GENERAL DATA

CRANE CAPACITY
50,000 kg at 2.5 m

BOOM
4-section, 10.7 m — 34.7 m

DIMENSION
Overall length
approx. 13,055 mm
Overall width
approx. 2,980 mm
Overall height
approx. 3,765 mm

MASS
Gross vehicle mass
approx. 33,420 kg
-front axle
approx. 16,440 kg
-rear axle
approx. 16,980 kg

PERFORMANCE
Max. traveling speed
computed 50 km/h
Gradeability (tan \( \theta \))
computed 69 % (at stall)
*30 %

* Machine should be operated within the limit of engine crankcase design (17° : MITSUBISHI 6M60-TL).

Specifications are subject to change without notice.
CRANE SPECIFICATIONS

MODEL
GR-500EX

CAPACITY
50,000 kg at 2.5 m

BOOM
Four section full power partially synchronized telescoping boom of round box construction with 4 sheaves at boom head. The synchronization system consists of a double acting telescope cylinder, extension cables and retraction cables.
Hydraulic cylinder fitted with holding valves.
- Fully retracted length . . . . . . . . . . 10.7 m
- Fully extended length . . . . . . . . . . 34.7 m
- Extension speed . . . . . . . . . . . . . . 24.0 m in 72 s

JIB
Two staged swingaround boom extension. Triple offset (5°/25°/45°) type. Stows alongside base boom section.
Assistant cylinders for mounting and stowing.
Single sheave at jib head.
- Length . . . . . . . . . . . . . . . . . . . . . . . . . . . 8.8 m and 15.2 m

SINGLE TOP (AUXILIARY BOOM SHEAVE)
Single sheave.
Mounted to main boom head for single line work.

ELEVATION
By a double-acting hydraulic cylinder, fitted with holding valve.
Automatic speed reduction and soft stop function.
- Boom angle . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . -0.8° to 81°
- Boom raising speed . . . . . . . . . . . . . . . . . . . . . . . . . . 20° to 60° in 27 s

HOIST - Main winch
Variable speed type with grooved drum driven by hydraulic axial piston motor through winch speed reducer. Power load lowering and hoisting. Equipped with automatic brake (Neutral brake) and counterbalance valve. Controlled independently of auxiliary winch.
- Single line pull . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 54.9 kN (5,600 kgf)
- Single line speed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 136 m/min (at the 4th layer)
- Wire rope . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Spin-resistant type
  Diameter x length . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 19 mm x 193 m

HOOK BLOCK(Optional) - 50 t capacity
5 sheaves, swivel type hook with safety latch.
HOIST -
  Auxiliary winch
  Variable speed type with grooved drum driven by hydraulic axial piston
  motor through winch speed reducer. Power load lowering and hoisting.
  Equipped with automatic brake (Neutral brake) and counterbalance
  valve. Controlled independently of main winch.
  Single line pull. ............ 54.9 kN (5,600 kgf)
  Single line speed. ............ 118 m/min (at the 2nd layer)
  Wire rope. .................. Spin-resistant type
  Diameter x length. ........ 19 mm x 110 m

HOOK BLOCK -
  5.6 t capacity
  Swivel type hook with safety latch for single line use.

SWING
  Hydraulic axial piston motor driven through planetary speed reducer.
  Continuous 360° full circle swing on ball bearing slew ring.
  Equipped with manually locked/released swing brake.
  Swing speed. ............... 2.7 min⁻¹ {rpm}

HYDRAULIC SYSTEM
  Pumps. ............ 2 variable piston pumps for telescoping, elevating
  and winches.
  Tandem gear pump for steering, swing and optional
  equipment.
  Control valves. .... Multiple valves actuated by pilot pressure with
  integral pressure relief valves.
  Circuit. .............. Equipped with air cooled type oil cooler.
  Oil pressure appears on AML display for main
  circuit.
  Hydraulic oil tank capacity. .
  approx. 560 liters
  Filters. .............. Return line filter

CRANE CONTROL
  By 4 control levers for swing, boom hoist, main winch, boom telescoping
  or auxiliary winch with 2 control pedals for boom hoist and boom
  telescoping based on ISO standard layout. Control lever stands can
  change neutral positions and tilt for easy access to cab.
CAB

Both crane and drive operations can be performed from one cab mounted on rotating superstructure. One sided one-man type, steel construction with sliding door access and tinted safety glass windows opening at side. Door window is powered control. Operator's 3 way adjustable seat with headrest and armrest. Hot water cab heater and air conditioning.

TADANO Automatic Moment Limiter (Model: AML-C)

Main unit in crane cab gives audible and visual warning of approach to overload. Automatically cuts out crane motions before overload. With working range (load radius and/or boom angle and/or tip height and/or swing range) limit function. Automatic Speed Reduction and Soft Stop function on boom elevation and swing.

Following functions are displayed.

- Load as percentage
- Number of parts of line of rope
- Boom angle
- Boom length
- Load radius
- Outriggers position
- On-tire indicator
- Actual hook load
- Permissible load
- Boom position indicator
- Potential hook height
- Swing angle
- Main hydraulic oil pressure
- Jib length and jib offset angle (only when jib operation)

OUTRIGGERS

Hydraulically operated H-type outriggers. Each outrigger controlled simultaneously or independently from the cab.

Equipped with sight level gauge. Floats mounted integrally with the jacks retract to within vehicle width.

All cylinders fitted with pilot check valves.

Crane operation with different extended length of each outrigger. Equipped with extension width detector for each outrigger.

Extended width

- Fully. . . . . . . . . . . 7,000 mm
- Middle. . . . . . . . . . 6,500 mm
- Middle. . . . . . . . . 5,000 mm
- Minimum. . . . . . . . . 2,480 mm

Float size (Diameter). . . . . 500 mm

COUNTERWEIGHT

Integral with swing frame

Mass. . . . . . . . . . . 2,900 kg

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

**Type**
- Rear engine, left-hand steering, driving axle 2-way selected type (by manual switch).
  - 4 x 2  front drive
  - 4 x 4  front and rear drive

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

**Engine**
- Model: MITSUBISHI 6M60-TL [EUROMOT Stage II A]
- Type: 4 cycle, turbo charged and after cooled, 6 cylinder in line, direct injection, water cooled diesel engine.
- Piston displacement: 7,545 cm³
- Bore x stroke: 118 mm x 115 mm
- Max. output: 200 kW at 2,600 min⁻¹ (rpm)
- Max. torque: 785 N-m at 1,400 min⁻¹ (rpm)

**Transmission**
- Electronically controlled full automatic transmission.
- Torque converter driving full powershift with driving axle selector.
- 6 forward and 2 reverse speeds.
- 4 speeds - High range - 2 wheel drive ; 4 wheel drive
- 4 speeds - Low range - 4 wheel drive

**Axles**
- Front: Full floating type, steering and driving axle with planetary reduction.
- Rear: Full floating type, steering and driving axle with planetary reduction.
- Non-spin differential.

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

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

**Brake System**
- 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.

**Electric System**
- 24 V DC. 2 batteries of 12 V - 120 Ah capacity.

**Fuel Tank Capacity**
- 300 liters

**Tires**
- Front: 23.5–25 (DR), Single x 2  Air pressure: 450kPa
- Rear: 23.5–25 (DR), Single x 2  Air pressure: 450kPa

**Turn Radius**
- Min. turning radius (at center of extreme outer tire)
  - 2-wheel steering: 11.7 m
  - 4-wheel steering: 6.7 m
EQUIPMENT

STANDARD EQUIPMENT
Automatic moment limiter (AML)
External lamp (AML)
Pendant type over-winding cutout
Winch automatic fail-safe brake
Winch drum rotation indicator (Audible and Visual type)
Winch drum mirror
Hook safety latch
Pilot check valves
Holding valves
Counterbalance valves
Hydraulic pressure relief valves
Swing brake
Swing lock
Boom angle indicator
Boom elevation foot pedal
Boom telescoping foot pedal
Outrigger extension width detector
Hot water cab heater, air conditioner and defroster
Sight level gauge
Hydraulic oil cooler
Electric windshield wiper and washer
Roof window wiper and washer
Power window (Cab door)
Tachometer/Speedometer
3 way adjustable cloth seat with seat belt, headrest and armrest
Cab floor mat
Sun visor (Front and roof)
Automatic drive system
Transmission neutral position engine start
Overshift prevention
Parking braked travel warning
Tilt-telescope steering wheel
Back-up alarm
Air cleaner dust indicator
Air dryer
Water separator with filter
Engine over-run alarm
Hydraulic lockout suspension
Non-spin differential (Rear)
Towing eyes - front and rear
Fuel consumption monitor
Eco mode system
Positive control

OPTIONAL EQUIPMENT
Over-unwinding prevention
Cable follower
Emergency steering
Red warning lamp (Top boom)
Radiator cover
Tire inflation kit
Hook block - 50t capacity (5 sheaves, swivel type with safety latch.
Mass : approx. 500 kg)
**HOISTING PERFORMANCE**

<table>
<thead>
<tr>
<th>Layer</th>
<th>Line pulls</th>
<th>Total wire rope</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (kgf)</td>
<td>Meters</td>
</tr>
<tr>
<td>1st</td>
<td>67,400 (6,880)</td>
<td>37.6</td>
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<tr>
<td>2nd</td>
<td>61,800 (6,310)</td>
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<tr>
<td>3rd</td>
<td>57,000 (5,820)</td>
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<tr>
<td>4th</td>
<td>53,000 (5,410)</td>
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<tr>
<td>5th</td>
<td>49,500 (5,050)</td>
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<tr>
<td>6th</td>
<td>46,400 (4,730)</td>
<td>271.6</td>
</tr>
<tr>
<td>7th</td>
<td>43,700 (4,460)</td>
<td>327.5</td>
</tr>
</tbody>
</table>

Maximum permissible line pull wire strength 68,400N(6,985kg) with 6×31 class wire rope.

1. Developed by machinery with each layer of wire rope, but not based on rope strength or other limitation in machinery or equipment.

2. Seventh layer of wire rope are not recommended for hoisting operations.
## RATED LIFTING CAPACITIES

### ISO 4305

### ON OUTRIGGERS FULLY EXTENDED 7.0m SPREAD

#### 360° ROTATION

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C (Unit: x1000kg)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2.5</td>
<td>69.3 50.0</td>
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<td>3.0</td>
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<td>3.5</td>
<td>63.6 41.3</td>
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<td>41.6 22.7</td>
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<td>24.8 16.0</td>
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<td>28.2 2.7</td>
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<td></td>
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<td>14.4 2.2</td>
</tr>
<tr>
<td></td>
<td>26.0</td>
<td>38.8 1.8</td>
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<td>28.0</td>
<td>32.6 1.45</td>
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<td>30.0</td>
<td>25.0 1.2</td>
</tr>
<tr>
<td></td>
<td>32.0</td>
<td>12.2 0.95</td>
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</table>

### LIFTING CAPACITIES AT ZERO DEGREE BOOM ANGLE

#### ON OUTRIGGERS FULLY EXTENDED 7.0m SPREAD

#### 360° ROTATION

<table>
<thead>
<tr>
<th>A</th>
<th>10.7m</th>
<th>18.7m</th>
<th>26.7m</th>
<th>34.7m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0°</td>
<td>8.6</td>
<td>7.5</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td>18.1m</td>
<td>16.6</td>
<td>3.2</td>
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<tr>
<td></td>
<td>18.3m</td>
<td>12.2</td>
<td>0.95</td>
<td>38.8</td>
</tr>
</tbody>
</table>

**A:** Boom length (m)

**B:** Load radius (m)

**C:** Loaded boom angle (°)

**D:** Minimum boom angle (°) for indicated length (no load)
# RATED LIFTING CAPACITIES

## ISO 4305

<table>
<thead>
<tr>
<th>C</th>
<th>34.7m Boom + 8.8m Jib</th>
<th></th>
<th>34.7m Boom + 15.2m Jib</th>
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<tr>
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<td>5°Tilt</td>
<td>25°Tilt</td>
<td>45°Tilt</td>
<td>5°Tilt</td>
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<tr>
<td>25°</td>
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</tr>
<tr>
<td></td>
<td>C : Boom angle (°)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>R : Load radius (m)</td>
<td></td>
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<tr>
<td></td>
<td>W : Rated lifting capacity (Unit: ×1000kg)</td>
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</table>
# RATED LIFTING CAPACITIES

ISO 4305

### ON OUTRIGGERS MID EXTENDED 6.5m SPREAD

<table>
<thead>
<tr>
<th>B</th>
<th>A</th>
<th>10.7m</th>
<th>18.7m</th>
<th>26.7m</th>
<th>34.7m</th>
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<td>C</td>
<td>C</td>
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### LIFTING CAPACITIES AT ZERO DEGREE BOOM ANGLE

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A : Boom length (m)
B : Load radius (m)
C : Loaded boom angle (°)
D : Minimum boom angle (°) for indicated length (no load)
## RATED LIFTING CAPACITIES

### ISO 4305

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<th>34.7m Boom + 15.2m Jib</th>
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- **C**: Boom angle (°)
- **R**: Load radius (m)
- **W**: Rated lifting capacity (Unit: ×1000kg)

---

**ON OUTRIGGERS MID EXTENDED 6.5m SPREAD**

**C 34.7m Boom + 8.8m Jib**

**C 34.7m Boom + 15.2m Jib**

**360° ROTATION**
## RATED LIFTING CAPACITIES

### ISO 4305

### ON OUTRIGGERS MID EXTENDED 5.0m SPREAD

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### 360° ROTATION

Unit: ×1000kg

### LIFTING CAPACITIES AT ZERO DEGREE BOOM ANGLE

ON OUTRIGGERS MID EXTENDED 5.0m SPREAD 360° ROTATION

<table>
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<tr>
<th>A</th>
<th>B</th>
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<th>26.7m</th>
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A: Boom length (m)
B: Load radius (m)
C: Loaded boom angle (°)
D: Minimum boom angle (°) for indicated length (no load)
## RATED LIFTING CAPACITIES

ISO 4305

<table>
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<tr>
<th>C</th>
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<th>34.7m Boom + 15.2m Jib</th>
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<td>0.58</td>
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C : Boom angle (°)
R : Load radius (m)
W : Rated lifting capacity (Unit:×1000kg)
### RATED LIFTING CAPACITIES

ISO 4305

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<thead>
<tr>
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<th>10.7m</th>
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<td>52.7</td>
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</table>

**D**: Minimum boom angle (°) for indicated length (no load)

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**LIFTING CAPACITIES AT ZERO DEGREE BOOM ANGLE**

ON OUTRIGGERS MIN EXTENDED 2.48m SPREAD 360° ROTATION

### Unit: x1000kg

**A**: Boom length (m)

**B**: Load radius (m)

**C**: Loaded boom angle (°)

**D**: Minimum boom angle (°) for indicated length (no load)
NOTES FOR "ON OUTRIGGERS" TABLE

1. Rated lifting capacities shown in the table are based on condition that crane is set on firm level surface. Those above bold lines are based on crane strength and those below, on its stability.

2. Rated lifting capacities based on crane stability are according to ISO 4305.

3. The mass of the hook (500kg for 50 t capacity, 150kg for 5.6 t capacity), slings and all similarly used load handling devices must be considered as part of the load and must be deducted from the lifting capacities.

4. For rated lifting capacity of single top, reduce the rated lifting capacities of relevant boom according to a weight reduction for auxiliary load handling equipment. Capacities of single top shall not exceed 5,600 kg including main boom hook mass and the net capacity must be so reduced.

5. Standard number of parts of line for each boom length is as shown below. Load per line should not surpass 54.9 kN (5,600 kgf) for main winch and auxiliary winch.

<table>
<thead>
<tr>
<th>Boom length</th>
<th>10.7m</th>
<th>10.7m to 18.7m</th>
<th>18.7m to 34.7m</th>
<th>Single top Jib</th>
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<tbody>
<tr>
<td>Number of parts of line</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>1</td>
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</table>

The lifting capacity data stowed in the AUTOMATIC MOMENT LIMITER (AML) 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 AUTOMATIC MOMENT LIMITER (AML).

6. The lifting capacity for over-side area differs depending on the outrigger extension width. Work with the capacity corresponding to the extension width. The lifting capacities for over-front and over-rear areas are for “outriggers fully extended”. However, the areas (angle \( \alpha \)) differ depending on the outrigger extension width.

<table>
<thead>
<tr>
<th>Outriggers extended width</th>
<th>6.5m (middle)</th>
<th>5.0m (middle)</th>
<th>2.48m (minimum)</th>
</tr>
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<tbody>
<tr>
<td>Angle ( \alpha )</td>
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## RATED LIFTING CAPACITIES

**ISO 4305**

### ON RUBBER STATIONARY (Unit: \(x1000\)kg)

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<th>B</th>
<th>A</th>
<th>Over Front</th>
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<th>18.7m</th>
<th>26.7m</th>
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### LIFTING CAPACITY AT ZERO DEGREE BOOM ANGLE

ON RUBBER STATIONARY

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<th>C</th>
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<th>Over Front</th>
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<th>360° Rotation</th>
<th>10.7m</th>
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- **A**: Boom length (m)
- **B**: Load radius (m)
- **C**: Loaded boom angle (°)
- **D**: Minimum boom angle (°) for indicated length (no load)
### RATED LIFTING CAPACITIES

**ISO 4305**

**ON RUBBER CREEP (Unit: ×1000kg)**

<table>
<thead>
<tr>
<th>B</th>
<th>10.7m</th>
<th>18.7m</th>
<th>26.7m</th>
<th>10.7m</th>
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**LIFTING CAPACITY AT ZERO DEGREE BOOM ANGLE ON RUBBER CREEP**

<table>
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</table>

A: Boom length (m)
B: Load radius (m)
C: Loaded boom angle (°)
D: Minimum boom angle (°) for indicated length (no load)
NOTES FOR "ON RUBBER" TABLES

1. Rated lifting capacities shown in the table are based on condition that crane is set on firm level surface, with suspension lock applied. Those above bold lines are based on tire capacity and those below, on crane stability. They are based on actual working radii increased by tire deformation and boom deflection.

2. Rated lifting capacities based on crane stability are according to ISO 4305.

3. The mass of the hook (500 kg for 50 t capacity, 150 kg for 5.6 t capacity), slings and all similarly used load handling devices must be considered as part of the load and must be deducted from the lifting capacities.

4. For rated lifting capacity of single top, reduce the rated lifting capacities of relevant boom according to a weight reductions for auxiliary load handling equipment. Capacities of single top shall not exceed 5,600 kg including main hook.

5. On tires lifting with "jib" is not permitted. Maximum permissible boom length is 26.7 m.

6. CREEP is motion for crane not to travel more than 60 m in any 30 minute period and to travel at the speed of less than 1.6 km/h.

7. During "CREEP" duties travel slowly and keep the lifting load as close to the ground as possible, and especially avoid any abrupt steering, accelerating or braking.

8. Do not operate the crane while carrying the load.

9. Tires should be inflated to their correct air pressure of 450 kPa.

10. For CREEP operation, choose the drive mode and proper gear according to the road or working condition.

11. Standard number of parts of line for on tires operation should be according to the following table.

<table>
<thead>
<tr>
<th>Number of parts of line</th>
<th>Boom length</th>
<th>10.7m</th>
<th>18.7m to 26.7m</th>
<th>Single top</th>
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<tr>
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<td>1</td>
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The lifting capacity data stowed in the AUTOMATIC MOMENT LIMITER (AML) 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 AUTOMATIC MOMENT LIMITER (AML).

WORKING AREA

Without outriggers "Over front" operation should be performed within 2 degrees in front of chassis.
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.
Note: Dimension is with boom angle at -0.8°
GR-500EX  Axle Weight Distribution Chart

<table>
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<th>Basic standard machine includes:</th>
<th>GVW</th>
<th>Front</th>
<th>Rear</th>
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<td>4-section boom (10.7 m - 34.7 m)</td>
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<tr>
<td>2-stage jib (8.8 m, 15.2 m)</td>
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<td></td>
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<tr>
<td>Single top</td>
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<td></td>
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</tr>
<tr>
<td>5.6 ton hook ball</td>
<td>33,420</td>
<td>16,440</td>
<td>16,980</td>
</tr>
</tbody>
</table>

| Add:                                    |      |       |       |
| 50 ton 5 sheaves hook block             | +500 | +920  | -420  |

| Remove:                                 |      |       |       |
| 1. 5.6 ton hook ball                    | -150 | -210  | +60   |
| 2. Top jib                              | -225 | -285  | +60   |
| 3. Base jib                             | -625 | -1,140| +515  |