

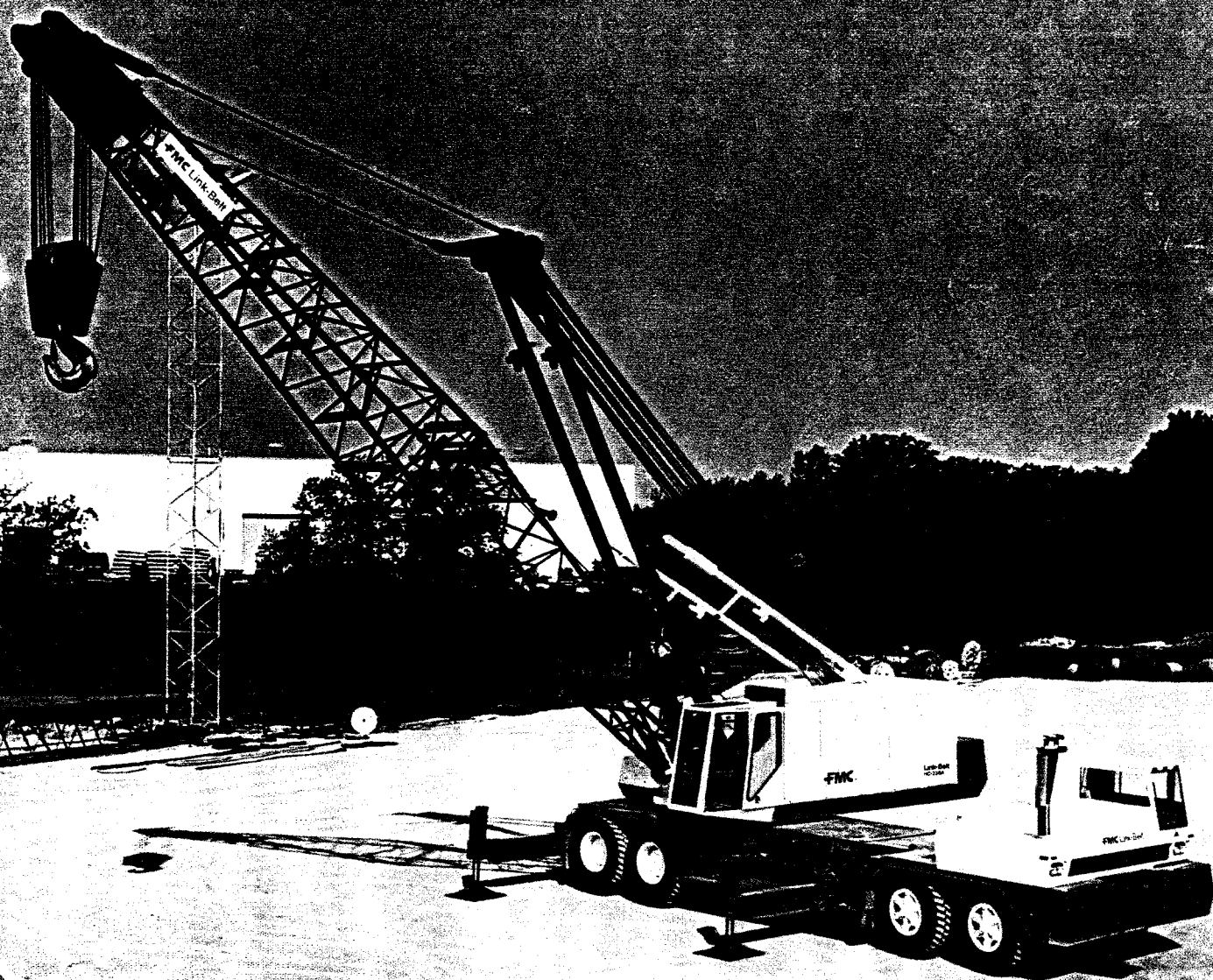
**Link-Belt®**

# **HC-238A**

## **Wire Rope Truck Crane**

140-ton (126.98 metric ton)

GENERAL INFORMATION ONLY

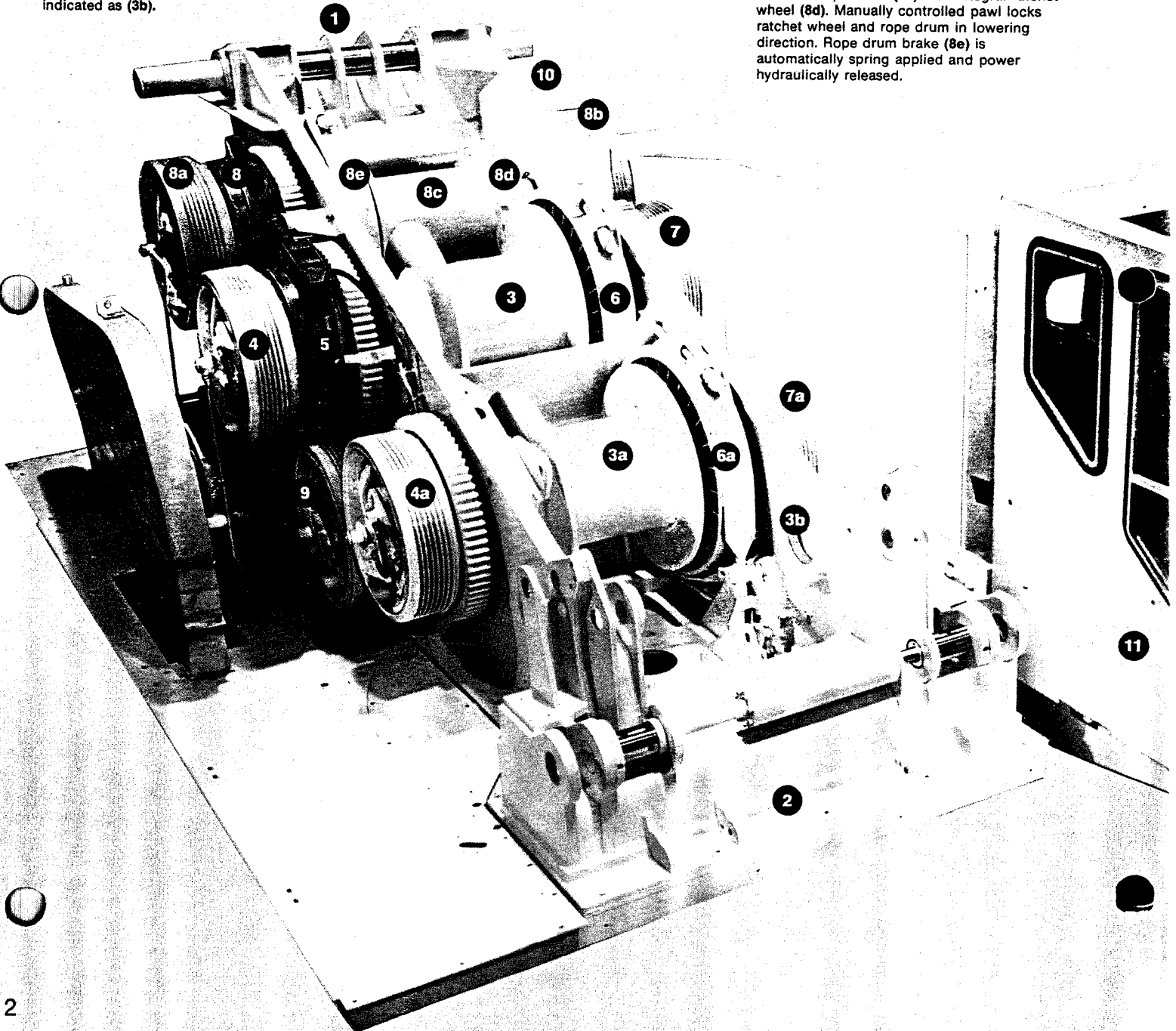


# FMC's exclusive low-profile Full-Function machinery design

ped-o-Matic® power hydraulic control system plus 2-shoe clutches

## GENERAL INFORMATION ONLY

- 1 **Engine:** (Not visible) Diesel with torque converter (single or 3-stage, optional).
- 2 **Frame:** Fixture welded and stress relieved for strength and durability; line bore accuracy for proper shaft and gear alignment. This results in less component wear and lower maintenance cost.
- 3 **3a., 3b. Rope drums:** Large diameter rear (3) and front (3a) rope drums accommodate up to 790' (240.79 m) of 1" (25.44 mm) diameter rope. Independent 3rd rope drum is optional and mounts in bores indicated as (3b).
- 4 **4a. Hoist clutches:** Two-shoe, rear (4), front (4a).
- 5 **Planetary driven hoist/lowering:** (Optional) Independent. Provides up to 70% increase in hoist line speed. Can be modified to provide 40% decrease in line speed.
- 6 **6a. Drum brakes:** Mechanically operated by foot pedals. Separated from hoist clutches (4, 4a) to eliminate heat transfer, resulting in cooler brakes and clutches. Brake drums splined to drum shafts.
- 7 **7a. Power load lowering clutches:** Independent; 2-shoe for powering down light loads and controlled lowering of heavier loads. Standard on rear drum (7), optional on front drum (7a). (Only clutch drums visible.)
- 8 **8a., 8b., 8c., 8d., 8e. Boomhoist:** Independent. Two-speed lowering with standard planetary drive (8) for control of long boom/jib lowering. Optional 2-shoe clutch (8a) for increased speed of shorter boom/jib lowering. Boom hoisting with 2-shoe clutch (8b). (Only clutch drum visible.) Large diameter rope drum (8c) with integral ratchet wheel (8d). Manually controlled pawl locks ratchet wheel and rope drum in lowering direction. Rope drum brake (8e) is automatically spring applied and power hydraulically released.



## GENERAL INFORMATION ONLY

- 9 **Swing:** Independent. Two-shoe clutches transmit swing power smoothly into the swing pinion. (Only right hand clutch and drum is visible.)
- 10 **Power package for power hydraulic controls:** (Not visible, mounts near front of engine.) Vane-type pump, belt driven from engine, piston-type accumulator, sump tank, normal system operating pressure is 900 (6,205.50 kPa) to 1,050 (7,239.75 kPa) p.s.i.
- 11 **Operator cab and controls:** Insulated and isolated for sound level reduction. The forward location, greatly improves the operator's ability to see his work on the ordinary, as well as many specialized, loading jobs.

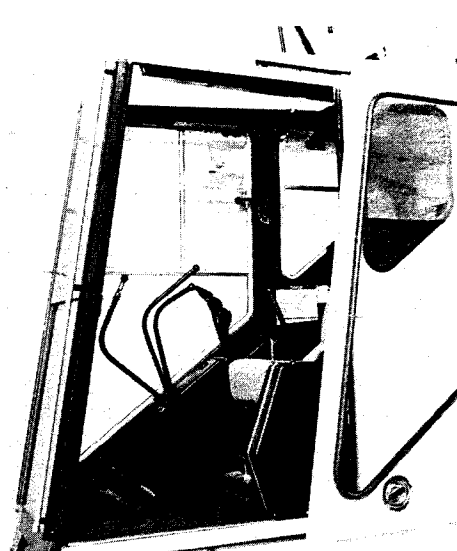


FMC now offers the exclusive and distinguished "New Look" on the 140-ton (126.98 metric ton) model HC-238A Link-Belt® truck crane. Stylized cabs are designed for more effective operator performance.

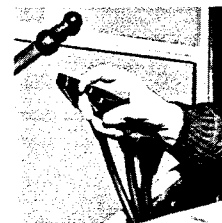
The power train design is FMC's exclusive Full-Function design. A precision-built, all-gear drive unit. The interchangeable, power hydraulically operated, 2-shoe clutches, and the clutch drums are mounted outside the side housings for service accessibility. Clutches can be engaged to any degree for smooth acceleration and deceleration of swing, hoist, and boomhoist.

For superb control of all the machine functions, the HC-238A incorporates the exclusive Speed-o-Matic® power hydraulic control system.

The modular and humanized **operator cab** is designed for arm-chair control and optimum visibility. The main controls consist of hoist levers to the right, swing lever to the left of the operator. Drum brakes are controlled by foot pedals. Upholstered seat, arm rests, sound reduction materials, etc. are all standard equipment.



Operator cab

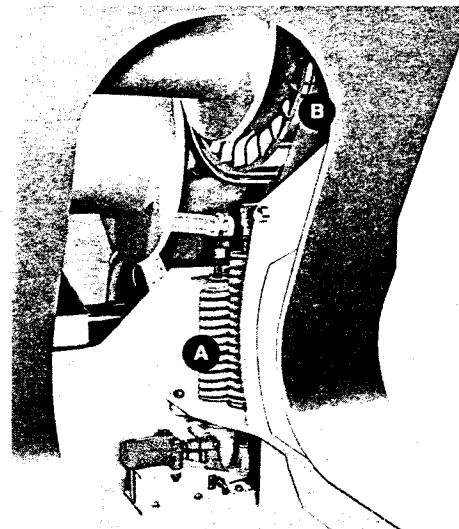


Drum rotation indicator

indicate both speed and direction.

To assist operator in precision load hoisting or lowering, **drum rotation indicator buttons** on drum clutch control levers pulsate whenever rope drums rotate to

The **swing brake (A)** controlled from operator's position, is spring applied and power hydraulically released (under control of the operator). A mechanical swing lock is also standard equipment.



Swing brake and boomhoist brake

The **boomhoist rope drum brake (B)** (item 8e) is automatically spring applied and power hydraulically released. Also, a manually controlled rope drum locking pawl is standard.

For high-speed hoisting, an exclusive, independent planetary hoist arrangement (optional) is available for mounting on the hoist or lowering side of the extended rear and front drum shafts. Planetaries (item 5) are mounted between the drum gear and clutch drums. These units can provide an increase of 70% or a reduction of 40% in line speed. Planetary engagement is controlled by a push button located on the hoist/lowering drum clutch control levers. Two-shoe hoist clutch engagement provides standard line speed.

# Carrier designed and manufactured by FMC's Crane and Excavator Division

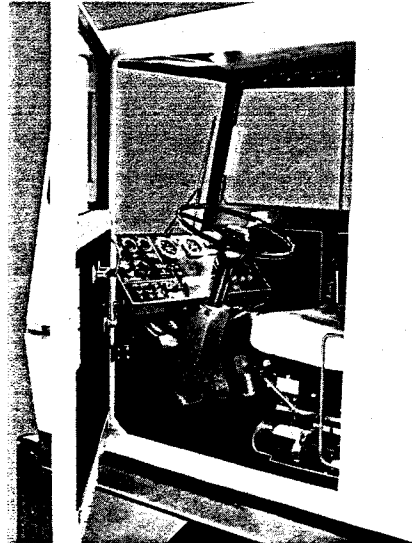
*Luxurious carrier cab insulated and isolated to reduce shock*

The model HC-238A carrier is designed with a 100,000 p.s.i. (689,500 kPa) quench and tempered, high-strength alloy steel frame for optimum weight-to-strength ratio — an important consideration in the HC-238A axle loadings for machine transportability.

The **carrier cab** interior provides a touch of luxury for the operator. The cab is insulated and isolated from the frame by rubber mounts to reduce shock and sound levels. Upholstered side panels, luxury instrument panel, excellent gauge visibility, floor carpet, large glass area, bucket seat with safety belt, right and left-hand mirrors, windshield washers and wipers, heater, defroster fan, and tachometer are all standard equipment on the HC-238A.

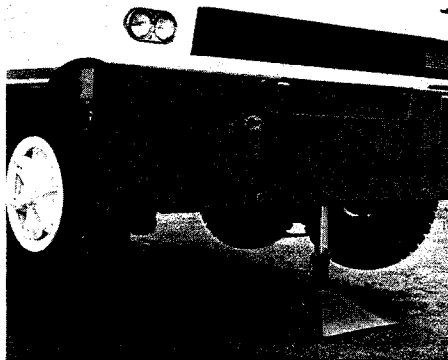
The carrier diesel engine drives through a Roadranger 15-speed transmission. This allows negotiating steep grades, maneuvering through traffic, and idling at highway speeds up to 42 m.p.h. (67.58 km/hr). In addition, a 2-speed (direct and low) auxiliary transmission is provided to allow, in the low range, for on-the-job precision travel movement as low as .8 m.p.h. (1.29 km/hr).

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 planetaries at the wheel hubs.



**Carrier cab**

Power for the hydraulic outriggers is from the carrier engine-driven pump, with individual control of beams and jacks. This permits leveling the machine on reasonably uneven terrain. Once the outriggers are set, a **check valve** fixed to the jack cylinder "locks" the oil in the cylinder and the outrigger jacks in place. For assistance in leveling, sight levels are located near the outrigger boxes.

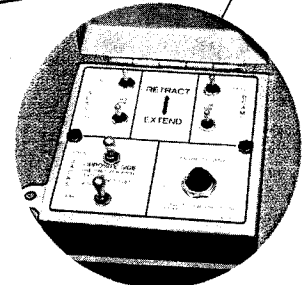
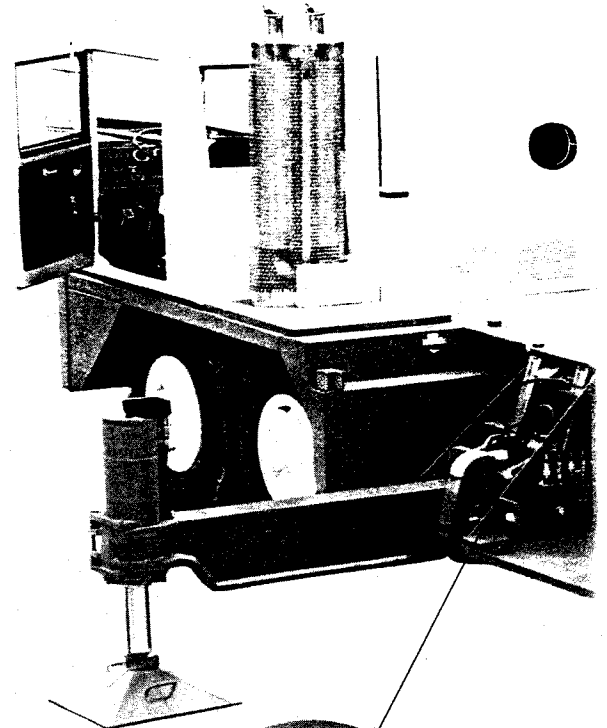


**Front center outrigger**

## GENERAL INFORMATION ONLY

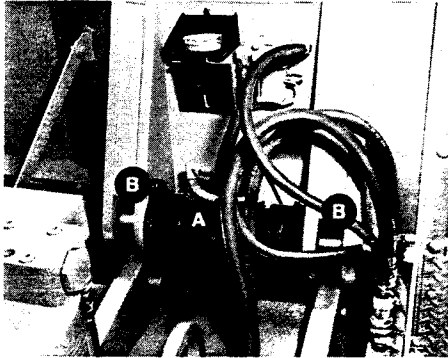
**Front center outrigger** (standard) allows handling of the over-the-side capacities throughout 360° swing. This gives greater on-the-job working capability. The outrigger control is located on the right front corner of the carrier.

Both front and rear outrigger boxes are pin-connected to the carrier frame for quick removal to reduce over-all weight for highway travel. Removal of four pins in each frees the outrigger from the carrier. Hydraulic lines are equipped with quick disconnects. Also, to facilitate removal of the front outrigger assembly, the jack cylinder can be disassembled from one outrigger beam.

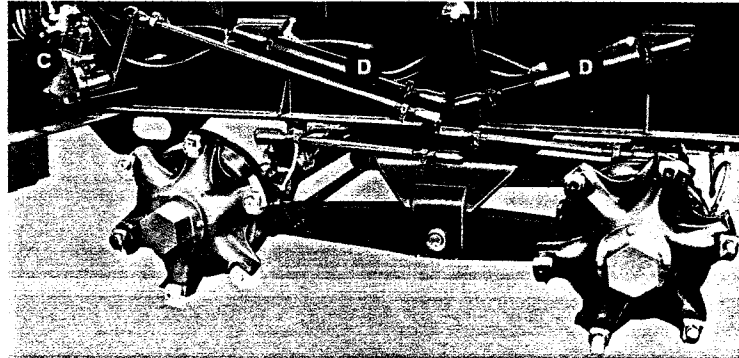


**Outrigger control panel**

## GENERAL INFORMATION ONLY



Hydraulic outrigger pin removal



Power assist hydraulic steer



Pin removal panel

A unique FMC design feature is the **hydraulic outrigger assembly pin removal** (optional). Four double-acting hydraulic cylinders (A) with integral cylinder rods/ pins

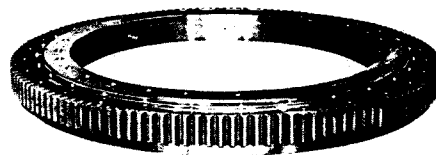
(B) are permanently mounted to the carrier frame lugs. Hoses powering the outrigger beam cylinders are disconnected and the hydraulic

outrigger pin cylinder hoses are connected in their places. When pins are removed, and using caution, the hydraulic outrigger jack cylinders can be used to lower the outrigger assembly.

The **outrigger control** and the **outrigger pin removal panels** are located on each side of

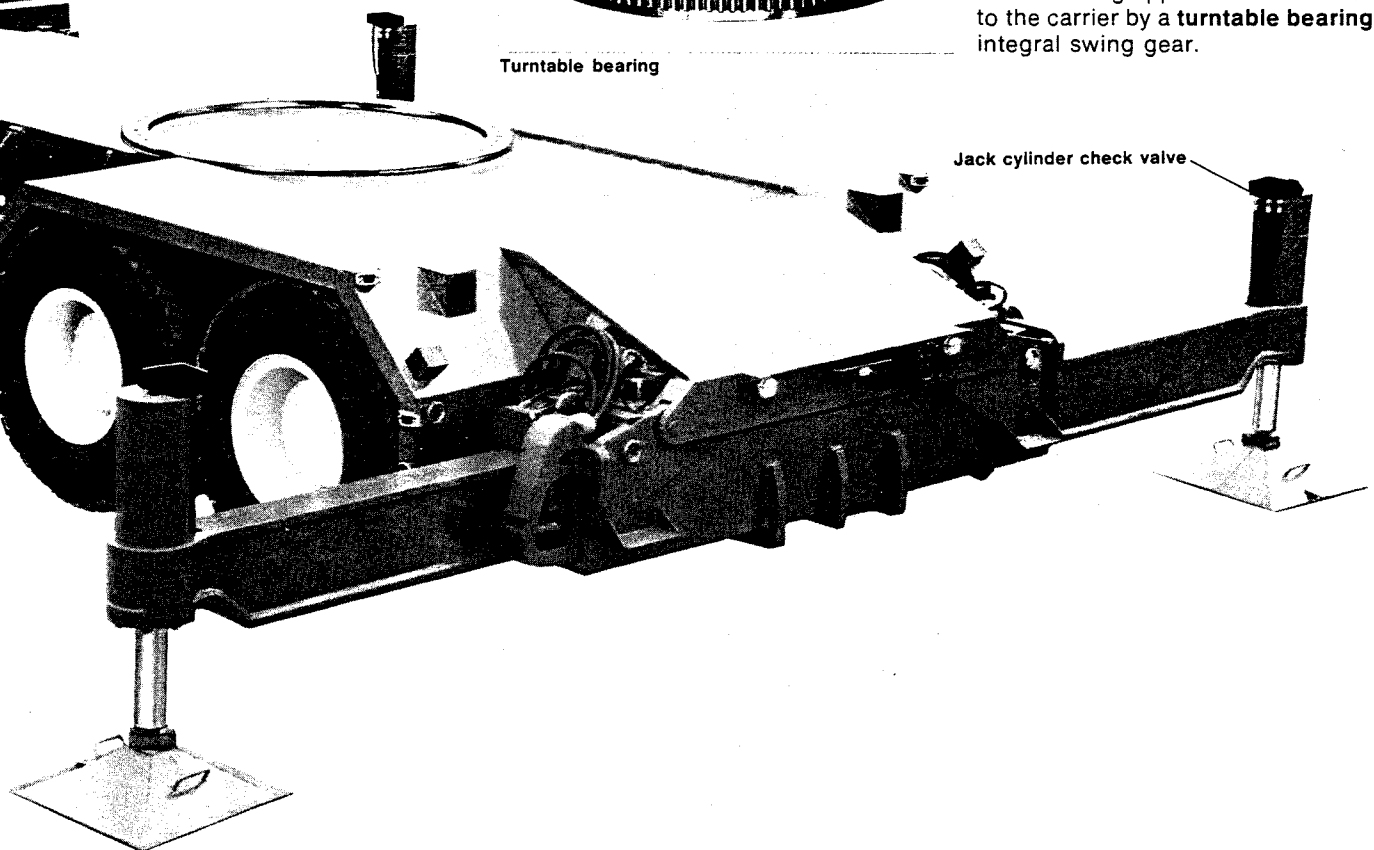
the carrier. Control panels are equipped with an engine "throttle" control.

The **power assist hydraulic steer** components are mounted to the side of the carrier frame for protection. The operator controls steering gear (C) and steer linkage. A hydraulic control valve, activated by the steering gear (C), directs oil from the steering pump to the interconnected, double-acting cylinders (D) for power assist hydraulic steer. This design results in equal power assist force when steering right or left.



Turntable bearing

The revolving upperstructure is mounted to the carrier by a **turntable bearing** with integral swing gear.



Jack cylinder check valve

# Pin-connected tubular boom and jib three types of boom top sections available

to 230' (70.10 m) boom with tapered top plus 70' (21.34 m) jib

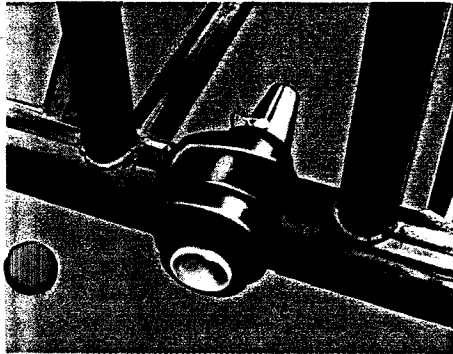
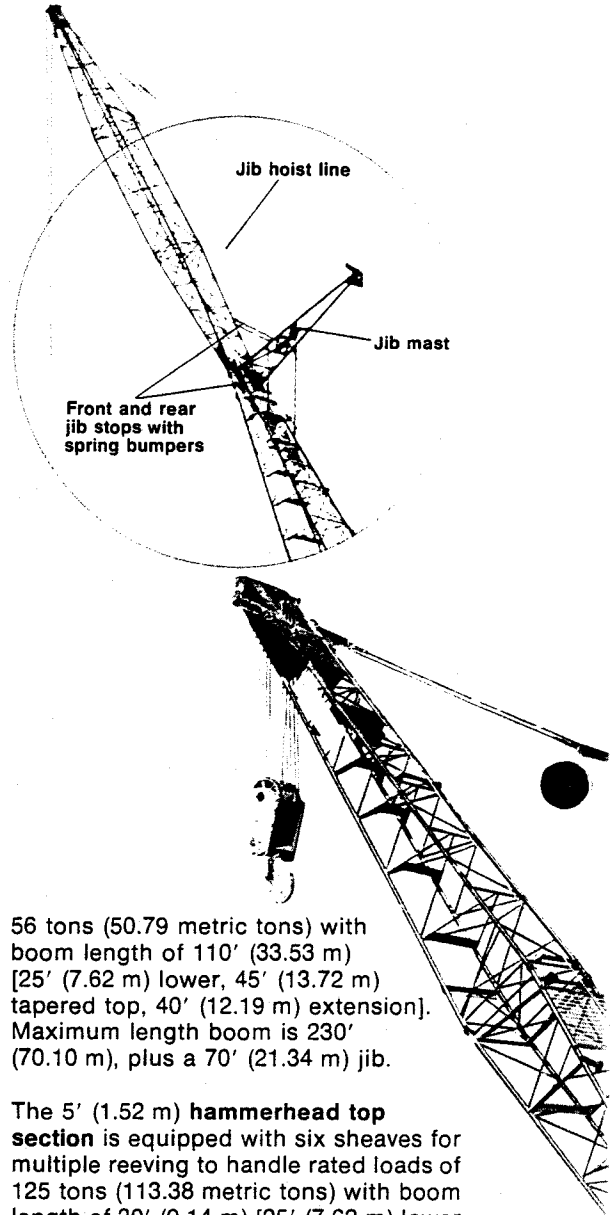
GENERAL INFORMATION ONLY

The HC-238A features a pin-connected tubular boom and jib. Tubular boom chord members are 100,000 p.s.i. (689,500 kPa) quench and tempered, high-strength alloy steel.

The tubular boom represents the latest advances in boom 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.

top sections. The jib mounts to the boom top section. The jib mast is pinned to the jib base. The front and rear jib stops are telescoping type. The jib peak sheave and the jib mast rope deflector sheaves are all mounted on anti-friction bearings to eliminate the need for daily lubrication.

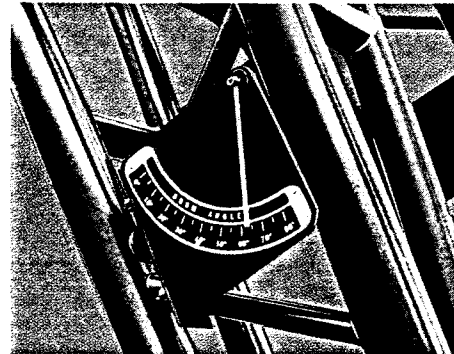
The **boom angle indicator** serves as a handy reference to the operator. It is mounted on the side of the boom nearest the operator for his ready reference.



Boom pin-connection

The method of welding the in-line pin lugs to the round tube chord minimizes stress concentration 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, mid-point pendants, or for pendant lines when assembling the boom. The **boom pin-connection tapered end pin** is held in place with a latchpin.

The basic jib is 30' (9.14 m) in length, 2-piece, pin-connected with 10' (3.05 m) and 15' (4.57 m) extensions available for a maximum jib length of 70' (21.34 m) with tapered top section; 60' (18.29 m) for hammerhead and open throat boom



Boom angle indicator



Boomhoist limiting device

The **boomhoist limiting device** improves close-radius operation. When an attempt is made to raise the boom closer than minimum radius, this mechanism acts to disengage the boom raising clutch and simultaneously engage the boomhoist brake.

To meet user's job requirements, the HC-238A crane boom can be equipped with one of three types of boom top sections — **tapered, hammerhead, or open throat.**

All boom peak sheaves are mounted on anti-friction bearings to eliminate the need for daily lubrication. The lower boom section is 25' (7.62 m) with 10' (3.05 m), 20' (6.10 m), 30' (9.14 m), and 40' (12.19 m) extensions available.

The 45' (13.72 m) long **tapered top section** is equipped with two sheaves for multiple reeving to handle rated loads of

56 tons (50.79 metric tons) with boom length of 110' (33.53 m) [25' (7.62 m) lower, 45' (13.72 m) tapered top, 40' (12.19 m) extension]. Maximum length boom is 230' (70.10 m), plus a 70' (21.34 m) jib.

The 5' (1.52 m) **hammerhead top section** is equipped with six sheaves for multiple reeving to handle rated loads of 125 tons (113.38 metric tons) with boom length of 30' (9.14 m) [25' (7.62 m) lower and 5' (1.52 m) top]. Maximum length boom is 230' (70.10 m) and boom and jib is 200' (60.96 m) plus 60' (18.29 m).

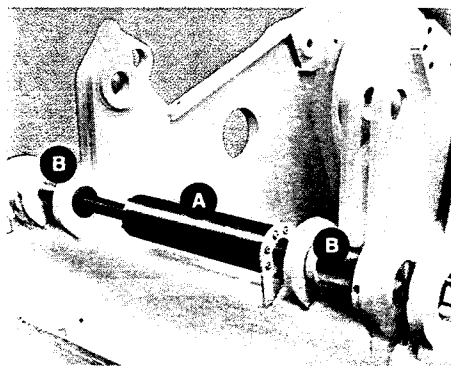
Bumper counterweight



## GENERAL INFORMATION ONLY

The 25' (7.62 m) **open throat top section** is equipped with six sheaves for multiple reeving to handle rated loads of 140 tons (126.98 metric tons) with boom length of 50' (15.24 m) [25' (7.62 m) lower and 25' (7.62 m) top]. Maximum length boom is 230' (70.10 m) and boom and jib is 200' (60.96 m) plus 60' (18.29 m).

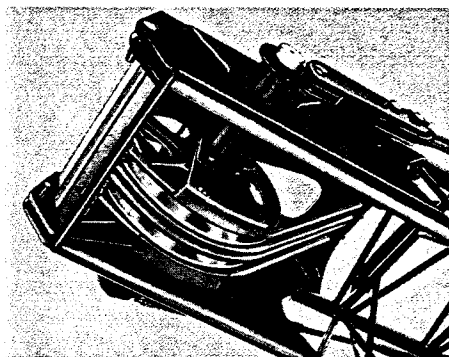
For fast removal (or installation) of the basic boom, the **boomfoot pins are removed (or inserted) with power hydraulics**. A double-acting hydraulic cylinder (A) with integral cylinder



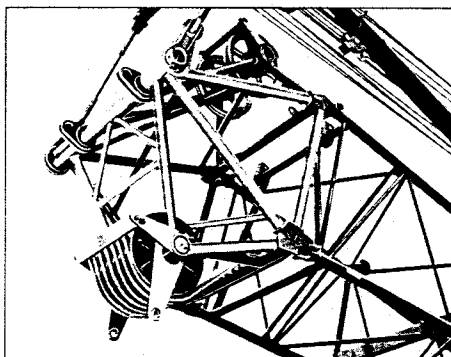
Hydraulic boomfoot pin removal

To reduce the over-all travel height, the boom live mast retracts from 30' (9.14 m) to 25'6" (7.77 m). Controls for hydraulically extending the boom live mast are located on the operator's control console. Open throat boom lengths of 90' (27.43 m) and 110' (33.53 m) can be folded for a travel height of 13'1" (3.99 m).

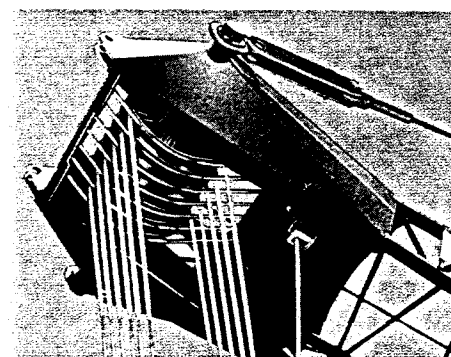
**Boom folding with the 25' (7.62 m) open throat top section** is possible with the insertion of an optional 10' (3.05 m) boom section equipped with **offset lugs**.



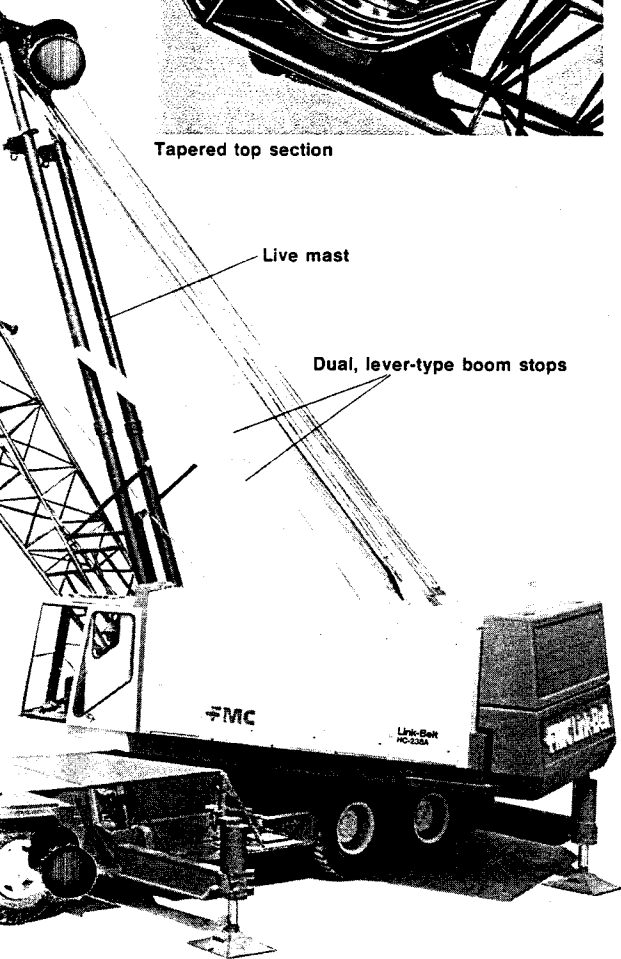
Tapered top section



Hammerhead top section



Open throat top section

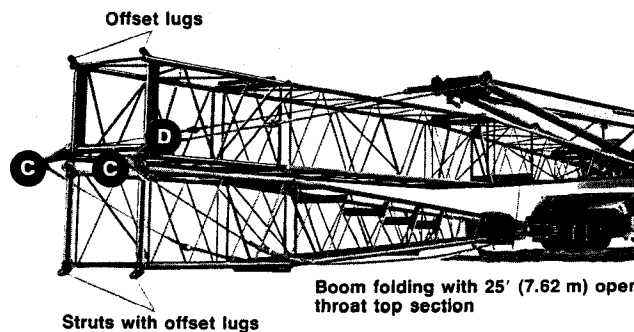


rods/pins (B) is permanently mounted between boomfoot lugs. Cylinder controls are located under the right front corner of the cab to enable operation from the ground.

**Dual, lever-type boom stops**, each with spring-loaded bumpers, are standard. When the **live mast** is used for assembly purposes, the boom stops can be arranged to serve as mast stops.

The boom **live mast** is equipped with sheaves and can be used for handling boom sections, counterweight, etc.

In addition, tubular **struts with offset lugs** are installed to mate with the offset lugs on the special section. Removal of upper boom connecting pins permit boom folding as shown in photo. Special 10' (3.05 m) section and tubular struts can remain in place when extending the boom. Two links (C) are inserted in the pendant lines and held in place with a shaft (D). Mounted in position shown, they serve to carry the pendants, eliminating the necessity of disconnecting the pendants while boom is folded. Boom folding wheel and tire are mounted to boom peak.



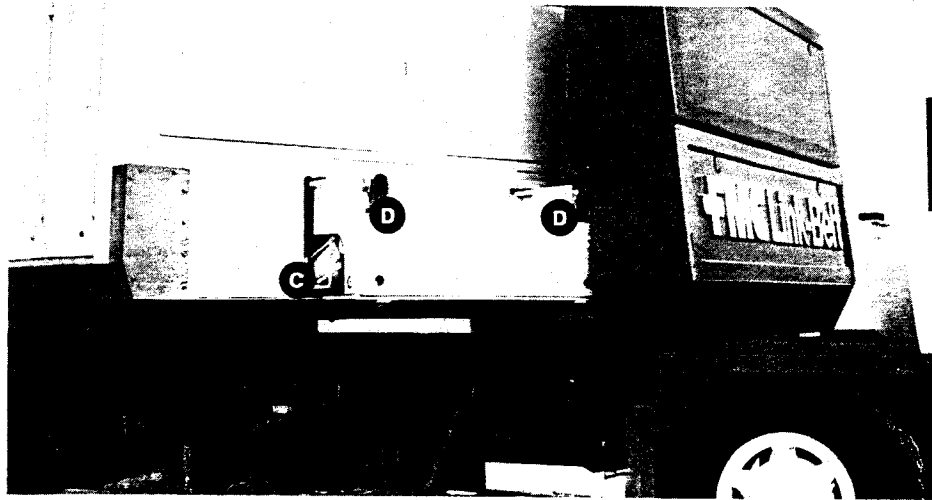
Designed for fast stripdown of outriggers, boom and counterweight.

GENERAL INFORMATION ONLY

Tag axle available for greater weight distribution

For job-to-job transportability the Link-Belt® HC-238A is designed for fast stripdown of bumper counterweight (photo page #6), outriggers (page #4-#5) and boom (page #7).

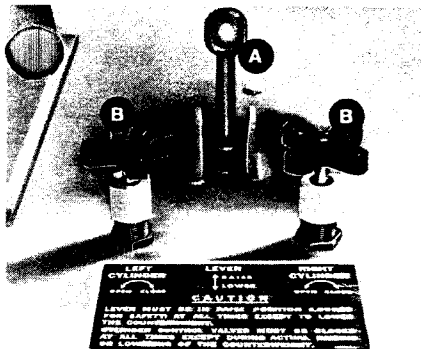
**Hydraulic counterweight lowering is standard.** Counterweight is held in place by hydraulically controlled frustums. Simply position the directional control lever (A) and turn the control valve (B), directing oil into the hydraulic counterweight lowering cylinders (C). (Only left-hand cylinder is visible.) With frustums (D) the counterweight is lowered to the carrier deck in seconds. Same procedure is followed for mounting the counterweight to the upper. The contoured counterweight allows the upper to be swung away from the counterweight, then with boom or live mast lift the counterweight from the carrier.



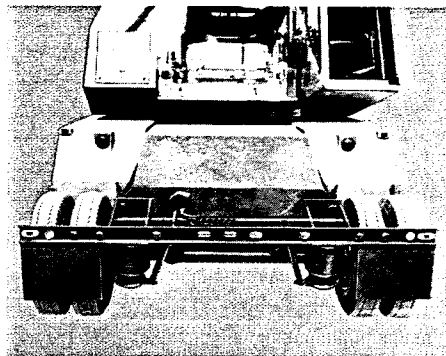
Hydraulic counterweight lowering

The HC-238A can be equipped with a third (non-driving) rear tag axle (available from Transport Trailers, Cedar

Rapids, Iowa), allowing greater over-all payload. With the pin-connected rear outrigger assembly removed from the carrier, the tag axle can then be pinned to the rear of the carrier frame. Air and electrical lines are equipped with quick disconnects. Tag axle suspension is through two air springs. Service brakes and heavy-duty shock absorbers are standard. A control valve, located at the rear of the tag axle, meters air to the air springs for maximum axle loading of up to 18,000# (8,165 kg).



Counterweight lowering/raising control



Rear tag axle

### Carrier features

- FMC designed and manufactured.  
**Benefit - Dependability and performance.**
- Luxurious operator cab.  
**Benefit - Increased operator efficiency.**
- Roadranger 15-speed transmission.  
**Benefit - Job-to-job mobility.**
- Power steer mounting.  
**Benefit - Protected for increased service life.**
- Outrigger pins removed hydraulically.  
**Benefit - Decreases stripdown time.**
- Front center outrigger.  
**Benefit - "Over-the-side" lift capacity through 360° swing.**

### Upperstructure features

- Operator's cab forward mounted.  
**Benefit - Greater overall operator visibility.**
- Full-Function gear train design.  
**Benefit - Permits independent or simultaneous crane functions for job flexibility.**
- Speed-o-Matic® power hydraulic control system.  
**Benefit - Proven and dependable. No daily maintenance.**
- Interchangeable 2-shoe clutches.  
**Benefit - Serviceability, accessibility, and performance.**
- High speed planetary driven load hoist.  
**Benefit - More cycles, increases production.**

- Hydraulic counterweight lowering.  
**Benefit - Decreases stripdown time.**

### Attachment features

- Choice of boom top sections.  
**Benefit - User job flexibility.**
- Hydraulic boom foot pin removal.  
**Benefit - Decreases stripdown time.**
- Tubular boom with 100,000 p.s.i. (689,500 kPa) alloy steel chords.  
**Benefit - Dependability.**

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

**FMC Corporation Crane and Excavator Division World Headquarters Cedar Rapids Iowa 52406**

Plants in: Cedar Rapids Iowa (2) • Lexington & Bowling Green Kentucky • Ontario Canada • Milan Italy • Queretaro Mexico & Nagoya Japan (under license)