Technical Manual

AIR CYLINDERS

Air cylinders, Fig. (6), are located at various points in the air control system to actuate the controls. The operations of all air cylinders are similar and the maintenance required is minimum. No lubrication is necessary. Two types are used here: Single Action, in which the piston rod is pushed or pulled by air pressure and returned by spring pressure. Double Action, in which the piston rod is pushed or pulled and returned by air pressure on the other side of the piston—no spring pressure being present.

LEAKS IN AIR LINES AND CONNECTIONS

All air lines, hoses and connections should be checked frequently for leaks. Brush on a thin solution of liquid soap and water. Observe the lines and connections while working at full air pressure. Bubbles will easily be seen at any point which is leaking air. Replace any damaged or leaking parts at once.

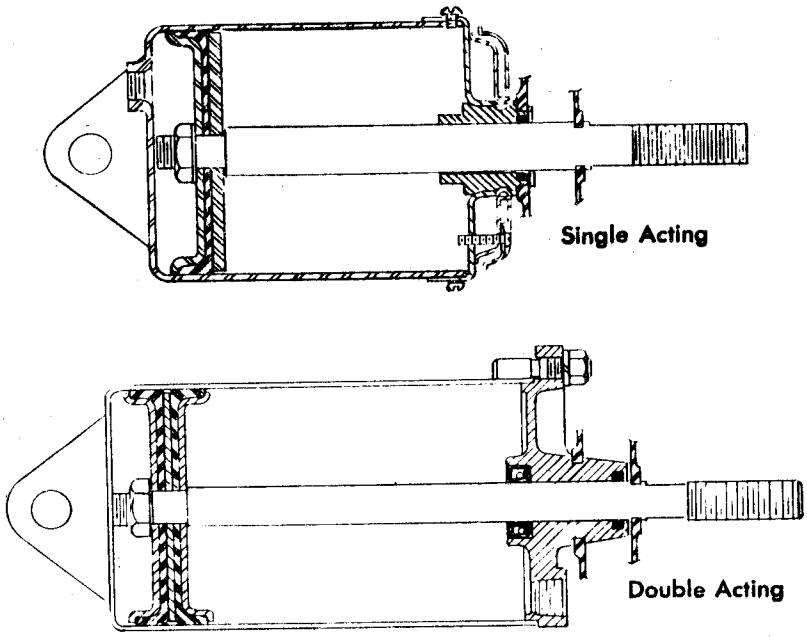

FIG. 6 AIR CYLINDERS

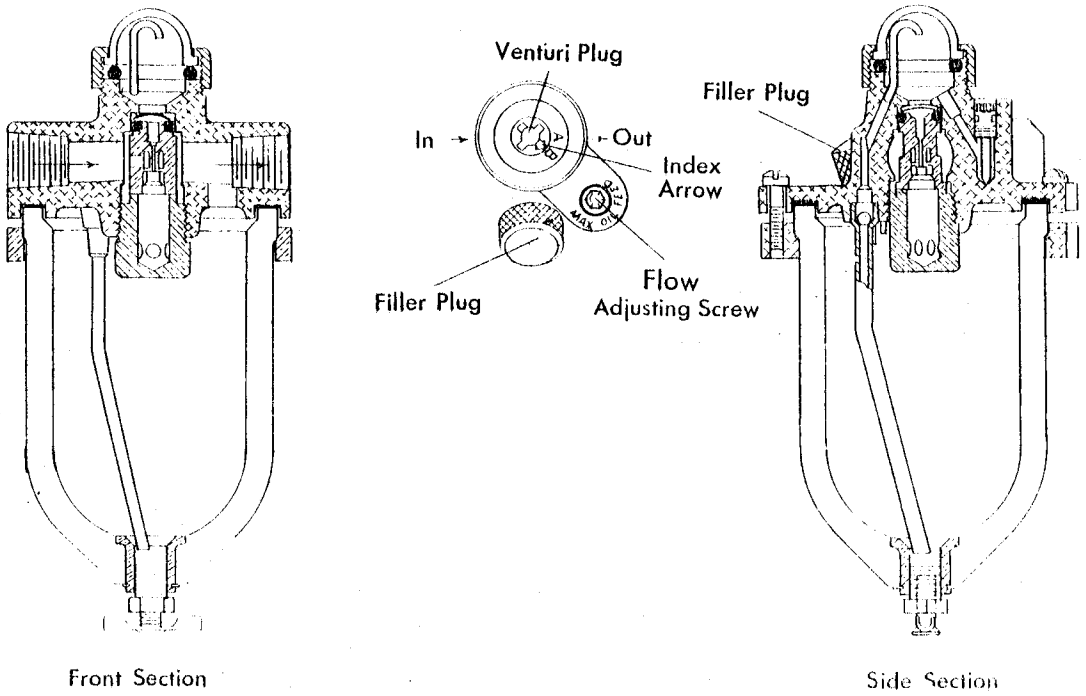

FIG. 7 MICRO-FOG LUBRICATOR

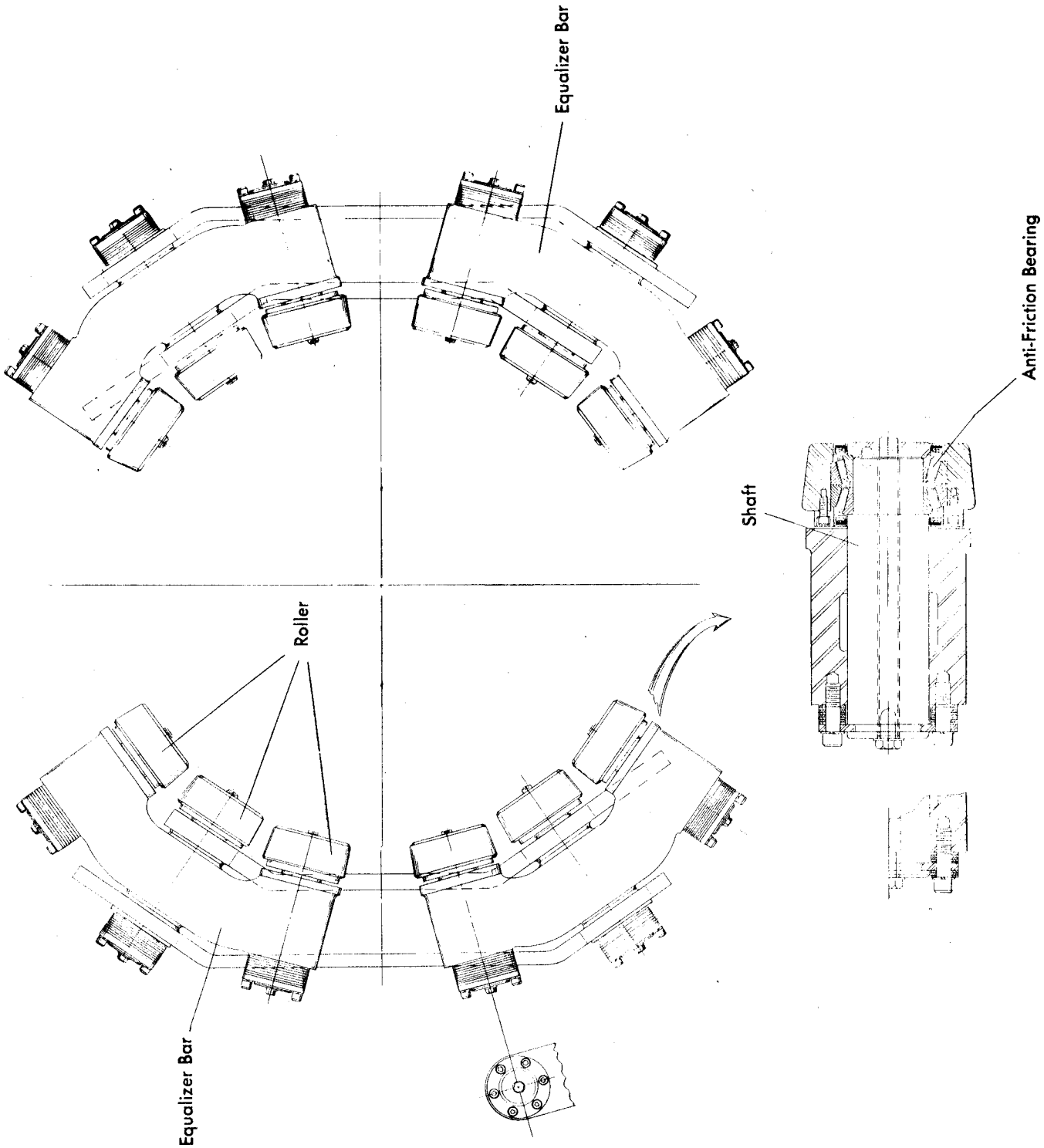

FIG. 15 ROLLERS

ENGINE DRIVE CHAIN

The deck machinery is driven from the engine by a multi-strand chain. The chain connects the engine pinion and the large diameter chain sprocket on the swing-propel shaft assembly. The chain operates inside a closed chain case and is lubricated by dip system. The chain case is filled to the 5 quart level with gear lubricant. The engine drive chain is considered to be in proper adjustment when there is between 1⅛" and 1⅝" sag at the center of the top strand when the bottom strand is tight. On machines equipped with sliding engine base, the chain is adjusted by moving the engine forward to loosen the chain and moving the engine toward the rear of the machine to tighten the chain.

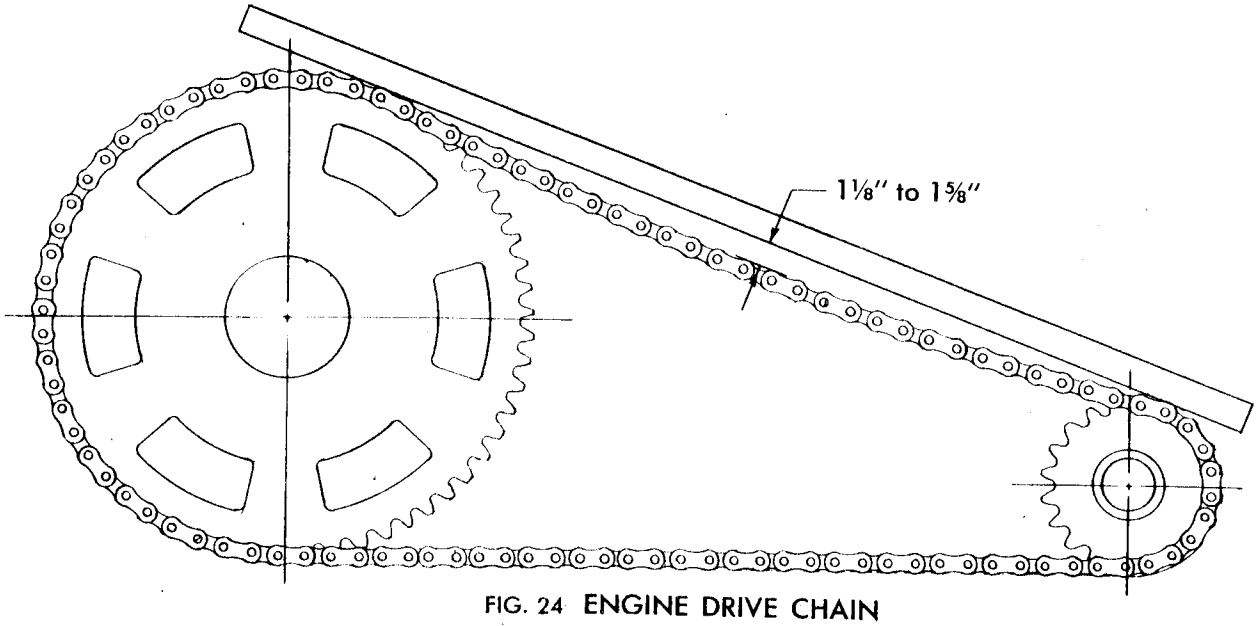

FIG. 24 ENGINE DRIVE CHAIN

TO ADJUST THE ENGINE DRIVE CHAIN:

First loosen all the hold down bolts enough to relieve the tension on the spring lock washers. Now by means of the two jack screws located at the front corners of the engine base, move the engine base until the proper sag in the engine drive chain is obtained. Be sure that both jack screws are turned the same number of turns in order to maintain the correct alignment. When the adjusting limit of the engine base has been reached, the chain will have worn sufficiently to require replacement.

LUBRICATION OF THIRD DRUM
AND LOAD LOWERING

Location Number	Name of Part	Type	No. of Fittings	Location of Fitting	Lub. Sym.	Period in Hrs.
73	Drum Bearing	Bushing	2	In each end of shaft	MPG	4-8
74	Drum Sprocket Bearing	Bushing	1	In R. H. end of drum shaft	MPG	4-8
75	Idler Sprocket Bearing	Bushing	1	In end of shaft	MPG	4-8
93	Chain Drive			Apply to chain	GL	As required
94	Sliding Clutch	—	—	Apply to part	MO	As required

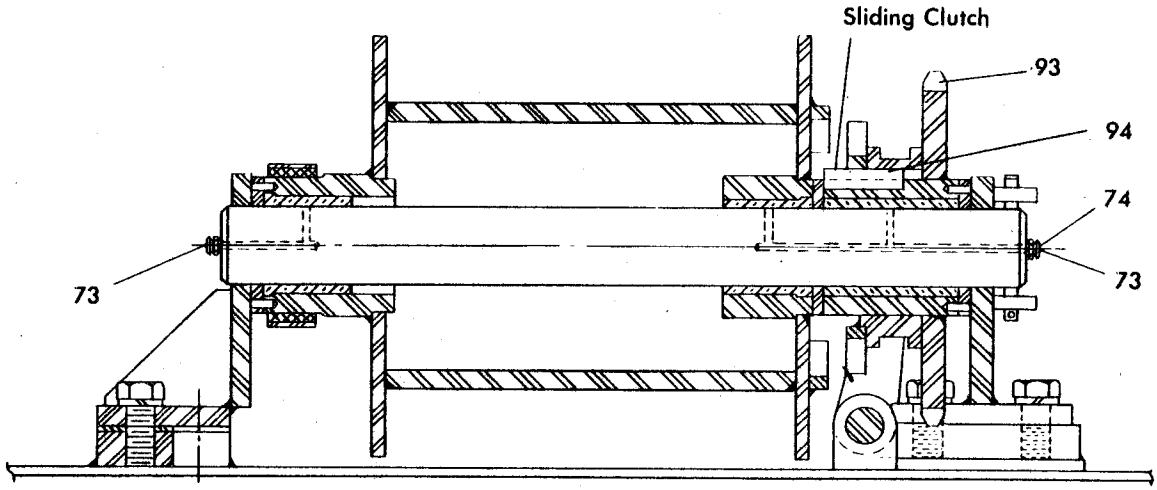

FIG. 35 THIRD DRUM

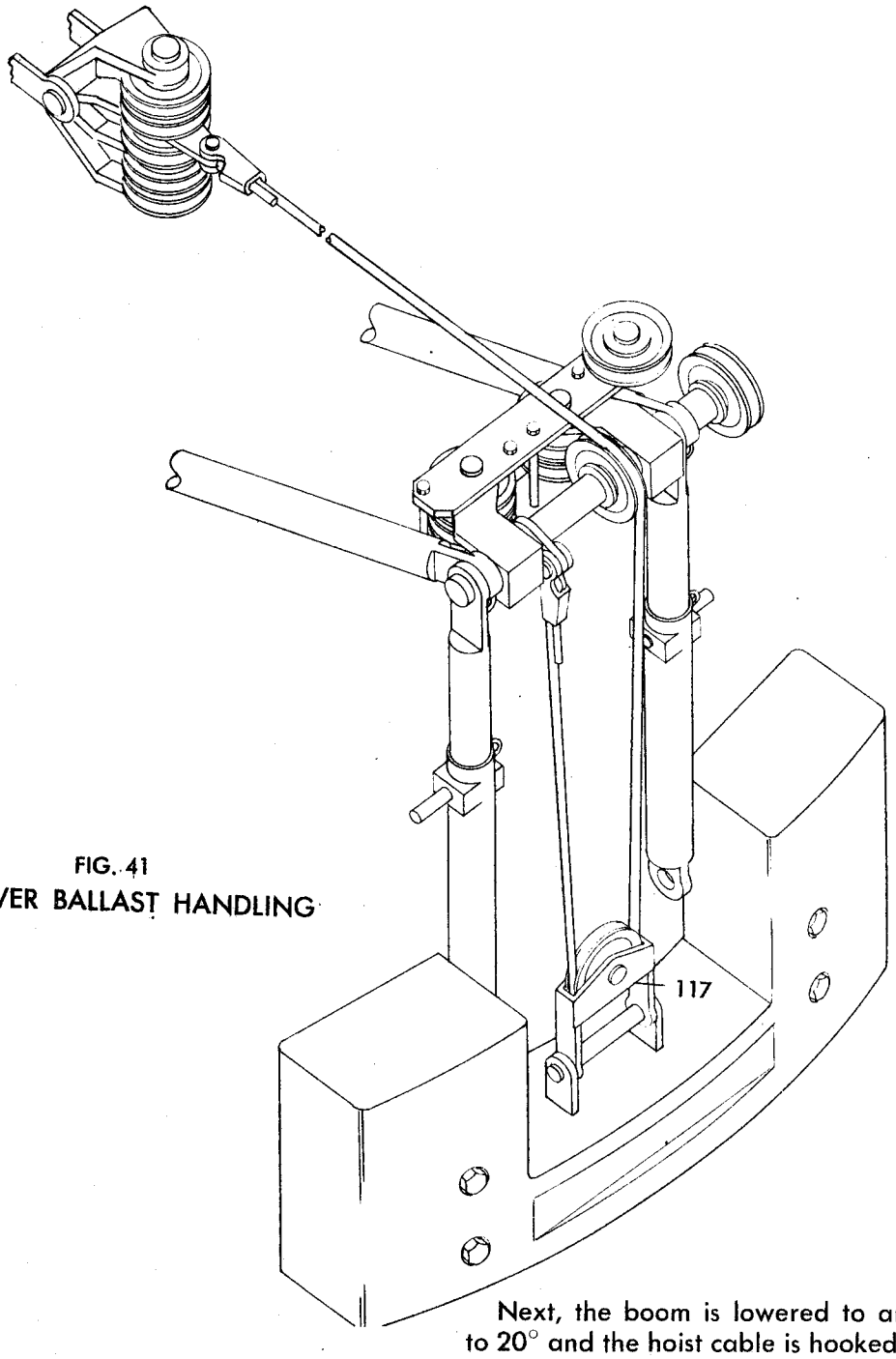

FIG. 41
POWER BALLAST HANDLING

POWER BALLAST HANDLING

The 51-M is provided with a power ballast handling device to remove the ballast.

A sheave attached to the ballast at the center of balance permits the use of a 2-part line. A special wire rope is anchored in the gantry and is reeved down and around the sheave on the ballast and up over the sheave located near the center of the gantry and to the anchor in the sheave block on the mast.

Next, the boom is lowered to an angle of 15° to 20° and the hoist cable is hooked to a stationary object or to a weight of not less than 4,000 lbs. Slack is then removed from the ballast cable by permitting the boom to lower. As the boom lowers, the hoist cable must be taken in to keep the cable taut. When the slack is completely gone from the ballast lowering cable, remove the ballast holding bolts. Now, by raising the boom by means of the boomhoist and paying out the hoist cable the ballast is lowered to the ground.

The procedure is reversed for raising the ballast into position.

INSTRUCTIONS FOR CARE OF WIRE ROPE

When reeving a wire rope, it should be kept as clean as possible by reeving directly from the coil or reel, working from the dead end toward the drum. Locate the coil or reel as near as practical to the sheave nearest the dead end. Mount the coil or reel on a round bar or pipe with supports on each side, so that the wire rope will unspool off the top of the coil or reel when the free end of the wire rope is pulled toward the first sheave to be reeved. Never lay a coil or reel down and take the wire rope off in loops, because the loops will become kinks, which can never be straightened, when the line is pulled taut. A kink in a wire rope permanently weakens it at that point. If no facilities are available for unspooling the wire rope, the coil or reel may be rolled along the ground with the wire rope coming off the bottom.

After the reeving is complete, check all sheaves and the drum, if grooved, to determine, if the wire rope is laying properly in the grooves; if not, make any necessary corrections. Also inspect the wire rope to see if it is clean. Wire brush all dirt off, and if available, blow off with compressed air.

After the wire rope is cleaned, lubricate thoroughly, using regular cable dressing or a light weight motor oil (do not use gear compound or any tacky lubricant). Sheaves and lagging grooves must be kept lightly coated with lubricant. Care must be exercised in lubricating dragline drag cable to avoid picking up excessive abrasive material when the cable is dragged through a cut. Dirt thus picked up will shorten the life of wire rope. However, lagging grooves and fairlead sheaves must be kept lightly coated with fluid lubricant to prevent excessive wear. In addition to periodic cleaning and lubrication, all wire ropes should be thoroughly cleaned and lubricated, when taken out of service to be put in storage.

When anchoring a wire rope by means of a wedge, insert the wire rope into the small end of the socket, so that the wire rope extends thru the socket approximately three times the length of the wedge; lay the wire rope along the straight side of the socket, insert the small end of the wedge approximately half way into the large end of the socket; lay the short end of the wire rope around the exposed end of the wedge and re-enter it into the socket, along the inclined side; by pushing on the wire rope where it curves around the large end of the wedge; and at the same time pulling on the running end of the wire rope, force the wedge into the socket as far as possible, and seat the wedge by hammering on a block of wood held against the wire rope where it passes around the large end of the wedge. The short end of the wire rope should extend approximately four times the diameter of the wire rope beyond the small end of the wedge or the small end of the socket, whichever allows less of the wire rope to protrude. Always use the proper size wedge and socket.

When a wire rope is anchored by means of a thimble and wire rope clips, the spacing between the clips should be equal to six times the diameter of the wire rope, with three to four times the diameter of the wire rope through the last clip. For wire rope less than ½" diameter use two wire rope clips; ½", ⅝", and ¾" diameter wire ropes require three clips; for ⅞", and 1" wire rope use four clips; for 1⅛", and 1¼" wire ropes use five clips; and for over 1¼" diameter six wire rope clips are to be used. The saddles of all the wire rope clips must ride on the running end and the U-Bolts straddle the short end of the wire rope. Never reverse or alternate the clips. The clip nearest the thimble must be kept as close to the thimble as possible, so as to choke the thimble with the maximum grip. After a short period of service, the nuts on new wire rope clip installations should be further tightened with the wire rope in tension during the working load. Always use the proper size thimble and clips.