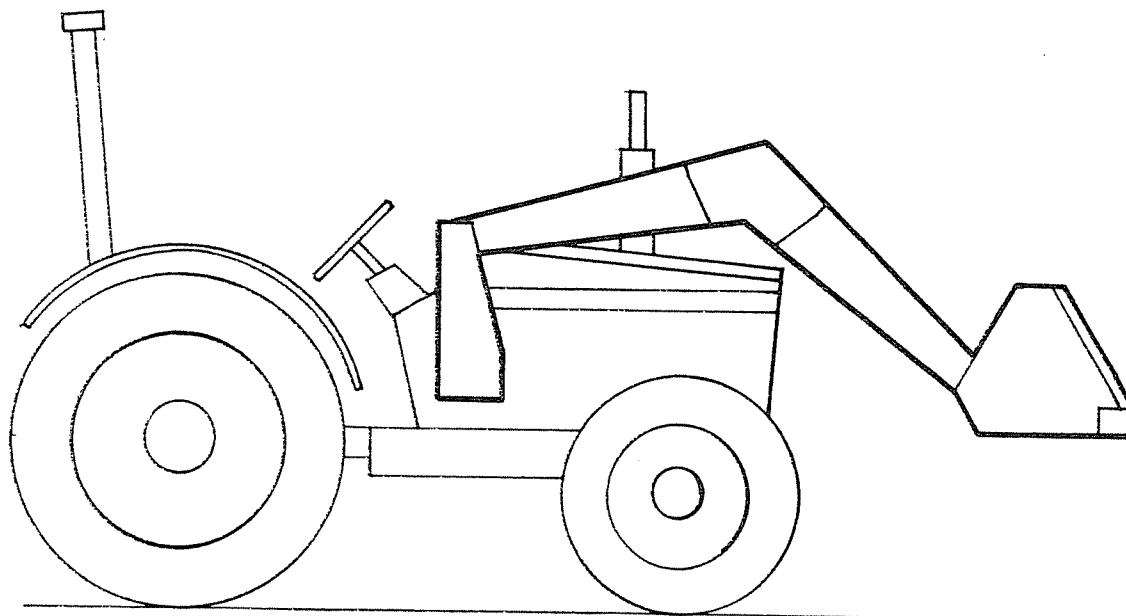


OWNERS MANUAL

MANUAL NO. 651612

REV. 3-4-92

KOYKER[®] K1 LOADER



IMPORTANT - KOYKER DEALER

BE SURE THIS MANUAL IS GIVEN TO THE
PURCHASER FOR HIS FUTURE REFERENCE

KOYKER MANUFACTURING CO., LENNOX S.D.

CONTENTS

PAGE

INTRODUCTION	1
SAFETY ALERT SYMBOL	2
SPECIFICATIONS	3
SAFETY INFORMATION	4 - 6
SAFETY LABELS	7 & 8
ATTACHING LOADER	9
OPERATION	10
DETACHING LOADER	11
LOADER INSPECTION, LUBRICATION AND MAINTENANCE	12
LOADER PARTS LIST	13
LOADER DIAGRAM	14
HYDRAULIC SYSTEM PARTS DIAGRAM	15
WARRANTY	16
HYDRAULIC CYLINDER INFORMATION	17
2" CYLINDER KIT	18
PISTON AND GLAND DIAGRAM	19
CYLINDER PARTS LIST	20
CYLINDER PARTS DIAGRAM	21

INTRODUCTION

For years, Koyker Manufacturing Company of Lennox, South Dakota, has provided the farm loader industry with innovative ideas for a more efficient and dependable means of material handling. Now, with the increasing popularity of the MFWD (Mechanical Front Wheel Drive) tractors, Koyker has again met the challenge and provided the market with a loader that will allow the efficient use of these tractors in material handling. The KOYKER K-1 Loader provides you with state-of-the-art design and innovation for your on-farm handling chores.

Features such as quick on/off attachment, quality construction, ease of maintenance, and high performance operating capacities, all at a low price, make the new K-1 Loader one of the most efficient loaders ever. With proper care and handling, it will provide many years of dependable service.

This manual is designed to provide you with important information regarding the basic loader and bucket. Our sincere intent, in providing this manual, is to help you or those involved better understand the machine and to prevent accidents.

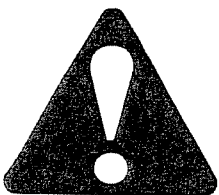
Should you have any questions, comments, improvements, or suggestions regarding the contents of any of the manuals provided, please contact Koyker Manufacturing Company at your earliest convenience.

We care about your safety!

SAFETY ALERT SYMBOL

The symbol shown below is used to call your attention to instructions concerning your personal safety. Watch this symbol --- it points out important safety precautions. It means --- ATTENTION! Become Alert! Your Personal Safety Is Involved!

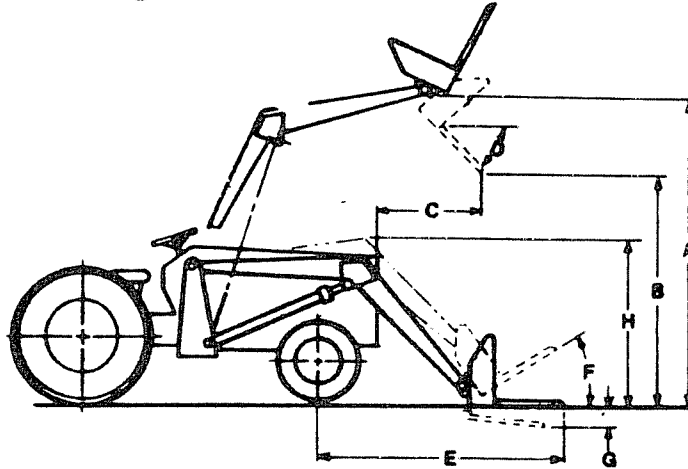
Read the message that follows and be alert to the possibility of personal injury or death.



WARNING

Anyone who will operate or work around a front-end loader shall first read this manual.

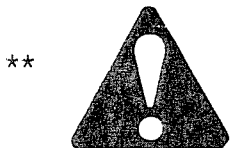
SPECIFICATIONS



K-1 LOADER

Bucket Size	48"
Maximum Lift Height (A)	101"
Clearance W/Bucket Dumped (B)	83"
Reach at Maximum Height (C)	16"
Maximum Dump Angle (D)	45°
Reach W/Bucket on Ground (E)	59"
Bucket Rollback (F)	17°**
Digging Depth	6"
Overall Height in Carry Position (H)	64"
*Lift Capacity to Full Height	875 Lbs.
*Breakaway Capacity	2200 Lbs.
Hydraulic Control Valve Requirements	Two Spool Selective Control Valve required for Loader and Hydraulic controlled Bucket Cylinders.
Lift Bucket and Cylinders	Double Acting Hydraulic Twin Cylinder
Bucket Control	4 Ft. Material
Standard Bucket	2" Bore x 23" Stroke
Bucket Cylinder Size (Twin)	2" Bore x 23" Stroke
Lift Cylinder Size	597 Lbs.
Approximate Weight W/4 Ft. Bucket (Less Mounts)	6.5 Seconds
*Raising Time	5.0 Seconds
*Lower Time	5.0 Seconds
*Bucket Dump Time	4.0 Seconds
*Bucket Rollback Time	

*Will vary depending upon tractor system capacity.



NEVER ATTEMPT FULL ROLLBACK IN RAISED POSITION WITH BUCKET FULL.

SAFETY



Improper use of a loader can cause serious injury or death. The following safety precautions, and those given on the tractor mount installation instructions, should be thoroughly understood before attempting to operate this machine.

BEFORE OPERATING:

Carefully study and understand this manual, the specific tractor mount instructions, and the attachment(s) manual(s).

Prior to operation, inspect the loader for system leaks and damaged, missing, or malfunctioning components in an effort to avoid the possibility of a dangerous failure involving structural members or hydraulic system components.

Be certain any repairs necessary are completed prior to loader operation.

Follow recommended maintenance procedures and precautions on Page #12.

Completely familiarize yourself and others involved with the operation of the hydraulic control valve before operating the loader.

Be certain all bystanders are clear of the machine and operating area prior to operation.

It may be necessary to add wheel ballast or rear weights as recommended by the tractor manufacturer to maintain stability of the machine; to prevent tipping or upset which could result in serious injury or death. See mounting instructions for specific information.

It is recommended that both front and rear wheel treads be set to the widest recommended width to prevent tipping or upset which could result in serious injury or death.

This loader is designed for farm type operations such as snow removal, barn and feedlot cleaning or light grading and digging. It's design is NOT intended for commercial and/or industrial use.

DURING OPERATION:

Never operate the machine other than from the tractor operator's seat.

Be sure operating area is clear of others during machine operation.

Never lift, hoist, or carry humans in the bucket or on any portion of the loader or loader attachments. Failure to heed, may result in serious injury or death.

Transport the machine load at the slowest speed possible and with the loader boom at the lowest transport position to avoid tipping or upset, which may result in serious injury or death.

SAFETY CONTINUED



Be extremely careful when working on inclines or near loose fill, rocks, and holes, as they can cause tipping or upset which may result in serious injury or death.

Be certain to avoid overhead electrical wires when operating loader. Contact with power lines may cause serious injury or death.

Avoid sudden stops when lowering or lifting the loader boom to prevent loss of control over the machine and/or load, which may result in serious injury or death.

Use maximum ballast and the widest recommended wheel setting on your tractor when handling large shiftable loads.

Never attempt to ram with the bucket at high speed or full tractor power. Sudden impact may result in structural failure and possible serious injury or death.

Never adjust or perform maintenance on the loader or tractor with the unit in motion, or without power source locked out.

Never get under bucket or lift arms or reach through the lift arms or bucket linkage when the loader is in operation. Inadvertant movement may cause serious injury or death.

FOLLOWING OPERATION:

Whenever machine is not in operation, lower the loader boom and set the tractor brakes, disengage drive, shut the engine off, and remove the ignition key before dismounting the tractor.

If loader is to be disengaged from tractor, be sure that loader is securely supported on a hard, level surface and that all stands are securely engaged. Be certain all connections between tractor and loader are free before disengaging.

TRANSPORTING:

Use safety lights and SMV emblem in addition to whatever local codes require when equipment is being transported on the road or highway. Check with proper authorities for legal limitations.

Transport all loads at a slow and safe speed.

Carry the load as low as possible and maintain adequate visibility and good ground clearance at all times.

PERFORMING MAINTENANCE:

Carefully review, understand, and follow the "maintenance" section in this owners manual before attempting to service loader.

SAFETY CONTINUED



PERFORMING MAINTENANCE CONTINUED:

Lower the bucket or attachment to the ground, shut off tractor engine, and relieve pressure in the hydraulic system before adjusting, lubricating, or servicing the loader.

Escaping hydraulic oil under pressure can penetrate the skin. Never use body to check for hydraulic leaks. Use cardboard when checking for leaks. See Figure #1. Relieve hydraulic pressure before disconnecting any hydraulic line. Failure to heed will result in serious injury or death.

Before disconnecting hydraulic lines, lower the loader and attachments. Lock out the hydraulic supply and relieve all hydraulic pressure.

Replace any damaged or painted-over decals. See Page #7 & #8 for replacement decals.

REMEMBER:

1. Move Slowly!
2. Always use care and common sense!
3. Be careful for your own sake and for that of others!

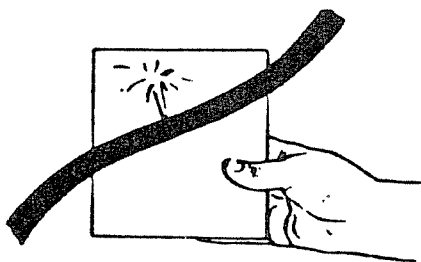


FIG. 1

SAFETY LABELS



CAUTION

Serial Number _____

DO NOT OPERATE LOADER WITHOUT FIRST READING OPERATORS MANUAL.

OPERATE LOADER FROM TRACTOR SEAT ONLY.

MOVE AND TURN TRACTOR AT LOW SPEEDS.

LOWER LOADER ARMS WHEN PARKING OR SERVICING.

CARRY LOADER ARMS AT A LOW POSITION DURING TRANSPORT.

ADD RECOMMENDED WHEEL BALLAST OR REAR WEIGHT FOR STABILITY.

MOVE WHEELS TO WIDEST SETTING RECOMMENDED FOR STABILITY.



This symbol means caution! Stay Alert! Watch for it!

KOYKER MFG. COMPANY

ASAE R355



WARNING

HYDRAULIC OIL UNDER PRESSURE

ESCAPING HYDRAULIC OIL UNDER PRESSURE CAN PENETRATE THE SKIN. NEVER USE BODY TO CHECK FOR HYDRAULIC LEAKS. USE CARDBOARD WHEN CHECKING FOR LEAKS. RELIEVE HYDRAULIC PRESSURE BEFORE DISCONNECTING ANY HYDRAULIC LINE.

FAILURE TO HEED WILL RESULT IN SERIOUS INJURY OR DEATH.

#85505

SAFETY LABELS CONTINUED



WARNING

RELIEF VALVE SETTING

CONTROL VALVE RELIEF IS PRESET AT THE FACTORY. TAMPERING WITH THE RELIEF SETTING CAN OVER-LOAD LOADER AND TRACTOR. FAILURE TO HEED MAY RESULT IN SERIOUS INJURY OR DEATH.

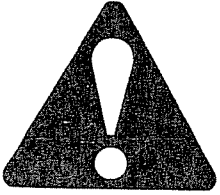


CAUTION

LIFTING OBJECTS

1. USE OF FRONT LOADERS FOR HANDLING LARGE HEAVY OBJECTS SUCH AS LARGE ROUND OR RECTANGULAR BALES, LARGE BALES, LOGS, DRUMS, ETC. IS NOT RECOMMENDED.
2. HANDLING LARGE HEAVY OBJECTS CAN BE EXTREMELY DANGEROUS DUE TO:
 - DANGER OF ROLLING THE TRACTOR OVER.
 - DANGER OF UP-ENDING THE TRACTOR.
3. DANGER OF THE OBJECT ROLLING OR SLIDING DOWN THE LOADER ARMS ONTO THE OPERATOR.
IF YOU MUST PERFORM THIS TYPE OF WORK, PROTECT YOURSELF BY:
 - NEVER LIFTING HIGHER THAN NECESSARY TO CLEAR THE GROUND WHEN MOVING.
 - BALLAST TRACTOR REAR TO COMPENSATE FOR LOAD.
 - NEVER LIFT OBJECTS WITHOUT ADEQUATE ANTI-ROLLBACK GUARDING.
 - ALWAYS MOVE SLOWLY AND CAREFULLY - AVOID ROUGH TERRAIN.

ATTACHING THE LOADER

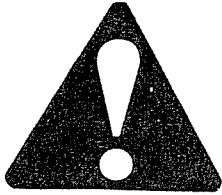


IMPORTANT:

Never attempt loader attachment on grades which are not reasonably level.

1. Check to be sure that the top surface of both mounting shoes are free of bolts, screws or other obstructions.
2. Drive the tractor slowly and carefully in between the loader arms only far enough to permit hook-up of the hydraulic system hoses.
3. Once all hoses have been properly coupled, drive the tractor forward checking to insure that the bottom of each upright clears the mount shoes. It may be necessary to operate the lift cylinder control valve either up or down to provide alignment between the wrap arm clips and wrap arm brackets. Be certain that the wrap arm clip is fully seated.
4. To allow the upright base to settle into the mount shoe, tip the bucket down slowly. After the upright contacts the shoe, engage the upright anchor bar into the rear of the shoe by driving the tractor ahead slowly.
5. To secure the loader, install the #7420 -- 3/4" diameter pins. Tighten the 3/4" diameter bolt on the front of the upright to draw the upright to the rear of the shoe.
6. After both uprights are secured to the shoes, raise the loader slightly to disengage and store each of the two loader stands.
7. Prior to operation, be certain to review all safety and operation information contained within this manual.

OPERATION



WARNING:

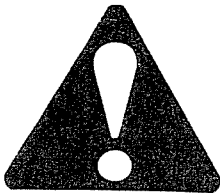
Never allow anyone to operate the loader until they have carefully reviewed and understood this owner's manual.

FILLING THE BUCKET:

Approach and enter the pile with the bucket level.

Roll bucket back gradually as the loader moves through the pile.

RAISING THE BUCKET:



WARNING:

Make sure material in bucket cannot spill out on to tractor when loader boom is raised. Keep clear of overhead obstructions such as trees, limbs or power lines when raising the bucket.

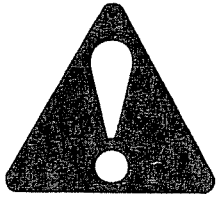
Side cutting is the best method of reducing large stockpiles. If the sides of the pile are too high, use the loader to pull them down and reduce the possibility of slides.



WARNING:

NEVER attempt to operate the loader with someone near the loader frame or bucket.

DETACHING THE LOADER



IMPORTANT:

Never attempt loader detachment on grades which are not reasonably level.

1. Raise loader frame slightly to permit loader stand stowage.
2. Lower loader and tip bucket slightly forward to apply pressure to mount connection. NOTE: This will prevent the loader from inadvertently rocking forward when the attachment screws are removed.
3. Loosen the 3/4" bolt on the front of both uprights and remove the #7420 -- 3/4" diameter locking pin.
4. Carefully, and very slowly, back out far enough to permit separation of the upright anchor and wrap arm clips from the mounts. NOTE: Should the loader move when tractor is backed up, try rotating the bucket up or down.
5. Before completely backing out, disconnect and store the loader system hydraulic hoses. It is important that the hoses be properly stored to keep the hose couplers as clean as possible.

IMPORTANT:

Never store the detached loader where insufficient soil bearing capacity exists. Good firm clay or firmly packed dirt are sufficient, providing the area is dry. If you are unsure, use blocking under each stand foot to disperse the load. Failure to heed, may allow the loader to settle and prevent attachment at later date.

LOADER INSPECTION, LUBRICATION, AND MAINTENANCE

Lower the bucket to the ground, shut off tractor engine, and relieve the pressure in the hydraulic system before adjusting, lubricating, or servicing the loader.

Inspect all pins and grease fittings before each use and lubricate with heavy duty grease as indicated in this manual.

Periodically check all bolts for looseness and retorque if necessary.

Before storage, be certain all hydraulic cylinders are fully collapsed so that the rod will not be exposed to the elements or damaged.

Be certain hydraulic system remains sealed at all times to prevent includes of contaminants.

Check and maintain an adequate fluid level in the tractor reservoir prior to use.

Inspect all hydraulic system hoses and fittings. Replace prior to further operation if damaged.

WARNING:



Escaping hydraulic oil under pressure can penetrate the skin. Never use body to check for hydraulic leaks. Use cardboard when checking for leaks. See Figure #1. Relieve hydraulic pressure before disconnecting any hydraulic line. Failure to heed will result in serious injury or death.

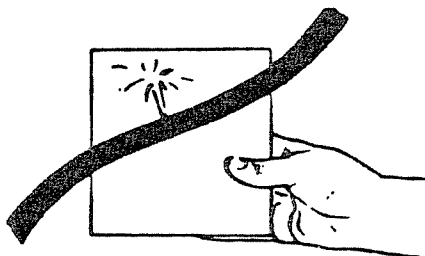


FIG. 1

PARTS IDENTIFICATION SCHEDULE

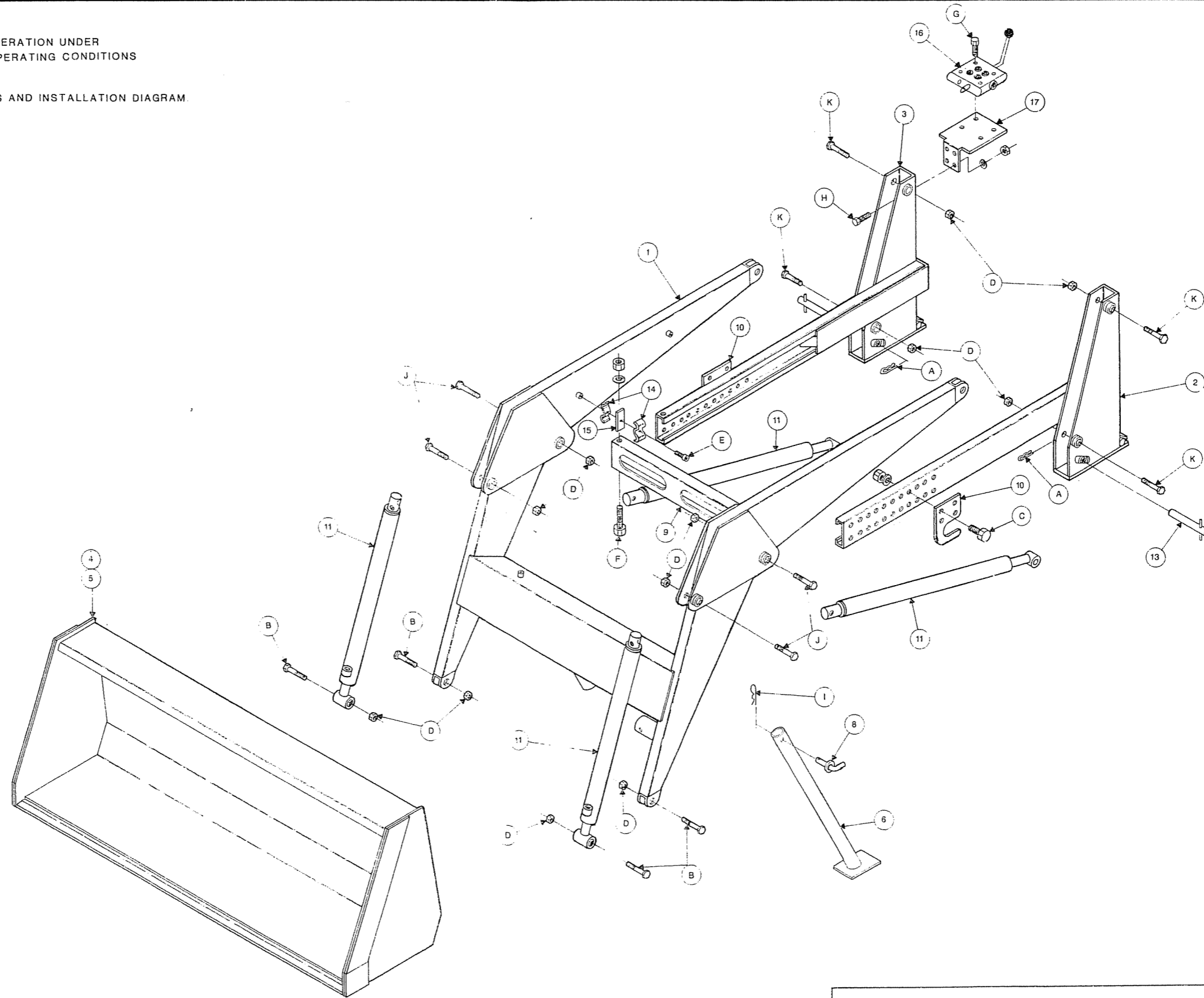
REFERENCE NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1 <i>4/2028</i>	7401	MAIN FRAME ASSEMBLY	1
2	7407	L.H. UPRIGHT ASSEMBLY	1
3	7408	R.H. UPRIGHT ASSEMBLY	1
4	7403	4' BUCKET ASSEMBLY	1
5	7402	5' BUCKET ASSEMBLY	1
6	652440	STAND PIPE ASSEMBLY	1
7			
8	641119	LOCK PIN ASSEMBLY	1
9	7415	FRONT CROSSMEMBER	1
10	7416	ARM CLIP	2
11	7404	2" x 23" CYLINDER COMPLETE	4
12			
13	7421	PIN ASSEMBLY	2
14	7411	OIL LINE CLAMP	8
15	7412	OIL LINE SPACER	4
16	7422	VALVE ASSEMBLY	1
17	7420	VALVE BRACKET	1

HARDWARE IDENTIFICATION SCHEDULE

REFERENCE NUMBER	DESCRIPTION	QUANTITY
A	#6 HITCH PIN CLIP	2
B	3/4" X 4" HEX HEAD BOLT	4
C	3/8" X 1" NC HEX BOLT W/LOCKWASHER & HEX NUT	8
D	3/4" LOCKNUT	12
E	1/4" X 1" SOCKET HEAD CAP SCREW	4
F	3/8" x 4 1/2" NC HEX BOLT, LOCKWASHER & HEX NUT	2
G	1/4" X 3" NC HEX BOLT, LOCKWASHER & HEX NUT	2
H	1/4" X 1 1/2" NC HEX BOLT, LOCKWASHER & HEX NUT	4
I	#3 HITCH PIN CLIP	1
J	3/4" X 3 1/2" HEX HEAD BOLT	4
K	3/4" X 3-3/4" HEX HEAD BOLT	4

NOTE:

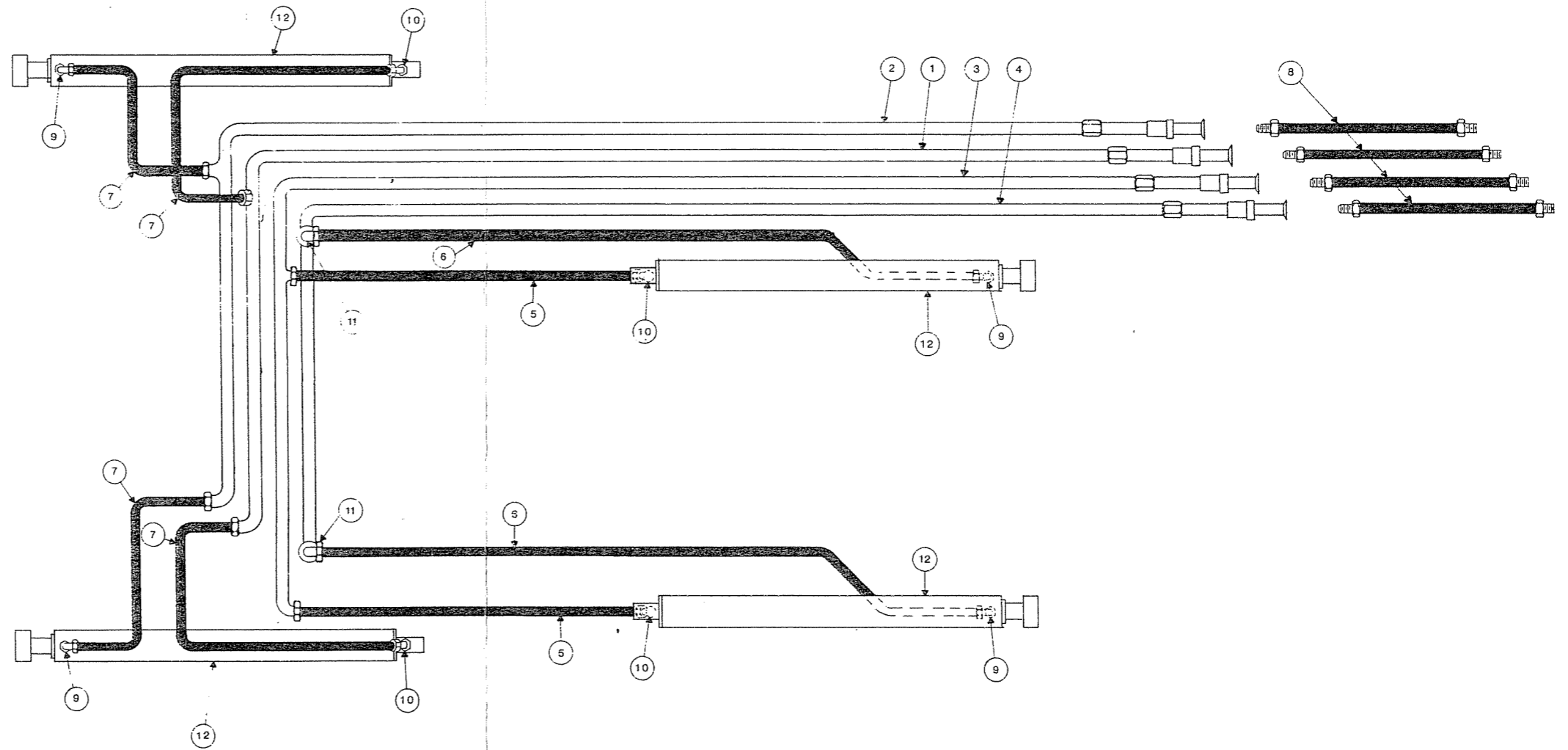
1. LUBRICATE ALL PINS EVERY 10 HOURS OF OPERATION UNDER NORMAL OPERATING CONDITIONS. SEVERE OPERATING CONDITIONS MAY REQUIRE MORE FREQUENT LUBRICATION.
2. SEE PAGE 15 FOR HYDRAULIC SYSTEM PARTS AND INSTALLATION DIAGRAM.



14

KOYKER K-1 BASIC LOADER PARTS DIAGRAM				14	
REV 3-4-92	KOYKER MANUFACTURING CO.	DWN. BY DJW	APPRD. BY	DATE 8/1/87	DWG. NO

REF. NO.	PART NO.	DESCRIPTION	QTY.
1	7477	*1 OIL LINE ASSEMBLY	1
2	7478	*2 OIL LINE ASSEMBLY	1
3	7479	*3 OIL LINE ASSEMBLY	1
4	7480	*4 OIL LINE ASSEMBLY	1
5	76154	26" HYDRAULIC HOSE	2
6	76155	42" HYDRAULIC HOSE	2
7	7414	18" HYDRAULIC HOSE	4
8	7413	30" HYDRAULIC HOSE	4
9	7965	90° ELBOW (O-RING, JIC)	4
10	7405	45° ELBOW (O-RING, JIC)	4
11	652448	45° ELBOW (MALE, FEMALE)	2
12	7404	CYLINDER COMPLETE	4



PAGE 15

PAGE 15

15

HYDRAULIC SYSTEM PARTS DIAGRAM
FOR K-1 LOADER

15

REV 3-4-92

KOYKER MANUFACTURING CO.	DWN BY DJW	APPRD. BY	DATE 8/1/87	DWG. NO
--------------------------	---------------	-----------	----------------	---------

WARRANTY

Koyker Manufacturing Company (Koyker) warrants to the original purchaser only that the goods manufactured by Koyker are free from defects in material and workmanship under normal use and service and when properly installed for a period of one (1) year from the date of purchase. Any defective part or component must be returned to the factory at the purchaser's expense for inspection by Koyker. The obligation of Koyker is limited to repairing or replacing at its factory any part or component determined to its satisfaction to be defective. KOYKER SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. All transportation charges shall be paid by purchaser. Purchaser must notify Koyker of a claim by registered or certified mail, return receipt requested, within thirty (30) days after discovery or the claim shall be deemed waived.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

No warranty is given by Koyker for parts, components, or trade accessories furnished by Koyker but not manufactured by it. They are covered by the warranty of their manufacturer, if any. No person, firm, or corporation including the selling dealer is authorized to assume for Koyker any other liability in connection with the sale of these goods.

User shall notify KOYKER in writing, within 30 days, of any accident or occurrence involving KOYKER products resulting in personal injury or property damage and shall cooperate fully with KOYKER in investigating and determining the cause of such accident or occurrence. In the event that user fails to give such notice to KOYKER and so cooperate, user agrees to indemnify and save KOYKER harmless from all loss or damage arising from such accident or occurrence.

CYLINDER WARRANTY

All cylinder claims shall be handled by Koyker Dealers or Distributors. All hydraulic cylinders are thoroughly inspected before shipment from factory. Therefore, no claim can be granted where a cylinder has been damaged or abused (including, but not limited to, bent tubes, dents, nicks, abused threads, attempted alterations, or welding), nor unless made to Koyker within one (1) year from sale to original purchaser.

Any defective cylinder reported to Koyker within one (1) year from sale by dealer to original purchaser will be replaced after properly inspected by Koyker. In such case, notify your Koyker Dealer and he will give you proper instructions.

If inspection proves cylinder is not defective and has been abused or otherwise damaged, any charges will be paid by original purchaser immediately after he has been notified of the result of Koyker's inspection of the cylinder sent in for inspection.

Cylinders requiring factory repair more than one (1) year after sale to original purchaser, can be given to Dealer for return to Koyker with transportation charges prepaid. Leaks around the shaft seal and internal bypass leaks can be field repaired. Service kits are available for this repair.

HYDRAULIC CYLINDERS

INSPECTION AND MAINTENANCE:

Periodically check all hydraulic system connections to insure a leak-free condition. Also, be certain to maintain proper fluid levels in the tractor hydraulic system as in accordance with the method and frequency recommended in the tractor operator's manual.

Use only hydraulic fluids recommended for your tractor hydraulic system by the manufacturer. Recommended hydraulic fluid for operation of the loader is DTE Light Hydraulic Oil Viscosity 150 SSU.

Keep hydraulic system clean. Be certain to maintain recommended oil filter service intervals.

All internal surfaces of the hydraulic system on your loader have been factory cleaned, inspected, and plugged with protective caps prior to shipment. Be certain all protective caps are securely in place until hydraulic system assembly is completed.

Care must be taken with your loader cylinders. Nicks, scratches, rust or other shaft damage can cause seal damage resulting in cylinder leakage and poor performance.

IMPORTANT:

Read these service tips before beginning assembly of cylinder gland or piston.

1. Keep seals clean from the time they are removed from package until they are installed.
2. Clean the groove or bore into which the seal is to be fitted before installing the seal.
3. Never touch the seal lip in handling. Always pick up the seal by its outer member.
4. Inspect each seal lip carefully for nicks, scratches, and dirt at time of installation. If dirty, use a soft, clean cloth and carefully wipe off seal. DO NOT wipe seal with fingers as this only imbeds dirt in the seal.

NOTE:

Seals can be made more pliable and easier to install, if first heated in hydraulic oil to 160°F. Never use direct heat on any seals.

IMPORTANT:

Never clean rubber related seals with a mineral based solvent! Clean rubber seals in denatured alcohol or non-mineral based solvents only.

2" CYLINDER SERVICE KITS

KIT NO. 1D:

Complete kit with all seals needed to service one (1) 2" Cylinder. Consists of:

1 EACH	2" Gland "O" Ring	7404-13
1 EACH	2" Backup Ring	7404-14
1 EACH	1 $\frac{1}{4}$ " EZ Squeeze Rod Seal	7404-12
1 EACH	1 $\frac{1}{4}$ " Rod Wiper	7404-15
2 EACH	2" EZ Squeeze Piston Seal	7404-10
1 EACH	3/4" Rod "O" Ring	7404-11

KIT NO. 2D:

Complete assembled 2" Cylinder Gland with all seals. Consists of:

1 EACH	2" Aluminum Gland	7404-9
1 EACH	2" Gland "O" Ring	7404-15
1 EACH	2" Backup Ring	7404-14
1 EACH	1 $\frac{1}{4}$ " EZ Squeeze Rod Seal	7404-12
1 EACH	1 $\frac{1}{4}$ " Rod Wiper	7404-15

KIT NO. 3D:

Complete assembled 2" Cylinder Piston with all seals. Consists of:

1 EACH	2" Aluminum Piston	7404-8
2 EACH	2" EZ Squeeze Piston Seal	7404-10
1 EACH	3/4" Rod "O" Ring	7404-11

KIT NO. 4D:

All seals needed to service one (1) 2" Cylinder Gland. Consists of:

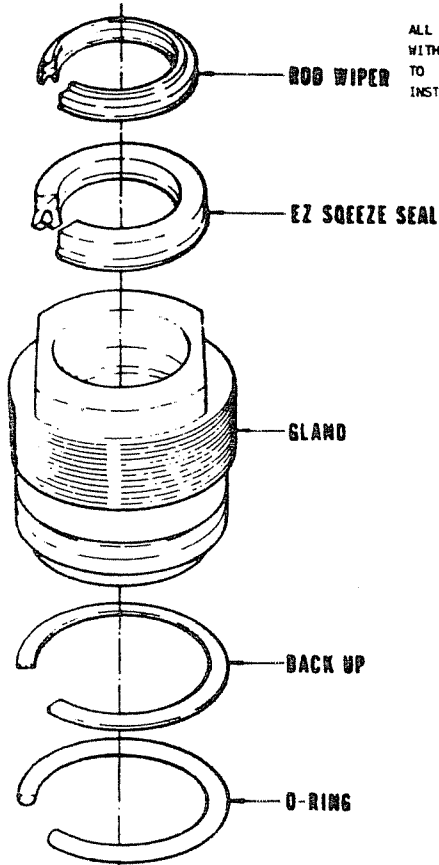
1 EACH	2" Gland "O" Ring	7404-13
1 EACH	2" Backup Ring	7404-14
1 EACH	1 $\frac{1}{4}$ " EZ Squeeze Rod Seal	7404-12
1 EACH	1 $\frac{1}{4}$ " Rod Wiper	7404-15

KIT NO. 5D:

All seals needed to service one (1) 2" Cylinder Piston. Consists of:

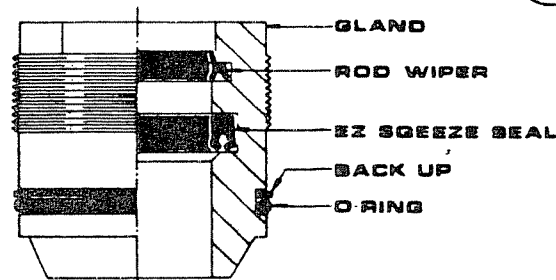
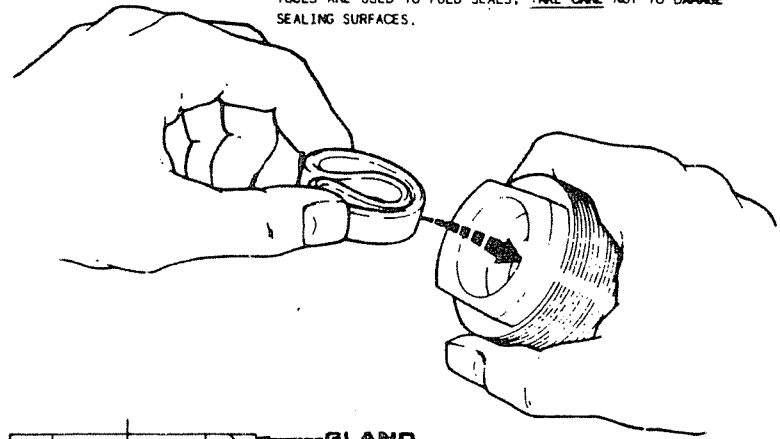
2 EACH	2" EZ Squeeze Piston Seal	7404-10
1 EACH	3/4" Rod "O" Ring	7404-11

CYLINDER GLAND SERVICE DIAGRAM



ALL GLAND SEALS SHOWN WITH A SECTION REMOVED TO FACILITATE CORRECT INSTALLATION.

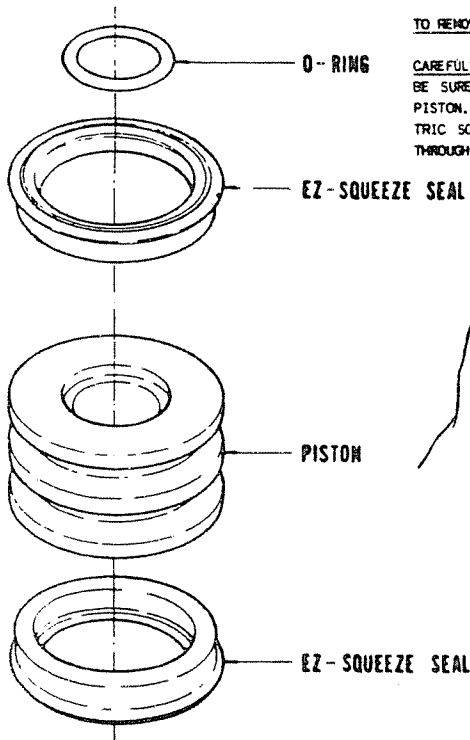
NOTE: TO INSTALL ROD WIPER AND EZ-SQUEEZE SEAL, FOLD SIMILAR TO SHAPE SHOWN BELOW, SLIP INTO GLAND BORE AND LOCATE EACH IN ITS RESPECTIVE GROOVE. IF TOOLS ARE USED TO FOLD SEALS, TAKE CARE NOT TO DAMAGE SEALING SURFACES.



**SECTION VIEW
ASSEMBLED GLAND**

IMPORTANT!! BE SURE ALL GLAND AND PISTON SEALS HAVE BEEN INSTALLED CORRECTLY BEFORE CYLINDER IS ASSEMBLED!

CYLINDER PISTON SERVICE DIAGRAM

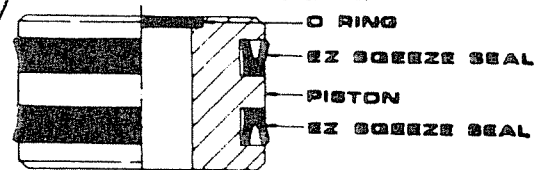
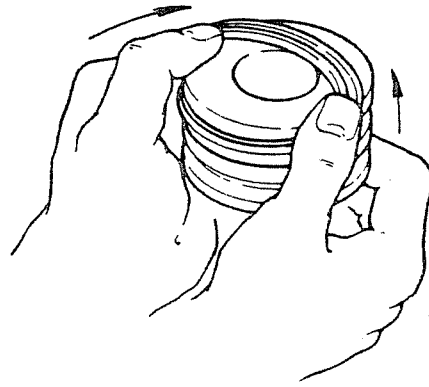


TO REMOVE SEALS:

CAREFULLY CUT ACROSS EACH SEAL WITH A SHARP KNIFE. BE SURE NOT TO SCRATCH SEALING SURFACES OF ALUMINUM PISTON. IF A SHARP KNIFE IS NOT AVAILABLE, AN ELECTRIC SOLDERING GUN OR HOT IRON MAY BE USED TO MELT THROUGH SEALS.

TO INSTALL SEALS:

1. THOROUGHLY CLEAN PISTON SEALING SURFACES OF ALL FOREIGN MATTER.
2. HEAT NEW SEALS IN HYDRAULIC OIL TO 160°F. NEVER USE A DIRECT FLAME OR HEATED WATER ON HYDRAULIC SEALS.
3. REMOVE SEALS FROM OIL, WIPE DRY AND INSTALL IN PISTON GROOVES AS SHOWN IN ILLUSTRATION AT LEFT. BE SURE SEALS HAVE COMPLETELY SEATED IN PISTON GROOVES BEFORE ALLOWED TO COOL.
4. REPLACE PISTON ON CYLINDER SHAFT AND ASSEMBLE CYLINDER WHEN SEALS HAVE COOLED TO ROOM TEMPERATURE.



**SECTION VIEW
ASSEMBLED PISTON**

CYLINDER PARTS LIST FOR 2" D CYLINDER

REFERENCE NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	7404-2	TUBE ASSEMBLY	1
2	7404-1	ROD ASSEMBLY	1
*3	7404-9	2" GLAND	1
**4	7404-8	2" PISTON	1
5	7404-7	3/4" JAM NUT	1

* SEE CYLINDER SERVICE KIT #2D.

** SEE CYLINDER SERVICE KIT #3D.

HYDRAULIC CYLINDER PARTS DIAGRAM

