

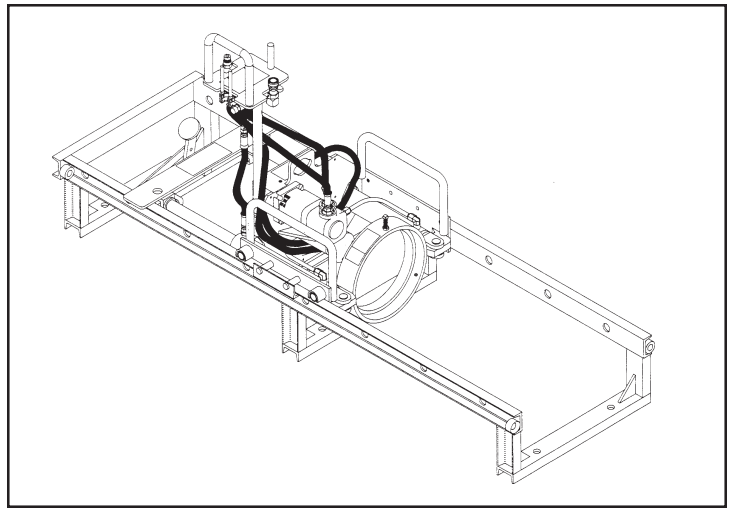


# COMPONENTS AND REPAIR MANUAL

For Machine Serial No.  
12HB - - - - 500  
And Higher

MODEL McL-12HB ZIPPER  
EARTH BORING MACHINE

PART NO. HD00000



Repair Manual Part No.:  
**E250079**

Machine Serial # \_\_\_\_\_

Purchased &  
Serviced Thru:

Purchase Date: \_\_\_\_\_

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Revision Date: 04.03

# SPECS & MAINTENANCE

## McL-12HB ZIPPER

### SPECIFICATIONS OF McL-12HB EARTH BORING MACHINE

#### Tunnel Diameter

Free or Cased Bore 3"-12" (8-30 cm)

#### Chain Final Drive

Hex Size 13/16" (2.06 cm)  
 (customer to specify) 1-1/8" (2.85 cm)  
 1-3/8" (3.50 cm)  
 1-5/8" (4.12 cm)

#### Dimensions

##### Carriage and Pusher

Centerline Height 9-1/2" (24.1 cm)  
 Width 26" (66.0 cm)  
 Height 44" (111.8 cm)  
 Weight (Less Dog Plate) 320 lbs. (145 kg)  
 Weight (Dog Plate) 40 lbs. (18 kg)

##### Master Track

For 4' Augers  
 Length 7' (213 cm)  
 For 3' Augers  
 Length 6' (183 cm)  
 Weight 85 lbs. (39 kg)

##### Extension Track

Length 6' (183 cm)  
 Weight 75 lbs. (34 kg)

#### Performance

##### Advance Thrust

@ 2500 PSI 24,500 lbs. (109 kN)

##### Drive Chuck Speed

@ 20 GPM (Forward & Reverse) 120 RPM

##### Drive Chuck Torque

@ 2500 PSI  
 (Forward & Reverse) 1030 ft.\* lbs. (1340 Nm)

#### Quick Disconnects

Parker NS-752-12FP and NS-751-12FP  
 Female disconnect ON MACHINE is the high pressure side of system.

Specifications are subject to change without notice. All weights and dimensions given are approximate. Exact measurements should be verified if required.

### MAINTENANCE INSTRUCTIONS

Review the Engine and Operation Manuals supplied with the power source before starting and operating the machine. Follow manufacturers recommendations for operation and maintenance to maintain your engine warranty.

### REPAIR AND MAINTENANCE/GENERAL

#### Carriage/Tightness of Nuts & Bolts

Check four (4) bolts that mount chuck to the drive shaft flange of the McL-12HB initially, then check each week when in continuous use. Each bolt should have lock washer. Tighten as needed.

Check four (4) bolts that mount hydraulic motor to the McL-12HB carriage initially, then check each week when in continuous use. Tighten as needed.

Check nine (9) bolts that hold sprocket cover to the back of the McL-12HB initially, then once each month when in continuous use. Tighten as needed.

Check all hydraulic fittings initially, then check each week when in continuous use. Tighten as needed, taking care not to twist hoses from original positions. Check nuts (4) on cam rollers initially, then once each month when in continuous use. Tighten as needed.

#### Carriage/Lubrication

Approximately every 50 hours of operation, lubricate the chain drive of the McL-12HB. To do so, use the grease fitting on the top of the chain guard. Use about 5-10 pumps with spindle rotating slowly. Do not over lubricate the chain. Also, periodically grease the cam rollers with all purpose bearing grease.

#### Carriage/Quick Disconnects

Wipe each Quick Disconnect with a clean rag to remove excess oil and dirt. Always return covers to Quick Disconnects when machine is not in use.

#### Carriage/Miscellaneous

Once a month, inspect the two (2) hitch pins (also called Auger Pins, R-Clips, R-Pins) that hold the clevis pins in place. Replace if worn or damaged. Also, check hitch pins that hold machine hold downs in place. Replace if worn or damaged. After each boring operation is completed, clean the carriage to remove dirt and mud. Use water if available. Always clean the unit before storage.

# SPECS & MAINTENANCE

## MCL-12HB ZIPPER

### **Dog Plate/General Maintenance**

Check all bolts on the dog plate initially, then once a week during continuous operation. Tighten as needed. When tightening bolts, test dog plate to ensure proper function.

Lubricate all members of the dog plate, including the dog pins, initially, then each week during continuous use. A light machine oil or spray lubricant is recommended. It is also recommended that the dog plate be removed and cleaned periodically, especially after use in sticky clay conditions.

Before each boring operation, adjust cylinders using the following steps: with the machine on the track, fully extend the cylinders. Make sure the dog pins are secure in their respective holes. Shut off power source before working on the machine. Loosen the nuts that lock the two set screws at the front of the dog plate. Tighten each of these set screws until the dog plate is held in place with no movement. Tighten the nuts to lock the set screws. Remove all tools and personnel from the area around the dog plate, restart the power source and test the dog plate. Readjust if necessary.

### **Track/General Maintenance**

Check the rolling surfaces of the track for dirt or contamination. Clean as required.

Tighten push plate bolts periodically. Always inspect bolts before boring begins.

Inspect the track for fractures and reweld as necessary.

### **Auger/General Maintenance**

Apply 30W-40W oil to both shank & socket of auger during the boring operation.

Clean and coat couplings with light oil after every use.

Examine auger after use for fractures and reweld as necessary.

### **Cutting Heads/General Maintenance**

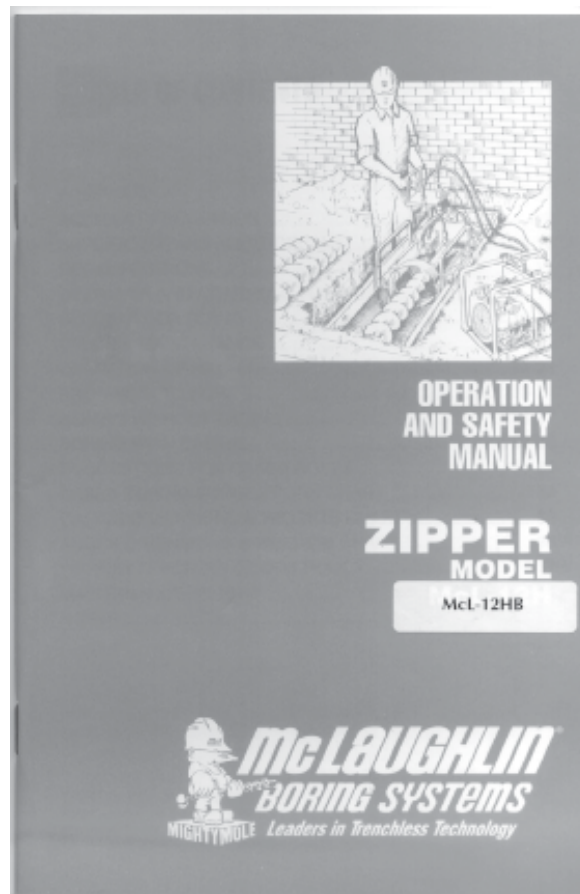
Examine all teeth and replace as necessary before use. Check all conical bits on rock heads for rotary freedom.

**Decal Identification Kit:** J100110

# OPERATION & SAFETY MANUAL

## McL-12HB ZIPPER

Operation and Safety Manual  
E250076



Call 1-800-435-9340  
for a replacement  
Operation and Safety Manual.  
Free of Charge.

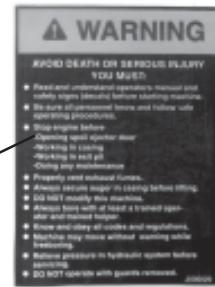
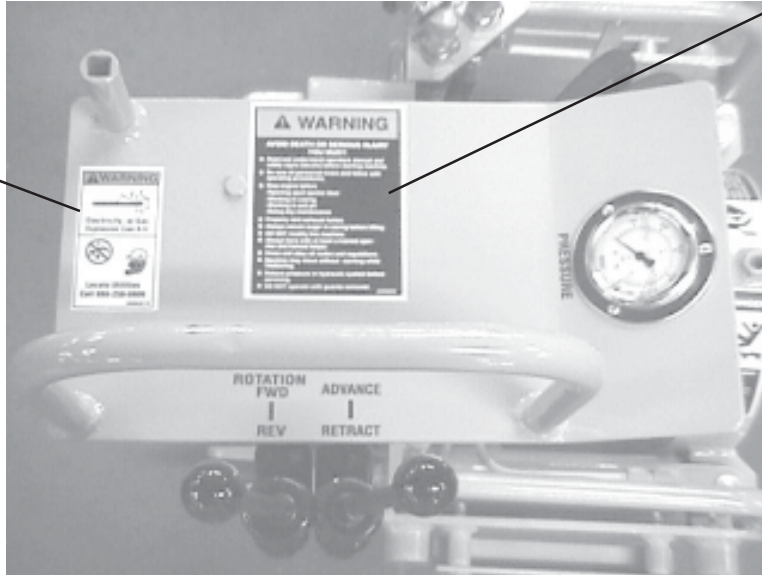
# HAZARD ALERT DECAL PLACEMENT

## McL-12HB ZIPPER

DECAL SAFETY KIT  
PART NUMBER: E250600



J000210



J000020

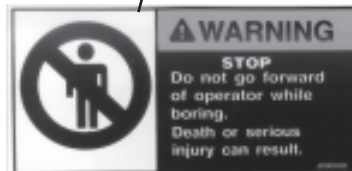
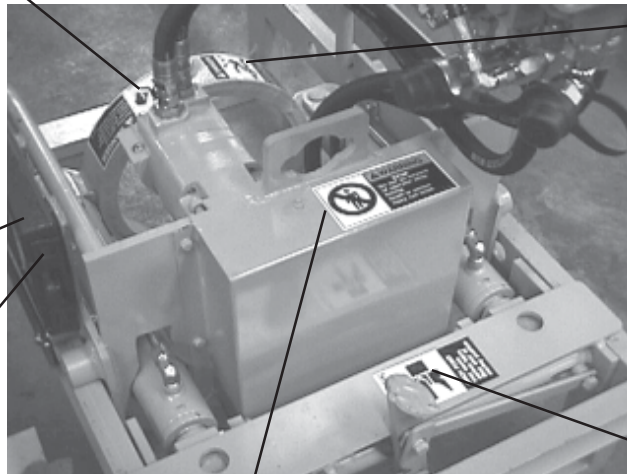
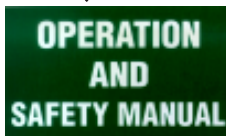


J000200

J000100



J800030



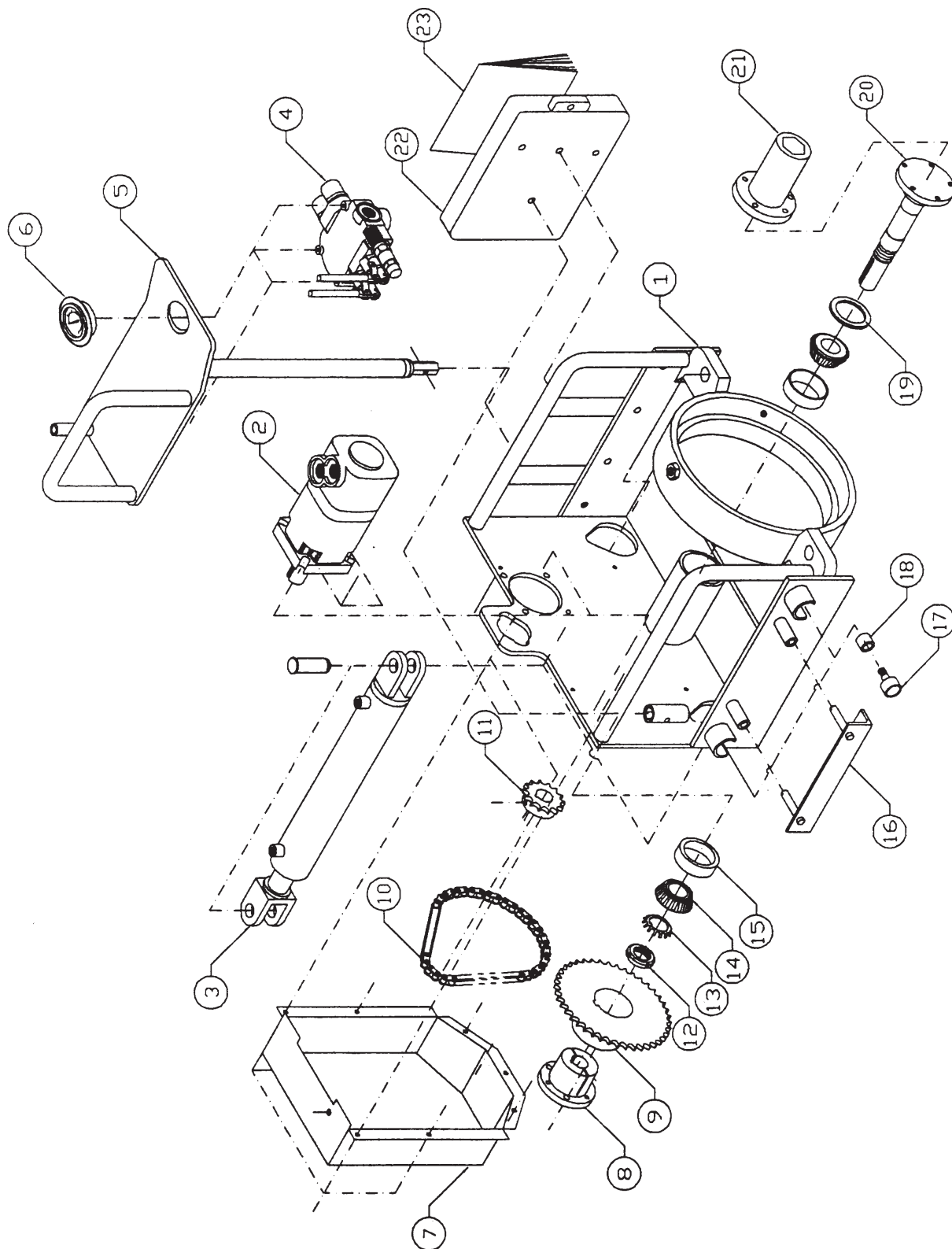
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J000160

# CARRIAGE ASSEMBLY

## MCL-12HB ZIPPER



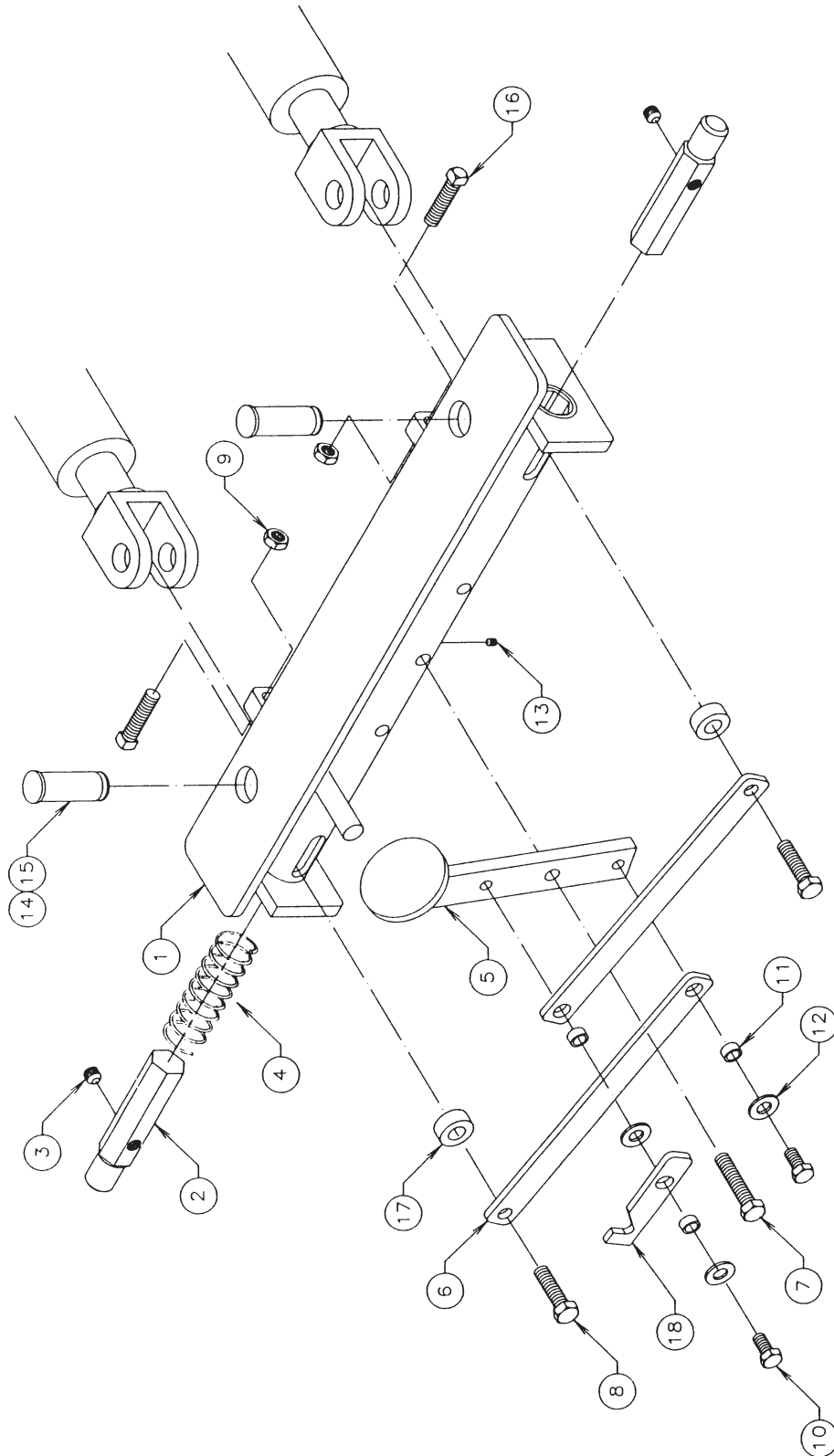
# CARRIAGE ASSEMBLY

## McL-12HB ZIPPER

ITEM#	QTY.	NUMBER	DESCRIPTION	ITEM#	QTY.	NUMBER	DESCRIPTION
1	1	HD10001	Carriage Assembly	11	1	8080223	Sprocket, 16 Tooth
2	1	T200080	Motor, Hydraulic	2	2	U024010	Screw, Set, .250-20 X .50
	4	U070020	Screw, HC .500-13 X 1.50	12	1	8080231	Bearing Lock Nut w/ Cross Clamp
	4	U210100	Washer, Lock, .500				Obsolete w/ #12
3	1	HD30610	Cylinder, Hydraulic	13	1	8080230	Thrust Bearing
4	1	HD30590	Valve, Hydraulic	14	2	8080229	Cup, Thrust Bearing
	3	U000220	Screw, HC .313-18 X 1.25	15	2	8080228	Hold Down Assembly
	4	U200040	Washer, Flat, .313	16	2	HD10095	Pin, R-Clip
	4	U120105	Nut, Lock, .313-18	17	4	R700175	Cam Roller Bearing
5	1	HD30050	Valve Mounting Assembly		4	W000020	Nut, Jam .500-20
	1	U000460	Screw, HC .375-16 X 1.50		4	U160015	Nut, Jam .500-20
	1	U100060	Nut, Hex, .375-16		4	T500080	Grease Fitting, .188 Stud.
6	1	HM00092	Gauge, Hydraulic Pressure	18	4	HD20082	Spacer, Cam Roller
	6	U030500	Screw, RHD 5-40 X 1.00	19	1	8080227	Shaft Seal
	6	U210003	Washer, Lock 5-40	20	1	HD11010	Drive Shaft
	6	U100003	Nut, Hex 5-40		1	HD11011	Key, SQ. .50 X 2.00
7	1	HD12025	Sprocket Guard	21	1		Chuck Assemblies
	8	U000180	Screw, HC .313-18 X .75			HD40050	Chuck, 1.625 Hex
	8	U210040	Washer, Flat .313			HD41050	Chuck, 1.375 Hex
	1	T500020	Grease Fitting, .125 MNPT			HD42050	Chuck, 1.125 Hex
	1	T405060	Fitting, Plug, .50 MNPT			HD44050	Chuck, .813 Hex
	1		Silicone Sealer		5	U000817	Screw, HC .500-13 X 1.00 Gr. 8
8	1	8080225	Taper Lock Bushing			U210100	Washer, Lock .500
	3	U000500	Screw, .375-18 X 2.0	22	1	E250210	Manual Box, Safety
	3	U210060	Washer, Lock, .375		3	U000040	Screw, HC .250-20 X .75
	1	U240030	Screw, Set, 3/8-16 X .50		6	U200020	Washer, Flat .250
9	1	8080224	Sprocket, 45 Tooth, #60		3	U120100	Nut, Hex .250-20
10	1	8080222	Drive Chain, #60		1	E250076	Silicone Sealant
				23	1		Manual, Safety & Operation - McL-12HB

# DOG PLATE ASSEMBLY

## MCL-12HB ZIPPER





# DOG PLATE ASSEMBLY

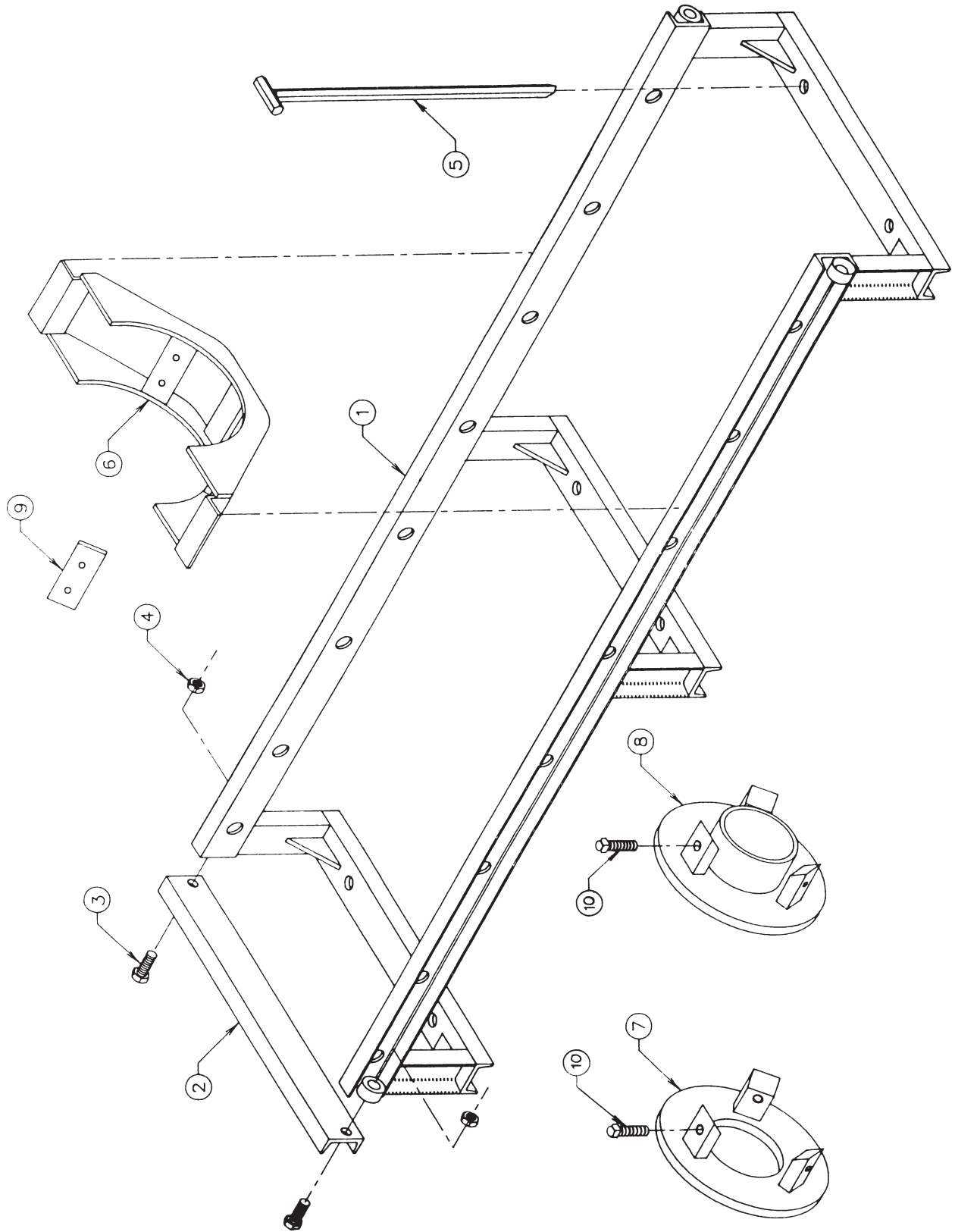
## MCL-12HB ZIPPER

ITEM#	QTY.	NUMBER	DESCRIPTION
1	1	HD21000	Main Body Assembly
2	2	HD20060	Dog Pin
3	2	U022110	Screw, Set .500-13 X .38
4	2	U600040	Spring, Compression
5	1	HD20070	Foot Pedal
6	2	HD20080	Linkage Arm
7	1	U000940	Screw, Hex Cap .500-13 X 3.50
8	2	U000880	Screw, Hex Cap .500-13 X 2.00
9	2	U100120	Nut, Hex .500-13
10	1	U000820	Screw, Hex Cap .500-13 X 1.25
11	3	HD20100	Bushing
12	3	U200100	Washer, Flat .500
13	1	U022040	Screw, Set .250-20 X .38
14	2	T840080	Clevis Pin
15*	2	R700180	Auger Clip
16	2	U020060	Screw, Sq. .500-13 X 2.00
17	2	HD20082	Spacer
18	1	HD20085	Dog Plate Latch

\* Not Shown

# MASTER TRACK ASSEMBLY

## MCL-12HB ZIPPER



# MASTER TRACK ASSEMBLY

## MCL-12HB ZIPPER

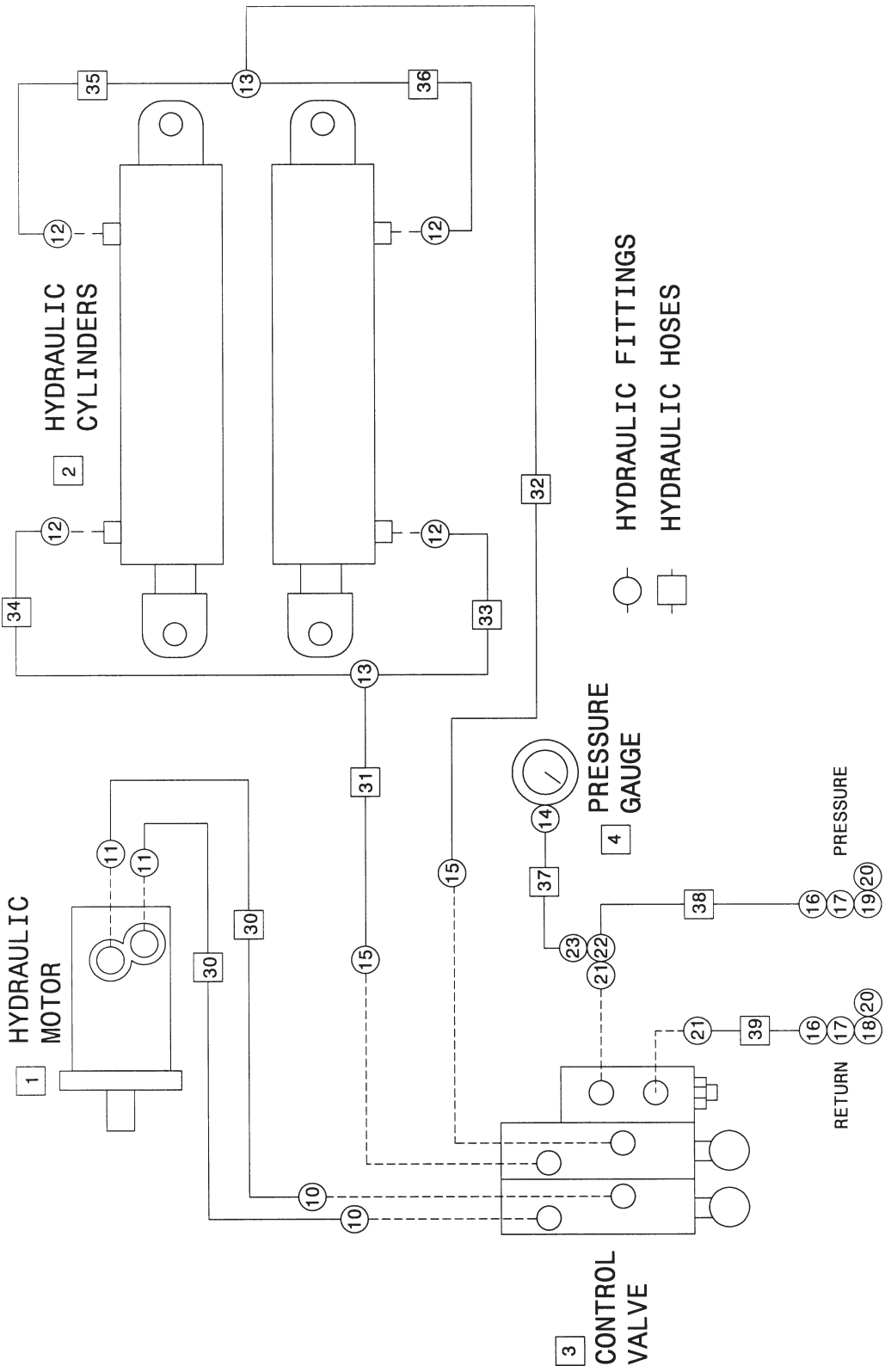
ITEM#	QTY.	NUMBER	DESCRIPTION
1	1	HD70000	7' Master Track
2	1	HD70060	Push Plate
3	2	U001400	Screw, HC .750-10 X 2.25
4	2	U100200	Nut, Hex .750-10
5	4	HD71000	Stake, Track Hold-Down
6	1	HD50000	Saddle

Optional Equipment (available upon request):

	HD60000	6' Master Track
	HD80000	6' Extension Track
7	HD14010	10" Adapter Kit, Steel
	HD14008	8" Adapter Kit, Steel
	HD14006	6" Adapter Kit, Steel
	HD14005	5" Adapter Kit, Steel
	HD14004	4" Adapter Kit, Steel
8	HD14010P	10" Adapter Kit, PVC
	HD14008P	8" Adapter Kit, PVC
	HD14006P	6" Adapter Kit, PVC
	HD14005P	5" Adapter Kit, PVC
	HD14004P	4" Adapter Kit, PVC
9	HD93000	Shoe Kit
	HD94100	Spacer Kit, 10" Adapter
	HD94200	Spacer Kit, 8" Adapter
	HD94300	Spacer Kit, 6" Adapter
	HD94400	Spacer Kit, 4" Adapter
10	U020120	Screw, Sq. Hd Set .750-10 X 2.00

# HOSES & FITTINGS

## MCL-12HB ZIPPER



# HOSES & FITTINGS

## MCL-12HB ZIPPER

ITEM#	QTY.	NUMBER	DESCRIPTION
1	1	T200080	Motor, Hydraulic
2	2	HD30610	Cylinder, Hydraulic
3	1	HD30590	Control Valve
4	2	HM00092	Pressure Gauge
Fittings			
10	2	T400400	Union 08MB-10MJ
11	2	T400210	Union, 12Mb-10MJ
12	4	T401120	Elbow, 90, 06MP-08MJ
13	2	T402040	Tee, 08MJ-08MJ-08MJ
14	1	T400112	Union, 04FP-04MJ
15	2	T400140	Union, 08MB-08MJ
16	2	T400100	Union, 12MP-12MJ
17	2	T401584	Elbow, 45, 12MP-12FP
18	1	T412000	Quick Disc, Male, 12FP
19	1	T412001	Quick Disc, Female, 12FP
20	2	T412002	Cap, Quick Disc.
Hoses			
30	2	TH00150	Valve (Rotation Spool) - Motor
31	1	TH00158	Valve (Thrust Spool) - Cyl. Rod Tee
32	1	TH00157	Valve (Thrust Spool) - Cyl. Base Tee
33	1	TH00153	Tee - Cylinder Rod (Right Side)
34	1	TH00154	Tee - Cylinder Rod (Left Side)
35	1	TH00155	Tee - Cylinder Base (Left Side)
36	1	TH00156	Tee - Cylinder Base (Right Side)
37	1	TH00159	Valve, Inlet Tee - Gauge
38	1	TH00160	Valve, Inlet to Bulkhead - Pressure
39	1	TH00161	Valve, Return to Bulkhead - Return

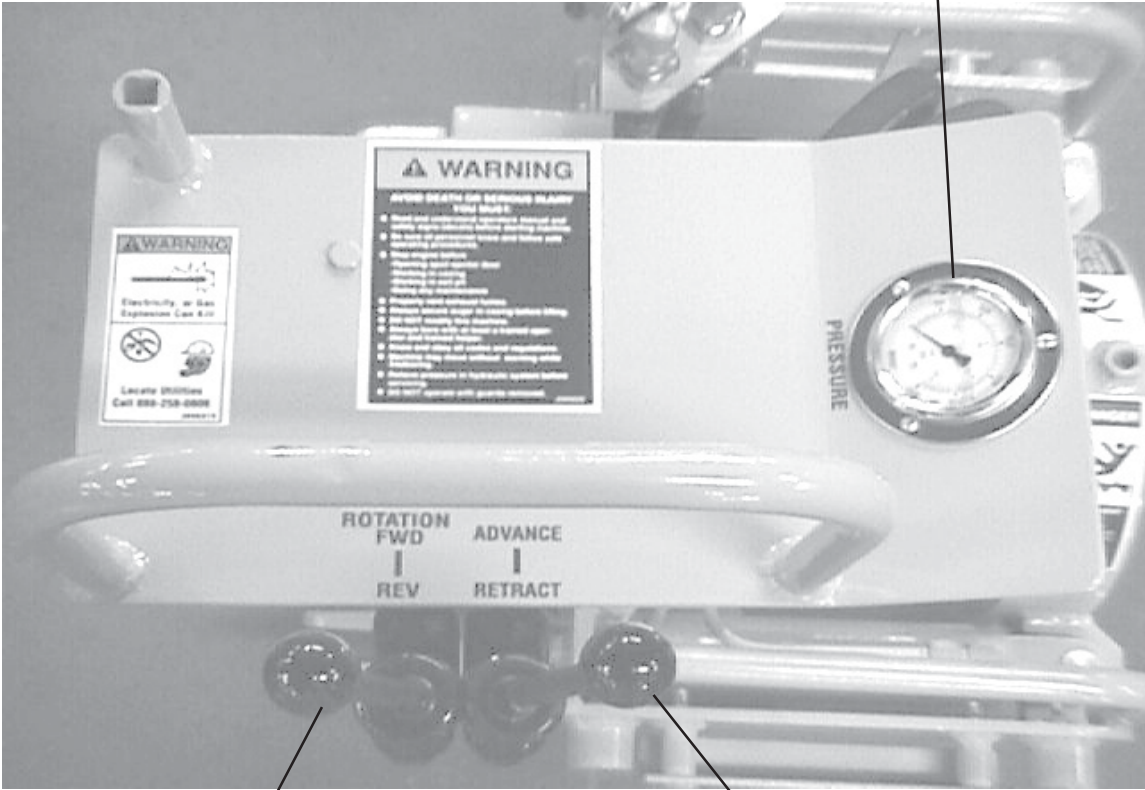
Item #2 - Serial Number: 12HB 030104 620 and Later

Item #3 - Serial Number: 12HB 072104 624 and Later

# CONTROL VALVE OPERATION

## MCL-12HB ZIPPER

Thrust  
Gauge

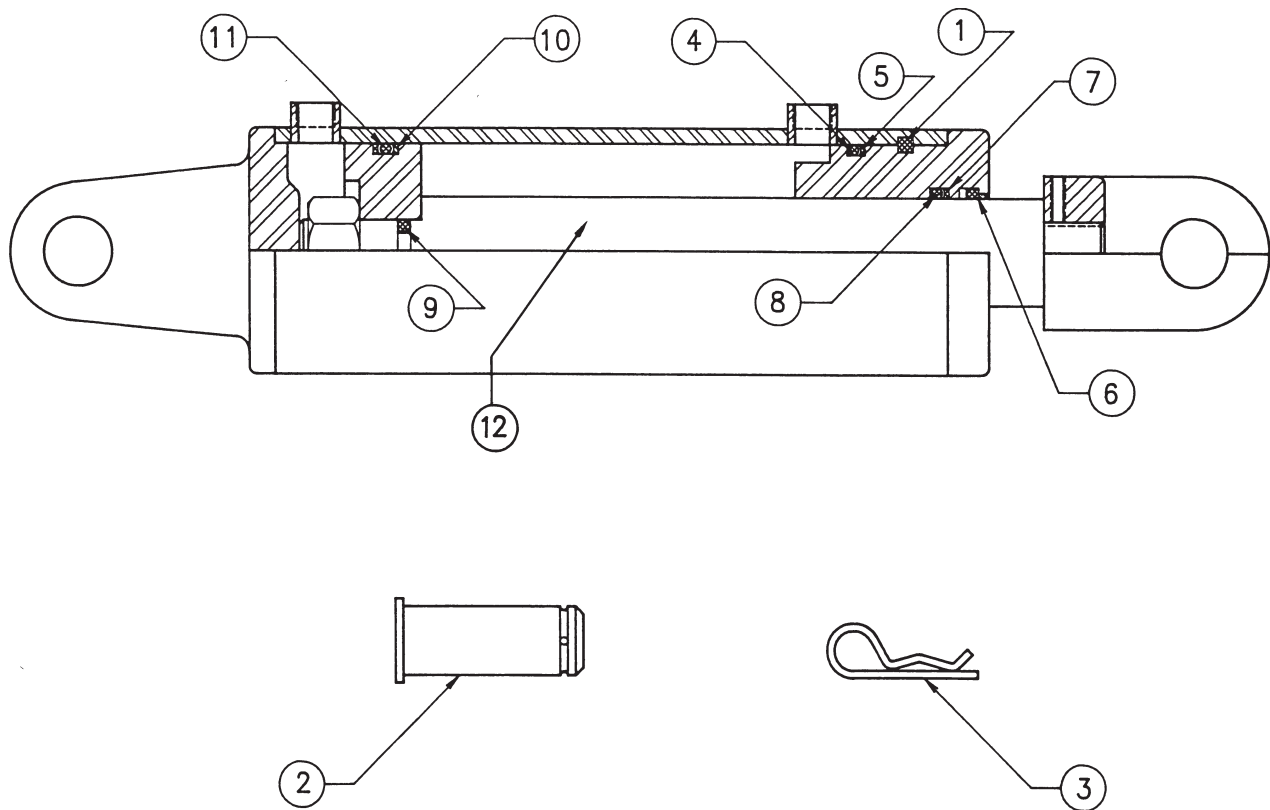


Rotation  
Lever

Thrust  
Lever

# HYDRAULIC CYLINDER

## MCL-12HB ZIPPER



# HYDRAULIC CYLINDER

## MCL-12HB ZIPPER

ITEM#	QTY.	NUMBER	DESCRIPTION
1	1		Consult Factory
2	2	T840085	Clevis Pin
3	2	R700180	R-Clip Pin
4-11	1	HD3061001	Seal Kit
12	1		Consult Factory
13	1		Consult Factory
	1		Consult Factory



# **HYDRAULIC VALVE COMPONENTS**

## **MCL-12HB ZIPPER**

For Seal Kit and Relief Valve, please consult factory.





# **HANDLE KIT, HYDRAULIC VALVE**

## **MCL-12HB ZIPPER**

**Hydraulic Valve Part No.: HD30590**

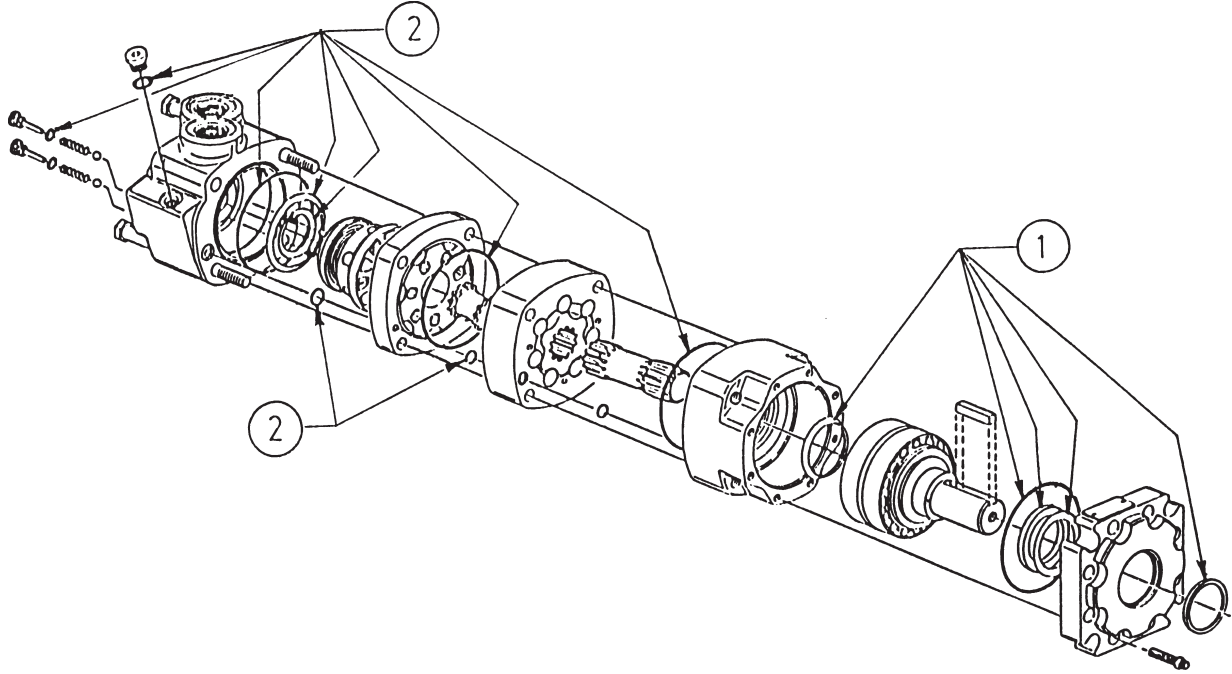
**Handle Kit Part No.: 2400359**

**\*Includes Handle and Linkage**

**2 required.**

# SEAL KIT, HYDRAULIC MOTOR

## MCL-12HB ZIPPER




# SEAL KIT, HYDRAULIC MOTOR


## MCL-12H ZIPPER


ITEM#	QTY.	NUMBER	DESCRIPTION
1	1	T200081	Seal Kit, Shaft
2	1	T200082	Seal Kit, Rear Motor


# REPAIR INSTRUCTIONS

## McL-12HB ZIPPER

**WARNING:**  
 Moving parts. Keep all guards in place. Shut down engine before service or maintenance. Being caught in machinery may cause serious injury.

**WARNING:**  
 Crushing weight can cause serious injury. Place machine on solid surface to prevent rollover or falling.

**WARNING:**  
 High Pressure. Leaking hydraulic fluid under pressure can penetrate and cause serious injury. Check for leaks with cardboard. Relieve pressure before working on any system.

**WARNING:**  
 Do not modify this machine. Use only authorized McLaughlin repair parts. Failure to comply can result in serious injury. Service this equipment according with maintenance instructions in this manual.

### CONTROL VALVE SETTINGS: THRUST AND ROTATION RELIEF VALVE SETTING:

2500 PSI (173 BAR)

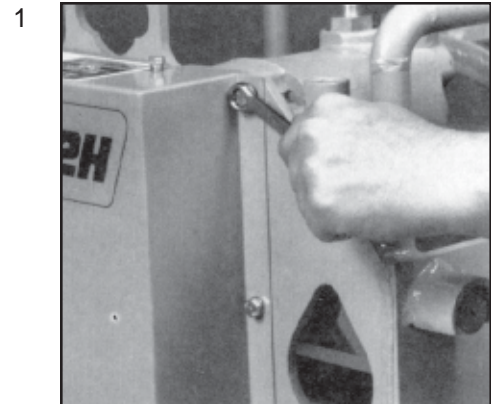
### BEFORE DISASSEMBLY:

1. **CHECK THE POWER SOURCE FOR THE FOLLOWING:**
  - A. Proper pressure and flow rate.
  - B. Correct fluid level and filtration.
2. **SHUT DOWN THE POWER SOURCE. RELIEVE SYSTEM PRESSURE AND DISCONNECT MACHINE FROM THE POWER SOURCE. FAILURE TO FOLLOW THESE STEPS PRIOR TO MACHINE DISASSEMBLY MAY RESULT IN SERIOUS INJURY.**

### STEP 1:

#### CHAIN COVER REMOVAL AND INSPECTION -

1. Remove bolts and lockwashers from chain cover (Photo #1).
2. Pull cover away from the machine frame. Some resistance may be encountered because of silicone sealant.
3. Inspect cover for cracks and dirt.
4. Wipe cover interior clean and scrape old silicone from cover and machine frame.
5. **TO BEGIN REASSEMBLY -** Apply a bead of silicone on the flange of cover (Photo #2).
6. Carefully set cover in place. Insert bolts and tighten.
7. Apply a heavy bead of silicone around the top of cover and any visible cracks that may allow dust and dirt to get in the cover.
8. Wipe off excess silicone and allow to dry before handling or using the boring machine.

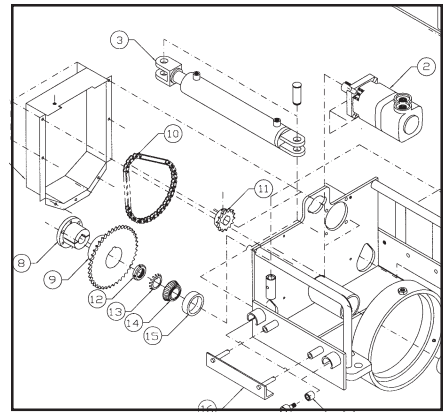


## STEP 2:

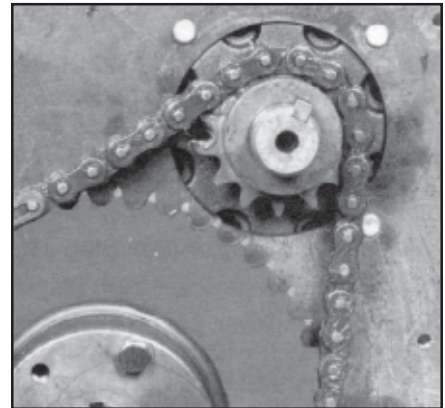
### CHAIN AND SPROCKET REMOVAL AND REPLACEMENT

1. Remove chain cover (Ref. Step #1).
2. Remove three (3) bolts from tapered bushing (Fig. 1, #8) of large sprocket (Fig. 1, #9).
3. Loosen the set screw in the bushing.
4. Screw three (3) of the bolts into the threaded holes of the tapered bushing (Photo #3).
5. Tighten these bolts until sprocket can be moved on the shaft. Alternate tightening of bolts. Do not tighten one bolt more than the other.
6. Loosen, but do not remove, the set screws in small sprocket. (Fig. 1, #11).
7. Using screwdriver, push sprocket away from machine frame.
8. Pull both sprockets away from the frame to create a 1" gap.
9. Find the master link of the chain by locating the clip used to hold the master link in place. This clip will be on the side of the chain farthest from the machine (Photo #4).
10. Remove clip and master link and then remove chain.
11. If only replacing the chain, go to Step #2, Item #19 to begin reassembly.
12. Remove both sprockets.
13. Clean and inspect all parts for dirt, cracks, wear or damage. Replace parts as needed.
14. **TO BEGIN REASSEMBLY** - Slip the small sprocket onto the motor shaft.
15. Slide the large sprocket without the bushing onto the drive shaft.
16. Slide the tapered bushing onto the drive shaft and into the large sprocket. Align bushing with key on shaft.
17. Align the bolt holes between the sprocket and bushing.
18. Slide both sprockets onto the shaft until there is a gap of approximately 1" between the sprockets and the machine frame.
19. Place chain on the sprockets.
20. Slip master link and matching plate onto chain (Photo #5).
21. Slip clip over the posts of the master link.
22. Check master link and chain to make certain of fit and that the master link clip is secure..
23. Slide both sprockets toward machine frame. Position the large sprocket so it is approximately 1/4" from the machine frame.
24. Insert three (3) bolts into large sprocket bushing: **DO NOT TIGHTEN.**

Fig. 1



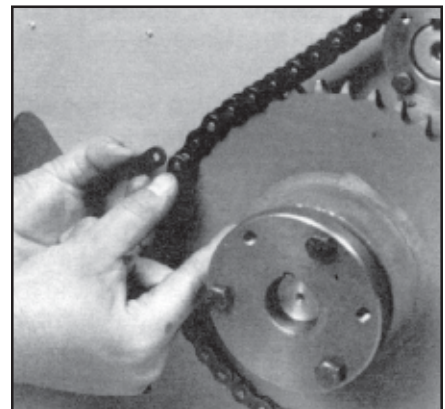
3



4



5



## STEP 2 (Con't)

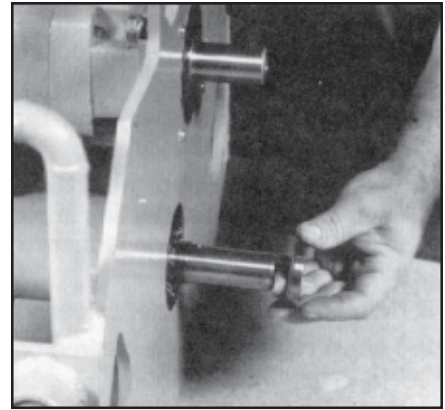
25. Tighten the bolts on the large sprocket bushing. Continue to check distance from the machine frame.
26. Check the chain alignment. Move the small sprocket as required to align the chain.
27. Tighten both setscrews of the small sprocket.
28. Apply grease to the chain.
29. Install chain cover (Ref. Step #1).

## STEP 3:

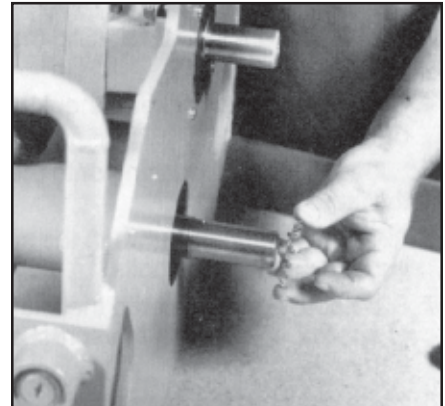
### SHAFT AND BEARING REMOVAL

1. Remove chain cover (Ref. Step #1).
2. Remove large sprocket (Ref. Step #2).
3. Using a screwdriver, pry up the tabs of the spanner washer (Fig. 1, #13) that have been bent into the slots of the spanner nut (Fig. 1, #12).
4. Unscrew the spanner nut from the drive shaft. Make sure that the shaft threads are clean before attempting to unscrew the spanner nut (Photo #6).
5. Slide the spanner washer off of the drive shaft (Photo #7).
6. Grasp the flange of the drive shaft and gently pull the shaft out toward the front of the machine. (Photo #8).
7. Remove the tapered roller bearing (Fig. 1, #14) from the rear end of the shaft tube.
8. To remove the oil seal and front bearing, use a piece of soft steel or aluminum tubing (2" o.d. x 8-10"). Slide this tube into the drive shaft housing tube until it makes contact with the bearing. Gently push the bearing until it touches the oil seal. Lightly tap the end of the soft steel tube until the oil seal and bearing are released.
9. Inspect all components for dirt, cracks, wear or damage. Replace parts as needed.
10. TO BEGIN REASSEMBLY - Repack the bearings with wheel bearing grease. Make sure all slots are filled with new grease.
11. Slip each bearing into the drive shaft tube until it stops. Slowly turn the bearings to ensure smooth movement.
12. Install the seal by holding a flat piece of smooth metal or wood against the face of the seal and uniformly tapping the piece of wood or metal with a hammer. Hammer until face of the seal is flush with the end of the tube, in all directions. Do not hammer directly against the seal.
13. Grease the input shaft and insert the drive shaft into the drive shaft tube. Take care not to damage the seal.
14. Slip spanner washer onto the end of the shaft until it stops. Note that the inside diameter of the spanner washer is keyed with a tab. Align the tab with the shaft keyway. The outside diameter tabs

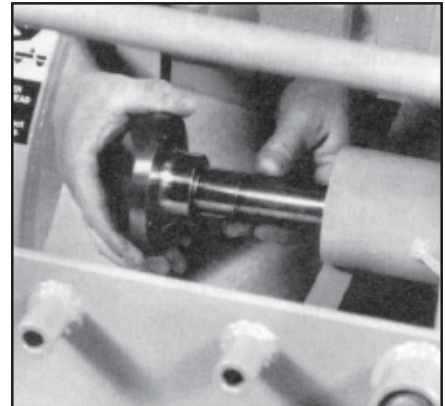
6



7



8



- should face toward the back of the machine.
15. Screw the spanner nut onto the end of the shaft. The bevel on the nut should be toward the front of the machine.
  16. Tighten the spanner nut until there is no end to end (axial) play in the shaft. The shaft will turn with some resistance.
  17. Using a screwdriver, bend tabs of spanner washer into slots of the spanner nut. Bend all tabs that line up (may be one or more than one).
  18. Set the keys for each sprocket into the slot of the motor shaft and the drive shaft.
  19. Reassemble sprockets and chain (Ref. Step #2).
  20. Install chain cover (Ref. Step #1).

## STEP 4:

### HYDRAULIC MOTOR REMOVAL AND REPLACEMENT

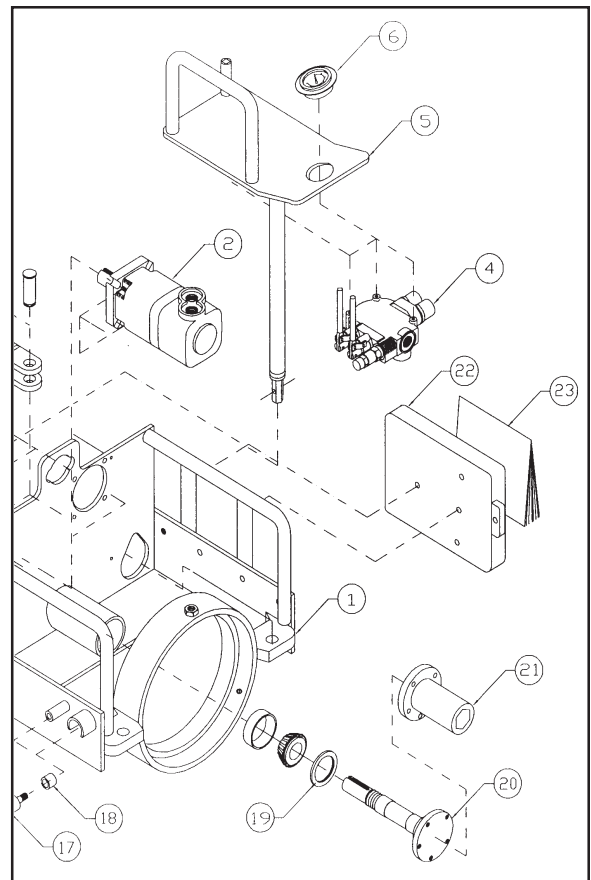
1. Remove chain cover (Ref. Step #1).
2. Remove small sprocket from machine (Ref. Step #2).
3. Disconnect hoses at the hydraulic motor ports (Fig. 4). There will be a small amount of hydraulic oil in the line. Allow the oil to drain into a rag. Clean up any spillage.
4. Loosen the four (4) bolts and lockwashers that hold the hydraulic motor (Fig. 2) in place.
5. While supporting the motor with one hand, remove the bolts and set motor aside (Photo #10).
6. Inspect all components for dirt, cracks, wear or damage.
7. **TO BEGIN REASSEMBLY** - set motor into pilot hole of the machine frame.
8. While holding motor with one hand, start the bolts into the threaded holes of the machine frame by hand.
9. Tighten the two bolts closest to the top of the machine first. (Photo #11).
10. Tighten the other two bolts.
11. Check all four bolts for tightness.
12. Reassemble small sprocket to motor shaft and add chain (Ref. Step #2).
13. Install chain cover (Ref. Step #1).

## STEP 5:

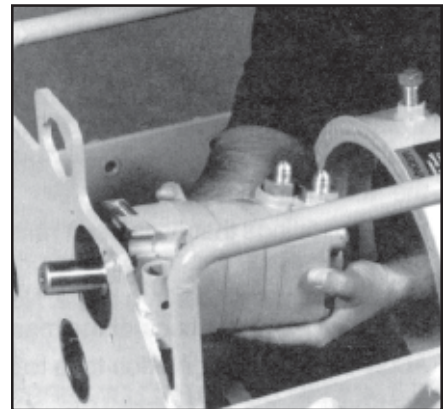
### CYLINDER REMOVAL AND REPLACEMENT

1. Loosen the nuts of the dog plate cylinder brackets (Fig. 3).
2. Screw the 1/2" square head bolts (Fig. 3) away from the cylinder clevis.
3. Remove the hitch pin (R-pin, R-clip, Auger Clip) from the dog plate clevis pin.
4. Remove the clevis pin (Photo #12).
5. Swing the dog plate away from the cylinder clevis.
6. Remove the hitch pin from the clevis pin at the

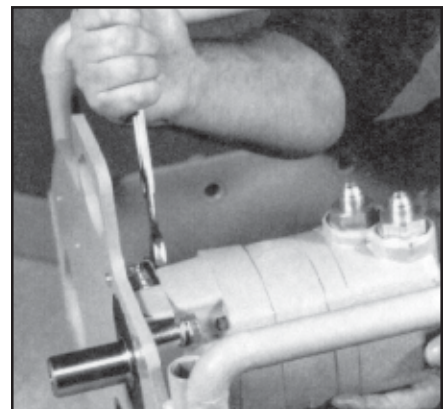
Fig. 2



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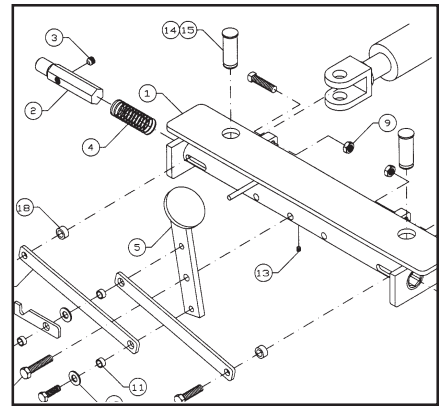


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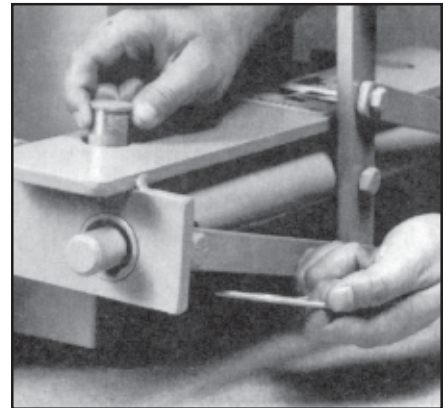


- front of the machine frame.
7. Remove the clevis pin.
  8. Unscrew the hydraulic line nut of the metal hydraulic line that goes to the front of the cylinder to be removed. Catch oil in a rag. Clean up oil from floor, work area and machine.
  9. Loosen the nut on the other end of the hydraulic line. This nut is connected to a tee (Fig. 4, #18).
  10. Rotate the metal line 90 degrees so that it is pointed up.
  11. Disconnect the hydraulic line nut that connects to the rear port of the cylinder. Catch oil in a rag. Clean up oil spillage.
  12. Remove the fitting from the rear port of the cylinder (Photo #13).
  13. Tilt the cylinder up at the free end and pull cylinder toward the front of the machine (Photo #14).
  14. Remove the 90 degree hydraulic fitting from the front cylinder port.
  15. Clean all fittings that have been removed or disconnected. Replace all damaged fittings.
  16. Slide the new cylinder into place. Note that the rod end must be toward the back of the machine.
  17. Apply pipe sealant to the front port fitting. **DO NOT ALLOW PIPE SEALANT TO GET INTO THE INTERIOR OF THE FITTING.**
  18. Screw in fitting and tighten. Fitting should point toward opposite end of the cylinder.
  19. Slide rod end of the cylinder into the hole of the machine frame with the ports pointed up.
  20. Slide front clevis onto machine frame.
  21. Rotate the metal hydraulic line to line up parallel with the cylinder.
  22. Reconnect metal line to front port fitting.
  23. Tighten nut on the other end of the hydraulic line onto the tee (Fig. 4, #18).
  24. Apply pipe sealant to the rear port fitting.
  25. Screw fitting into port and tighten.
  26. Connect hose to fitting.
  27. Align the holes of the clevis with frame hole and slip clevis pin into front cylinder clevis. Add hitch pin.
  28. Rotate the dog plate and align the hole of the dog plate with the holes of the rod end clevis. Add hitch pin.
  29. Check all hydraulic fittings (entire hydraulic system). Tighten as required.
  30. Set the machine on the track.
  31. Connect the boring machine to a hydraulic power source. Start the power source (refer to power source operators manual for safe operating instructions).
  32. Make sure the dog pins of the dog plate are both locked into place.
  33. Extend the cylinders to full stroke.
  34. Shut off the power source.
  35. Screw out the 1/2" square head bolts on the dog

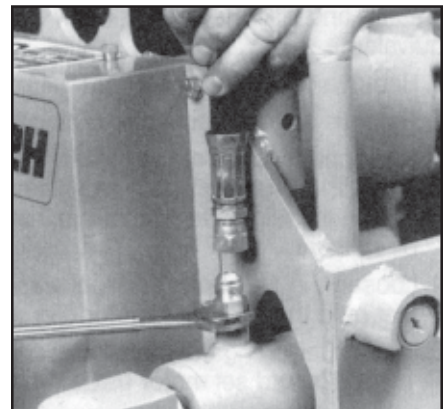
Fig. 3



12



13



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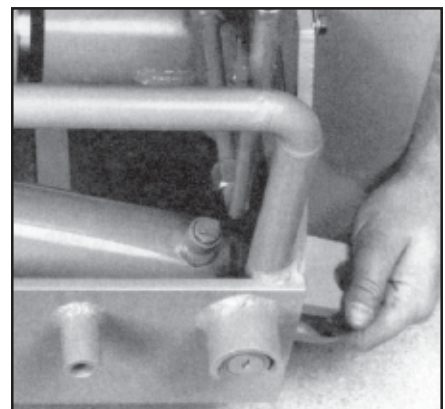
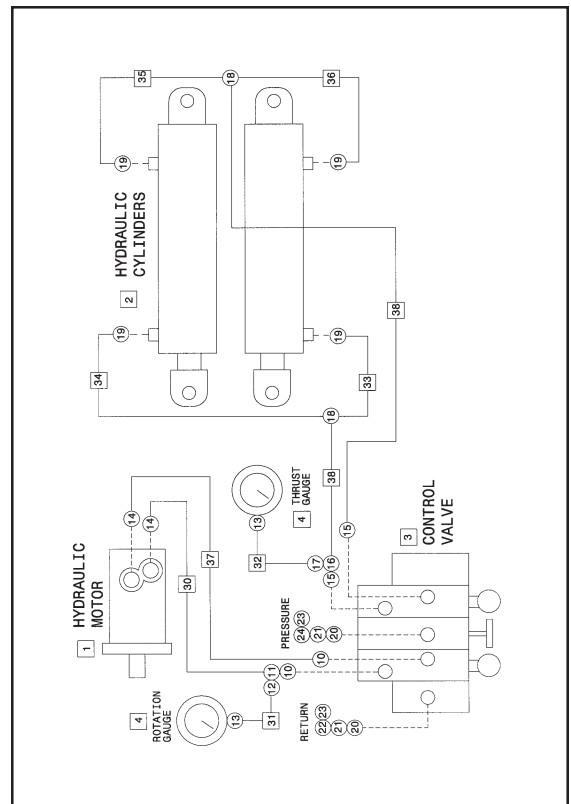


plate cylinder brackets until they make contact with the cylinder clevis.

36. Simultaneously tighten each of the square head bolts against the cylinder pins.
37. Tighten the nuts (Fig. 3, #9) to secure the square head bolts.
38. Start the power source and test machine function. Readjust as necessary, making sure that the power source is always off when any adjustments are made.

Fig. 4





# WARRANTY RETURN GOODS POLICY

## LIMITED WARRANTY

The Manufacturer warrants its products to be free from defects in material and workmanship for a period of twelve months from the date of shipment from the factory. Hole Hammer pistons, bodies, and nose pieces are warranted to be free from defects in material and workmanship for a period of three years from the date of shipment from the factory. The Manufacturer shall not be responsible for any damage resulting to or caused by its products by reason of installation, improper storage, unauthorized service, alteration of the products, neglect or abuse, or use of the product in a manner inconsistent with its design. This warranty does not extend to any component parts not manufactured by Manufacturer; however, Manufacturer's warranty herein shall not limit any warranties made by manufacturers of component parts which extend to Buyer.

Claims for defects in material and workmanship shall be made in writing to Manufacturer within ten days of discovery of defect. Manufacturer may either send a service representative or have the product returned to its factory at Buyer's expense for inspection. Upon notification of defect, Manufacturer will issue a return goods authorization number to Buyer. The return goods authorization number must accompany the product returned. If judged by the Manufacturer to be defective in material or workmanship, the product will be replaced or repaired at the option of the manufacturer, free from all charges except authorized transportation. Buyer shall be responsible for all maintenance services consisting of lubrication and cleaning of equipment, replacing expandable parts, making minor adjustments, and performing operating checks, all in accordance with procedures outlined in Manufacturer's maintenance literature.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES AND NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, (INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR FITNESS FOR A

PARTICULAR PURPOSE), ARE MADE BY THE MANUFACTURER IN CONNECTION WITH THE MANUFACTURE OR SALE OF ITS PRODUCTS. NO EMPLOYEE, DISTRIBUTOR, OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY ON BEHALF OF MANUFACTURER THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER REMEDIES. THE LIABILITY OF MANUFACTURER WHETHER IN CONTRACT, TORT, UNDER ANY WARRANTY, OR OTHERWISE SHALL NOT EXTEND BEYOND ITS OBLIGATION TO REPAIR OR REPLACE, AT ITS OPTION ANY PRODUCT OR PART FOUND BY MANUFACTURER TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP. MANUFACTURER SHALL NOT BE LIABLE FOR COST OF INSTALLATION AND/OR REMOVAL OR BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.

## GENERAL RETURNS OF MERCHANDISE

1. All returns must be pre-authorized
  - A. Please call our parts department for an RGA number
  - B. Please include RGA number on the outside of box
  - C. Include any required paper work or special instructions
  - D. Items returned without an RGA number will not be accepted
2. All returns are subject to a 20% restock charge.
3. Special items are non-returnable
  - A. Non-stock parts
  - B. Custom parts
  - C. If you are unsure about a parts status when ordering, ask your McLaughlin representative if the item fits on of the above conditions.
4. Items must be returned within thirty days of original order date.
5. Items not returned within 30 days from the date of RGA is issued will not be accepted.
6. The item(s) must be in new condition. Used item(s) are not returnable.