

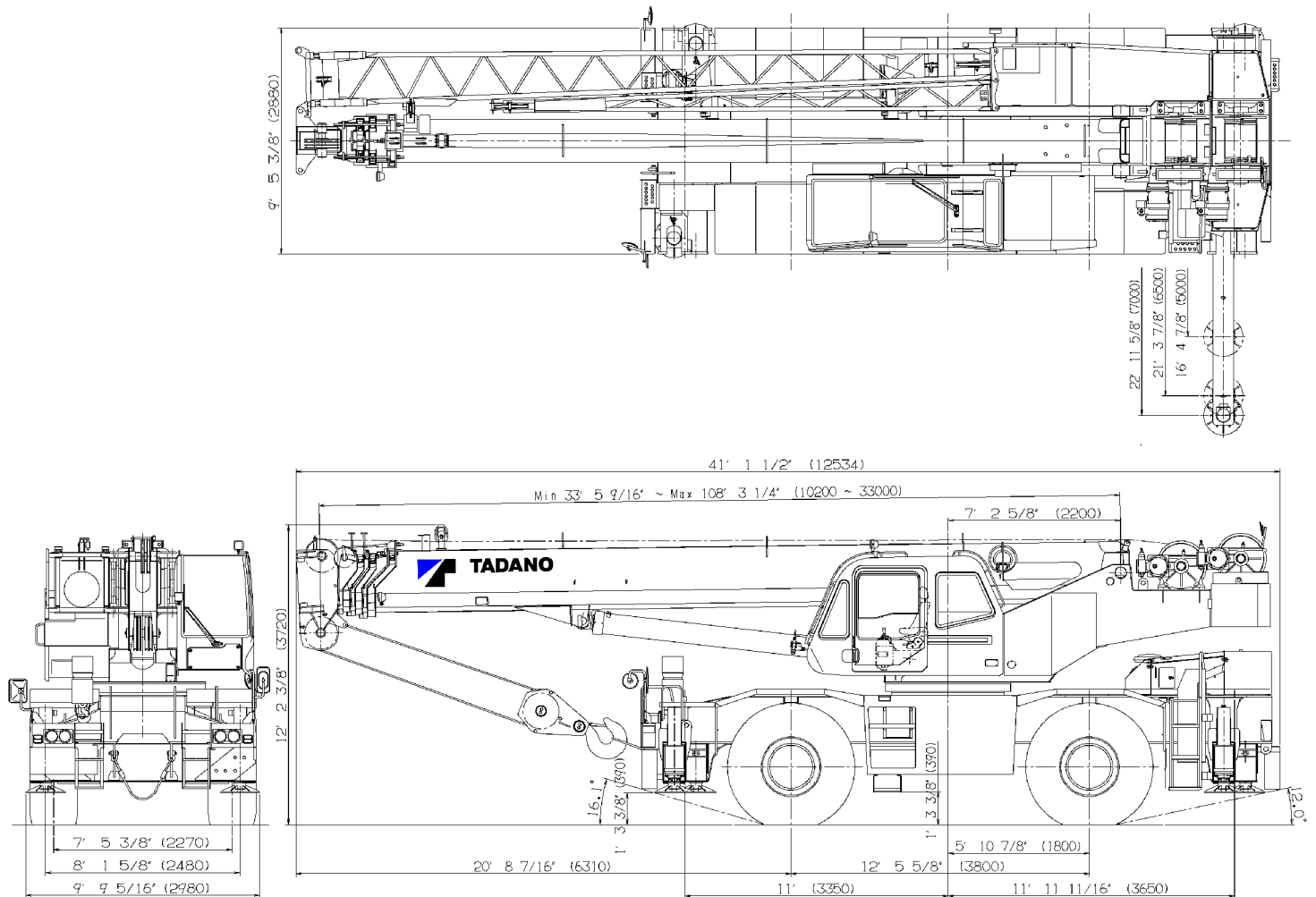


# TR-450XL-4

45 Ton Capacity (40.8 Metric Tons)

## HYDRAULIC ROUGH TERRAIN CRANE

### DIMENSIONS



### GENERAL DIMENSIONS (23.5 x 25 Tires)

Note: Dimension is with boom angle at -0.8 degree.

|                             | Feet       | Meters |
|-----------------------------|------------|--------|
| Turning radius:             |            |        |
| 4 wheel steer               | 22'        | 6.7    |
| 2 wheel steer               | 38' 4-5/8" | 11.7   |
| Tail swing of counterweight | 13' 5"     | 4.12   |

# CRANE SPECIFICATIONS

## BOOM

Four section full power synchronized telescoping boom, 33.5'~108.3' (10.2m~33m), of round hexagonal box construction with four sheaves, 15-5/8" (0.396m) root diameter, at boom head. The synchronization system consists of a double acting telescope cylinder, two extension cables and retraction cables. Hydraulic cylinder fitted with holding valve. Two easily removable wire rope guards, rope dead end provided on both sides of boom head. Boom telescope sections are supported by wear pads both vertically and horizontally.

**BOOM ELEVATION** - By a double acting hydraulic cylinder with holding valve. Elevation -0.8°~80°, combination controls for hand or foot operation. Boom angle indicator.

**JIB** - Double stage lattice type, 5°, 25° or 45° offset (tilt type). Single sheave, 15-5/8"(0.396m) root diameter, at base and top jib head. Stored alongside base boom section. Jib length is 28.9' (8.8m) or 50' (15.2m). Self stowing jib mounting pins.

**AUXILIARY LIFTING SHEAVE (SINGLE TOP) (OPTIONAL)** - Single sheave, 17-5/16"(0.44m) root diameter. Mounted to main boom head for single line work (stowable).

**ANTI-TWO BLOCK** - Pendant type over-winding cut out device with audio-visual (FAILURE lamp/BUZZER) warning system.

## SWING

Hydraulic axial piston motor driven through planetary swing speed reducer. Continuous 360° full circle swing on ball bearing turntable at 2.7rpm. Equipped with manually locked/released swing brake. A 360° positive swing lock for pick and carry and travel modes, manually engaged in cab. Twin swing System: Free swing or lock swing controlled by selector switch on right hand of front console.

## HOIST

**MAIN HOIST** - Variable speed type with grooved drum driven by hydraulic axial piston motor through winch speed reducer. Power load lowering and raising. Equipped with automatic brake (neutral brake) and counterbalance valve. Controlled independently of auxiliary hoist. Equipped with cable follower and drum rotation indicator.

**DRUM** - Grooved 15-3/4"(0.40m) root diameter x 22-3/4" (0.578m) wide. Wire rope: 597' of 3/4" diameter rope (182m of 19mm). Drum capacity: 905' (276m) 6 layers. Maximum line pull (permissible): 14,272lbs. (6,474kg)\*. Maximum line speed: 534FPM (163m/min).

**AUXILIARY HOIST (OPTIONAL)** - Variable speed type with grooved drum driven by hydraulic axial piston motor through winch speed reducer. Power load lowering and raising. Equipped with automatic brake (neutral brake) and counterbalance valve. Controlled independently of main hoist. Equipped with cable follower and drum rotation indicator.

**DRUM** - Grooved 15-3/4"(0.40m) root diameter x 22-3/4" (0.578m) wide. Wire rope: 345' of 3/4" diameter rope (105m of 19mm). Drum capacity: 905' (276m) 6 layers. Maximum line pull (permissible): 14,272lbs. (6,474kg)\*. Maximum line speed: 534FPM (163m/min).

\* Maximum permissible line pull may be affected by wire rope Strength.

**WIRE ROPE** - Warrington seal wire, extra improved plow steel, preformed, independent wire rope core, right regular lay. 3/4"(19 mm) 6X37 class

## HOOK BLOCKS

45 ton (40.8 metric ton) - 4 sheaves with swivel hook and safety latch, for 3/4"(19mm) wire rope. (OPTIONAL)  
30 ton (27.2 metric ton) - 3 sheaves with swivel hook and safety latch, for 3/4"(19mm) wire rope. (OPTIONAL)  
5.5 ton (5.0 metric ton) - Weighted hook with swivel and safety latch, for 3/4"(19mm) wire rope.

## HYDRAULIC SYSTEM

**PUMPS** - Two variable piston pumps for crane functions. Tandem gear pump for steering, swing and optional equipment. Powered by carrier engine. Pump disconnect for crane is engaged/ disengaged by rotary switch from operator's cab.

**CONTROL VALVES** - Multiple valves actuated by pilot pressure with integral pressure relief valves.

**RESERVOIR** - 148 gallon (560 lit.) capacity. External sight level gauge.

**FILTRATION** - 26 micron return filter, full flow with bypass protection, located inside of hydraulic reservoir. Accessible for easy replacement.

**OIL COOLER** - Air cooled fan type.

## CAB AND CONTROLS

Both crane and drive operations can be performed from one cab mounted on rotating superstructure.

Left side, 1 man type, steel construction with sliding door access and safety glass windows opening at side. Door window is powered control. Windshield glass window and roof glass window are shatter-resistant. Tilt-telescoping steering wheel. Adjustable control lever stands for swing, boom hoist, boom telescoping, auxiliary hoist and main hoist. Control lever stands can change neutral positions and tilt for easy access to cab. Engine throttle knob. Foot operated controls: boom hoist, boom telescoping, service brake and engine throttle. Hot water cab heater and air conditioning (OPTIONAL).

Dash-mounted engine start/stop, monitor lamps, cigarette lighter, drive selector switch, parking brake switch, steering mode select switch, power window switch, pump engaged/disengaged switch, swing brake switch, telescoping/auxiliary winch select switch, outrigger controls, free swing / lock swing selector switch and ashtray.

Instruments - Torque converter oil temperature, engine water temperature, air pressure, fuel, speedometer, tachometer and hour meter. Hydraulic oil pressure is monitored and displayed on the AML-L display panel.

Tadano electronic LOAD MOMENT INDICATOR system (AML-L) including:

- Control lever lockout function
- Load radius / boom angle / tip height / swing range preset function
- Warning buzzer
- Boom angle / boom length / jib offset angle / load radius / rated lifting capacities / actual loads read out
- Ratio of actual load moment to rated load moment indication
- Automatic Speed Reduction and Soft Stop function on boom elevation and/or swing.
- Working condition register switch
- External warning lamp

TADANO AML-L monitors outrigger extended length and automatically programs the corresponding "RATED LIFTING CAPACITIES" table.

Operator's right hand console includes transmission gear selector and sight level bubble. Upper console includes working light switch, roof washer and wiper switch, oil cooler switch, emergency outrigger set up key switch and air conditioning control switch. Swing lock lever and 3 way adjustable seat with high back and seat belt.

NOTE: Each crane motion speed is based on unladen conditions.

## CARRIER SPECIFICATIONS

**TYPE** - Rear engine, left hand steering, 4x2 front drive or 4x4 front and rear drive, selected by 2-way manual switch.

**FRAME** - High tensile steel, all welded mono-box construction.

**TRANSMISSION** - Electronically controlled full automatic transmission. Torque converter driving full powershift with driving axle selector. 6 forward and 2 reverse speeds, constant mesh.

- 4 speeds - high range - 2 wheel drive; 4 wheel drive
- 4 speeds - low range - 4 wheel drive

**TRAVEL SPEED** - 30 mph (48 km/h)

**AXLE** - Front: Full floating type, steering and driving axle with planetary reduction. Rear: Full floating type, steering and driving axle with planetary reduction and non-spin rear differential.

**STEERING**- Hydraulic power steering controlled by steering wheel. Three steering modes available: 2 wheel front, 4 wheel coordinated and 4 wheel crab.

**SUSPENSION** - Front: Semi-elliptic leaf springs with hydraulic lockout device. Rear: Semi-elliptic leaf springs with hydraulic lockout device.

**BRAKE SYSTEMS** - Service: Air over hydraulic disc brakes on all 4 wheels. Parking/Emergency: Spring applied-air released brake acting on input shaft of front axle. Auxiliary: Electro-pneumatic operated exhaust brake.

**TIRES** - 23.5-25 20PR(OR)

**OUTRIGGERS** - Four hydraulic beam and jack outriggers. Vertical jack cylinders equipped with integral holding valve. Each outrigger beam and jack is controlled independently from cab. Beams extend to 22'11-5/8" (7.0 m) center-line and retract to within 9' 10-1/8" (3.0 m) overall width with floats. Outrigger jack floats are attached thus eliminating the need to manually attach and detach them. Controls and sight bubble located in superstructure cab. Three outrigger extension lengths are provided with corresponding "RATED LIFTING CAPACITIES" for crane duty in confined areas.

- Mid. Extension 16' 4-7/8" center to center
- Mid. Extension 21' 3-7/8" center to center
- Max. extension 22' 11-5/8" center to center

### ENGINE

|                               |   |
|-------------------------------|---|
| Model                         | Mitsubishi 6D16-TLEE                      |
| Type                          | Direct injection diesel                   |
| No. of cylinders              | 6   |
| Combustion                    | 4 cycle, turbo charged and after cooled   |
| BoreXStroke, in.(mm)          | 4.646 X 4.528 (118X115)                   |
| Displacement, cu. in (liters) | 460 (7.545)                               |
| Air inlet heater              | 24 volt preheat                           |
| Air cleaner                   | Dry type, replaceable element             |
| Oil filter                    | Full flow with replaceable element        |
| Fuel filter                   | Full flow with replaceable element        |
| Fuel tank, gal.(liters)       | 79.2 (300), right side of carrier         |
| Cooling                       | Liquid pressurized, recirculating by-pass |

|                              |  |
|------------------------------|--|
| Radiator                     | Fin and tube core, thermostat controlled |
| Fan, in.(mm)                 | Suction type, 6-blade, 23.6 (600) dia.   |
| Starting                     | 24 volt                                  |
| Charging                     | 24 volt system, negative ground          |
| Battery                      | 2-120 amp. Hour                          |
| Compressor, air, CFM(l /min) | 9.2 CFM (260) at 2,800rpm                |
| Horsepower (kW)              | Gross 223 (166) at 2,700rpm              |
| Torque, Max. ft-lb (kgm)     | 521 (72) at 1,300rpm                     |
| Capacity, gal.(liters)       |  |
| Cooling water                | 3.4 (13)                                 |
| Lubrication                  | 3.7 ~ 4.2 (14 ~ 16)                      |
| Fuel                         | 79.2 (300)                               |

# STANDARD EQUIPMENT

- Four section full power synchronized boom 33.5'~108.3' (10.2 m~33 m)
- 28.9'~50' (8.8 m~15.2 m) bi-fold lattice jib (tilt type) with 5°, 25° or 45° pinned offsets and self storing pins.
- Boom hoist foot control
- Boom telescoping foot control
- Boom angle indicator
- Variable speed main hoist with grooved drum, cable follower and 597' of 3/4" cable.
- Drum rotation indicator (thumper type) main hoist
- Tadano twin swing system
- 360° positive swing lock
- 4 X 4 X 4 drive/steer
- Disc brakes
- Semi-elliptic leaf springs suspension with hydraulic lockout device (front and rear)
- Non-spin rear differential
- 23.5-25 20PR (OR) tires
- Independently controlled outriggers
- Three outrigger extension positions
- Self-storing outrigger pads
- Outrigger extension length detector
- Outrigger hose protection
- Mitsubishi 6D16-TLEE turbo charged after cooled engine (223HP) with exhaust brake
- Electronic controlled automatic transmission driven by torque converter
- Engine over-run alarm
- Anti-Two block device (overwind cutout)
- Electronic crane monitoring system
- Tadano electronic load moment indicator system (AML-L) including
  - Control lever lockout function
  - Load radius / boom angle / tip height / swing range preset function
  - Warning buzzer
  - Boom angle / boom length / jib offset angle / load radius / rated lifting capacities / actual loads read out
  - Automatic Speed Reduction and Soft Stop function on boom elevation and/or swing.
  - Ratio of actual load moment to rated load moment indication
  - Working condition register switch
  - External warning lamp
- Tinted safety glass
- Front windshield wiper and washer
- Roof window wiper and washer
- Power window (door of the cab)
- Rear view mirrors (right and left side)
- Mirror for main and auxiliary hoists
- 3 way adjustable cloth seat with high back and seat belt
- Tilt-telescoping steering wheel
- Self centering finger control levers with pilot control
- Cab floor mat
- Cigarette lighter
- Electric fan in cab
- Back-up alarm
- Low oil pressure/high water temp. warning device (visual)
- Rear steer centering light
- Fenders
- Air cleaner dust indicator
- Towing hooks-front and rear
- Lifting eyes
- Tool storage compartment
- Full instrumentation package
- Pump disconnect in operator's cab
- Air dryer
- Water separator with filter
- Complete highway light package
- Flood lights and work lights
- Tire inflation kit
- Hydraulic oil cooler
- 24 volt electric system
- 5.5 ton (5.0 metric ton) hook with swivel
- Hook block tie down (front bumper)
- Weighted hook storage compartment

# OPTIONAL EQUIPMENT

- Variable speed auxiliary hoist with grooved drum, cable follower, drum rotation indicator and 345' of 3/4" cable.
- Auxiliary lifting sheave (single top) stowable
- 45 ton (40.8 metric ton) 4 sheave hook block
- 30 ton (27.2 metric ton) 3 sheave hook block
- Hot water cab heater and air conditioner
- Propane heater (less tank)

# HOISTING SPECIFICATIONS

## LINE SPEEDS AND PULLS

| Layer            | Speed | Main or auxiliary hoist - 15'-3/4" (0.4m) drum |       |                        |       |                          |       |
|------------------|-------|--|-------|------------------------|-------|--------------------------|-------|
|                  |       | Line speeds <sup>2</sup>                       |       | Line pulls             |       |                          |       |
|                  |       |  |       | Available <sup>1</sup> |       | Permissible <sup>4</sup> |       |
|                  |       | F.P.M  | m/min | Lbs.                   | kgf   | Lbs.                     | kgf   |
| 1st              | High  | 367  | 112   | 15,698                 | 7,121 | 14,272                   | 6,474 |
| 2nd              | High  | 400  | 122   | 14,647                 | 6,644 | 13,315                   | 6,040 |
| 3rd              | High  | 433  | 132   | 13,520                 | 6,133 | 12,292                   | 5,576 |
| 4th              | High  | 466  | 142   | 12,557                 | 5,696 | 11,417                   | 5,179 |
| 5th              | High  | 502  | 153   | 11,721                 | 5,317 | 10,657                   | 4,834 |
| 6th <sup>3</sup> | High  | 534  | 163   | 10,989                 | 4,985 | 9,991                    | 4,532 |

- Developed by machinery with first layer of wire rope, but not based on rope strength or other limitation in machinery or equipment.
- Line speeds based only on hook block, not loaded.
- Sixth layer of wire rope is not recommended for hoisting operations.
- Permissible line pull may be affected by wire rope strength.

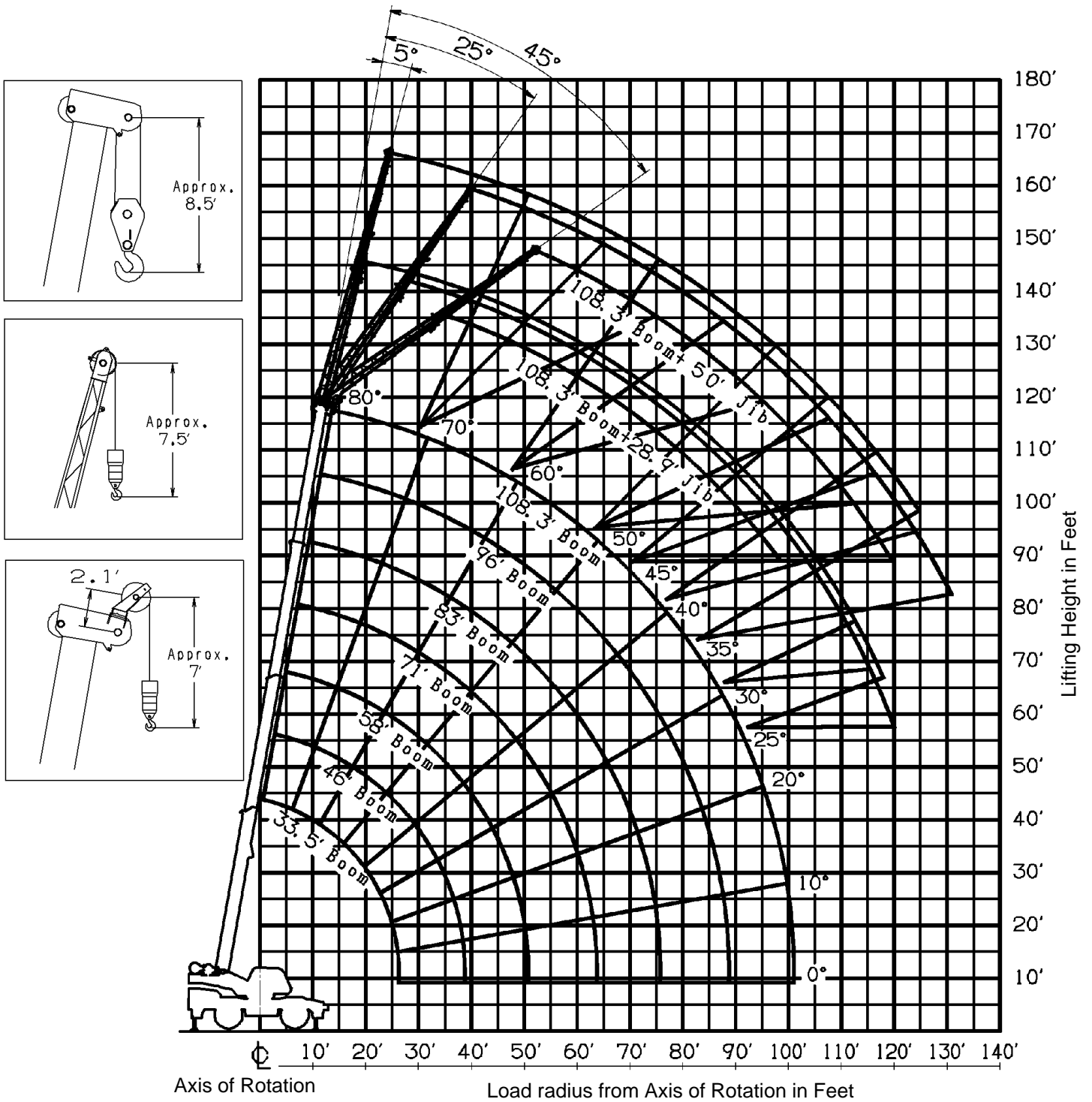
## DRUM WIRE ROPE CAPACITIES

| Wire rope layer | Main and auxiliary drum grooved lagging |        |                 |        |
|-----------------|---|--------|-----------------|--------|
|                 | 3/4" (19mm) wire rope                   |        |                 |        |
|                 | Rope per layer                          |        | Total wire rope |        |
|                 | Feet                                    | Meters | Feet            | Meters |
| 1               | 123.0                                   | 37.5   | 123.0           | 37.5   |
| 2               | 134.2                                   | 40.9   | 257.2           | 78.4   |
| 3               | 145.3                                   | 44.3   | 402.5           | 122.7  |
| 4               | 156.5                                   | 47.7   | 559.0           | 170.4  |
| 5               | 167.7                                   | 51.1   | 726.7           | 221.5  |
| 6               | 178.8                                   | 54.5   | 905.5           | 276.0  |

## DRUM DIMENSIONS

|                 | Inch    | mm  |
|-----------------|---------|-----|
| Root diameter   | 15-3/4" | 400 |
| Length          | 22-3/4" | 578 |
| Flange diameter | 25-3/8" | 645 |

# TR-450XL-4 WORKING RANGE CHART



**NOTE:** Boom and jib geometry shown are for unloaded condition and machine standing level on firm supporting surface. Boom deflection and subsequent radius and boom angle change must be accounted for when applying load to hook.

# TR-450XL-4 RATED LIFTING CAPACITIES (IN POUNDS)

|       |         | ON OUTRIGGERS FULLY EXTENDED 22'11-5/8" (7.0m) SPREAD |          |          |         |          |         |                      |  |       |            |       |            |       |   |       |            |       |            |       |
|-------|---------|---|----------|----------|---------|----------|---------|----------------------|--|-------|------------|-------|------------|-------|---|-------|------------|-------|------------|-------|
|       |         | 360° ROTATION   |          |          |         |          |         |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| A \ B | 33.5'   | 46'   | 58'      | 71'      | 83'     | 96'      | 108.3'  | Boom Angle in Degree | 108.3' (33.0m) Boom + 28.9' (8.8m) Jib |       |            |       |            |       | 108.3' (33.0m) Boom + 50.0' (15.2m) Jib |       |            |       |            |       |
|       | (10.2m) | (14.02m)  | (17.68m) | (21.64m) | (25.3m) | (29.26m) | (33.0m) |                      | 5° offset                              |       | 25° offset |       | 45° offset |       | 5° offset                               |       | 25° offset |       | 45° offset |       |
|       |         |   |          |          |         |          |         |                      | R                                      | W     | R          | W     | R          | W     | R                                       | W     | R          | W     | R          | W     |
| 10'   | 90,000  | 44,100  | 44,100   | 41,000   |         |          |         | 80°                  | 19.0                                   | 9,900 | 28.5       | 8,150 | 35.4       | 6,000 | 24.9                                    | 5,900 | 40.7       | 4,000 | 52.8       | 2,850 |
| 12'   | 77,000  | 44,100  | 44,100   | 41,000   | 36,600  |          |         | 75°                  | 31.5                                   | 9,900 | 40.0       | 7,200 | 46.9       | 5,700 | 39.4                                    | 5,900 | 54.5       | 3,500 | 65.3       | 2,550 |
| 15'   | 67,200  | 44,100  | 44,100   | 41,000   | 36,600  | 30,400   |         | 70°                  | 43.6                                   | 8,600 | 51.5       | 6,300 | 57.4       | 5,300 | 52.8                                    | 4,900 | 67.3       | 3,100 | 76.8       | 2,400 |
| 20'   | 52,700  | 44,100  | 42,700   | 36,400   | 31,100  | 27,500   | 20,000  | 65°                  | 55.1                                   | 6,900 | 62.3       | 5,500 | 67.3       | 4,850 | 65.9                                    | 4,100 | 79.4       | 2,850 | 87.6       | 2,300 |
| 25'   | 36,500  | 43,000  | 37,500   | 32,000   | 26,900  | 23,700   | 20,000  | 60°                  | 65.9                                   | 5,800 | 72.5       | 4,800 | 76.4       | 4,400 | 78.4                                    | 3,500 | 90.9       | 2,650 | 97.4       | 2,200 |
| 30'   |         | 33,700  | 33,200   | 28,600   | 23,600  | 20,700   | 19,100  | 55°                  | 76.1                                   | 4,900 | 82.0       | 4,150 | 85.3       | 3,950 | 90.2                                    | 3,000 | 101.1      | 2,350 | 106.6      | 2,100 |
| 35'   |         | 25,300  | 26,100   | 25,500   | 20,900  | 18,400   | 16,700  | 50°                  | 85.6                                   | 4,100 | 90.6       | 3,700 | 93.2       | 3,500 | 100.7                                   | 2,650 | 110.6      | 2,150 | 114.5      | 1,950 |
| 40'   |         |   | 20,700   | 20,900   | 18,500  | 16,400   | 14,700  | 45°                  | 94.2                                   | 3,500 | 98.4       | 3,100 | 100.1      | 2,850 | 110.6                                   | 2,250 | 119.1      | 1,950 | 121.7      | 1,800 |
| 45'   |         |   | 16,700   | 17,000   | 16,500  | 14,800   | 13,200  | 40°                  | 101.7                                  | 2,750 | 105.3      | 2,450 |            |       | 119.4                                   | 1,650 | 126.6      | 1,550 |            |       |
| 50'   |         |   | 13,700   | 14,100   | 13,900  | 13,400   | 11,900  | 35°                  | 108.6                                  | 2,150 | 111.6      | 2,000 |            |       | 127.6                                   | 1,200 | 133.2      | 1,150 |            |       |
| 55'   |         |   |          | 11,700   | 11,900  | 11,600   | 10,800  | 30°                  | 114.8                                  | 1,650 | 117.1      | 1,650 |            |       |   |       |            |       |            |       |
| 60'   |         |   |          | 10,000   | 10,200  | 10,000   | 9,700   | 25°                  | 119.8                                  | 1,350 | 121.7      | 1,400 |            |       |   |       |            |       |            |       |
| 65'   |         |   |          |          | 8,700   | 8,700    | 8,700   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 70'   |         |   |          |          | 7,300   | 7,300    | 7,600   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 75'   |         |   |          |          | 6,300   | 6,350    | 6,600   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 80'   |         |   |          |          |         | 5,400    | 5,700   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 85'   |         |   |          |          |         | 4,750    | 4,900   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 90'   |         |   |          |          |         |          | 4,150   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 95'   |         |   |          |          |         |          | 3,650   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 100'  |         |   |          |          |         |          | 3,150   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| C     |         |   |          |          |         |          | 0°      |                      |  |       |            |       |            |       |   |       |            |       |            |       |

A: Boom length in feet  
 B: Load radius in feet  
 C: Minimum boom angle (deg.) for indicated length (no load)  
 R: Load radius in feet  
 W: Rated lifting capacity in pounds

|       |         | ON OUTRIGGERS MID. EXTENDED 21' 3-7/8" (6.5m) SPREAD |          |          |         |          |         |                      |  |       |            |       |            |       |   |       |            |       |            |       |
|-------|---------|--|----------|----------|---------|----------|---------|----------------------|--|-------|------------|-------|------------|-------|---|-------|------------|-------|------------|-------|
|       |         | 360° ROTATION  |          |          |         |          |         |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| A \ B | 33.5'   | 46'  | 58'      | 71'      | 83'     | 96'      | 108.3'  | Boom Angle in Degree | 108.3' (33.0m) Boom + 28.9' (8.8m) Jib |       |            |       |            |       | 108.3' (33.0m) Boom + 50.0' (15.2m) Jib |       |            |       |            |       |
|       | (10.2m) | (14.02m)   | (17.68m) | (21.64m) | (25.3m) | (29.26m) | (33.0m) |                      | 5° offset                              |       | 25° offset |       | 45° offset |       | 5° offset                               |       | 25° offset |       | 45° offset |       |
|       |         |  |          |          |         |          |         |                      | R                                      | W     | R          | W     | R          | W     | R                                       | W     | R          | W     | R          | W     |
| 10'   | 90,000  | 44,100   | 44,100   | 41,000   |         |          |         | 80°                  | 19.0                                   | 9,900 | 28.5       | 8,150 | 35.4       | 6,000 | 24.9                                    | 5,900 | 40.7       | 4,000 | 52.8       | 2,850 |
| 12'   | 77,000  | 44,100   | 44,100   | 41,000   | 36,600  |          |         | 75°                  | 31.5                                   | 9,900 | 40.0       | 7,200 | 46.9       | 5,700 | 39.4                                    | 5,900 | 54.5       | 3,500 | 65.3       | 2,550 |
| 15'   | 67,200  | 44,100   | 44,100   | 41,000   | 36,600  | 30,400   |         | 70°                  | 43.6                                   | 8,600 | 51.5       | 6,300 | 57.4       | 5,300 | 52.8                                    | 4,900 | 67.3       | 3,100 | 76.8       | 2,400 |
| 20'   | 52,700  | 44,100   | 42,700   | 36,400   | 31,100  | 27,500   | 20,000  | 65°                  | 55.1                                   | 6,900 | 62.3       | 5,500 | 67.3       | 4,850 | 65.9                                    | 4,100 | 79.4       | 2,850 | 87.6       | 2,300 |
| 25'   | 36,500  | 39,300   | 37,500   | 32,000   | 26,900  | 23,700   | 20,000  | 60°                  | 65.9                                   | 5,800 | 72.5       | 4,800 | 76.4       | 4,400 | 78.4                                    | 3,500 | 90.9       | 2,650 | 97.4       | 2,200 |
| 30'   |         | 28,100   | 28,300   | 28,600   | 23,600  | 20,700   | 19,100  | 55°                  | 76.1                                   | 4,500 | 82.0       | 3,850 | 85.3       | 3,850 | 90.2                                    | 3,000 | 101.1      | 2,350 | 106.6      | 2,100 |
| 35'   |         | 21,000   | 21,300   | 21,800   | 20,900  | 18,400   | 16,700  | 50°                  | 85.6                                   | 3,300 | 90.6       | 2,850 | 93.2       | 2,900 | 100.7                                   | 2,050 | 110.6      | 1,750 | 114.5      | 1,750 |
| 40'   |         |  | 17,000   | 17,300   | 17,300  | 16,400   | 14,700  | 45°                  | 94.2                                   | 2,350 | 98.4       | 2,000 | 100.1      | 2,050 | 110.6                                   | 1,350 | 119.1      | 1,150 | 121.7      | 1,150 |
| 45'   |         |  | 13,700   | 14,000   | 14,100  | 14,300   | 13,200  | 40°                  | 101.7                                  | 1,650 | 105.3      | 1,450 |            |       |   |       |            |       |            |       |
| 50'   |         |  | 11,100   | 11,500   | 11,700  | 11,800   | 11,450  | 35°                  | 108.6                                  | 1,150 | 111.6      | 1,000 |            |       |   |       |            |       |            |       |
| 55'   |         |  |          | 9,500    | 9,700   | 9,900    | 9,800   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 60'   |         |  |          | 8,000    | 8,200   | 8,300    | 8,200   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 65'   |         |  |          |          | 7,000   | 7,000    | 7,000   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 70'   |         |  |          |          | 5,900   | 5,900    | 6,000   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 75'   |         |  |          |          | 5,000   | 5,000    | 5,100   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 80'   |         |  |          |          |         | 4,300    | 4,400   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 85'   |         |  |          |          |         | 3,700    | 3,700   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 90'   |         |  |          |          |         |          | 3,100   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 95'   |         |  |          |          |         |          | 2,700   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| 100'  |         |  |          |          |         |          | 2,200   |                      |  |       |            |       |            |       |   |       |            |       |            |       |
| C     |         |  |          |          |         |          | 0°      |                      |  |       |            |       |            |       |   |       |            |       |            |       |

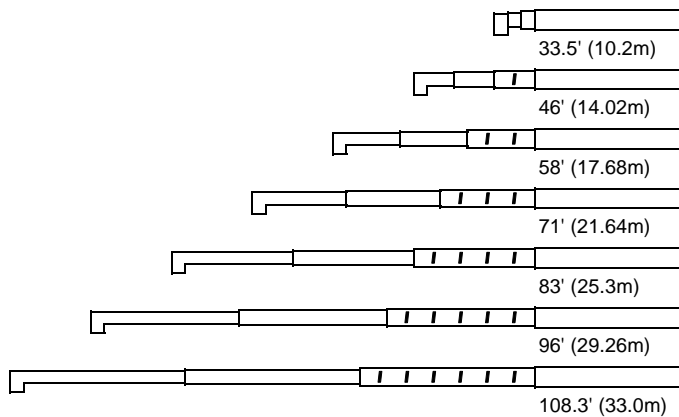
A: Boom length in feet  
 B: Load radius in feet  
 C: Minimum boom angle (deg.) for indicated length (no load)  
 R: Load radius in feet  
 W: Rated lifting capacity in pounds

# TR-450XL-4 RATED LIFTING CAPACITIES (IN POUNDS)

| ON OUTRIGGERS MID. EXTENDED 16' 4-7/8"(5.0m) SPREAD<br>360° ROTATION |   |         |          |          |          |         |          |         |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
|--|---|---------|----------|----------|----------|---------|----------|---------|-------------------------------|--|-------|------------|-------|------------|-------|---|-------|------------|-------|------------|-------|--|
| B  | A | 33.5'   | 46'      | 58'      | 71'      | 83'     | 96'      | 108.3'  | Boom<br>Angle<br>in<br>Degree | 108.3' (33.0m) Boom + 28.9' (8.8m) Jib |       |            |       |            |       | 108.3' (33.0m) Boom + 50.0' (15.2m) Jib |       |            |       |            |       |  |
|  |   | (10.2m) | (14.02m) | (17.68m) | (21.64m) | (25.3m) | (29.26m) | (33.0m) |                               | 5° offset                              |       | 25° offset |       | 45° offset |       | 5° offset                               |       | 25° offset |       | 45° offset |       |  |
|  |   |         |          |          |          |         |          |         |                               | R                                      | W     | R          | W     | R          | W     | R                                       | W     | R          | W     | R          | W     |  |
| 10'  |   | 90,000  | 44,100   | 44,100   | 41,000   |         |          |         |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 12'  |   | 77,000  | 44,100   | 44,100   | 41,000   | 36,600  |          |         |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 15'  |   | 61,300  | 44,100   | 44,100   | 41,000   | 36,600  | 30,400   |         | 80°                           | 19.0                                   | 9,900 | 28.5       | 8,150 | 35.4       | 6,000 | 24.9                                    | 5,900 | 40.7       | 4,000 | 52.8       | 2,850 |  |
| 20'  |   | 38,500  | 38,200   | 38,200   | 36,400   | 31,100  | 27,500   | 20,000  | 75°                           | 31.5                                   | 9,900 | 40.0       | 7,200 | 46.9       | 5,700 | 39.4                                    | 5,900 | 54.5       | 3,500 | 65.3       | 2,550 |  |
| 25'  |   | 24,500  | 25,900   | 25,900   | 26,400   | 26,900  | 23,700   | 20,000  | 70°                           | 43.6                                   | 8,150 | 51.5       | 6,300 | 57.4       | 5,300 | 52.8                                    | 4,900 | 67.3       | 3,100 | 76.8       | 2,400 |  |
| 30'  |   |         | 18,600   | 19,000   | 19,400   | 19,800  | 19,600   | 19,100  | 65°                           | 55.1                                   | 5,500 | 62.3       | 4,700 | 67.3       | 4,350 | 65.9                                    | 3,900 | 79.4       | 2,850 | 87.6       | 2,300 |  |
| 35'  |   |         | 13,200   | 14,400   | 14,800   | 15,000  | 15,000   | 15,000  | 60°                           | 65.9                                   | 3,400 | 72.5       | 3,150 | 76.4       | 3,000 | 78.4                                    | 2,400 | 90.9       | 1,950 | 97.4       | 1,900 |  |
| 40'  |   |         |          | 11,200   | 11,700   | 11,900  | 11,900   | 11,900  | 55°                           | 76.1                                   | 2,200 | 82.0       | 2,000 | 85.3       | 2,000 | 90.2                                    | 1,300 | 101.1      | 1,130 | 106.6      | 1,100 |  |
| 45'  |   |         |          | 8,800    | 9,300    | 9,500   | 9,500    | 9,600   | 50°                           | 85.6                                   | 1,300 | 90.6       | 1,150 | 93.2       | 1,200 |   |       |            |       |            |       |  |
| 50'  |   |         |          | 7,000    | 7,500    | 7,700   | 7,700    | 7,800   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 55'  |   |         |          |          | 6,000    | 6,100   | 6,150    | 6,300   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 60'  |   |         |          |          | 4,850    | 5,000   | 5,000    | 5,100   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 65'  |   |         |          |          |          | 4,050   | 4,050    | 4,150   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 70'  |   |         |          |          |          | 3,300   | 3,300    | 3,400   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 75'  |   |         |          |          |          | 2,650   | 2,700    | 2,800   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 80'  |   |         |          |          |          |         | 2,100    | 2,200   |                               |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 85'  |   |         |          |          |          |         |          | 1,600   | 1,700                         |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 90'  |   |         |          |          |          |         |          |         | 1,300                         |  |       |            |       |            |       |   |       |            |       |            |       |  |
| 95'  |   |         |          |          |          |         |          |         | 900                           |  |       |            |       |            |       |   |       |            |       |            |       |  |
| C  |   |         |          |          | 0°       |         |          |         | 22°                           |  |       |            |       |            |       |   |       |            |       |            |       |  |

A: Boom length in feet  
 B: Load radius in feet  
 C: Minimum boom angle (deg.) for indicated length (no load)  
 R: Load radius in feet  
 W: Rated lifting capacity in pounds

## Boom length in feet



NOTE: Load radiuses for jib operation are given for reference with the boom fully extended to 108.3' (33m).

4,700 lbs. (2,132 kg) shall be subtracted from the rated lifting capacity of main boom, when 28.9' jib is attached to main boom head. 28.9' jib weight is 1,250 lbs. (567 kg).

6,600 lbs. (3,000 kg) shall be subtracted from the rated lifting capacity of main boom, when 50.0' jib is attached to main boom head. 50.0' jib weight is 1,780 lbs. (807 kg).

Standard number of parts of line for outrigger operation should be according to the following table.

| Boom Length in Feet (meters) | 33.5' (10.2) | 33.5' to 71' (10.2 to 21.64) | 71' to 108.3' (21.64 to 33.0) | Single top Jib |
|------------------------------|--------------|------------------------------|-------------------------------|----------------|
| Number of parts of line      | 8            | 6                            | 4                             | 1              |

The lifting capacity data stored in the LOAD MOMENT INDICATOR (AML-L) is based on the standard number of parts of line listed in the chart.

Maximum lifting capacity is restricted by the number of parts of line of LOAD MOMENT INDICATOR (AML-L).

# WARNING AND OPERATING INSTRUCTIONS FOR LIFTING CAPACITIES

## GENERAL

1. RATED LIFTING CAPACITIES apply only to the machine as originally manufactured and normally equipped by TADANO LTD. Modifications to the machine or use of optional equipment other than that specified can result in a reduction of capacity.
2. Construction equipment can be hazardous if improperly operated or maintained. Operation and maintenance of this machine must be in compliance with information in the operation, safety and maintenance manual supplied with machine. If these manuals are missing, order replacement through the distributor.
3. The operator and other personnel associated with this machine shall fully acquaint themselves with the latest American National Standards Institute (ANSI) safety standards for cranes.

## SET UP

1. Rated lifting capacities on the chart are the maximum allowable crane capacities and are based on the machine standing level on firm supporting surface under ideal job conditions. Depending on the nature of the supporting surface, it may be necessary to have structural supports under the outrigger floats or tires to spread the loads to a larger bearing surface.
2. For outrigger operation, outriggers shall be properly extended with tires free of supporting surface before operating crane.

## OPERATION

1. Rated lifting capacities have been tested to and meet minimum requirements of SAE J1063-Cantilevered Boom Crane Structures Method of Test.
2. Rated lifting capacities do not exceed 85 % of the tipping load on outriggers fully extended as determined by SAE J765-Crane Stability Test Code.  
Rated lifting capacities for partially extended outriggers are determined from the formula, Rated Lifting Capacities = (Tipping Load - 0.1 x Tip Reaction)/1.25.
3. Rated lifting capacities above bold lines in the chart are based on crane strength and those below, on its stability. They are based on actual load radius increased by boom deflection.
4. The weight of load handling device such as hook blocks, slings, etc., must be considered as part of the load and must be deducted from the lifting capacities.
5. Rated lifting capacities are based on freely suspended loads and make no allowance for such factors as the effect of wind, sudden stopping of loads, supporting surface conditions, inflation of tires, operating speeds, side loads, etc. Side pull on boom or jib is extremely dangerous.
6. Rated lifting capacities do not account for wind on lifted load or boom. Rated lifting capacities and boom length shall be appropriately reduced, when wind velocity is above 20 mph (9 m/sec.).
7. Rated lifting capacities at load radius shall not be exceeded. Do not tip the crane to determine allowable loads.
8. Do not operate at boom lengths, radii, or boom angle, where no capacities are shown. Crane may overturn without any load on the hook.
9. When boom length is between values listed, refer to the rated lifting capacities of the next longer and next shorter booms for the same radius. The lesser of the two rated lifting capacities shall be used.

10. When making lifts at a load radius not shown, use the next longer radius to determine allowable capacity.
11. Load per line should not exceed 11,500 lbs. (5,200kg) for main winch and 11,000 lbs. (5,000kg) for auxiliary winch.
12. Check the actual number of parts of line with LOAD MOMENT INDICATOR (AML-L) before operation. Maximum lifting capacity is restricted by the number of parts of line of LOAD MOMENT INDICATOR (AML-L). Limited capacity is as determined from the formula, Single line pull for main winch (11,500 lbs.) x number of parts of line.
13. The boom angle before loading should be greater to account for deflection.
14. The 33.5' (10.2m) boom length capacities are based on boom fully retracted. If not fully retracted [less than 46' (14.0m) boom length], use the rated lifting capacities for the 46' (14.0m) boom length.
15. Extension or retraction of the boom with loads may be attempted within the limits of the RATED LIFTING CAPACITIES. The ability to telescope loads is limited by hydraulic pressure, boom angle, boom length, crane maintenance, etc.
16. For lifting capacity of single top, reduce the rated lifting capacities of relevant boom by the mass of the main hook block. Capacities of single top shall not exceed 11,000 lbs. (5,000kg) including main hook.
17. When erecting and stowing jib, be sure to retain it by hand or by other means to prevent its free movement.
18. 4,700 lbs. (2,132 kg) shall be subtracted from the rated lifting capacities of the main boom, when 28.9' jib is attached to main boom head. 28.9' jib weight is 1,250 lbs. (567 kg).  
6,600 lbs. (3,000 kg) shall be subtracted from the rated lifting capacities of the main boom, when 50.0' jib is attached to main boom head. 50.0' jib weight is 1,780 lbs. (807 kg).
19. Use Anti-two block (OVERWIND CUTOFF) disable switch when erecting and stowing jib and when stowing hook block. While the switch is pushed, the hoist does not stop, even when overwind condition occurs.
20. For boom length with 28.9' (8.8m) jib, rated lifting capacities are determined by loaded boom angle only in the column headed "108.3' (33.0m) boom + 28.9' (8.8m) jib".  
For boom length with 50' (15.2 m) jib, rated lifting capacities are determined by loaded boom angle only in the column headed "108.3' (33.0m) boom + 50' (15.2m) jib".  
For angles not shown, use the next lower loaded boom angle to determine allowable capacity.
21. When lifting a load by using jib (aux. winch) and boom (main winch) simultaneously, do the following:
  - Enter the operation status as jib operation, not as boom operation.
  - Before starting operation, make sure that mass of load is within rated lifting capacity for jib.

## DEFINITIONS

1. Load Radius: Horizontal distance from a projection of the axis of rotation to supporting surface before loading to the center of the vertical hoist line or tackle with load applied.
2. Loaded Boom Angle: The angle between the boom base section and the horizontal, after lifting the rated lifting capacity at the load radius.
3. Working Area: Area measured in a circular arc about the centerline of rotation.
4. Freely Suspended Load: Load hanging free with no direct external force applied except by the hoist line.
5. Side Load: Horizontal side force applied to the lifted load either on the ground or in the air.



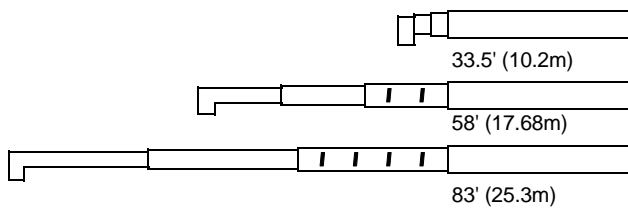
# TR-450XL-4 RATED LIFTING CAPACITIES (IN POUNDS)

TIRE : 23.5-25 20PR

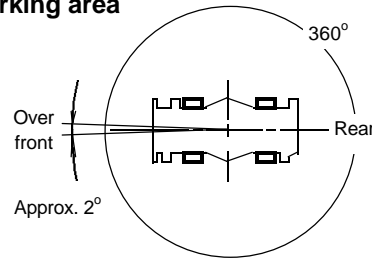
| ON RUBBER           |                     |              |             |                     |              |             |                     |              |             |
|---------------------|---------------------|--------------|-------------|---------------------|--------------|-------------|---------------------|--------------|-------------|
| Load Radius in Feet | Stationary          |              |             |                     |              |             | Creep               |              |             |
|                     | Over Front          |              |             | 360° Rotation       |              |             | Over Front          |              |             |
|                     | Boom Length in Feet |              |             | Boom Length in Feet |              |             | Boom Length in Feet |              |             |
|                     | 33.5' (10.2m)       | 58' (17.68m) | 83' (25.3m) | 33.5' (10.2m)       | 58' (17.68m) | 83' (25.3m) | 33.5' (10.2m)       | 58' (17.68m) | 83' (25.3m) |
| 10'                 | 38,500              |              |             | 28,000              |              |             | 35,700              |              |             |
| 12'                 | 37,000              | 33,600       |             | 22,000              | 22,500       |             | 30,800              | 32,000       |             |
| 15'                 | 33,700              | 29,000       |             | 16,900              | 17,500       |             | 25,200              | 26,400       |             |
| 20'                 | 25,500              | 22,500       | 18,700      | 9,900               | 10,500       | 10,800      | 18,500              | 20,000       | 18,700      |
| 25'                 | 17,400              | 17,800       | 16,000      | 6,100               | 6,900        | 7,300       | 14,100              | 15,400       | 15,800      |
| 30'                 |                     | 13,100       | 12,700      |                     | 4,700        | 5,100       |                     | 12,100       | 12,700      |
| 35'                 |                     | 10,000       | 9,600       |                     | 3,100        | 3,500       |                     | 10,000       | 9,600       |
| 40'                 |                     | 7,800        | 7,500       |                     | 2,000        | 2,300       |                     | 7,800        | 7,500       |
| 45'                 |                     | 6,100        | 5,700       |                     | 1,100        | 1,400       |                     | 6,100        | 5,700       |
| 50'                 |                     | 5,000        | 4,500       |                     |              |             |                     | 5,000        | 4,500       |
| 55'                 |                     |              | 3,500       |                     |              |             |                     |              | 3,500       |
| 60'                 |                     |              | 2,700       |                     |              |             |                     |              | 2,700       |
| 65'                 |                     |              | 2,100       |                     |              |             |                     |              | 2,100       |
| 70'                 |                     |              | 1,650       |                     |              |             |                     |              | 1,650       |
| 75'                 |                     |              | 1,200       |                     |              |             |                     |              | 1,200       |
| A                   | 0°                  |              |             | 30°                 | 51°          | 0°          |                     |              |             |

A : Minimum boom angle (deg.) for indicated length (no load)

## Boom length in feet



## Working area



NOTE: Standard number of parts of line for on rubber operation should be according to the following table.

The lifting capacity data stored in the LOAD MOMENT INDICATOR (AML-L) is based on the standard number of parts of line listed in the chart.

| Boom mode               | Boom | Single top |
|-------------------------|------|------------|
| Number of parts of line | 4    | 1          |

## WARNING AND OPERATING INSTRUCTIONS FOR ON RUBBER LIFTING CAPACITIES

- Rated lifting capacities on rubber are in pounds and do not exceed 75 % of tipping loads as determined by SAE J765-Crane Stability Test Code.
- Rated lifting capacities shown in the chart are based on condition that crane is set on firm level surfaces with suspension lock applied. Those above bold lines are based on tire capacity and those below, on crane stability. They are based on actual load radius increased by tire deformation and boom deflection.
- If the suspension lock cylinders contain air, the axle will not be locked completely and rated lifting capacities may not be obtainable. Bleed the cylinders according to the operation safety and maintenance manual.
- Rated lifting capacities are based on proper tire inflation, capacity and condition. Damaged tires are hazardous to safe operation of crane.
- Tires shall be inflated to correct air pressure.
- Over front operation shall be performed within two degrees in front of chassis.
- On rubber lifting with "jib" is not permitted. Maximum permissible boom length is 83 ft. (25.3m).
- When making lift on rubber (stationary), set parking brake.
- For creep operation, boom must be centered over front of machine, swing lock engaged, and load restrained from swinging. Travel slowly and keep the lifted load as close to the ground as possible, and especially avoid any abrupt steering, accelerating or braking.
- Do not operate the crane while carrying the load.
- Creep is motion for crane not to travel more than 200 ft. (60 m) in any 30 minute period and to travel at the speed of less than 1 mph (1.6 km/h).
- For creep operation, set drive select switch to "4-WHEEL (Lo)" and set gear shift lever to "1".

| Tires        | Air Pressure                       |
|--------------|------------------------------------|
| 23.5-25 20PR | 68 psi. (4.75kgf/cm <sup>2</sup> ) |

# WARNING AND OPERATING INSTRUCTIONS FOR USING THE LOAD MOMENT INDICATOR (AML-L)

1. When operating crane on outriggers:
  - Before outrigger operation, the suspension lock operation must be performed. Suspension lock system can only be performed in the over-front area.
  - Push and hold the suspension lock switch to the "LOCK" position until suspension lock lamp changes from flashing to a solid light and the suspension is fully retracted. (Outrigger and crane operations cannot be performed until suspension lock operation has been completed.)
  - Set P.T.O. switch to "ON" position.
  - Extend the outriggers and level the crane.
  - Press the outrigger mode select key to register the outriggers condition with the LOAD MOMENT INDICATOR (AML-L). Press the register key. The outrigger status symbol will change from flashing to a solid light.
  - Press the boom mode select key to select the boom status that corresponds to the actual boom configuration. Each time the boom mode select key is pressed, the status changes. Press the register key to register the boom status with the LOAD MOMENT INDICATOR (AML-L). The boom status symbol will change from flashing to a solid light.
  - When erecting and stowing the jib, select the "JIB SET" mode. (The jib state symbol will be flashing.)
2. When operating crane on rubber:
  - Before outrigger operation, the suspension lock operation must be performed. Suspension lock system can only be performed in the over-front area.
  - Push and hold the suspension lock switch to the "LOCK" position until suspension lock lamp changes from flashing to a solid light and the suspension is fully retracted. (Crane operations cannot be performed until suspension lock operation has been completed.)
  - Set P.T.O. switch to "ON" position.
  - Press the outrigger mode select key to select the on rubber status that corresponds to the actual on rubber configuration. Each time the outrigger mode select key is pressed, the status changes. When the stationary operation is selected, the on-rubber status symbol will be a solid light. When the creep operation is selected, the on-rubber status symbol will be a flashing light.
  - Press the boom mode select key to select the boom status that corresponds to the actual boom configuration. Pay attention to the following :
    - (1) For stationary operation :
      - The over-front capacities are in effect only when the over-front area symbol is lit. When the swing position is more than 1° off from center of chassis (i.e., not in the over-front area), 360° rated lifting capacities are in effect.
      - Before swinging to the over-side area with a load that was lifted in over-front area, make sure the actual weight of the load is less than the 360° rated lifting capacities.
    - (2) For creep operation :
      - The creep rated lifting capacities are in effect only when the over-front area symbol is lit. If swing position is not in the over-front area, never creep with the load.
3. The swing does not automatically stop if the crane become overloaded.
4. During crane operation, make sure that displays on the front panel of the LOAD MOMENT INDICATOR (AML-L) are in accordance with actual operating conditions.
5. The displayed values of LOAD MOMENT INDICATOR (AML-L) are based on freely suspended loads and make no allowance for such factors as the effect of wind, sudden stopping of loads, supporting surface conditions, inflation of tires, operating speed, side loads, etc. For safe operation, it is recommended that lifted loads be appropriately reduced when extending and lowering the boom or swinging.
6. LOAD MOMENT INDICATOR (AML-L) is intended as an aid to the operator. Under no condition should it be relied upon to replace use of capacity charts and operating instructions. Relying solely upon the LOAD MOMENT INDICATOR (AML-L) in place of good operating practice can cause an accident. The operator must exercise caution to assure safety.

**TR-450XL-4 Axle weight distribution chart**

|  | Pounds |        |        | Kilograms |        |        |
|--|--------|--------|--------|-----------|--------|--------|
|  | GVW    | Front  | Rear   | GVW       | Front  | Rear   |
| Base machine                                       | 72,690 | 35,570 | 37,120 | 32,971    | 16,134 | 16,837 |
| Remove:  |        |        |        |           |        |        |
| 1. Auxiliary hoist with 345' (105m) of 3/4" (19mm) | -1830  | 440    | -2,270 | -830      | 200    | -1,030 |
| 2. 5.5 ton (5.0 metric ton) hook ball              | -290   | -410   | 120    | -132      | -186   | 54     |
| 3. Top jib (21')                                   | -530   | -600   | 70     | -240      | -272   | 32     |
| 4. Base jib (28.8')                                | -1,250 | -2,070 | 820    | -567      | -939   | 372    |
| 5. EXT. Counter weight                             | -1,760 | 890    | -2,650 | -798      | 404    | -1,202 |
| Option:  |        |        |        |           |        |        |
| 1. Auxiliary lifting sheave                        | 150    | 390    | -240   | 68        | 177    | -109   |
| 2. 45 ton (40.8 metric ton) hook block             | 760    | 1,320  | -560   | 345       | 599    | -254   |
| 3. 30 ton (27.2 metric ton) hook block             | 630    | 1,090  | -460   | 285       | 494    | -209   |
| 4. Hot water cab heater and air conditioner        | 220    | 70     | 150    | 100       | 32     | 68     |

