

# HOOK SUSPENDED, EXTENDED HANDWHEEL, TWIN HOOKS and ARMY TYPE HOISTS

SECTION ZMS-80-R-03

## SERVICE INSTRUCTIONS AND MAINTENANCE MANUAL

### OPERATING INSTRUCTIONS

A Lockout/Tagout policy and procedure shall be implemented by the owner or user of all hoists. MAKE A COMPLETE INSPECTION of the hoist at regular and frequent intervals. See ASME B30.16 for inspection criteria and record keeping requirements.

LUBRICATE AS RECOMMENDED, as often as may be necessary.

AVOID OVERLOADING and impacting. Use only with loads within the rated hoist capacity, and avoid sudden stops and jerking in raising or lowering. Both are dangerous and destructive, and will shorten the working life of the hoist.

### LUBRICATING THE HOIST

Ordinarily only the load chain will require any periodic lubrication. These manual chain hoists have been thoroughly lubricated and tested when they leave the factory. Normally, factory lubrication within the completely enclosed covers will

last throughout the working life of the hoist. However, the lubricant will melt and escape if the hoist is subjected to very high temperatures. Should this happen the lubrication must be renewed as recommended below.

#### (1) BRAKE

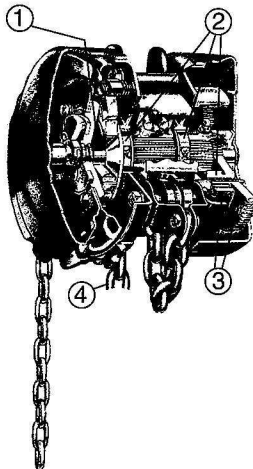
It should be immediately noted in connection with lubrication of the hoist that the brake requires none at any time. It is advisable, though, to coat the square thread lightly with bearing grease at reassembly.

#### (2) NEEDLE BEARINGS

Lubricate with an NLGI Grade 2, complex lithium based grease with E.P. additive after prolonged use or at reassembly.

#### (3) GEARS

Use NLGI Grade 2, complex lithium based grease with E.P. additive. Lubricate gears after prolonged use or at reassembly.



#### (4) LOAD CHAIN

Useful load chain life can be appreciably increased by immersing chain in oil at frequent intervals. Unlubricated chain wears rapidly from friction with the pocket wheel as well as with its own links. Immerse in container of oil with an E.P. additive as often as necessary or swab with oil soaked rag. Wipe off excess oil. This will maintain the chain in a lubricated and rust free condition.

If oil is objectionable, or not practical, a bonded lubricant such as Dow Molykote M-88 may be used.

Consult your local oil dealer in regard to recommended grades of lubrication.

#### CAUTION: MAKE NEEDED REPLACEMENTS IMMEDIATELY.

If hooks are badly stretched or worn, replace with new ones.

Obviously worn or stretched chain should also be replaced immediately. Do not anneal this hardened steel load chain. It has been heat treated and will not work-harden. Do not use hoist if the load chain is fouled by rust or other foreign substances. This hoist load chain will wear well if kept lubricated.

Replace the load sheave when both ends of each pocket

become excessively worn. If only one end of pockets shows wear, reverse the load sheave. If load sheave is replaced, do not use stretched or badly worn chain in new load sheave pockets.

Replace any badly worn or damaged brake assembly washers, pawl or pawl spring. Adjust check washer No. 925 if substantially greater than  $\frac{1}{4}$  inch throw is measured.

### ASSEMBLY PROCEDURE

Reassembling the manual hoist Mechanism after complete tear-down.

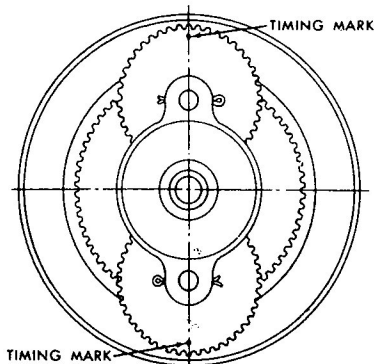
Assemble ball bearings No. 960 in internal gear frame No. 920-G and handwheel frame No. 920-H. Place load shaft No. 974 in internal gear frame bearing, with small splined end toward internal gear.

Assemble bearings No. 922 in gear-and-pinion No. 927. Assemble gear-and-pinion inside pinion cage No. 921 and place cotter in axles No. 919.

Assemble bearing No. 906 in pinion cage bearing block No. 959, and press pinion cage bearing block into pinion cage. Assemble pinion cage complete with gears on splined load shaft. Line up the set-screw hole in pinion cage with hole in load shaft.

Now, time the gears. Locate punch marks on gears as shown in Fig. 2. These marks must be directly opposite each other as indicated, for proper timing.

**FIG. 2**



After gears are properly installed, press pinion cage with gears completely onto the load shaft, and secure with square-head setscrew and lock nut.

Assemble load sheave No. 929 on load shaft No. 974 with combination stripper and load chain guide No. 905. Align stripper with studs on internal gear frame and press on as one assembly. Spacing of studs assures location.

Next, assemble pawl spring No. 910 and pawl No. 923 on handwheel frame stud and fasten with pawl retaining snap ring.

Assemble handwheel frame to internal gear frame, and install top hook No. 913 before pressing frame over separator studs. Fasten with four nuts and lock washers, making sure the tail of the pawl spring No. 910 is anchored under the nearest separator stud nut.

*NOTE: A hoist in which load suspension parts have been altered, replaced or repaired should be load tested at 100% of rated capacity per ASME B30.16.*

## DO'S AND DON'TS FOR SAFE OPERATION

### DO'S

READ ASME B30.16 SAFETY STANDARD FOR OVERHEAD HOISTS

1. CHECK lubricant before operating the hoist.
2. EXAMINE hoist before each shift. CHECK for damaged hooks or chains, also make sure the hoist is properly secured. Make sure your hoist is kept clean and well lubricated.
3. CHECK daily the chain for improper seating, twisting, kinking, wear or other defects before operating the hoist. If these are not checked, the chain may break under a normal load.
4. BE SURE there are no objects in the way of a load or hook when moving the hoist on the trolley.
5. MAKE SURE a load clears neighboring stock piles or machinery when raising or lowering the load.
6. CENTER hoist unit over the load before lifting.
7. AVOID swinging of load or load hook when traveling the hoist.
8. PROPERLY secure outdoor hoist when unattended.
9. KEEP load block above head level when not in use.
10. BE SURE the sling is properly seated in the saddle of the hook. Tip loading leads to spreading and possible failure. Hook latch should not support any part of the load.
11. DO lift a load only a few inches then check load balance and brake operation before proceeding.

Run spindle No. 918 through load shaft. Spindle will fall in place and may be turned easily if gears are properly timed. If spindle cannot be turned, or locks, gears are out of time and the timing operation will have to be repeated.

Proceed with assembling the brake parts. Place one brake disc No. 934 over the threaded end of the spindle No. 918 and follow with the ratchet No. 935 and another brake disc No. 934. Fit the end of the pawl into the ratchet teeth.

Rotate handwheel and nut clockwise on spindle and tighten. Assemble check washer No. 925 on splined hub of part No. 916 making sure that lug on splined ring is  $\frac{1}{4}$  inch minimum to right of hole in spindle. Insert drive cotter pin.

Try handwheel release, and if it releases hard, increase the gap between drive pin and check washer lug by one tooth. Keep the gap to a minimum. Handwheel nut No. 916 must not tighten against the drive pin when releasing.

Assemble bearing No. 903 in handwheel cover No. 968. Assemble hand chain No. 937 in handwheel cover.

Assemble handwheel cover to frame, and fasten with four round head screws and lock washers. Reeve the hand chain on handwheel with the welds up in the grooves. Apply and close open link.

Now, reeve load chain in load sheave, again with the side opposite weld of each link riding in the groove. First and last links of chain must be in vertical position. Test reeving by pulling on hand chain. Excessive hand chain pull will indicate load chain is not properly set in load sheave pockets.

Remedy by backing load chain off and reeving again. Continued hand chain pulling will cause chain to ball, with serious damage to chain and cover.

Finally, fasten dead end of load chain to combination stripper and dead support No. 905 with bolt nut and lockwasher.

Lubricate gears as recommended on page 1, and assemble gear cover No. 930 on internal gear frame. Fasten with four round head screws and lock washers.

### DON'TS

1. NEVER lift a load with hoist until all personal are clear.
2. DO NOT allow any unqualified personnel to operate hoist.
3. AVOID collisions or bumping of hoists.
4. DO NOT transport load over personnel.
5. NEVER carry personnel on the hook or the load.
6. DO NOT operate hoist if you are not physically fit to do so.
7. NEVER pick up a load beyond the capacity appearing on the hoist.
8. DO NOT tamper with any parts of the hoist unless you are a qualified maintenance man.
9. NEVER use the hoist chain as a sling.
10. DO NOT use chain as ground for welding. NEVER touch the welding electrode to the chain.
11. DO NOT divert attention from load while operating hoist.
12. DO NOT leave a load suspended in the air at the end of a work shift, or for extended periods of time and DO NOT leave a load unattended during regular working hours.
13. DO NOT tip or "point" load a hook.
14. DO NOT operate a hoist in need of adjustment or repair.
15. DO NOT operate a hand hoist with power or more than one operator.
16. DO NOT operate a hoist that has been tagged out of service.