



Link-Belt Speeder

**418A**

110-Ton Crawler Crane

GENERAL INFORMATION ONLY

**LINK-BELT**

# Exclusive Full-Function Upper Machinery Design

*Independent Swing, Travel, Boomhoist And Hoist*

## GENERAL INFORMATION ONLY

**1 UPPER FRAME:** Jig welded, stress relieved for strength and durability; line bore accuracy for shaft mountings which assures properly aligned shafts and gears — results in less wear and lower maintenance costs.

**2 ENGINE:** Diesel with hydraulic coupling or torque converter (single- or three-stage). Auxiliary torque converter output shaft governor control optional.

**3 TRAVEL:** Independent (optional). 2-shoe travel clutches transmit travel power smoothly into the track sprockets. (Only left-hand clutch is visible.)

**4 SWING:** Independent from boomhoist. 2-shoe swing clutches transmit power smoothly to the vertical swing shaft. (Only left-hand clutch is visible.) Clutches also used for non-independent travel.

**5 BOOMHOIST:** Independent. Two-shoe clutches for both raising and lowering of the boom. (Boom raising clutch on opposite end of shaft not visible.)

**5a BOOMHOIST DRUMS:** Worm drive to dual rope drums mounted on platform at cab roof level.

**6 HOIST CLUTCHES:** Two-shoe hoist clutches for front and rear rope drums. (Clutch drums only visible.)

**7 DRUMS:** Lagging bolt to adaptors which are splined to drum shafts.

**8 DRUM BRAKES:** Mechanically operated by foot pedals. Brakes separated from drum clutches to minimize heat transfer, results in cooler brakes and clutches. Brake drums splined to shaft.

**9 COUNTERWEIGHT LOWERING DRUM:** Cast integrally with the rear brake drum, accommodates rope for lowering the counterweight.

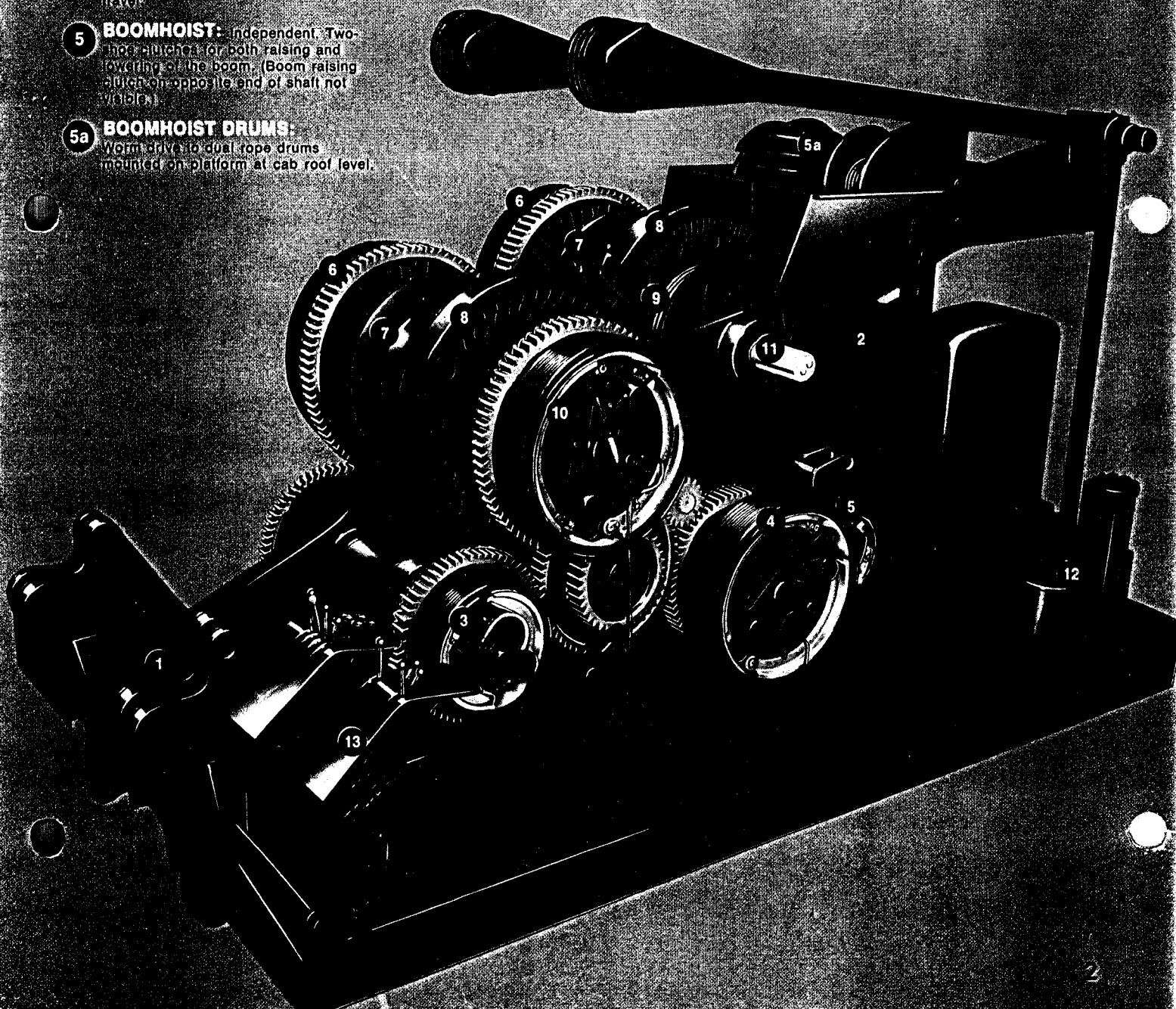
**10 LOAD LOWERING CLUTCH:** (Optional). Completely independent front drum power load lowering 2-shoe clutch.

for powering down light loads and controlled lowering of heavier loads against the resistance of the machinery and engine.

**11 EXTENDED REAR DRUM SHAFT:** To accommodate installation of an optional rear drum power load lowering clutch or an optional auxiliary rear drum brake that doubles total effective braking area.

**12 POWER PACKAGE FOR POWER HYDRAULIC CONTROLS:** Vane-type pump, belt driven from engine; piston-type accumulator and sump tank; normal system operating pressure, 900 to 1,050 p.s.i.

**13 CONTROL STAND:** Speed-o-Matic power hydraulic controls, time-tested and proven throughout the world.



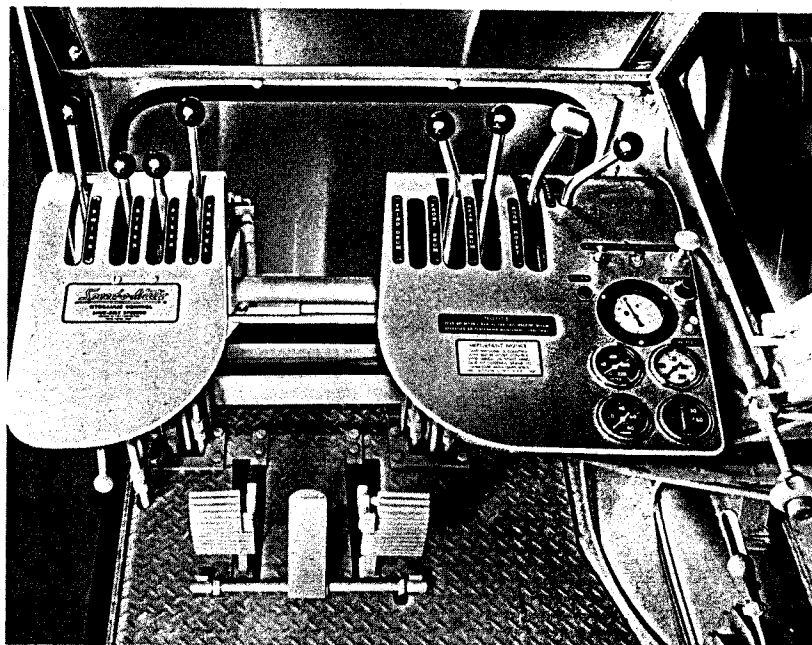
# Power Hydraulic Control System

*Permits Use Of 2-Shoe Clutches For Swing-Travel-Boom-Hoist*

GENERAL INFORMATION ONLY

The LS-418A unique upper machinery power train is Link-Belt Speeder's exclusive Full-Function which makes possible independent or simultaneous performance of swing, travel, booming, and load hoisting or lowering. In addition, with separate right- and left-hand machinery gear train, 2-directional power is available to each shaft. Exclusive Full-Function gives superb on-the-job load handling precision and machine maneuverability.

For outstanding control of all the machine functions, the LS-418A incorporates Link-Belt Speeder's famous Speed-o-Matic power hydraulic control system. This system is unaffected by day-to-day atmospheric variations and does not require priming or bleeding. Oil under pressure from the pressure accumulator storage tank does the work.



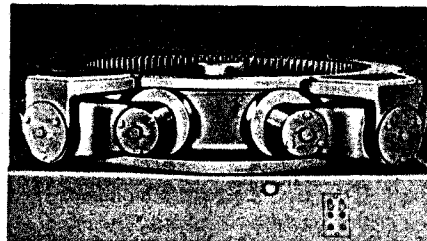
Operator Control Console

Short throw levers in operator's control console actuate variable pressure valves from which oil under pressure is metered to each 2-shoe clutch for prompt, positive response. Speed-o-Matic power hydraulics . . . the exclusive control system combined with 2-shoe clutches . . . gives outstanding control.

The brakes for the front, rear, and optional third operating rope drums are mechanically operated by foot pedals located beneath the operator's control console.

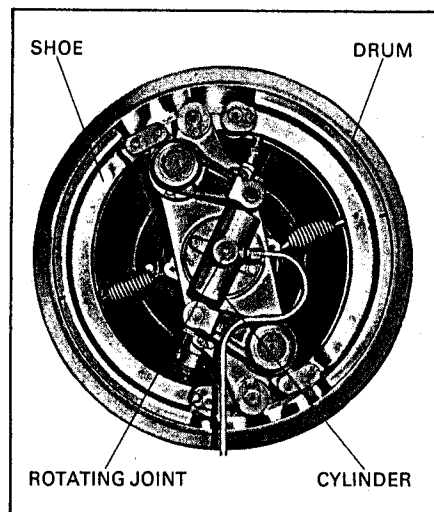
The independent boomhoist features power hydraulic, 2-shoe clutch control for both precision raising and lowering of the boom. The boomhoist dual drums, along with the high efficiency worm drive reduction unit, are mounted at cab roof level for optimum rope off-lead and longer

rope life. An automatic, spring-applied boomhoist brake is power hydraulically released when the boom raising or lowering clutch is engaged. Also, an operator-controlled mechanical rope drum locking ratchet and pawl is standard.



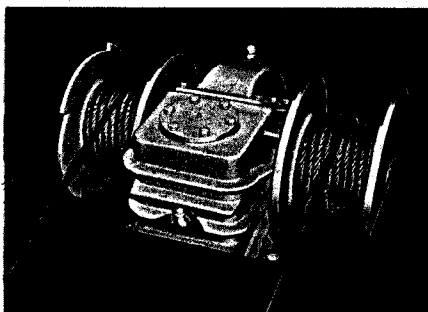
Conical Hook Rollers

Conical hook rollers, mounted on anti-friction bearings, join the upper to the lower. The conical shape of the rollers matches the taper inside the top and bottom flanges of the heat-treated roller path for smooth swing. Rollers are shim adjusted for normal wear.



2-Shoe Clutch

The power hydraulic, 2-shoe clutch is self-compensating over a wide range of lining wear. Clutches can be engaged partially for smooth acceleration and deceleration of swing, travel, hoist, and boom. For maximum rope line pull or travel power, the clutch can be fully engaged by complete application of the control lever. Two-shoe clutches are a most efficient means of transferring engine horsepower into the rope drums and swing-travel mechanisms.

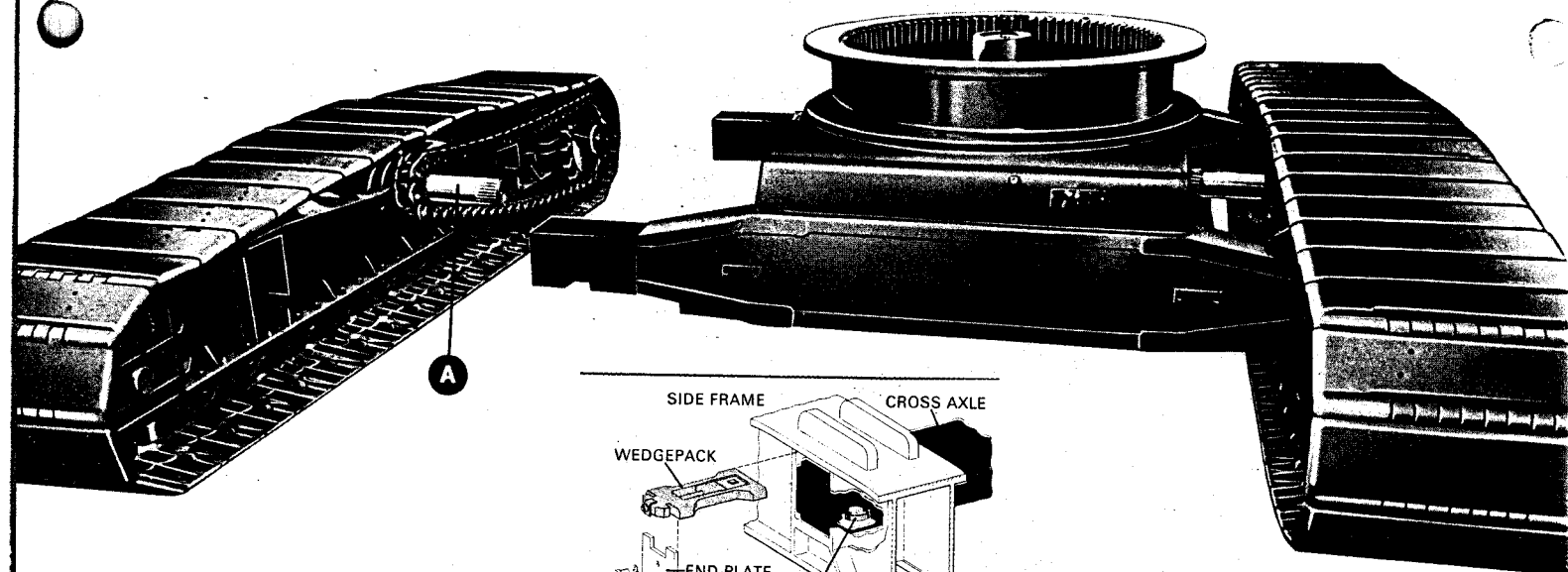


Boomhoist Dual Drums

# Patented Dowel And Key Arrangement For Fast Side Frame Removal

All-Welded Stress Relieved Lower And Side Frames

GENERAL INFORMATION ONLY



The LS-418A lower and side frames are all-welded and stress-relieved to provide a more durable lifting base.

Short, 11" pitch shoes permit smooth machine travel. To minimize track wear, each multiple-hinged shoe is heat treated and joined by a full-floating pin. 38" and 44" wide track shoes are available.

The track drive sprocket lugs and the shoe lugs are offset for self-cleaning.

Track rollers, idler, and sprocket assembly are heat treated for longer service life.

Lower frame is line bored for mounting of the center horizontal travel shaft. External horizontal travel shafts are spline-connected to both the center travel shaft located in the lower frame and the drive chain sprocket hub in the side frames.

The side frames are positioned to the lower frame cross axles by means of the patented Link-Belt dowel and key

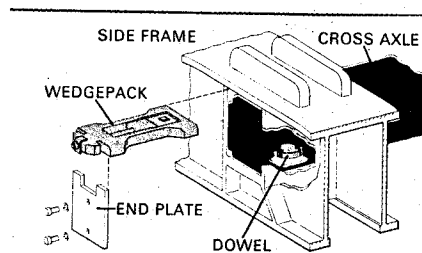


Illustration (A)

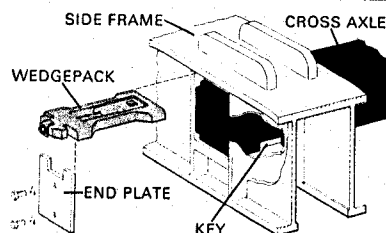


Illustration (B)

arrangement. A dowel (Illustration A) or key (Illustration B), fixed in separate windows of the side frame, mates with a corresponding rectangular or circular recess on the underneath side of the cross axles. A wedgepack is then placed above each cross axle inside the window of the side frame. End plates, bolted to the ends of the cross axles, secure the wedgepack in position. By means of a tie bolt, the wedge is drawn up the inclined plane locking each side frame to its respective cross axle.

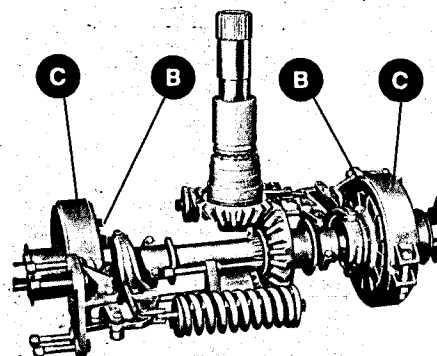
To remove a side frame requires **seven basic steps:** (Exact details available on request.)

1. Remove all counterweight and swing upper crosswise to the tracks.
2. Remove plate (not shown) from end of external horizontal travel shaft.
3. Pull external travel shaft (A) from splined coupling into the hub of the chain sprocket.
4. Loosen wedgepack tie bolt; then remove end plate.
5. Remove wedgepacks.
6. Raise and block up lower frame until cross axles clear the key and dowel in side frame windows.
7. Remove side frames with basic boom or live mast with drive chain remaining intact.

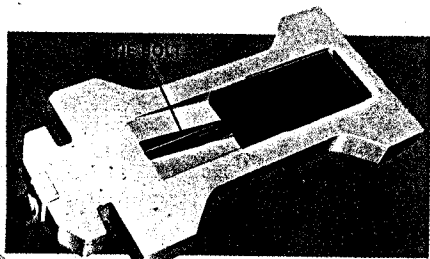
The LS-418A is equipped with **power hydraulic steer**. The steer-travel mechanism is completely enclosed within the lower frame . . . no components project below the underside of the carbody to be subjected to damage when transporting on a beam trailer.

Powerful jaw clutches (B) are engaged through Speed-o-Matic power hydraulics. When jaw clutches are fully engaged or pre-loaded, spring-applied brakes (C) are automatically released.

Jaw clutches (B) are engaged independently for steer by either of two operator steer control levers. They are simultaneously engaged for straight-line travel by the two steer levers. Brakes (C) also act as digging locks.



Power Hydraulic Steer



Wedgepack

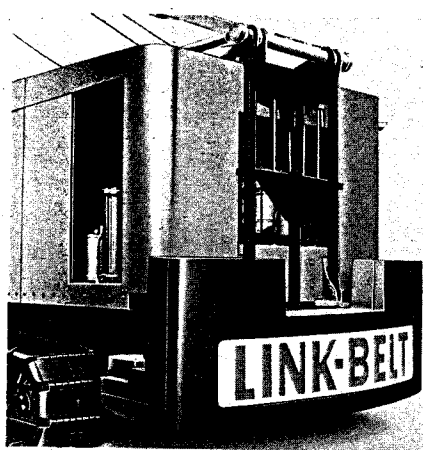
# Angle Boom Ideal For Dragline--Clamshell--Grapple

2-Piece 50' Basic Angle Boom

GENERAL INFORMATION ONLY

The LS-418A is a versatile, powerful clamshell, dragline, or grapple with a recommended angle boom length up to 90'. Angle boom is bolt-connected and quality-built box lattice construction with alloy chord angles. Both 10' and 20' extensions are available (Boomhoist pendants are standard.)

As a lifting crane, the LS-418A with live mast handles up to 150' of angle boom plus 40' angle jib. Basic jib is 20', 2-piece, bolt-connected with 10' and 15' jib extensions available. Live mast (illustrated on page 6) is required for angle booms exceeding 110'.



Counterweight Removal

The LS-418A counterweight can be lowered to the ground or raised into position on the machine with the rope mechanism. Rope is anchored to special drum cast integrally with the rear brake drum. (See illustration page 2, number 9.) Counterweight is lowered with rear drum brake and raised by rear drum hoist clutch. Two large "T" bolts hold counterweight to the machine.

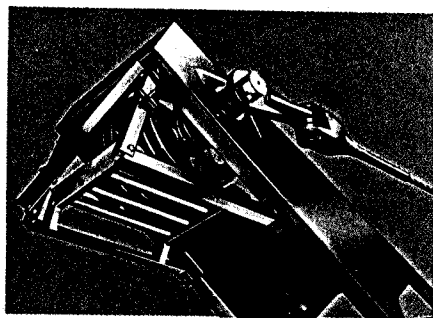


Full-Revolving Fairlead

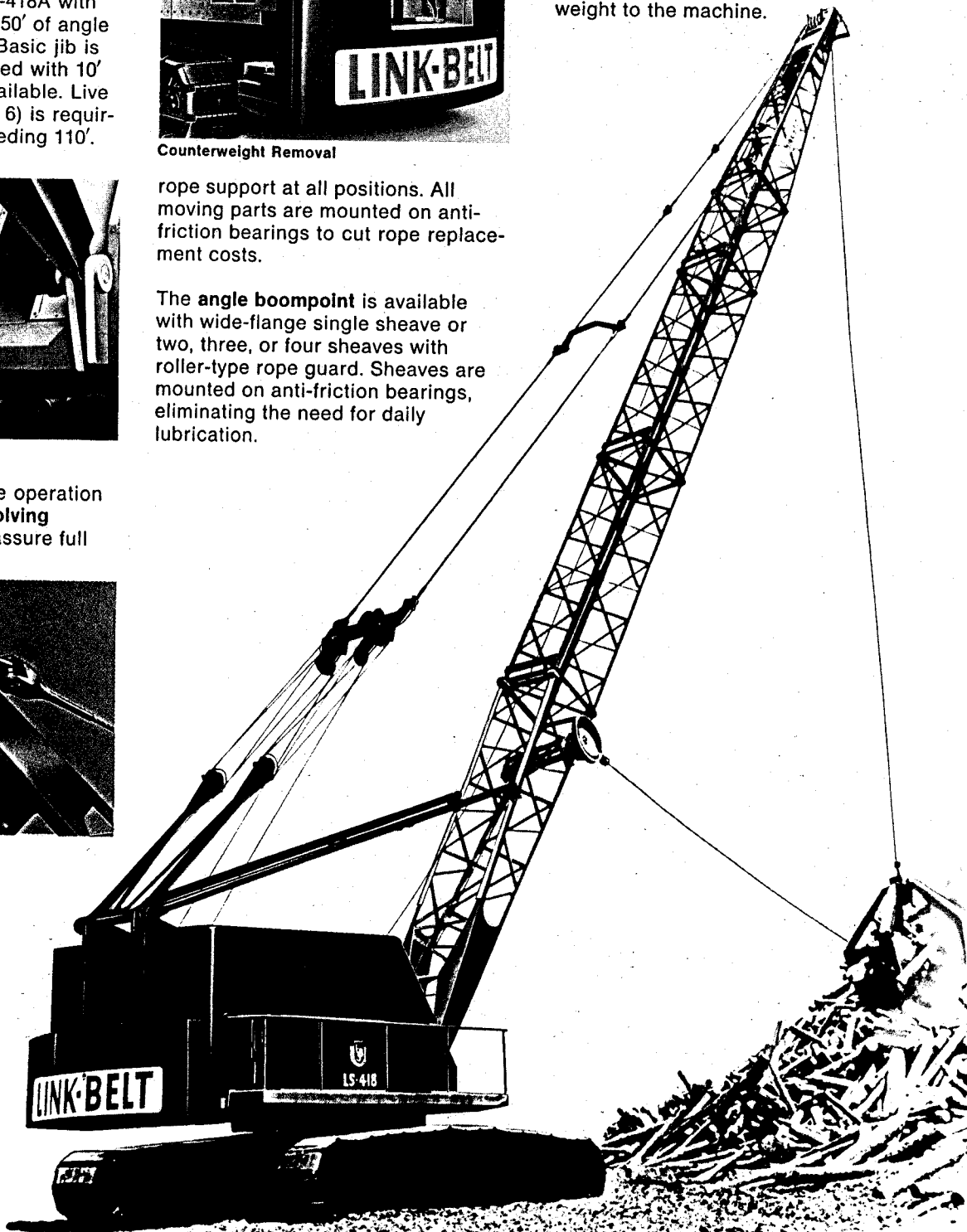
rope support at all positions. All moving parts are mounted on anti-friction bearings to cut rope replacement costs.

The angle boompoint is available with wide-flange single sheave or two, three, or four sheaves with roller-type rope guard. Sheaves are mounted on anti-friction bearings, eliminating the need for daily lubrication.

Rope economy in dragline operation is a feature of the full-revolving fairlead which rotates to assure full



Angle Boompoint



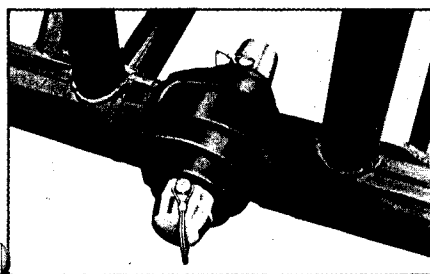
# Tubular "Hi-Lite" Boom Unmatched For Lifting Crane

*Up To 200' Boom Plus 60' Jib*

GENERAL INFORMATION ONLY

As a lifting crane, the LS-418A features a 50', 2-piece, "Hi-Lite" tubular, pin-connected boom with 10', 20', and 30' pin-connected sections available for a maximum boom length of 200'. Also available is a 30', 2-piece, tubular, pin-connected jib with 15' sections available for a maximum jib length of 60'.

The LS-418A, "Hi-Lite" tubular boom is outstanding in design and is precision built with special automatic machine tools and fixtures. Machine-coped lattice ends match the contour of the round, alloy steel, tubular chords and are carefully welded in place with 360° welds.



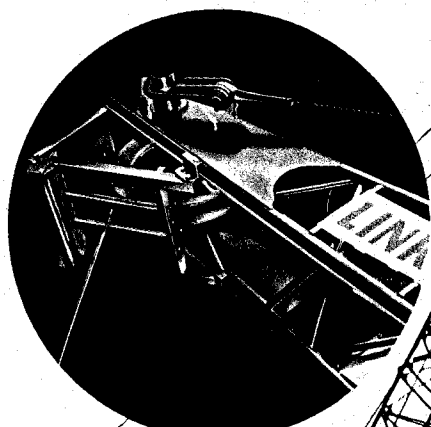
In-Line Pin Lugs

The method of welding the in-line pin lugs to the round chord tube avoids stress build-up and is an exclusive development of Link-Belt Speeder

**Live Mast** — For booms exceeding 120' and maximum lifting crane service. Equipped with two sheaves for use as short boom for dismantling and assembling the machine.

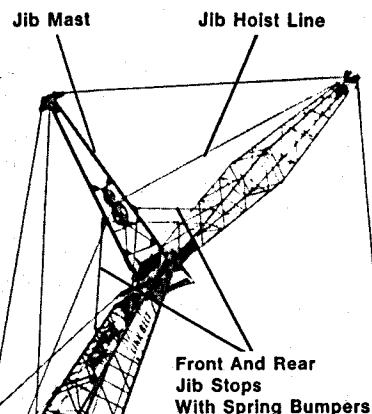
engineering/manufacturing technology. The extended hub on the female connection serves as an anchor for the jib guyline or for pendant lines when assembling the boom. The tapered pin is held in place with two latch pins.

The **tubular boompoint** contains four sheaves with roller-type rope guards, all mounted on anti-friction bearings to eliminate the need for daily lubrication. Jib mounts conveniently to



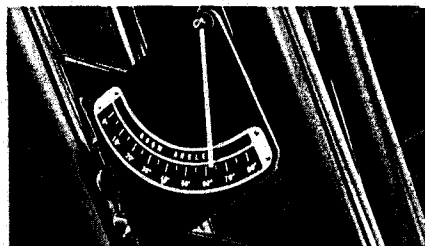
Tubular Boompoint

**Dual, Rail-Type Boom Stops** — Include Spring-Loaded Bumpers



extended boompeak head shaft hubs with jib mast pinned to jib base.

The **boom angle indicator** serves as a handy reference to the operator. The **boomhoist kickout device** on the LS-418A is intended to automatically stop the boom hoisting function when minimum radius is reached. When the boom is raised closer than minimum radius, this mechanism disengages the boom raising clutch and engages simultaneously the boomhoist brake.



Boom Angle Indicator



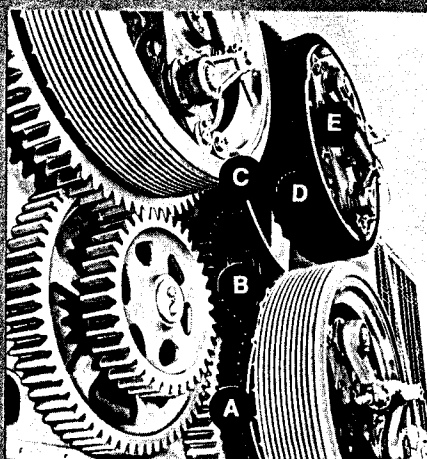
Boomhoist Kickout Device



# Unmatched Options In A Big Crawler Crane

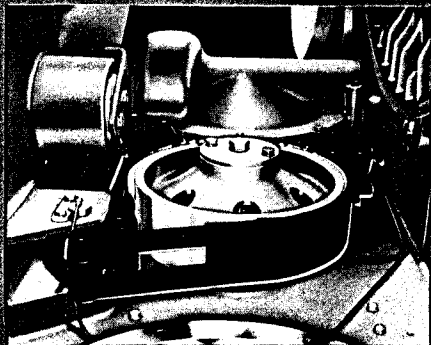
*For Wide Range Of Applications*

The flexibility of the Link-Belt Speeder machinery design results in the availability of options unmatched by other crawler lifting cranes. All designed to maximize the usefulness and productivity of the machine for your own unique needs.



2-Speed Gear Drive

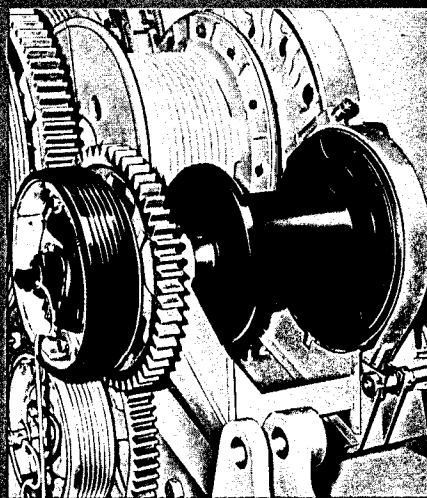
Available is a 2-speed, gear-driven rear rope drum which, at the same time, retains standard speed for swing, travel, hoist, boomhoist, and third drum. Hoist clutch on right end of rear drum shaft operates at standard hoist speed. Clutch (E) on left end of drum shaft operates at 80% higher than standard hoist speed. Control is by pulling the hoist drum lever for standard speed, pushing for high speed. The addition of gear (A) mounted on swing shaft powers gear (B) mounted on extended reduction shaft, causing gear (C) and clutch drum (D) to revolve in the same direction as the standard speed hoist clutch and drum, but at 80% increased speed. However, with this arrangement, clutch-controlled power load lowering and auxiliary rear drum brake are not available.



Swing Brake

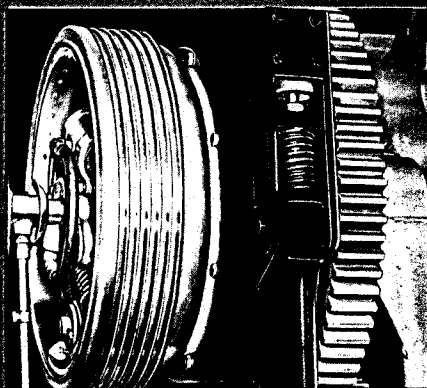
The swing brake is spring applied and power hydraulically released. Holds upper and boom at any wind position, or it can be set to partially engage for a slight drag when making precision swings. Swing brake is controlled from operator's position through variable pressure control valve. The LS-418A also features a mechanical swing lock as standard equipment.

Completely independent of all other machine functions, gear-driven third drum is available. Particularly valuable for pile driving operations that require "snaking in" a load, the third drum provides a high rope line pull of 22,200 lbs. and rope speed of 135 f.p.m.



Third Drum

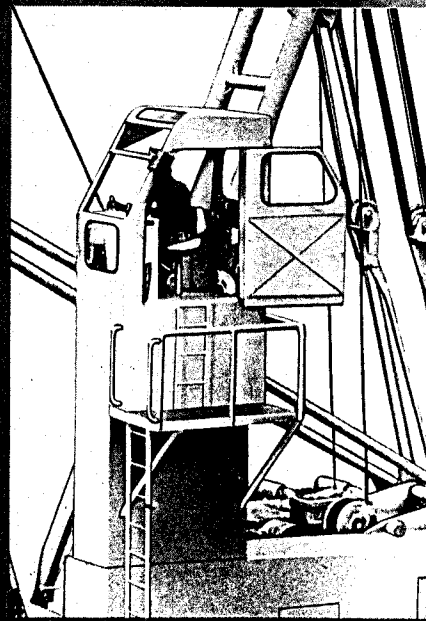
For fast travel on the job site, the LS-418A can be equipped with 2-speed travel in one direction, standard speed opposite direction. An independent planetary arrangement is mounted between the travel gear and



2-Speed Travel

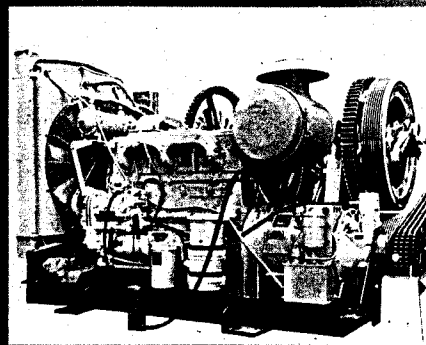
clutch drum. Engaging the 2-shoe clutch provides standard speed. Planetary drive provides high-speed travel. Planetary is controlled by push button located on the travel clutch control lever.

Elevated operator cab is available. This option puts the operator up where he can see his work on specialized loading jobs. Permits more efficient operation.



Elevated Cab

Engine-driven hydraulic hoists are available with variable coupling or single and double speed converters. With torque converter, optional over-coupling full-line performance control available for 50% higher than standard hoist speed. This is combined with the optional 2-speed, high-speed rope drum to give a rope speed greater than standard hoist speed with back pull up to approximately 200%.

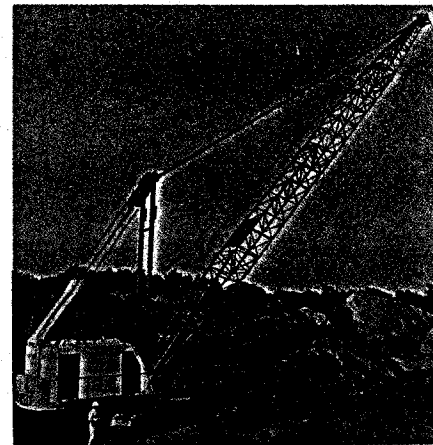
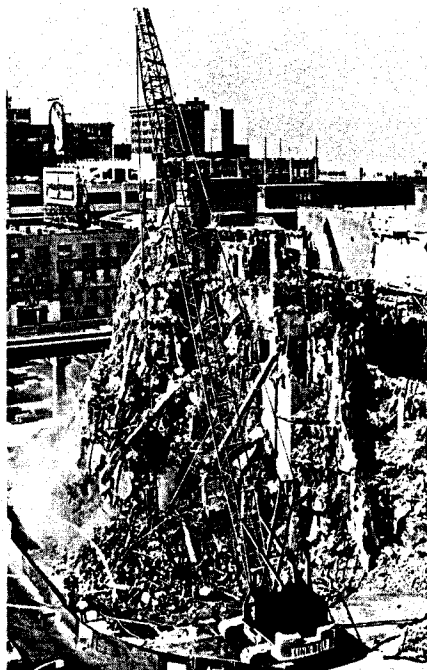


Engine-Driven

# Performance-Tested Job Adaptability

*As Hoe, Crane, Clamshell, And Dragline*

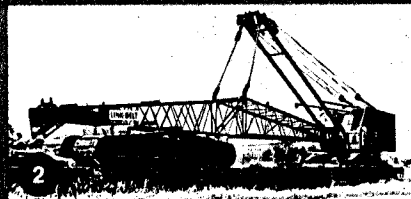
Superior machine strength is achieved with all-welded and stress-relieved lower and upper frames. Power hydraulic control with 2-shoe clutches results in great precision. Optional independent swing and travel adds to on-the-job maneuverability.



The Link-Belt Speeder LS-418A 2½ cu. yd. hoe offers a maximum digging depth of 34' 10" and a maximum digging radius of 51' 2". In lift crane work, match the boom to the job, choosing from a rugged angle chord type to a 200' maximum reach tubular type.

## The LS-418A Features Self-Erecting / Stripdown Of Side Frames And Boom

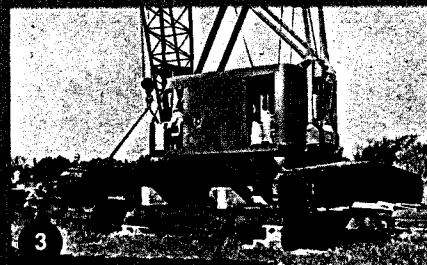
The LS-418A crawler lifting crane is designed for fast on-the-job self-erection of boom, side frames, and counterweight. No need for auxiliary crane equipment. The basic procedure involved is as follows. (Exact details available upon request.)



(1) Machine with side frames and boom fully extended. The crane is in the process of self-erecting. The side frames and boom are being raised into position.

(2) The crane is in the process of self-erecting. The side frames and boom are being raised into position. The crane is in the process of self-erecting. The side frames and boom are being raised into position.

(3) Machine with side frames and boom fully extended. The crane is in the process of self-erecting. The side frames and boom are being raised into position. The crane is in the process of self-erecting. The side frames and boom are being raised into position.



(4) The crane is in the process of self-erecting. The side frames and boom are being raised into position. The crane is in the process of self-erecting. The side frames and boom are being raised into position.

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