

583R Pipelayer

The 583R Pipelayer offers outstanding productivity.

Power Train

The rugged, easy-to-service Caterpillar® 3406C Engine has a 55 percent torque rise and meets worldwide emissions regulations. An exclusive Caterpillar designed torque divider allows the engine to respond quickly to varying work applications while providing high fuel efficiency. **pg. 4**

Cooling System

The Advanced Modular Cooling System (AMOCS) has excellent cooling capacity. AMOCS allows the machine to be operated in the most demanding environments. **pg. 5**

Structure

Mainframe is heavy, strong and durable. Full box-sections, steel castings and continuous rolled rails provide durable support to the undercarriage, elevated final drives and other integral frame components. **pg. 6**

Engineered for reliable production in the toughest working conditions.

The 583R's high horsepower and rugged components are designed for tough and varied working conditions. This machine offers the reliability and durability expected from Cat Pipelayers.





Undercarriage

The elevated sprocket moves the final drives above the work area, isolating them from ground impact for long power train component life.

pg. 7

Operator Station

Ergonomically designed for maximum productivity and comfort. Controls are low-effort and easy to reach. The instrument panel is easy to read and informative. **pg. 8**

Pipelayer

Fully hydraulic load line and boom winches provide excellent speed capability. Counterweight and frame design provides excellent stability.

pg. 9

Serviceability

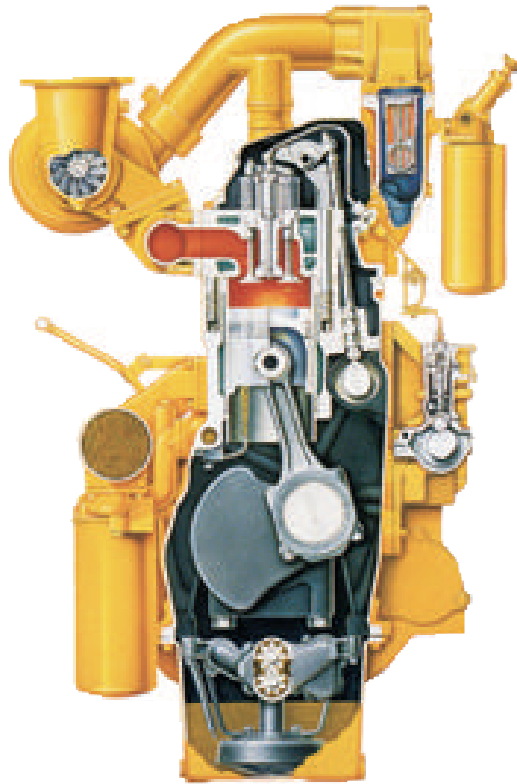
Major modular components are designed for excellent serviceability and allow fast, in-field component exchange. **pg. 10**

Total Customer Support

Excellent parts availability and the best service capability help increase productivity. **pg. 10**

Power Train

The Caterpillar® 3406C Engine, torque divider and field-proven, power shift transmission provide an excellent balance between efficiency and power.



Cat 3406C Engine performs at full-rated net power of 228 kW (305 hp) at 2100 rpm with a torque rise of 55 percent. The large displacement and high torque rise provide the 583R with the power needed on challenging jobs. The high displacement rating allows long hours of continuous operation.

3406C Engine meets worldwide emissions regulations for the Environmental Protection Agency, the European Union and the California Air Resources Board.

Turbocharging and aftercooling provide high horsepower while keeping rpm and exhaust temperatures low. The efficient, direct-injection fuel system keeps fuel costs down.

A steel spacer between the block and head eliminates the need for block counterbores, extending block life.

Components live longer because oil-cooled pistons and full-length, water-cooled cylinder liners provide maximum heat transfer for longer component life. The cylinder heads also utilize additional coolant passages to provide maximum cooling to the rear of the engine.

Stellite-faced valves, through-hardened crankshaft journals and steel-backed, copper-bonded aluminum bearings help assure reliable performance in the toughest duty.

Cat Dealer's exchange program for major engine components can cut repair time and costs.

Torque Divider. A single-stage torque converter with output torque divider sends 70 percent of engine torque through the converter, 30 percent through a direct drive shaft for greater driveline efficiency and higher torque multiplication.

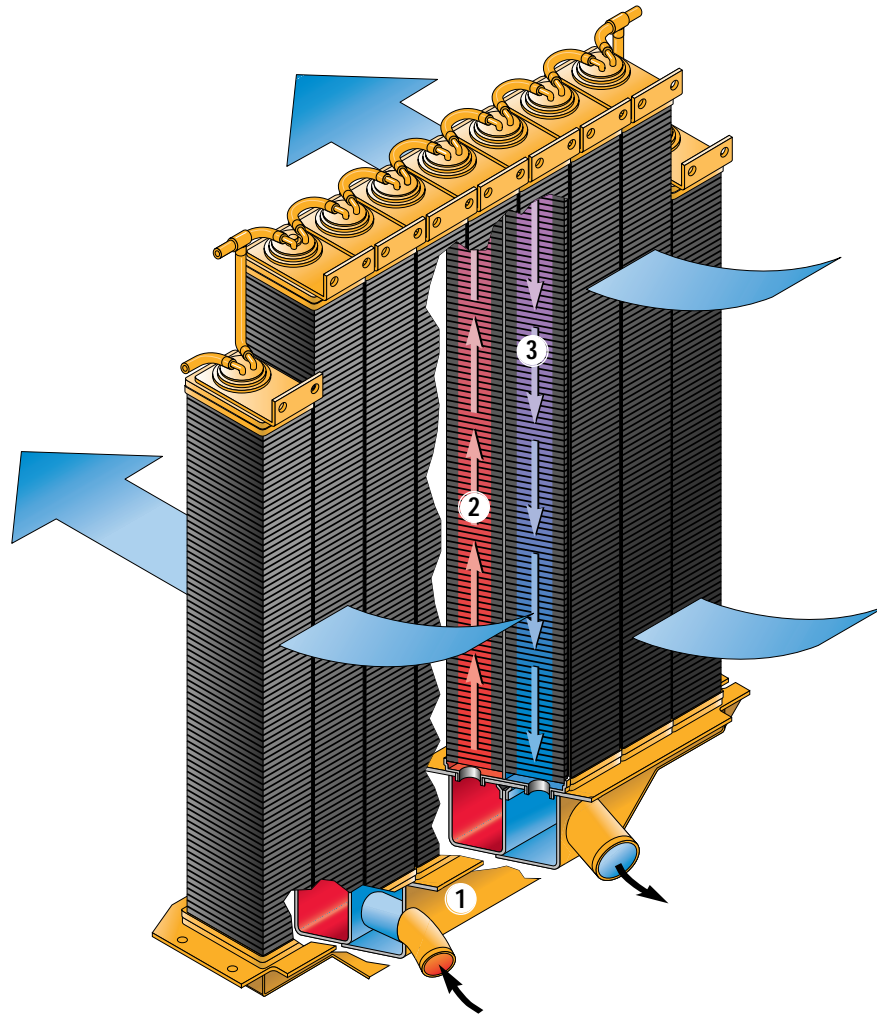
The torque converter shields the driveline from sudden torque shocks and vibration.

Planetary Power Shift Transmission has 3-speeds forward and 3-speeds reverse and utilizes large diameter, high-capacity, oil-cooled clutches.

- Modulation system permits fast speed and direction changes.
- Modular transmission and bevel gear slide into rear case for servicing ease.
- Oil-to-water cooler for maximum cooling capacity.
- Forced oil flow lubricates and cools clutch packs to provide maximum clutch life.

Cooling System

Superior cooling and ease of service keep the 583R on the job and producing day after day.



Advanced Modular Cooling System (AMOCS) utilizes an exclusive two-pass cooling system and increased cooling surface area to provide significantly more cooling capacity than conventional systems.

Caterpillar Extended Life Coolant (ELC) is standard in 583R pipelayers. Engine coolant life can be doubled, allowing longer intervals between coolant changes, when Cat extender solution is used at 3000 hours.

Two-pass cooling system circulates coolant from the sectioned bottom tank (1) up through one side (2) of the cooling element and down through the other side (3) returning it to the bottom tank.

The cooling elements are individual core modules that are connected to a sectioned bottom tank. There is no top tank to remove.

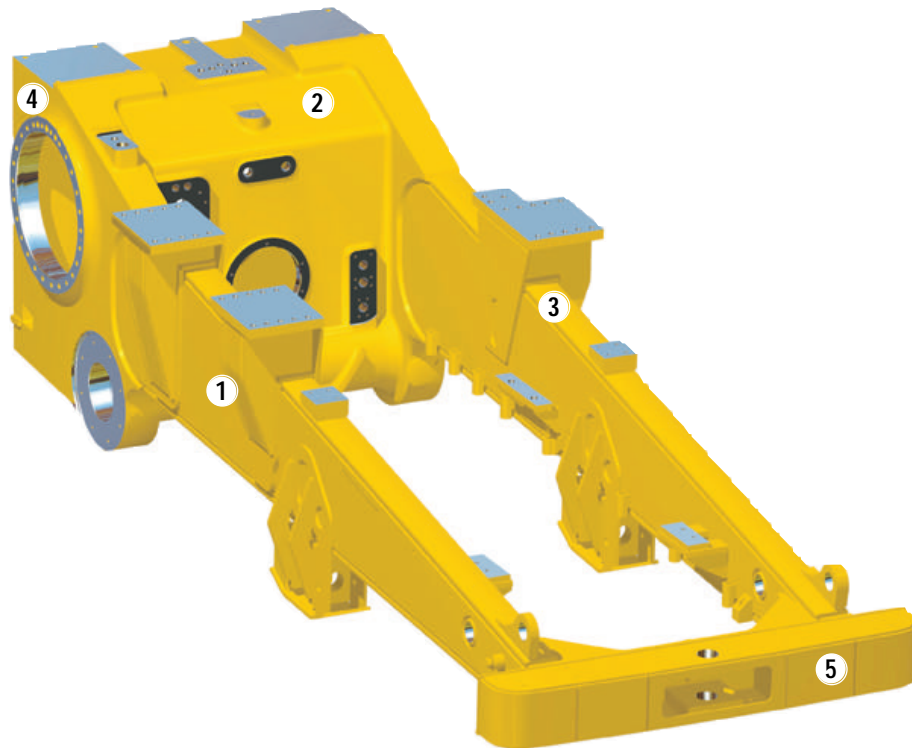
- 9 steel fins per inch.
- Brass tube construction within each core.

The servicing of the AMOCS can be performed without tilting the radiator guard.

- No need to remove or replace a major component as on single-core radiators.
- Each core module can be replaced individually (without removing the entire radiator), saving considerable cost and repair time.

Structures

Durable design and construction stand up to the most demanding applications.



High strength steel mainframe. The 583R mainframe is built to absorb high impact shock loads and twisting forces.

1 Frame rails are full box-section, designed to keep components rigidly aligned.

2 Heavy steel casting gives added strength to the main case.

3 The top and bottom rails are continuous rolled sections, with no machining or welding to provide superior mainframe durability.

4 The main case elevates the final drives well above the ground level work area to protect them from impact loads, abrasion and contaminants.

5 A front bumper is integral with the frame rails and provides both protection and a towing device. Pipelayer frame mounts are also an integral part of the frame.

Precision, top level machining enhances alignment of bores and surfaces.

Roller frames are tubular, to resist bending and twisting, with reinforcement where operating stresses are the highest.

- Non-oscillating roller frames for greater stability in pipelaying applications.
- The recoil system is sealed and lubricated.

Undercarriage

The Caterpillar elevated sprocket undercarriage arrangement is designed for excellent balance, performance and component life.



Final drives and associated power train components are raised above the work area, isolating them from ground-induced impact loads, as well as pipelayer loads, extending power train component life.

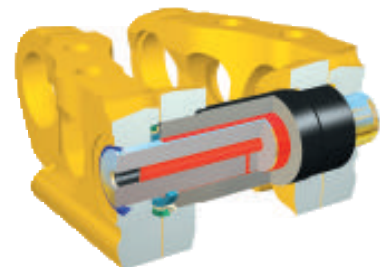
Sprocket position keeps sprocket teeth, bushings and final drives away from the abrasive materials and moisture, resulting in longer final drive gear and seal life.

Track shoes are 710 mm (28 in) single grouser design and made from heat-treated, rolled steel for added strength. Long track frame and wide gauge enhance track contact area, providing a stable working base.

1 Positive Pin Retention (PPR) Sealed and Lubricated Track permanently coats the track pin with a sealed-in lubricant, minimizing metal-to-metal contact.

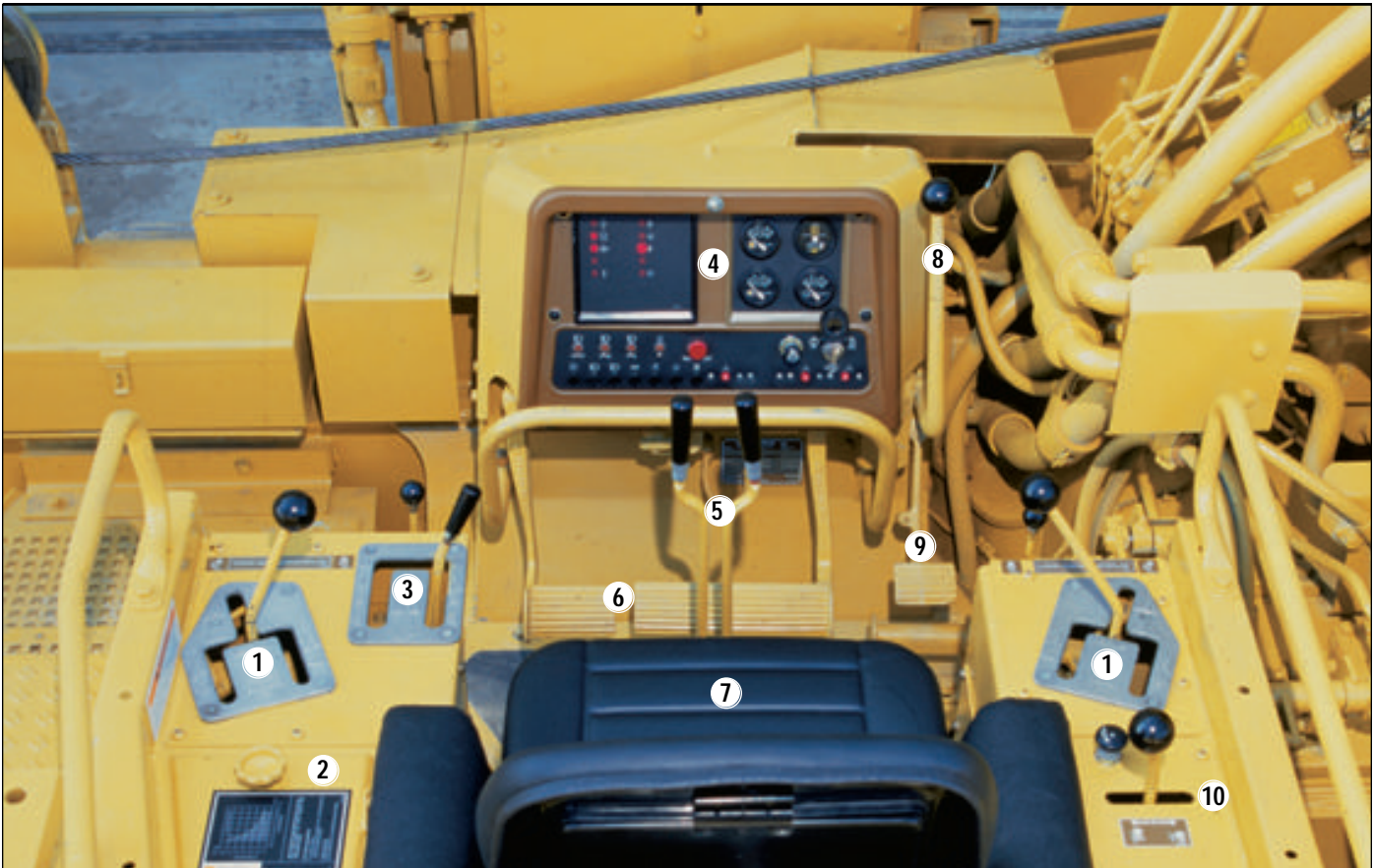
- Virtually eliminates internal pin and bushing wear.
- Lubricant is held in a reservoir in the track pin.

①



Operator Station

Ergonomically designed for operator's maximum comfort and productivity.



Operator station provides excellent comfort and convenience.

- 1 Pipelayer controls** are low-effort and allow simultaneous, precise positioning of the load line and boom, while allowing the operator to select a high or low speed range.
- 2 A storage compartment** has been included for operator convenience.
- 3 Transmission control.** Simple U-shaped shift pattern with excellent detents makes speed changes smooth, fast and accurate.
- 4 Instrument panel** is the Electronic Monitoring System (EMS) for monitoring critical machine functions. There is also a gauge group displaying power train oil, hydraulic oil and coolant temperatures.
- 5 Pipelayer steering clutch levers** are easy-to-reach, low-effort controls. They are independently actuated for sure, precise steering.
- 6 Separated brakes** are independent of the steering clutch function to give the machine precise steering control.
- 7 The seat** is ergonomically designed and fully adjustable for maximum comfort.
- 8 Governor control.** High to low idle setting allows the operator to set engine speed at the desired rpm.
- 9 Accelerator pedal** allows the operator to control engine speed while freeing hands for transmission and pipelayer controls.
- 10 Counterweight control** adjusts the position of the counterweight for added machine stability.

Pipelayer

Caterpillar pipelayer system includes winch, boom, counterweight and frame.



Winch and Boom

- Boom and hook drawworks are driven by independent hydraulic winches.
- Oil-disc brakes provide smooth operation, positive retention of boom and hook positions.
- Modular design allows fast replacement, easy field service and testing.
- High parts interchangeability between hook and boom winch assemblies.
- Winches provide both low and high speed raise.
- Infinitely variable speed controls for both boom and hook allow precise control.
- Replaceable, boom-mount bearings.
- Emergency free-fall function on boom and hook line controls allow the operator to drop the load quickly.



Counterweight and Frame

- Counterweight is extended hydraulically for improved load balance and clearance.
- Counterweight segments are contoured to provide a low center of gravity and enhanced forward viewing area. Segments are splined to the counterweight assembly for ease of assembly and disassembly.

Drawbar

- Able to tow wide range of attachments.



Serviceability

Modular design concept moves Cat elevated sprocket pipelayers a generation ahead in simplified service and repair.

Modular design of power train components permits fast removal and installation.

Pre-testing modular components before installation or after repair assures high quality.

Grouped service points and excellent access to service areas make routine checks fast and convenient.

Quick, easy service access simplifies inspection of daily maintenance items.

Pressure test points for power train and hydraulic systems are provided.

Electrical diagnostic connector enables fast troubleshooting of starting and charging systems.

AMOCS individual cooling elements allow radiator servicing without major component removal, saving considerable time and cost.



Caterpillar Remanufactured starters, alternators, cylinder heads, short blocks, engines, oil pumps and final drive hubs are available for fast, economical repairs.

Spin-on fuel and engine oil filters save changing time. Further time is saved with fast fuel and quick oil change attachments.

Ecology drains provide an environmentally safer method to drain fluids. They are included on the radiator, hydraulic tank and major power train components.

Total Customer Support

Unmatched in the industry.

Cat Dealers offer a wide range of services under a customer support agreement when equipment is purchased. The dealer will help choose a plan that can cover everything from machine and attachment selection to replacement for the best return on your investment.

Selection. Make detailed comparisons of the machine being considered before a purchase. How long do components last? What is the cost of preventative maintenance? What is the true cost of lost production? Your Cat Dealer can give precise answers to these questions.

Purchase. Look past initial price. Consider the financing options available as well as day-to-day operating costs. This is also the time to look at dealer services that can be included in the cost of the machine to yield lower equipment owning and operating costs over the long run.

Your dealer can also arrange affordable lease, rental or purchase financing for all Caterpillar products.

Machine management services. Cat Dealers help manage equipment investments with:

- Custom Track Service.
- Effective preventive maintenance programs.

- Diagnostic programs like Scheduled Oil Sampling and Technical Analysis.
- Information to make the most cost-effective repair option decisions.
- Customer meetings and training for operators and mechanics.

Replacement. Repair, rebuild or replace? Your Cat Dealer can help evaluate the cost involved so you can make the right choice.

Product support. Cat Dealers utilize a world-wide computer network to find in-stock parts to minimize machine down time. Save money with remanufactured parts. Receive the same warranty and reliability as new products at cost savings of 40 to 70 percent.

Engine

Four-stroke cycle, 3406C turbocharged and aftercooled diesel engine.

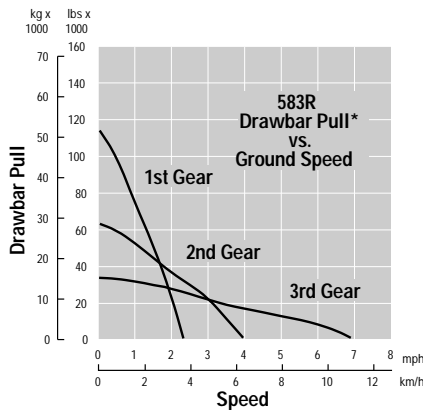
| Ratings at 2100 rpm* | kW | hp |
|----------------------|-----|-----|
| Gross power | 245 | 328 |
| Net power | 228 | 305 |

The following ratings apply at 2100 rpm when tested under the specified standard conditions for the specified standard:

| Net power | kW | hp | PS |
|-------------|-----|-----|-----|
| Caterpillar | 228 | 305 | — |
| ISO 9249 | 228 | 305 | — |
| SAE J1349 | 226 | 302 | — |
| EEC 80/1269 | 228 | 305 | — |
| DIN 70020 | — | — | 317 |

Dimensions

| | | |
|--------------|-------------|---------------------|
| Bore | 137 mm | 5.4 in |
| Stroke | 165 mm | 6.5 in |
| Displacement | 14.6 liters | 893 in ³ |



*Power rating conditions

- based on standard conditions of 25°C (77°F) and 99 kPa (29.32 in Hg) dry barometer
- used 35° API gravity fuel having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 30°C (86°F) [ref. a fuel density of 838.9 g/L (7.001 lb/U.S. gal)]
- net power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator
- no derating required up to 2286 m (7500 ft) altitude

Features

- direct-injection fuel system with individual, adjustment free injection pumps and valves
- cam-ground and tapered, aluminum-alloy pistons with three keystone-designed rings, each cooled by oil spray
- steel-backed, copper-bonded, aluminum bearings, through-hardened crankshaft journals
- pressure lubricated with full-flow filtered and cooled oil
- dry-type air cleaner with primary and secondary elements
- 24-volt, direct-electric starting system, 50-amp alternator
- engine/torque divider module is isolation mounted to the mainframe reducing machine vibration and structure-radiated noise
- water cooled turbocharger bearing for longer life

Transmission

Three-speed planetary auto shift, remotely mounted from engine.

Speeds with power shift transmission (approximate)

| | | km/h | mph |
|---------|---|------|-----|
| Forward | 1 | 3.5 | 2.3 |
| | 2 | 6.4 | 4.0 |
| | 3 | 10.8 | 6.8 |
| Reverse | 1 | 4.7 | 2.9 |
| | 2 | 8.1 | 5.0 |
| | 3 | 13.8 | 8.6 |

Features

- modular transmission and bevel gear plug into rear of main drive case
- special modulation system permits fast speed and direction changes

Torque Divider

A single stage torque converter with output torque divider.

Features

- 70% of engine torque through the converter, 30% through a direct drive shaft
- torque divider shields the driveline from sudden torque shocks and vibration

Final Drives

Crown-shaved, two-stage planetary, in-line final drive gears.

Features

- splash lubricated and sealed with Duo-Cone floating ring seals
- sprockets have five bolt-on, replaceable rim segments

Sealed and Lubricated Track

Positive Pin Retention design for superior track life.

Features

- improved sealability and link rail wear life
- wider bushing strap provides improved bushing retention and resistance to bore stretching and cracking
- wider pin boss and longer pin improves pin-to-link retention
- more rail material increases link and roller system wear life
- extends undercarriage maintenance intervals
- reduces overall undercarriage operating costs

Undercarriage

Tubular design resists torsional loads.

Features

- Lifetime Lubricated rollers and idlers are directly mounted to roller frame
- roller frames attach to tractor by pivot shaft and pinned front bar
- large, lubricated pivot bushings require no maintenance
- recoil system fully sealed and lubricated

| | | |
|---|---------------------|----------------------|
| Track gauge | 2337 mm | 92" |
| Width of standard shoes | 710 mm | 28" |
| Length of track on ground | 3587 mm | 141" |
| Ground contact area with 710 mm (28") shoes | 5.10 m ² | 7896 in ² |
| Number of rollers (each side) | | 9 |
| Number of shoes (each side) | | 47 |

Counterweight

Provides machine stability.

Features

- fully hydraulic, single-lever control
- horizontal pivot point design provides good side and ground clearance

Service Refill Capacities

| | Liters | Gallons |
|--|--------|---------|
| Fuel tank | 416 | 110 |
| Crankcase and filter | 32.5 | 8.6 |
| Transmission, bevel gear and steering clutch (includes torque converter or oil clutch) | 190 | 50 |
| Final drive (each side) | 13 | 3.4 |
| Cooling system | 92 | 24.3 |
| Hydraulic tank | 114 | 30 |
| Recoil spring compartments (each side) | 73 | 19 |

Steering and Braking

Multiple disc clutches and brakes meet SAE J1026 at APR90.

Features

- hydraulically released, spring applied and separated
- cooled by pressurized oil
- no adjustment required
- each assembly serviceable as a unit
- clutch hand controls
- two brake foot pedals
- mechanically actuated, spring applied parking brake

Hydraulic Controls

Three-section gear pump.

Pump output at 2100 pump rpm (2100 engine rpm) and maximum pressure
490 L/min 129 gpm

Relief valve setting

Counterweight 17 225 kPa 2500 psi

Hook and

boom winch 18 259 kPa 2650 psi

Weight (approximate)

Shipping: 44 347 kg (97,767 lb)

Includes lubricants, coolant, 10% fuel, hydraulic controls and fluids, backup alarm, seat belt, 710 mm (28") single grouser shoes, drawbar and counterweight

Operating: 44 748 kg (98,650 lb)

Includes all shipping weights plus full fuel tank and operator

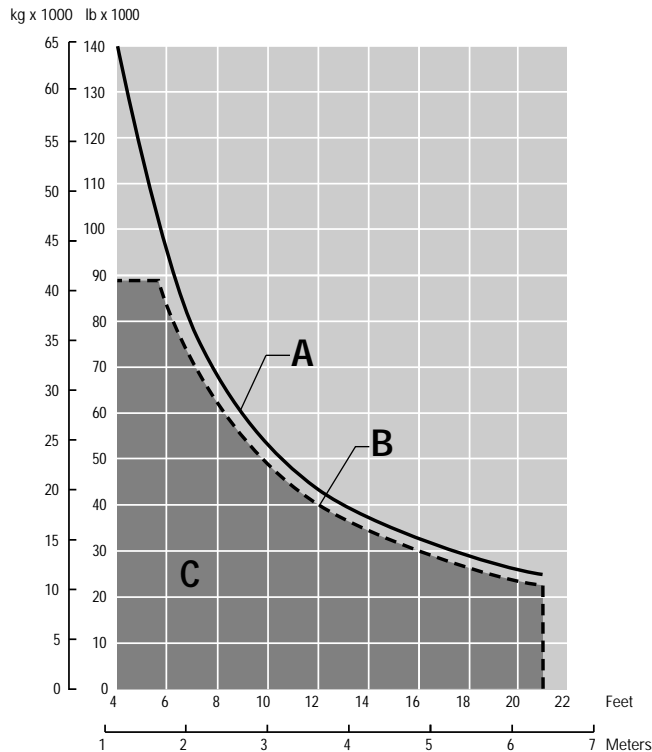
Pipelaying Equipment

Hydraulic Power – 490 L/min at 18 259 kPa/183 bar (129 GPM at 2650 PSI) and 2100 rpm pump speed independent of torque converter.

Planetary hydraulic winches

| | Hook | | Boom | |
|--------------------------------------|---|----------------------|--------|---------|
| Drum diameter | 343 mm | 13.5 in | 343 mm | 13.5 in |
| Flange diameter | 571 mm | 22.5 in | 571 mm | 22.5 in |
| Drum length | 303 mm | 11.9 in | 303 mm | 11.9 in |
| Capacity (19 mm/3/4" dia) | 126 m | 414 ft | 126 m | 414 ft |
| Wire rope installed (19 mm/3/4" dia) | 62 m | 204 ft | 49 m | 160 ft |
| Hook speed (lower) | 30 m/min | 98 ft/min | | |
| Hook speed (raise) | Low | High | | |
| with 6 part line | 7.5 m/min (24 ft/min) | 22 m/min (73 ft/min) | | |
| Boom | 6.10 m (20 ft) square section standard | | | |
| Removable counterweight | 13 segments, 2 @ 300 kg (662 lb) 6 @ 535 kg (1180 lb) 5 @ 430 kg (948 lb) | | | |
| Total weight extendible | 9036 kg (19,920 lb) | | | |

Lifting Capacity



Specified Equipment:

- 19 mm (3/4") diameter wire rope
- 26 672 kg (58,800 lb) minimum breaking strength
- 6 part load line
- 5 part boom line
- 9036 kg (19,920 lb) counterweight extended
- boom 6.10 m (20 ft) standard
- total operating weight 44 748 kg (98,650 lb)

- A Max. lift capacity per SAE J743 MAR92
- B Rated load capacity per ANSI/ASME B30.14
- C Working range per ANSI/ASME B30.14

Standard Equipment

Standard and optional equipment may vary. Consult your Caterpillar Dealer for specifics.

| | | |
|--|--|--|
| Accelerator | Engine, 3406C DITA diesel | Seat belt |
| Advanced Modular Cooling System (AMOCS) | Ether starting aid | Sprocket, segmented |
| Air cleaner | Front bumper with towing device | Single key start |
| Air cleaner service indicator | Fuel priming pump | Steering system, lever steering |
| Alternator, 50-amp | Gauge package: | Storage compartment |
| Backup alarm | Coolant temperature | Track: |
| Blower fan | Power train oil temperature | Adjusters, hydraulic |
| Boom, 6.10 m (20 ft) | Hydraulic oil temperature | Carrier rollers |
| Counterweight, extendible, segmented 9036 kg (19,920 lb) | Guards: | Sealed and Lubricated with PPR, medium service, single grouser track shoes, 47 section, 710 mm (28") |
| Diagnostic connector (starting and charging system) | Crankcase | Two-piece master link |
| Diagnostic pressure taps | Power train, hinged | Throttle lever |
| Drawbar, rigid | Radiator, hinged | Tool box |
| Drawworks, hydraulically actuated and controlled | Track guiding | Torque divider |
| Ecology drains | Horn | Transmission, power shift |
| Electric hour meter | Hydraulics, pipelayer system | Undercarriage, non-suspended with 9-roller, tubular track roller frame |
| Electric starting, 24-volt direct | Lifetime Lubricated rollers and idlers | |
| Electronic Monitoring System | Lighting system | |
| | Muffler | |
| | Precleaner with dust ejector | |
| | Rain cap | |
| | Seat, vinyl suspension | |

Optional Equipment

(with approximate changes in operating weight)

| | kg | lb |
|--------------------------------------|-----|-----|
| Fan, reversible | 2 | 4 |
| Fast Fuel System | 3 | 7 |
| Guards: | | |
| Track roller | 228 | 503 |
| Radiator core protection grid | 11 | 25 |
| Hook with Latch | 52 | 114 |
| Oil change system, quick | 2 | 5 |
| Starting aids: | | |
| Heater, engine coolant, 120-volt | 2 | 4 |
| Heater, diesel fuel | 4 | 9 |
| Starting, low temperature | 14 | 31 |
| Seat covers, snap on cloth | 1 | 2 |
| Tracks, pair, Sealed and Lubricated: | | |
| 762 mm (30 in), PPR Moderate Service | 226 | 498 |
| Vandalism Protection | 4 | 9 |
| Tool kit (dealer installed) | 7 | 16 |