Link-Belt
HTC-50W
Hydraulic Truck Crane
50-ton (45.35 metric ton)
To its already impressive line of hydraulic cranes, FMC offers the Link-Belt® HTC-50W hydraulic truck crane, a 50-ton (45.35 metric ton) capacity machine mounted on a 10' (3 m) wide carrier. The FMC designed and manufactured carrier features a wider axle width, longer wheelbase, and greater distance between front and rear outriggers — combining to increase stability by distributing the weight of the machine over a broader area. Also, the larger carrier provides increased stability for off-the-road travel.

The HTC-50W mounting is designed using a 100,000 p.s.i. (689 500 kPa) quench and tempered, high-strength alloy steel (between outrigger boxes) for an optimum weight-to-strength ratio. This is an important consideration in the axle.

The in-line carrier power train is powered by a diesel engine. Engine options provide customer preference. A 13-speed Roadranger transmission allows negotiating steep grades, maneuvering through traffic, and traveling at highway speeds.

Eight-wheel air brakes are standard. When lifting "on tires", parking brakes can be set from the carrier cab. The brake chambers on the rear tandem also provide emergency braking. The tandem rear axles are equipped with planetary reduction systems for increased tractive effort.

The carrier cab interior provides a touch of luxury for the operator. The cab is insulated from the frame by rubber mounts to reduce shock and sound levels. Upholstered side panels, full instrumented panel, excellent gauge visibility, floor carpet, large glass area, bucket seat with safety belt, right and left hand mirrors, windshield washer and wipers, heater, defroster, fan and tachometer are all standard equipment on the HTC-50W. Also inside the cab is a centralized circuit-breaker panel to provide an instant status check of the major electrical systems in the carrier.
The HTC-50W carrier not only provides for an ideal lifting base, but also for optimum maneuverability. The power assist hydraulic steer requires minimum effort when driving in congested areas.

The **hydraulic assist steer** components are mounted to the side of the carrier frame for protection. The operator controls steering gear (A) and steer linkage. A hydraulic control valve, activated by the steering gear (A) directs oil from the steering pump to the interconnected, double-acting cylinders (B) for power assist hydraulic steer.

Hydraulic power for all upper crane functions and the carrier mounted outriggers is provided by engine-driven, gear-type pumps located in the front of the carrier. A carrier cab controlled, pump disconnect is standard. Oil for the crane functions flows through a rotating joint mounted on the center of rotation which routes oil into the upper hydraulic systems. A hydraulic reservoir is mounted amidship on the right side of the carrier.

The revolving upperstructure is mounted to the carrier by a turntable bearing with integral swing gear.
The Link-Belt HTC-50W hydraulic truck crane revolving upperstructure design introduces a new concept to the hydraulic truck crane user. The major components are mounted inside the extended, low profile frame. This enables the use of larger accessible drums for greater wire-rope capacity. It also keeps the bulk of the weight low in the frame reducing the crane's overall center of gravity.

To obtain an optimum weight-to-strength ratio the entire upper frame was subjected to an extensive testing program in the FMC Applied Mechanics Laboratory. Powerful hydraulic rams apply realistic loadings to simulate the stress imposed under actual crane working conditions. Strain gauges applied directly to the metal surface detect the strain as force is applied to the structure. The strain data is then recorded through the use of sophisticated, sensitive acquisition systems. This elaborate program helps to assure Belin crane users of a superior quality.

The hydraulic power for the HTC-50W upperstructure functions is provided by hydraulic pumps driven off the engine (see page 2). The HTC-50W is available with two wire-rope drums (front drum optional) which utilize the exclusive two-shoe power hydraulic clutches.

Power for the two rope drums is from a bi-directional motor (A) through an FMC gear reduction system. Two speed hoisting is standard. The utilization of two-shoe clutches (B) enables the operator to perform load hoisting/lowering using one of two methods:

1. With the two-shoe clutch (B) engaged, and drum brake (C) released, the operator controls the load (hoisting, lowering and holding) with the hydraulic motor control lever. The automatic brake (D) holds load when lever is returned to the neutral position,
2. With the 2-shoe clutch (B) disengaged and drum brake (C) released, but with the hydraulic motor control lever engaged (gear train running, drums remain stationary) the operator controls load by engaging the 2-shoe clutch control lever. To hold the load at a desired height the mechanical drum brake is applied by depressing the foot pedal in the cab as the 2-shoe clutch is disengaged. Releasing the drum brake (C) will permit true “free-fall” load lowering.

Free-fall load lowering enables an empty hook (or concrete bucket) to be returned to the ground faster to increase production while improving fuel economy. Also, with the two large equal size drums the HTC-50W is capable of some duty cycle applications.

The 360° swing power is from the bi-directional tandem gear-type motor (E) into the FMC reduction unit (F) and then into the swing shaft/pinion. “Free-swing” or “metered swing speed” is possible. Results in smooth swing acceleration and deceleration, and permits centering of the boom over the load before the load is lifted. A manually controlled swing brake (G) plus a pin-type swing lock is standard.

The modular and humanized operator cab is the result of FMC’s styling and design engineering group. Directly in front of the operator is the luxurious yet functional control console with full complement of instruments. Control levers for crane functions and foot pedals for the mechanical drum brakes and throttle are all conveniently located. An air actuated throttle controls engine rpm. Control console includes boom angle indicator, bubble level and throttle control. In addition to providing smooth acceleration and deceleration of crane functions it can be set to remain at any engine rpm level during machine operation. An electric boom length indicator is standard. For operating visibility and comfort, the cab is equipped with a hinged roof window and removable front window. The cab is rubber-mounted to the frame.

The superb design of the low profile crane upper structure mounted on a wider longer carrier is an ideal combination for an operator to experience increased stability, high mobility, and high rated capacity.
The 3-section power boom design is an exclusive FMC engineering achievement. With the aid of the Applied Mechanics Laboratory and extensive testing, the **boom design (patented)** was developed to consist of minimum gauge side plates along with 100,000 p.s.i. (689 500 kPa) yield strength steel angles in the four corners resulting in a more durable boom.

To maintain the tolerances and precision established by engineering, FMC made a considerable investment in custom designed machine tools and an all new facility for manufacturing the boom.

The Link-Belt® HTC-50W hydraulic truck crane boom side plates are embossed with a 1200-ton (1 088 metric ton) **hydraulically operated press**. The embossing of the minimum gauge boom side plates increases the strength and stiffness while keeping the weight at a minimum. The **diamond shaped depressions** were adapted to the design to allow for the natural flow of boom stresses (both compression and tension) and avoid high stress risers when a load is lifted.

To eliminate undesirable welds in the corners of the boom, the side plates are precisely welded by **automatic welding machines** to specially machined corner **angles**. The angles promote greater boom rigidity while increasing the overall reliability. The corner angles are able to absorb and efficiently transmit the boom stresses which occur when lifting a load.

To maintain proper alignment of the power boom sections, the FMC boom design
FMC's exclusive boom design (patented) incorporates the use of wear shoes which are positioned on the top, bottom and sides of each power section. All of the shoes are readily accessible for serviceability. The rear wear shoes are lubricated through external fittings located at the head of each section. It is not necessary to dismantle the boom for wear shoe replacement.

The total power boom length is 35 - 90' (10.67 - 27.43 m). Standard is 32' (9.75 m) swing around lattice fly section. A 28' (8.53 m) lattice extension is available which when used with fly, makes a 60' (18.29 m) jib. An additional 20' (6.10 m) extension is also available to make an 80' (24.38 m) jib giving a total tip height of 173' (52.73 m).

The hydraulic out-and-down outriggers are conveniently controlled by the controls located under the right arm-rest in the operator's cab. Automatic check valves attached directly to the jack cylinder "locks" oil in the cylinder to secure the jack in place once the outrigger is set. The pontoons may be stored in racks on each side of the carrier.

In the event that the counterweight must be removed to transport the machine, a counterweight removal linkage is available. Attaching the special linkage to the boom base and the counterweight, permits the boom to be raised, lowering the counterweight to the bed of the carrier. The upper can then be swung around to lift the counterweight with the boom for lowering onto a trailer.
The HTC-50W maximum boom/jib tip height is 173′ (52.73 m)

Convenient storage of fly/jib in travel position

The HTC-50W lattice fly or jib options are conveniently stored on the side of boom (except 80′ (24.38 m) jib) in the travel position. A minimum amount of time is required to assemble the boom extensions into a working position. The HTC-50W offers exceptional boom/fly/jib tip heights, reach, and lifting capacity.

The HTC-50W features:

- **Carrier**
  - FMC designed and manufactured
  - **Benefit:** Dependability and performance
  - Wide 10′ (3 m) carrier
  - **Benefit:** Added stability and lifting capacity
  - Reduced overall weight
  - **Benefit:** Increased transportability, reduced stripdown time required
  - Roadranger 13-speed transmission
  - **Benefit:** Job-to-job mobility

- **Upperstructure**
  - Low profile frame
  - **Benefit:** Reduce overall center of gravity
  - Large equal sized 2-speed hoist drums
  - **Benefit:** Decreased cycle times, added wire-rope capacity
  - True “free-fall” load lowering
  - **Benefit:** Increased production, reduced fuel consumption, plus duty cycle capability
  - Luxurious operator’s cab
  - **Benefit:** Increased operator efficiency

- **Attachment**
  - FMC exclusive boom design
  - **Benefit:** Dependable and reliable
  - Swing around fly and jib section
  - **Benefit:** Easily assembled, exceptional capacities
  - 173′ (52.73 m) boom/jib tip height
  - **Benefit:** Gives extra added working range capability

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

**FMC Corporation** Hydraulic Crane Division Lexington Kentucky 40502

Link-Belt® cranes/excavators manufactured in: Cedar Rapids Iowa • Lexington & Bowling Green Kentucky • Ontario Canada • Milan Italy • Queretaro Mexico & Nagoya Japan (under license)