

# Wheel Loader

140 net horsepower (104.4 kW)

Buckets up to 3.25 yd<sup>3</sup> (2.5 m<sup>3</sup>)

SAE breakout force 32,061 lbf (142 614 N)

# 721



**Case**

**721**

# 721 Basic Tractor

## ENGINE

Make and model . . . . . Case 6T-830 diesel  
 Type of fuel . . . . . No. 2 diesel  
 No. of cylinders . . . . . 6  
 Bore and stroke . . . . . 4.48" x 5.32"  
 (114 mm x 135 mm)

Displacement . . . . . 504 in<sup>3</sup> (8269 cm<sup>3</sup>)  
 Compression ratio . . . . . 17.3 to 1

Fuel pump . . . . . Bosch A  
 Fuel supply . . . . . Injection pump  
 Air cleaner . . . . . Dry type elements  
 with warning restriction indicator

Oil filter . . . . . Replaceable, spin-on full  
 flow cartridge

Lubrication . . . . . Positive pressure  
 Cooling system . . . . . Air, water w/lube  
 oil cooler

Horsepower  
 (1) Gross . . . . . 157 @ 2100 rpm:  
 (117.1 kW @ 2100 r/min)

(2) SAE Net . . . . . 140 @ 2100 rpm:  
 (104.4 kW @ 2100 r/min)

Governed Speed . . . . . 2200 rpm  
 Max. torque ft-lb

(1) Gross . . . . . 479 @ 1500 rpm:  
 (649 Nm @ 1500 r/min)

(2) SAE Net . . . . . 458 @ 1500 rpm:  
 (621 Nm @ 1500 r/min)

(1) Gross engine horsepower or torque at flywheel per  
 SAE Standard J1349  
 (2) Net engine horsepower or torque at flywheel per  
 SAE Standard J1349

## ELECTRICAL

System voltage . . . . . 24 volts,  
 negative ground

Batteries (2) . . . . . 12 volt, low maintenance  
 600 cold cranking amps  
 0°F (-18°C)

Alternator . . . . . 45 amp

## TRAVEL SPEEDS — MPH (km/h)

Engine at full throttle—20.5 x 25 tires

|                | 1st           | 2nd           | 3rd            | 4th            |
|----------------|---------------|---------------|----------------|----------------|
| <b>Forward</b> | 4.4<br>(7.08) | 7.3<br>(11.7) | 14.0<br>(22.5) | 22.3<br>(35.9) |
| <b>Reverse</b> | 4.4<br>(7.08) | 7.3<br>(11.7) | 14.0<br>(22.5) | —              |

## POWER TRAIN

**Transmission:** 4 speeds forward, 3  
 reverse powershift. Forward/reverse  
 modulated clutching in 1st and 2nd gears.

**Torque converter:** Single stage integral  
 with transmission. 2.86 to 1 stall ratio.

## BRAKES

Air-over-hydraulic, 4-wheel disc. Two brake  
 pedals, left pedal applies brakes and  
 electrically neutralizes power flow to drive  
 wheels. Right pedal applies brakes only.  
 Two master cylinders for split front and  
 rear system. Manually applied drum  
 parking brake on transmission output  
 shaft neutralizes power flow to drive  
 wheels when engaged.

## AXLES

Outboard planetary. Torque-proportioning  
 differentials. Front axle fixed. Rear axle  
 oscillates 24° total or 16.2" (411 mm) in each  
 direction.

## STEERING

Center pivot articulated design with hydrostatic  
 power steering. Front and rear wheels always  
 track. Two hydraulic cylinders controlled by  
 a hydrostatic steering gear with relief and flow  
 control valve.

### Steering angle —

each direction from center . . . . . 40°

**Pump** . . . . . Transmission mounted, positive  
 displacement, tandem gear-type

**Pump capacity** . . . . .  
 30.9 gpm @ 2200 rpm @ 2500 psi  
 (117.0 L/min @ 2200 r/min @ 17 237 kPa)

**System relief** . . . . . 2500 psi (17 237 kPa)

**Steering cylinders**, double acting . . . . .  
 (2) 3" dia x 17.43" stroke, 1.75" rod  
 (76 mm dia x 443 mm stroke, 44 mm rod)

**Turning ratio** (stop to stop) . . . . . 4 turns

**Turning radius**  
 outside tires . . . . . 17'2.5" (5.25 m)

## LOADER HYDRAULIC SYSTEM

**Cylinders:** Double-acting, bolted gland, with  
 hardened and chrome-plated rods.

Lift (2) . . . . . 5" dia x 32.8" stroke, 3" rod  
 (127 mm dia x 833 mm stroke, 76 mm rod)  
 Tilt (1) . . . . . 6.5" dia x 21.4" stroke, 3" rod  
 (165 mm dia x 544 mm stroke, 76 mm rod)

**Pump:** Tandem, gear-type, engine-driven  
 56.4 gpm @ 2200 rpm @ 2525 psi  
 (213.4 L/min @ 2200 r/min @ 17 409 kPa)

**Control valve:** Sectional, open-center,  
 series parallel circuit with low pressure  
 regeneration for bucket dump.

**Hydraulic lines:** steel tubing with SAE  
 fittings and wire-braid, high-pressure  
 hose with swaged fittings.

**Reservoir:** Positive pressurized, inlet  
 filtered hydraulic oil system sealed for dirt  
 exclusion. All hydraulic oil passes through  
 a 100 mesh screen.

**System relief pressure** . . . . . 2525 psi  
 (17 409 kPa)

**Filtration:** Two 10 micron, full flow spin-on  
 elements on return line.

### Hydraulic cycle time:

| (Rated load in bucket)       | Seconds     |
|------------------------------|-------------|
| Raise . . . . .              | 5.9         |
| Dump . . . . .               | 1.8         |
| Lower (float down) . . . . . | 4.6         |
| <b>Total</b> . . . . .       | <b>12.3</b> |

## SERVICE CAPACITIES

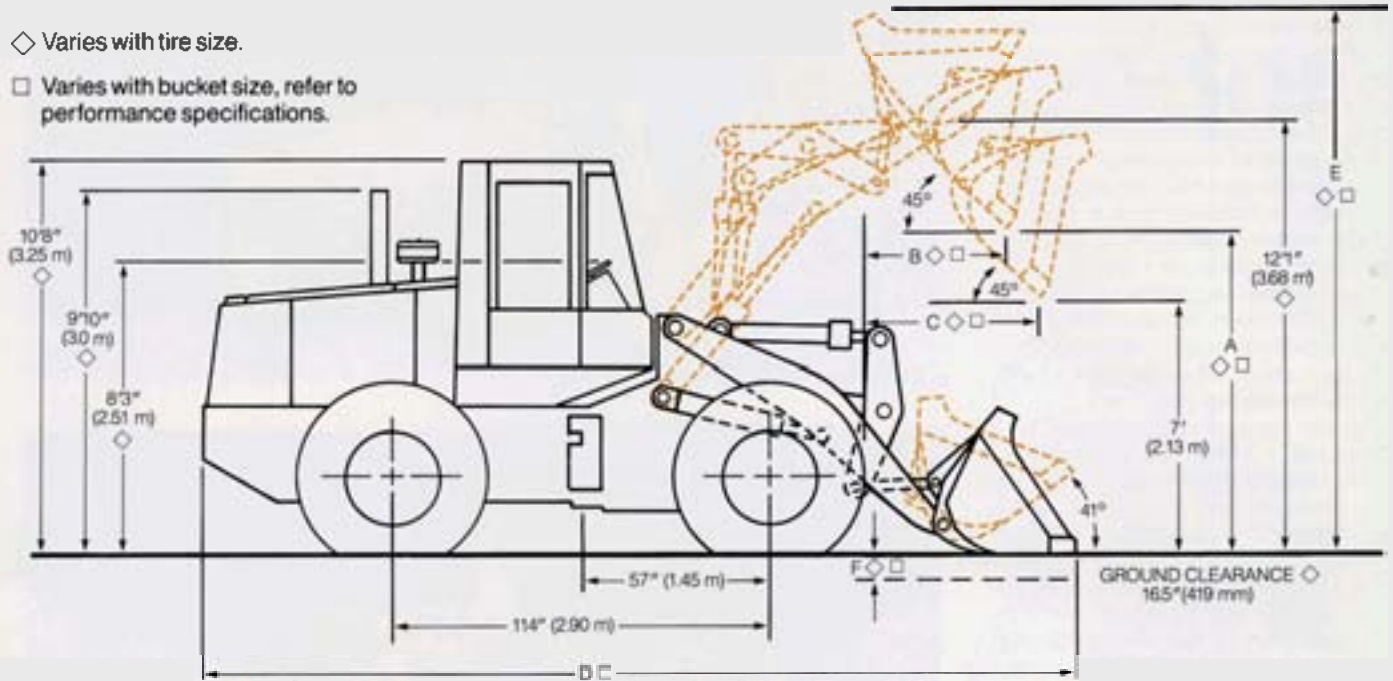
|  | U.S. Gals | Litres |
|--|-----------|--------|
| Fuel tank . . . . .                            | 62        | 234.7  |
| Hydraulic system - total . . . . .             | 40.5      | 153.1  |
| -reservoir . . . . .                           | 23.8      | 90.1   |
| Transmission and<br>torque converter . . . . . | 6.0       | 22.7   |
| Engine crankcase<br>(with filter) . . . . .    | 5.9       | 22.4   |
| <b>Axles</b>                                   |           |        |
| Front and rear                                 |           |        |
| Differential . . . . .                         | 3.6       | 13.6   |
| Planetaries . . . . .                          | 0.9       | 3.4    |
| Cooling system . . . . .                       | 8.5       | 32.1   |

## STANDARD EQUIPMENT

Air cleaner, two element dry type • Alternator  
 with voltage regulator • Antifreeze to -34°F  
 (-36°C) • Articulation lock • Axles, four wheel  
 drive with torque proportioning • Backup  
 alarm • Batteries, two 12 volt • Brake, parking  
 • Brakes, four wheel disc • Bucket position  
 indicator • Systems Monitor, four level warning  
 • Differentials, torque proportioning • Engine  
 side doors • Engine, industrial diesel • Fan  
 guard • Fan, pusher • Fuel filter, dual • Fuse  
 and circuit breaker (automatic) protected  
 24 volt electrical circuits • Gauges, (LCD type):  
 engine coolant temperature, fuel level • Grab  
 handles • Horn • Hour meter • Hydraulic oil  
 cooler • Hydraulics, two spool • Lights, 2 front  
 & 2 rear halogen floods, 2 rear stop • Loader  
 controls, hydraulic servo type with detent  
 activation switch • Loader linkage, sealed •  
 ROPS canopy • Rear fenders • Return to dig,  
 automatic • Seat, bucket type • Seatbelt,  
 2" (51 mm) anticreep • Starter, electric •  
 Steering column, tilting • Transmission  
 disconnect switch • Transmission oil cooler  
 • Transmission, electric powershift • Warning  
 lights (LED type): alternator, engine oil  
 pressure, air pressure, work lights, air filter  
 restriction, hydraulic filter restriction, hydraulic  
 temperature, transmission temperature,  
 parking brake function.

# Performance Data

- ◇ Varies with tire size.
- Varies with bucket size, refer to performance specifications.



**PERFORMANCE SPECIFICATIONS** — Loader ratings are measured in accordance with SAE J732c and J742b except where noted.

| Bucket type<br>Bucket configuration             |                                      | General Purpose     |                     |                      |                     |                     |                      | Loose Material      |                      | 4-in-1 <sup>®</sup> |
|---|--------------------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
|   |                                      | Bucket only         | Bucket w/ teeth     | Bucket w/ 3-pc. edge | Bucket only         | Bucket w/ teeth     | Bucket w/ 3-pc. edge | Bucket only         | Bucket w/ 3-pc. edge | Bucket only         |
| SAE heaped capacity                             | yd <sup>3</sup><br>(m <sup>3</sup> ) | 2.50<br>(1.91)      | 2.50<br>(1.91)      | 2.60<br>(1.99)       | 2.75<br>(2.10)      | 2.75<br>(2.10)      | 2.80<br>(2.14)       | 3.25<br>(2.48)      | 3.30<br>(2.52)       | 2.50<br>(1.91)      |
| SAE struck capacity                             | yd <sup>3</sup><br>(m <sup>3</sup> ) | 2.15<br>(1.64)      | 2.15<br>(1.64)      | 2.21<br>(1.69)       | 2.35<br>(1.80)      | 2.35<br>(1.80)      | 2.38<br>(1.82)       | 2.80<br>(2.14)      | 2.86<br>(2.19)       | 2.06<br>(1.57)      |
| Bucket width                                    | in<br>(m)                            | 102<br>(2.59)       | 102<br>(2.59)       | 102<br>(2.59)        | 102<br>(2.59)       | 102<br>(2.59)       | 102<br>(2.59)        | 102<br>(2.59)       | 102<br>(2.59)        | 102<br>(2.59)       |
| Bucket weight                                   | lb<br>(kg)                           | 2155<br>(977)       | 2441<br>(1107)      | 2779<br>(1261)       | 2215<br>(1005)      | 2501<br>(1134)      | 2839<br>(1288)       | 2340<br>(1061)      | 2964<br>(1344)       | 2950<br>(1338)      |
| A - Dump clearance @ 45° full height            | ft, in<br>(m)                        | 9'5"<br>(2.87)      | 9'<br>(2.74)        | 9'3"<br>(2.82)       | 9'4"<br>(2.84)      | 8'10"<br>(2.69)     | 9'2"<br>(2.79)       | 9'<br>(2.74)        | 8'10"<br>(2.69)      | 9'4"<br>(2.84)      |
| B - Bucket reach @ 45° dump, full height        | ft, in<br>(m)                        | 3'2"<br>(0.98)      | 3'2"<br>(0.98)      | 3'3"<br>(0.99)       | 3'4"<br>(1.02)      | 3'4"<br>(1.02)      | 3'5"<br>(1.04)       | 3'9"<br>(1.12)      | 3'9"<br>(1.14)       | 3'<br>(0.91)        |
| C - Bucket reach @ 45° dump, 7' (2.13 m) height | ft, in<br>(m)                        | 4'10"<br>(1.47)     | 4'10"<br>(1.47)     | 4'9"<br>(1.45)       | 4'11"<br>(1.50)     | 4'11"<br>(1.50)     | 4'10"<br>(1.47)      | 5'1"<br>(1.55)      | 5'<br>(1.52)         | 4'7"<br>(1.40)      |
| D - Overall length                              | ft, in<br>(m)                        | 22'5"<br>(6.83)     | 23'2"<br>(7.06)     | 22'7"<br>(6.88)      | 22'7"<br>(6.88)     | 23'4"<br>(7.11)     | 22'9"<br>(6.93)      | 23'1"<br>(7.04)     | 23'3"<br>(7.09)      | 22'5"<br>(6.83)     |
| E - Overall height                              | ft, in<br>(m)                        | 16'2"<br>(4.93)     | 16'2"<br>(4.93)     | 16'2"<br>(4.93)      | 16'3"<br>(4.95)     | 16'3"<br>(4.95)     | 16'3"<br>(4.95)      | 16'8"<br>(5.08)     | 16'8"<br>(5.08)      | 15'9"<br>(4.8)      |
| F - Digging depth                               | in<br>(mm)                           | 2.8<br>(71)         | 2.8<br>(71)         | 4.1<br>(104)         | 2.8<br>(71)         | 2.8<br>(71)         | 4.1<br>(104)         | 2.8<br>(71)         | 4.1<br>(104)         | 5.7<br>(145)        |
| Loader clearance circle, bucket at carry        | ft, in<br>(m)                        | 37'5"<br>(11.40)    | 37'9"<br>(11.51)    | 37'6"<br>(11.43)     | 37'6"<br>(11.43)    | 37'10"<br>(11.53)   | 37'7"<br>(11.48)     | 37'9"<br>(11.51)    | 37'10"<br>(11.53)    | 37'6"<br>(11.43)    |
| SAE breakout force                              | lbf<br>(N)                           | 32,061<br>(142,614) | 31,743<br>(141,200) | 30,024<br>(133,553)  | 30,239<br>(134,510) | 29,932<br>(133,144) | 28,357<br>(126,138)  | 25,976<br>(115,547) | 24,421<br>(108,630)  | 31,920<br>(141,987) |
| SAE tipping load, straight*                     | lb<br>(kg)                           | 25,172<br>(11,418)  | 24,800<br>(11,249)  | 23,944<br>(10,861)   | 24,718<br>(11,212)  | 24,348<br>(11,044)  | 23,756<br>(10,776)   | 24,155<br>(10,957)  | 23,203<br>(10,525)   | 23,731<br>(10,764)  |
| 40° turn*                                       | lb<br>(kg)                           | 20,155<br>(9142)    | 19,788<br>(8976)    | 19,002<br>(8619)     | 19,840<br>(8999)    | 19,385<br>(8793)    | 18,829<br>(8541)     | 19,336<br>(8771)    | 18,331<br>(8315)     | 18,812<br>(8533)    |
| Operating load*                                 | lb<br>(kg)                           | 10,078<br>(4571)    | 9894<br>(4488)      | 9501<br>(4310)       | 9920<br>(4500)      | 9692<br>(4398)      | 9414<br>(4270)       | 9668<br>(4385)      | 9165<br>(4157)       | 9406<br>(4266)      |
| SAE operating weight                            | lb<br>(kg)                           | 28,829<br>(13,077)  | 29,115<br>(13,206)  | 29,453<br>(13,360)   | 28,889<br>(13,104)  | 29,175<br>(13,234)  | 29,513<br>(13,387)   | 29,014<br>(13,161)  | 29,638<br>(13,444)   | 29,624<br>(13,437)  |

\* For selected items, add to or deduct from the machine operating weight and tipping loads as given on the following page. Spec Loader is a fully serviced unit that includes all standard equipment, 20.5 x 25, L2, 12PR tires, ROPS cab with heater, auxiliary counterweight and a 175 lb (79 kg) operator.

## OPERATING DIMENSIONS

|   |                |                |
|---|----------------|----------------|
| Tire Options                              | 17.5 x 25      | 20.5 x 25      |
| Tread                                     | 78.1" (1.98 m) | 78.1" (1.98 m) |
| Width over tires                          | 97" (2.46 m)   | 99.8" (2.53 m) |
| Change in vertical dimensions             | -2.38" (60 mm) | None           |
| Change in horizontal dimensions (B and C) | +2.9" (74 mm)  | None           |

# Performance Data

| Selected Items                                 | Operating Weight Adjustments |      | Tipping load Adjustments |      |          |      |
|--|------------------------------|------|--------------------------|------|----------|------|
|  |                              |      | Straight                 |      | 40° Turn |      |
|  | lbs                          | kg   | lbs                      | kg   | lbs      | kg   |
| 17.5 x 25, L2, 12PR                            | -748                         | -339 | -725                     | -329 | -830     | -376 |
| ▲ 17.5 x 25, L2, 12PR w/75% CaCl <sub>2</sub>  | -454                         | -206 | -610                     | -277 | -266     | -121 |
| 17.5 x 25, L3, 12PR                            | -616                         | -279 | -276                     | -125 | -174     | -79  |
| ▲ 17.5 x 25, L3, 12PR w/75% CaCl <sub>2</sub>  | -322                         | -146 | -396                     | -167 | -162     | -73  |
| 17.5 x R25, XRAT 1*                            | -452                         | -205 | -124                     | -56  | -7       | -3   |
| ▲ 17.5 x R25, XRAT 1* w/75% CaCl <sub>2</sub>  | +2                           | +1   | +14                      | +6   | +163     | +74  |
| 17.5 x R25, XGLAT 1*                           | -580                         | -263 | -212                     | -96  | -79      | -36  |
| ▲ 17.5 x R25, XGLAT 1* w/75% CaCl <sub>2</sub> | -126                         | -57  | -73                      | -33  | +151     | +68  |
| 20.5 x 25, L2, 12PR                            | 0                            | 0    | 0                        | 0    | 0        | 0    |
| ▲ 20.5 x 25, L2, 12PR w/75% CaCl <sub>2</sub>  | +934                         | +424 | +779                     | +353 | +712     | +323 |
| 20.5 x 25, L3, 12PR                            | +372                         | +169 | +393                     | +178 | +357     | +162 |
| ▲ 20.5 x 25, L3, 12PR w/75% CaCl <sub>2</sub>  | +934                         | +424 | +667                     | +303 | +654     | +297 |
| 20.5 x R25, XRAT 1*                            | +356                         | +161 | +382                     | +173 | +348     | +158 |
| ▲ 20.5 x R25, XRAT 1* w/75% CaCl <sub>2</sub>  | +1088                        | +494 | +893                     | +405 | +840     | +381 |
| 20.5 x R25, XGLAT 1*                           | +66                          | +30  | +180                     | +82  | +181     | +82  |
| ▲ 20.5 x R25, XGLAT 1* w/75% CaCl <sub>2</sub> | +1088                        | +494 | +1098                    | +498 | +1010    | +458 |
| 20.5 x 25, L2, 16PR                            | +336                         | +152 | +276                     | +125 | +266     | +121 |
| ▲ 20.5 x 25, L2, 16PR w/75% CaCl <sub>2</sub>  | +1101                        | +499 | +1071                    | +486 | +993     | +450 |
| Without auxiliary counterweight                | -1000                        | -454 | -1918                    | -870 | -1507    | -684 |
| Without front fenders                          | -92                          | -42  | -27                      | -12  | -24      | -11  |
| ROPS canopy                                    | -295                         | -134 | -266                     | -121 | -234     | -106 |

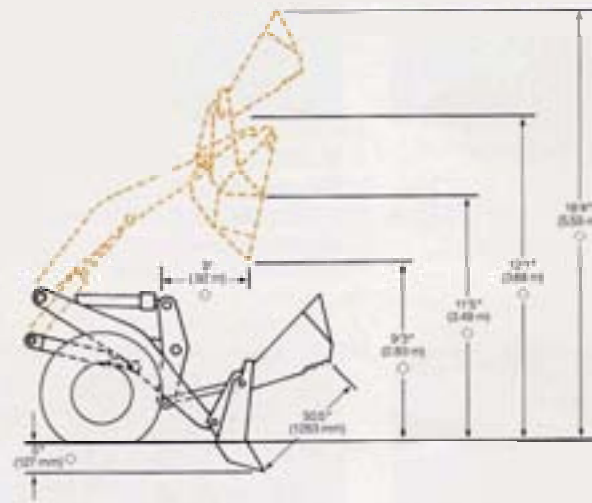
▲ Note: These tire adjustment values include rear tire ballast, but not the 1000-pound (454-kg) auxiliary counterweight. The use of rear tire ballast with the auxiliary counterweight option is neither recommended nor approved. Rear tire ballast involves filling the rear tires 75% full with a solution of 5 pounds (2.27 kg) of calcium chloride per 1 gallon (3.79 L) of water.

## 4-IN-1 BUCKET SPECIFICATIONS

Reach @ 45° dump angle, 7'0"  
(2.13 m) clearance, 4'7" (1.40 m)

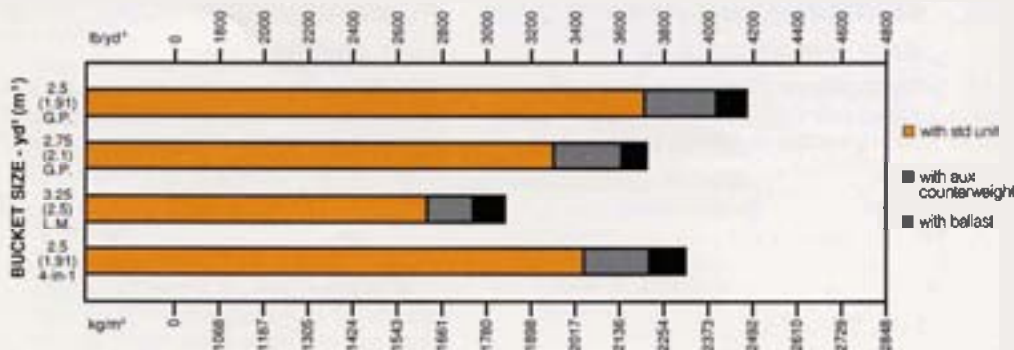
Tilt back @ ground level, 43.5°

Varies with tire size - refer to performance specifications.



## 721 BUCKET SELECTION CHART

Spec Loader is a fully serviced unit that includes all standard equipment, 20.5 x 25, L2 tires, ROPS cab, fenders, bucket as listed and a 175 lb (79 kg) operator.



| MATERIAL                         | lb/yd³ | kg/m³ |
|----------------------------------|--------|-------|
| Sand, wet                        | 3500   | 1575  |
| Sand & Gravel, wet               | 3375   | 1500  |
| Gravel, wet 1/2" x 2"            | 3375   | 1500  |
| Sand, slightly damp              | 3240   | 1420  |
| Gravel, pit run (gravelled sand) | 3240   | 1420  |
| Clay & gravel, wet               | 3085   | 1390  |
| Slag, broken                     | 2970   | 1340  |
| Traprock, broken                 | 2960   | 1330  |
| Sand & gravel, dry               | 2918   | 1320  |
| Earth, soft loose mud            | 2918   | 1320  |
| Gravel, dry, 1/2" x 2"           | 2835   | 1280  |
| Granite, broken or crushed       | 2778   | 1245  |
| Stone, crushed                   | 2700   | 1200  |
| Sand, dry loose                  | 2700   | 1200  |
| Gypsum, crushed                  | 2700   | 1200  |
| Gravel, sand & clay, loose       | 2700   | 1200  |
| Earth, wet excavated             | 2700   | 1200  |
| Clay & gravel, dry               | 2700   | 1200  |
| Clay, wet lumps                  | 2700   | 1200  |
| Limestone, broken or crushed     | 2625   | 1155  |
| Gravel, loose dry                | 2565   | 1120  |
| Sandstone, broken                | 2550   | 1110  |
| Earth, moist excavated           | 2430   | 1095  |
| Earth, loam, dry excavated       | 2100   | 945   |
| Coal, anthracite, broken         | 1875   | 850   |
| Clay, dry excavated              | 1847   | 835   |
| Clay, dry lumps                  | 1822   | 818   |
| Coal, bituminous, broken         | 1413   | 640   |
| Garbage, wet                     | 1350   | 601   |
| Asphalt                          | 1100   | 495   |
| Sludge                           | 865    | 390   |
| Snow, wet                        | 400    | 180   |
| Snow, dry                        | 150    | 68    |

Bucket recommendations shown above are based on normal materials and average operating conditions. When selecting the proper bucket for a specific application other factors, such as loadability, material characteristics, terrain and other pertinent job conditions must also be considered.

## 721 Features



### Z-BAR LINKAGE

A single, 6.5" (165 mm) diameter bucket cylinder operates through a massive, ductile iron bellcrank to deliver 32,061 lbf (142.6 kN) breakout force at the bucket.



### BOLTED GLAND CYLINDERS

All loader cylinders are of bolted gland design for easy field serviceability. Sealed loader linkage pins and bushings increase lubrication intervals up to 100 hours.



### HYDRAULIC-ASSIST CONTROLS

Fingertip operation is provided through five control lever options which are available for the 2, 3 or 4 spool sectional valves. Height control and return to travel are also available.



### ELECTRIC POWER SHIFTING

A single lever, twist grip simplifies gear selection. This same lever also provides forward and reverse power shuttle.



### ELECTRONIC MONITORING

Instrumentation includes multi-level visual and audible warnings of vital machine functions as well as non-vital service requirements and information notification.



### COMFORT CAB

The optional ROPS cab features large areas of tinted safety glass for excellent visibility. A tilting steering column is standard. Brake pedals are suspended for easy operation.



### ARTICULATION JOINT

In the joint area, hose routings are clean and easily accessible. Cylinders are mounted for easy accessibility. Drive shaft 'U' joints are lubed for life.



### EASY SERVICEABILITY

Sight glasses show brake, hydraulics and transmission oil fluid levels. The sight glass allows warm and cold oil checks.



### FAST ACCESS

The rear, swing-open grille provides access to batteries, radiator, oil cooler, fuel fill and coolant level reservoir. The back-up alarm and cold-start system are also located in this compartment.

# Equipment Data

## OPTIONAL EQUIPMENT

AM/FM stereo radio • Air Conditioning • Air dryer • Alternator, 65 amp • Anti-vandalism kit • Batteries, heavy-duty • Beacon, rotating • Bolt-on cutting edge • Brackets, lift and tie down • Bucket teeth • Buckets, general purpose, loose material, multi-purpose • Cold weather start aid • Counterweight, auxiliary rear (1000 lb-454 kg) • FACT coupler system male master • Fenders, front • Gauges: voltmeter, engine oil pressure, air pressure, transmission temperature • Height control and return to travel, automatic • Hydraulics, two spool w/two levers, two spool w/one lever, three spool w/three levers, three spool w/two levers, four spool w/two levers • Lights, auxiliary (2 front driving, 2 front working, 2 front parking, turn signals/flashers front and rear) • Precleaner • ROPS cab with following features: inside mirror, full view tinted glass, heater, pressurization, defogger, 3 speed blower, full ventilation windows, dome light, front wiper, full frame lockable door • Radiator sand screen • Seat, deluxe suspension type • Secondary steering • Special paint • Tires, radials and bias ply • Washer, front; wiper, rear • West coast mirrors • Windshield and wiper for canopy • 3" (76 mm) seat belt.



**Sold and serviced by:**

NOTES: All specifications are stated in accordance with SAE Standards or Recommended Practices, where applicable.

### IMPORTANT

J I Case Company reserves the right to change these specifications without notice and without incurring any obligation relating to such changes. Unit illustrated is equipped with non-standard items.

**J I Case**  
A Tenneco Company

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