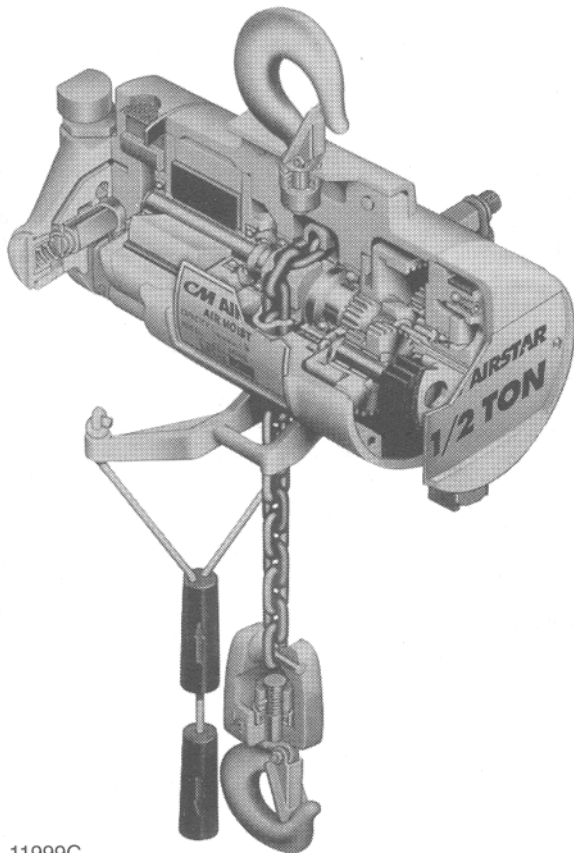


OPERATION, SERVICE & PARTS MANUAL

CM[®] AIRSTAR[™] **AIR HOISTS**



11999C

Rated Loads: 1/4
thru 1 ton/ 225
thru 900 kg.

Follow all instructions and warnings for inspecting, maintaining and operating this hoist. The use of any hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual.

Retain this manual for future reference and use.

Forward this manual to the operator. Failure to operate this equipment as directed in this manual may cause injury.

Before installing hoist, fill in the information below. Refer to the Hoist and Motor data plates.

Model No. _____

Serial No. _____

Purchase Date _____

Air Pressure _____

Rated Load _____

CM COLUMBUS McKINNON CORPORATION
INDUSTRIAL PRODUCTS DIVISION
140 JOHN JAMES AUDUBON PARKWAY
AMHERST, NEW YORK 14228-1197 U.S.A.

AIRSTAR

PRINTED IN U.S.A.

FOREWORD

This book contains important information to help you install, operate and maintain your new **CM AIRSTAR** Air Hoist. We recommend that you study its contents thoroughly before putting your hoist to use. Through proper installation, application of correct operating procedures, and by practicing the recommended maintenance suggestions you will be assured maximum service from your hoist.

Complete inspection, maintenance and overhaul service is available for **CM AIRSTAR** Air Hoists at recognized CM Repair Stations. Refer to your telephone directory yellow pages under "HOISTS." They are staffed by quali-

fied factory-trained service men and stock approved CM replacement parts.

Replacement parts information is also included in this book for your convenience. Since it will likely be a long time before parts information is needed, we suggest that, after you have become familiar with operation and preventive maintenance procedures, this book be carefully filed for future reference.

**EQUIPMENT ILLUSTRATED AND DESCRIBED HEREIN IS NOT
DESIGNED OR SUITABLE FOR LIFTING OR LOWERING PERSONS.**

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NOTICE: Information contained in this book is subject to change without notice.

SECTION I – GENERAL DESCRIPTION

1-1. **GENERAL. CM AIRSTAR Air Hoists** are precision built chain type hoists which are built in three rated loads, 1/4, 1/2, and 1 ton. Each size is available in pull cord control and pendantthrottle control models. In addition, there are model variations with coil type or roller type load chains and hook or lug type suspensions. Coil chain hoists are also provided in spark resistant models. (Note: Spark resistant models have rated loads of 3/8 and 3/4 ton.)

1-2. **BASIC CONSTRUCTION.** All sizes and models are of the same basic design, having many common and interchangeable parts. They consist primarily of an aluminum alloy frame which houses a vane type air motor, chain sprocket wheel, and gearing. A shoe-type brake is mounted on one end of frame and is encased in an aluminum alloy end cover. A control head assembly with built-in muffler and air inlet swivel connection is mounted on opposite end of frame. An upper suspension hook or lug bracket is attached to the top of the frame. Either a special nickel steel roller type load chain or an alloy steel coil type load chain with spring-latch type lower block assembly is employed to raise and lower loads. A block and chain operated limit stop lever is mounted at bottom of frame and is pinned to throttle valve control shaft. Hoist operation is controlled by either pull cords or a pendant throttle control assembly.

1-3. **DIFFERENCES BETWEEN MODELS AND SIZES.** The main differences between hoist models are in the type of control, type load chain and type suspension employed. These are described in paragraphs (a.) through (c.) below. Differences between sizes are in reeving of the load chain. On 1/4 and 1/2 ton hoists, the load chain is single reeved (one part of chain); on 1 ton hoists, the chain is double

reeved (two parts of chain). Standard lift is 10' though increased lifts may be ordered.

a. Control differences are in methods employed for operating hoist. There are two types, pull cord control and pendant throttle control. These are further described in Section I I I, paragraphs 3-1 and 3-3.

b. Two types of load chains are used as the lifting medium, roller chain and coil chain. The roller type chain is a special precision manufactured nickel steel chain. The coil type chain is full-flexing, electric welded, link chain; carburized alloy steel on standard models and surface hardened chrome-nickel stainless steel on spark resistant models. Both types are especially designed for use in hoisting.

c. Suspension differences include a conventional hook type mounting and a lug type mounting. Hook suspension allows portability, permitting hoist to be easily moved from job to job. Lug suspension allows rigid trolley mounting of hoist on an overhead I-beam to permit traversing hoist and load. Rigid mounting of trolley on hoist affords maximum headroom advantage, saving up to 3-3/16" compared to a hoist hook-suspended on a trolley.

1-4. HOIST DATA.

*Rated Loads: 1/4, 1/2 and 1 ton Air Pressure (recommended): 90 psi Air

Consumption: 48 cfm at 90 psi Net Weight (basic hoist): 36 pounds

Suspension: Hook or lug Control: Pull Cord or Pendant Throttle

*For standard models. Spark resistant models are rated at 3/8 and 3/4 ton.

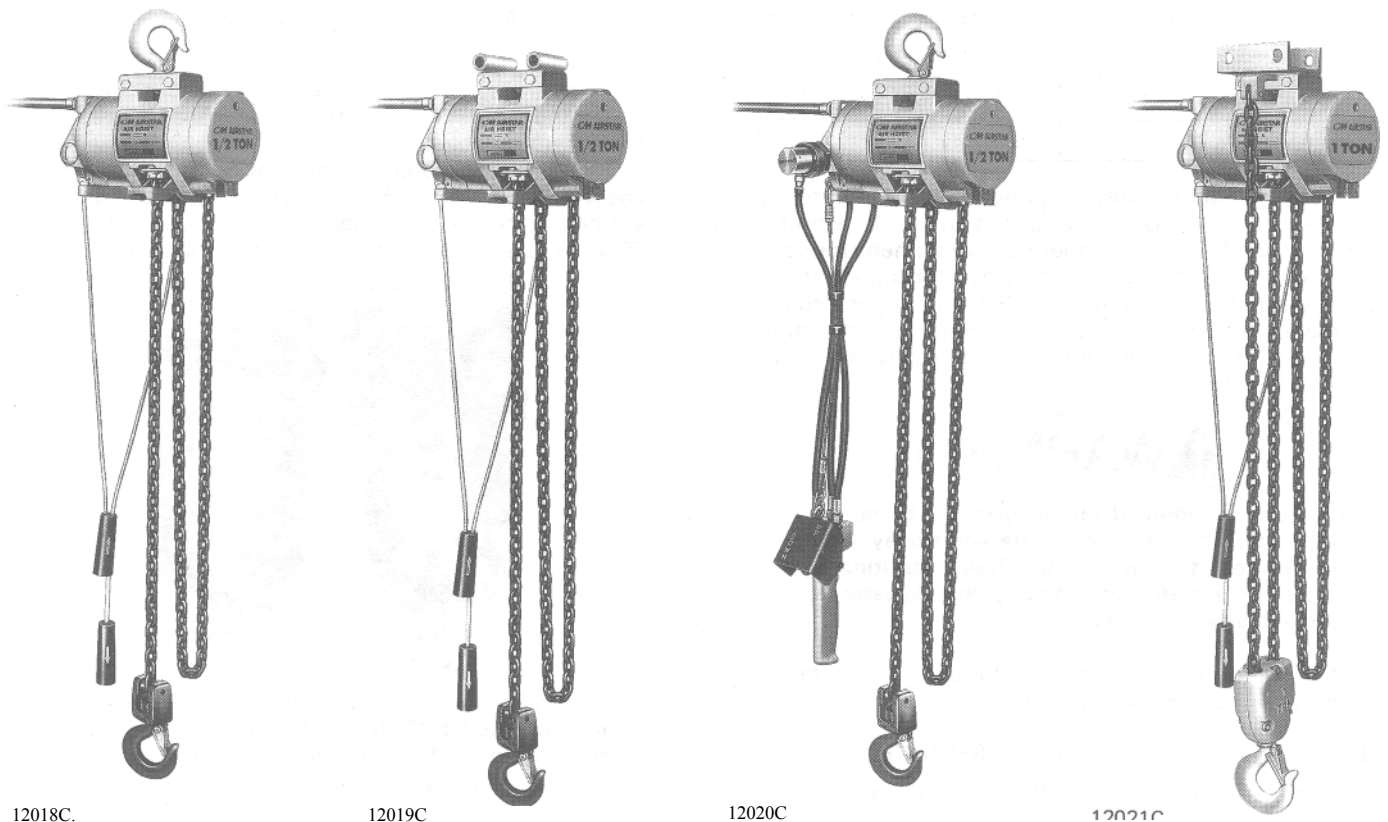


Figure 1-1. Views of Various Air Hoist Models.

SECTION II – INSTALLATION

2-1. **GENERAL. CM AIRSTAR** Air Hoists are completely lubricated and load tested before being shipped from the factory. To place hoist in service, attach to a suitable overhead suspension (Paragraph 2-2) in area to be used; connect hoist to nearest air supply (paragraph 2-3); and check and adjust hoist speed (paragraph 2-4).

2-2. SUSPENDING HOIST.

a. On hook suspended hoists, select a suitable overhead support in area hoist is to be used (one capable of holding combined weight of hoist and its rated load) and hang hoist up. **Be certain that upper hook is firmly seated in center of hook saddle and that the spring safety latch is properly closed over hook opening.** In some cases, it may be necessary to first remove spring latch before hook will fit over a support. Reinstall latch after hook is engaged.

b. On lug suspended hoists, select a suitable overhead support in area hoist is to be used (one capable of holding combined weight of hoist and its rated load). Mount hoist using through bolts of appropriate size to fit mounting holes in suspension lug at top of hoist. Use only suspension bolts provided by CM. (See table below.)



The structure used to suspend hoist must be of sufficient strength to withstand reasonable forces

to which hoist and support may be subjected. Hoist must be aligned with load to avoid side pulls.

SUSPENSION LUG BOLT SIZE AND HOLE SPACING

Dimension	Hoist Rated Load (Ton)	
	1/4, 3/8, 1/2	3/4, 1
Bolt Size (ins.)	5/8	5/8
Center Distance Between Bolt Holes (ins.)	3-1/8	3-1/8
Suspension Lug Widths (ins.)	3-5/8	4

c. On rigid mount trolley suspended hoists, the trolley side plates must be properly spaced so trolley will fit (beam on which hoist will operate). Adjustment for various I-beam sizes is accomplished by rearrangement of spacer washers on through bolts which connect trolley side plates to hoist suspension lug. Refer to instruction sheet furnished with CM Rigid Mount Trolleys for complete instructions.



If trolley is mounted on an open-end beam, end stops must be installed to prevent trolley from running off the end of the beam resulting in injury to operator and others, and damages to load and other property.

d. If chain container is to be used on hoist, install it following instructions furnished with container.

2-3. CONNECTING HOIST TO AIR SERVICE.

a. Connect hoist to nearest filtered and lubricated air source using minimum 1/2" I.D. air hose assembly (see Figure 2-1). Avoid use of reducing bushing and nipple or hose assemblies of smaller diameters which may cause restrictions.

b. If hoist is suspended by trolley, provide sufficient hose to reach from air source to farthest point of trolley travel. CM Hose Trolleys are recommended to keep hose up out of the way (see Figure 2-2).

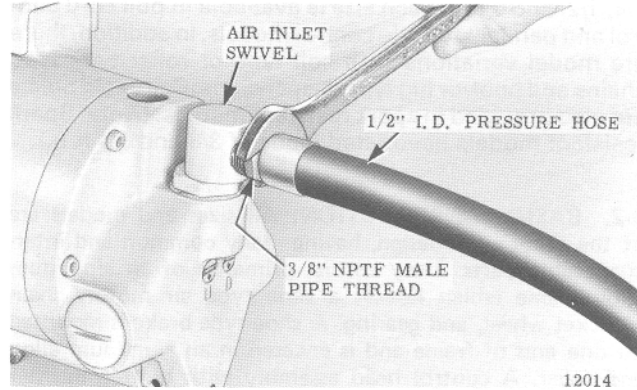


Figure 2-1. Connecting Air Hose to Hoist.

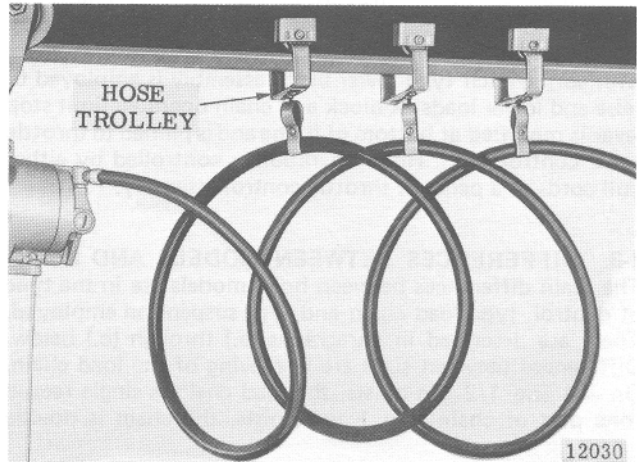


Figure 2-2. Air Hoist Supported by CM Hose Trolleys.

c. A filter and lubricator unit (Figure 2-3) must be installed between air source and air hose leading to hoist. These keep air flowing to hoist free of dirt and add lubricant to air so internal parts of motor are constantly lubricated. Use Air Hoist Motor Oil or good grade 10W machine oil (approximately viscosity 150 SSU at 100°F.). Multi-viscosity, detergent type engine oil is not recommended. Feed one drop of oil for every 50 to 75 cubic feet of air going through the air motor.

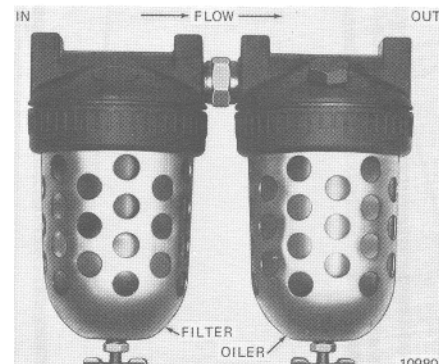


Figure 2-3. Air Filter and Lubricator Unit.

d. The recommended operating air pressure for all capacities of **CM AIRSTAR** Air Hoists is 90 psi. When line pressure exceeds 100 psi (while hoist is operating), it is recommended that a pressure regulator valve be provided in the air supply line to maintain proper pressure. However, there is a wide range of pressures within which the hoists will operate. Refer to "Performance Charts." See Figure 2-5.

2-4. HOISTING AND LOWERING SPEED ADJUSTMENTS.

- a. Hoist speed is adjusted at the factory to give maximum lifting speed and is set at average between minimum and maximum lowering speed.
- b. To adjust the hoisting or lowering speed, turn appropriate regulator screw (Figure 2-4) in either direction a little at a time while operating hoist under load.

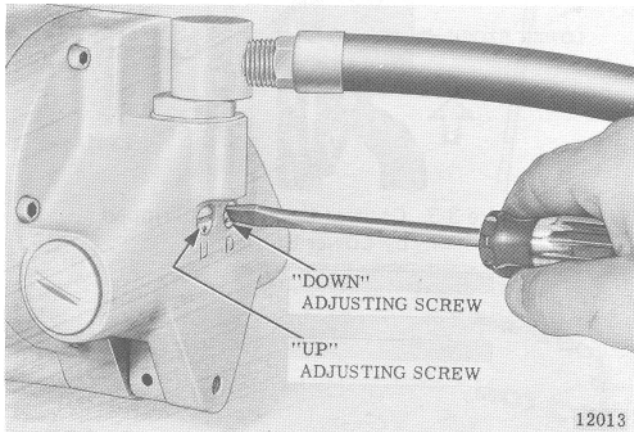


Figure 2-4. Hoisting and Lowering Speed Adjustment.

CAUTION

Maximum lowering speed with rated load is very high. Adjust with care. Heads of adjusting screws should not extend beyond outer surface of housing.

- c. When the screwdriver slots on ends of adjusting screws are horizontal (hoist in normal suspended position), the hoist speeds will be at either minimum speed or maximum speed. Rotating the screws 180° in either direction will give a full adjustment between minimum and maximum speed limits. NOTE: Screws have arrow stamped on end to assist operator with adjustment.

SECTION III – OPERATION

3-1. **GENERAL.** Operation of **CM AIRSTAR** Air Hoists is controlled by either pull cords or a pendant throttle control, depending upon the model. Pull Cord Control models have pull type control cords (Figure 3-1) suspended from a rocker type lever at bottom of hoist that actuates the throttle control valve. Pendant Throttle Control models have a convenient lever type control valve handle (Figure 3-2) suspended from the control cylinders on sides of control head housing.

WARNING

Do not lift more than rated load except for test purposes. Overloading hoist can result in chain breakage, hook deformation and other failures which can cause serious injury and damage. A test at greater than rated load should be a properly supervised official test only, not an operator test. If any load sustaining parts have been altered, replaced or repaired, hoist should be load tested at 125% of rated load by a designated, qualified person, with a written report recording test load, as recommended in ANSI B30.16 Safety Standards.

3-2. **PRE-OPERATIONAL CHECKS.** Check the following before operating hoist with load:

- a. Inspect chain anchor connections at side of hoist frame and at upper hook or lug mounting bracket on 3/4 and 1 ton double reeved models. Anchor screw or pin should be secure and not bent or broken. Chain should be solidly anchored.
- b. Check hoist brake for proper adjustment and operation. Refer to Section V, paragraph 5-2, d.
- c. Check hooks. They should not be bent or distorted and should not be opened beyond the correct opening sizes given in Figure 5-3. Hook latches should not be bent or damaged and springs not broken.
- d. Check chain to make sure it is not twisted or kinked. Be sure lower block (3/4 and 1 ton, double reeved models) has not been capsized.

WARNING

Never operate hoist with defective chain anchor pins, brake or hooks.

- e. Lubricate chain per paragraph 4-4.

3-3. **OPERATING HOIST.** With hoist installed and air pressure turned on, hoist is operated in the following manner:

a. **Pull Cord Control.**

- (1) Pull top handle (marked with arrow pointing up) down to raise load.
- (2) Pull bottom handle (marked with arrow pointing down) down to lower load.
- (3) Release handle being used to stop either lifting or lowering.
- (4) Speed of lifting and lowering is varied between slowest (inching) to full speed by the pull exerted on control handle being used.

1/4 TON RATED LOAD HOIST

LOAD	125 LBS.				250 LBS.				500 LBS.			
	UP		DOWN		UP		DOWN		UP		DOWN	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0	0	0	5	8	0	0	15	40	0	0	25	65
60	35	70	30	75	30	65	35	85	20	50	40	95
70	40	75	30	80	35	70	35	85	25	60	40	95
80	40	80	35	80	35	75	35	85	30	60	40	95
90	40	80	35	80	35	80	35	85	30	65	40	95
100	40	80	35	80	40	80	35	85	30	65	40	95

1/2 TON RATED LOAD HOIST

LOAD	250 LBS.				500 LBS.				1000 LBS.			
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0	0	0	15	40	0	0	25	65	0	0	45	125
60	30	65	35	85	20	50	40	95	0	20	45	125
70	35	70	35	85	25	60	40	95	0	30	50	120
80	35	75	35	85	30	60	40	95	10	40	55	120
90	35	80	35	85	30	65	40	95	15	45	55	120
100	40	80	35	85	30	65	40	95	20	50	55	120

1 TON RATED LOAD HOIST

LOAD	500 LBS.				1000 LBS.				2000 LBS.			
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0	0	0	8	20	0	0	13	33	0	0	25	65
60	15	32	16	42	10	25	20	50	0	10	25	65
70	16	35	17	42	12	30	20	50	0	15	25	60
80	17	37	18	42	14	31	20	48	5	20	30	60
90	18	40	18	42	15	32	20	47	7	23	30	60
100	20	40	18	42	15	34	20	45	10	25	30	60

NOTE: Hoist Speeds are shown in feet per minute (f.p.m.).

Figure 2-5. Hoist Performance Charts.

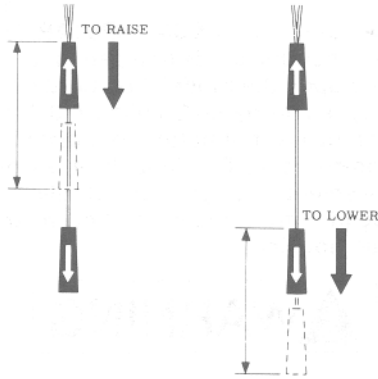


Figure 3-1. Pull Cord Control Handles.

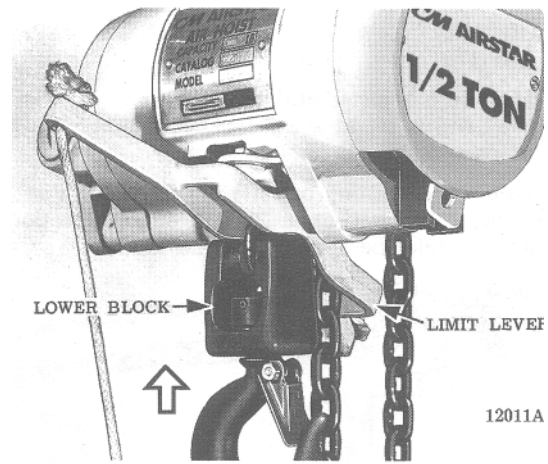


Figure 3-3. Control Lever Being Tripped by Lower Block.

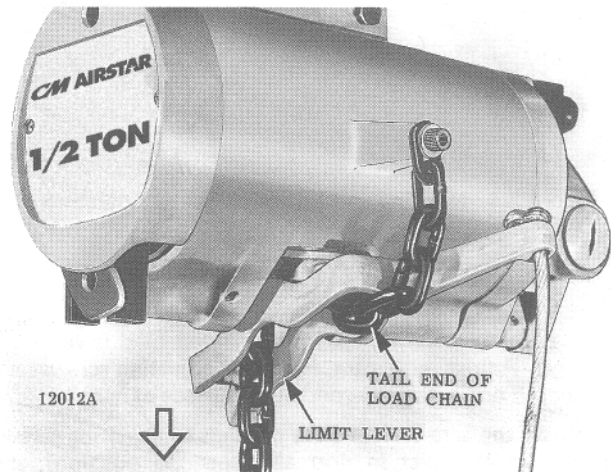
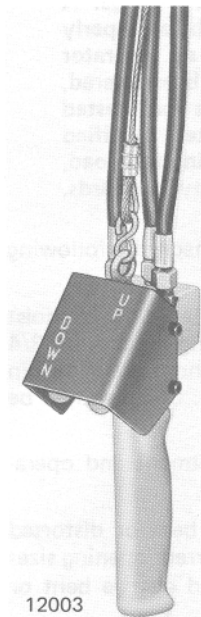


Figure 3-4. Control Lever Being Tripped by Tail End of Load Chain.



b. Pendant Throttle Control.

- (1) Depress throttle valve lever marked "UP" to raise load. See Figure 3-2.
- (2) Depress throttle valve lever marked "DOWN" to lower load.
- (3) Release lever being depressed to stop either lifting or lowering.
- (4) Speed of lifting and lowering is varied by the position of the throttle valve lever being depressed.

Figure 3-2. Pendant Throttle Control Handle.

3-4. PULLING AND PIVOTING HOIST AND LOAD.

a. On Pendant Throttle Control models, the valve handle is supported by a strain cable that is suitable for pulling trolley suspended hoists **when empty or lightly loaded**. Use a tag line or pole to pull or push loads to traverse heavily loaded hoists. Observe caution to stay clear of loads.

b. To pivot load, push on one corner of load. Lower hook will swivel through 360° to permit load to be swung to the desired position. The upper hook (hook suspension models) is also designed to rotate so that side pulls will swing hoist to face the load, thus reducing side thrust.

3-5. UPPER AND LOWER LIMIT STOPS. A lower block and chain operated limit stop is provided to guard against overtravel of load in either raising or lowering direction, which can cause damage to hoist. When highest position is reached, the lower block trips the control lever (Figure 3-3). When lowest position is reached, the tail end of load chain trips the control lever (Figure 3-4). The control lever is connected to the control shaft which actuates inlet valves controlling air pressure to air motor. Limit stops are intended as safety devices and should not be used as a routine basis to stop travel of lower block or shut off hoist.

3-6. OPERATING PRECAUTIONS.



Equipment covered herein is not designed or suitable as a power source for lifting or lowering persons.

Safe operation of an overhead hoist is the operator's responsibility. Listed below are some basic rules that can make an operator aware of dangerous practices to avoid and precautions to take for his own safety and the safety of others. Observance of these rules in addition to frequent examinations and periodic inspection of the equipment may save injury to personnel and damage to equipment.

- a. Operate hoist cautiously to become familiar with its performance.
- b. Do not load hoist beyond rated load.
- c. Take up chain slack carefully to avoid jerking load.
- d. Never use hoist load chain as a sling.
- e. Always be sure there is no twist in coil load chain. On 3/4 and 1 ton hoists, check to see that lower block is not capsized between strands of chain.
- f. Check both upper and lower limit stop operation by raising or lowering empty hook to limit of travel. Hoist must shut off.

- g. When lifting load, make certain it is free to move and will clear all obstructions.
- h. Stand clear of all loads and never lift or travel loads over people.
- j. Avoid operating hoist when hook is not centered under hoist. Be sure that hoist trolley or other support mechanism is correctly positioned for handling the load before lifting.
- k. Guide load so as to have it under control at all times.
- l. Do not operate hoist with twisted, kinked or damaged chain.
- m. Do not operate damaged or malfunctioning hoist.
- n. Conduct periodic visual inspection for signs of damage or wear.
- o. Observe inspection and maintenance procedures described in this manual.
- p. Never lift or transport a load until all personnel are clear. Never lift people on hook or load.
- q. Do not divert attention from load while operating hoist. Never leave a suspended load unattended.
- r. Do not use limit stop as normal operating stop. This is a safety device only.
- s. Do not "jog" unnecessarily.
- t. Personnel not physically fit or properly qualified, shall not operate hoist.
- u. Do not remove or obscure warning labels.
- v. Use common sense and best judgement whenever operating a hoist. Observe American National Standard Safety Standard, ANSI B30.16, latest issue.

- a. **Coil Chain.** Under ordinary conditions, only weekly attention will be necessary for alloy steel chain. Under hot and dirty conditions, it may be necessary to clean chain at **least once a day** and lubricate it several times between cleanings. Thoroughly clean chain with an oil solvent and relubricate by coating it lightly with penetrating oil and graphite. Make sure that lubricant coats wear surfaces between links. Stainless steel load chain must be well lubricated at all times and must be inspected daily when in use.
- b. **Roller Chain.** Under ordinary conditions, only monthly attention will be necessary. Under hot and dirty conditions, weekly attention may be required. Thoroughly clean chain with an oil solvent and apply a good grade of S.A.E. 20 motor oil. Wipe off excess oil. When subjected to excessive moisture or corrosive atmospheres, DO (dripless oil) lubricant from American Grease Stick Company is recommended for use on roller chain in place of regular motor oil.

4-5. LUBRICATE UPPER HOOK AND LOWER BLOCK ASSEMBLY.

- a. On 3/4 and 1 ton hoists, apply a few drops of S.A.E. 60 oil on shank of upper hook where it enters suspension bracket.
- b. On single line hoists (1/4, 3/8 and 1/2 ton) disassemble upper and lower hooks as described in 7-2.b.(4) and grease thrust bearings with a good grade of bearing grease.
- c. On double line hoists (3/4 and 1 ton) lower blocks, disassemble as described in 7-2.b.(5) and grease needle bearings for sprocket shaft and hook with a good grade of bearing grease.

4-6. LUBRICATE CONTROL SHAFT, BRAKE CAM AND VALVE SHIFTER.

- a. Apply a few drops of S.A.E. 60 oil on control shaft at bearing points.
- b. Apply graphite grease on valve shifter and on brake cam.

4-7. LUBRICATE TROLLEY WHEEL BEARINGS. If hoist is mounted on a trolley, apply light grease to wheel bearings as recommended by trolley literature.

SECTION IV – LUBRICATION

4-1. **GENERAL.** The lubrication services outlined in paragraphs 4-2 through 4-7 should be performed at regular intervals to maintain top hoist performance and insure long life. Frequency of lubrications will depend on type of hoisting service hoist is subjected to and should coincide with preventive maintenance inspections. See Section V Maintenance.

4-2. **SERVICE AIR LINE LUBRICATOR.** Servicing air line filter and lubricator unit is of primary importance since it is the only source of lubrication for control valves and air motor. Fill lubricator with Air Hoist Motor Oil or good grade 10W machine oil (approximate viscosity 150 SSU at 100°F.). Multi-viscosity, detergent type engine oil is not recommended.

4-3. **GEARCASE.** The gearcase is grease packed at the factory and requires no further greasing unless the gearcase is for any reason disassembled. Then, at reassembly, the parts should be washed clean (using commercial fluid) and repacked with NLGI EP-2 Grease.

4-4. **LUBRICATE LOAD CHAIN.** A small amount of lubricant will greatly increase load chain life; therefore, chain should not be allowed to run dry. Chain should be cleaned and lubricated as directed in paragraphs a. and b. below, depending upon type of chain. User should set up a regular schedule for chain lubrication after observing operating conditions for a few days. Use Bar and chain Oil (LUBRIPLATE or equal) on load chain.



Before performing any internal work on hoist, remove load and be certain air is shut off.

SECTION V – MAINTENANCE

5-1. **GENERAL.** Preventive maintenance services required on **CM AIRSTAR Air Hoists** are for the most part simple periodic inspection procedures to determine condition of hoist components. Below are suggested inspection procedures, based on daily average hoist usage.

Hoist subjected to severe service or to adverse environments should be examined weekly or as conditions warrant.

5-2. **THIRTY-DAY INSPECTION.** Hoist may be left suspended.

a. Inspect Load Chain.

(1) Operate hoist under load and observe operation of chain over sprocket in both directions of chain travel. Chain should feed smoothly into and away from the sprocket. If chain binds, jumps or is noisy, first see that

it is clean and properly lubricated. If trouble persists, inspect chain and mating parts for wear, distortion or other damage.

(2) **Coil Type Load Chain.** Clean chain for inspection. Examine visually for gouges, nicks, weld splatter, corrosion or distorted links. Slacken chain and check bearing surfaces between links for wear, Figure 5-1. Greatest wear will often occur at sprocket at high or low point of lift, particularly when hoist is subjected to repetitive lifting cycles. Case hardness of chain is about .015" deep. Chain must be replaced before the case is worn through. Also check chain for elongation using a vernier caliper (Figure 5-2). Select an unworn, unstretched section of chain (usually at slack or tail end) and measure and record the length over the number of chain links (pitches) indicated in Figure 5-2. Measure and record the same length of a worn section in the load side of the chain. Obtain the amount of wear by subtracting the measurement of the unworn section from the measurement of the worn section. If the result (amount of wear) is greater than the amount specified in the "ALLOWABLE CHAIN WEAR" table, the chain has elongated beyond the maximum allowable length and must be replaced. Chain with excessively pitted, corroded, nicked, gouged, twisted or worn links should be replaced using only factory approved chain. **Never weld or attempt to repair coil chain.**

Load chain for spark resistant models is made of stainless steel. Surface hardness treatment is no more than .001" deep and the core is lower in hardness than standard alloy steel load chain. For these reasons the rated capacity of spark resistant models is lower than that of standard models as follows:

LINES OF LOAD CHAIN	RATED LOAD FOR STANDARD MODEL	RATED LOAD FOR SPARK RESISTANT MODEL
1	1/4 Ton	---
1	1/2 Ton	3/8 Ton
2	1 Ton	3/4 Ton



Figure 5-1. Check Chain Wear at Bearing Surfaces Between Links.

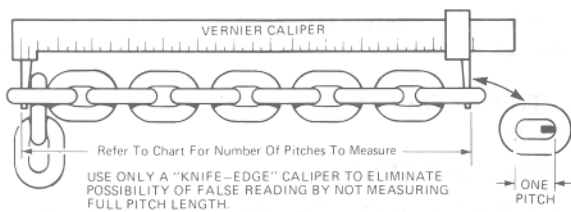


Figure 5-2. Checking Coil Chain Using Vernier Caliper.

ALLOWABLE CHAIN WEAR – ELONGATION

CHAIN SIZE (WIRE DIA.)	NO. OF PITCHES TO MEASURE	MAXIMUM WEAR LIMIT
1/4"	13	.145"



Do not assume that load chain is safe because it measures below replacement points given herein. Other factors, such as those mentioned in visual checks above, may render chain unsafe or ready for replacement long before elongation replacement is necessary.



When replacing coil load chain, use only factory approved chain conforming to factory specifications for material, hardness, strength and link dimensions. Chain not conforming to CM hoist specifications may be dangerous as it will not fit in the load sprocket and chain guide correctly, causing damage to hoist, and it will wear prematurely, deform and eventually break.

(3) **Roller Type Load Chain.** Visually check for possible twists, broken links, wear or elongation. Check roller chains for elongation from wear by pulling chain taut and measuring as follows: On RC-625 or H-5 size chain (5/8" pitch), measure distance over a length of 20 pitches (center-to-center distance between 21 rivets) - it must not exceed 12-3/4 inches. If chain exceeds this limit, replace damaged section or install new load chain assembly. Check chain for twist. If twist in any 5' extension exceeds 15°, replace chain. Check chain for camber. If any section has side bow exceeding 1/4" in five feet, replace chain. Use only factory approved chain. If chain is to be spliced to replace damaged section, it is recommended that this be done by a recognized CM Repair Station, since splicing link must have a spun head requiring special tools. Spring link must not be used except to secure the tail chain to the hoist frame. (See Figure 7-1.)



It must not be assumed that load chain is safe because it measures below replacement points given herein. Other factors, such as those mentioned in visual checks above, may render chain unsafe or ready for replacement long before elongation replacement is necessary.

(4) Check anchor end of chain at side of hoist frame for damage to last link, also connecting link on roller chain hoists. Replace damaged parts.

(5) Check connection of chain to lower block on 1/4, 3/8 and 1/2 ton hoists. Replace parts showing evidence of damage, twisting or elongation.

(6) Check connection of chain to anchor on side of suspension bracket on double reeved, 3/4 and 1 ton hoists. Replace parts showing evidence of damage, twisting or elongation.

(7) Lubricate load chain if required. See paragraph 4-4, Section IV.