

# Link-Belt HT-450 Stripdown A Matter Of Minutes

Hydraulic Counterweight Lowering



Hydraulic truck crane job-to-job transportability was not overlooked in the design of the HT-450.

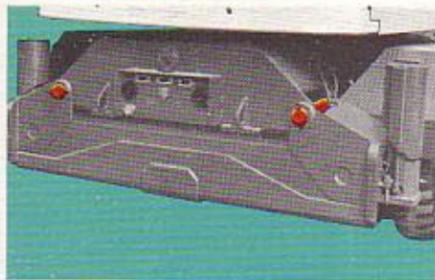
Fast stripdown of counterweight and outriggers was a design consideration. Removal of two pins each frees the front and rear outrigger assembly from

the carrier. Hydraulic lines are equipped with quick-disconnects. The retracted boom may be used to handle the outriggers.

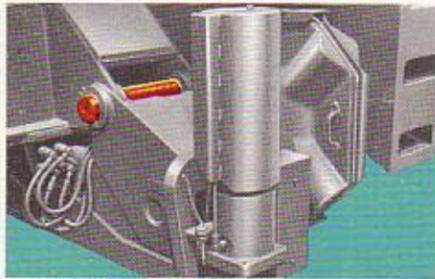
The counterweight is one piece and held in place by a hydraulically raised and lowered frustum. To lower the counterweight to the carrier deck, simply position the direction valve lever (A) and turn the control lever (B) directing oil to the lowering cylinder. The entire job is completed in 10 seconds. Hydraulic power for the raising/lowering cylinder is from the piston-type, engine-driven pump. The contoured counterweight allows the operator to swing away from the counterweight and remove it from the

carrier deck with the retracted boom. Hydraulic counterweight lowering is a standard feature on the HT-450.

For reduced rear axle loadings for job to job travel, counterweight may be stored on the carrier deck, held in place with special brackets.



Rear Outrigger — Pin-Connected



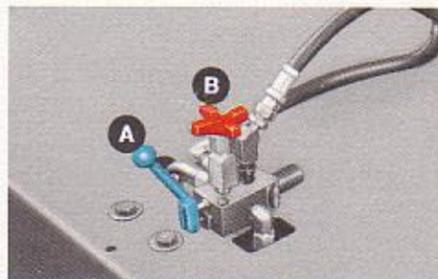
Front Outrigger — Pin-Connected



Counterweight Stored On Carrier Deck



Counterweight Hydraulically Lowered/Raised



Direction Valve And Control Lever

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

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



Printed in U.S.A.

# Link-Belt HT-450 45-Ton Hydraulic Truck Crane



# Continuous Innovation....Designed Versatility



The new ATC-822 with 121' (36.88 m) of on board tip height and 22 ton (20 mt) capacity is specifically designed to give you the best equipment value in the 22 ton (20 mt) all terrain class.

## Unparalleled Roadability and Job Site Maneuverability



New from the ground up, the ATC-822 provides the highway transportability of a truck crane and the job site maneuverability of a rough terrain crane. A combination of highway speed capability, low axle loadings and full power shift automatic transmission make it easy

to move from job to job, quickly and efficiently. With a spring mounted suspension, oscillation cylinders acting as shock absorbers, and radial tires, highway travel becomes smooth and comfortable.

Maneuvering the ATC-822 on the job site is made easier with the use of independent controls for steering in both upper and carrier cabs. Selectable from either cab, steering modes include independent front and rear steer, four wheel coordinated steer and "crab" steering for tight job site situations. And the direction of steering remains the same whether the upper is over the front or rear making it easier for the operator to move the machine without having to re-learn his steering habits.



During 360° lifting applications, the oscillation cylinders automatically lockout creating a stable lifting base. For further maneuverability the front axle will release and oscillate when the boom is centered over the rear for pick and carry applications.

**Carrier** The Link-Belt design incorporates 100,000 psi steel in a parallel box design to achieve maximum rigidity and torsional strength while reducing weight for roadability. Proven drive train components are matched for reliability and excellent travel speeds of over 55 mph (88.51 km/h).

Link-Belt's 4 x 4 x 4 carrier also features interaxle differential locks for maximum tractive effort, a 6-speed power shift automatic transmission, aluminum "diamond plate" fenders and large engine access doors for serviceability.



**Carrier Cab** The acoustically treated carrier cab assures the operator of highway comfort and control with the standard tilt/telescoping steering

wheel connected to rack and pinion power assisted steering. Additional comfort and safety features include dash-mounted comprehensive instrumentation with lighted gauges, rear sliding and roll-down door windows for excellent ventilation, fully adjustable fabric seat, aluminum non-skid "diamond plate" floor, suspended pedals, rear view mirrors and automotive-type fuses.

## Piston-Motor Hydraulic Hoist System

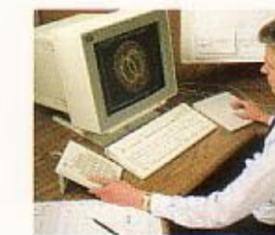
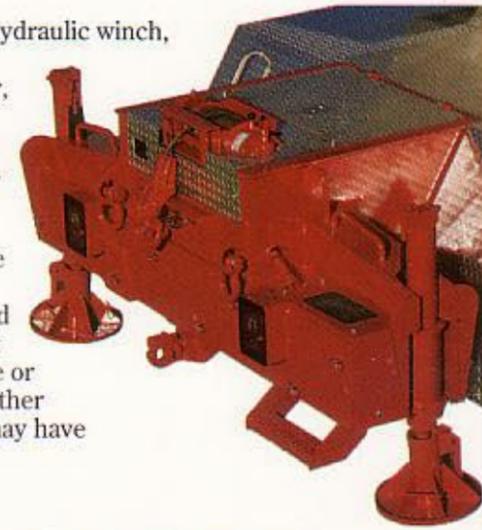
Delivers superior hoisting to the 22 ton (20 mt) all terrain class

Model 1M main winch with single speed motor and automatic brake; power up/down mode of operation with hoist drum cable follower. Bi-directional piston-type hydraulic motor, driven through a double planetary reduction unit provides precise, smooth load control with minimal engine r.p.m.



**Multi-function Control** For greater productivity and control, simultaneous function of boom hoist, winch and swing sets the standard in the 22 ton (20 mt) class.

**Tow Winch** A hydraulic winch, recessed in the rear of the carrier, is available to provide a variety of job site options to the operator. Conveniently operated from the upper cab, the winch can be used to pull equipment towards the crane or assist in pulling other equipment that may have become stuck.



**Computer-aided Design** Link-Belt has pursued a course of 'continuous innovation' to set new standards for all terrain crane design....design originals that improve reliability and performance.

Advanced, high speed computer-aided, state-of-the-art designs are measured by their reliable performance through extensive testing and re-testing before Link-Belt endorses a new idea, assuring the customer of real user value....maximum on-the-job performance.

**Simplified Routings** All Link-Belt hydraulic cranes incorporate well thought out routings for easy access. Fittings and connections are staggered where necessary for quick and easy servicing.

**Serviceability** Standard quick disconnects installed at various locations in the hydraulic system allows the hydraulic pressure to be quickly and easily checked with Link-Belt's exclusive diagnostic gauge kit.



Diagnostic Kit

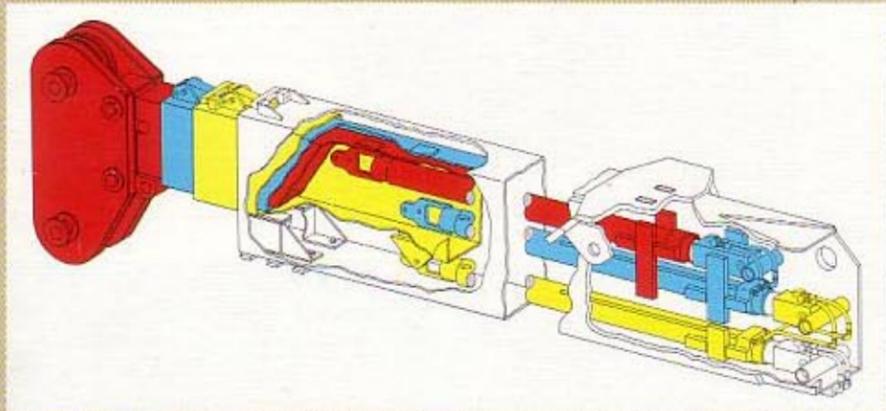
**State-of-the-Art Wire Harness** The ATC-822 has Packard XL automotive-type wire harnesses throughout for outstanding long term reliability.



## Full Power 4-Section Boom Manual Extension And Jib Available

Boom Extension System For Optimum Lifting Capacity

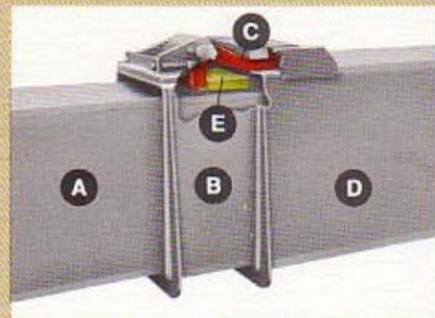
The Link-Belt Model HT-450 hydraulic crane is equipped with the full-power 4-section telescoping boom. For additional reach, manual boom and jib extensions are available. The boom sections are constructed of alloy steel for greater strength. The method of welding the boom sections is a development of FMC Crane and Excavator Division engineering/manufacturing technology. The boom is hydraulically



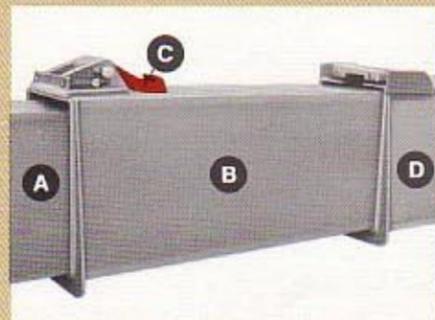
Exclusive 3-Cylinder Arrangement

extended and retracted with an **exclusive 3-cylinder arrangement**. The cylinders are double acting with the cylinder rods remaining stationary and the cylinder case extending-retracting. The **3-cylinder arrangement** eliminates the need for long hoses and hose reels.

The boom extend-retract design allows the power boom to extend in sequence. From tip (**red**) fully extended to second section (**blue**) fully extended to third section (**yellow**) fully extended. This is accomplished by means of an **exclusive latch-lock arrangement**. The **latch (C)** locks the center sections (**B**) and (**D**) in the fully retracted position. At the end of the tip section stroke, block (**E**) fixed to the top of the tip section (**A**) will engage the base of **latch (C)**, **unlocking** the section (**B**) and allowing the third section to extend.



Latch Locked



Latch Unlocked



Boom Head With Jib Strut And Link Attached

When hydraulically retracting the boom, the sequence is reversed and the center power sections retract completely before the tip power section (**A**) can be retracted. No need for multiple boom-telescope control levers. Only one control lever is used to extend or retract the boom. This boom extend-retract design keeps the greatest portion of the boom weight closest to the machine for optimum lifting capacity. Boom extend-retract cylinders are equipped with check and holding valves. The check valves hold boom/cylinders in position when operator control lever is in neutral. Holding valves allow controlled retracting of boom.

The **boom head** machinery consists of one top and three bottom sheaves. Sheaves are mounted on anti-friction bearings to eliminate the need for frequent lubrication. Boom head machinery is designed for fast pinning to either the tip power section or the manual boom extension. Hoist line guide rollers are mounted on top of the boom.

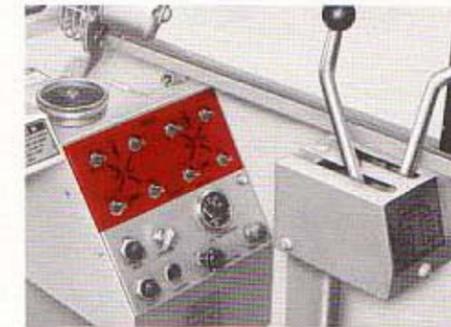
The **jib** is pinned to the boom head machinery and is stored under the boom base section when not in use. Jib mounts to extended lower boom head shaft hubs. For fast on-the-job hook-up, the front stay lines also serve to raise the jib to the stored position. **Jib strut and link** may be left in place on the boom head.

Refer to HT-450 flysheet for boom lengths and manual or jib extensions.

The boom mounts in an in-line bore in the upper revolving frame.



Hydraulic Outriggers

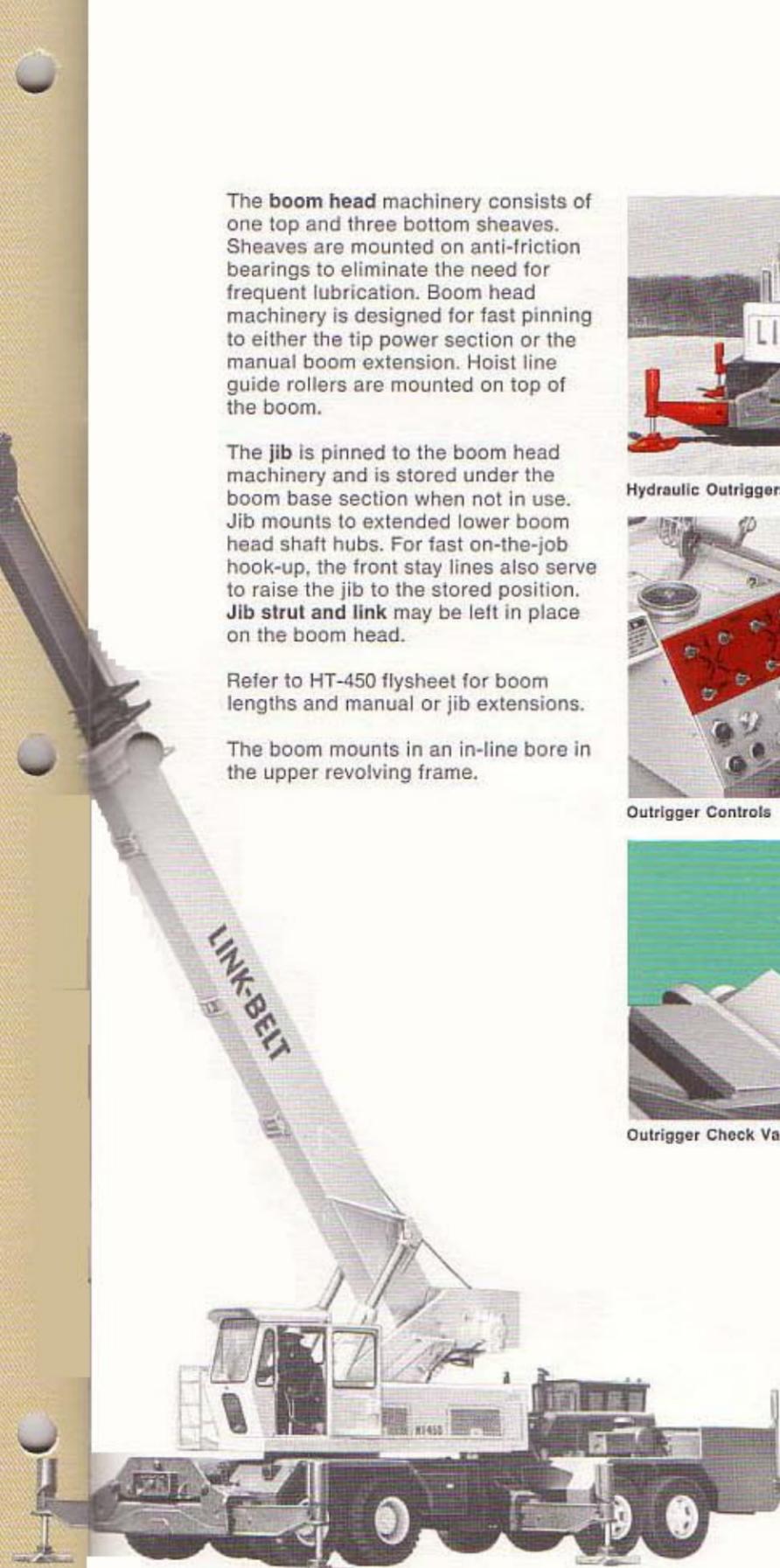


Outrigger Controls



Outrigger Check Valve (Cover Removed)

**Hydraulic outriggers** are standard on the HT-450. Beams are full width with individual control of beams and jacks. This permits leveling the machine on reasonably uneven terrain. **Outrigger controls** are conveniently grouped on the right-hand control panel of the crane upper cab. Once the outriggers are set, a **check valve** fixed to the jack cylinder "locks" oil in the cylinder and the outrigger jacks in place. For assistance in leveling the HT-450 on outriggers, sight levels are located near the outrigger boxes fixed to the carrier frame.



## Carrier Designed For Mobility And On-The-Job Durability

*Carrier Engine Furnishes Hydraulic Power For Crane*

The 45-ton Model HT-450 is one of a line of Link-Belt carrier mounted, hydraulic cranes. The HT-450 incorporates a proven hydraulic crane concept with a durable 4-axle carrier especially designed for hydraulic crane duty. The box-type, high-strength alloy steel frame (100,000 p.s.i. min. yield strength steel) gives a desirable weight-to-strength ratio — an important consideration in axle loadings for machine transportability.

Functional carrier styling is an important design consideration. The **carrier cab** is mounted forward of the front axles for easier operator entrance. This also reduces over-all cab height. The cab interior provides a touch of luxury for the operator. All side panels are upholstered with pleated vinyl. Floor surface is carpeted to reduce road noise. Bucket seat with safety belt, tachometer, ash tray, lighter, outside handrail, right- and left-hand bus-type mirrors, windshield wiper, horn, windshield washer, heater, defroster, back-up alarm and lights are all standard equipment.

The HT-450 carrier features an 8 x 4

drive with 12:00 x 20-H 16-ply tires on the tandem rear axles and super single 16:50 x 22.5-H 16-ply tires on the tandem front axles for excellent load carrying capacity and machine flotation.

Power for travel is from the carrier diesel engine into a 13-speed main transmission for negotiating steep grades, maneuvering through traffic, or travelling at highway speeds up to 46 m.p.h. Mounted behind the main trans-



Carrier Cab

mission, ahead of the rear axles, is a 2-speed range (direct and low) auxiliary transmission. The low speed range is for on-the-job precision travel movements as low as .61 m.p.h.

The tandem rear axles are equipped with planetaries. Power steering and 8-wheel service brakes with Maxi brakes on both axles of rear tandem wheels are standard. Service brakes may be set with a brake lock when operating the crane on tires. Maxi brakes provide parking and emergency braking in addition to the service brake function. Tandem front axles are tubular with equalizer beams.

The hydraulic crane upper is mounted to the carrier by a turntable bearing with integral swing gear.

Hydraulic outrigger boxes are pin-connected to the carrier for quick removal. Outriggers are controlled from the crane upper cab. (See page 7.)

The Model HT-450 hydraulic crane is a simple but efficient design. The carrier engine powers the carrier and also supplies hydraulic power for all the

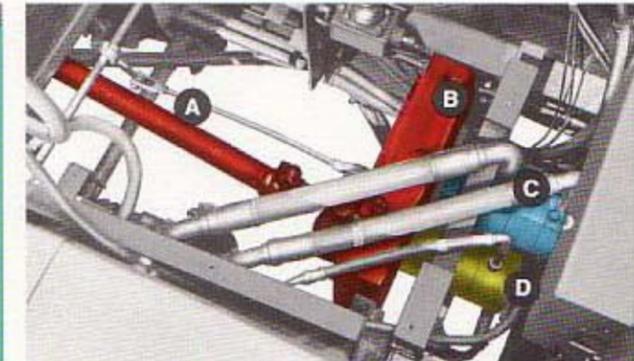


Hydraulic Oil Reservoir

crane functions — eliminates the need for a second engine in the crane upper.

The **hydraulic oil reservoir** with filters and strainer is located in the right front corner of the carrier. A large capacity oil cooler in front of the engine radiator maintains proper oil operating temperature for increased hydraulic component life.

Hydraulic power is from the front of the



Hydraulic Power

engine through a universal drive tube (A) into the enclosed gear drive (B) powering pumps (C) and (D). One section of tandem gear-type pump (C) supplies power for hoist and boom-hoist. One section supplies power for swing and boom extend-retract. The variable volume piston-type pump (D) supplies power for outrigger cylinders, counterweight lowering cylinder, and 2-shoe clutches located in the rope drum circuit.

For long distance or full speed over-the-road travel, a cab-controlled pump disconnect clutch is provided to avoid unnecessary wear and over-speed on the pump and drive assembly.

Oil from the pumps, driven by carrier engine, flows through a rotating joint mounted in the center of rotation which leads into the upper frame. From the rotating joint, oil is directed into the control valves.

