

SIDEWINDER

OPERATING PROCEDURE

TO OPERATE

1. Always make sure area is clear before starting ride.
2. Depress deadman switch.
3. Release hand brake.
4. Hold wobble stick right or left to engage rotation.
5. After one complete revolution, depress black button and hold to start tilt operation. Button has to be held until car has moved out from column about 3 or 4 feet. Tilt cycle thereafter is automatic and booms will return to vertical position and stop.
6. Rotation can be reversed only when booms are in vertical position and braked to a complete stop.
7. For emergency operation, tilt mechanism may be operated manually by moving toggle switch to "Man and operated with toggle switch labeled "Up-Down". If automatic electric control system has malfunctioned, booms can be lowered by placing hydraulic selector valve in "Manual" position and activate hydraulic tilt cylinder valve lever.

TO LOAD CARS

1. Remove belt bar door restraint key.
2. Depress spring-loaded door latch knob.
3. Open door — belt bar will raise automatically. Maximum passenger weight per seat is 400 lb.
4. Firmly close door engaging spring-loaded latch.
NOTE: While door is being closed visually check belt tension, adjust as necessary — belt should be taut over passenger laps when door is latched.
5. Insert door restraint key in belt bar.
6. Rotate boom and load remaining cars as above.
NOTE: Care should be taken to balance weight of passengers when loading ride.

EMERGENCY PROCEDURE

EMERGENCY PROCEDURE FOR LOWERING PASSENGER LOADED CARS TO LOADING POSITION IN EVENT OF HYDRAULIC PUMP DRIVE OR BELT FAILURE

There are two counterbalance valves located just behind the solenoid operated valve. Each have 1/2" adjusting bolts (3/4" hex), locked with a locknut and jam nut. Back off each bolt until they are within one or two full turns of thread of being removed. Scribe a mark on the bolt and valve body to enable easier return to proper adjustment. Engage the rotation slowly until the boom end with heavier cars starts to descend. As the boom lowers, apply the rotation hand brake. The car will come to rest at the loading position. With the hand brake applied, unload only one car, unless only one car is loaded at the upper boom end. Unload both cars if only one car in the second set is loaded.

If cars are evenly balanced and will not descend, it will be necessary to lower the cars with a line as follows: With the booms located in line with the ride (cars directly over operator), apply and lock hand brake. Pass a rope (3/8" or larger) over the boom above the operator, as near the cars as possible and manually pull the cars down. As the boom assembly passes over the center of the hinge it will descend to loading position without further assistance. Unload passengers in the sequence as outlined in the operating procedure.

LUBRICATION INSTRUCTIONS

LUBE POINT LOCATION	LUBRICANT TYPE	DAILY	WEEKLY	MONTH	90 DAYS	YEAR
A TILT CYLINDER ROD END	BEARING LUBE	X				
B TILT HEAD HINGE BEARINGS	BEARING LUBE	X				
C REVOLVING ROD BUSHINGS	BEARING LUBE	X				
D CAR BELT BAR PIVOT	30W OIL		X			
E RETURN ROD LINKAGE (CAR)	BEARING LUBE		X			
F CAR DOOR HINGES	30W OIL		X			
G CAR DOOR LATCH PLUNGER	30W OIL		X			
H COLUMN HINGE BUSHINGS	BEARING LUBE			X		
I BOOM HUB DRIVE CHAIN	HI-SPEED CHAIN LUBE			X		
J BACK BRACES	BEARING LUBE				X	
K SAFETY CYLINDERS	BEARING LUBE	X				
L UNIVERSAL JOINTS & SPLINE	BEARING LUBE			X		
M MUDSILL PIVOT BEARINGS	BEARING LUBE				X	
N TILT HEAD SAFETY HOOKS	BEARING LUBE			X		
O GEAR REDUCER	GEAR LUBE			CHECK		DRAIN & REFILL
P HYDRAULIC SYSTEM*	HYD. FLUID		CHECK			X
Q BRAKE MASTER CYLINDER DISC	HYD. BRAKE FLUID			CHECK		
R WHEEL BEARINGS (TLR)	GEAR LUBE			CHECK		DRAIN & REFILL
S BOOM ANCHOR POINTS (HUB) 4	BEARING LUBE			X		
T BOOM HUB LOCK BOLT	BEARING LUBE			X		
U BOOM HUB	BEARING LUBE			X		
V CONTROL STAND LINKAGES	BEARING LUBE		X			
W BRAKE LEVER SHAFT BEARINGS	30W OIL	X				
X GOOSENECK HINGE	BEARING LUBE		X			
Y CAR REVOLVING CHAIN	HI-SPEED CHAIN LUBE	X				
Z CAR REVOLVING BEARINGS	BEARING LUBE	X				

* DRAIN & REFILL - CHANGE FILTER CARTRIDGE 1ST 90 DAYS OPERATION.

Bearing Lube - A multi-purpose water resistant grease with an accepted extreme pressure additive.

30w Oil - Good grade 30w motor oil.

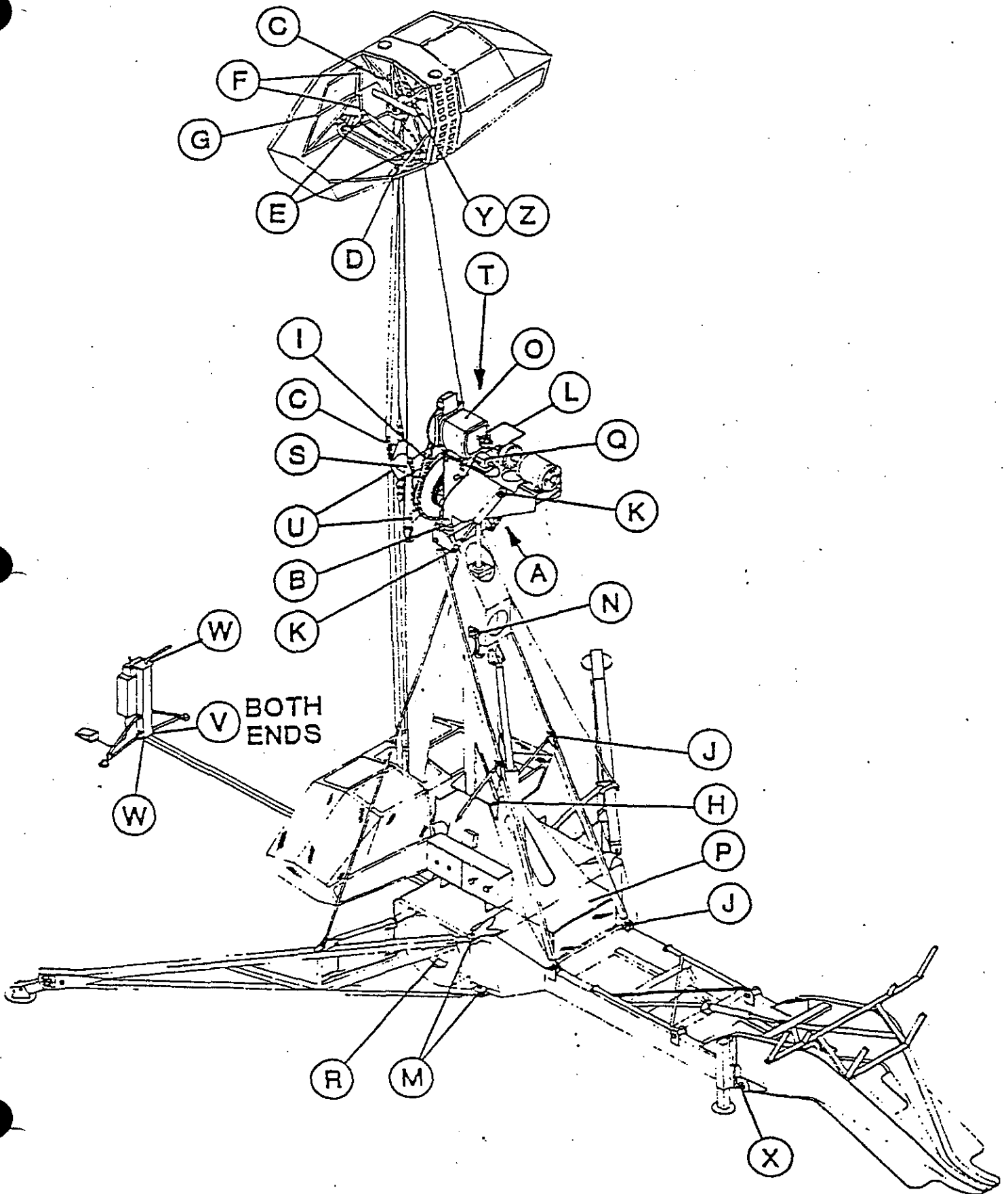
Hi-Speed Chain Lube - Hydrotex #525 deluxe leaded or equivalent.

Gear Lube - Hydrotex 80w-140 or equivalent.

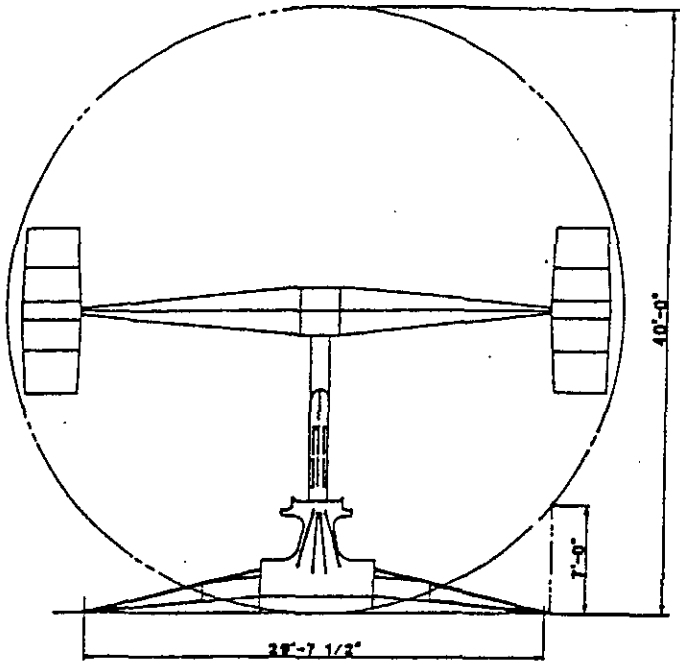
Hyd. Brake Fluid - Vegetable based brake fluid.

Hyd. Fluid - DTE light or equivalent.

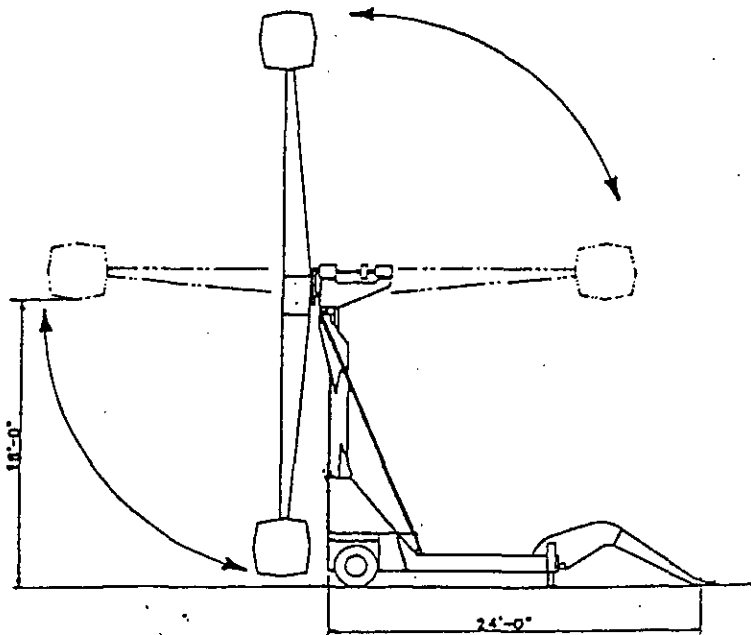
LUBRICATION INSTRUCTIONS



SPACE REQUIREMENTS

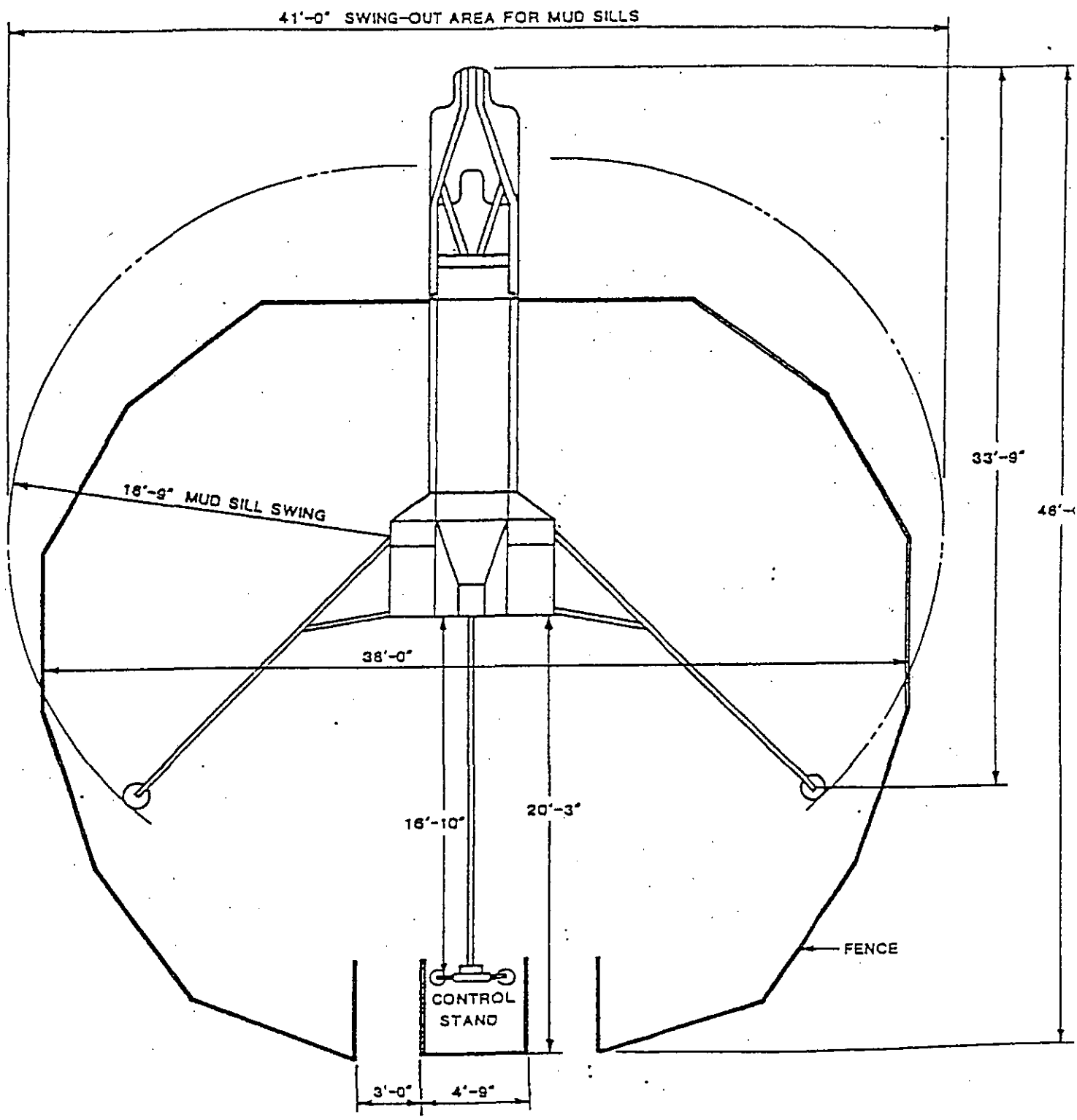


FRONT VIEW



SIDE VIEW

PLAN VIEW & FENCE LAYOUT



LIMIT SWITCH ADJUSTING PROCEDURE

This assembly is set at the factory and should require no further adjustment. However, there may be a certain part or parts at some time that may require replacing, in which case, re-adjustment may be necessary.

The following procedure will facilitate this operation.

1. With the column erected and the cars in loading position, rotate booms $\frac{1}{4}$ revolution, or until parallel with ground. Apply and lock brake. Remove access plate located approximately 24" below boom hub on side of column facing operator. Loosen the set screws securing the actuator tabs, Ref. #8, until they slide freely on connecting rod, Ref. #4. The limit switch lever RH, Ref. #2, should be set at approximately 90° with limit switch. The limit switch lever LH should be set slightly above as shown in Fig. #LS-1.
2. With hydraulic selector valve lever positioned at "Auto" and toggle switch on control box switched to "Man" start hydraulic system. Move stop tab up connecting rod until it engages the roller on LH limit switch lever.

NOTE: Do not move lever, Ref. #12, up to the end of the stroke at this time. Move it up just far enough to solidly engage the lever roller without stopping the hydraulic system. Secure set screw.
3. Move the lower reversing tab up the connecting rod until it engages the RH (Reversing Limit Switch) lever roller. Secure set screw on tab.
4. Screw out adjusting bolt, Ref. #9, on stop tab (LH) until limit switch is activated and the hydraulic system shuts off.
5. Screw out adjusting bolt, Ref. #9, on reversing tab until a 'click' is heard in the reversing limit switch. Turn out the adjusting bolt one-half turn further.
6. With selector valve and toggle switch on "Auto" have someone depress the hydraulic start button. The tilt head should begin closing. Let the system operate until the lower reversing tab has moved approximately 3" down from the limit switch lever. Reach in and manually press down on the RH reversing limit switch lever. The tilt head will reverse itself and the lower reversing tab will move upwards. If the reversing tab adjusting bolt contacts the roller and the cycle reverses, the adjusting bolt will have to be turned in until the 'Reversing' limit switch and the 'Stop' limit switch activate simultaneously.

NOTE: To get adequate movement on the adjusting bolts it may be necessary to re-locate the adjusting tabs.
7. Depress the start button. The tilt head will begin closing and continue until the tilt cylinder is completely closed and hydraulic system will by-pass. Depress the stop button. Lower the upper reversing tab until a 'click' is heard in the reversing limit switch. Secure the tab with set screw to the connecting rod. Turn out the adjusting screw one-half turn. Depress the start button. The tilt head should operate through the complete cycle.
8. Operate the tilt cycle in the usual manner, making sure all adjustments are correct. If no further adjustments are required, the adjusting bolts on the stop and reversing tabs must be locked at this time. Make certain the jam nuts are tight!

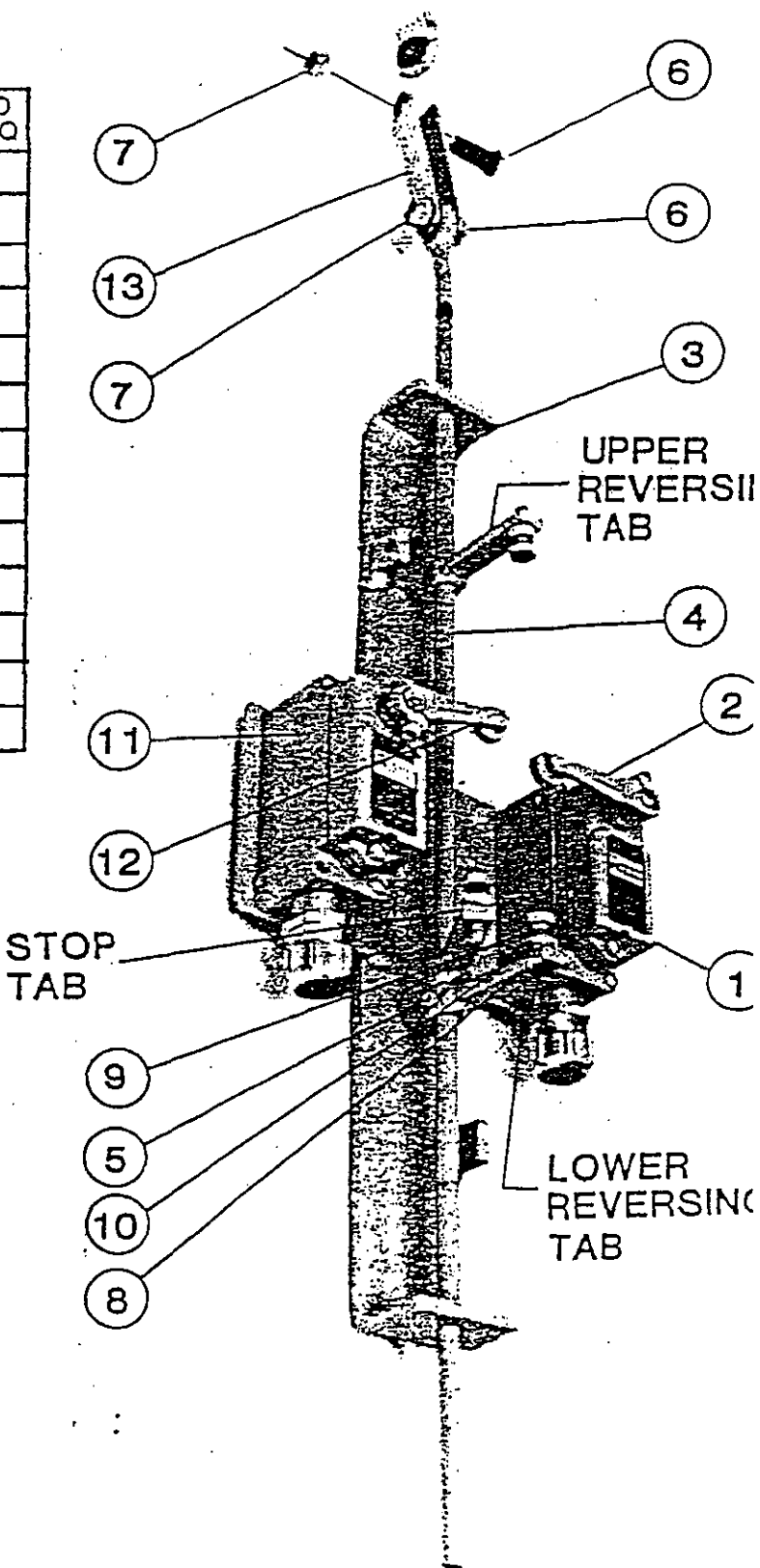
LIMIT SWITCH ACTUATOR ASSEMBLY

FIG LS-1

REF NO	PART NO	NAME OF PART	NO REQ
1	E-700	SWITCH, REVERSE LIMIT	1
2	E-701	LEVER, LIMIT SWITCH	2
3	ST-45-1	ASSEMBLY, BASE	1
4	ST-45-5	ROD, CONNECTING	1
5		SCREW, 1/4-28 NF SET	3
6		BOLT, 3/8-24NF X 1	2
7		NUT, 3/8-24 LOCK	2
8	ST-45-6	TAB, ACTIVATOR	3
9		BOLT, 1/4-28 NF x 1	3
10		NUT, 1/4-28 NF JAM	3
11	E-700A	SWITCH, STOP LIMIT	1
12	E-701	LEVER, LIMIT SWITCH	1
13	ST-45-4	LINK, CONNECTING	2

NOTE:

COVER PLATE (ST-12-22) AND (8) 1/4-28 NF x 1/2" MUST BE REMOVED FOR ACCESS TO LIMIT SWITCHES.



HYDRO-SHEAVE

MODELS 9.4 HC, HCF, HCM, HBM FLUID COUPLINGS UNIT ASSEMBLY AND SERVICE INSTRUCTIONS

ASSEMBLY INSTRUCTIONS

NOTE: Tapers to be cleaned with suitable solvent, wiped dry and assembled per S765. Do Not use molybdenum disulfide or equivalent friction reducing compounds on fasteners or taper.

1. If seal and needle bearing are not in place in rear bearing carrier, install them using special seal and bearing driver.
2. Install "O" ring in coupling face, mount rear bearing carrier to coupling face using six 12 point capscrews with "O" rings. Torque capscrews to 27-30 lb. ft.
3. Install ball bearing into front bearing carrier with special bearing driver. Care must be taken to not damage circuit front cover adjacent to flat head screws.
4. Install output shaft or output flange assembly through rear bearing carrier and into taper in runner hub. Support the output end of output shaft flange assembly and press ball bearing onto output shaft until bearing inner race overhangs shaft end .060 to .120". **CAUTION:** Do not press flush with shaft end. Press force never to exceed 24,000 lbs. and torque to 177-195 lb. ft. bearing and runner are now in place.

NOTE: To hold shaft from turning while torquing capscrew, use open end or pipe wrench on retainer washer.

5. Mount selected input group with "O" ring and six 12 point capscrews with "O" rings to input end. Torque to 27-30 lb. ft.
6. Check air tightness with 5-10 PSI pressure applied thru filler hole.

TOOLS REQUIRED FOR ASSEMBLY

1. Bearing and seal driver.
2. Bearing driver.

SERVICE DISASSEMBLY INSTRUCTIONS

1. Remove the two pipe plug in the front cover and impeller, allow fluid to drain completely.
2. Remove coupling assembly from installation.
3. Remove the six 12 point capscrews and "O" rings from the input group. Remove input group and "O" ring.
4. Remove hex head capscrew which retains the output shaft or output flange assembly. Remove the retainer washer.
5. To remove Models HC or HCF output shaft and Model HCM output flange assembly, pack shaft center screw hole with grease. Wrap thread of removed hex. Head capscrew with several layers of teflon tape to seal against high grease pressure. Insert screw thru retainer washer into grease filled hole and tighten. Repack hole if necessary until release of taper joint is achieved. To remove Model HBM output shaft, first remove output bearing carrier per instructions no. 6. Support runner on a tube* and press output shaft from runner. Use plug against output shaft to protect threads in shaft.
6. Remove six 12 point capscrews and "O" rings from output bearing carrier. Remove carrier assembly and "O" ring.
7. If removal of bearing and seal from output bearing carrier is necessary, press out from coupling side.
8. To remove input ball bearing use a rod and tap out from coupling output end.

NOTE: If the front cover and impeller assembly is damaged, the basic unit must be replaced.

*TOOLS REQUIRED FOR DISASSEMBLY

1. Teflon tape
2. Tube (3.00 O.D. x 1.81 I.D. x 5.00 Long)

RECOMMENDED REPLACEMENTS FOR OVERHAUL

1. Seal
2. Bearings
3. All "O" rings

HYDRO-SHEAVE

MODEL 9.4 HSD FLUID COUPLING (HYDRO SHEAVE) UNIT ASSEMBLY AND SERVICE INSTRUCTIONS

ASSEMBLY INSTRUCTIONS

NOTE: Tapers to be cleaned with suitable solvent, wiped dry and assembled per S765. Do not use molybdenum disulfide or equivalent friction reducing compounds on fasteners or tapers.

1. If seal and needle bearing are not in place in sheave hub install them using special seal and bearing driver.
2. Install "O" ring in coupling face. Mount sheave hub to coupling face using the six 12 point capscrews with "O" rings. Torque capscrews to 27-30 lb. ft.
3. Install ball bearing into front bearing carrier with special bearing driver. Care must be taken to not damage circuit front cover adjacent to flat head screws.
4. To install input shaft, seal bushing with "O" ring, end cap assembly, and retaining ring.
 - a) Install input shaft through sheave hub and into taper in runner hub. Press shaft through ball bearing until it overhangs bearing $3/8$ to $7/16$ inch.
 - b) Install seal bushing with "O" ring into overhung end of shaft.
 - c) If seal is not in place in end cap install it using special seal driver.
 - d) Mount end cap assembly with "O" ring and six 12 point capscrews with "O" rings. Torque to 27-30 lb. ft.
 - e) Install roll pins in retainer washer. Place retainer washer with roll pins over shaft end making sure pins align with holes in shaft.
 - f) Insert capscrew through retainer washer and into thread of special tapped tool. Torque capscrew to 177-195 lb. ft.
 - g) To install motor shaft adapter, loosen capscrew from special tapped tool and remove tool. Insert motor shaft adapter and engage screw hand tight for shipment purposes only.
5. Check air tightness with 5-10 psi pressure applied thru filler hole.

TOOLS REQUIRED FOR ASSEMBLY

- Needle bearing and seal driver (sheave hub)
- Ball bearing driver
- Seal driver (end cap)
- 4. Tapped bar

SERVICE DISASSEMBLY INSTRUCTIONS

1. Remove the two pipe plugs in the front cover and impeller. Allow fluid to drain completely.
2. Remove six 12 point capscrews and "O" rings from end cap and coupling. Remove end cap and "O" ring.
3. Remove hex head capscrew which retains the motor shaft adapter. Remove retainer washer with roll pins.
4. Remove seal bushing and "O" ring from shaft end.
5. Insert push rod through hole in input shaft to bottom of tapped hole in motor shaft adapter. Use a capscrew* in end of input shaft, and tighten against push rod to break taper between input shaft and motor shaft adapter. Use flats on shaft end to react wrench torque on screw. It may be necessary to tap end of capscrew to break taper contact.
6. Remove input shaft and coupling assembly with sheave from motor shaft adapter. Remove the 3 capscrews retaining the sheave. Remove sheave from sheave hub.
7. Remove six 12 point capscrews and "O" rings from sheave hub and coupling. Remove hub assembly and "O" ring.
8. If removal of bearing and seal from sheave hub is necessary, use a rod and tap from sheave side to remove.
9. Remove pusher rod from motor shaft adapter. Remove shaft adapter from motor shaft.
10. To remove input shaft, support runner on a tube* and press input shaft from runner. Use plug against input shaft to protect threads in shaft.
11. To remove ball bearing, use a rod and tap out from coupling sheave end.

NOTE: If the front cover and impeller assembly is damaged, the basic unit must be replaced.

*TOOLS REQUIRED FOR DISASSEMBLY

1. Push rod (50 dia. x 4.00 long steel hardened to Rc 50 min.)
2. Tube (3.44 O.D. x 2.75 I.D. x 7.00 long)
3. Capscrew (3/4 10 NC x 1.00 long)

COMMENDED REPLACEMENTS FOR OVERHAUL

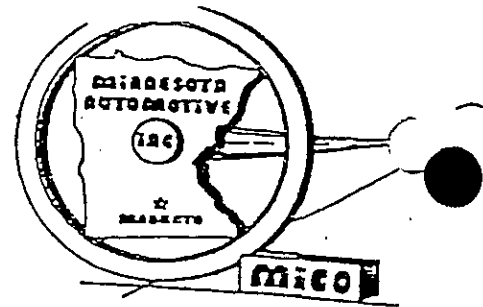
1. Seals
2. Bearings
3. "O" rings

INSTALLATION AND SERVICE INSTRUCTIONS

MICO

CALIPER DISC BRAKE

MODEL NO. 02-520-027



The MICO Model 02-520-027 Disc Brake is designed to be used with a disc of 1/2 inch thickness. (For other disc thicknesses consult manufacturer.) If a disc of lesser thickness is used, the same centerline must be maintained and the initial disc to puck clearance will be greater; however, after an initial brake application the linings will contact the disc, then upon pressure release, the Mico-Jeffries retractor-compensator will provide the proper running clearance of .010 inch to .030 inch per side.

CAUTION: Minimum allowable disc thickness for use with this caliper assembly is 7/16". If a thinner disc is used, a loss of fluid may occur at the time of complete lining wear.

Uneven lining wear may occur if the caliper is not mounted squarely over the disc, or, if the pucks are not parallel to the disc surface. Reduced 'O' ring seal life may also be evident. After the linings have worn to the point of replacement they then may be replaced with lining 20-060-012.

When installing the MICO Model 02-520-027 Disc Brake it is of utmost importance that the caliper be centered evenly and squarely over the disc. This is to provide even and equal travel and contact of the lining assemblies or "pucks". The MICO Model 02-520-027 has a mounting face to disc centerline distance of 2-11/16". When planning or designing an installation of this brake on a vehicle this dimension should be closely held. A .03 inch variance (greater or lesser) from this 2-11/16" dimension will eliminate the disc running clearance. Proper shims must be inserted between the disc brake mounting face and the vehicle mounting surface. Torque mounting bolts to approximately 80 foot pounds. Bleed according to standard procedure.

DISASSEMBLY PROCEDURE

1. Remove brake from vehicle by disconnecting necessary fluid lines and removing mounting bolts. (Drain fluid from assembly.)
2. Separate caliper halves (item 3) by removing assembly bolts (item 1), washers (item 2), nuts (item 18), tubing assembly (item 16) and spacer (item 14). Use bench vise.
3. Remove free floating lining assembly (item 13).
4. Loosen assembly nut (item 12) approximately 3 turns with a 12" socket wrench.
5. Remove piston (item 6) from housing by pulling piston from bore. If piston fails to move, place housing half face down on bench. Protect piston face by placing a cloth pad between piston and bench. Support housing half on bench in such a way that piston can be blown out of its bore. This is accomplished by carefully introducing low pressure air (10-15 p.s.i.) through fluid inlet fittings. **CAUTION:** Do not use high pressure as it is dangerous and unnecessary. Be careful not to scratch piston.
6. Remove assembly nut (item 12), loading spring (item 11), wedge (item 10), pressure ring (item 9), and o'ring (item 8) from compensator assembly (item 20).
7. Remove compensator sub-assembly (item 7) from bottom of housing (item 3) using an 11/16" socket wrench over the retainer.
8. Remove back-up ring (item 5) and o'ring (item 4) from housing groove.
9. Repeat steps 3-8 for second caliper half.

CHANGE LINING PROCEDURE

- 1-2, Follow steps 1 and 2 of Disassembly Procedure.
3. Remove free floating lining assemblies (item 13).
4. Install new linings (item 13) into housing pockets.
5. Complete assembly and installation by following steps 8-14 of Assembly Procedure.

ASSEMBLY PROCEDURE

1. Clean housing bore with type fluid used in system.
2. Lubricate o'ring (item 4) and back-up ring (item 5) with type fluid used in system and install in groove of housing. *CAUTION: When installing back-up ring (item 5) be sure it is positioned on the lining side of groove. If the back-up ring is cupped be sure that cupped side is against o'ring (item 4).*
3. Install new compensator sub-assembly (item 7) in bottom of housing using an 11/16" socket wrench over the retainer.
4. Lubricate piston (item 6) with type fluid used in the system. Carefully insert piston through o'ring (item 4). Push piston into bore with a twisting motion. Piston must bottom on housing to assure lining to disc clearance on vehicle.
5. Lubricate and install compensator o'ring (item 8), pressure ring (item 9), wedge (item 10) with taper to match that of the compensating piston. Install loading spring (item 11) and assembly nut (item 12). Torque assembly nut to approximately 15 ft. lbs.
6. Install lining (item 13) into housing pocket.
7. Repeat steps 1-6 for second housing half.
8. Position spacer (item 14) between the caliper halves (item 3) and insert two 1/2" bolts (item 1) with washers (item 2) through the outboard holes. Assemble washers (item 2) and nuts (item 18) and torque to approximately 80 ft. lbs.
9. Connect tubing assembly (item 16).
10. Install brake assembly on vehicle with bleeder screw up. Torque mounting bolts to approximately 80 ft. lbs. and connect lines.
11. Connect necessary fluid lines.
12. Bleed according to standard procedure.
13. Make several static brake applications. Check for leaks and bleed again.
14. Check linings to be sure there is no drag. If lining to disc drag occurs refer to step 4 above to correct.

REPAIR KITS:

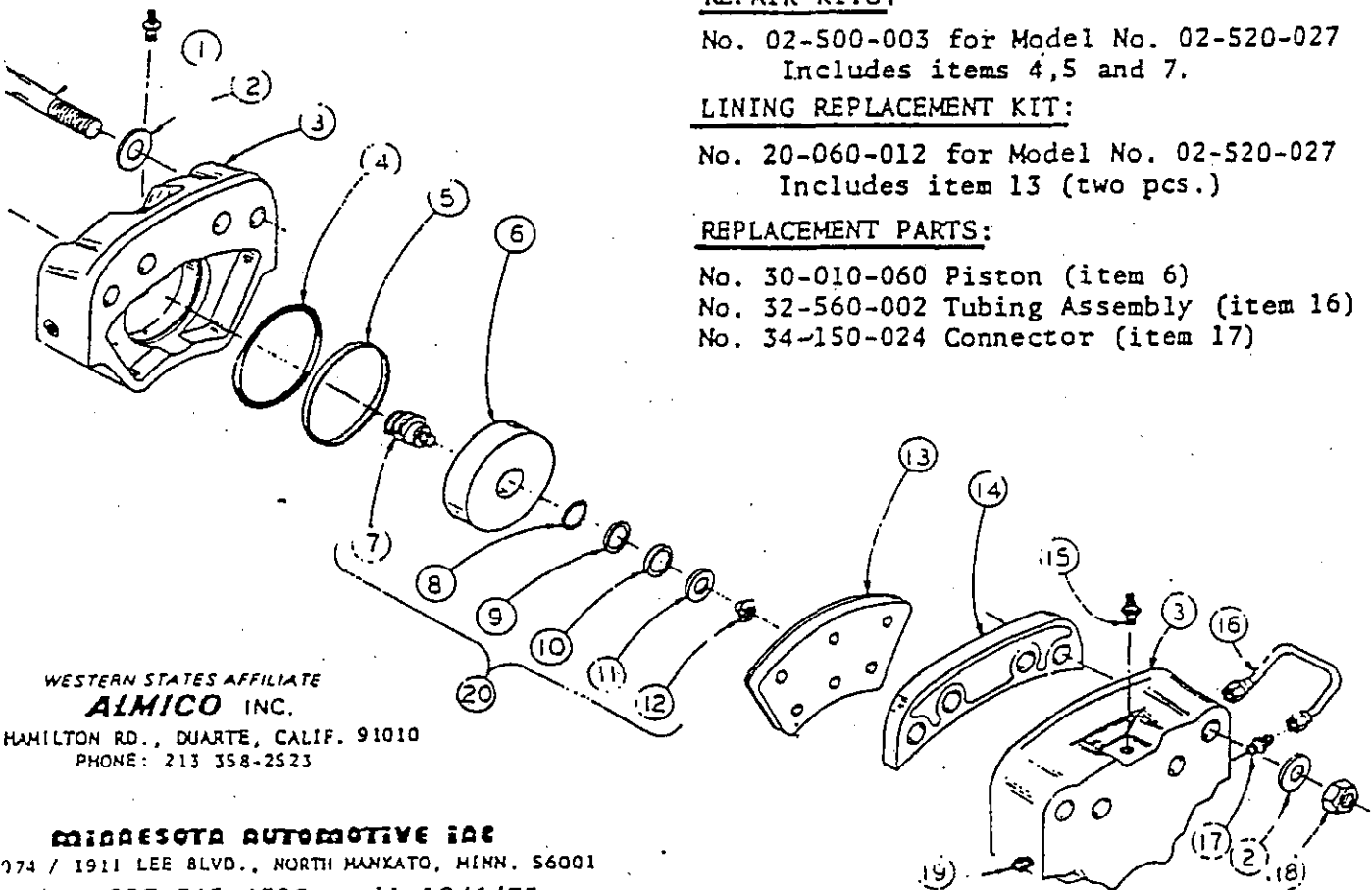
No. 02-500-003 for Model No. 02-520-027
Includes items 4, 5 and 7.

LINING REPLACEMENT KIT:

No. 20-060-012 for Model No. 02-520-027
Includes item 13 (two pcs.)

REPLACEMENT PARTS:

No. 30-010-060 Piston (item 6)
No. 32-560-002 Tubing Assembly (item 16)
No. 34-150-024 Connector (item 17)



WESTERN STATES AFFILIATE
ALMICO INC.

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Service the control cylinder if one or more of the following symptoms are suspected:

1. If normal lever force and stroke develops braking pressure, but the lever then drifts, service the head and barrel (13).
 2. If the lever will not return to normal position after brake application, service the spring case (20).
 3. If brake fluid leaks past the shaft or the spring case, replace these seals (8-12).
 4. If the supply tank (3) appears defective, *discard and replace* the complete assembly.
- When servicing the assembly, always refer to the nameplate assembly number on top of the supply tank.

SERVICING THE HEAD AND BARREL (13)

Drain fluid from the supply tank (3). Remove four stud bolts and head and barrel assembly (13). Clamp barrel light in vise in vertical position with piston end up. Remove stop wire, support ring piston, cup retainer and return spring valve and valve seat. Clean cylinder using only brake fluid or isopropyl alcohol. *Do not* use gasoline, cleaning solvent or mineral oil. Bypass port holes must not be clogged. If cylinder bore is scratched or pitted, discard and replace head and barrel assembly.

Reassemble head and barrel in reverse order using all new parts (14, 16-19A) from head and barrel repair kit ST-201. Lubricate parts with vegetable base fluid. Clean residual fluid from supply tank reservoir and reinstall head and barrel using new gear gasket (31). Make sure that piston push rod aligns with socket on lever (5).

SERVICING THE SPRING CASE (20-26)

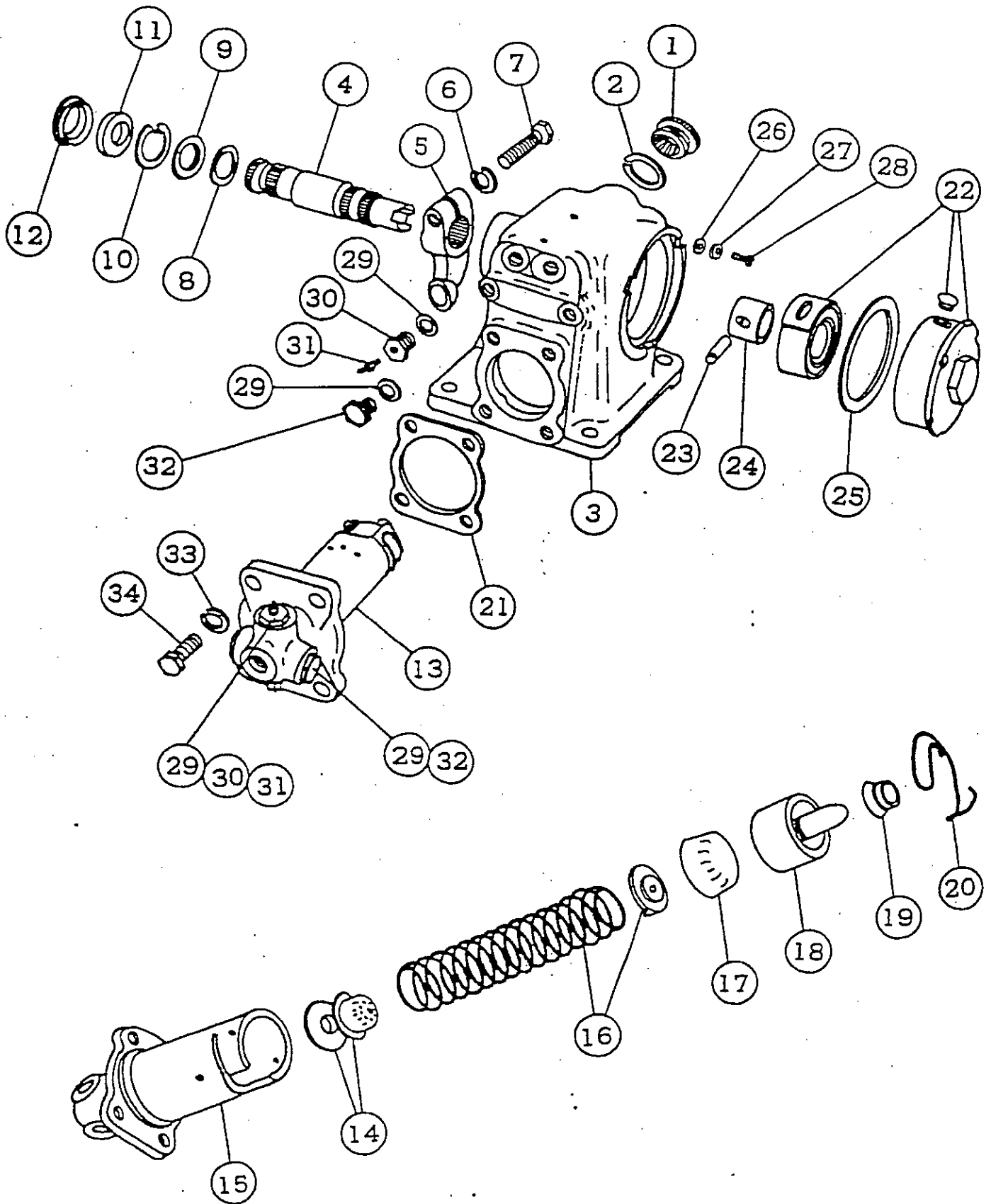
If the lever will not return to normal position, loosen the three screws (26) and apply 125-175 in. lb. counterclockwise torque to the spring case (20). Tighten screws. If this does not help, the clock spring may be defective. Loosen screws and unwind the spring case clockwise, remove the screws and spring case. The spring case is serviced as a ST-202 Kit including items 20-26. Note that a new spring case includes a hex for tightening with standard wrench.

To reassemble, lubricate gasket (23) with brake fluid and slide over spring case (20). Insert assembly into supply tank (3) while rotating to engage pin (21) to slot in shaft (4). Attach three lockwashers, case washers and screws loosely. Use wrench to wind spring case counterclockwise to 125-175 in. lb. torque. Tighten the screws and check torque by installing arm at a 45° angle above floor. With head and barrel (13) in place, depressed arm must return to original angle.

SERVICING THE SHAFT SEAL (8-12)

Remove retainer, felt seal, snap ring, retainer plate and o-ring. Use new parts (8-12) from ST-200 Shaft Kit. Dip o-ring and felt seal in brake fluid and reinstall in reverse order.

CONTROL CYLINDER



59 SERVICING THE HYDRAULIC BRAKE SYSTEM

After all brake components are completely assembled, but before connecting rod end (part 36), follow the following procedure:

- A. Locate tilt head in a position where the control cylinder filler plug (part 1) is in the "Up" position.
- B. Remove filler plug (part 1) and fill the control cylinder reservoir with an automotive type (vegetable based brake fluid). Replace filler plug (part 1).
- C. Back disc brake bleeder plug (part 61) out $\frac{1}{4}$ turn.
- D. With bleeder plug (part 61) in the open position, pump the control cylinder until brake fluid is ejected from the bleeder plug (part 61).
- E. Re-tighten bleeder plug (part 61) securely. Operate control cylinder arm (part 35), using 16" crescent wrench, or other advantage. Maintain pressure on cylinder arm (part 35) and open bleeder plug (part 61) $\frac{1}{4}$ turn. Re-tighten before releasing cylinder arm (part 35).
- F. Wipe clean all evidence of brake fluid spills.
- G. Pre-load control cylinder by fixing control arm (part 35) in such a position that it requires half its throw to mate the rod end (part 36) when the brake cable is in the "Brake Off" position. This will establish the "Brake Off" position of the control arm (part 35) to be approximately 45° with respect to the base of the control cylinder when control cylinder arm (part 35) is connected to rod end (part 36).
- H. Actuate brake system from operators control stand. If steps (A) through (G) were successful, the brake handle will develop considerable resistance. If the brake arm is soft, it indicates that either the bleeding was not satisfactorily completed, or there is a leak in the system.
- I. Inspect all connections for leaks.
- J. In the event the brake does not operate and there are no leaks, repeat steps (A) through (I) until trapped air is disposed of through bleeding.
- K. When the brake is operational, locate the tilt head in a position where the control cylinder filler plug is up and carry out step (B).

TROUBLE SHOOTING THE CAR

CAUSES AND CORRECTIONS

Excessive Tube Punctures:

1. Under pressurization. — Inflate to 5 to 6 PSI
2. Improperly installed tube. — Readjust as required for proper seating.
3. Foreign projection punctures. — Check ride bumpers and perimeter bumpers for protrusions and correct.

Car Pulls To One Side:

1. Unequal actuation of hydrostatic transmission. — Adjust control rod for equal throw.
2. Low oil level in hydrostatic transmission. — Fill transmission hydrostatic to proper level and check for leaks.
3. Steering lever out of adjustment. — Match adjust steering levels to an upright position set to incline about 2° from operator.
4. Broken chain. — Repair or replace with new chain and lubricate.
5. Loose or broken drive sheave. — Tighten or replace with new drive sheave.
6. Loose or broken drive belt. — Tighten or replace with new drive belt.

Motor Runs, Steering Levers Engaged, Car Does Not Drive:

1. Hydrostatic transmission in neutral mode. — Adjust steering levers to upright position inclining 2° from car operator.
2. Broken motor drive belt. — Replace belt.
3. Oil low in hydrostatic transmission. — Fill to proper level and check for leaks.
4. Steering levers out of adjustment. — Adjust steering levers to upright position inclining 2° from car operator.

ELECTRICAL TROUBLE SHOOTING

This section assumes power to the floor is on, of proper voltage, and proper current capacity.

Car Runs Erratically:

A, B, C, I, J

Car Will Not Run In Any Position:

A, B, C, D, E, F, G, K

Fuse Blowing, Immediate & Consistent:

C

Car Runs Backwards:

H

- A. Check fuse
- B. Check power to top of fuse
- C. Check Diodes
- D. Check power out of rectifier
- E. Turn on seat by-pass switch
- F. Check by-pass solenoid
- G. Check power at motor leads
- H. Reverse motor leads
- I. Check slipper contacts, clean slippers to bare metal.
- J. Check car deck, clean thoroughly
- K. Check motor



SIDEWINDER CHECKLIST

(Device) Name _____ Serial Number _____

INSPECTION DATE _____ INSPECTED BY _____

Please refer to the proper factory Parts Catalog and Operating Instruction Manual for detailed explanation of Inspection and Maintenance procedures. (Additional copies are available from us). In addition to your routine inspection and maintenance the following items should be checked:

DESCRIPTION	WHAT TO CHECK	OK/BY	DATE	NOTES & REMARKS
1. Mudsills	Cracks or structural damage.			Notify ORI if damage or cracks are discovered.
2. Column				
3. Booms				
4. Sway Brace Rods	Straightness, cracks, damaged threads or nuts.			If rods are bent, straighten cold. If nuts are damaged or cracked, replace.
5. Pins & Safeties	Looseness in the pins. Proper safety pins.			If pins are loose, ream holes and replace with factory oversized pins. Replace damaged or improper pins with pins shown in parts manual.
6. Cars	Loose, cracked, or missing screen. Worn or broken tubing.			Repair or replace damaged or missing screen. Contact ORI if worn or broken tubing is found.
7. Car Spindle	Visually check for wear or damage. Looseness on hub.			If spindle is worn or has been welded on, replacement is ABSOLUTELY NECESSARY.
8. Crank Arm & Bushing	Excessive play in crank arm, worn bushing.			Replacement is necessary if any adverse condition exists. DO NOT operate if crank arm is loose or removed

DESCRIPTION	WHAT TO CHECK	OK/BY	DATE	NOTES & REMARKS
9. Automatic Belt Return Bar	Condition of all fasteners, lost or broken springs, belt bar door key hole for wear. (Max, from outside of hole to end of bar 3/8") Worn or damaged door keys, missing door key straps, restraint belt condition.			Replace worn belts, enlarged key holes should be weld-fitted and drilled to proper size. Install new fasteners, keys & straps as required.
10. Car Hubs	Looseness on spindle when lock nuts are set. Key & key-way, inner tapered nut, condition of special car lock washer.			If taper hub is worn so that it will not seat properly, contact ORI for instructions. Replace tapered inner nut if damaged. Replace worn car lock washer.
1. Main Support Spindle & Bushing	Check with ride in operating position. Cars at loading position. Push cars toward tower, & then pull back away from tower.			If boom attaching bolts & pins are tight, there should be no play, if play exceeds 1", and replacement of inner, outer bearing &/or boom links may be necessary.
2. Car Revolving Chain Sprockets	Tightness, corrosion, damage, general condition.			If any adverse condition exists, replace. Looseness of the revolving chain will result in excessive strain on the crank arm. Car revolving chain should be tight on the sprocket.
3. Car Revolving Rod	Crank arm attaching point, adjusting points, car spindle attaching mono ball. Straightness damage.			If any adverse conditions or ware is evident, replace with factory parts.