

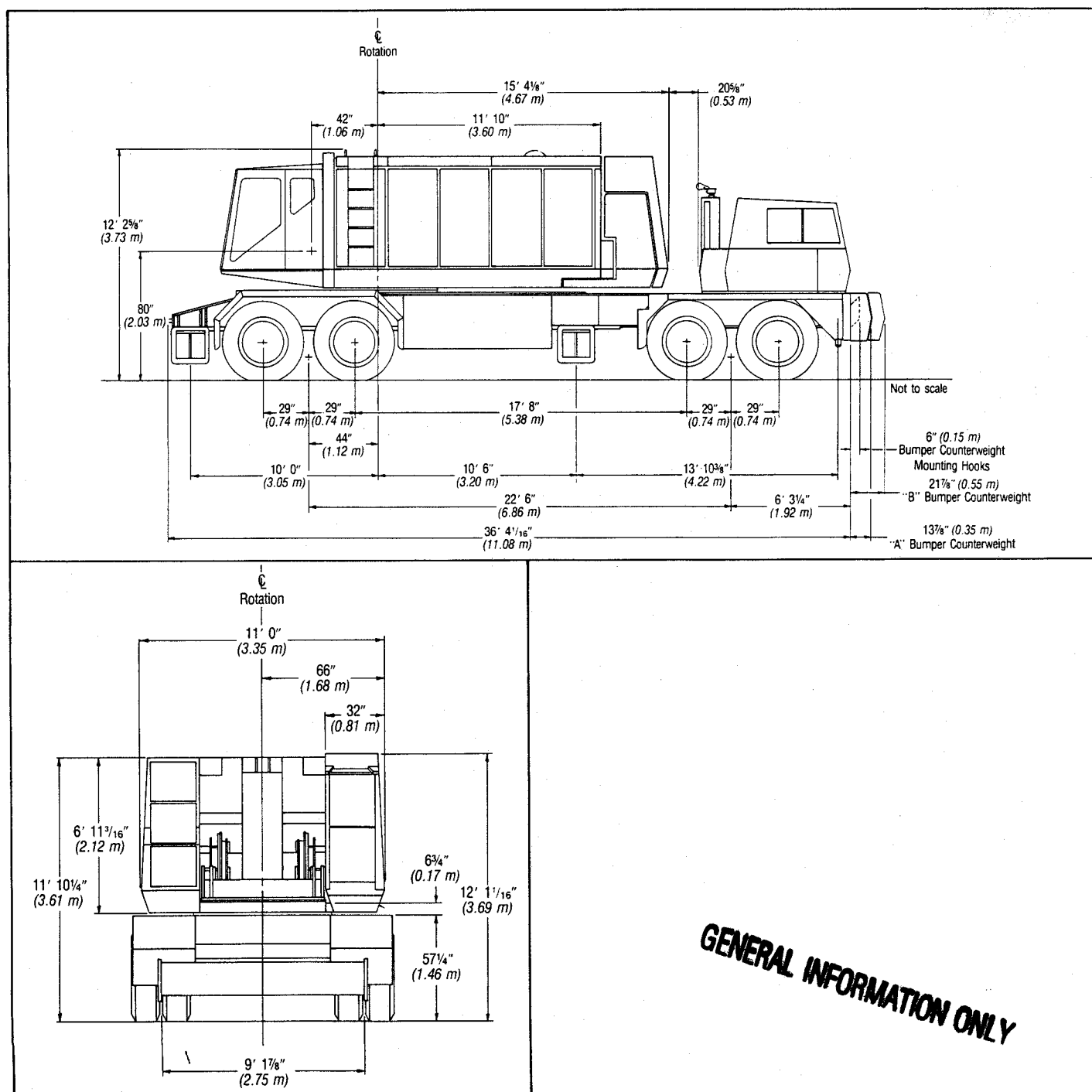


# General Specifications

Link-Belt® 140-ton (126.98 metric ton)

Wire rope truck crane

## HC-238A



**GENERAL INFORMATION ONLY**



| General Dimensions                                               | Feet                                 | meters |
|------------------------------------------------------------------|--------------------------------------|--------|
| Overall width, outriggers extended (over floats)                 | 24' 6"                               | 7.47   |
| Overall width, outriggers extended (center line of jacks)        | 22' 0"                               | 6.71   |
| Overall width, outriggers retracted (floats removed)             | 11' 10"                              | 3.60   |
| Minimum ground clearance                                         | 9 <sup>9</sup> / <sub>16</sub> "     | 0.24   |
| Ground clearance under upper counterweight with machine on tires | 4' 11 <sup>1</sup> / <sub>16</sub> " | 1.50   |
| Counterweight tailswing, across corners                          | 16' 3 <sup>9</sup> / <sub>16</sub> " | 5.15   |
| Overall upper cab width                                          | 11' 0"                               | 3.35   |
| Basic boom length — open throat                                  | 50' 0"                               | 15.24  |
| — hammerhead                                                     | 30' 0"                               | 9.14   |
| — tapered tip                                                    | 110' 0"                              | 33.53  |
| Radius of boom hinge pin                                         | 3' 6"                                | 1.07   |
| Height of boom hinge pin                                         | 6' 8"                                | 2.03   |

| General Dimensions                                                                                                  | Feet                                | meters |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------|
| Overall length with basic boom in travel position over rear of carrier with bumper counterweight — open throat boom | 81' 8 <sup>1</sup> / <sub>2</sub> " | 24.90  |
| — tapered tip boom                                                                                                  | See note                            |        |
| — hammerhead boom                                                                                                   | 60' 5 <sup>1</sup> / <sub>2</sub> " | 18.43  |
| Overall length with basic boom in travel position over front of carrier                                             | 70' 0"                              | 21.34  |
| — open throat boom                                                                                                  | See note                            |        |
| — tapered tip boom                                                                                                  | 48' 9"                              | 14.86  |
| — hammerhead boom                                                                                                   |                                     |        |
| Height over boom live mast with basic boom in travel position over rear of carrier                                  | 12' 3 <sup>1</sup> / <sub>4</sub> " | 3.74   |
| — open throat boom                                                                                                  | See note                            |        |
| — tapered tip boom                                                                                                  | 13' 6 <sup>1</sup> / <sub>4</sub> " | 4.12   |
| — hammerhead boom                                                                                                   |                                     |        |
| Height over boom live mast with basic boom in travel position over front of carrier                                 | 14' 9 <sup>1</sup> / <sub>2</sub> " | 4.51   |
| — open throat boom                                                                                                  | See note                            |        |
| — tapered tip boom                                                                                                  | 16' 9 <sup>1</sup> / <sub>2</sub> " | 5.12   |
| — hammerhead boom                                                                                                   |                                     |        |

Note: Boom with tapered tip top section cannot be traveled over the road.

## Axle loadings — approximate

| Based on HC-238A crane upper equipped with 30,000# (13 608 kg) counterweight "A", boom lowering planetary, rear drum load lowering clutch, GM 6-71N diesel with single stage torque converter*; mounted on FMC 8 x 4, 11' 10" (3.61 m) wide, 270" (6.86 m) wheelbase carrier with GM 6V-92TAC diesel, 14:00 x 24L (20-ply rating) Custom Hi-Miler tires, hydraulic outriggers front and rear and front center hydraulic jack, 5 floats in storage racks, and 11,400# (5 171 kg) front bumper counterweight "A".<br>Adjust axle loadings accordingly for the following components: | Basic machine Gross weight |         | Upper facing front |        |         |         | Upper facing rear |         |         |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|--------------------|--------|---------|---------|-------------------|---------|---------|--------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |         | Front              |        | Rear    |         | Front             |         | Rear    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Lbs.                       | kg      | Lbs.               | kg     | Lbs.    | kg      | Lbs.              | kg      | Lbs.    | kg     |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70,810                     | 32 119  | -13,585            | -6 162 | 84,395  | 38 282  | 36,670            | 16 633  | 34,140  | 15 486 |
| B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70,565                     | 32 008  | 37,305             | 16 922 | 33,260  | 15 087  | 16 922            | 33,260  | 15 087  |        |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 141,375                    | 64 128  | 23,720             | 10 759 | 117,655 | 53 368  | 73,975            | 33 555  | 67,400  | 30 573 |
| Component Weights                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |         | Front              |        | Rear    |         | Front             |         | Rear    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Lbs.                       | kg      | Lbs.               | kg     | Lbs.    | kg      | Lbs.              | kg      | Lbs.    | kg     |
| Upper machinery — Boom hoist planetary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | + 790                      | + 358   | - 90               | - 41   | + 880   | + 399   | + 350             | - 159   | + 440   | + 199  |
| Boom lowering clutch (high speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | + 420                      | + 191   | - 50               | - 23   | + 470   | + 214   | + 180             | - 82    | + 240   | + 109  |
| Boomhoist wire rope — 675' (205.74 m), 7/8" (22 mm) diameter, Type "T"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | + 970                      | + 440   | - 110              | - 50   | + 1,080 | + 490   | + 420             | - 191   | + 550   | + 249  |
| Front drum load lowering clutch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | + 620                      | + 281   | + 70               | + 32   | + 550   | + 249   | + 130             | - 59    | + 490   | + 222  |
| Front drum load hoist or lowering planetary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | + 790                      | + 358   | + 80               | + 36   | + 710   | + 322   | + 170             | - 77    | + 620   | + 281  |
| Front drum wire rope — 900' (274.32 m), 1" (25 mm) diameter, Type "N"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | + 1,665                    | + 755   | - 180              | - 81   | + 1,485 | + 674   | + 360             | - 163   | + 1,305 | + 592  |
| Rear drum load hoist or lowering planetary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | + 790                      | + 358   | - 20               | - 9    | + 810   | + 367   | + 270             | - 122   | + 520   | + 236  |
| Rear drum wire rope — 900' (274.32 m), 1" (25 mm) diameter, Type "N"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | + 1,665                    | + 755   | - 35               | - 4    | + 1,700 | + 771   | + 575             | - 55    | + 1,090 | + 107  |
| Third drum (with front drum load lowering clutch and gear to power third drum)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | + 2,360                    | + 1 070 | + 420              | + 190  | + 1,940 | + 880   | + 350             | - 158   | + 2,010 | + 912  |
| Third drum — as above, but with load lowering clutch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | + 590                      | + 268   | + 120              | + 54   | + 470   | + 214   | + 70              | - 32    | + 520   | + 236  |
| Third drum wire rope — 460' (140.21 m), 7/8" (22 mm) diameter, Type "N"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | + 660                      | + 299   | + 140              | + 64   | + 520   | + 235   | + 80              | - 36    | + 580   | + 263  |
| Upper counterweight "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | -30,000                    | -13 608 | +12,895            | +5 849 | -42,895 | -19 457 | -22,680           | -10 288 | - 7,320 | -3 320 |
| Upper counterweight "B"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | +30,000                    | +13 608 | -13,945            | -6 325 | +43,945 | +19 933 | +23,735           | +10 766 | + 6,265 | +2 842 |
| Optional Cummins N855-P220 diesel with three-stage torque converter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | + 830                      | + 376   | - 240              | - 109  | + 1,070 | + 485   | + 510             | - 231   | + 320   | + 145  |
| Crane booms and auxiliary equipment — 50' (15.24 m) basic open throat boom with accessories                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | + 6,720                    | + 3 048 | +12,700            | +5 762 | - 5,980 | - 2 714 | -10,500           | - 4 763 | +17,220 | +7 811 |
| 25' (7.62 m) open throat boom top section only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | - 4,610                    | - 2 091 | -10,720            | -4 862 | + 6,110 | + 2 771 | + 9,220           | + 4 182 | -13,830 | -6 273 |
| 30' (9.14 m) basic hammerhead boom with accessories                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | + 5,060                    | + 2 295 | + 6,530            | +2 962 | - 1,470 | - 667   | - 4,880           | - 2 214 | + 9,940 | +4 509 |
| 5' (1.52 m) hammerhead boom top section only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | - 2,950                    | - 1 338 | - 4,550            | -2 064 | + 1,600 | + 726   | + 3,590           | + 1 628 | - 6,540 | -2 966 |
| Boom stops                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | + 660                      | + 299   | + 200              | + 91   | + 460   | + 208   | + 10              | - 5     | + 650   | + 294  |
| Boom live mast (retracted and horizontal), bridle and spreader bar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | + 7,000                    | + 3 175 | + 7,960            | +3 610 | - 960   | - 435   | - 5,680           | - 2 576 | +12,680 | +5 751 |
| Carrier — Front outrigger box, beams and jacks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | - 7,500                    | - 3 402 | - 4,720            | -2 141 | - 2,780 | - 1 261 | - 4,720           | - 2 141 | - 2,780 | -1 261 |
| Rear outrigger box, beams and jacks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - 7,500                    | - 3 402 | - 2,110            | - 957  | - 9,610 | - 4 359 | + 2,110           | - 957   | - 9,610 | -4 359 |
| Front and rear outrigger floats (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - 680                      | - 308   | - 190              | - 86   | - 490   | - 222   | - 190             | - 86    | - 490   | - 222  |
| Front center jack float (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | - 130                      | - 59    | - 50               | - 23   | - 80    | - 36    | - 50              | - 23    | - 80    | - 36   |
| Bumper counterweight "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -11,400                    | - 5 171 | -14,850            | -6 736 | + 3,450 | + 1 565 | -14,850           | - 6 736 | + 3,450 | +1 565 |
| Bumper counterweight "B"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | + 7,300                    | + 3 311 | - 9,780            | -4 436 | - 2,480 | - 1 125 | + 9,780           | + 4 436 | - 2,480 | -1 125 |
| Optional Cummins NTC-290 or NTCC-350 diesel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | + 745                      | + 338   | + 795              | + 361  | - 50    | - 23    | + 745             | + 338   | - 50    | - 23   |
| Optional 14:00 x 24L (20-ply rating) HCT highway type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | + 970                      | + 440   | + 320              | + 145  | + 650   | + 295   | + 320             | + 145   | + 650   | + 295  |
| Optional 14:00 x 24L (20-ply rating) Goodyear SRL-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | + 1,330                    | + 603   | + 440              | + 200  | + 890   | + 403   | + 440             | + 200   | + 890   | + 403  |

\* GM 6-71N diesel with three-stage converter — weight approximately same as GM 6-71N with single-stage converter.

\*\*A — Upper, B — Carrier, C — Total.



## General specifications

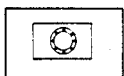
### Mounting



#### Type

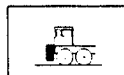
FMC, rubber tire, mobile base; 8 x 4 drive, 270" (6.86 m) wheelbase, 11' 10" (3.61 m) wide.

**Frame** — Main members heat treated alloy steel; machined surface for mounting turntable bearing. Formed channel front bumper.



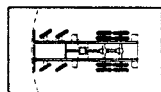
#### Turntable bearing

Outer race, with integral swing (ring) gear bolted to carrier.



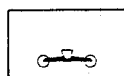
#### Bumper counterweight

Easily removed, mounts on front bumper hooks. Refer to lifting capacity charts for counterweight requirements. *Standard*: 11,400 lb. (5 171 kg) counterweight "A". *Optional*: 7,300 lb. (3 311 kg) counterweight "B".



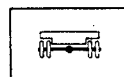
#### Front axles

Eaton FTCA-34L; bogie beam mounted tandem axles, single wheels. Track — 114" (2.89 m).



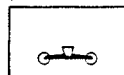
#### Bogie

Hendrickson; rubber bushed equalizer beams and torque rods.



#### Rear axles

Clark Planetary BD-71000, bogie mounted tandem axles, dual wheels. Track — 109 7/8" (2.79 m).



#### Bogie

Hendrickson; bronze bushed equalizer beams, rubber bushed torque rods.

**Tag axle** — Optional: Transport Trailer, equipped with air brakes, 10:00 x 20F (12-ply rating) dual tires.

**Wheels and rims** — Front; cast spoke type. Rear; integral with planetary hubs.



#### Tires

Single tires front; dual tires rear.

*Standard* — 14:00 x 24L (20-ply rating) Goodyear Custom Hi-Miler.

*Optional* — General HCT Nygen; 14:00 x 24L (20-ply rating). Goodyear SRL-1 lug-type; 14:00 x 24L (20-ply rating).

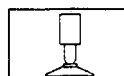


#### Outriggers

Full width, double box, front and rear; pin connected to carrier frame. Hydraulically operated beam and jack cylinders individually controlled from each side of carrier. Hydraulic power supplied by PTO-driven hydraulic pump. Check valve at each jack cylinder.

*Hydraulic removal of outrigger box pins* — *Optional*.

*Floats* — Low profile, alloy steel, lightweight; 30" (0.76 m) square base.



#### Front center hydraulic jack with float

*Standard*: Required for handling 360° swing rated capacities. Warning horn sounds if ground surface allows front center jack to settle.

**Trailer hitch** — *Optional*.

**Air and electric connections** — *Optional*: At rear of mounting for trailer/tag axle lights and air brakes.

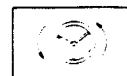
**Brakes** — 8-wheel air brakes.

**Service** — Dual diaphragm air chambers on four rear wheels; single diaphragm air chambers on four front wheels.

**Size and area** — Rear wheels; 20" x 7" (0.51 x 0.18 m); total effective lining area, 574 square inches (3 703 cm<sup>2</sup>) per axle. Front wheels; 17-1/4" x 4" (0.44 x 0.10 m); total effective lining area, 248 square inches (1 601 cm<sup>2</sup>) per axle.

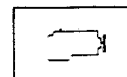
**Parking** — Brakes on four rear wheels applied and air chamber push rods automatically and mechanically locked with air control valve on dash.

**Emergency** — Brakes on four rear wheels apply and mechanically lock automatically if air pressure drops to 40 p.s.i. (275.80 kPa) in system. Emergency brake may be manually applied any time by hand control of dash-mounted air control valve.



#### Steering

Power hydraulic assist. Ross HPS 70 steering gear; 18" (0.46 m) diameter steering wheel.



#### Engines

Diesel; 12-volt starter, pressure lubrication, hydraulic pump, dry type air cleaner, and 15.5 c.f.m. (0.44 m<sup>3</sup>/min) air compressor. *Standard*: GM 6V-92TAC. *Optional*: — Cummins NTC 290 or Cummins NTCC-350.

**Clutch** — Lipe-Rollway, 14" (0.36 m), 2-plate, dry disc.

#### Transmissions

*Main* — Eaton RTO-915; 15 speeds forward, 3 reverse.

*Auxiliary* — Eaton AT-1202; 2-speed, midship mounting.

**Universals** — Mechanics-type drive tubes; needle bearings.

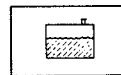
GENERAL INFORMATION ONLY



**Cab** — One-man, offset, fully enclosed. Air suspension mounted bucket seat with seat belt. Noise absorbing insulation with vinyl covering, sound reduction headliner, carpet floor mat; isolated from engine compartment, rubber mounted for sound level reduction. Instrument panel and dash includes speedometer, odometer, voltmeter, and gauges for fuel, engine temperature, air and oil pressures. Low air pressure warning buzzer, key locking switch, pushbutton starter, throttle control, tachometer, fire extinguisher, heater and defroster, 2-speed electric windshield wiper, and windshield washer.

**Electrical system**

12-volt; including dual sealed beam headlights, directional signals with 4-way flashing system, stop and tail lights, clearance lights, horn, lighting of instrument panel, dome light, headlight dimmer switch, and two 12-volt, 225 ampere hour batteries. Individual switches provide circuit control for hydraulic outrigger solenoid valves; one control station on each side of carrier.

**Fuel tanks**

Two 45-gallon (170 L) capacity fuel tanks mounted under carrier with filler spout on each side of carrier.

**Standard auxiliary equipment** — West Coast type rear view mirrors, boom guide, lug wrench, 2-way reading bubble levels at four positions on carrier frame. High pressure lube fittings at all bearing points, hand grab rails, carrier deck access ladder, back-up alarm, skid-resistant finish on carrier deck, fenders, and mud flaps.

| Engine specifications                                      | GM 6V-92TAC                 | Cummins NTC-290             | Cummins NTCC-350            |
|------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Number of cylinders                                        | 6                           | 6                           | 6                           |
| Bore and stroke — inches<br>— (mm)                         | 4.84 x 5<br>(123 x 127)     | 5½ x 6<br>(140 x 152)       | 5½ x 6<br>(140 x 152)       |
| Piston displacement — cubic inches<br>— (cm <sup>3</sup> ) | 552<br>(9 047)              | 855<br>(14 013)             | 855<br>(14 013)             |
| Engine r.p.m. at governed load speed                       | 2,100                       | 2,100                       | 2,100                       |
| Brake horsepower (kW) at governed load speed               | 305 (227 kW)                | 290 (216 kW)                | 350 (261 kW)                |
| Peak torque — foot pounds<br>— (J)                         | 921<br>(1 249)              | 930<br>(1 261)              | 1,065<br>(1 444)            |
| Peak torque r.p.m.                                         | 1,300                       | 1,300                       | 1,400                       |
| Shutdown Alternator                                        | Electric<br>12-volt, 65 amp | Electric<br>12-volt, 65 amp | Electric<br>12-volt, 65 amp |

**Carrier speeds**

| Based on GM 6V-92TAC (or Cummins NTC-290 or NTCC-350) engine at 2,100 r.p.m. governed full load speed |      |                         |                           |       |            |       |
|-------------------------------------------------------------------------------------------------------|------|-------------------------|---------------------------|-------|------------|-------|
| Gear                                                                                                  |      | Main —<br>Eaton RTO-915 | Auxiliary — Eaton AT-1202 |       |            |       |
|                                                                                                       |      |                         | 1.00:1.00                 |       | 2.036:1.00 |       |
|                                                                                                       |      |                         | M.p.h.                    | km/h  | M.p.h.     | km/h  |
| High                                                                                                  | 10th | .81                     | 42.0                      | 67.58 | 20.6       | 33.15 |
|                                                                                                       | 9th  | 1.00                    | 34.0                      | 54.71 | 16.7       | 26.87 |
|                                                                                                       | 8th  | 1.26                    | 27.0                      | 43.44 | 13.3       | 21.40 |
|                                                                                                       | 7th  | 1.59                    | 21.4                      | 34.43 | 10.5       | 16.89 |
|                                                                                                       | 6th  | 2.04                    | 16.7                      | 26.87 | 8.1        | 13.03 |
|                                                                                                       | Rev. | 2.21                    | 15.4                      | 24.78 | 7.6        | 12.23 |
| Low                                                                                                   | 5th  | 2.59                    | 13.1                      | 21.08 | 6.5        | 10.46 |
|                                                                                                       | 4th  | 3.20                    | 10.6                      | 17.06 | 5.2        | 8.37  |
|                                                                                                       | 3rd  | 4.04                    | 8.4                       | 13.52 | 4.1        | 6.60  |
|                                                                                                       | 2nd  | 5.10                    | 6.7                       | 10.78 | 3.3        | 5.31  |
|                                                                                                       | 1st  | 6.51                    | 5.2                       | 8.37  | 2.6        | 4.18  |
|                                                                                                       | Rev. | 7.06                    | 4.8                       | 7.72  | 2.4        | 3.86  |
| Deep reduction                                                                                        | 5th  | 3.87                    | 8.8                       | 14.16 | 4.3        | 6.92  |
|                                                                                                       | 4th  | 4.78                    | 7.1                       | 11.42 | 3.5        | 5.63  |
|                                                                                                       | 3rd  | 6.03                    | 5.6                       | 9.01  | 2.8        | 4.51  |
|                                                                                                       | 2nd  | 7.62                    | 4.5                       | 7.24  | 2.2        | 3.54  |
|                                                                                                       | 1st  | 9.73                    | 3.5                       | 5.63  | 1.7        | 2.74  |
|                                                                                                       | Rev. | 10.55                   | 3.2                       | 5.15  | 1.6        | 2.57  |

**Note:** Creep speed in deep reduction low (1st), based on peak engine torque of 1,300 r.p.m. for GM 6V-92TAC and Cummins NTC-290, and 1,400 r.p.m. for Cummins NTCC-350. Creep speed is 1.1 m.p.h. (1.77 km/h). Rear axle ratio 9.00 to 1.00.

**GENERAL INFORMATION ONLY**



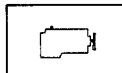
## Turning ability

| Turning circle diameter        | Curb clearance circle diameter | Vehicle clearance circle diameter |                                                |                                                 |
|--------------------------------|--------------------------------|-----------------------------------|------------------------------------------------|-------------------------------------------------|
| Centerline of outer front tire | Outside of outer front tire    | Over outside of front bumper      | Over outside of front bumper counterweight "A" | Over outside of front bumper counterweight "AB" |
| 114' 10" (35.00 m)             | 116' 0" (35.36 m)              | 120' 4" (36.68 m)                 | 120' 6" (37.03 m)                              | 122' 2" (37.24 m)                               |

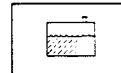
## Revolving upperstructure

**Frame**

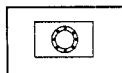
All welded, stress relieved, precision machined; machinery side housings welded integral with frame.

**Engines**

Diesel; full pressure lubrication, oil filter, air cleaner, hour meter, foot and optional hand throttles. Manual control shutdown for GM engine, electrical shutdown for Cummins engine.

**Fuel tank**

75-gallon (284 L) capacity fuel tank equipped with fuel gauge, fill pipe with flame arrester unit, and locking eye for padlock.

**Turntable bearing**

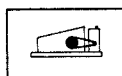
Inner race of bearing bolted to machined surface on under side of frame.

| Engine Specifications                                      | GM 6-71N with single stage torque converter <sup>①</sup> | GM 6-71N with three stage torque converter <sup>②</sup> | Cummins N855-C220 with three stage torque converter <sup>②</sup> |
|------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|
| Number of cylinders                                        | 6                                                        | 6                                                       | 6                                                                |
| Bore and stroke — inches<br>— (mm)                         | 4¼ x 5<br>(108 x 127)                                    | 4¼ x 5<br>(108 x 127)                                   | 5½ x 6<br>(140 x 152)                                            |
| Piston displacement — cubic inches<br>— (cm <sup>3</sup> ) | 426<br>(6 976)                                           | 426<br>(6 976)                                          | 855<br>(14 013)                                                  |
| Engine r.p.m. @ full load speed                            | 1,900                                                    | 1,880                                                   | 1,800                                                            |
| Engine r.p.m. @ high idle speed                            | 2,040                                                    | 2,020                                                   | 1,980                                                            |
| Net engine horsepower @ full load speed                    | 171 (127 kW)                                             | 168 (125 kW)                                            | 168 (125 kW)                                                     |
| Peak torque — foot pounds<br>— (J)                         | 1,400<br>(1 898)                                         | 2,360<br>(3 200)                                        | 2,400<br>(3 254)                                                 |
| Peak torque r.p.m.                                         | Output shaft stall                                       | Output shaft stall                                      | Output shaft stall                                               |
| Electric system                                            | 12-volt                                                  | 12-volt                                                 | 12-volt                                                          |
| Batteries                                                  | 1 12-volt                                                | 1 12-volt                                               | 2 12-volt                                                        |
| Clutch or power take-off                                   | Disconnect between engine and converter                  | Disconnect between engine and converter                 | Disconnect between engine and converter                          |
| Transmission                                               |                                                          |                                                         |                                                                  |
| — Number chain wheel teeth                                 | 171                                                      | 171                                                     | 171                                                              |
| — Number engine pinion teeth                               | 21                                                       | 22                                                      | 22                                                               |

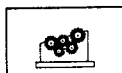
①Allison #TCD0475

②Twin Disc #CO-10066TC-1

## Power train

**Transmission**

Four-strand roller chain enclosed in oil tight chain case with integral lubrication system.

**Machinery gear train**

"Full Function" design, two-directional power available to all operating shafts; shafts mounted on anti-friction bearings in precision bored machinery side housings. All load hoist, swing, and boomhoist functions independent of one another. Components such as gears, pinions, chain wheels, brake drums and

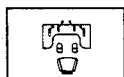
clutch spiders involute splined to shafts. Drum gear/clutch drum assemblies bolted together and mounted on shafts on anti-friction bearings. Machine-cut teeth on drum gears, pinions, spur gears, and chain wheel. Chain wheel and pinion fully enclosed and running in oil.

**GENERAL INFORMATION ONLY**



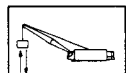
## GENERAL INFORMATION ONLY

## Principal operating functions



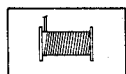
## Control system

Speed-o-Matic® power hydraulic control system; a variable pressure system requiring no bleeding. Operating pressure transmitted to all two-shoe clutch cylinders, and other hydraulic cylinders as required. System includes constant displacement, engine driven, vane type hydraulic pump to provide flow of oil; accumulator to maintain system operating pressure, unloader valve to control pressure in accumulator, relief valve to limit maximum pressure buildup in system, full-flow filter with 40 micron disposable filter element, and variable pressure control valves to control drum clutches and other operating cylinders.



## Load hoisting and lowering

Wire rope drum gear train (front and rear main, and optional third, operating drums) powered by chain transmission from engine.



## Load hoist drums

**Front and rear main operating drums —** One-piece, 17¼" (0.44 m) root diameter smooth drums; involute splined to shafts. Extended length shafts permit installation of power load lowering clutches; special length shaft required for, and furnished with, optional planetary drive units for either or both drums.

**Third operating drum — Optional:** mounts forward of front main operating drum. One-piece, 12¼" (0.31 m) root diameter smooth drum; involute splined to shaft. Note: Installation of optional third operating drum includes required installation of power load lowering clutch/gear unit on front main operating drum shaft.



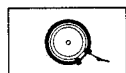
## Drum clutches

Speed-o-Matic® power hydraulic two-shoe clutches. Internal expanding, lined aluminum alloy shoes; clutch spiders splined to shafts, clutch drums bolted to drum spur gears and mounted on shafts on anti-friction bearings.

**Load hoist clutches —** Front and rear main, and optional third, operating drums — 23" (0.58 m) diameter, 6" (0.15 m) face width.

**Load lowering clutches —** Standard on rear main drum; optional on front main, and optional third, operating drums. Clutches 23" (0.58 m) diameter, 6" (0.15 m) face width.

**Drum planetary drive units — Optional:** available for load hoist or lowering on either or both front and rear main operating drums. Planetary units mount on extended drum shafts between drum spur gears and two-shoe clutch drums. Available for either increased or decreased load hoist or lowering line speeds. Two-shoe clutches control standard line speeds. Planetary drive units controlled by external contracting band brakes through push button located on control lever.

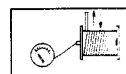


## Drum brakes

Two-piece, external contracting band; mechanically foot pedal operated. Foot pedals equipped with latch to permit locking brakes in applied position. **Optional:** automatic brakes for front and rear main operating drums.

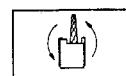
**Front and rear main drums — Brakes** 34" (0.86 m) diameter, 5" (0.13 m) face width.

**Optional third drum — Brake** 28" (0.71 m) diameter, 5" (0.13 m) face width.



## Drum rotation indicators

Standard for front and rear main operating drums. Two electrically operated indicator buttons, recessed in drum clutch control lever handles; one button pulsates when rope drums rotate in one direction, the other button pulsates when drums rotate in opposite direction. Operator can adjust pulsations to determine either rope speed off drum or hook block speed based on specific number of parts of load hoist rope.



## Swing system

Spur gear driven; single bevel gears (enclosed and running in oil) on horizontal and vertical swing shafts. Swing pinion, involute splined to vertical swing shaft, meshes with external teeth of swing gear integral with outer race of turntable bearing.



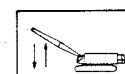
## Swing clutches

23" (0.58 m) diameter, 6" (0.15 m) face width; lined, aluminum alloy shoes.

**Swing brake —** External contracting band; spring applied, hydraulically released by operator controlled lever. Brake drum involute splined to vertical swing shaft; brake 20" (0.51 m) diameter, 3¼" (83 mm) face width.

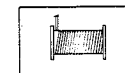
**Swing lock —** Mechanically controlled pawl engages external teeth of turntable bearing swing (ring) gear.

**Maximum swing speed —** 2.8 r.p.m.



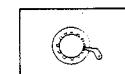
## Boom hoist/lowering system

Independent, spur gear driven. Precision control — hoisting through power hydraulic two-shoe clutch; lowering through low speed planetary drive unit.



## Boomhoist drum

12¼" (0.31 m) root diameter, smooth; involute splined to shaft.



## Boomhoist drum locking pawl

Operator controlled; spring applied, mechanically released.



## Boom hoist clutch

23" (0.58 m) diameter, 6" (0.15 m) face width.

**Boom lowering planetary —** Mounts on outer end of shaft; planetary external contracting band brake hydraulically controlled by boom hoist/lowering control lever.

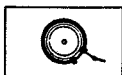


## Boom lowering clutch

**Optional:** in addition to planetary boom lowering. Two-shoe clutch permits higher speed boom lowering mounted on shaft outside planetary unit, clutch drum bolted to outer face of planetary housing. Clutch power hydraulically controlled by depressing solenoid push button located on boom hoist/lowering control lever.



## GENERAL INFORMATION ONLY

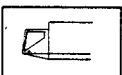
**FMC****Boom hoist/lowering brake**

External contracting band; spring applied, hydraulically released as hoist clutch or lowering planetary are engaged. Brake drum involute splined to shaft; brake 28" (0.71 m) diameter, 5" (0.13 m) face width.

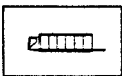
**Boom hoist limiting device** — Provided to restrict hoisting boom beyond recommended minimum radius; located on exterior right-hand side of operator's cab.

**Electrical system**

Battery, 12-volt, 225 ampere hour, either one or two batteries depending on engine; 12-volt, 60 ampere alternator. *Optional:* battery lighting system, including two sealed beam automotive type adjustable headlights located on cab front roof, one interior cab light and automotive type wiring. *Optional:* additional 50 watt sealed beam automotive type headlight mounted on boom. (Three maximum quantity recommended.) *Optional:* Onan independent light plant with single cylinder four cycle, air cooled diesel engine with remote electric starting, 3,000 watt, 120-volt, single-phase, 60 cycles A.C. including wiring in conduit, three interior cablights, trouble lamp with cord and two 300 watt adjustable flood lights on cab front roof. *Optional:* additional 300 watt floodlights available for mounting on cab and boom.

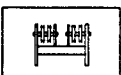
**Operator's cab**

Environmental cab, modular type isolated from upper machinery cab. Tinted tempered glass panels in all windows, hand grab rail, adjustable, cushioned seat with head rest, arm rests, on control consoles, dry chemical fire extinguisher. *Optional:* cab heater/defroster (propane or hot water type) and windshield wiper.

**Machinery cab**

Equipped with warning horn, hinged doors on two sides, rear, and top. Removable panels for machinery access, roof-top access ladder, and skid resistant finish on roof.

**Gantry** — Low type, mounted at top rear of machinery side housings; supports boom suspension system.

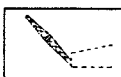
**Gantry bail**

Contains seven 15" (0.38 m) root diameter sheaves, mounted on anti-friction bearings, for 16-part boomhoist wire rope reeving.

**Counterweight**

Total "AB" counterweight — 60,000 lbs. (27 216 kg). Counterweight "A" — 30,000 lbs. (13 608 kg); counterweight "B" — 30,000 lbs. (13 608 kg). Total "A" or "AB" counterweight power hydraulically raised from, or lowered to, carrier deck in seconds. Two hydraulically controlled frustums hold counterweight "A" in place; counterweight "B" bolts to top of "A".

## Boom and jib

**Boom**

Tubular; two-piece basic boom. Boom 60" (91.52 m) wide, 54" (1.37 m) deep at centerline of connections. Alloy steel, round tubular chords 3 3/8" (92 mm) outside diameter.

**Base section** — 25' (7.62 m) long. Boom feet 2 3/4" (70 mm) wide on 60" (1.52 m) centers. Lifting lugs on top side of base section to facilitate attaching carrying links for carrying base section, or for boom assembly.

**Boom extensions** — Available in 10' (3.05 m), 20' (6.10 m), 30' (9.14 m), and 40' (12.19 m) lengths, with appropriate pendants, and one hoist line deflector roller per extension.

**Boom connections** — In-line, tapered pins.

**Boom top section** — Open throat; 25' (7.62 m) long. Permissible boom lengths without jib — minimum 50' (15.24 m); maximum 230' (70.10 m). Maximum boom length with jib — 200' (60.96 m).

— **Boompoint machinery.** Six 21" (0.53 m) root diameter head sheaves mounted on anti-friction bearings.

**Boom top section** — Hammerhead; 5' (1.52 m) long. Permissible boom lengths without jib — minimum 30' (9.14 m), maximum 230' (70.10 m). Maximum boom length with jib — 200' (60.96 m).

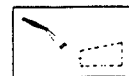
— **Boompoint machinery.** Six 21" (0.53 m) root diameter head sheaves; heat treated, mounted on anti-friction bearings.

**Boom top section** — Tapered tip; 45' (13.72 m) long, open throat on under side. Tapers from 60" x 54" (1.52 x 1.37 m) to 36" x 17" (0.91 m x 0.43 m) cross section. Permissible boom lengths with or without jib — minimum 110' (33.53 m), maximum 230' (70.10 m).

— **Boompoint machinery.** Two 28 3/8" (0.72 m) root diameter sheaves; heat treated, mounted on anti-friction bearings.

— **Pendant spreader bar.** Standard: for tapered tip top section only. Mounts between boom suspension pendants to maintain "straight line" pendant spread from boomhoist bridle/spreader bar to point near base of tapered tip top section, and to prevent interference between boom pendants and jib backstay lines. Use required for booms 210' (64.01 m) through 230' (70.10 m) long when equipped with jib; use optional for all other boom lengths.

**Boom folding equipment** — *Optional:* for folding 90' (27.43 m) or 110' (33.53 m) long booms equipped with open throat top section. Includes folding links, folding shaft, special 10' (3.05 m) long pin-connected boom extension with pendants, one hoist line deflector roller, and one boom peak wheel with 6.5 x 16 (6-ply rating) tire with tube. Special 10' (3.05 m) extension equipped with lifting lugs to accommodate boom folding shaft. (Combination of boom sections must be of such length that portion folded under is 20' (6.10 m) shorter than that above it.) Note: Folding equipment not available for booms equipped with hammerhead or tapered tip top sections.

**Jib**

Tubular; two-piece basic jib 28' (8.61 m) long (effective length 30'—9.14 m); 36" (0.91 m) wide, 30" (0.76 m) deep at centerline of connections. Alloy steel tubular chords 2 1/4" (57 mm) outside diameter.

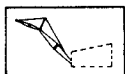
**Base section** — 13' 3" (4.04 m) long.

**Jib extensions** — Available in 10' (3.05 m) and 15' (4.57 m) lengths with appropriate length pendants. Maximum boom/jib lengths permitted: open throat and hammerhead booms — 200' (60.96 m) boom plus 60' (18.29 m) jib; tapered tip boom — 230' (70.10 m) boom plus 70' (21.34 m) jib.



**Jib connections** — In-line, tapered pins.

**Tip section** — 15' (4.57 m) long; equipped with single peak sheave, 21" (0.53 m) root diameter, heat treated, and mounted on anti-friction bearings. Anchor provided at peak of jib tip section for two-part load hoist wire rope (whipline).



**Jib mast**

13' 6" (4.11 m) high, mounted on jib base section. Two deflector sheaves mounted within mast to guide whipline; mounted on anti-friction bearings. Two equalizer sheaves mounted on top of mast — one for jib frontstay line, one for jib backstay line.

**Jib staylines** — Front and rear staylines vary in length depending on degree of jib offset from boom centerline; backstay lines attached at bottom end of boom top section.

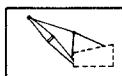
**Jib stops** — Telescoping type; pinned from jib mast to boom top section and from jib mast to jib base section.

## Items applicable to boom and jib



**Boom stops**

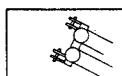
Dual lever-type; connected to bail shaft and top of boom base section; spring-loaded bumper ends.



**Boom live mast**

Supports boomhoist bridle and boom midpoint suspension pendants. Required for all boom lengths. Hydraulically extends from 25' 6" (7.77 m) to 30' 0" (9.14 m) working position, mechanically retracts to 25' 6" (7.77 m) position. **Note:** Retracted 25' 6" (7.77 m) position required for 30' (9.14 m) hammerhead boom maximum capacities, and used to reduce overall height for travel.

**Boom live mast stops** — Incorporated with boom stops; manually positioned when using live mast as short boom.



**Boomhoist bridle and spreader bar**

Serves as connection for boom suspension system. Bridle contains eight 15" (0.38 m) root diameter sheaves, (for 16-part boomhoist reeving) mounted on anti-friction bearings, and two 15" (0.38 m) root diameter auxiliary load hoist sheaves, mounted on bronze bushings, which enable boom live mast to be used for machine assembly or disassembly. Spreader bar provides attachment point for boom main pendants.

**Boom pendants** — Standard; furnished for basic boom lengths plus appropriate length pendants with each boom extension.

**Boom midpoint suspension pendants** — Required for all boom lengths exceeding 160' (48.77 m). Pendants connected at 85' (25.91 m) point of boom.

**Deflector rollers** — Deflect load hoist wire rope off boom to avoid chafing; steel rollers mounted on anti-friction bearings. One roller furnished with each boom extension, two with open throat boom top, and three with tapered tip top section.

**Hydraulic boomfoot pin removal** — **Standard:** a double acting hydraulic cylinder with integral cylinder rods/pins is permanently mounted between boomfoot lugs.

## Auxiliary equipment



**Boom angle indicator**

Pendulum type; mounted on boom base section.

**Anti-two block warning device** — **Optional:** available for main load hoist line, or main load hoist line and jib line.

**Load moment device** — **Optional:** audio/visual warning device for main load hoist line, or main load hoist line and jib line.

**Automatic function kick-out system** — **Optional:** for use with anti-two block warning device and/or load moment device. **Note:** requires optional automatic brakes.

**Load hoist wire ropes** — Main load hoist wire rope standard. Jib load hoist wire rope (whipline) furnished with machine only if jib is ordered.

**Hook blocks** — Blocks, or weighted ball with swivel hook, optional — refer to price list.

GENERAL INFORMATION ONLY

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

**FMC Corporation Cable Crane and Excavator Division Cedar Rapids Iowa 52406**

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

