Link-Belt®

LS-518

150-Ton Crawler Crane
Exclusive Full-Function Revolving Superstructure Design

1. **UPPER FRAME**: Jig welded and stress relieved for strength and durability; line bore accuracy for proper shaft and gear alignment. Results in less component wear and lower maintenance costs.

2. **ENGINE**: Diesel with torque converter.

2b. Auxiliary output shaft governor control for lifting crane service (not shown) allows increase of hoist line speed up to 150% when line pull is less than maximum.

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

4. **SWING**: Independent. Two-shoe clutches transmit power smoothly to the vertical swing shaft and pinion. (Only left-hand clutch is visible.)

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

5a. **BOOM HOIST ROPE DRUMS**: Worm drive to dual rope drums mounted on platform at cab roof level. (Only left-hand drum visible.)

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

7. **ROPE DRUM LAGGINGS**: Front and rear rope drum laggings bolt to adapters which are splined to drum shafts.

8. **DRUM BRAKES**: Mechanically operated by foot pedals. Drum brakes separated from clutches (items 6 and 10) to eliminate heat transfer, resulting in cooler brakes and clutches for longer component life of both. Brake drum 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) Independent front drum power load lowering 2-shoe clutch for powering down light loads and controlled lowering of heavier loads.

11. **EXTENDED REAR DRUM SHAFT**: To accommodate installation of a rear drum power load lowering clutch or an auxiliary rear drum brake, doubling 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 CONSOLE**: Speed-o-Matic power hydraulic controls, time-tested and proven throughout the world.
The model LS-518 revolving superstructure machinery design is FMC’s unique Full-Function. This exclusive machinery design permits independent or simultaneous performance of swing, travel, booming, and load hoisting or lowering. Increases on-the-job machine and load handling capability. In addition, provides for tailoring the machine to the job with the widest choice of options. (See page 4.)

For superb control of all the machine functions, the LS-518 Link-Belt® crane incorporates the 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 belt-driven, vane-type pump or from the pressure accumulator storage tank does the work. Normal system operating pressure is 900 — 1,050 p.s.i. The accumulator is pre-charged to 650 p.s.i.

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 that permits the use of 2-shoe clutches for all machine functions.

The brakes for the front, rear, and optional third operating rope drums are mechanically operated by foot pedals equipped with positive latches located beneath the operator’s control console. Drum rotation indicators are standard. Foot throttle, hand throttle on swing lever, windshield wiper, and cab heater and defroster fan are available. The independent boom hoist features power hydraulic, 2-shoe clutch control for both precision raising and lowering of the boom. The boom hoist 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 rope drum brake is power hydraulically released when the boom raising or lowering clutch is engaged. Also, a manually controlled rope drum locking pawl is standard.

2-Shoe Clutch

The power hydraulic, 2-shoe clutch is self-compensating over a wide range of lining wear and heat expansion and is separated from the rope drum brake to eliminate heat transfer for longer clutch and brake lining life. Clutches can be engaged to any degree for smooth acceleration and deceleration of swing, travel, hoist, and boom. For maximum rope line pull, the clutch can be fully engaged by complete application, or toggling in, of the control lever.

Turntable Bearing

The crane upper is mounted to the crawler lower by a turntable bearing which provides extremely smooth swinging. The bearing is attached to machined surfaces with alloy steel, high-strength bolts.
The flexibility of the revolving superstructure machinery design results in the availability of options unmatched by other crawler lifting cranes. Two-speed travel, independent third drum, auxiliary rear drum brake ... all designed to maximize the usefulness and productivity of the machine for your own unique needs.

2-Speed Travel

travel gear and 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.

A gear-driven third operating rope drum, completely independent of all other machine functions, is available. Particularly valuable for pile driving operations that require "snaking in" a load, the third drum provides a high rope line pull of 22,800 lbs. and rope speed of 126 f.p.m.

Elevated operator's cabs are available. Puts the operator up where he can see his work on specialized loading jobs. Power hydraulic controls are ideally suited for elevated operator's cabs.

For high-speed hoisting, an independent, gear-driven, 2-speed rear rope drum is available. Standard speed is retained for swing, travel, front drum hoist, boom hoist, and third drum. Hoist clutch on right end of rear drum shaft (not shown) provides standard hoist speed. Two-shoe clutch (E) on left end of drum shaft provides 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. (Item #11, page #2)

For best travel on the job site, the L-6 can be equipped with 2-speed travel in one direction, single-speed reverse. An independent planetary arrangement is mounted between the

The full-revolving fairlead rotates to insure full inhaul rope support in all positions. All moving parts are mounted on anti-friction bearings.

Increases inhaul rope life, permits greater economy.

Elevated Operator's Cab

A diesel engine with either a single- or 3-stage torque converter is available. An auxiliary output shaft governor control is standard. For lifting crane service, when line pull is less than maximum, allows up to 150% increase of standard hoist line speed. This, combined with the optional, 2-speed, gear-driven rope drum, gives up to 270% higher than standard hoist speed.
Removable Side Frames
Save Stridetown Time
Patented FMC Dowel And Key Arrangement

The LS-518 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. Standard 44" wide track shoes, mounted on 24' 4" overall length side frames, result in lower ground bearing pressure.

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

Lower frame is line bored after stress relieving 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 located in the side frame.

The side frames are positioned to the lower frame cross axles by means of the patented dowel and key arrangement. A dowel (Illustration A) and key (Illustration B) fixed in separate windows of the side frame, mate with a corresponding circular and rectangular 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. By means of a tie bolt, the wedge is drawn up the inclined plane, locking each side frame to its respective cross axle. End plates, bolted to the ends of the cross axles, secure the wedgepack in position.

To remove the side frame requires seven basic steps: (Exact details and procedure available upon request)
1. Remove all counterweight and swing upper with basic length boom 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 wedgepack.
6. Raise and block up lower frame (front and rear) until cross axles clear the key and dowel in the side frame windows.
7. Remove side frames with basic boom or live mast with drive chain remaining intact.

Follow similar procedure for removing opposite side frame. Reverse basic procedure for installing side frames. (Exact details and procedure available upon request)

The LS-518 is equipped with power hydraulic steer. The steer-travel mechanism is completely enclosed within the lower frame.

Power Hydraulic Steer

Powerful jaw clutches (B) are operator 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 straightline travel by the two steer levers. Brakes (C) also "brake" the machine while working.
The LS-518 crawler lifting crane is equipped with the tubular boom and jib. The basic boom is 60', 2-piece, pin-connected with 10', 20', 30', and 40' pin-connected sections available for a maximum boom only length of 250'. The basic jib is 30', 2-piece, pin-connected with 10' and 15' jib sections available for a maximum jib length of 70'.

The LS-518 tubular boom design is fully tested and proven and is precision built with special, automatic machine tools and fixtures. Precise, machined-coped lattice ends match the contour of the round, alloy steel, tubular chords and are carefully welded in place with 360° welds.

The method of welding the in-line pin lugs to the round chord tube minimizes stress build-up and is an exclusive development of FMC 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-end pin is held in place with two latch pins. It all adds up to a superior boom design.

The tubular boompoint contains five sheaves with roller-type rope guards, all mounted on anti-friction bearings to eliminate the need for daily lubrication. Wide-flange sheaves available for dragline work. Jib mounts conveniently to extended boompeak head shaft hubs with jib mast pinned to jib base.

The boom angle indicator serves as a handy guide to the operator. It is mounted on the side of the boom nearest the operator for his ready reference.

The live mast required for all boom lengths reduces boom compression loadings. Mast mounts to the front of the upper frame, supporting boom hoist bridle, pendants, and boom hoist rope. Also supports the midpoint suspension pendants required for boom lengths over 180'. Live mast, equipped with two sheaves, can be used as a short boom for handling side frames, boom sections, and counterweight when dismantling and assembling the machine.

Dual, rail-type boom stops, each with spring-loaded bumpers, are standard. When live mast is used as boom, boom stops are also arranged to serve as mast stops.
The LS-518 can be equipped with a pin-connected angle boom. Basic boom is 50', 2-piece with 10', 20', and 30', extensions available. The basic jib is 20', 2-piece, bolt-connected with 10' jib sections available for a maximum jib length of 40'.

The angle boompoint contains five sheaves with roller-type rope guards, all mounted on anti-friction bearings to eliminate the need for daily lubrication. Wide-flange sheaves available for dragline work.

The boom hoist limiting device of the LS-518 improves close-radius operation. When the boom is raised closer than minimum radius, this mechanism acts to disengage the boom raising clutch with simultaneous engagement of the boom hoist brake.

The swing brake is spring applied or power hydraulically released (under control of the operator). Acts to hold upper and boom at any swing position, or can be partially engaged for a slight drag to control side drift when making precision lifts. Swing brake is controlled from operator's position through variable pressure control valve. The LS-518 also features a mechanical swing lock as standard equipment.

The LS-518 with exclusive Full-Function upper design has the versatility for high performance in many varied lifting crane applications. Independent swing, travel, boom hoist, and hoisting mean superior on-the-job maneuverability.

The Link-Belt® LS-518 crawler lifting crane is designed to meet many of the unusual demands of the big crawler crane user.
The LS-518 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 in brief is as follows: (Exact details on LS-518 self-erection and self-stripping are available upon request.)

1) Machine with side frames removed and resting on the rail car deck, arrives at the job site. Boom base section and live mast with boom hoist reeved installed on machine. Rail car, directly ahead, is loaded with the side frames and boom head section.

2) Live mast raised and pendants attached to top of base section. With rope off the front operating drum, the side frames are pulled toward the machine, carrying with them the boom head section. Top and bottom boom sections can then be pinned together easily.

3) Hoist line is reeved through multiple-sheave hook block and attached to a wire rope sling around the rail car. Engaging the hoist clutch with hook block anchored to rail car will cause the rear cross axles to raise as shown. Blocking is placed under the carbody, forward of center, to serve as a pivot point for "jacking up" the machine. With alternate hoisting and lowering of the front rope drum and blocking installed, the entire machine can be raised on the rail car.

4) Machine raised to proper height and fully blocked. With hook block free and the boom raised to near minimum radius, both hoist and inhaul ropes are anchored to the side frame for mounting to the cross axles. Swing upper and boom 180° to install opposite side frame. (Refer to page 5 for details on side frame installation.)

5) With the side frames fully installed, blocking removed, and ramp constructed, the assembled machine travels down the ramp to ground. Machine is ready for the addition of the counterweight.

The entire counterweight is quickly raised with rope mechanism from the ground into position on the machine. Rope is anchored and wound to the special drum cast integrally with the rear brake drum. (For illustration, see page 2, number 9.) Counterweight is raised by rear drum hoist clutch and lowered by rear drum brake. Two large "T"-bolts hold counterweight to the machine.

With the side frames and counterweight in place, the LS-518 is ready for build-up and installation of the complete boom and jib. Reverse the procedure for self-stripping of machine.

The Link-Belt® LS-518 crawler lifting crane can be tailored to meet your specific needs.

---

We are constantly improving our products and therefore reserve the right to change designs and specifications.

FMC Corporation Crane and Excavator Division Cedar Rapids Iowa 52406 Plants In: Ontario Canada • Milan Italy • Queretaro Mexico

Printed in U.S.A.