSIBLE CORROSION.

MAINTENANCE OPERATIONS

DUE TO THE WIDE RANGE OF OPERATIONAL CONDITIONS THAT THE MACHINE WILL BE SUBJECTED, IT IS DIFFICULT AND RATHER COMPLEX TO SPECIFY MAINTENANCE REQUIREMENTS FOR A GIVEN TIMING. THEREFORE, THE FOLLOWING MAINTENANCE RECOMMENDATIONS ARE TO BE ONLY A GUIDE LINE. FREQUENCIES AND REQUIREMENTS MAY BE VARIED TO SUIT LOCAL NEEDS.

RECOMMENDATIONS

- ALWAYS USE CLEAN HYDRAULIC FLUID AND PERIODICALLY CHECK FOR LEAKS.
- PERFORM COMPLETE LUBRICATION OPERATIONS ON THE MACHINE AT THE END AND THE BEGINNING OF EVERY SEASON. SEE LUBRICATION CHART ON PAGE # 27.
- CHANGE GEAR BOX LUBRICANT AT THE END OF FIRST 100 HOURS OF OPERATION AND THEREAFTER EVERY 2500 HOURS. USE 2.5 LITRES (5 PINTS) OF GEAR OIL, AS RECOMMENDED IN PAGE # 18 PARAGRAPH C.
- REPACK AND ADJUST WHEEL BEARINGS AT THE BEGINNING OF EVERY SEASON. SEE ADJUSTMENT METHOD AT THE SERVICE AND REPAIR PROCEDURE SECTION, PAGE # 30.
- CHECK TWICE EVERY SEASON THE CONDITION OF DRIVE TRAIN CROSS AND JOINTS. PARTS REPLACEMENT AND REPAIR METHOD IS CONTAINED IN THE SERVICE AND REPAIR PROCEDURE SECTION.
- DO NOT EXCEED RECOMMENDED TIRE PRESSURE. USE CARE AND CAUTION WHEN SERVICING AND INFLATING TIRES TO PREVENT PERSONAL INJURY FROM BLOW-OUT.

CHECK:	DAILY	WEEKLY	BI-WEEKLY	MONTHLY	SEASONALLY	
					START	END
HYDRAULIC FLUID LEAKS	X				X	X
DRIVE TRAIN :						
* BEARING CONDITION		X			X	X
COUPLING SET SCREWS		X			X	X
SPROCKET SET SCREWS		X			X	X
BOLTS AND NUTS TIGHT				X	X	
SPROCKET ALIGNMENT				X	X	OR X
CHAIN SLACK ADJUSTMENT		X			X	OR X
GRILL TEETH WEAR				X	X	OR X
PADDLE TEETH WEAR				X	X	OR X
REEL PADDLE TEETH TO GRILL TEETH ADJUSTMENT				X	X	OR X
STRUCTURAL COMPONENTS BOLTS AND NUTS TIGHT				X	X	
TIRE PRESSURE	X				X	
WHEEL RIM BOLTS TIGHT			X		X	
GEAR BOX OIL LEVEL			X		X	

* MACHINE RUNNING IN IDLE &
OFF THE GROUND. WITH CAUTION
LISTEN FOR BEARING NOISE.



LUBRICATION :

PLEASE SEE LUBRICATION PROCEDURE.

ADJUSTMENTS

REEL PADDLE TEETH TO GRILL TEETH ADJUSTMENT

THE PADDLE TEETH SHOULD ALWAYS BE REASONABLY CENTERED TO THE GRILL TEETH. THE REEL ASSEMBLY FLANGE BEARING UNIT LOCKING COLLARS ARE THE DEVICES THAT CONTROL THIS ADJUSTMENT. STEP BY STEP ADJUSTMENT PROCEDURE IS DESCRIBED IN PARAGRAPHS 4 AND 5 OF PAGE # 35.

NOTE: EVERY TIME THAT THIS ADJUSTMENT IS PERFORMED, THE DRIVE SPROCKETS ALIGNMENT MUST BE VERIFIED, SINCE THE SPROCKET ATTACHED TO THE REEL ASSEMBLY IS THE LEADER.

DRIVE SPROCKETS ALIGNMENT

ON ALL ROCK PICKERS, IT IS VERY IMPORTANT TO MAINTAIN THE DRIVE SPROCKET ALIGNED TO THE REEL SPROCKET AS FOLLOWS:

- FOR GROUND DRIVEN MACHINES ALIGN THE DRIVE HUB SPROCKET TO THE REEL SPROCKET, AS DESCRIBED IN PARAGRAPH 'C', PAGE # 10.
- FOR THROW-OUT CLUTCH EQUIPPED MACHINES, ALIGN THE CLUTCH SLIDING SPROCKET IN ENGAGED POSITION TO THE REEL SPROCKET AS DESCRIBED IN PARAGRAPH 'B' OF PAGE # 13 AND THEN, ALIGN THE DRIVE HUB SPROCKET TO THE CLUTCH OUTER SPROCKET, AS DESCRIBED IN PARAGRAPH 'C' OF PAGE # 14.
- FOR PTO DRIVEN MACHINES, ALIGN THE GEAR BOX DRIVE SPROCKET TO THE REEL SPROCKET, AS DESCRIBED IN PARAGRAPH 'C' OF PAGE # 18.

DRIVE CHAIN ADJUSTMENT

- FOR GROUND DRIVEN MACHINES, FOLLOW INSTRUCTIONS DESCRIBED IN PARAGRAPH E OF PAGE # 11.
- FOR THROW-OUT CLUTCH EQUIPPED MACHINES, FIRST ADJUST THE DRIVE HUB SPROCKET TO CLUTCH OUTER SPROCKET CHAIN AS DESCRIBED IN PARAGRAPH D OF PAGE # 14, AND THEN ADJUST THE REEL SPROCKET TO CLUTCH SLIDER SPROCKET CHAIN, AS DESCRIBED IN PARAGRAPH E OF PAGE # 15.
- FOR PTO DRIVEN MACHINES, FOLLOW INSTRUCTIONS DESCRIBED IN PARAGRAPH G OF PAGE # 20.

PADDLE SPRING ADJUSTMENT

FROM FREE STATE MOUNTED CONDITION, TIGHTEN THE EYE BOLT LOCK NUT UNTIL A PIECE OF PAPER CAN BE SLID BETWEEN THE SPRING COILS.

NOTE: THE PADDLE SPRING TENSION MAY BE AFFECTED IF THE PADDLE BUSHING AND REEL PINS HAVE SIGNIFICANT WEAR.

THROW-OUT CLUTCH ADJUSTMENTS

FOR THROW-OUT CLUTCH ADJUSTMENTS, PLEASE REFER TO CLUTCH SECTION IN THE SERVICE AND REPAIR PROCEDURES, PAGE # 39.

TORQUE LIMITER ADJUSTMENT

FOR THE TORQUE LIMITER BREAK-AWAY ADJUSTMENT, PLEASE REFER TO TORQUE LIMITER SECTION IN THE SERVICE AND REPAIR PROCEDURES, PAGE # 43.

WHEEL HUB BEARING REPLACEMENT AND ADJUSTMENT

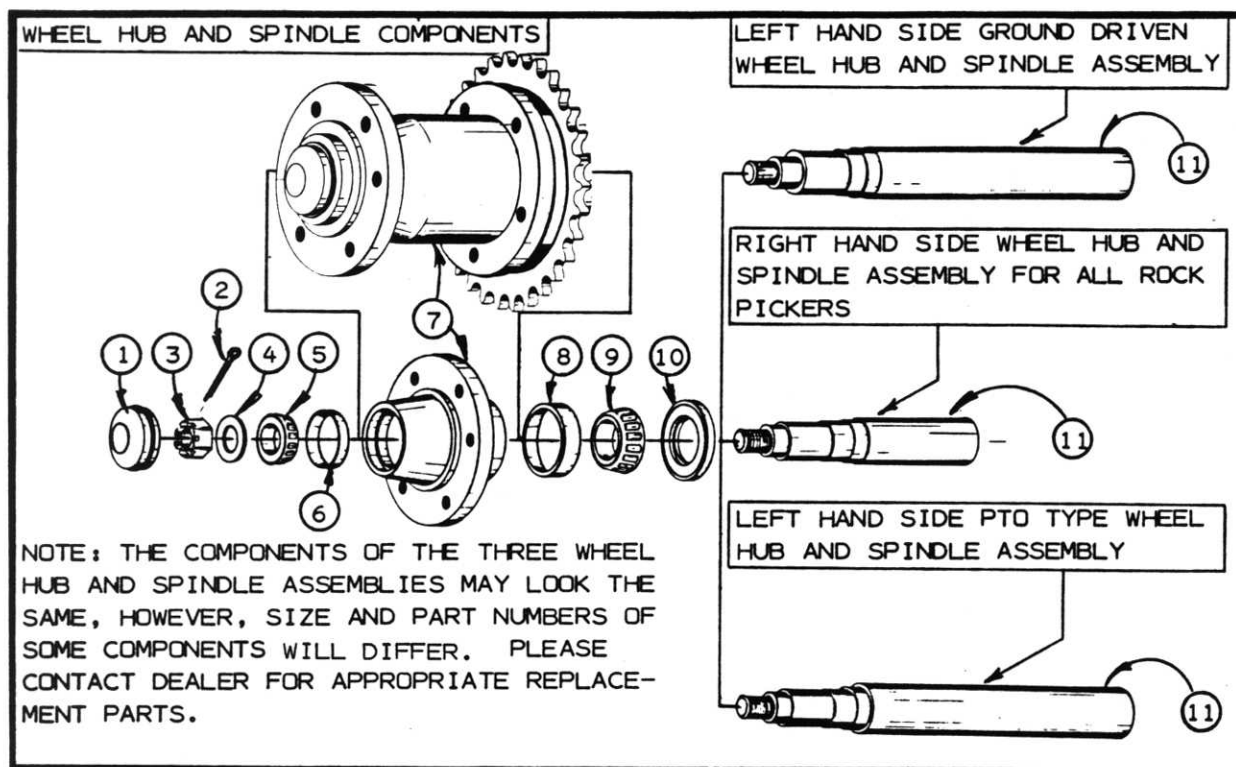


FIGURE # 39

WHEEL HUB BEARING REPLACEMENT AND ADJUSTMENT PROCEDURE

THIS PROCEDURE IS VALID TO SERVICE ANY ONE OF THE THREE WHEEL HUB AND SPINDLE ASSEMBLIES FOUND ON THE ROCK PICKERS, EVEN THOUGH SOME COMPONENTS DIFFER IN SHAPE OR SIZE, AS SHOWN ON FIGURE # 39.

REMOVAL AND DISASSEMBLY OPERATIONS

- BEFORE REMOVING THE LEFT HAND SIDE HUB FROM SPINDLE:
 - *ON STANDARD GROUND DRIVEN MACHINES, RELEASE CHAIN TIGHTENER SPRING TENSION, RAISE REEL ASSEMBLY TO HIGHEST POSITION TO SLACKEN DRIVE CHAIN AND REMOVE CONNECTOR LINK. THEN, LOWER REEL ASSEMBLY AND REMOVE THE CHAIN.
 - *ON THROW-OUT CLUTCH EQUIPPED MACHINES, REMOVE THE HUB SPROCKET TO CLUTCH OUTER SPROCKET DRIVE CHAIN CONNECTOR LINK AND THE CHAIN.
- LOOSEN WHEEL RIM BOLTS WITH APPROPRIATE WRENCH.
- RAISE WHEEL ASSEMBLY FROM GROUND USING SUITABLE JACK TO LIFT AND BLOCK THE MACHINE PROPERLY.
- REMOVE ALL WHEEL RIM BOLTS AND WHEEL ASSEMBLY.
- REMOVE DUST CAP (1) FROM WHEEL HUB (7), USING A SCREW DRIVER TO PRY AND TAP GENTLY ON THE DUST CAP RIDGE.
- REMOVE COTTER PIN (2) FROM CASTELLATED NUT (3) AND DISCARD IT.
- REMOVE CASTELLATED ADJUSTING NUT (3) AND FLAT WASHER (4).
- PULL OUT THE HUB CASTING (5) CAREFULLY, BEING ALERT TO CATCH THE OUTER ROLLER BEARING CONE (6).
- PLACE ALL REMOVED PARTS ON A CLEAN BENCH TOP OR SUITABLE TRAY.

SERVICE & REPAIR PROCEDURES

- USE A 1/2 X 8 IN. BRONZE BAR ON SIMILAR SOFT MATERIAL TO TAP CAREFULLY ON THE INNER ROLLER BEARING CONE (9) TO REMOVE BOTH THE CONE AND THE DUST SEAL (10).
- WASH ALL REMOVED PARTS WITH CLEAN SOLVENT AND AIR DRY.

NOTE: WHEN AIR DRYING ROLLER BEARING CONES, DO NOT ALLOW THEM TO SPIN AVOIDING POSSIBLE DAMAGE.

- INSPECT ALL PARTS FOR WEAR AND DAMAGE.
- IF BEARING CUPS NEED TO BE REPLACED, USE A 12 IN. LONG TAPER PUNCH TO HAMMER THE CUPS ON THEIR EDGES ALTERNATELY.
- TO INSTALL BEARING CUP REPLACEMENTS INTO THE HUB CASTING, USE THE TAPER PUNCH TO DRIVE IN THE CUPS (6) AND (8) BY POUNDING ON THEIR EDGE ALTERNATELY AND BEING CAREFUL NOT TO CHIP THE CUPS. MAKE SURE THAT CUPS (6) AND (8) ARE FULLY SEATED.
- APPLY A THICK WALL OF BEARING GREASE INSIDE THE HUB CASTING, AND SOAK THE BEARING CONES (5) AND (9), IN HEAVY OIL SUCH AS TRANSMISSION OIL. LUBRICATE DUST SEAL LIP (10) WITH A THICK BEAD OF THE SAME OIL.
- INSTALL THE INNER ROLLER BEARING CONE (9) AND NEST IT ON ITS CORRESPONDING BEARING CUP INSIDE OF THE HUB CASTING.
- NOW INSTALL THE DUST SEAL (10) ON TOP OF THE BEARING CONE (9) JUST ASSEMBLED, SUCH THAT THE SEAL FACES IN-BOARD AND THE METAL CAGE REMAINS FLUSH WITH THE HUB CASTING BORDER (7). USE THE BRONZE BAR MENTIONED ABOVE TO HAMMER TAP GENTLY ON THE UNIT SEAL (10).
- INSERT THE HUB CASTING (7) ONTO THE SPINDLE (11) BEING CAREFUL NOT TO DAMAGE THE DUST SEAL (10) WITH THE SPINDLE STEPS (11).
- FILL REMAINING HUB CAVITIES WITH BEARING GREASE, TO PROVIDE ADEQUATE LUBRICATION RESERVE.
HOLDING THE HUB CASTING (7) CENTERED ON THE SPINDLE (11), SLIDE THE OUTER BEARING CONE (5) ONTO THE SAME SPINDLE PUSHING INWARD.
- INSERT THE FLAT WASHER (4) AND THREAD ON THE CASTELLATED NUT (3) TO THE SPINDLE (11).
- USE A SUITABLE SIZE CRESCENT WRENCH TO SLOWLY TIGHTEN THE NUT (3) AND AT THE SAME TIME, CONSTANTLY ROTATE THE HUB CASTING (7) UNTIL DIFFICULTY OF ROTATION IS FELT. THEN, LOOSEN THE NUT (3) A HALF OF A TURN.
- NOW, HAND TIGHTEN THE CASTELLATED NUT (3) SUFFICIENTLY TO THE POINT WHERE ANY DRAG CONDITION IS FELT ON THE HUB CASTING (7) WHILE BEING ROTATED SLOWLY.

OBSERVE THE COTTER PIN SPINDLE HOLE (11) POSITION AGAINST THE NUT CASTELLATIONS (3). IF NO COINCIDENTAL SITUATION WAS OBTAINED, TURN BACK THE NUT (3) TO THE NEAREST CASTELLATION THAT WOULD ALLOW THE NEW COTTER PIN (2) INSTALLATION. HUB CASTING (7) MUST TURN FREE AND MUST NOT HAVE APPRECIABLE END PLAY.

- SLIGHTLY TAP COTTER PIN HEAD (2) AND BEND LEGS SIDEWISE OVER THE NUT (3), SUCH THAT IT WILL NOT MOVE.
- FILL THE DUST CAP (1) HALF WAY WITH BEARING GREASE AND INSTALL IT ON THE HUB CASTING (7) TAPPING GENTLY, UNTIL RIDGE IS SEATED.
- REINSTALL WHEEL ASSEMBLY ONTO HUB CASTING (7) AND HAND TIGHTEN WHEEL BOLTS. LOWER THE JACK AND RETIGHTEN WHEEL BOLTS ALTERNATELY AND FIRM.
- AFTER THE LEFT HAND SIDE HUB IS SERVICED:

*ON STANDARD GROUND DRIVEN MACHINES, RAISE REEL ASSEMBLY TO HIGHEST POSITION TO INSTALL DRIVE CHAIN AND CONNECTOR LINK, RE-ADJUST CHAIN TIGHTENER SPRING TENSION AND THEN, LOWER REEL ASSEMBLY. SEE PAGE #10 PARAGRAPH C AND D.

*ON THROW-OUT CLUTCH DRIVEN MACHINES, INSTALL DRIVE CHAIN ONTO HUB SPROCKET AND CLUTCH OUTER SPROCKET AND INSTALL CONNECTOR LINK. SEE PAGE #14 PARAGRAPH D.

SERVICE & REPAIR PROCEDURES

HYDRAULIC CYLINDERS

IF HYDRAULIC CYLINDER EFFICIENCY DECREASES AND NO EXTERIOR FLUID LEAKAGE IS EVIDENT, THE FOLLOWING STEPS MAY BE TAKEN:

- CHECK THAT THE TRACTOR HYDRAULIC FLUID RESERVOIR HAS SUFFICIENT FLUID.
- REMOVE CYLINDER FROM THE ROCK PICKER AND TEST EACH CYLINDER INDIVIDUALLY.
- FULLY RETRACT THE HYDRAULIC CYLINDER AND THEN DISCONNECT FROM THE CYLINDER, THE HOSE THAT NORMALLY SUPPLIES HYDRAULIC FLUID PRESSURE TO EXTEND THE ROD.
- APPLY FLUID PRESSURE TO RETRACTING SIDE OF THE CYLINDER AND AT THE SAME TIME OBSERVE THE OPEN PORT FOR FLUID FLOW.
- IF A CONTINUOUS STREAM OF FLUID IS FLOWING, REPLACE PISTON SEALS.
- REVERSE THE HOSE CONNECTIONS AND PERFORM THE SAME TEST, BUT NOT FULLY EXTENDING THE HYDRAULIC CYLINDER AND OBSERVE THE RESULTS.
- IF THE HYDRAULIC CYLINDER TEST RESULTS ARE SATISFACTORY, BUT THE HYDRAULIC FLUID PRESSURE REMAINS DEFICIENT, THEN PROCEED TO REVIEW THE TRACTOR HYDRAULIC SYSTEM.

CYLINDER DISASSEMBLY

- PLUG CYLINDER PORTS AND THOROUGHLY CLEAN COMPLETE CYLINDER.
- LOOSEN END CAP LOCK RING AND SCREW OFF END CAP.
- CAREFULLY REMOVE THE PISTON AND ROD ASSEMBLY.
- CLAMP THE EXTERIOR END OF THE ROD ON A VISE TO REMOVE THE PISTON ASSEMBLY.

VERY IMPORTANT: DO NOT CLAMP THE CYLINDER ROD BY THE CHROMED SURFACE.

- REMOVE PISTON LOCK NUT AND PISTON AND SLIDE OFF ROD FROM END CAP.
- WASH PARTS WITH CLEAN SOLVENT AND AIR DRY. INSPECT PARTS THOROUGHLY.

CYLINDER ASSEMBLY

NOTE; DO NOT USE SHARP TOOLS TO AID IN INSTALLATION OF COMPONENTS. BE CAREFULL NOT TO DAMAGE SEALS.

- REPLACE ALL SEALS ON PISTON AND END CAP.
- REINSTALL ROD THROUGH END CAP.
- SECURE PISTON TO ROD WITH LOCK NUT. TORQUE TO 225 FT. LBS.
- HOLD CYLINDER BODY IN A VICE AND GENTLY INSERT PISTON AND ROD ASSEMBLY INTO CYLINDER USING A SLIGHT ROCKING MOTION.
- SCREW ON END CAP FULLY UNTIL IT BOTTOMS AGAINST TOP OF CYLINDER. BACK OFF END CAP TO ACHIEVE DESIRED PORT DIRECTION.
- SECURE END CAP BY JAMMING LOCK RING AGAINST END CAP.
- TEST CYLINDER ASSEMBLY, AS DESCRIBED AT TOP OF PAGE, TO ASSURE OPERATING EFFECTIVENESS.

THE FOLLOWING DIAGRAMS WILL ASSIST YOU IN IDENTIFYING COMPONENT NAMES AND LOCATIONS WHEN SERVICING HYDRAULIC CYLINDERS.

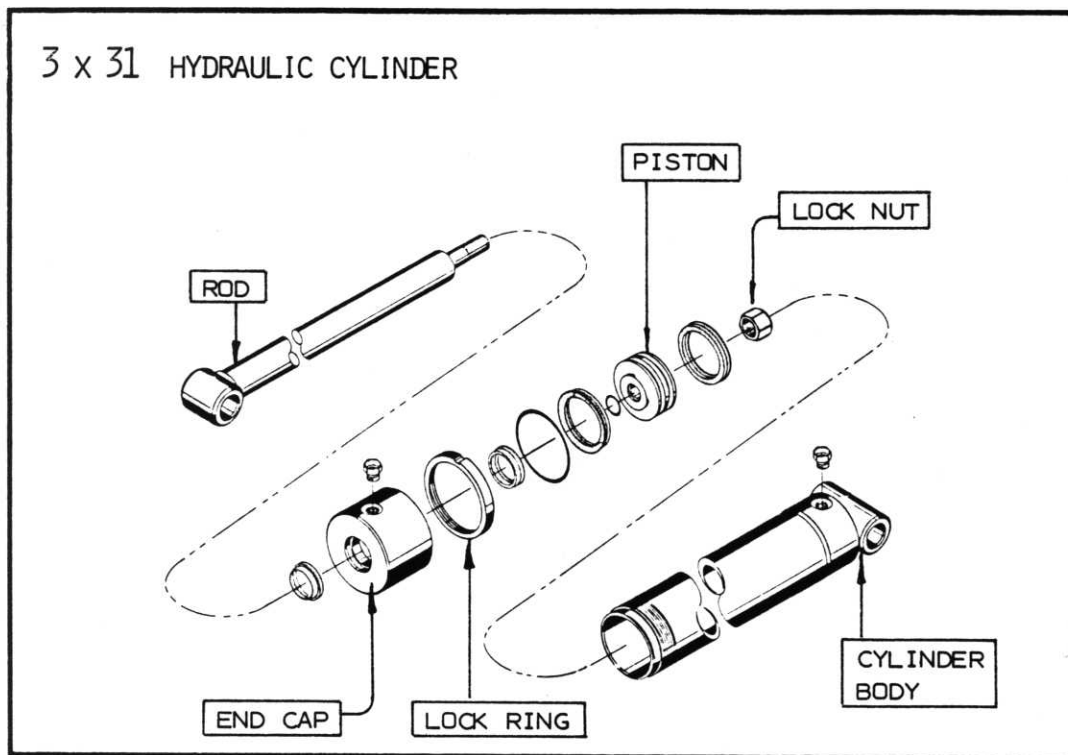


FIG #40

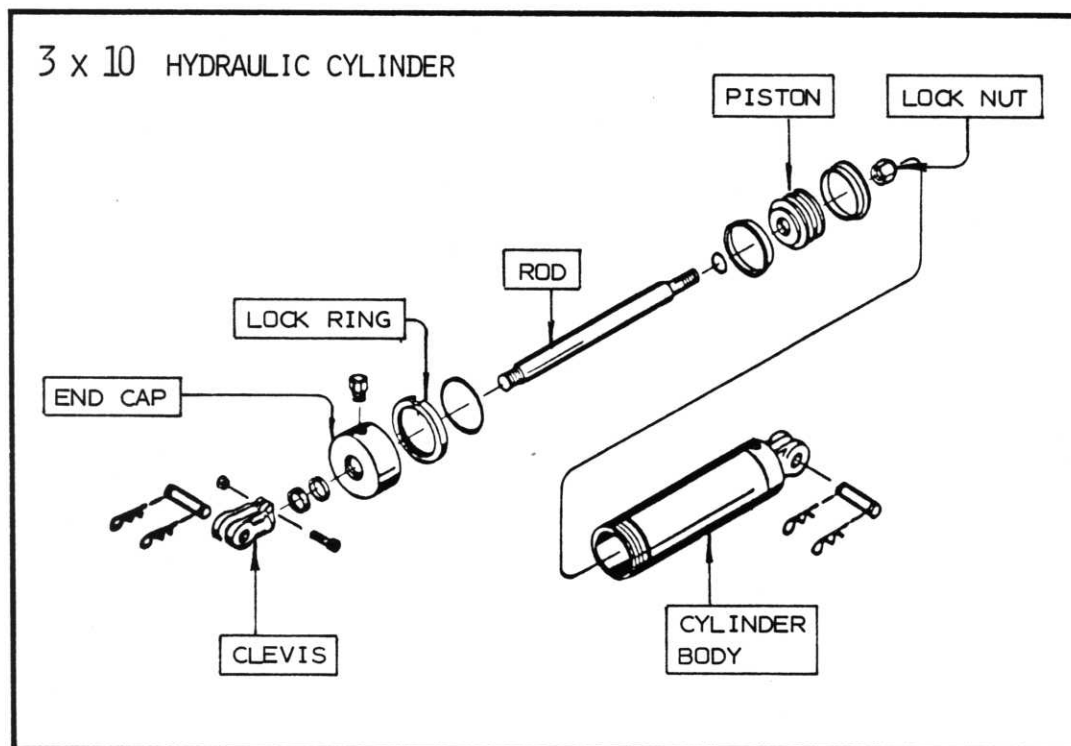


FIG #40A

SERVICE & REPAIR PROCEDURES

REEL SPROCKET REPLACEMENT PROCEDURE

1. REEL ASSEMBLY - REMOVAL

- LOCATE THE ROCK PICKER ON LEVELLED HARD GROUND AND THEN REST THE PICKING GRILL ON TOP OF A FEW 2 X 4 IN. WOODEN BLOCKS BY OPERATING THE HITCH POLE JACK.
- WRAP A STRONG LIFTING CHAIN AROUND THE CENTRE PORTION OF THE REEL TUBING AND MAINTAIN CHAIN UNDER SLIGHT TENSION HOLDING THE REEL ASSEMBLY.
- REMOVE THE FOUR HEX BOLTS THAT FASTEN EACH OF THE FLANGE BEARING UNITS TO THE BEARING PLATES AND PROCEED TO LIFT AND REMOVE THE REEL ASSEMBLY FROM THE MACHINE. PLACE THE REEL ASSEMBLY ON THE GROUND BESIDE THE ROCK PICKER.

REFERENCE FIGURE # 41.

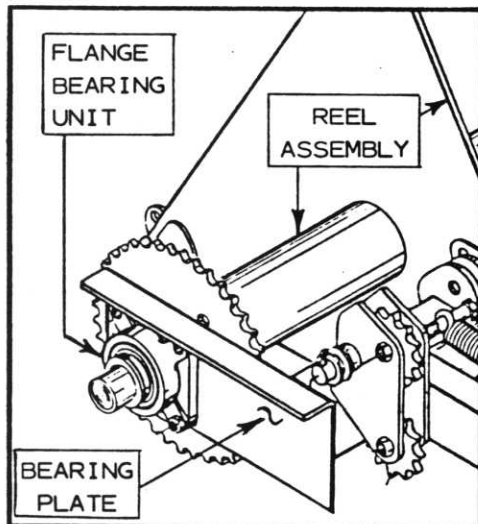


FIGURE # 41

NOTE: TO REPLACE THE REEL SPROCKET, ONLY THE LEFT HAND SIDE FLANGE BEARING UNIT HAS TO BE REMOVED FROM THE REEL SHAFT.

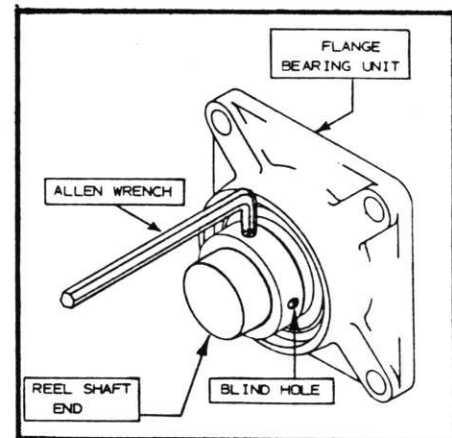


FIGURE # 42

2. FLANGE BEARING UNIT - REMOVAL (REFERENCE FIGURE # 42 AND # 43)

- SCRAPE OFF PAINT FROM REEL ASSEMBLY SHAFT END AND REMOVE LOCKING COLLAR SET SCREW WITH 3/16 IN. ALLEN WRENCH.
- INSERT PUNCH OR DRIFT IN LOCKING COLLAR BLIND HOLE AND POUND WITH HAMMER TO MAKE COLLAR ROTATE IN OPPOSITE DIRECTION OF REEL WORKING ROTATION, UNTIL IT BECOMES LOOSE.
- DISENGAGE LOCKING COLLAR ECCENTRIC FROM BEARING RACE AND REMOVE FROM REEL SHAFT END.
- REMOVE THE FLANGE BEARING FROM REEL SHAFT.

3. REEL SPROCKET - REMOVAL

- REMOVE THE THREE 3/4 X 2 IN. HEX BOLTS, LOCK WASHERS AND HEX NUTS THAT FASTEN THE REEL SPROCKET TO THE REEL TUBING FLANGE.
- REMOVE THE 40 TOOTH SPROCKET.

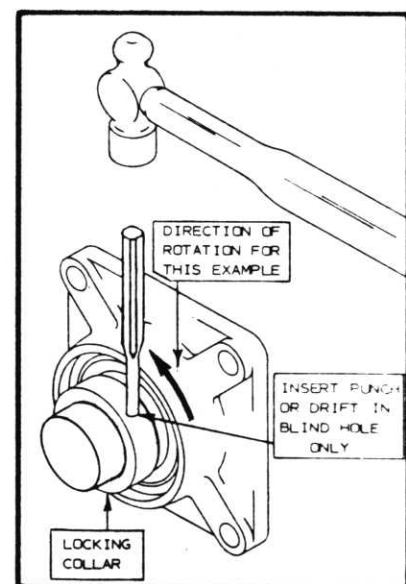


FIGURE # 43

4. REPLACEMENT REEL SPROCKET INSTALLATION

- PLACE THE NEW 48 TOOTH SPROCKET, UNIQUE FOR THE 1000 RPM-PTO DRIVE OPTION, ON THE LEFT SIDE REEL TUBING NEXT TO THE FLANGE.

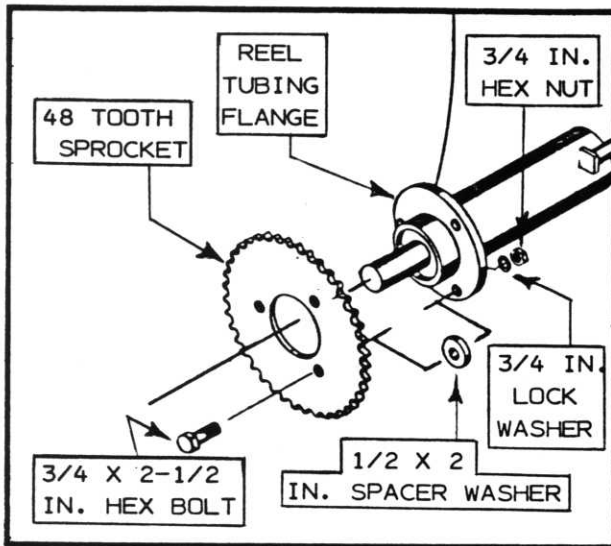


FIGURE # 44

- PLACE THREE 1/2 IN. TH. X 2 IN. OD SPACER WASHERS BETWEEN SPROCKET AND REEL TUBING FLANGE. ALSO, USE NEW 3/4 X 2-1/2 HEX BOLTS TO FASTEN THE SPROCKET AND THE INSERTED SPACER WASHERS AS SHOWN IN FIGURE # 44. SPACER WASHERS AND NEW LONGER HEX BOLTS ARE PROVIDED WITH THE OPTIONAL PTO PACKAGE HARDWARE. TIGHTEN HEX BOLTS TO 175 FT-LB. TORQUE.
- INSERT THE BEARING UNIT BACK ONTO THE LEFT HAND REEL SHAFT END, BUT DO NOT INSTALL THE LOCKING COLLAR AT THIS TIME.
- LIFT AND REINSTALL THE REEL ASSEMBLY OVER THE BEARING PLATES AND MAKE THE BEARING UNIT HOLES COINCIDE WITH THE BEARING PLATES HOLES. SECURE WITH THE FOUR HEX BOLTS AND HEX NUTS PREVIOUSLY REMOVED FROM EACH SIDE.

- REMOVE THE LIFTING DEVICE AND CHAIN UTILIZED TO SUSPEND THE REEL ASSEMBLY.

5. CENTERING THE REEL ASSEMBLY TO THE GRILL TEETH

IMPORTANT NOTE: BEFORE INSTALLING THE REEL ASSEMBLY FLANGE BEARING LOCKING COLLARS, IT IS NECESSARY TO CENTER THE REEL PADDLE TEETH TO THE GRILL TEETH, REFERENCE FIGURE # 45. AS REQUIRED, SLIDE THE COMPLETE REEL ASSEMBLY SIDEWISE TO CENTER ANYONE OF THE PADDLE TEETH TO THE GRILL TEETH. THEN, SLOWLY, TURN REEL ASSEMBLY TO OBSERVE THE REMAINING PADDLE TEETH POSITION, BUT MAKE SURE THE REEL ASSEMBLY DOES NOT SHIFT SIDEWISE. TO PREVENT THIS SHIFTING POSSIBILITY, USE A SMALL PIECE OF STEEL BAR THAT WILL FIT BETWEEN THE RIGHT HAND SIDE REEL TUBING END AND THE BEARING PLATE OF SAME SIDE, ACTING AS A SPACER. DETERMINE REEL LOCATION WHERE THE TEETH OF ALL PADDLES WOULD BE APPROXIMATELY CENTERED BETWEEN GRILL TEETH. ALWAYS REMEMBER, THAT THE LOCKING COLLARS MAINTAIN THE REEL TEETH TO GRILL TEETH ADJUSTMENT.

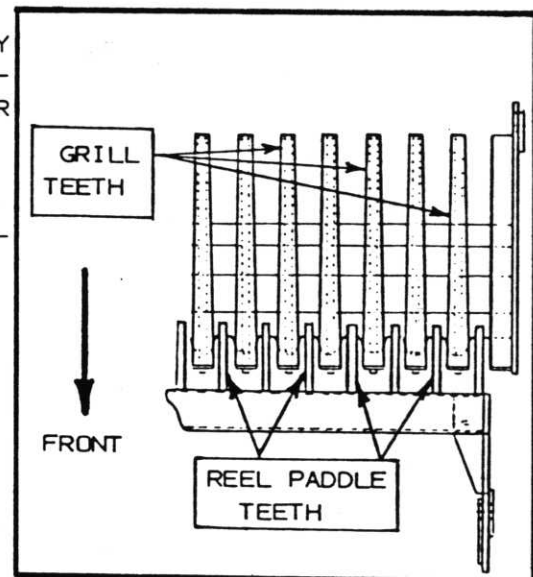


FIGURE # 45

SERVICE & REPAIR PROCEDURES

6. INSTALLING ECCENTRIC LOCKING COLLARS ON FLANGE BEARING UNITS

FIRST A WORD OF CAUTION . . . OBSERVING FIGURE # 46, NOTICE THAT THE BEARING INNER RACE HAS A MACHINED ECCENTRIC ON ITS OUTER DIAMETER EDGE, REFERENCE (A). ALSO, THE INSIDE OF THE LOCKING COLLAR HAS A MACHINED ECCENTRIC, REFERENCE (B). THESE ECCENTRICS MUST ENGAGE BEFORE LOCKING ACTION CAN OCCUR. THE SET SCREW REFERENCE (C) IS AN ADDED LOCKING DEVICE, BUT SHOULD NOT BE RELIED UPON TO LOCK THE BEARING TO THE SHAFT BY ITSELF.

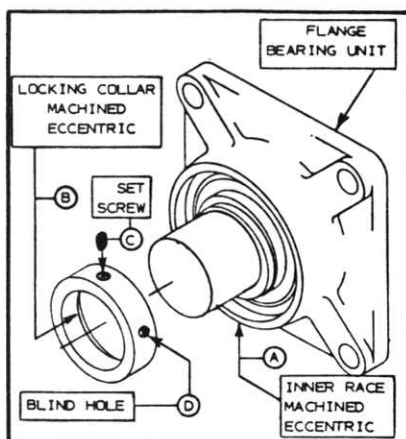


FIGURE # 46

- AS SHOWN ON FIGURE # 47 WITH A HAMMER, POUND INSERTED PUNCH TO MAKE LOCKING COLLAR ROTATE IN DIRECTION OF SHAFT WORKING ROTATION TO SECURELY LOCK BOTH THE BEARING INNER RACE AND SHAFT.

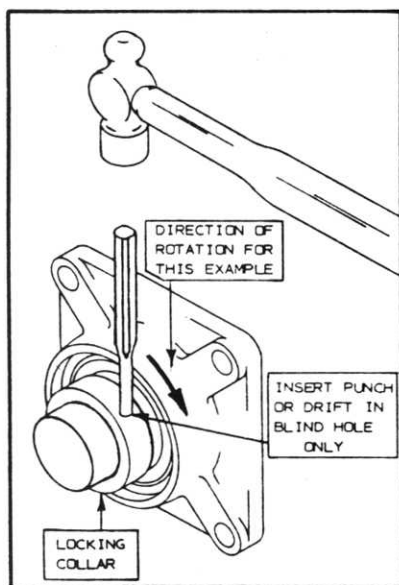


FIGURE # 47

EFFECTIVE LOCKING ACTION IS OBTAINED AS FOLLOWS:

- SLIDE LOCKING COLLAR ON THE SHAFT WITH ECCENTRIC FACING THE BEARING INNER RACE. TURN COLLAR IN DIRECTION OF SHAFT WORKING ROTATION UNTIL IT SLIPS OVER BEARING INNER RACE ECCENTRIC. THIS ACTION REQUIRES ABOUT A QUARTER TURN.
- NOW, TURN LOCKING COLLAR QUICKLY IN DIRECTION OF SHAFT WORKING ROTATION TO OBTAIN POSITIVE ENGAGEMENT OF BOTH ECCENTRICS.
- THEN, INSERT A PUNCH OR DRIFT INTO LOCKING COLLAR BLIND HOLE, REFERENCE (D) OF FIGURE # 46.

- FINALLY, TIGHTEN LOCKING COLLAR SET SCREW WITH 3/16 IN. ALLEN WRENCH. REFERENCE FIGURE # 48.

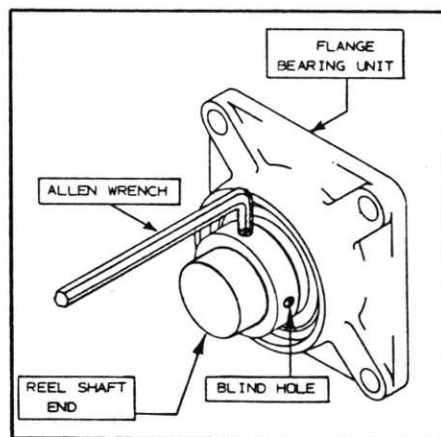


FIGURE # 48

7. CHAIN SPROCKET ALIGNMENT

BEFORE CHECKING OR ADJUSTING THE DRIVE SPROCKET ALIGNMENT MAKE SURE THAT:

- THE PADDLE TEETH ARE CENTERED TO THE GRILL TEETH.
- THE REEL ASSEMBLY IS LOCKED IN POSITION BY THE FLANGE BEARING LOCKING COLLARS AT BOTH ENDS.
- THE REEL SPROCKET IS WELL FASTENED TO THE REEL TUBING FLANGE, EITHER DIRECTLY MOUNTED FOR GROUND DRIVE APPLICATIONS, OR OFFSET MOUNTED WITH SPACER WASHERS FOR PTO DRIVE USE.

THE REEL SPROCKET IS NOW THE GUIDE TO WHICH THE REMAINING DRIVE TRAIN SPROCKETS WILL HAVE TO BE ALIGNED.

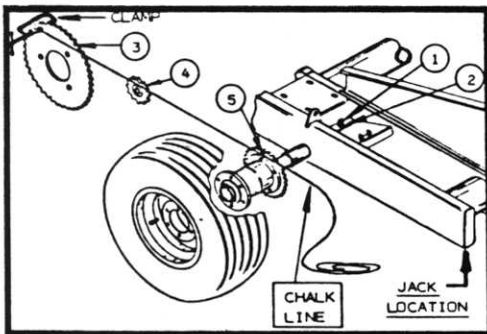


FIGURE # 49

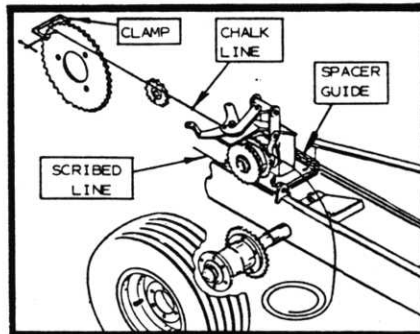


FIGURE # 49 - A

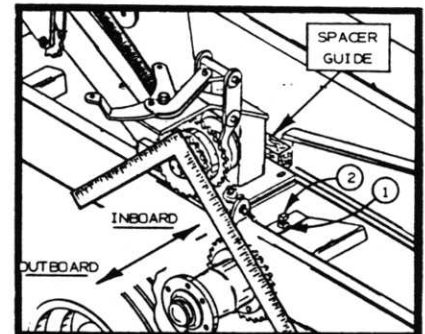


FIGURE # 49 - B

FOR DRIVE SPROCKET ALIGNMENT VERIFICATION OR ALIGNMENT PROCEDURE PLEASE REFER AS FOLLOWS:

- * FOR STANDARD GROUND DRIVEN MACHINES REFERENCE FIGURE # 49, USE THE PROCEDURE DESCRIBED IN PARAGRAPH 'C' OF PAGE # 10.
- * FOR THROW-OUT CLUTCH GROUND DRIVEN MACHINES, REFERENCE FIGURES 49 - A AND B, USE THE PROCEDURES DESCRIBED IN PARAGRAPHS 'B' OF PAGE # 13 AND 'C' OF PAGE # 14.
- * FOR PTO DRIVEN MACHINES, REFERENCE FIGURE # 50, USE THE PROCEDURE DESCRIBED IN PARAGRAPH 'C' OF PAGE # 19

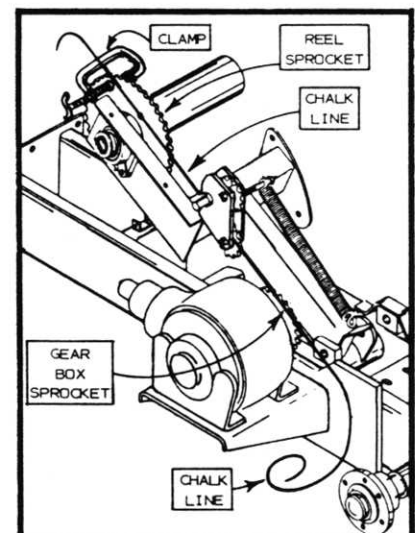


FIGURE # 50

SERVICE & REPAIR PROCEDURES

REEL PADDLE TEETH AND GRILL TEETH

RESTORING TEETH WEAR

THE REEL PADDLE TEETH AND THE GRILL TEETH ARE HARD SURFACED AT THE FACTORY. HOWEVER, DUE TO THE CONTINUED CONTACT WITH DIFFERENT GRADE OF ABRASIVE MATERIALS, THE WORKING EDGES WILL EVENTUALLY SHOW SOME WEAR. THIS WEAR MAY BE COMPENSATED BY RESURFACING WITH HARD SURFACE WELDING RODS.

REPLACING THE TEETH

THE REEL PADDLE TEETH AND THE GRILL TEETH CAN BE REPLACED WITH NEW ONES. IT WILL BE NECESSARY TO CUT OFF THE WELDING THAT HOLDS THE OLD TOOTH. THEN, LAY-OUT, SQUARE AND SPACE EVENLY THE NEW TOOTH, AMONG THE REMAINING TEETH, BEFORE IT IS TACKED AND FINALLY WELDED.

VERY IMPORTANT: WHEN PERFORMING ARC WELDING OPERATIONS ON THE ROCK PICKER, THE CURRENT BETWEEN THE ROD AND THE GROUND MUST NOT PASS THROUGH ANY BEARING SINCE THEY MAY BE SERIOUSLY DAMAGED.

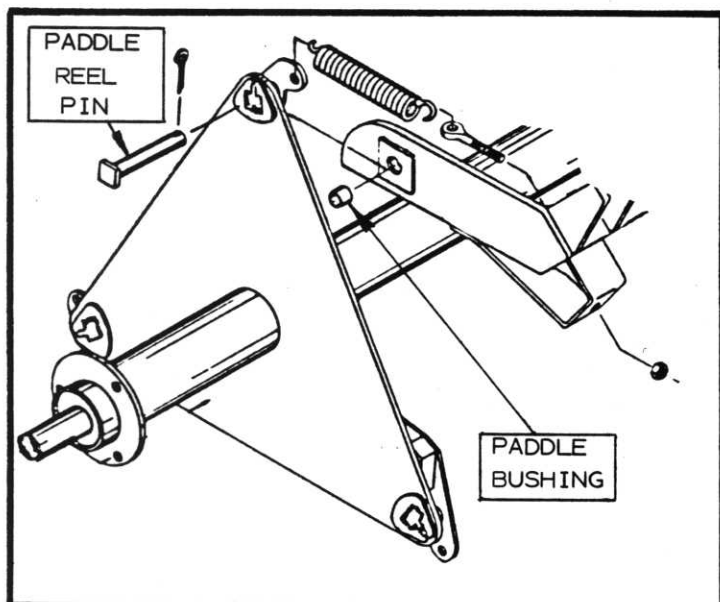


FIGURE # 51

PADDLE PINS AND BUSHINGS

THE PINS AND BUSHINGS THAT ANCHOR THE PADDLES TO THE REEL ASSEMBLY WILL HAVE TO BE REPLACED WHEN APPRECIABLE WEAR IS NOTICED, WHILE HAND-SHAKING THE PADDLES.

HEX BOLT AND HEX NUT TORQUE LEVELS (IN FOOT-POUNDS)

SIZE	TH. IN.	TORQUE	SIZE	TH. IN.	TORQUE
3/8	16	18	3/8	24	25
7/16	14	35	7/16	20	35
1/2	13	50	1/2	20	60
UNC THREADS 9/16	12	70	UNC THREADS 9/16	18	85
(COARSE) 5/8	11	95	(FINE) 5/8	18	120
3/4	10	175	3/4	16	210
7/8	9	285	7/8	14	340
1	8	425	1	14	540

FIGURE # 52

NOTE: FREQUENTLY CHECK AND RETIGHTEN BOLTS TO SPECIFIED TORQUES SHOWN.

THROW-OUT CLUTCH REPAIR PROCEDURE

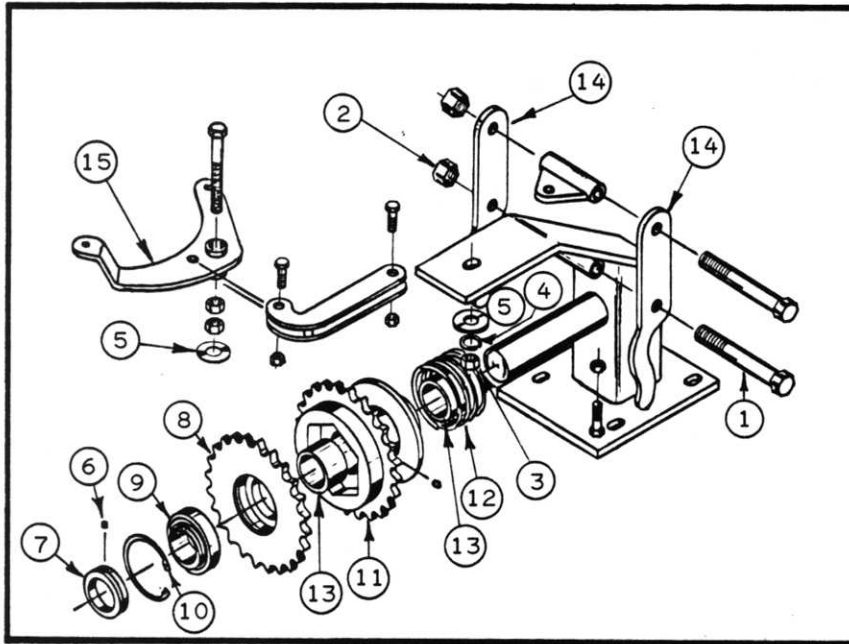


FIGURE # 53



- PLACE THE ROCK PICKER ON A LEVELLED SURFACE AND RAISE THE GRILL TO APPLY THE TRANSPORT ARM AS DESCRIBED IN THIS SERVICE AND REPAIR PROCEDURE SECTION, PAGE # 43.
- RELIEVE THE TENSION OF THE DRIVE CHAIN TIGHTENER SPRING.
- REMOVE A CONNECTOR LINK FROM THE REEL DRIVE CHAIN AND THE CHAIN ALSO.
- REMOVE THE CONNECTOR LINK FROM THE HUB DRIVE CHAIN AND THE CHAIN ALSO.

BEFORE DISASSEMBLING THE THROW-OUT CLUTCH, CHECK THE GENERAL CONDITION OF PARTS SUBJECT TO NORMAL WEAR:

- LOOSE OR JAMMED DRIVE SPROCKET BEARING (9).
- WEAR ON SLIDER SPROCKET BUSHINGS (13).
- WEAR ON SLIDER AND ON DRIVE SPROCKETS (8) AND (11) ENGAGEMENT JAWS. REFERENCE FIGURE # 54.
- INSUFFICIENT PRESSURE ON SPRING (12) TO MAINTAIN SLIDER SPROCKET (1) ENGAGED.
- WEAR ON THROW-OUT LEVERS (14) THRUST SURFACES. OVERRIDING MECHANISM MISADJUSTED.

DISASSEMBLY PROCEDURE

- REMOVE HEX LOCK NUT (2) AND HEX BOLT (1) FROM THROW-OUT LEVERS (14).
- REMOVE HEX NUT (3), LOCK WASHER (4), AND FLAT WASHER (5).
- RAISE THE COMPLETE OVERRIDING MECHANISM AND PLACE IT TO ONE SIDE.
- LOOSEN THE LOCKING COLLAR SET SCREW (6). APPLY A DRIFT PUNCH INTO THE LOCKING COLLAR BLIND HOLE AND POUND WITH HAMMER TO MAKE IT ROTATE CLOCKWISE. THEN, REMOVE THE COLLAR AND AT THE SAME TIME, HOLD THE DRIVE SPROCKET WHICH WILL BE UNDER SOME SPRING PRESSURE.
- REMOVE DRIVE SPROCKET (8) WITH BEARING (9). IF THE BEARING NEEDS TO BE REPLACED REMOVE THE INNER BORE SNAP RING (10) WITH NEEDLE NOSE PLIERS AND PRESS OUT THE BEARING FROM THE SPROCKET (8).
- REMOVE SLIDING SPROCKET (11) AND COMPRESSION SPRING (12). IF THE SPROCKET BUSHINGS (13) WILL BE REPLACED, USE DRIFT PUNCH AND HAMMER TO DRIVE THEM OUT OF EACH SIDE.

CLEANING AND INSPECTION OF PARTS

- THOROUGHLY CLEAN ALL CLUTCH PARTS WITH SOLVENT AND AIR DRY.
- INSPECT ALL PARTS FOR WEAR AND DAMAGE AND OBTAIN REQUIRED REPLACEMENT PARTS.

SERVICE & REPAIR PROCEDURES

THROW-OUT CLUTCH REPAIR PROCEDURE (CONTINUED)

ASSEMBLY PROCEDURE

- IF REPLACED, PRESS NEW DRIVE SPROCKET BEARING (9) INTO DRIVE SPROCKET (8), SUCH THAT THE INNER RACE ECCENTRIC FACES OUT-BOARD. PRESS FORCE HAS TO BE APPLIED TO THE OUTER BEARING RACE AND NOT TO THE INNER BEARING RACE. THEN, LOCK THE BEARING WITH THE INNER BORE SNAP RING (10).
- IF SLIDING SPROCKET BUSHINGS (13) ARE BEING REPLACED, PRESS NEW BUSHINGS FROM EACH SIDE OF SLIDING SPROCKET (11) UNTIL THEY ARE FLUSH TO THE BORE EDGE.
- PLACE COMPRESSION SPRING (12) ON TOP OF SLIDING SPROCKET (11) THRUST COLLAR AND INSERT BOTH ONTO THE CLUTCH FRAME SHAFT, AS SHOWN ON FIGURE # 53 AND # 54.
- INSTALL THE OVERRIDING MECHANISM OVER THE CLUTCH TOWER, MAKING THE THRUST LEVERS SLIDE BETWEEN THE SLIDING SPROCKET (11) TEETH AND ITS THRUST COLLAR. AT THE SAME TIME, INSERT THE OVERRIDING ARM PIVOT INTO THE CLUTCH TOWER UPPER BRACKET ELONGATED HOLE, PLACING THE TOP AND BOTTOM FLAT WASHERS (5), LOCK WASHERS (4) AND THREADING A HEX NUT (3) TO THE ARM PIVOT. REFERENCE FIGURES # 53 AND # 54.
- INSTALL HEX BOLT (1) THROUGH LEVERS (14) TOWER ANCHOR AND SECURE WITH HEX LOCKING NUT (2), REFERENCE FIGURE # 53.

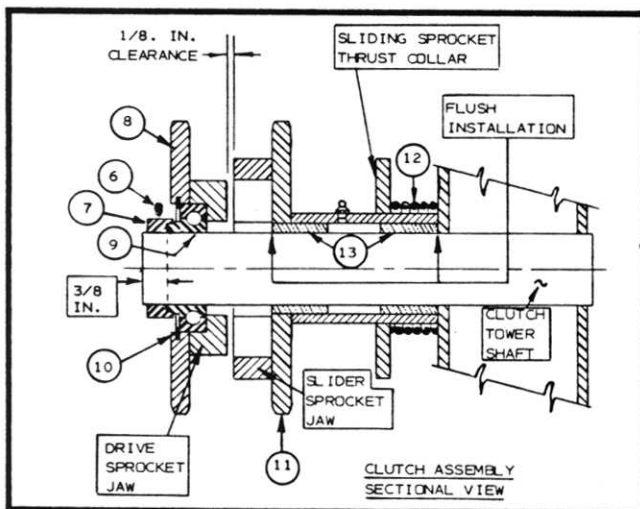


FIGURE # 54

- COMPRESS SPRING (12) BY OPERATING THE OVERRIDING MECHANISM AND MAINTAIN SAME IN LOCKED POSITION, AS SHOWN ON FIGURE # 55.
- INSERT THE DRIVE SPROCKET (8) ONTO THE CLUTCH TOWER SHAFT WITH THE RAISED HEXAGON JAW FACING THE SLIDING SPROCKET (11) SUCH THAT THE BEARING (9) INNER RACE EDGE IS PLACED AT 3/8 IN. FROM THE END OF THE SHAFT. REFERENCE FIGURE # 54.
- INSERT THE BEARING LOCKING COLLAR (7) ONTO THE SHAFT ENGAGING THE ECCENTRIC DEVICE.
- PROVISIONALLY LOCK THE BEARING COLLAR (7) WITH THE SET SCREW (6) AT THAT POSITION, UNTIL THE OVERRIDING MECHANISM IS ADJUSTED. REFERENCE FIGURE # 54.

ADJUSTING THE CLUTCH OVERRIDING MECHANISM

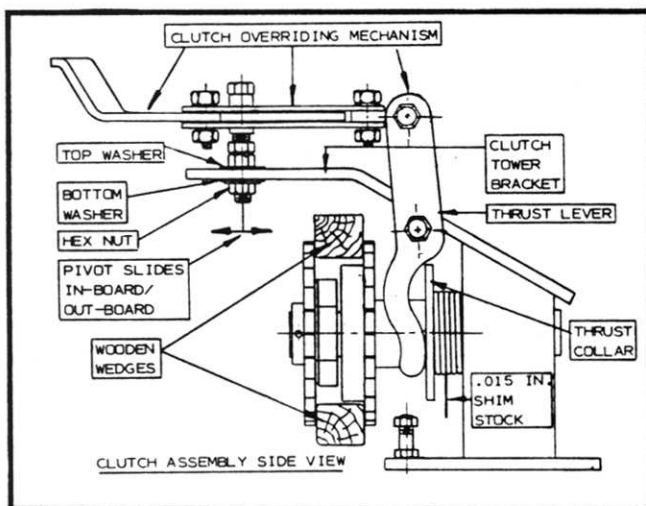


FIGURE # 55

- FABRICATE TWO WOODEN WEDGES, SUCH THAT THEY CAN BE INSERTED DIAMETRICALLY OPPOSED BETWEEN THE TEETH OF THE TWO SPROCKETS AND THAT THE SPRING BECOMES ALMOST TOTALLY COMPRESSED. (LET THE SPRING COILS (12) CLEAR A .015 IN. SHIM STOCK) REFERENCE FIGURE # 55.
- SET THE OVERRIDING MECHANISM ARM IN THE DISENGAGED POSITION, THAT IS, PIN 'C' OF FIGURE # 56 SHOULD TRAVEL BEYOND THE 'A' AND 'B' PIN ALIGNMENT LINE. LOOSEN THE OVERRIDING PIVOT NUT TO ALLOW THE PIVOT TO SLIDE IN-BOARD OR OUT-BOARD AS REQUIRED SUCH THAT THE THRUST LEVERS ARE IN TOUCH WITH THE SLIDING SPROCKET THRUST COLLAR. AT THIS POSITION, TIGHTEN THE OVERRIDING PIVOT HEX NUT SUFFICIENTLY AND REMOVE THE WOODEN WEDGES.

THROW-OUT CLUTCH REPAIR PROCEDURE (CONTINUED)

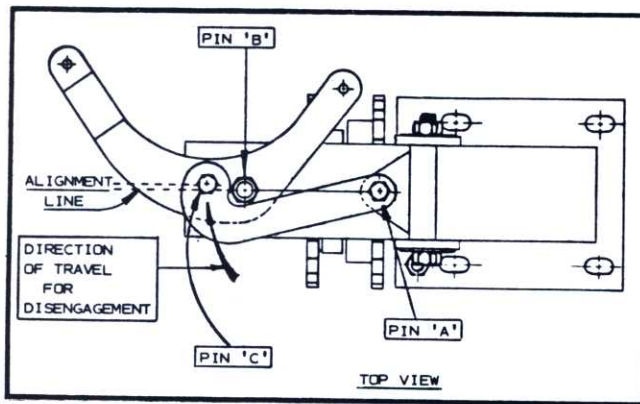


FIGURE # 56

- OPERATE THE OVERRIDING ARM A FEW TIMES TO SEE THAT THE MECHANISM IS ABLE TO STAY LOCKED IN DISENGAGED POSITION AND THAT IT TAKES A SMALL EFFORT TO RELEASE IT TO THE ENGAGED POSITION.
- ONCE AGAIN, PLACE THE OVERRIDING MECHANISM ARM IN THE DISENGAGED POSITION. REFERENCE FIGURE # 55.
- LOOSEN THE BEARING LOCKING COLLAR (7) SET SCREW (6). MOVE THE DRIVE SPROCKET (8) IN-BOARD OR OUT-BOARD, UNTIL AN 1/8 IN. CLEARANCE IS OBTAINED BETWEEN THE DRIVE SPROCKET (8) BODY AND THE SLIDING SPROCKET (11) BODY. REFERENCE FIGURE # 54. AT THIS POSITION, HAVE THE BEARING LOCKING COLLAR (7) ENGAGE THE BEARING ECCENTRIC DEVICE.
- NEXT INSERT A DRIFT PUNCH INTO THE LOCKING COLLAR (7) BLIND HOLE AND POUND IT WITH A HAMMER, MAKING IT ROTATE COUNTER CLOCKWISE TO LOCK. THEN, TIGHTEN THE SET SCREW (6).
- AFTER THE THROW-OUT CLUTCH HAS BEEN ADJUSTED AND BEFORE THE DRIVE CHAIN IS INSTALLED, CHECK THE SPROCKET ALIGNMENT AS DESCRIBED IN PAGE # 14, PARAGRAPH C AND ADJUST IF REQUIRED.
- INSTALL AND ADJUST THE DRIVE CHAINS AS DESCRIBED IN PAGE # 13, PARAGRAPH B AND PAGE #14, PARAGRAPH C.
- INSTALL AND ADJUST THE DRIVE CHAINS AS DESCRIBED IN PAGE # 14, PARAGRAPH D AND PAGE # 15, PARAGRAPH E.
- REMOVE THE TRANSPORT A R M AS DESCRIBED IN PAGE # 12, PARAGRAPH F.

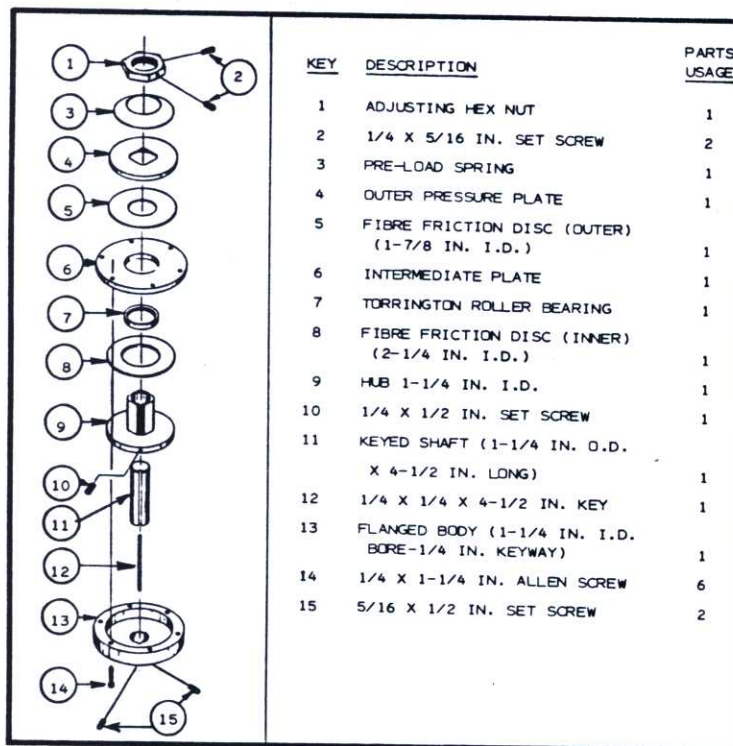


FIGURE # 57

TORQUE LIMITER REPAIR PROCEDURE

- LOOSEN THE TWO 1/4 X 5/16 IN. SET SCREWS (2) WHICH LOCK THE PRE-LOAD SPRING NUT. REFERENCE FIGURE # 57.
- STICK A PRY BAR THROUGH THE MIDSHIP SHAFT UNIVERSAL JOINT YOKE ARMS TO BLOCK COUNTER CLOCKWISE ROTATION OF TORQUE LIMITER.
- WITH A 2-1/2 IN. OPEN END WRENCH LOOSEN THE PRE-LOAD SPRING NUT (1) TO A FINGER TIGHT CONDITION.
- REMOVE THE PRY BAR.
- REMOVE THE TWO 1/2 X 2 IN. HEX BOLTS, HEX NUTS, LOCK WASHERS AND FLAT WASHERS THAT HOLD THE PILLOW BLOCK BEARING AT FRONT OF DRIVE TRAIN.
- LOOSEN THE TWO 3/8 X 1/2 IN. SET SCREWS AT THE MIDSHIP SHAFT UNIVERSAL JOINT REAR COUPLING.
- SLIDE FORWARD THE ENTIRE GROUP OF IN-PUT DRIVE TRAIN COMPONENTS TO DISCONNECT THE UNIVERSAL JOINT REAR COUPLING FROM THE TORQUE LIMITER KEYED SHAFT.

SERVICE & REPAIR PROCEDURES

TORQUE LIMITER (CONTINUED)

- LOOSEN THE TWO 5/8 X 1/2 IN. SET SCREWS (15) LOCATED ON THE TORQUE LIMITER BODY REAR FLANGE (13) AND SLIDE THE COMPLETE ASSEMBLY FROM THE GEAR BOX IN-PUT SHAFT.

DISASSEMBLY OPERATIONS

- REMOVE THE SIX 1/4 X 1-1/4 IN. ALLEN SCREWS (14) THAT HOLD THE INTERMEDIATE PLATE (6) TO THE BODY (13), AND REMOVE SAME. REFERENCE FIGURE # 57.
- REMOVE THE PRE-LOAD SPRING NUT (1), THE PRE-LOAD SPRING (3), THE OUTER PRESSURE PLATE (4), THE OUTER FIBRE DISC (5), THE INTERMEDIATE PLATE (6), AND THE INNER FIBRE DISC (8).
- LOOSEN THE 1/4 X 1/2 IN. SET SCREW (10) FROM THE HUB (9) AND SLIDE OUT THE 1-1/4 IN. DIAMETER KEYED SHAFT (11) TO FINALIZE THE DISASSEMBLY PROCESS.

CLEANING AND INSPECTION

- WASH WITH CLEAN SOLVENT ALL PARTS EXCEPT FOR THE FIBRE DISCS AND DRY WITH AIR. INSPECT ALL COMPONENTS FOR WEAR AND DAMAGE.
- ALL PARTS SURFACES CONTACTING THE FIBRE DISCS MUST BE FLAT, FREE OF GROOVES AND INDENTATIONS AND PREFERABLE WITH A 32 MICRO INCH SURFACE FINISH. OBTAIN THE NECESSARY REPLACEMENT PARTS TO START THE ASSEMBLY OPERATIONS.

CAUTION: THE TORRINGTON BEARING (7) MUST PROTRUDE AT LEAST A 1/16 IN. FROM THE RAISED PLATFORM OF THE INTERMEDIATE PLATE (6) AND RECESSED FROM THE OPPOSITE FACE OF THE SAME PLATE.

ASSEMBLY OPERATIONS

- INSTALL A 1/4 X 1/4 X 4-1/2 IN. KEY (12) TO THE 1-1/4 IN. DIAMETER KEYED SHAFT (11). REFERENCE FIGURE # 57.
- SLIDE THE SHAFT (11) INTO HUB (9) UNTIL FLUSH WITH HUB FLANGE FACE. IN THIS POSITION, INSTALL A 1/4 X 1/2 IN. SET SCREW (10) AND TIGHTEN.
- INSERT THE INNER FIBRE DISC (2-1/4 IN. ID) (8) ONTO THE HUB (9).
- APPLY MODERATE AMOUNT OF BEARING GREASE TO THE INTERMEDIATE PLATE TORRINGTON BEARING (7) AND WIPE WITH CLEAN RAG ANY EXCESS FROM PLATE SURFACES.
- INSERT THE INTERMEDIATE PLATE (6) OVER THE HUB SHANK (9), MAKING SURE THAT THE RAISED PLATFORM OF PLATE (6) FACES THE FIBRE DISC PREVIOUSLY INSTALLED AND THAT THE BEARING PROTRUSION FITS THE INSIDE DIAMETER OF THE SAME FIBRE DISC.
- NOW, INSERT THE OUTER FIBRE DISC (1-7/8 IN. ID) (5) FOLLOWED BY THE OUTER PRESSURE PLATE (4).
- INSTALL THE PRE-LOAD SPRING (3) AND THE SPRING NUT (1), ASSURING THAT THE NUT RAISED RING FITS INTO THE SPRING INNER DIAMETER. TIGHTEN NUT (1) SNUG ONLY.
- INSTALL ABOVE ASSEMBLY ONTO THE FLANGED BODY (13), THREAD THE SIX 1/4 X 1-1/4 IN. ALLEN SCREWS (14) AND TIGHTEN EVENLY.

REINSTALLING THE TORQUE LIMITER TO THE ROCK PICKER

- INSTALL THE TORQUE LIMITER ONTO THE GEAR BOX IN-PUT SHAFT, MAKING SURE THAT THE KEY SLIDES INTO PROPER POSITION AND THAT FULL ENGAGEMENT OF SHAFT AND TORQUE LIMITER IS OBTAINED. THEN, TIGHTEN THE TWO 5/16 X 1/2 IN. SET SCREWS (15).
- NOW, SLIDE BACK THE ENTIRE GROUP OF IN-PUT DRIVE TRAIN COMPONENTS, CONNECTING THE MIDSHIP SHAFT UNIVERSAL JOINT REAR COUPLING TO THE TORQUE LIMITER SHAFT. THE SHAFT SHOULD NOT PROTRUDE THROUGH THE UNIVERSAL JOINT COUPLING FLANGE. IN THIS POSITION, TIGHTEN THE TWO 3/8 X 1/2 IN. SET SCREWS.
- REINSTALL THE PILLOW BLOCK BEARING TO ITS SUPPORT, USING TWO 1/2 X 2 IN. HEX BOLTS, FLAT WASHERS, LOCK WASHERS AND HEX NUTS, PREVIOUSLY REMOVED.

TORQUE LIMITER (CONTINUED)

ADJUSTING THE TORQUE LIMITER BREAK-AWAY ACTION

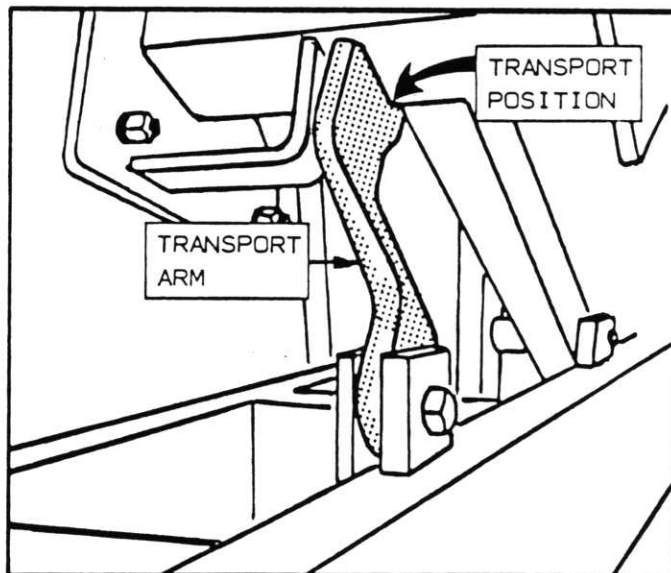
- SINCE THE PRE-LOAD SPRING NUT (1) WAS LEFT SNUG TIGHT ONLY, MAKE COINCIDENT REFERENCE MARKS ON THE NUT EDGE (1) AND ON THE OUTER PRESSURE PLATE EDGE (4).
- AGAIN STICK A PRY BAR THROUGH THE MIDSHIP SHAFT UNIVERSAL JOINT YOKE ARMS TO BLOCK THE CLOCKWISE ROTATION OF THE TORQUE LIMITER.
- USE A 2-1/2 IN. OPEN END WRENCH TO TURN THE SPRING NUT (1) AND SET THE CORRECT PRE-LOAD ADJUSTMENT AS FOLLOWS:
FOR 540 RPM PTO DRIVEN MACHINES, TIGHTEN NUT ONE COMPLETE TURN FROM SNUG POSITION IF NEW FIBRE DISCS WERE INSTALLED, OR 3/4 OF ONE TURN IF USED FIBRE DISCS WERE RETAINED.
FOR 1000 RPM PTO DRIVEN MACHINES, TIGHTEN NUT 3/4 OF ONE TURN FROM SNUG POSITION IF NEW FIBRE DISCS WERE INSTALLED, OR 1/2 OF ONE TURN IF USED FIBRE DISCS WERE RETAINED.
- FINALLY, LOCK THE SPRING NUT (1) WITH THE TWO 1/4 X 5/16 IN. SET SCREWS (2).

TRANSPORT ARM UTILIZATION

A TRANSPORT ARM IS INSTALLED TO EVERY ROCK PICKER TO PROVIDE A MEANS OF SAFE RESTING OF THE PICKING GRILL IN A RAISED POSITION WHEN THE MACHINE WILL BE HAULED ON THE ROADS OR HIGHWAYS, AND WHILE PREFORMING REPAIR WORK ON IT.

THIS TRANSPORT ARM IS LOCATED ON THE TOP OF THE LEFT OUTER FRAME MEMBER BESIDE THE GRILL, BOLTED TO ANCHORS WHICH ALLOW THE ARM TO BE TILTED TO 'ON' AND 'OFF' POSITIONS.

RAISE THE GRILLE ASSEMBLY TO MAXIMUM HEIGHT USING THE PICKER HYDRAULIC SYSTEM. FLIP TRANSPORT ARM BACKWARDS AND LOWER GRILLE.



SERVICE & REPAIR PROCEDURES

GEAR BOX REPAIR AND ADJUSTMENTS

. LUBRICATION: FOLLOWING ARE THE MANUFACTURER'S RECOMMENDATIONS:

- NEW GEAR BOX IS SHIPPED DRY.
- THE OIL IN A NEW GEAR BOX SHOULD BE DRAINED AT THE END OF 100 HOURS OF OPERATION. THEREAFTER EVERY 2500 HOURS OF OPERATION OR ONCE A YEAR.
- FOR PROCEDURE OF FILLING THE GEAR BOX WITH OIL, TYPE OF OIL, VISCOSITY, QUANTITY AND CHECKING THE LEVEL, PLEASE REFER TO PAGE # 18, PARAGRAPH C.

. BEARING ADJUSTMENT:

WHEN ADJUSTING THE RING GEAR HUB BEARINGS, FIRST WITHDRAW THE PINION SHAFT AND HOUSING ASSEMBLY FROM THE GEAR BOX CASE. TRY NOT TO DAMAGE OR ALTER THE PINION HOUSING SHIM GASKETS AT LOCATION 'C', REFERENCE FIGURE # 59.

ADJUSTING RING GEAR HUB BEARINGS

THREE OR FOUR SHIM GASKETS ARE INITIALLY INSTALLED AT LOCATIONS 'A' AND 'B'. REMOVE ONE AT A TIME FROM LOCATION 'B' ONLY, UNTIL BEARINGS BIND. THEN ADD ONE SHIM GASKET AND MAKE SURE THAT THE RING GEAR HUB ROTATES FREELY. REFERENCE FIGURE # 59.

ADJUSTING PINION SHAFT BEARINGS

WITH PINION ASSEMBLY REMOVED FROM CASE, TIGHTEN NUT UNTIL PINION BEARINGS BIND, THEN BACK OFF THE NUT UNTIL SHAFT ROTATES FREELY. THE NUT IS SELF-LOCKING. IF PINION HOUSING SHIM GASKETS LOCATED AT 'C' WERE ALTERED, DAMAGED OR IF THE RING GEAR HUB BEARINGS WERE RE-ADJUSTED, IT IS NECESSARY TO RESET THE GEAR BACKLASH ADJUSTMENT. REFERENCE FIGURE # 59.

. ADJUSTING RING GEAR AND PINION FOR BACKLASH:

MOUNT PINION AND HOUSING ASSEMBLY IN GEAR CASE PLACING BETWEEN THEM 3 OR 4 SHIM GASKETS AT LOCATION 'C'. IF GEAR BACKLASH IS FELT, REMOVE ONE SHIM GASKET AT A TIME FROM 'C' LOCATION, UNTIL GEARS ROTATE FREELY WITH NO BACKLASH. THEN, REINSTALL ONE SHIM GASKET TO PROVIDE ADEQUATE BACKLASH.

CONSEQUENTLY, IF NO GEAR BACKLASH WAS FELT INITIALLY, OR IF GEARS DO NOT ROTATE FREELY, ADD ONE SHIM GASKET AT A TIME AT 'C' LOCATION, UNTIL FREE GEAR ROTATION IS OBTAINED, BUT WITHOUT BACKLASH. THEN, FINALLY ADD ONE MORE SHIM GASKET FOR ADEQUATE BACKLASH.

NOTE: WHEN PERFORMING THE ABOVE DESCRIBED ADJUSTMENTS, EVERY COMPONENT MUST BE FASTENED WITH THE REQUIRED BOLTS EVENLY TIGHTENED.

GEAR BOX REPAIR AND ADJUSTMENTS (CONTINUED)

PARTS LIST

Ref. No.	Part Name	No. Req.
1	Case	1
2	Cover — Output	1
3	Seal Carrier — Output	1
4	Output Hub (specify bore)	1
5	Bearing Cup (output hub)	2
6	Bearing Cone (output hub)	2
7	Bearing Cup (pinion — inner)	1
8	Bearing Cone (pinion — inner)	1
9	Bearing Cup (pinion — outer)	1
10	Bearing Cone (pinion — outer)	1
11	Gear Set — Ring Gear and Pinion (specify ratio)	1
12	Pinion Housing	1
13	*Seal (output hub)	2
14	*Seal (pinion shaft)	1
15	*Seal Carrier	1
16	*Nut — Pinion	1
17	*Rivet	12
18	*Gasket — Cover	as req.
19	*Gasket — Pinion Housing	as req.
20	*Gasket — Output Seal Carrier	as req.
21	*Gasket — Pinion Seal Carrier	as req.
22	Capcrew	22
	Pipe Plug (case)	1
	*Pressure Relief Vent (case)	1
	Pipe Thread Bushing (case)	2
	*Capcrew (pinion seal carrier)	4
23	Repair Kit	

* PARTS INCLUDED IN REPAIR KIT

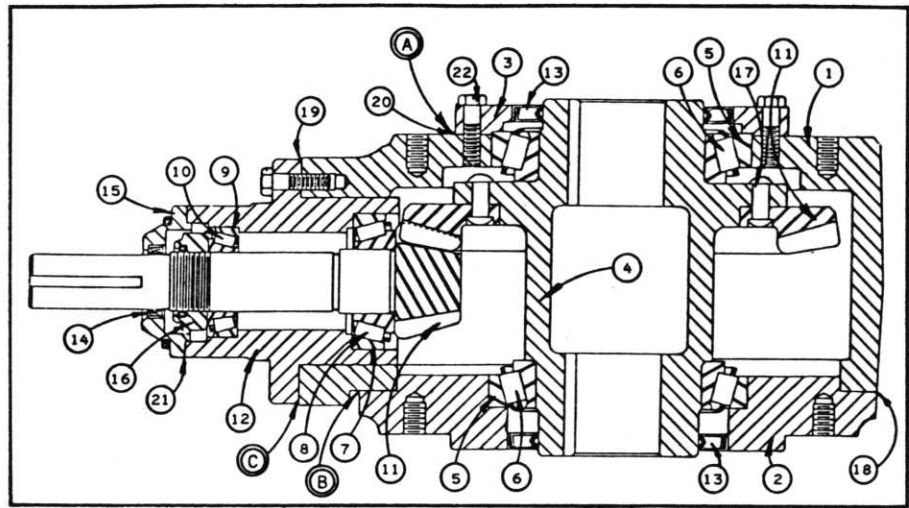


FIGURE # 59

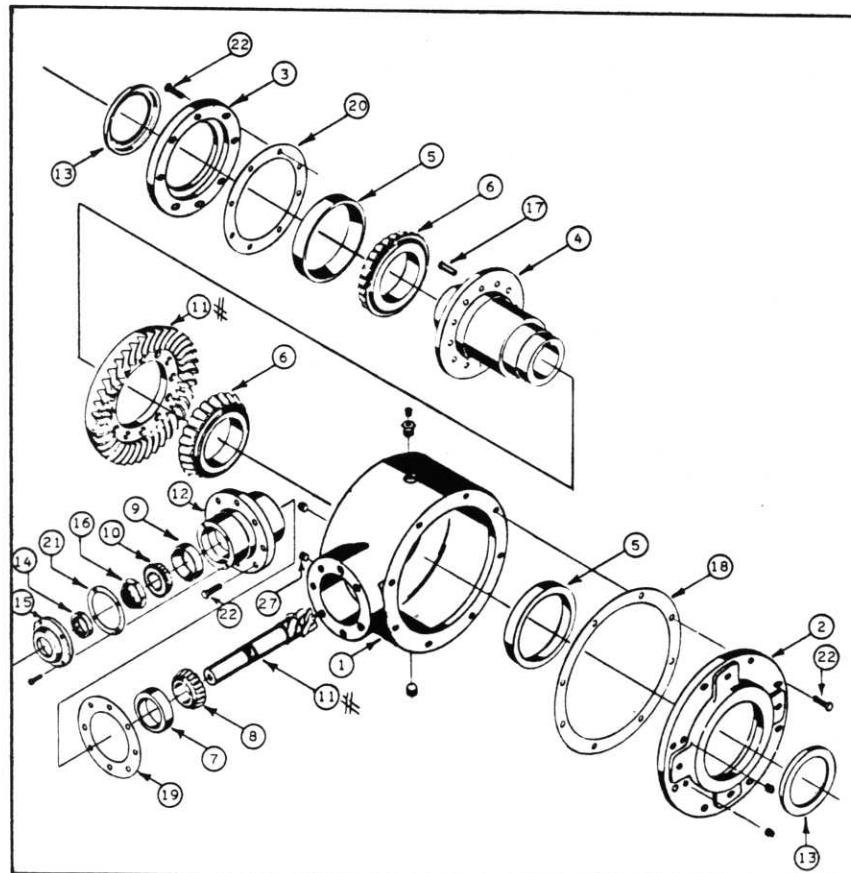


FIGURE # 60

SERVICE & REPAIR PROCEDURES

UNIVERSAL JOINTS REPAIR PROCEDURE

DISASSEMBLY

INSERT THE POINT OF A SCREWDRIVER IN THE SLOT AND PRY THE SEMI-CIRCULAR NYLON BEARING UP, AS SHOWN IN FIGURE # 61.

THEN, GRASP THE RAISED PORTION WITH PLIERS AND PULL THE BEARING OUT. REFERENCE FIGURE # 62.

REPEAT THE SAME PROCEDURE FOR THE OPPOSITE SIDE SEMI-CIRCULAR NYLON BEARING.

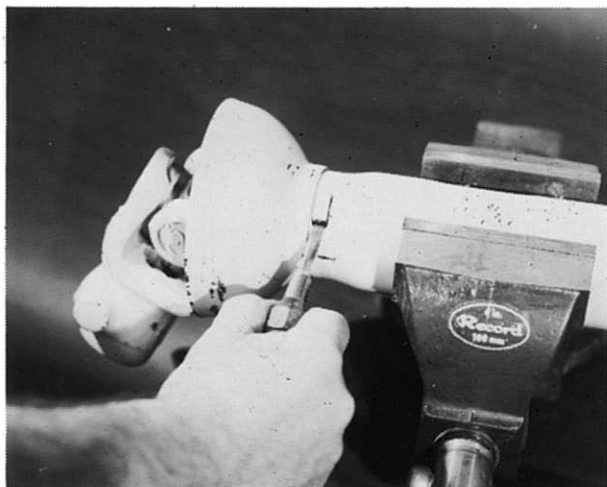


FIGURE # 61



FIGURE # 62

ASSEMBLY

FIGURE # 63 SHOWS THE BASIC ARRANGEMENT OF COMPONENTS PRIOR TO ASSEMBLY. TWO/THREE SEMI-CIRCULAR NYLON BEARINGS PER MOUNTING MUST BE USED.

MAKE THE SLOT IN THE SHIELD ALIGN DIRECTLY OVER THE GROOVE IN THE SHAFT YOKE. REFERENCE FIGURE # 64.

THEN, INSERT A BEARING IN EACH SLOT, MAKING IT SLIDE AND SNAP INTO LOCK POSITIONING IN THE SHIELD SLOT.

NOTE: IF BEARINGS ARE STIFF, SOAK SEVERAL MINUTES IN HOT WATER TO MAKE THEM PLIABLE AND EASY TO ASSEMBLE.



FIGURE # 63



FIGURE # 64

UNIVERSAL JOINTS REPAIR PROCEDURE

UNIVERSAL JOINTS ARE SIMPLE IN CONSTRUCTION, READILY DISASSEMBLED AND REASSEMBLED WITHOUT SPECIAL TOOLS OR SPECIAL MECHANICAL SKILL.

DISASSEMBLY

REMOVE OUTSIDE SNAP RINGS AS SHOWN IN FIGURE # 65. NOTE: IF OUTSIDE SNAP RINGS STICK, LOOSEN BY TAPPING LIGHTLY ON ENDS OF BEARINGS WITH SOFT BRASS DRIFT.

WITH DRIVE SHAFT CLAMPED IN A VISE AND END FITTING HELD IN PALM OF HAND, TAP YOKE AS ILLUSTRATED IN FIGURE # 66 TO WORK BEARING OUTWARD AND UP.

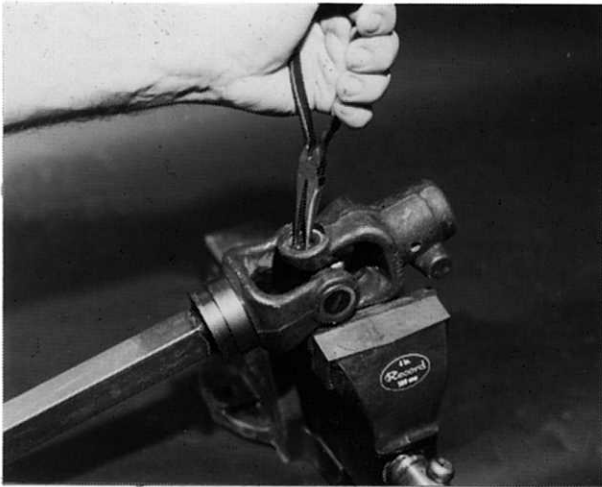


FIGURE # 65

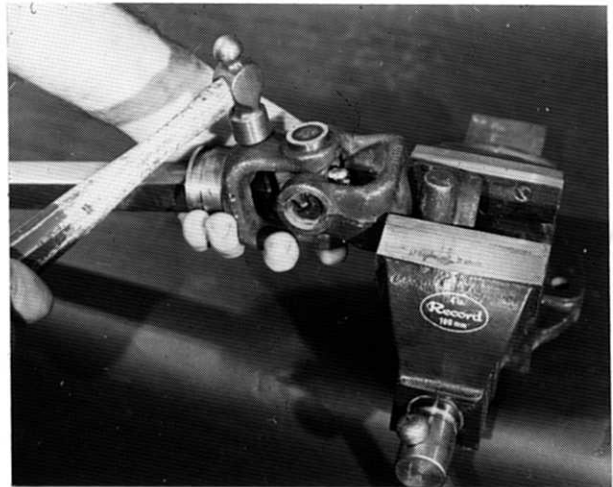


FIGURE # 66

CLAMP PROTRUDING BEARING IN VISE WITH SOFT METAL PROTECTED JAWS. FIGURE # 67 . TURN JOINT OVER AND TAP WITH SOFT BRASS DRIFT ON EXPOSED END OF JOURNAL CROSS TO REMOVE SECOND BEARING. THEN REMOVE YOKE.

ASSEMBLY

CLAMP END YOKE LIGHTLY IN VISE, WITH GREASE FITTING FACING AWAY FROM SHAFT. LIFT SHAFT TO RAISE JOURNAL CROSS PERMITTING BEARING TO POSITION ITSELF ON JOURNAL CROSS. TAP BEARING AS SHOWN IN FIGURE # 68 DOWN TO INSERT FIRST SNAP RING.

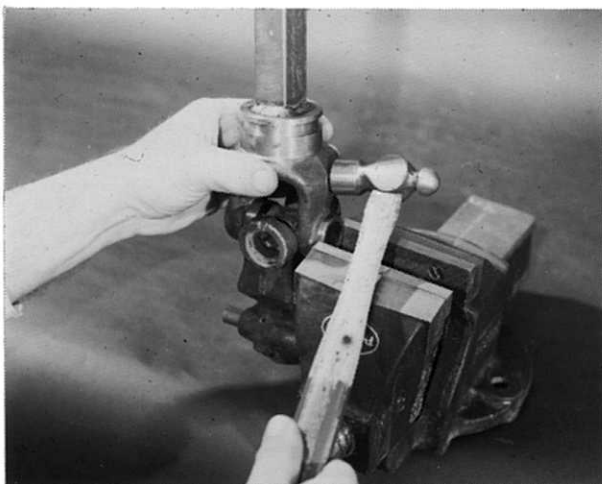


FIGURE # 67

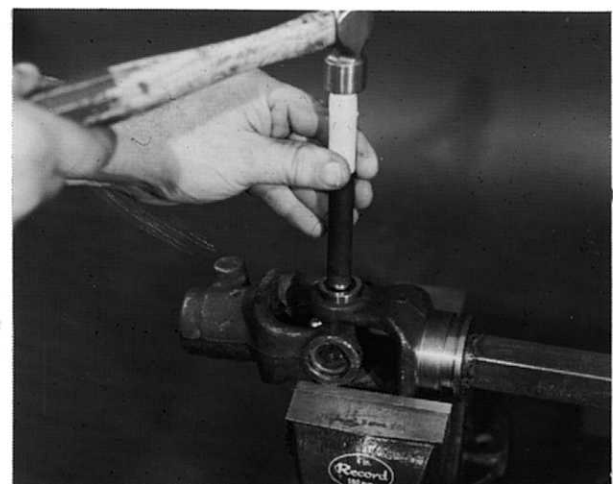


FIGURE # 68

SERVICE & REPAIR PROCEDURES

UNIVERSAL JOINTS REPAIR PROCEDURE

ASSEMBLE SNAP RING AS SHOWN IN FIGURE # 69.

TURN SHAFT TO BRING SECOND CROSS HOLE TO TOP POSITION. CLAMP END YOKE LIGHTLY IN VISE. LIFT SHAFT TO RAISE JOURNAL CROSS PERMITTING BEARING TO POSITION ITSELF ON END OF JOURNAL CROSS.

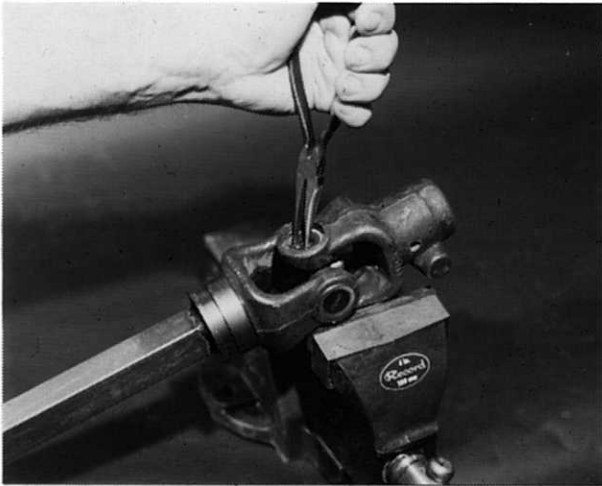


FIGURE # 69



FIGURE # 70

CAUTION: IN LIFTING SHAFT TO POSITION TOP BEARING, BOTTOM LEG OF JOURNAL CROSS MUST NOT BE LIFTED CLEAR OF BOTTOM BEARING. OTHERWISE ROLLERS MAY BE DISLODGED.

TAP BEARING DOWN TO ASSEMBLE SECOND SNAP RING.

A JOINT SHOULD FLEX FREELY. IF JOINT IS STIFF, SHARPLY STRIKE FORGED SURFACE OF YOKE LUGS AS SHOWN IN FIGURE # 70.

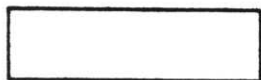
STANDARD EQUIPMENT

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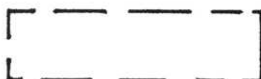
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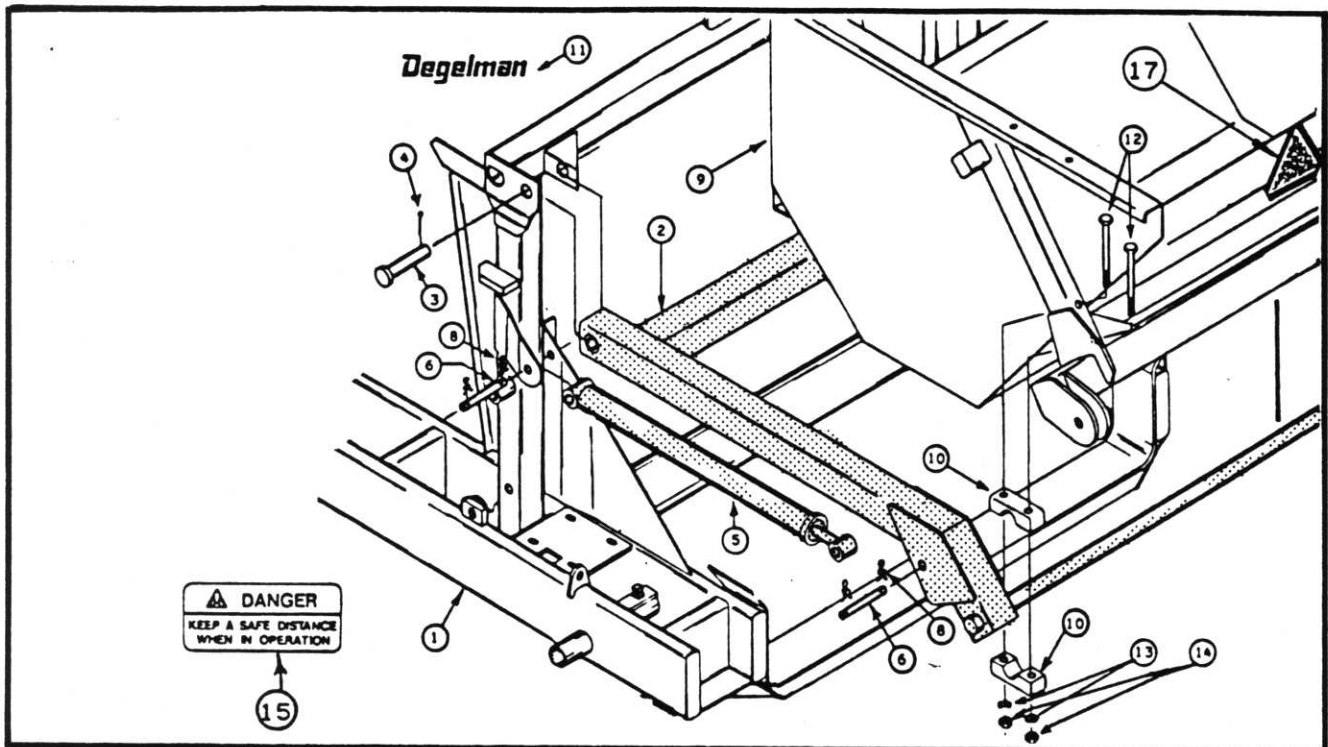


WHOLEGOOD ITEMS ARE LISTED IN THIS PARTS MANUAL AND IDENTIFIED BY BOXED PART NUMBERS AND ARE NOT SOLD AS PARTS.



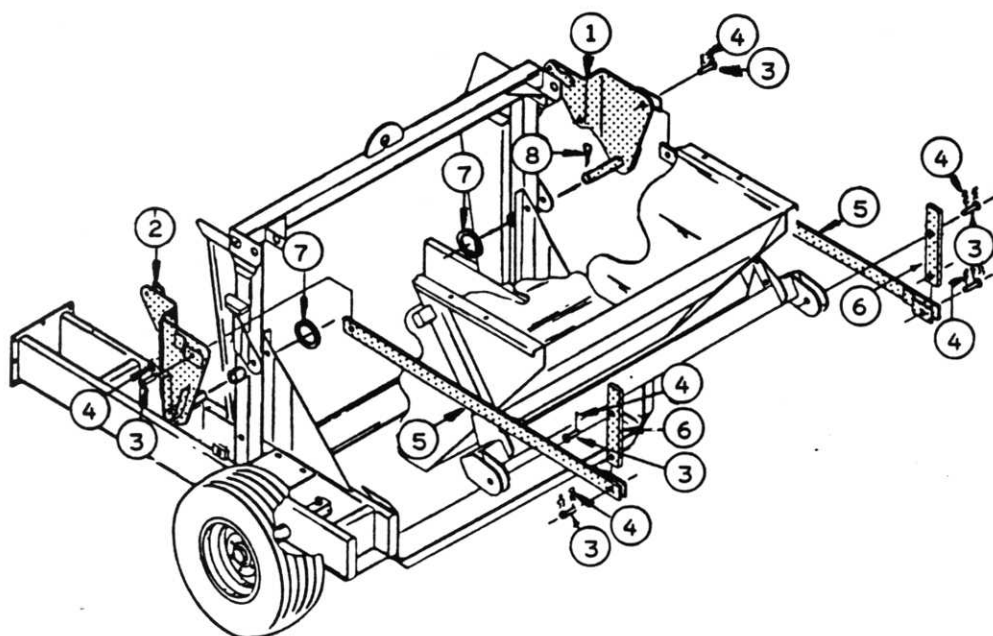
DOTTED RECTANGLES DENOTE ITEMS THAT ARE NOT STOCKED AS PARTS. USUALLY THESE ITEMS ARE CONTAINED IN A WHOLEGOOD BUNDLE.

FRAME, LIFT FRAME AND HOPPER BOX



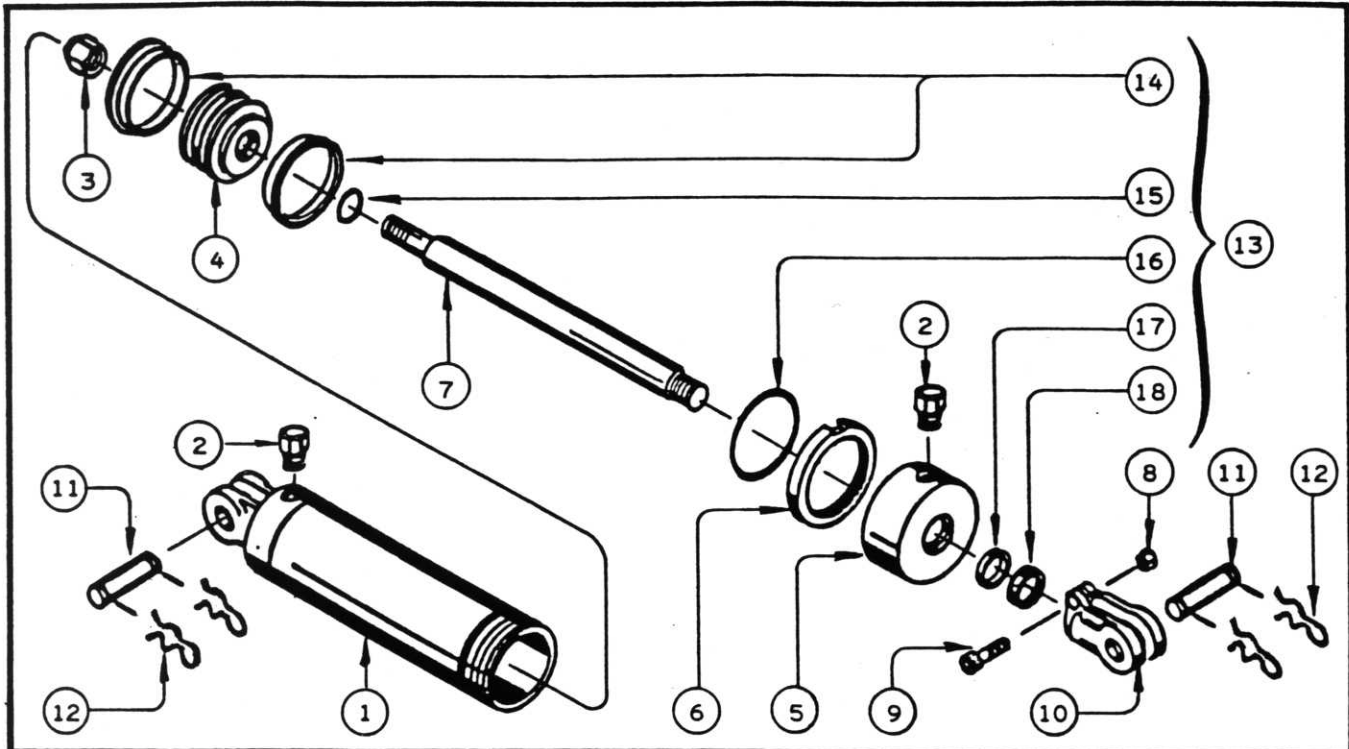
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	202011	FRAME ASSEMBLY - HI LIFT ROCK PICKER	1	
2	216000	LIFT FRAME ASSEMBLY	1	
3	231080	TOP LIFT HINGE PIN 1-7/16 X 6 IN. (HEAD TYPE)	2	
4	118840	PIN, COTTER 1/4 X 3 IN.	2	
5	121644	HYDRAULIC CYLINDER 3 X 31 IN. - 3/4 ORB PORTS	2	
6	121945	PIN 25.4 X 125 MM(EFF)-PL-N/D	4	
8	118882	PIN, HAIR 3/16 X 2-3/4 IN.-PL-N/D	8	
9	205000	HOPPER BOX ASSEMBLY	1	
10	110001	CASTING BEARING HALF	4	
11	142008	'DEGELMAN' DECAL 6 X 26-1/2 IN. (LH SIDE FRAME RAIL)	1	
12	118069	BOLT, HEX 3/4 X 9 - UNC	4	
13	118509	WASHER, LOCK 3/4 IN.	4	
14	118410	NUT, HEX 3/4 IN. - UNC	4	
15	142109	'DANGER' DECAL 9 X 3-1/2 IN. (BOTH SIDES OF HOPPER BOX LIFT FRAME ARMS AND HOPPER BOX REAR SIDE.)	3	
17	142156	'SLOW MOVING VEHICLE SIGN' DECAL	1	

HYDRAULIC LIFT MECHANISM



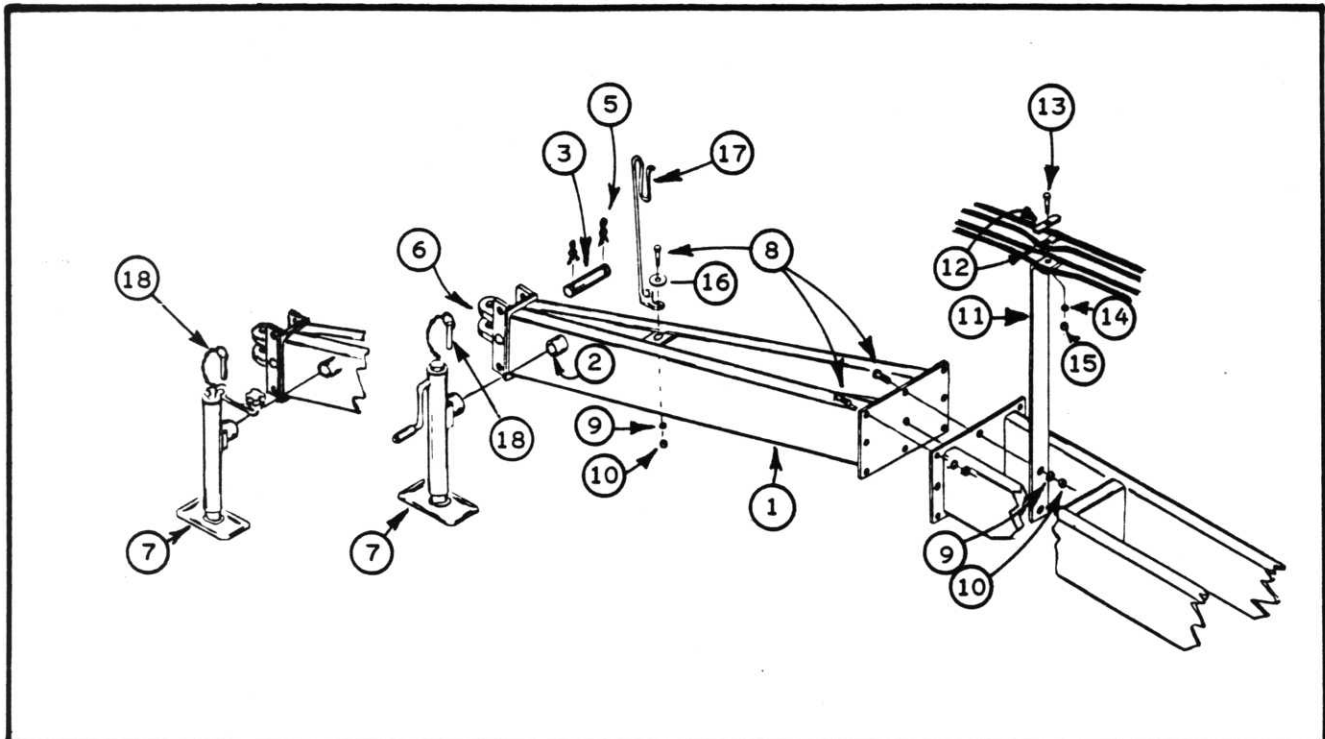
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	217000	HYDRAULIC DUMP ARM - RH SIDE	1	
2	218000	HYDRAULIC DUMP ARM - LH SIDE	1	
3	121942	PIN 25.4 X 60 MM(EFF)-PL-N/D	6	
4	118882	PIN, HAIR 3/16 X 2-3/4 IN.-PL-N/D	12	
5	221020	LEVEL DUMP ARM ASSY.	2	
6	221030	LEVEL DUMP ARM BAR	2	
7	217070	WASHER 2-5/16 X 2-7/8 X 1/4 IN.	2	
8	118840	PIN, COTTER - 1/4 X 3 IN.	2	

HYDRAULIC CYLINDER 3 x 10 DIL



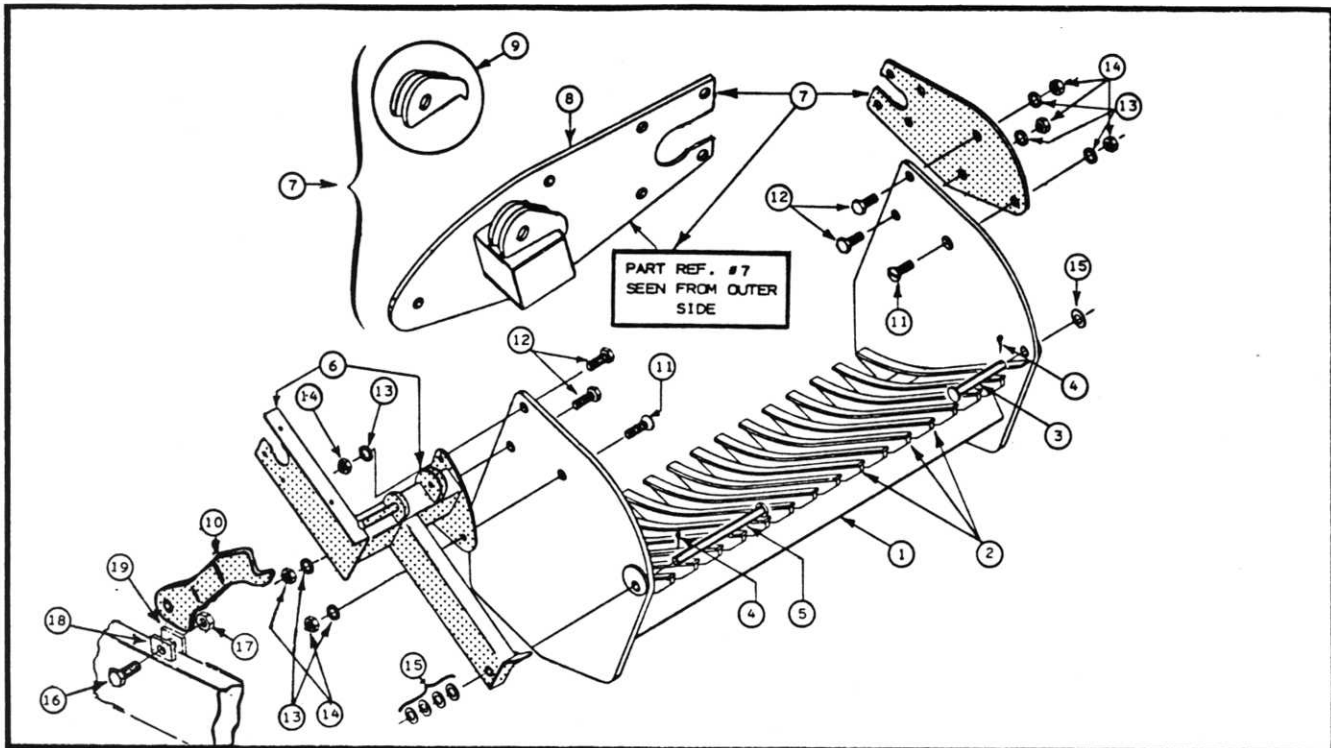
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	121718	Hydraulic Cylinder Assy. - DIL - 3 x 10 with 3/4 - 16 ORB Ports Consists of:		
1	121716	- Barrel, Closed Cap Assy. - 3 in. ID		1
2	121326	- Plug, Plastic - 3/4 - 16 ORB		2
3	118441	- Nut, Lock - 7/8 in. - UNF		1
4	121606	- Piston - 3 in.		1
5	121630	- Cap, Open		1
6	121746	- Lock Ring, 3 in. Cylinder		1
7	121714	- Rod - 1 1/4 in. OD		1
8	118403	- Nut, Hex - 3/8 in. Gr. 5 UNC		1
9	118311	- Cap Screw, Socket - 3/8 x 1 3/4 in. UNC		1
10	121699	- Clevis, Rod - 1 in. - 14		1
11	121941	- PIN 25.4 X 73 MM(EFF)-PL-N/D		2
12	118882	- PIN, HAIR 3/16 X 2-3/4 IN.-PL-N/D		4
13	121719	- Seal Kit - consists of:		1
14		Two - Piston Outer U-Cup		
15		One - Piston Inner O-Ring		
16		One - Cap Inner O-Ring		
17		One - Cap Inner U-Cup		
18		One - Rod Wiper Seal		
NOTE: Complete rebuilt Hydraulic Cylinders may be available				

HITCH POLE



KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	224100	HITCH POLE ASSEMBLY (AS SHIPPED WITH NEW MACHINES)	1	
		CONSISTS OF:		
1	224110	- HITCH POLE - CW:		1
2	132008	- JACK MOUNTING BRACKET	1	
3	121944	- PIN 25.4 X 110 MM(EFF)-PL-N/D	1	
5	118882	- PIN,HAIR 3/16 X 2-3/4 IN.-PL-N/D	2	
6	110002	- HITCH CLEVIS CASTING	1	
7	{ 132004	TOP WIND JACK ASSY. - GROUND DRIVE ONLY	{ 1	
	132005	SIDE WIND JACK ASSY.- PTO DRIVE ONLY		
8	118023	BOLT, HEX - 5/8 X 1-1/2 IN. - UNC - GR 2	10	
9	118508	WASHER, LOCK - 5/8 IN.	10	
10	118407	NUT, HEX - 5/8 IN. - UNC	10	
11	202012	BRACKET, HOSE SUPPORT	1	
12	650253	CLIP, HOSE BRACKET	2	
13	118105	BOLT, HEX - 5/16 X 2-1/2 IN. - UNC - GR 5	1	
14	118530	WASHER, LOCK - 5/16 IN.	1	
15	118427	NUT, HEX - 5/16 IN. - UNC	1	
16	118514	WASHER, FLAT - 5/8 IN.	1	
17	143111	HOLDER, HOSE	1	
18	118879	PIN, HITCH JACK 9/16 IN. DIA.		1

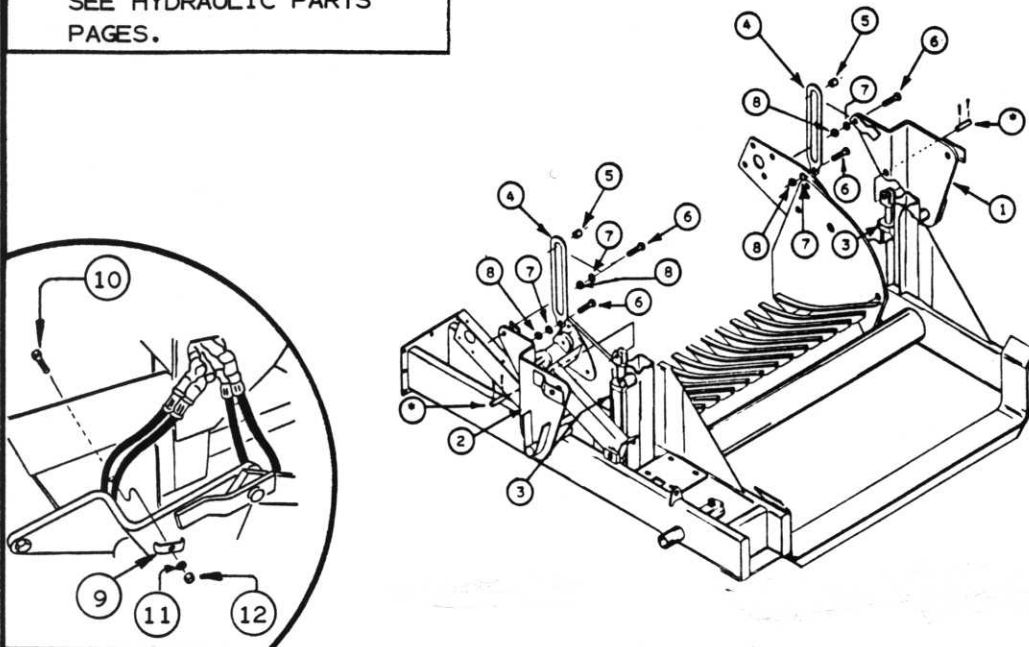
GRILL AND SUPPORTS



KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	207000	GRILL ASSEMBLY	1	
2	207070	GRILL TINE (TO BE WELDED TO GRILL ASSY.)		15
3	231060	1 X 7-3/8 IN. GRILL PIN - RIGHT HAND SIDE	1	
4	118838	1/4 X 1-1/2 IN. COTTER PIN	2	
5	231070	1 X 12-5/8 IN. GRILL PIN - LEFT HAND SIDE	1	
6	213200	REEL SUPPORT YOKE - LEFT HAND SIDE	1	
7	215100	BEARING PLATE ASSEMBLY - RIGHT HAND SIDE	1	
		CONSISTS OF:		
8	215000	BEARING PLATE		1
9	213100	SUPPORT LUGS		2
10	225031	TRANSPORT LOCK ARM	1	
11	118303	3/4 X 2 IN. BOLT - COUNTERSUNK HEAD - UNC	2	
12	118042	3/4 X 2 IN. HEX BOLT - UNC	4	
13	118509	3/4 IN. LOCK WASHER	6	
14	118410	3/4 IN. HEX NUT - UNC	6	
15	118526	1-1/32 IN. ID X 1-1/2 IN. OD X 1/8 IN. TH. FLAT WASHER	AS REQ.	
16	118047	BOLT, HEX - 3/4 X 2-1/2 IN. UNC GR5	1	
17	118422	NUT, HEX LOCK, - 3/4 IN. - UNC	1	
18	201042	ANCHOR BLOCK, TRANSPORT LOCK	1	
19	201041	BRACKET, TRANSPORT LOCK	1	

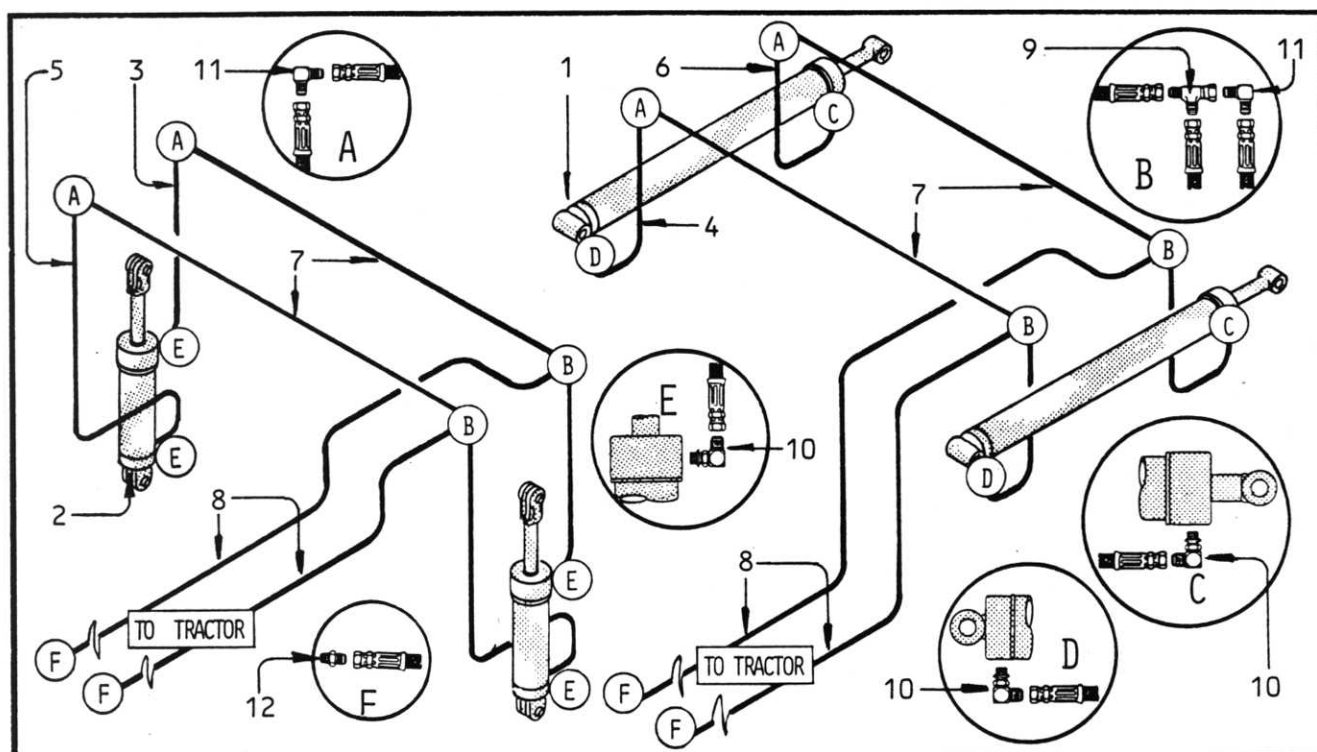
HYDRAULIC LIFT MECHANISM

* FOR HYDRAULIC CYLINDER, PINS AND RELATED PARTS SEE HYDRAULIC PARTS PAGES.



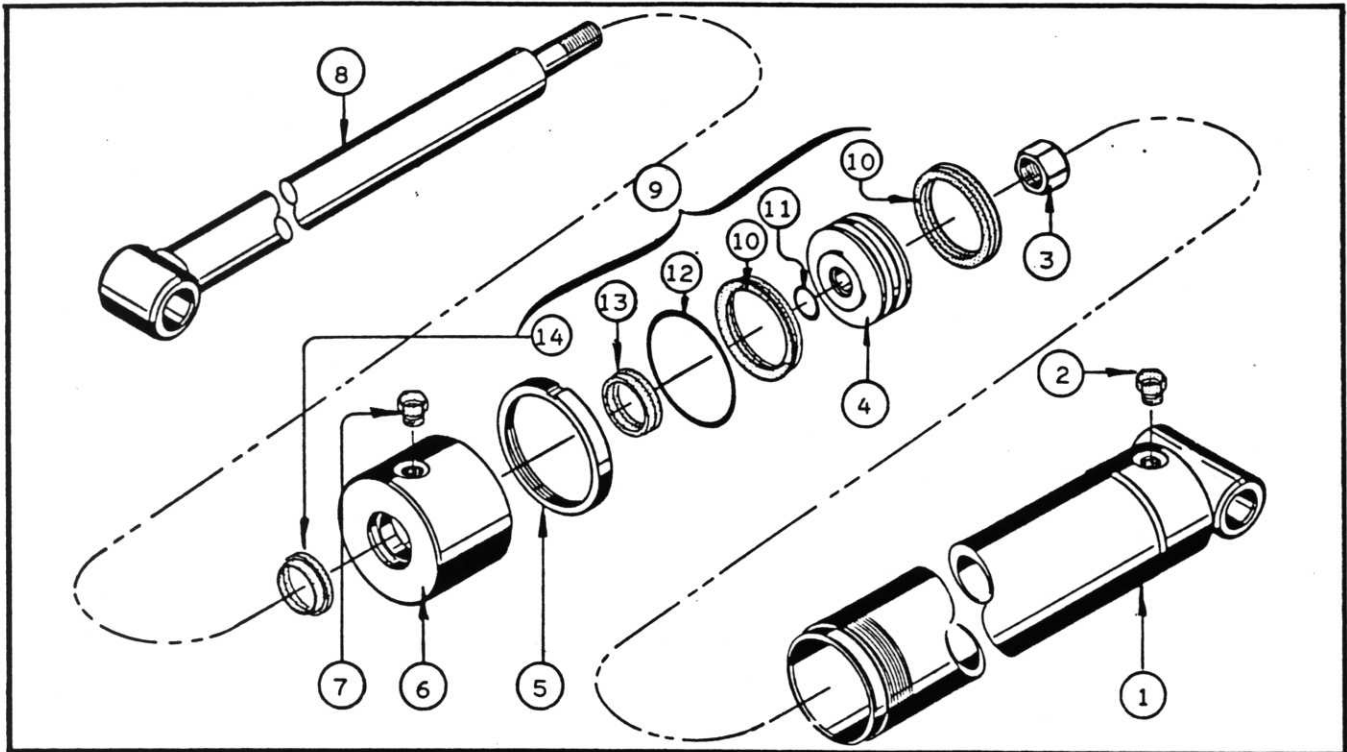
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	217000	HYDRAULIC DUMP ARM - RH SIDE	1	
2	218000	HYDRAULIC DUMP ARM - LH SIDE	1	
3	121718	HYDRAULIC CYLINDER 3 X 10 D.I.L.-3/4 ORB PORT	2	
4	217080	LIFT ARM, SLOTTED	2	
5	217060	BUSHING 1-1/4 X 13/16 X 3/4 IN.	2	
6	118046	BOLT, HEX 3/4 X 2-1/2 IN. UNC, GR.5	4	
7	118509	WASHER, LOCK 3/4 IN.	4	
8	118410	NUT, HEX 3/4 IN. UNC	4	
9	650256	HOSE CLIP - 2 HOSE	2	
10	118121	BOLT, HEX 5/16 X 2 IN. UNC GR. 5	2	
11	118530	WASHER, LOCK 5/16 IN.	2	
12	118427	NUT, HEX 5/16 IN. UNC	2	

HYDRAULIC SYSTEM



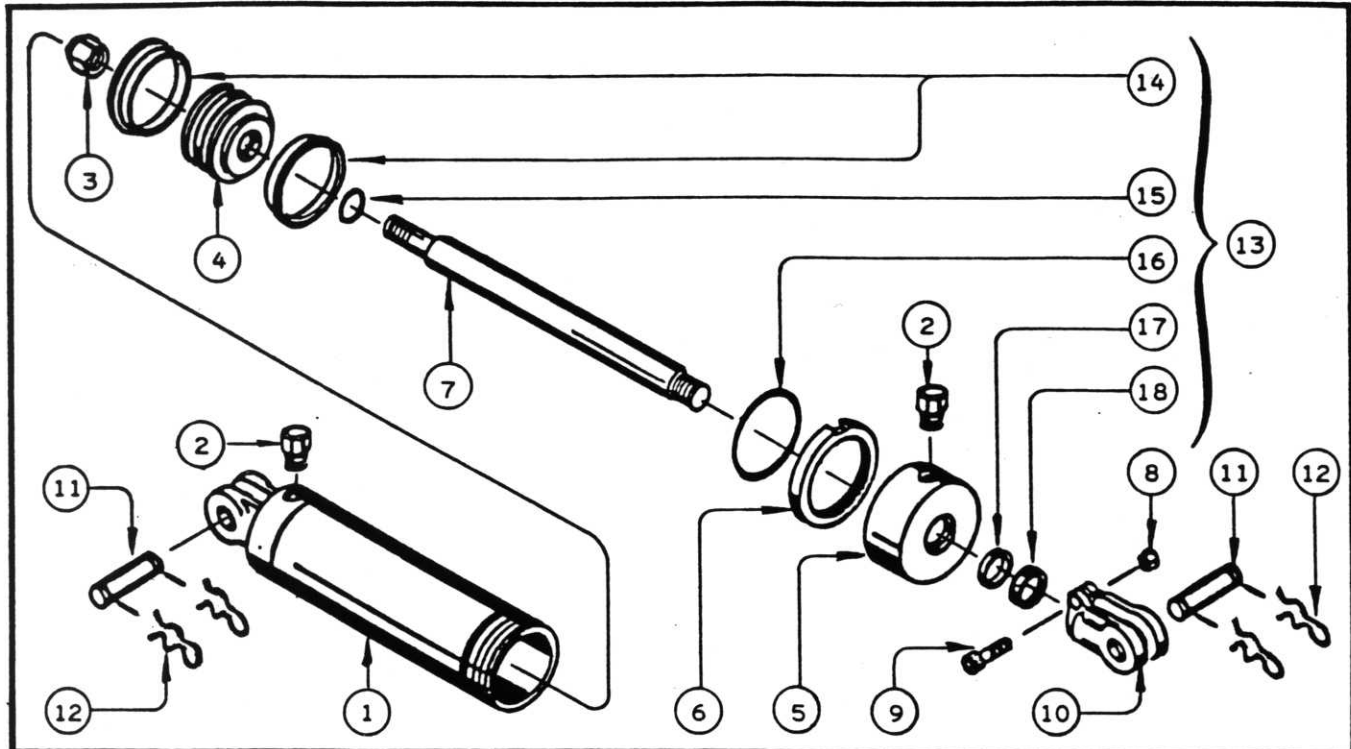
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	121644	Hydraulic Cylinder - 3 x 31 3/4 ORB Ports	2	
2	121718	Hydraulic Cylinder - 3 x 10 3/4 ORB Ports	2	
3	126522	Hose 3/8 x 36-2 WB - 3/4 JIC (F-SW)	2	
4	126546	Hose 3/8 x 40-2 WB - 3/4 JIC (F-SW)	2	
5	126548	Hose 3/8 x 50-2 WB - 3/4 JIC (F-SW)	2	
6	126549	Hose 3/8 x 55-2 WB - 3/4 JIC (F-SW)	2	
7	126550	Hose 3/8 x 75-2 WB - 3/4 JIC (F-SW)	4	
8	126552	Hose 3/8 x 144-2 WB - 3/4 JIC (F-SW)	4	
9	141503	Tee, 3/4 JIC (F-SW) x 3/4 JIC (M) x 3/4 JIC (M)	4	
10	141504	Elbow, 90° 3/4 JIC(M) x 3/4 ORB (M)	8	
11	141513	Elbow, 90° 3/4 JIC(M) x 3/4 JIC (M)	8	
12	141514	Nipple 1/2 NPT (M) x 3/4 JIC (M)	4	

HYDRAULIC CYLINDER 3 x 31 DIL



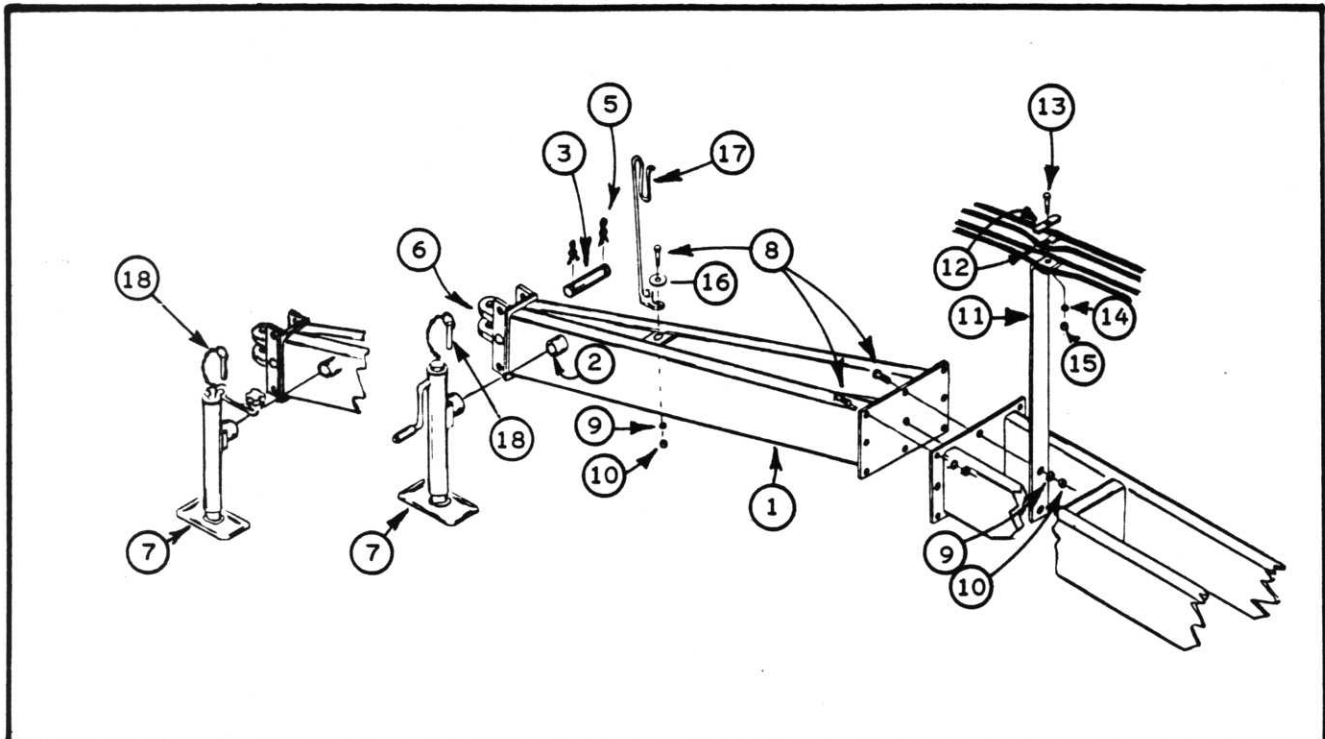
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	121644	Hydraulic Cylinder Assy. - DIL - 3 x 31 in. complete - 3/4 - 16 ORB Ports Consists of:		
1	121647	- Barrel Assy. - 3 in. I.D. - includes:	1	
2		One - 121326 Port Plug 3/4 - 16 ORB		
3	118441	- Nut, Lock - 7/8 in. - UNF	1	
4	121606	- Piston, 3 in. O.D.	1	
5	121746	- Lock Ring, 3 in. Cylinder	1	
6	121629	- Cap, Open End - Includes:	1	
7		One - 121326 Port, Plug 3/4 - 16 ORB		
8	121648	- Rod Assy. - 1 1/2 in. O.D. - includes:	1	
9	121612	- Seal Kit - Consists of:	1	
10		Two - Piston Outer U-Cup		
11		One - Piston Inner O-Ring		
12		One - Cap Inner O-Ring		
13		One - Cap Inner U-Cup		
14		One - Rod Wiper Seal		
NOTE: Complete rebuilt Hydraulic Cylinder may be available				

HYDRAULIC CYLINDER 3 x 10 DIL



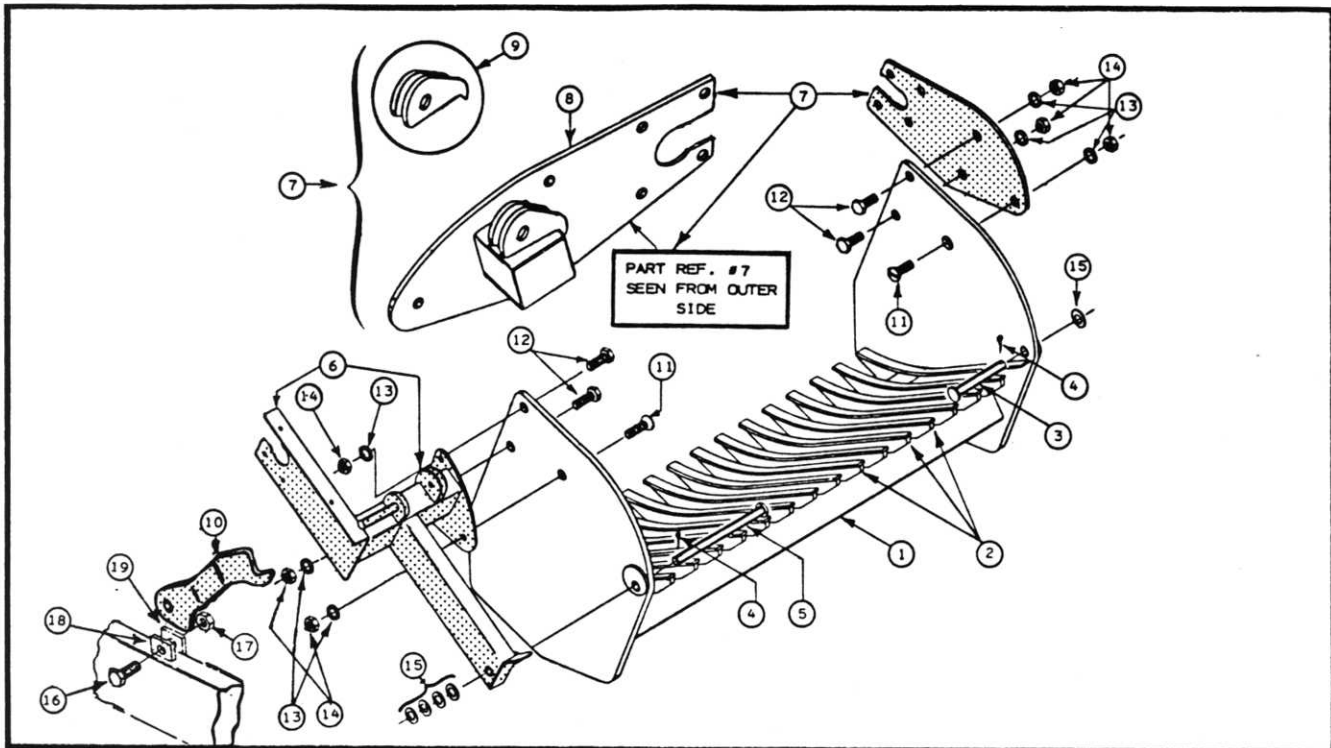
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	121718	Hydraulic Cylinder Assy. - DIL - 3 x 10 with 3/4 - 16 ORB Ports Consists of:		
1	121716	- Barrel, Closed Cap Assy. - 3 in. ID		1
2	121326	- Plug, Plastic - 3/4 - 16 ORB		2
3	118441	- Nut, Lock - 7/8 in. - UNF		1
4	121606	- Piston - 3 in.		1
5	121630	- Cap, Open		1
6	121746	- Lock Ring, 3 in. Cylinder		1
7	121714	- Rod - 1 1/4 in. OD		1
8	118403	- Nut, Hex - 3/8 in. Gr. 5 UNC		1
9	118311	- Cap Screw, Socket - 3/8 x 1 3/4 in. UNC		1
10	121699	- Clevis, Rod - 1 in. - 14		1
11	121941	- PIN 25.4 X 73 MM(EFF)-PL-N/D		2
12	118882	- PIN, HAIR 3/16 X 2-3/4 IN.-PL-N/D		4
13	121719	- Seal Kit - consists of:		1
14		Two - Piston Outer U-Cup		
15		One - Piston Inner O-Ring		
16		One - Cap Inner O-Ring		
17		One - Cap Inner U-Cup		
18		One - Rod Wiper Seal		
NOTE: Complete rebuilt Hydraulic Cylinders may be available				

HITCH POLE



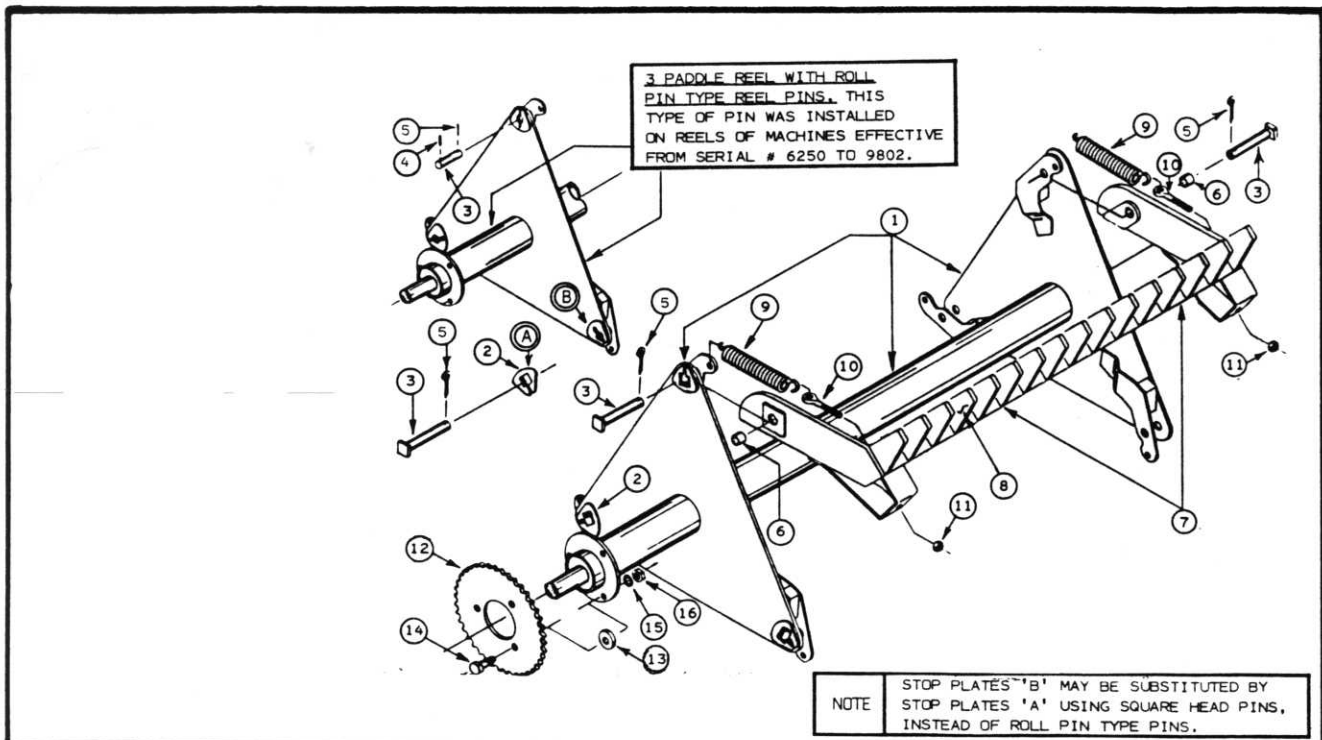
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	224100	HITCH POLE ASSEMBLY (AS SHIPPED WITH NEW MACHINES)	1	
		CONSISTS OF:		
1	224110	- HITCH POLE - CW:		1
2	132008	- JACK MOUNTING BRACKET	1	
3	121944	- PIN 25.4 X 110 MM(EFF)-PL-N/D	1	
5	118882	- PIN,HAIR 3/16 X 2-3/4 IN.-PL-N/D	2	
6	110002	- HITCH CLEVIS CASTING	1	
7	{ 132004	TOP WIND JACK ASSY. - GROUND DRIVE ONLY	{ 1	
	132005	SIDE WIND JACK ASSY.- PTO DRIVE ONLY		
8	118023	BOLT, HEX - 5/8 X 1-1/2 IN. - UNC - GR 2	10	
9	118508	WASHER, LOCK - 5/8 IN.	10	
10	118407	NUT, HEX - 5/8 IN. - UNC	10	
11	202012	BRACKET, HOSE SUPPORT	1	
12	650253	CLIP, HOSE BRACKET	2	
13	118105	BOLT, HEX - 5/16 X 2-1/2 IN. - UNC - GR 5	1	
14	118530	WASHER, LOCK - 5/16 IN.	1	
15	118427	NUT, HEX - 5/16 IN. - UNC	1	
16	118514	WASHER, FLAT - 5/8 IN.	1	
17	143111	HOLDER, HOSE	1	
18	118879	PIN, HITCH JACK 9/16 IN. DIA.		1

GRILL AND SUPPORTS



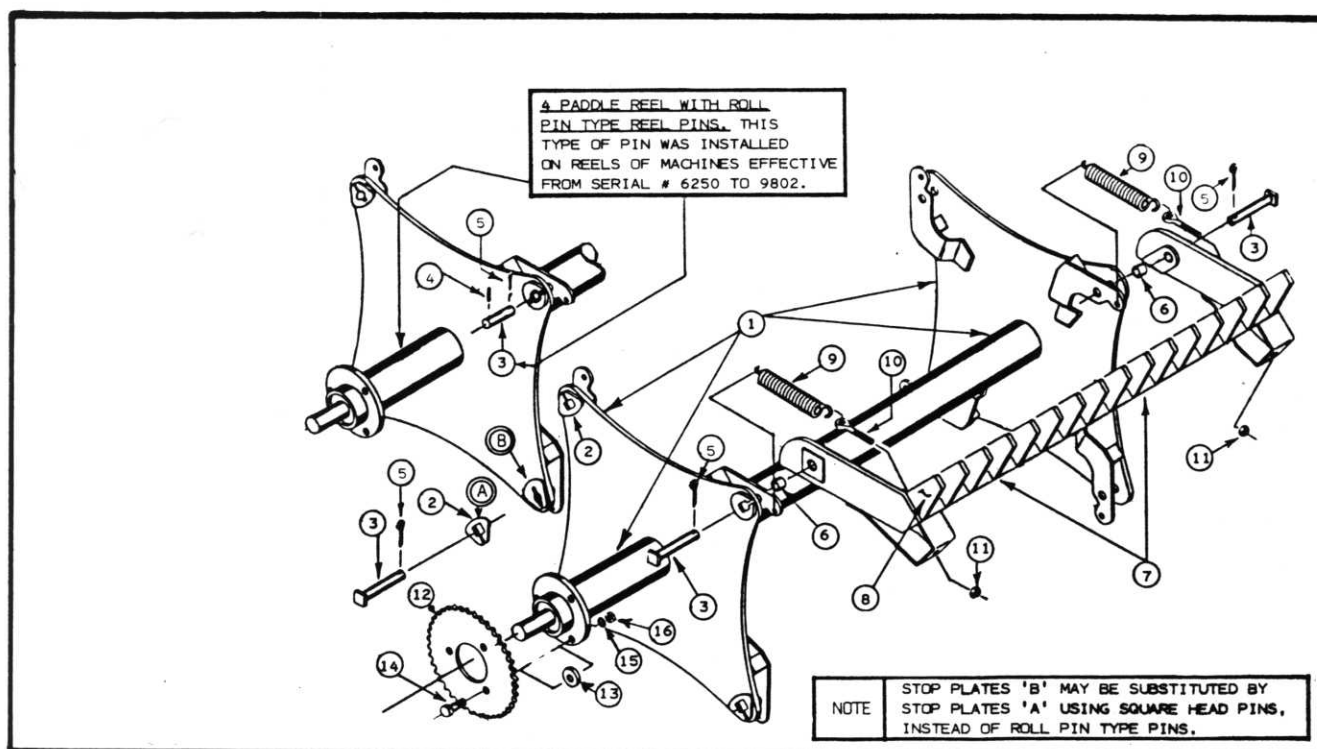
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	207000	GRILL ASSEMBLY	1	
2	207070	GRILL TIME (TO BE WELDED TO GRILL ASSY.)		15
3	231060	1 X 7-3/8 IN. GRILL PIN - RIGHT HAND SIDE	1	
4	118838	1/4 X 1-1/2 IN. COTTER PIN	2	
5	231070	1 X 12-5/8 IN. GRILL PIN - LEFT HAND SIDE	1	
6	213200	REEL SUPPORT YOKE - LEFT HAND SIDE	1	
7	215100	BEARING PLATE ASSEMBLY - RIGHT HAND SIDE	1	
		CONSISTS OF:		
8	215000	BEARING PLATE		1
9	213100	SUPPORT LUGS		2
10	225031	TRANSPORT LOCK ARM	1	
11	118303	3/4 X 2 IN. BOLT - COUNTERSUNK HEAD - UNC	2	
12	118042	3/4 X 2 IN. HEX BOLT - UNC	4	
13	118509	3/4 IN. LOCK WASHER	6	
14	118410	3/4 IN. HEX NUT - UNC	6	
15	118526	1-1/32 IN. ID X 1-1/2 IN. OD X 1/8 IN. TH. FLAT WASHER	AS REQ.	
16	118047	BOLT, HEX - 3/4 X 2-1/2 IN. UNC GR5	1	
17	118422	NUT, HEX LOCK, - 3/4 IN. - UNC	1	
18	201042	ANCHOR BLOCK, TRANSPORT LOCK	1	
19	201041	BRACKET, TRANSPORT LOCK	1	

THREE PADDLE REEL SECTION - GROUND AND PTO DRIVEN ROCK PICKERS



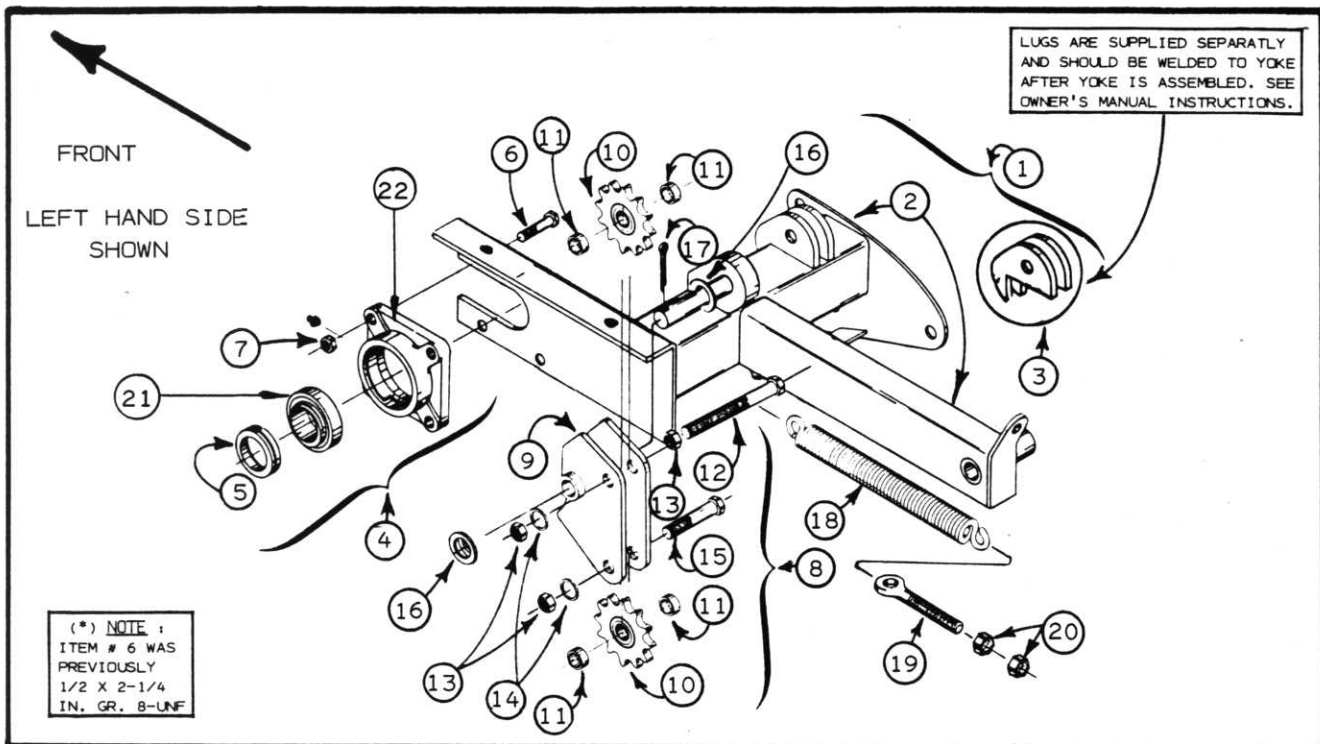
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	209000	3 PADDLE TYPE REEL (USES SQUARE HEAD PINS)	1	
2	209020	PLATE, SQUARE HEAD PIN STOP	6	
3	118801	PIN, SQUARE HEAD REEL - 1 X 3-1/4 (NEW ST)	6	
4	118802	PIN, ROLL PIN HEAD REEL-1 X 3-5/8 (OLD ST)C/W	6	
5	118846	ROLL, PIN DOUBLE - 5/16 X 2-1/2		1
6	118838	PIN, COTTER - 1/4 X 1-1/2 IN.	6	
7	117114	BUSH-1-1/4 x 1/8W x 1-1/4 LG SPG STL	6	
8	211000	PADDLE ASSAMBY - C/W 16 TEETH	3	
9	211012	PADDLE TOOTH (REPLACEMENT)		16
10	143005	SPRING, REEL	6	
11	118241	EYE BOLT, SPRING - 3/4 X 5-1/4 IN.	6	
12	118422	NUT, HEX LOCK - 3/4 IN - UNC	6	
13	122012	SPROCKET-40 TOOTH (STD FOR GROUND DRIVE AND 540 RPM PTO DRIVE OPTION)	1	
14	122015	SPROCKET-48 TOOTH (REQUIRED FOR 1000 RPM PTO DRIVE OPTION)		
15	210010	SPACER - 2 IN. O.D. X 1/2 IN. TH. (REQUIRED OPTION FOR PTO DRIVEN MACHINES)	3	
16	118042	BOLT, HEX-3/4 X 2 IN. - UNC - GR. 2 (FOR GROUND DRIVEN ONLY)	3	
17	118046	BOLT, HEX-3/4 X 2-1/2 - UNC - GR. 2 (REQUIRED OPTION FOR PTO DRIVEN MACHINES)		
18	118509	WASHER, LOCK - 3/4 IN.	3	
19	118410	NUT, HEX - 3/4 IN. - UNC	3	
6	211040	OLD STYLE BUSH 1.32OD x 1.05ID x 1-1/4 LG		

FOUR PADDLE REEL SECTION - GROUND AND PTO DRIVEN ROCK PICKERS



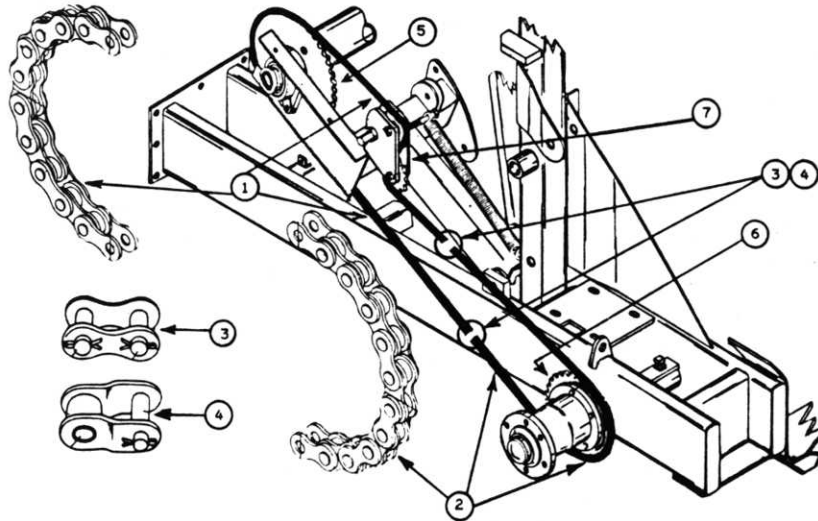
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	210000	4 PADDLE TYPE REEL (USES SQUARE HEAD PINS)	1	1
2	209020	PLATE, SQUARE HEAD PIN STOP	8	
3	118801	PIN, SQUARE HEAD REEL - 1 X 3-1/4 (NEW ST)	8	
4	118802	PIN, ROLL PIN HEAD REEL-1 X 3-5/8 (OLD ST)C/W		
5	118846	ROLL PIN, DOUBLE - 5/16 X 2-1/2		
6	118838	PIN, COTTER - 1/4 X 1-1/2 IN.	8	
7	117114	BUSH-1-1/4 x 1/8W x 1-1/4 LG SPG STL	8	16
8	211000	PADDLE ASSEMBLY - C/W 16 TEETH	4	
9	211012	PADDLE TOOTH (REPLACEMENT)		
10	143005	SPRING, REEL	8	
11	118241	EYE BOLT, SPRING - 3/4 X 5-1/4 IN.	8	
12	118422	NUT, HEX LOCK - 3/4 IN. - UNC	8	
13	122012	SPROCKET-40 TOOTH (STD FOR GROUND DRIVE AND 540 RPM PTO DRIVE OPTION)	1	
14	122015	SPROCKET-48 TOOTH (REQUIRED FOR 1000 RPM PTO DRIVE OPTION)		
15	210010	SPACER - 2 IN. O.D. X 1/2 IN. TH (REQUIRED OPTION FOR PTO DRIVEN MACHINES)	3	
16	118042	BOLT, HEX - 3/4 X 2 IN. UNC - GR. 2 (FOR GROUND DRIVE ONLY)	3	
17	118046	BOLT, HEX - 3/4 X 2-1/2-UNC-GR. 2 (REQUIRED OPTION FOR PTO DRIVEN MACHINES)		
18	118509	WASHER, LOCK - 3/4 IN.	3	
19	118410	NUT, HEX - 3/4 IN. UNC	3	
6	211040	OLD STYLE BUSH 1.32OD x 1.05ID x 1-1/4 LG		

REEL SUPPORT YOKE AND CHAIN TIGHTENER COMPONENTS



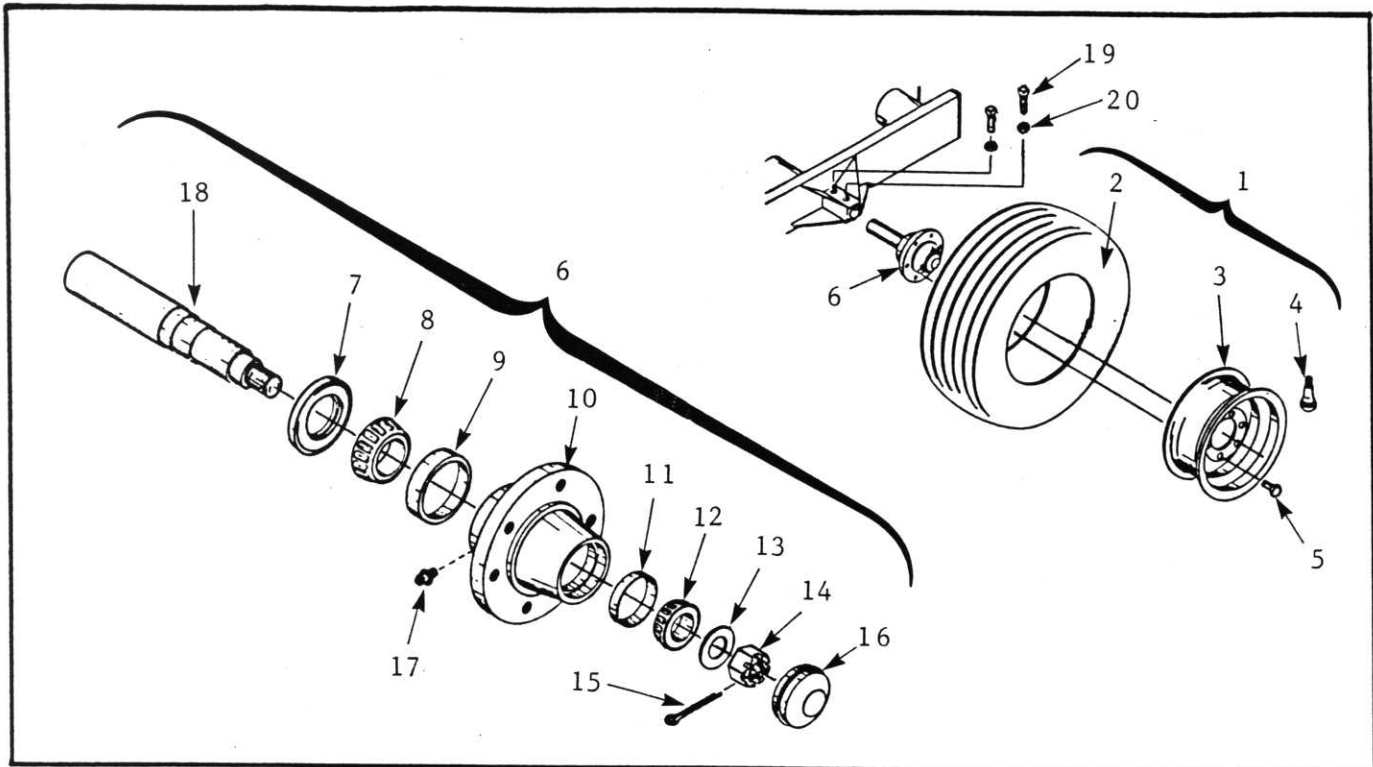
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	213200	REEL SUPPORT YOKE-LEFT HAND SIDE CONSISTS OF:	1	
2	213000	REEL SUPPORT YOKE		1
3	213100	SUPPORT LUGS		2
4	117018	FLANGE BEARING UNIT - 1-15/16 IN. ID CPT.	2	
5	117016	LOCKING COLLAR C/W SET SCREW		1
6	118012 (*)	1/2 X 1-3/4 IN. HEX BOLT - UNF - GR. 8	8	
7	118419	1/2 IN. LOCK NUT - UNF	8	
8	222000	CHAIN TIGHTENER ASSY. - COMPLETE CONSISTS OF:	1	
9	222001	CHAIN TIGHTENER FRAME ASSEMBLY		1
10	122001	IDLER SPROCKET ASSY. - C/W BEARING		2
11	222041	SPACER BUSHING		4
12	222030	3/4 X 7 IN. SPROCKET SHAFT & SPRING SUPPORT		1
13	118410	3/4 IN. HEX NUT - UNC		3
14	118509	3/4 IN. LOCK WASHER		2
15	118052	3/4 X 3-1/2 IN. HEX BOLT - UNC		1
16	118526	1-1/32 IN. ID X 1-1/2 OD X 1/8 IN. THICK FLAT WASHER	2	
17	118838	1/4 X 1-1/2 IN. COTTER PIN	1	
18	143003	CHAIN TIGHTENER SPRING	1	
19	118240	5/8 X 5-1/4 IN. EYE BOLT - UNC	1	
20	118407	5/8 IN. HEX NUT - UNC	2	
21	117015	INSERT, BEARING 1-15/16 IN.		1
22	117017	CASTING, FLANGE - 4 HOLE 1-15/16 IN.		1

STANDARD GROUND DRIVE COMPONENTS SECTION



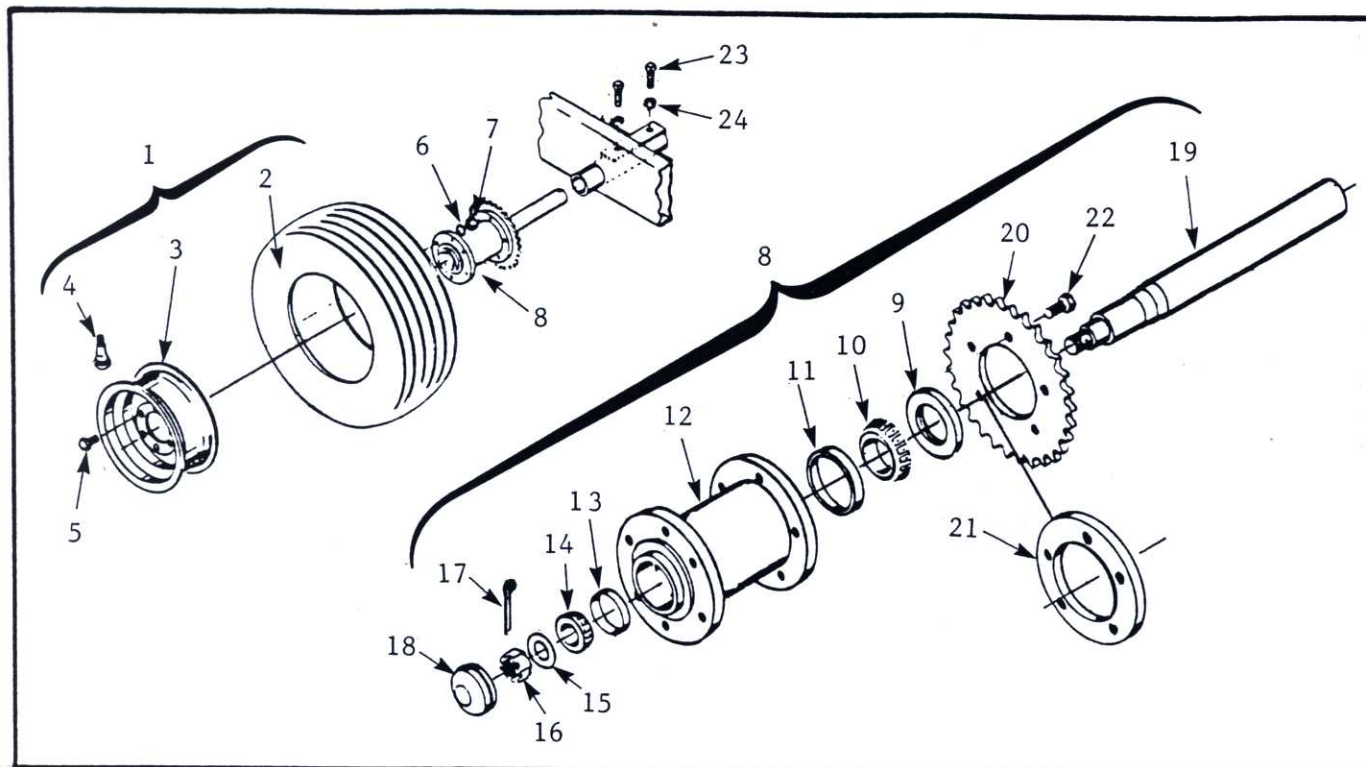
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	120009	83 LINK ROLLER CHAIN #80	1	
2	120008	55 LINK ROLLER CHAIN #80	1	
3	120002	CONNECTOR LINK #80	2	
4	120003	OFFSET LINK #80	2	
5	122012	40 TOOTH REEL SPROCKET	1	
6	122013	30 TOOTH WHEEL HUB SPROCKET	1	
7	222000	CHAIN TIGHTENER ASSEMBLY (SEE DETAILS ON PAGE # 62)	1	

WHEEL, HUB & AXLE ASSEMBLY SECTION
(RH Side for Ground, PTO or Hydraulic Drive Machines)



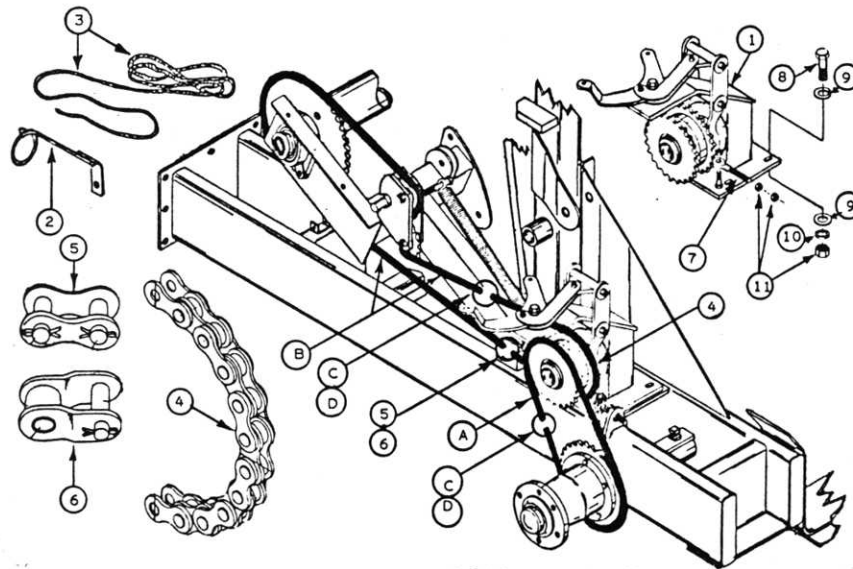
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	131329	Wheel Assy 12.5Lx15-8 Ply-3/4 in. Pos Offset	a/r	
2	127007	Tire 12.L x 15-8 Ply Tubeless		1
3	131328	Rim, Wheel 15x10 LBH-6 Bolt 3/4 in. Pos Offset		1
4	127006	Valve Stem - TR415		1
5	118313	Bolt, Wheel 9/16 x 1 1/16 in. UNF,Gr5,Plated		6
6	131017	Hub/Spindle Assy - H618 - 2 x 12 in. Spindle	a/r	
7	131026	Dust Seal CR#20140 - 2.000 in. ID		1
8	131022	Cone, Bearing #25580 - 1.750 in. ID		1
9	131023	Cup, Bearing #25520 - 3.265 in. OD		1
10	131013	Hub H618G c/w Cups #9 & 11		1
11	131025	Cup, Bearing LM48510 - 2.563 in. OD		1
12	131024	Cone, Bearing LM48548 - 1.375 in. OD		1
13	131020	Washer, Flat 1 in. SAE		1
14	118423	Nut, Slotted 1 in. UNS, Gr5		1
15	118835	Pin, Cotter 3/16 x 1 1/2 in.		1
16	131016	Cap, Hub H618 & H619		1
17	118335	Grease Fitting 1/4 - 28 AMNF-Straight		1
18	131080	Spindle - S618 - 2 x 12 in. c/w Nut #14		1
19	118251	Setscrew, Sq Head 5/8 x 1 1/2 in. UNC	2	
20	118416	Nut, Jam 5/8 in. UNC, Gr2, Plated	2	

WHEEL, HUB & AXLE ASSEMBLY SECTION
(LH Side for Ground Drive Machines Only)



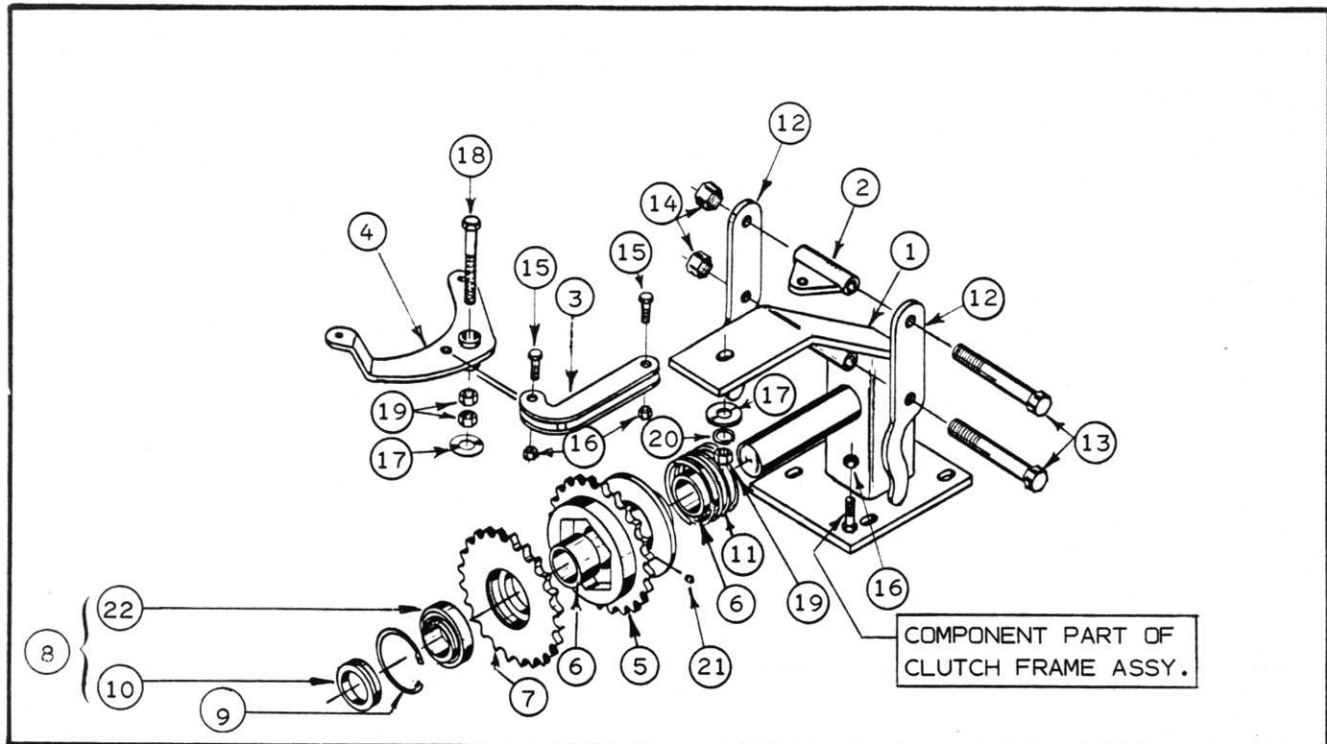
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	131329	Wheel Assy 12.5Lx15-8 Ply-3/4 in. Pos Offset	1	
2	127007	Tire 12.L x 15-8 Ply Tubeless		1
3	131328	Rim, Wheel 15x10 LBH-6 Bolt 3/4 in. Pos Offset		1
4	127006	Valve Stem - TR415		1
5	118314	Bolt, Wheel 9/16 x 1 3/4 in. UNF,Gr5,Plated		6
6	118507	Washer, Lock 9/16 in. Plated		6
7	118406	Nut, Hex 9/16 in. UNF, Gr5, Plated		6
8	131327	Hub/Spindle/Sprocket Assy - 1/2 in. H619	1	
9	131031	Seal, Dust CR#22644 - 2.250 in. ID		1
10	131027	Cone, Bearing #385A - 2.000 in. ID		1
11	131028	Cup, Bearing #382A - 3.813 in. OD		1
12	131012	Hub H619 c/w Cups #11 & 13		1
13	131025	Cup, Bearing #LM48510 - 2.563 in. OD		1
14	131024	Cone, Bearing #LM48548 - 1.375 in. ID		1
15	131020	Washer, Flat 1 in. SAE		1
16	118423	Nut, Slotted 1 in. UNS, Gr5		1
17	118835	Pin, Cotter 3/16 x 1 1/2 in.		1
18	131016	Cap, Hub H618 & H619		1
19	131083	Spindle - S619 - 2.25 x 20.25 in. c/w Nut #16		1
20	122013	Sprocket - 80A30-RP/R - Ground Drive		1
21	122048	Ring, Spacer - H619 Hub - 1/2 in.		1
22	118314	Bolt, Wheel 9/16 x 1 3/4 in. UNF, Gr5, Plated		5
23	118251	Setscrew, Sq Head 5/8 x 1 1/2 in. UNC	2	
24	118416	Nut, Jam 5/8 in. UNC, Gr2, Plated	2	

GROUND DRIVE OPTIONAL CLUTCH PACKAGE



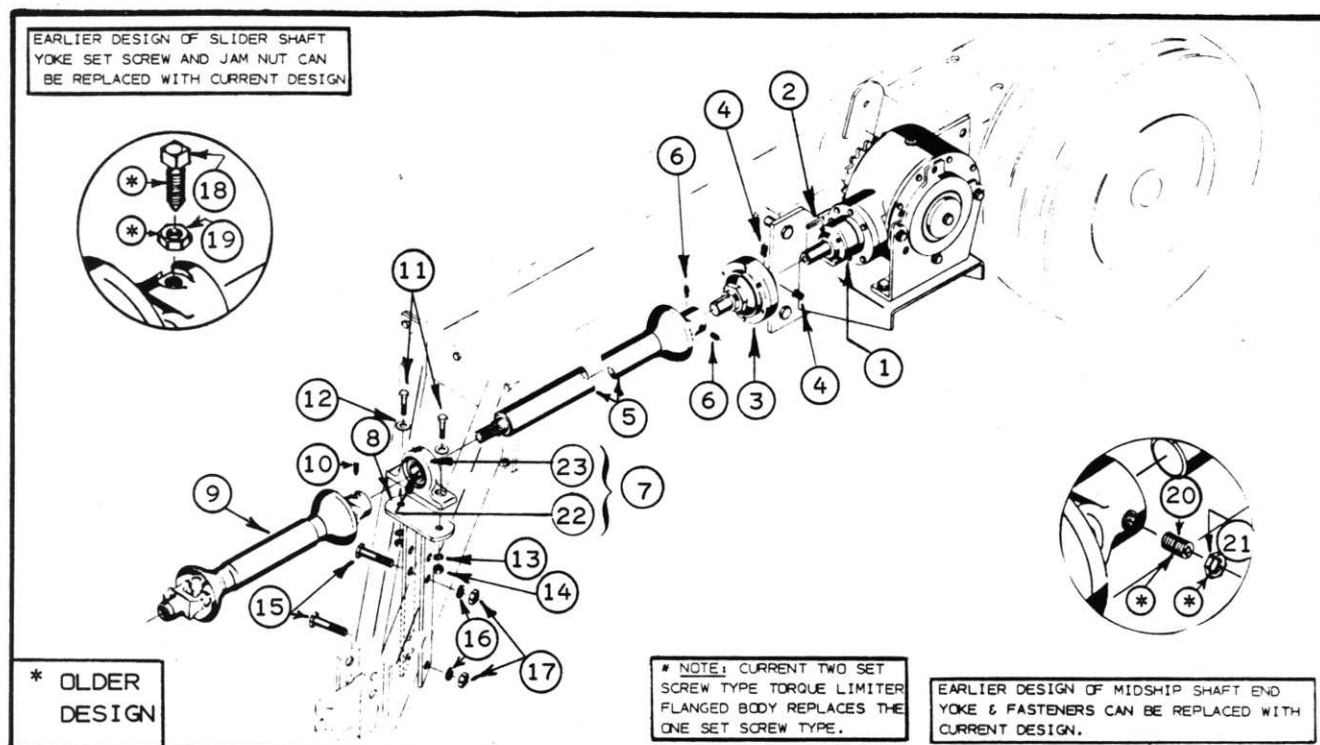
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	226000	THROW-OUT CLUTCH ASSEMBLY-COMLETE (SEE PAGE # 67 FOR PARTS DETAIL)	1	
2	227000	ROPE GUIDE ASSEMBLY	1	
3	133002	5/16 IN. X 50 FEET ROPE	1	
4	120007	33 LINK ROLLER CHAIN #80	1	
N/S	253020	HARDWARE BAG - CONSISTS OF:	1	
5	120002	CONNECTOR LINK #80		1
6	120003	OFFSET LINK #80		1
7	118240	5/8 X 5-1/4 IN. EYE BOLT - UNC		1
8	118090	5/8 X 2 IN. HEX BOLT - UNC		4
9	118514	5/8 IN. FLAT WASHER		8
10	118508	5/8 IN. LOCK WASHER		4
11	118407	5/8 IN. HEX NUT - UNC		6
	NOTE:	THE FOLLOWING COMPONENTS ARE SUPPLIED WITH THE STANDARD GROUND DRIVE ROCK PICKER. (REFERENCE PAGE # 63)		
A		55 LINK ROLLER CHAIN #80		1
B		83 LINK ROLLER CHAIN #80		1
C		CONNECTOR LINK #80		2
D		OFFSET LINK #80		2

GROUND DRIVE - OPTIONAL CLUTCH



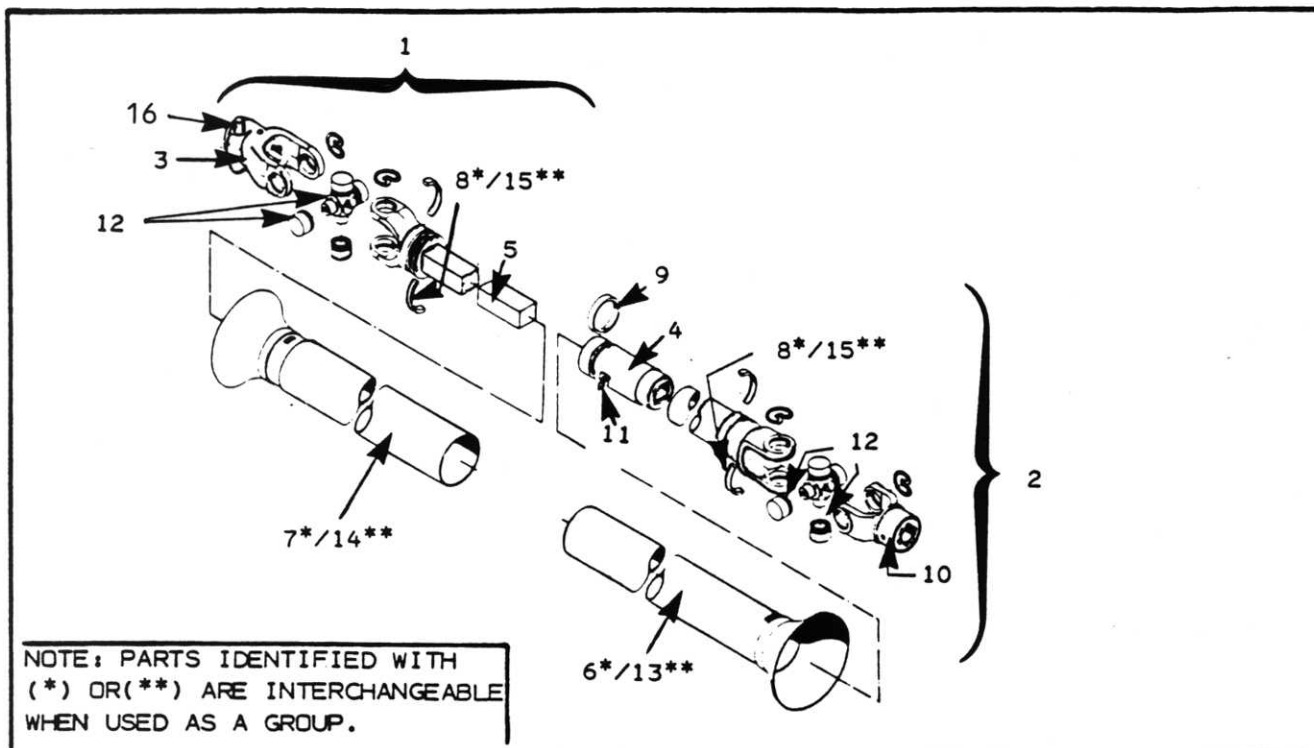
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	226000	THROW-OUT CLUTCH ASSY. COMPLETE CONSISTS OF:		1
1	226010	CLUTCH FRAME ASSEMBLY		1
2	226020	LUG BUSHING ASSEMBLY		1
3	226030	LOCK ARM ASSEMBLY		1
4	226040	THROW-OUT ARM ASSEMBLY		1
5	226056	SLIDING SPROCKET ASSY C/W BRONZE BUSHING		1
6	226060	BRONZE BUSHING		2
7	226070	DRIVE SPROCKET (24 TEETH)		1
8	117007	DRIVE SPROCKET BEARING C/W LOCKING COLLAR		1
9	118330	DRIVE SPROCKET BEARING RETAINING RING		1
10	117031	LOCKING COLLAR - INCLUDES SET SCREW		1
11	143002	THROW-OUT COMPRESSION SPRING		1
12	226080	THROW-OUT LEVER		2
13	118064	3/4 X 6 IN. HEX BOLT - UNC - GR. 5		2
14	118422	3/4 IN. HEX LOCK NUT - UNC		2
15	118026	5/8 X 2 IN. HEX BOLT - UNC - GR. 5		2
16	118447	5/8 IN. HEX LOCK NUT-UNC GR C- UNI-TORQUE		3
17	118516	3/4 IN. FLAT WASHER		2
18	226100	EXTRA THREADED 3/4 X 5 IN. HEX BOLT - UNC		1
19	118410	3/4 IN. HEX NUT - UNC		2
20	118509	3/4 IN. LOCK WASHER		1
21	118332	1/8 IN. NPT GREASE FITTING		1
22	117013	INSERT, BEARING - 2 IN.		1

DRIVE TRAIN COMPONENTS



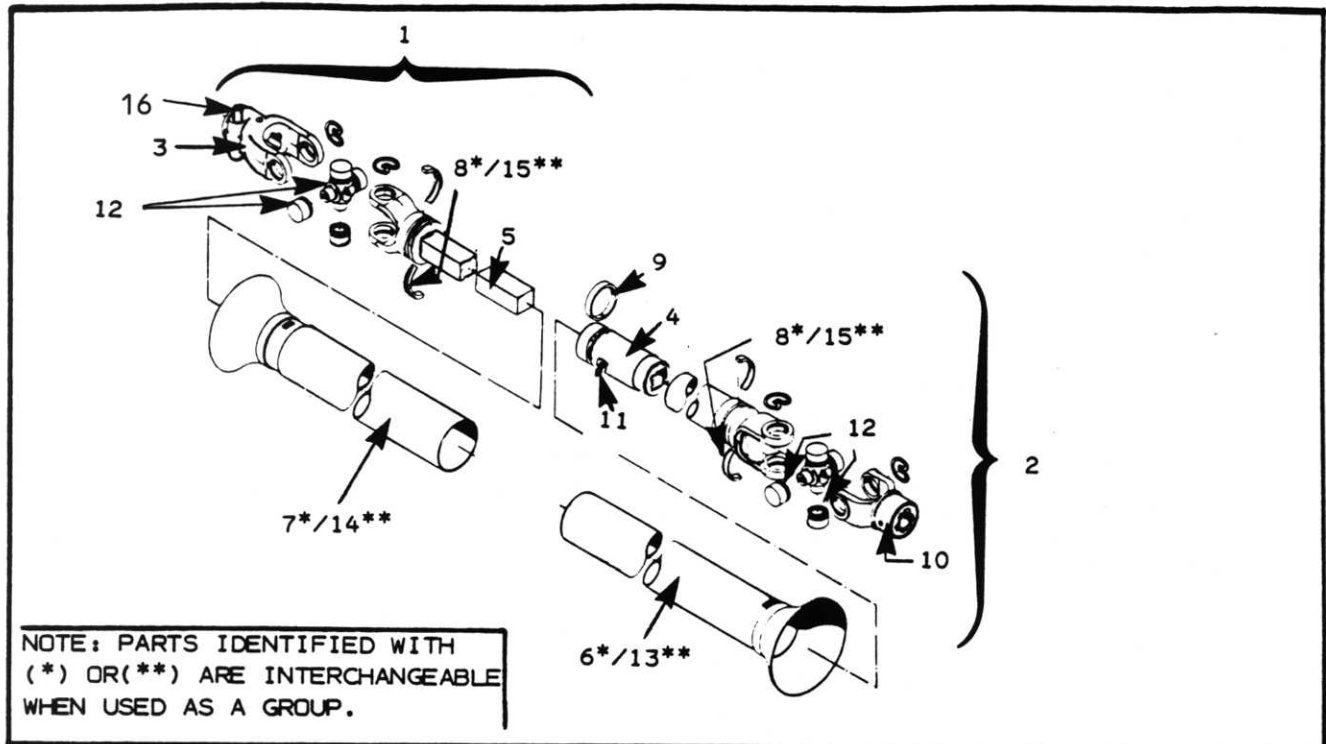
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	119050	6.66:1 RATIO - 920 GEAR BOX ASSEMBLY	1	
2	119214	1/4 X 1/4 X 1-3/4 IN. KEY	1	
3	119202	TORQUE LIMITER ASSEMBLY	1	
4	118308	5/16 X 1/2 IN. ALLEN SET SCREW (PART OF TORQUE LIMITER ASSEMBLY)		2
5	119104	1240 SERIES JOINT AND MIDSHIP SHAFT ASSY.	1	
6	118301	3/8 X 1/2 IN. ALLEN SET SCREW - UNC	2	
7	117023	PILLOW BLOCK BEARING UNIT-1-3/8 IN. ID CPT. C/W LOCKING COLLAR (NOT REQUIRED)	1	
8	230000	DRIVE TRAIN BEARING SUPPORT	1	
9	119102	1240 SERIES SLIDER IN-PUT DRIVE SHAFT ASSY. 540 RPM	1	
	119107	1240 SERIES SLIDER IN-PUT DRIVE SHAFT ASSY. 1000 RPM		
10	119134	1/2 X 3/4 IN. ALLEN SET SCREW - UNF	1	
11	118013	1/2 X 2 IN. HEX BOLT - UNC	2	
12	118512	1/2 IN. FLAT WASHER	2	
13	118504	1/2 IN. LOCK WASHER	2	
14	118405	1/2 IN. HEX NUT - UNC	2	
15	118035	5/8 X 4 IN. HEX BOLT - UNC	2	
16	118508	5/8 IN. LOCK WASHER	2	
17	118407	5/8 IN. HEX NUT - UNC	2	
18	(*)118252	1/2 X 1-1/16 IN. SET SCREW		1
19	(*)118424	1/2 IN. JAM NUT		1
20	(*)118304	3/8 X 3/4 IN. ALLEN SET SCREW		1
21	(*)118415	3/8 IN. JAM NUT		1
22	117090	INSERT, BEARING 1-3/8 IN.		1
23	117010	CASTING, PILLOW BLOCK 1-3/8 IN.		1

IN-PUT DRIVESHAFT (540 PTO TRACTORS)



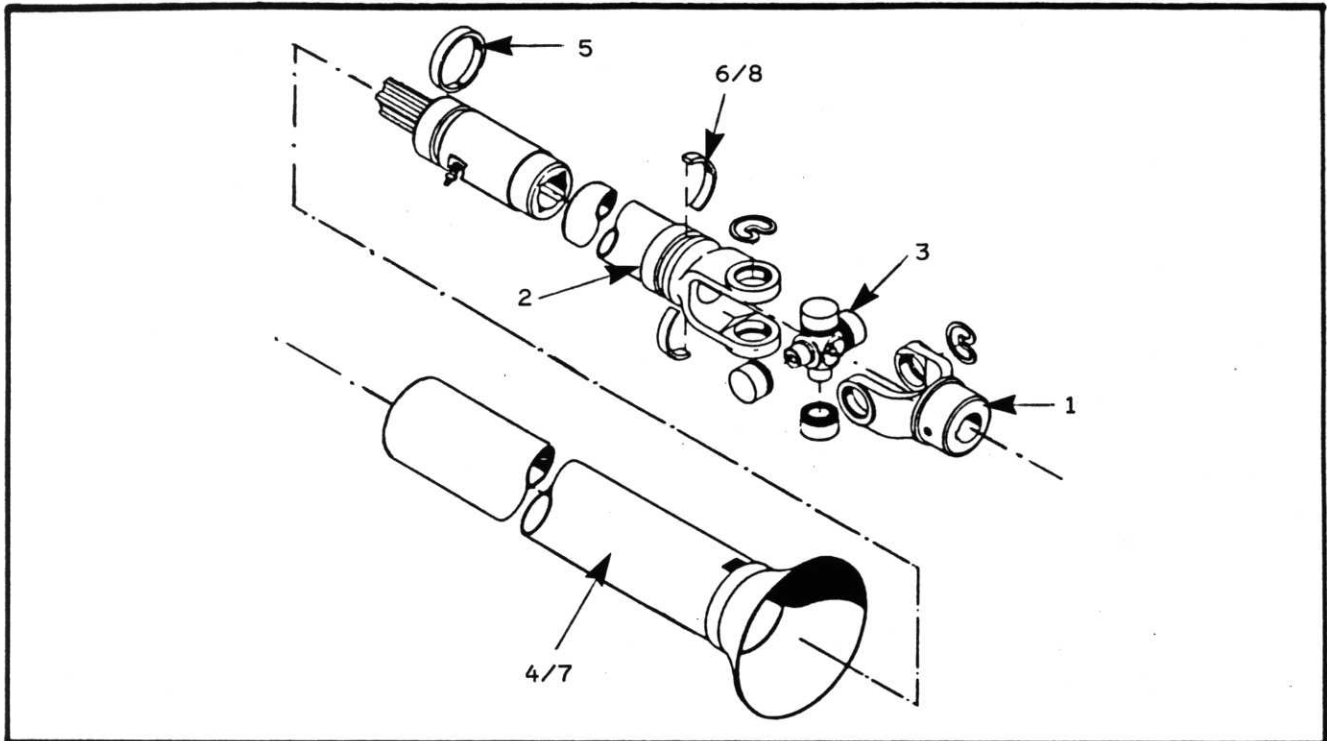
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
-	119102	SHAFT, SLIDER - 29.6 IN. LOA - HAYES 1240 WITH ENDS 1 1/4 IN. - 6 SPLINE X 1 3/8 IN. 6 SPLINE QUICK DISCONNECT	1	
1	119081	SHAFT, HALF - BAR - 6 SPLINE - HAYES 1240		1
2	119162	SHAFT, HALF - TUBE - 1 1/4 YOKE - HAYES 1240		1
3	119109	YOKE 1 3/8 IN. Q.D. - 6 SPLINE - HAYES 1240		1
4	119110	YOKE/TUBE - 15.31 IN. LG - HAYES 1240		1
5	119111	YOKE/BAR - 17.25 IN. LG - HAYES 1240		1
6	119137	SHIELD, INNER - PVC - 14.5 IN. - HAYES 1240		1
7	119138	SHIELD, INNER - PVC - 14.5 IN. - HAYES 1240		1
8	119139	KIT, BEARING - PVC SHIELD - HAYES 1240		1
9	119115	BEARING, SHIELD SUPPORT - HAYES 1240/1340		1
10	119116	YOKE 1 1/4 IN. - 6 SPLINE - HAYES 1240		1
11	118332	GREASE FITTING - 1/8 NPT THREAD - STRAIGHT		1
12	119118	KIT, CROSS & BEARING - HAYES 1240		2
13	119112	SHIELD, INNER - STEEL - 14.5 IN. - HAYES 1240		1
14	119113	SHIELD, OUTER - STEEL - 14.5 IN. - HAYES 1240		1
15	119114	KIT, BEARING - STEEL SHIELD - HAYES 1240		1
16	{ 119135 119136	{ KIT, PIN - QD - HAYES 1240 (ROLL PIN TYPE) KIT, PIN - QD - HAYES 1240 (NEW DESIGN) }		1

IN-PUT DRIVESHAFT (1000 PTO TRACTORS)



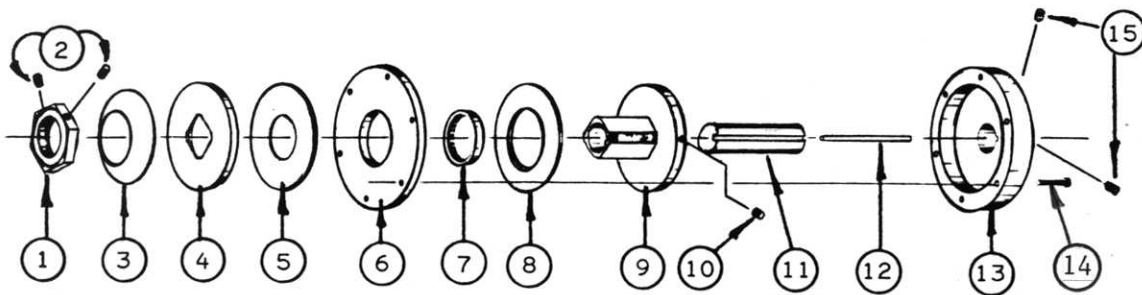
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
-	119107	SHAFT, SLIDER - 29.1 IN. LOA - HAYES 1240 WITH ENDS 1 1/4 IN. - 6 SPLINE X 1 3/8 IN. 21 SPLINE QUICK DISCONNECT	1	
1	119160	SHAFT, HALF - BAR - 21 SPLINE - HAYES 1240		1
2	119162	SHAFT, HALF - TUBE - 1 1/4 YOKE - HAYES 1240		1
3	119119	YOKE 1 3/8 IN. Q.D. - 21 SPLINE - HAYES 1240		1
4	119110	YOKE/TUBE - 15.31 IN. LG - HAYES 1240		1
5	119111	YOKE/BAR - 17.25 IN. LG - HAYES 1240		1
6	119137	SHIELD, INNER - PVC - 14.5 IN. - HAYES 1240		1
7	119138	SHIELD, INNER - PVC - 14.5 IN. - HAYES 1240		1
8	119139	KIT, BEARING - PVC SHIELD - HAYES 1240		1
9	119115	BEARING, SHIELD SUPPORT - HAYES 1240/1340		1
10	119116	YOKE 1 1/4 IN. - 6 SPLINE - HAYES 1240		1
11	118332	GREASE FITTING - 1/8 NPT THREAD - STRAIGHT		1
12	119118	KIT, CROSS & BEARING - HAYES 1240		2
13	119112	SHIELD, INNER - STEEL - 14.5 IN. - HAYES 1240		1
14	119113	SHIELD, OUTER - STEEL - 14.5 IN. - HAYES 1240		1
15	119114	KIT, BEARING - STEEL SHIELD - HAYES 1240		1
16	{ 119135 119136	{ KIT PIN - QD - HAYES 1240 (ROLL PIN TYPE) KIT, PIN - QD - HAYES 1240 (NEW DESIGN) }		1

JOINT AND MIDSHIP DRIVESHAFT



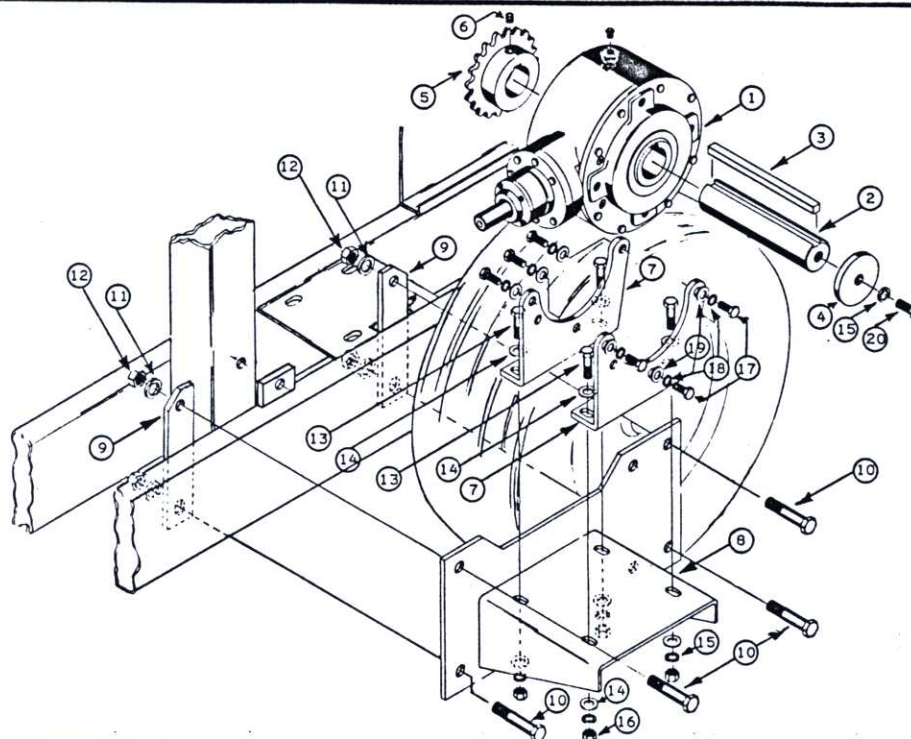
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
-	119104	SHAFT, DRIVE - 63 IN. LOA - HAYES 1240 WITH ENDS 1 1/4 IN. - 6 SPLINE SHAFT - 1 1/4 IN. YOKE	1	
1	119120	YOKE 1 1/4 IN. BORE - HAYES 1240		1
2	119121	YOKE/SHAFT - 58.94 IN. LONG - HAYES 1240		1
3	119118	KIT, CROSS & BEARING - HAYES 1240		1
4	119140	SHIELD, OUTER - PVC - 55.3 IN. - HAYES 1240		1
5	119123	BEARING, SHIELD SUPPORT - HAYES 1240		1
6	119139	KIT, BEARING - PVC SHIELD - HAYES 1240		1
7	119122	SHIELD, OUTER - STEEL - 55.3 IN. HAYES 1240		1
8	119114	KIT, BEARING - STEEL SHIELD - HAYES 1240		1

TORQUE LIMITER



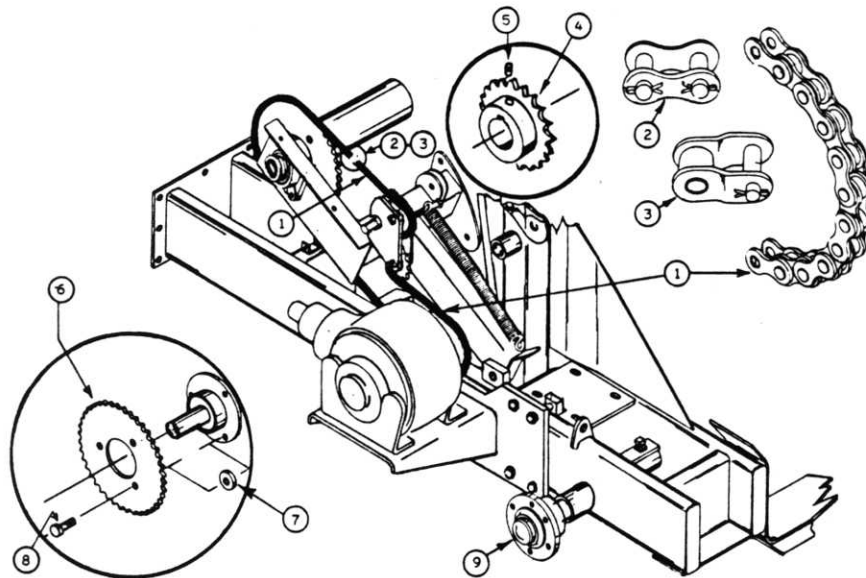
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	119202	TORQUE LIMITER ASSEMBLY COMPLETE CONSISTS OF:	1	
1	119203	ADJUSTING HEX NUT		1
2	118306	1/4 X 5/16 IN. SET SCREW		2
3	119204	PRELOAD SPRING		1
4	119205	OUTER PRESSURE PLATE		1
5	119206	FIBRE FRICTION DISC (OUTER) 1-7/8 IN. ID		1
6	119207	INTERMEDIATE PLATE		1
7	119208	TORRINGTON ROLLER BEARING		1
8	119209	FIBRE FRICTION DISC (INNER) 2-1/4 IN. ID		1
9	119210	HUB 1-1/4 IN. ID		1
10	118307	1/4 X 1/2 IN. SET SCREW		1
11	119211	KEYED SHAFT (1-1/4 IN. OD X 4-1/2 IN. LG)		1
12	119212	1/4 X 1/4 X 4-1/2 IN. KEY		1
13	(*) 119213	FLANGED BODY (1-1/4 IN. ID BORE - 1/4 IN. KEYWAY)		1
14	118309	1/4 X 1-1/4 IN. ALLEN SCREW		6
15	118308	5/16 X 1/2 IN. SET SCREW		2
<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>* NOTE: CURRENT TWO SET SCREW TYPE FLANGED BODY REPLACES THE ONE SET SCREW TYPE.</p> </div>				

GEAR BOX INSTALLATION COMPONENTS



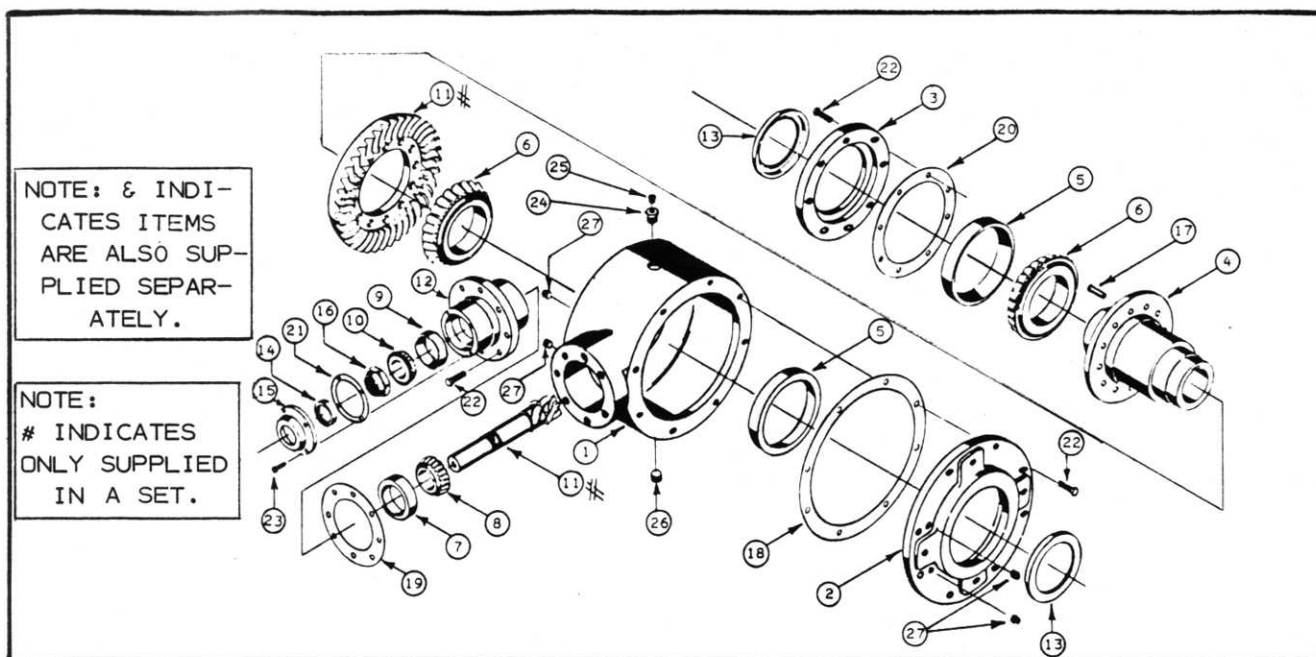
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	119050	6.66:1 RATIO - 920 GEAR BOX ASSEMBLY	1	
2	229100	GEAR BOX SHAFT 2-7/16 IN. OD X 10-1/2 IN.LG.	1	
3	119076	5/8 X 5/8 X 10-1/2 IN. KEY	1	
4	229030	GEAR BOX SHAFT END WASHER	1	
5	122004	20 TOOTH OUT-PUT SPROCKET - FOR 540 RPM PTO	1	
6	122011	16 TOOTH OUT-PUT SPROCKET -FOR 1000 RPM PTO	1	
7	118256	5/8 X 5/8 IN. ALLEN SET SCREW	1	
8	229050	GEAR BOX SUPPORT PLATE	2	
9	228002	GEAR BOX SUPPORT BRACKET	1	
10	228030	SUPPORT BRACKET STRAP	2	
11	118055	3/4 X 4 IN. HEX BOLT - UNC	4	
12	118509	3/4 IN. LOCK WASHER	4	
13	118410	3/4 IN. HEX NUT - UNC	4	
14	118090	5/8 X 2 IN. HEX BOLT - UNC	4	
15	118514	5/8 IN. FLAT WASHER	8	
16	118508	5/8 IN. LOCK WASHER	4	
17	118407	5/8 IN. HEX NUT - UNC	4	
18	118009	1/2 X 1-1/4 IN. HEX BOLT - UNC	6	
19	118504	1/2 IN. LOCK WASHER	6	
20	118512	1/2 IN. FLAT WASHER	4	
	118023	5/8 X 1-1/2 IN. HEX BOLT - UNC	1	

OPTIONAL PTO CHAIN DRIVE COMPONENTS



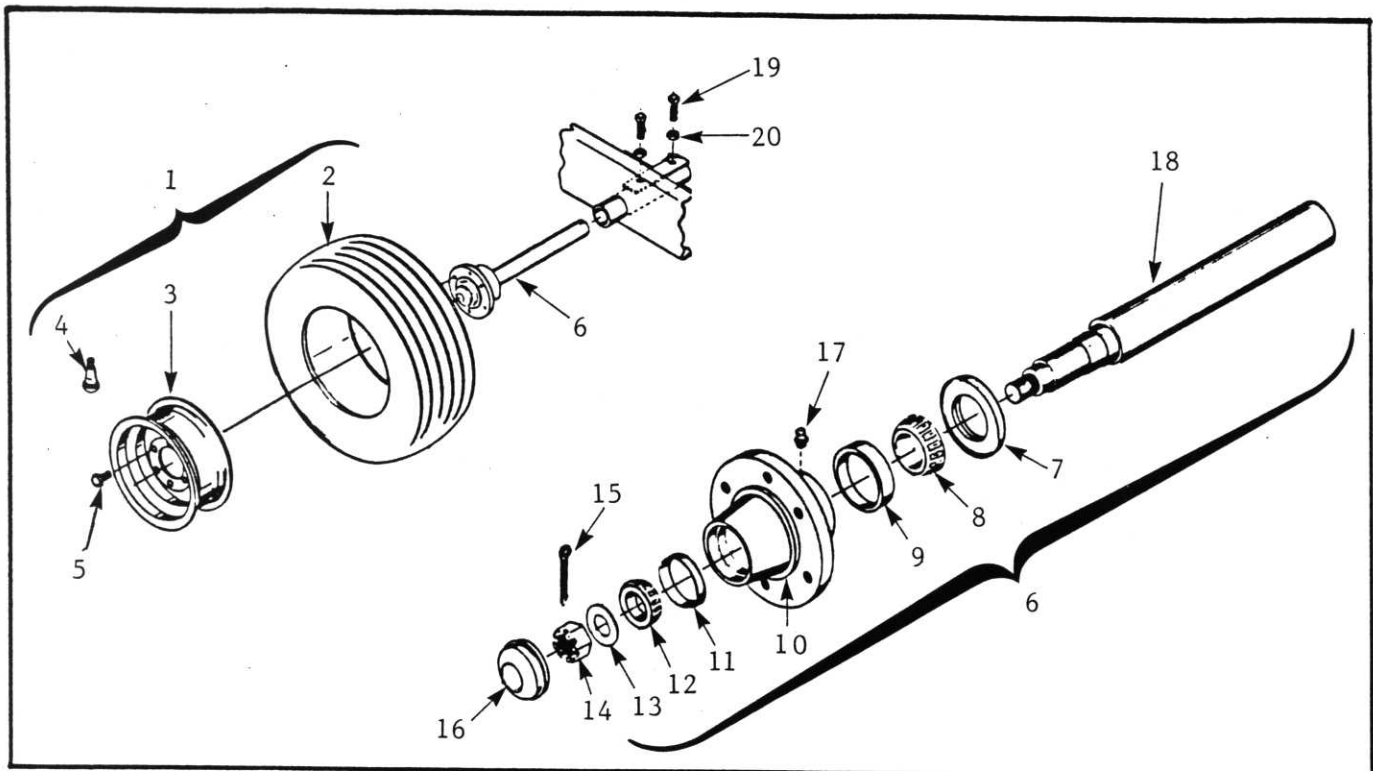
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	120010	87 LINK ROLLER CHAIN #80 (USE 85 LINKS FOR 540 RPM DRIVE CHAIN AND 87 LINKS FOR 1000 RPM DRIVE CHAIN)	1	
2	120002	CONNECTOR LINK #80	1	
3	120003	OFFSET LINK #80	1	
4	122004	20 TOOTH OUT-PUT SPROCKET - FOR 540 RPM PTO	1	
	122011	16 TOOTH OUT-PUT SPROCKET - FOR 1000 RPM PTO	1	
5	118256	5/8 X 5/8 IN. ALLEN SET SCREW	1	
	122012	40 TOOTH SPROCKET STD FOR GROUND DRIVE & ALSO USED WITH 540 PTO DRIVE OPTION	1	
6	122015	48 TOOTH SPROCKET -REQUIRED FOR 1000 RPM PTO DRIVE OPTION	1	
7	210010	2 IN. OD X 1/2 IN. TH. SPACER (REQUIRED OPTION FOR PTO DRIVEN MACHINES)	3	
8	118047	3/4 X 2-1/2 IN. HEX BOLT - UNC (REQUIRED OPTION FOR PTO DRIVEN MACHINES)	3	
9	131018	PTO TYPE LEFT HAND SIDE WHEEL HUB AND AXLE ASSEMBLY	1	

GEAR BOX SECTION



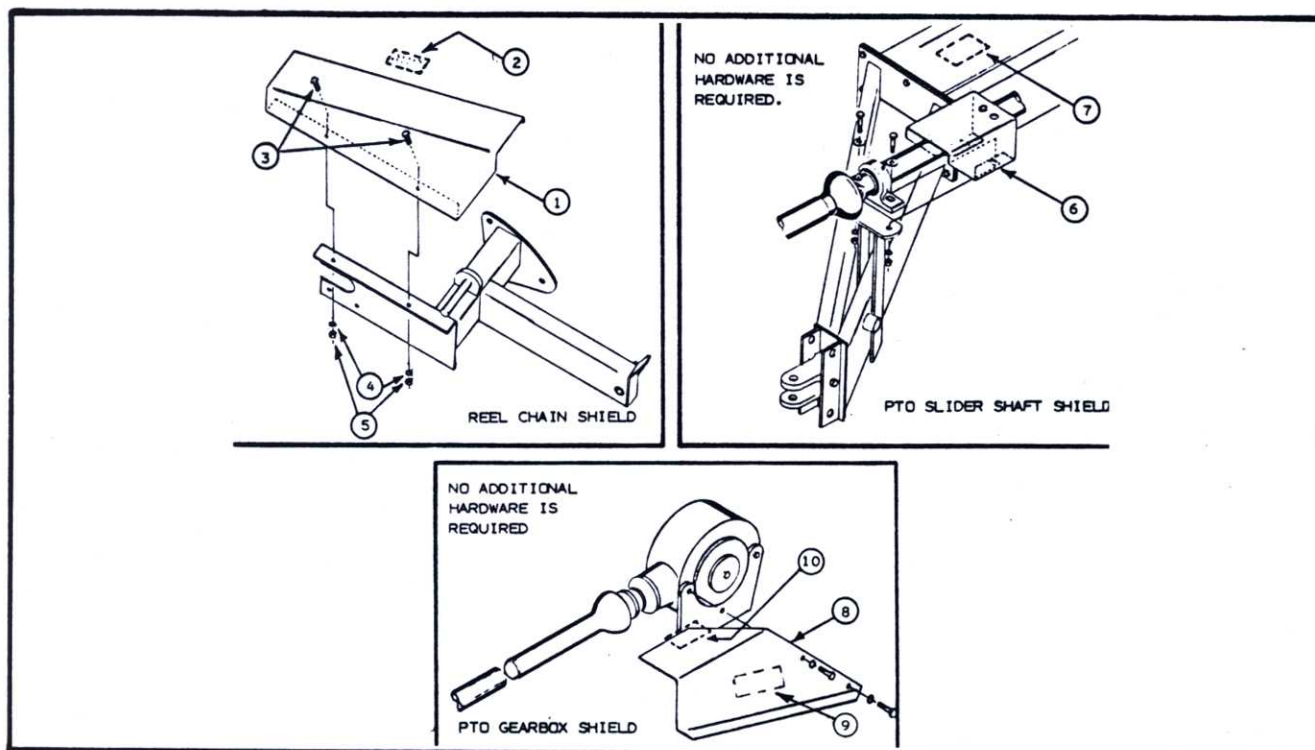
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	119050	6.66:1 RATIO 920 GEAR BOX CONSISTS OF:	1	
1	119051	CASE		1
2	119052	COVER AND BEARING HOLDER		1
3	119053	CAP (SEAL CARRIER)		1
4	119054	RING GEAR HUB (2-7/16 IN.)		1
5	119055	RING GEAR HUB BEARING CUP		2
6	119056	RING GEAR HUB BEARING CONE		2
7	119057	PINION INNER BEARING CUP		1
8	119058	PINION INNER BEARING CONE		1
9	131025	PINION OUTER BEARING CUP		1
10	131024	PINION OUTER BEARING CONE		1
11	# 119059	RING GEAR & PINION SET (6X39)6:66:1 RATIO		1
12	119060	PINION BEARING HOUSING		1
13	* & 119061	RING GEAR HUB OIL SEAL		2
14	* & 119062	PINION SHAFT OIL SEAL		1
15	119063	PINION SHAFT OIL SEAL HOLDER		1
16	* --	PINION SHAFT BEARING ADJUSTING NUT		1
17	* --	RIVET (RING GEAR TO HUB)		12
18	* --	COVER GASKET		A/R
19	* --	PINION BEARING HOUSING GASKET		A/R
20	* --	CAP GASKET		A/R
21	* --	PINION SHAFT OIL SEAL HOLDER GASKET		1
22	118310	CAPSCREW 3/8 X 1-1/4 IN. - UNC		23
23	119070	ALLEN SCREW #10 X 3/4 IN. - UNF		4
24	* & 119021	PIPE THREAD BUSHING 1/2 TO 1/8 IN. NPT		1
25	* & 119020	PRESSURE RELIEF VENT		1
26	* & 119016	DRAIN PLUG 1/2 IN. - NPT		1
27	* & 119071	PLUG 1/4 IN. - NPT		4
	119075	REPAIR KIT (INCLUDES PARTS MARKED WITH *)	1	

WHEEL, HUB & AXLE ASSEMBLY SECTION
(LH Side for PTO or Hydraulic Driven Machines)



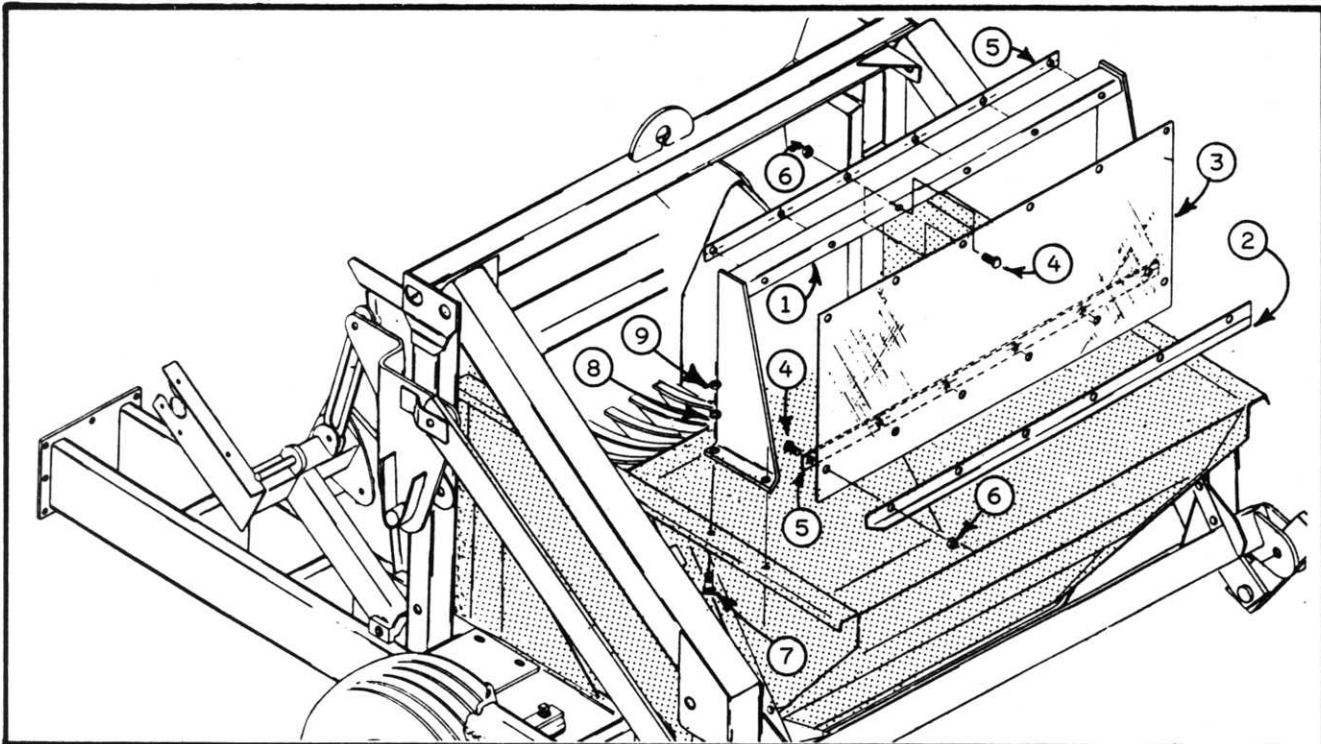
KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	131329	Wheel Assy 12.5Lx15-8 Ply-3/4 in. Pos Offset	a/r	
2	127007	Tire 12.L x 15-8 Ply Tubeless		1
3	131328	Rim, Wheel 15x10 LBH-6 Bolt 3/4 in. Pos Offset		1
4	127006	Valve Stem - TR415		1
5	118313	Bolt, Wheel 9/16 x 1 1/16 in. UNF,Gr5,Plated		6
6	131017	Hub/Spindle Assy - H618 - 2 x 12 in. Spindle	a/r	
7	131026	Dust Seal CR#20140 - 2.000 in. ID		1
8	131022	Cone, Bearing #25580 - 1.750 in. ID		1
9	131023	Cup, Bearing #25520 - 3.265 in. OD		1
10	131013	Hub H618G c/w Cups #9 & 11		1
11	131025	Cup, Bearing LM48510 - 2.563 in. OD		1
12	131024	Cone, Bearing LM48548 - 1.375 in. OD		1
13	131020	Washer, Flat 1 in. SAE		1
14	118423	Nut, Slotted 1 in. UNS, Gr5		1
15	118835	Pin, Cotter 3/16 x 1 1/2 in.		1
16	131016	Cap, Hub H618 & H619		1
17	118335	Grease Fitting 1/4 - 28 AMNF-Straight		1
18	131085	Spindle - S618 - 2.25 x 20.25 in. c/w Nut #14		1
19	118251	Setscrew, Sq Head 5/8 x 1 1/2 in. UNC	2	
20	118416	Nut, Jam 5/8 in. UNC, Gr2, Plated	2	

PTO DRIVE TRAIN SAFETY SHIELDS



KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
1	253000	PTO REEL CHAIN SAFETY SHIELD C/W:	1	
2		142014 'WARNING' DECAL 5 X 3-1/2 IN.		1
3	118008	1/2 X 1 IN. HEX BOLT - UNC	2	
4	118504	1/2 IN. LOCK WASHER	2	
5	118405	1/2 IN. HEX NUT - UNC	2	
6	254000	PTO SLIDER SHAFT SAFETY SHIELD C/W:	1	
7		142110 'DANGER' DECAL 4-3/4 X 5 IN.		1
8	255000	PTO GEAR BOX SAFETY SHIELD C/W:	1	
9		142013 'WARNING' DECAL 1-3/4 X 4 IN.		1
10		142015 'CAUTION' DECAL 4 X 1-3/4 IN.		1

OPTIONAL ROCK GUARD KIT



KEY NO.	PART NUMBER	PART DESCRIPTION	UNITS PER MACHINE	PIECES PER UNIT
	235000	REEL TYPE PICKER ROCK GUARD KIT (OPTIONAL) CONSISTS OF:	1	
1	235010	- FRAME, ROCK GUARD - ASSEMBLY		1
2	235020	- STIFFNER, GUARD FLAP		1
3	235030	- FLAP, GUARD		1
4	118136	- BOLT, HEX - 3/8 X 1-1/2 - UNC - GR 5		12
5	235040	- STRAP, GUARD FLAP		2
6	118403	- NUT, HEX - 3/8 IN. - UNC		12
7	118011	- BOLT, HEX - 1/2 X 1-1/2 IN. - UNC - GR5		4
8	118504	- WASHER, LOCK - 1/2 IN.		4
9	118405	- NUT, HEX - 1/2 IN. - UNC		4

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