KOMATSU
WA 320-1
WHEEL LOADER

Flywheel Horsepower @ 2350 RPM
166 HP  123 kW

Operating Weight  28,897 lb  13,105 kg
Bucket Capacities  3.0-4.2 yd³  2.3-3.2 m³

Photo shown may include optional equipment.
Superior Visibility – 47% of the total cab area is tinted glass, giving the operator a clear and complete view of the working environment. This greatly increases the operator’s confidence and productivity.

Efficient Layout of Controls – The cab of the Komatsu Wheel Loader is designed around the operator. The most critical controls, such as the transmission and work equipment controls, are conveniently located to allow low-effort finger tip operation. This ease of operation contributes to increased operator efficiency and greater machine productivity.

Two Door Walk-Through Cab – provides easy entrance and exit from either side of the machine.

Adjustable Suspension Seat – ergonomically designed and fully adjustable for maximum operator comfort.
• Vinyl seat cover
• Adjustable suspension firmness
• Backrest angle adjustment
• Seat height and tilt adjustment
• 3.9” 100 mm vertical suspension stroke
• 6.9” 160 mm fore and aft adjustment
**Efficient and Comfortable**

**Electrically Controlled Transmission** - allows the operator to quickly and easily shift gears without removing their hands from the steering wheel. Directional and speed shift levers utilize electrical signals and control valves, so that gear changes are smooth and easy.

**Tilt Steering Column** – Has a 4” 100 mm tilt range, allowing the operator to select the optimum position for greater comfort.

**Direct Control Work Equipment** – provides excellent fine control with minimal operator effort greatly increases efficiency and maximum performance.

**Kickdown Switch** – located on top of the boom control lever.
- The Komatsu Kickdown Switch provides faster cycle times and reduced operator effort.
- As the loader bucket penetrates the pile, depressing the switch immediately shifts the transmission from F2 to F1.
- This enables the machine to fully utilize its maximum loading power for big bucket payloads while allowing the operator to keep his hand on the steering wheel.
- Once the bucket is loaded, a simple flick of the directional lever to reverse automatically puts the transmission in R2 for faster reverse cycle times.

**Electronic Display and Monitoring System** – is highly effective and reliable display/warning system which continuously monitors all operating systems. If a malfunction should occur the operator is immediately warned which system is experiencing trouble, saving downtime and repair costs. Also, gauges constantly monitor coolant temperature, transmission oil temperature, fuel level, service hours and speed. Komatsu's transmission monitoring system insures that the engine cannot be started unless the transmission is in neutral.

**Full Hydraulic Steering System** – ensures smooth, constant steering regardless of engine speed, which results in easy machine operation, fast cycle times and increased maneuverability.

The transmission modulation feature minimizes shock generated during gear changes, assuring a smooth and comfortable ride and protection for the power train components.
Power Train System

KDC 614T Engine – is a water cooled four-stroke-cycle, 6 cylinder in line, overhead valve, turbo-charged, direct injection engine. Which offers outstanding power excellent fuel economy, easy servicing and high reliability.

Wet Disc Brakes – Hydraulically controlled inboard mounted wet disc brakes provide excellent life and lower operating costs. The Komatsu adjustment-free design results in optimum performance throughout the life of the brake system.

Proven Komatsu Components – are specifically designed to work together and provide the most reliable and durable power train system in the industry. This results in a machine that offers the highest productivity with the lowest operating cost.

Cross-Flow Head Design – Single-piece cross-flow cylinder head design contains two valves per cylinder with short exhaust ports for quicker response. One-piece design also reduces possibility of air and fuel leaks.

Dual Thermostat Control – The twin thermostat design of this engine provides high flow capacity and even flow control. Below operating temperatures, the thermostats close, bypassing the water to the pump inlet. At higher temperatures, both thermostats open, restricting the bypass flow to provide optimum engine cooling.

Dual Ni-Resist Piston Inserts – Piston design incorporates a dual Ni-Resist insert and keystroke profile ring grooves for better oil control and increased piston life.

Countershaft Power Shift Transmission – modulation valve provides smooth shifting with fingertip control.

Torque Proportioning Differentials – minimizes slippage and improves traction, resulting in higher production and increased tire life.

Torque Converter – The Komatsu three-element, single-stage, single-phase torque converter acts as a fluid coupling to effectively absorb drive train shock loads.
Z-Bar Loader Linkage – Single Z-bar design provides large breakout forces for heavy-duty work, even distribution of loads, a clear view of the bucket, and fewer wear and grease points.

Coupler System – a versatile optional coupler system provides fast, efficient tool changes without leaving the cab. An optional third spool valve is available for additional hydraulic functions.

Fast and Easy Servicing – is designed into all Komatsu Wheel Loaders to provide the owner with the least amount of downtime and the greatest amount of production.

Rugged Construction – is provided by a four plate loader tower and solid plate lift arms.

- Tilt back engine compartment hood provide easy access to engine compartment.
- Ground Level Greasing – all grease points are easily reached from ground level and grease banks are provided in some areas to reduce maintenance time.
- Ground level fueling.
- Sight gauges for hydraulic tank and transmission case.
- Batteries are located on each frame side for ground level access.
- Sealed Loader Linkage Pins are designed to keep grease contained longer, prevent the entrance of dust, thereby lengthening greasing intervals.
Specifications

Engine

The Komatsu Dresser 614T is a 4-stroke, water-cooled, overhead valve, direct-injection turbocharged diesel engine. It includes six cylinders with a 4.5" x 114 mm bore x 5.3" 135 mm stroke and a 505 in³, 8.27 ltr. piston displacement.

Flywheel horsepower:
166 HP, 123 kW at 2350 RPM, SAE J1349

Direct-injection fuel system. All-speed mechanical governor. Gear pump-driven force-lubrication with full-flow filters. All filters are spin-on type for easy maintenance. Dry, cyclopack air cleaner for longer element service. 24 V/7.5 kW electric starting motor. 24 V/45 A alternator. 2 x 12 V/150 Ah batteries.

Transmission

3-element, single-stage, single-phase torque converter. Full power-shift, countershaft type transmission. A modulating function assures shockless speed and directional changes without braking. An electrically-controlled transmission allows fingertip control with speed and directional change levers. A neutral safety circuit allows starting only when the directional control lever is in neutral. The transmission kickdown switch allows the operator to shift between first and second gear without taking his hand off the work control levers.

<table>
<thead>
<tr>
<th>Travel Speed</th>
<th>Forward</th>
<th>Reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>4.7 MPH</td>
<td>0-7.5 km/h</td>
</tr>
<tr>
<td>2nd</td>
<td>7.0 MPH</td>
<td>0-11.3 km/h</td>
</tr>
<tr>
<td>3rd</td>
<td>12.5 MPH</td>
<td>0-26.1 km/h</td>
</tr>
<tr>
<td>4th</td>
<td>23.5 MPH</td>
<td>0-37 km/h</td>
</tr>
</tbody>
</table>

Axles & Final Drives

Four-wheel drive system. A semi-floating front axle is fixed to the front frame. Center-pin supported, semi-floating rear axle with a large oscillation of ± 15°. A spiral bevel gear for reduction and planetary gear for final reduction. Front and rear torque proportioning differentials minimize tire slippage on soft or wet terrain.

Brakes

Service brakes: Hydraulically actuated, inboard-mounted, wet, disc brakes actuate all four-wheels. Two brake pedals are provided. Both can be used for normal braking; however, the left pedal can be used for braking and transmission neutralizing simply by actuating a switch.

Parking brake: Dry disc type applied on front output coupling of transmission.

Steering System

Center-pivot frame articulation. Orbitol type, full-hydraulic power-assisted steering independent of engine RPMs. A wide articulation angle of 40° on each side for a minimum turning radius of 19 10/35 mm at the outside corner of the bucket.

Boom & Bucket

Z-bar loader linkages are designed for maximum rigidity and offers powerful excavation. Rap-out loader linkage design enables shock dumping for removing sticky materials. Sealed loader linkage pins with dust seals extend greasing intervals. The bucket is made of high-tensile-strength steel. Bucket corner teeth (optional) not only minimize bucket wear but also increase penetrating force.

Bucket Controls

Light effort is required to operate the bucket and boom control levers, assuring smooth, responsive bucket boom action. In addition, the bucket positioner and the boom kickout device facilitate repeated digging/loading operations.

Control positions:

Boom Raise, hold and lower 
Bucket Tilt-back, hold and dump

Hydraulic System

Two- gear pumps for steering and loader control.

Capacity (discharge flow) at engine 2350 RPM

| Loader Pump | 61.6 U.S. gal/min. 233 ltr. |
| Steering Pump | 38.3 U.S. gal/min. 145 ltr. |

Relief valve setting:

| Loader | 2990 psi 210 kg/cm² |

Control valves:

A 2-speed type control valve and a steering valve with a demand valve.

<table>
<thead>
<tr>
<th>Hydraulic cylinders</th>
<th>Number of cylinders</th>
<th>Bore</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom</td>
<td>2</td>
<td>5.5&quot;</td>
<td>140 mm</td>
</tr>
<tr>
<td>Bucket</td>
<td>1</td>
<td>6.3&quot;</td>
<td>160 mm</td>
</tr>
</tbody>
</table>

Hydraulic cycle time (rated load in bucket): Total 10.3 sec.
Raise...6.0 sec./Dump...1.3 sec./Lower (empty)...3.0 sec.

Service Refill Capacities

| Cooling system | 10.0 U.S. gal 38 ltr. |
| Fuel tank      | 52.8 U.S. gal 200 ltr. |
| Engine         | 5.8 U.S. gal 22 ltr. |
| Brake oil tank | 0.3 U.S. gal 1 ltr. |
| Hydraulic system | 19.8 U.S. gal 75 ltr. |
| Axle (each front & rear) | 6.3 U.S. gal 24 ltr. |
| Torque converter and transmission | 6.6 U.S. gal 25 ltr. |
### Bucket Type

<table>
<thead>
<tr>
<th>Bucket Type</th>
<th>General Purpose Bolt-on Cutting Edge</th>
<th>Excavating Bolt-On Cutting Edge</th>
<th>Light Material Bolt-On Cutting Edge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bucket Capacity</td>
<td>SAE Rated 3.25 yd³ 2.5 m³</td>
<td>3.0 yd³ 2.3 m³</td>
<td>4.2 yd³ 3.2 m³</td>
</tr>
<tr>
<td>Struck</td>
<td>2.75 yd³ 2.1 m³</td>
<td>2.6 yd³ 2.0 m³</td>
<td>3.7 yd³ 2.8 m³</td>
</tr>
<tr>
<td>Bucket Width</td>
<td>9’9” 2740 mm</td>
<td>9’0” 2740 mm</td>
<td>9’9” 2740 mm</td>
</tr>
<tr>
<td>Bucket Weight</td>
<td>2558 lbs 1160 kg</td>
<td>2437 lbs 1105 kg</td>
<td>2767 lbs 1255 kg</td>
</tr>
<tr>
<td>Static Tipping Loads</td>
<td>Straight 21,763 lbs 9870 kg</td>
<td>21,918 lbs 9940 kg</td>
<td>21,223 lbs 9625 kg</td>
</tr>
<tr>
<td>Full Turn</td>
<td>19,018 lbs 8625 kg</td>
<td>19,051 lbs 8640 kg</td>
<td>18,500 lbs 8390 kg</td>
</tr>
<tr>
<td>Dumping Clearance, max. height and 45° dump angle</td>
<td>9’2” 2805 mm</td>
<td>9’3” 2820 mm</td>
<td>8’9” 2655 mm</td>
</tr>
<tr>
<td>Reach @ 7’ 2130 mm cutting edge clearance and 45° dump angle</td>
<td>5’0” 1510 mm</td>
<td>5’0” 1525 mm</td>
<td>5’2” 1575 mm</td>
</tr>
<tr>
<td>Reach at max. height and 45° dump angle</td>
<td>3’4” 1015 mm</td>
<td>3’6” 1070 mm</td>
<td>3’10” 1170 mm</td>
</tr>
<tr>
<td>Reach with arm horizontal and bucket level</td>
<td>7’9” 2350 mm</td>
<td>8’0” 2445 mm</td>
<td>8’5” 2570 mm</td>
</tr>
<tr>
<td>Operating Height (fully raised)</td>
<td>16’9” 5110 mm</td>
<td>16’5” 5005 mm</td>
<td>17’6” 5340 mm</td>
</tr>
<tr>
<td>Overall Length</td>
<td>Bucket ground 24’3” 7390 mm</td>
<td>24’7” 7490 mm</td>
<td>25’0” 7610 mm</td>
</tr>
<tr>
<td>Bucket at carry</td>
<td>24’1” 7330 mm</td>
<td>24’3” 7400 mm</td>
<td>24’6” 7470 mm</td>
</tr>
<tr>
<td>Turning radius (bucket at carry, outside corner of bucket)</td>
<td>19’10” 6035 mm</td>
<td>19’11” 6060 mm</td>
<td>20’0” 6090 mm</td>
</tr>
<tr>
<td>Digging Depth</td>
<td>0º 3.5” 90 mm</td>
<td>4.1” 105 mm</td>
<td>3.5” 90 mm</td>
</tr>
<tr>
<td>10º 11” 285 mm</td>
<td>1” 315 mm</td>
<td>1” 320 mm</td>
<td></td>
</tr>
<tr>
<td>Breakout Force</td>
<td>29,415 lbs 13,340 kg</td>
<td>34,178 lbs 15,500 kg</td>
<td>24,365 lbs 11,050 kg</td>
</tr>
<tr>
<td>Operating Weight</td>
<td>28,897 13,105 kg</td>
<td>28,775 13,050 kg</td>
<td>29,106 13,200 kg</td>
</tr>
</tbody>
</table>

- **Tires & Options**
  - **Change in Operating Weight**
    - **Change in tipping load**
      - **Straight**
        - **Full Turn**
          - 17.5-25-12PR (L2)
            - W/ballast +86 lbs* +40 kg | -154 lbs* -70 kg | 0 | 0
            - W/ballast -143 lbs -65 kg | -121 lbs -55 kg | -99 lbs -45 kg | 0
          - 20.5-25-12PR (L2)
            - W/ballast +816 lbs** +370 kg | +684 lbs** +310 kg | +783 lbs** +355 kg | 0
            - W/ballast +408 lbs +185 kg | +320 lbs +145 kg | +287 lbs +130 kg | 0
          - 20.5-25-12PR (L3)
            - W/ballast +1224 lbs** +555 kg | +1003 lbs** +455 kg | +1025 lbs** +465 kg | 0
          - Additional Counterweight (removed)
            - 1147 lbs 520 kg ballast used instead of additional counterweight.
          - ROPS Canopy (instead of ROPS Cab)
            - 1488 lbs 675 kg ballast used instead of additional counterweight.

- **Static tipping load and operating weight shown include lubricants, coolant, full fuel tank, ROPS cab (option), hydraulic adapter kit, front fenders, additional counterweight, 20.5 - 25-12PR (L2) tubeless tires and tower. Machine stability and operating weight and affected by counterweight, tire size and other attachments. Use either tire ballast or counterweight, not both. Add the following weight changes to operating weight and static tipping load.**
Standard Equipment
- Alternator, 45 amp
- Axles, Full Floating
- Batteries, 2 x 12V/150 Ah
- Boom Lift Kickout, Automatic
- Brakes, Service, Wet Multiple Disc
- Bucket Positioner, Automatic
- Electronic Display/Monitoring System
- Horn - Electric
- Lights: stop & tail, turn signal (2 front, 2 rear) working (2 front, 2 rear)
- Seat Belt, 3" wide
- Seat, Suspension Type
- Starter, 24V x 7.5 kW Direct Electric
- Steering, Full Hydraulic Power
- Steering Wheel, Tilt Type
- Transmission Control Levers, Electric Type with Kickdown Switch
- Transmission, F4-R4, Countershaft
* Note: Unit must be equipped with ROPS Canopy or ROPS Cab

Optional Equipment
- Additional Counterweight
- Air Conditioner with Heater/Defroster/Pressurizer
- Auxiliary Steering Kit
- Fenders, Front
- Heater (40,000 BTU)/Defroster/Pressurizer
- Hydraulic Adapter Kit, includes 3-spool valve, lever and piping
- Mono Type Control Lever for 2 spool valve
- Mono Type Control Lever for Hydraulic Adapter Kit (2 levers)
- Rear view mirrors, outside cab mounted
- Rear windshield wiper and washer
- ROPS Cab, includes windshield washer and wiper (front), inside and outside mounted rear view mirrors, floor mat and dome light
- ROPS Canopy, includes rear view mirrors
- Starting aid, ether type
- Tool Box
- Tool Kit
- Vandalism Protection Kit
- Working lights, front cab mounted
- Back-up Light

Work Equipment
- 3.0 yd³ Excavating Bucket
- 3.25 yd³ General Purpose Bucket
- 4.2 yd³ light material bucket
- Bolt-on Cutting Edge
- Bolt-on Bucket Teeth
- JRB Hydraulic Quick Coupler
- JRB 3.25 yd³ General Purpose Bucket for use with quick coupler only
- JRB 60" Construction Forks

Tires (Bias Ply)
- 17.5-25-12PR (L2)
- 17.5-25-12PR (L3)
- 20.5-25-12PR (L2)
- 20.5-25-12PR (L3)

Tires (Radial Ply)
- 17.5-R25 X HAT (L3) Michelin
- 20.5-R25 X TLAT (L2) Michelin
- 20.5-R25 X HAT (L3) Michelin

RIMS
- for 17.5-25 tires (3 piece)
- for 20.5-25 tires (3 piece)

Materials and specifications are subject to change without notice.

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