

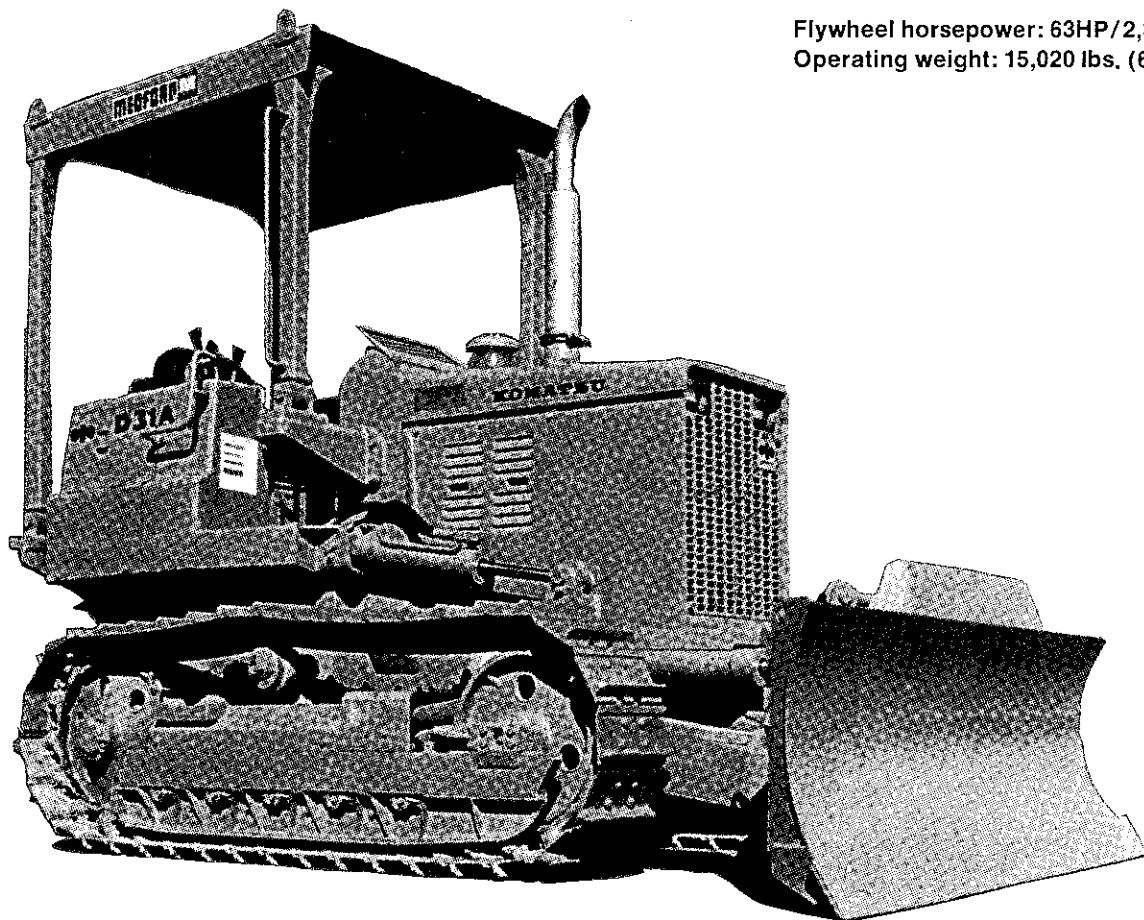
# **KOMATSU**

## **D31A-16**

**POWER ANGLE  
TILTDOZER**

**HYDROSHIFT  
TRANSMISSION**

Flywheel horsepower: 63HP/2,350 RPM  
Operating weight: 15,020 lbs. (6,819 kg)



### **STANDARD FEATURES**

- Exclusive Hydroshift transmission combines the operating ease of power shift with the efficiency and fuel economy of direct drive.
- Inching pedal allows safe, precise maneuvering or full-power dynamic digging.
- Direct injection Komatsu diesel engine delivers 63 HP at 2,350 RPM with a 30% torque rise, highest in its class, for strong lugging.
- Compact, inside mounted blade raises, tilts, and angles with only two levers.
- Two-pedal steering leaves hands free for blade and shift controls.
- Servicing simplified, downtime minimized by fewer maintenance points, all with easy access.
- Lowest engine noise and vibration in its class make for exceptional operator comfort.

# KOMATSU D31A-16 POWER ANGLE TILDOZER

## the engine

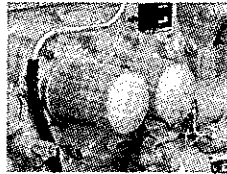
**Komatsu 4D105-3**  
**Direct injection**  
**Four cylinder**  
**Diesel, over-**  
**head valve**  
**4 cycle water**  
**cooled.**

Komatsu's rugged 264 cu. in. (4,330 cc) diesel engine puts out a hefty 63 flywheel horsepower. A 30% torque rise, the highest in its class, produces a maximum drawbar pull of 17,750 lbs. (8,050 kg).

The 4D105-3 engine achieves this output through the use of high efficiency overhead valves and direct fuel injection, which injects a precisely metered charge of atomized fuel directly into the combustion chamber. The compact cylinder block design features replaceable wet cylinder liner of heat- and wear-resistant iron.

Regularly serviced items are readily accessible from a centralized hood check point. Spin-on type filters are employed for engine oil, fuel and hydraulic fluid.

The Komatsu advanced engineering and production quality control through all phases of casting, forging, machining and assembly ensure high output, superior fuel economy, and outstanding durability.



Model ..... Komatsu 4D105-3  
 Type ..... Direct injection diesel;  
 4 cycle, overhead valve, water cooled

No. of cylinders—  
 bore and stroke .... 4—4.13" x 4.92" (105mm x 125mm)  
 Piston displacement ..... 264 cu. in (4,330cc)  
 Performance\*

Flywheel horsepower ..... 63 HP/2,350 RPM  
 Maximum torque ..... 180 ft. lb. (25 kg-m)/1,400 RPM  
 Fuel consumption ratio ..... 0.37 lb. (170g)/HP-h  
 Fuel system

Fuel oil ..... Diesel oil ASTM specification  
 D975-60T No. 2D

Governor ..... Mechanical, all-speed control

Lubrication system  
 Lubrication method ..... Trochoid gear pump,  
 forced lubrication

Filter ..... Full-flow and bypass type  
 Oil cooler ..... Water cooled

Cooling system ..... Centrifugal water pump,  
 forced circulation

Air cleaner ..... Dry type with pre-cleaner

Starting method ..... Electric starter

Starter motor ..... 24V, 5.2 KW

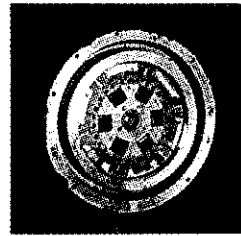
Alternator ..... 24V, 25A

Battery ..... 24V (12V x 2)—120 Ah

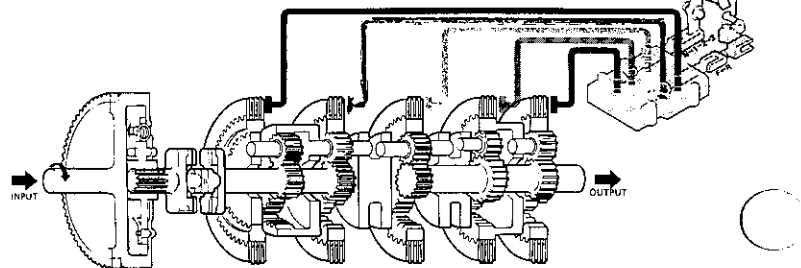
\*Performance of a standard engine equipped with fan, air cleaner, alternator (generator), water pump, lubricating oil pump and fuel pump, under SAE standard ambient temperature (85° F, 29.4° C) and barometric conditions (29.38" Hg, 745 mm Hg.)

## transmission

Komatsu's unique Hydrosift transmission gives the D31-16 a clear edge in its class. Using a 6 torsion spring, 2 friction lining damper, instead of a torque converter, coupled with hydraulically actuated planetary gear clusters, Hydrosift delivers the high output and fuel economy of direct drive, and clutchless, single lever shifting. Three speeds forward and reverse always provide the right ratio for maximum control and drawbar pull. The tubular finned transmission oil cooler is located in the air stream in front of the radiator for better cooling and easy access, ensuring long transmission life. The Inching Pedal offers precise control for critical maneuvers near trucks, obstacles and dropoffs. And because it is independent from throttle settings, the Inching Pedal allows you to use the full power of the engine when dynamic digging or loading is necessary.



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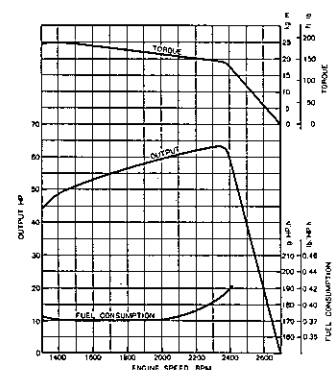
Damper ..... Wet type, 6 torsion springs,  
 2 fiber friction linings

Transmission type ..... Planetary gear and multiple plate  
 disc clutch, hydraulically actuated,  
 forced lubrication

Gear shift ..... 3 forward and 3 reverse speeds

Bevel gear ..... Spiral bevel gear

## Engine performance curve



## Travel speed and drawbar pull

	Travel speed	Rated drawbar pull
Forward 1st	1.4 mph (2.2 km/h)	13,650 lbs (6,190 kg)
2nd	2.4 mph (3.9 km/h)	7,690 lbs (3,490 kg)
3rd	4.0 mph (6.5 km/h)	4,630 lbs (2,100 kg)
Reverse 1st	1.5 mph (2.4 km/h)	
2nd	2.7 mph (4.3 km/h)	
3rd	4.4 mph (7.1 km/h)	
Maximum drawbar pull		17,750 lbs (8,050 kg)

## final drive

Single reduction final drive is simple, direct, and trouble free. Shaft, pinion gears, bearings and sprockets are reinforced for durability. All gears, including the spur gears, are heat treated by Komatsu's unique process for high wear resistance.

Final drive ..... Spur gear, single reduction, splash lubrication

## undercarriage

No. of carrier rollers ..... 1 (each side)

No. of track rollers ..... 5 (each side)

Shoes

Type ..... Assembled, single grouser

Grouser height ..... 1.6" (40 mm)

No. of shoes ..... 37 each side

Pitch ..... 6.1" (154 mm)

Width ..... 15.75" (400 mm)

## power take-off

A power take-off is located near the center of the main frame at rear to drive winches and farm implements.

Location ..... Rear of steering case

Rotational direction ..... Clockwise

## refill capacities

Cooling water ..... 7.4 U.S. gal (28.0 ltr)

Fuel tank ..... 30 U.S. gal (115 ltr)

Lubricating oils:

Engine ..... 3.4 U.S. gal (13 ltr)

Transmission ..... 3.4 U.S. gal (13 ltr)

Bevel gear ..... 4.0 U.S. gal (15 ltr)

Final drive case ..... 2.2 U.S. gal (8.5 ltr)

Hydraulic oil ..... 13 U.S. gal (49 ltr)

Damper case ..... 0.26 U.S. gal (1.0 ltr)

## power angle tiltadozer

The Komatsu power angle tiltadozer lets you grade, back-fill, ditch, spread, or doze with equal ease. The compact inside mounted blade tilts and raises simultaneously with a single lever, while angle is controlled by a second lever. An extra strong reinforced "C" frame resists torsional forces. All hydraulic lines are fully enclosed for reliability under the most demanding operating conditions. Operator control over the five hydraulic cylinders is easy and precise.

## accessories

Versatility is important in this small dozer class, so Komatsu offers a wide range of attachments to let you tackle almost any job.

### Front attachments

Power angle tiltadozer

Front pull hook

### Rear attachments

Backhoe

Towing winch

3-point linkage

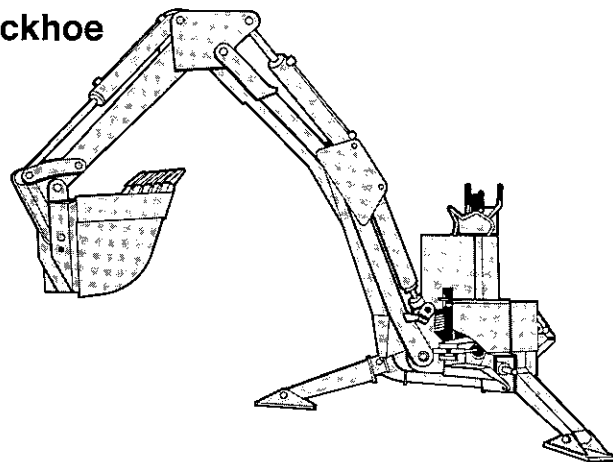
Swing drawbar

Ripper

Hitch-type drawbar

PTO for farm implements and winches

## backhoe



- Pin-on backhoe enables installation or removal in less than three minutes.
- Common mounting brackets for D31-A and D31-S.
- Flip-over seat allows easy, comfortable operation of both machine and backhoe.

### Specifications\*

Bucket capacity ..... 18" width—4.7 cu. ft. capacity

24" width—6.7 cu. ft. capacity

30" width—6.7 cu. ft. capacity

(6 other job-matched buckets are available)

Digging depth ..... 14' 0" (4,267 mm)

Digging reach (from swing pivot @

grade level) ..... 17' 0" (5,181 mm)

Dumping height (bucket closed) ..... 11' 5" (3,479 mm)

Swing arc ..... 180°

Bucket rotation ..... 182°

Stabilizer span (@ grade level) ..... 12' 0" (3,657 mm)

Stabilizer reach (below grade level) ..... 17" (431 mm)

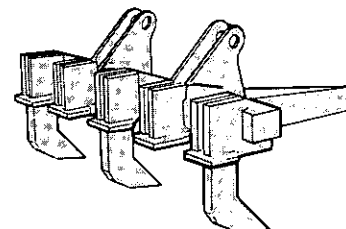
Digging effort ..... 13,000 lbs (5,889 kg)

Operating pressure ..... 2,150 psi (151 kg/cm<sup>2</sup>)

Backhoe weight ..... 3,942 lbs (1,790 kg)

\*Specifications established with 24" heavy duty bucket attached. Based on Ware backhoe model 450G.

## ripper



The rear mounted ripper is used in construction work to break up and crush hard materials.

### Specifications

Type ..... Tool bar type

Weight ..... 880 lbs (400 kg)

Number of shanks ..... 3 (standard)

5 (optional)

Digging depth ..... 11.8" (300 mm)

Beam length ..... 59.1" (1,500 mm)

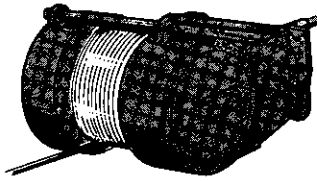
Maximum lift ..... 15.7" (400 mm)

Tooth point ..... Replaceable and reversible

Digging angle ..... 55°

Digging position ..... 1 stage

## towing winch



The towing winch is a valuable addition, allowing pulling, lifting and lowering of heavy materials. Wire rope is automatically wound or paid out under operator control.

### Specifications

Type	Gear drive, single drum, reversible
Weight	1,060 lbs (480 kg)
Drum dimensions:	
Length	9.1" (230 mm)
Width	10.8" (275 mm)
Height	30.2" (766 mm)
Drum diameter	7.1" (180 mm)
Flange diameter	15.7" (400 mm)
Bare drum line speed	110 ft per min.
Bare drum line pull	18,740 lbs (8,500 kg)
Cable capacity	295 ft x .63" dia. (90 M x 16 mm dia.)

## dimensions (see drawings)

Ground contact area	2,331 sq. in. (15,040 cm <sup>2</sup> )
Ground pressure*	6.4 psi (0.45 kg/cm <sup>2</sup> )
Ground clearance (excluding grouser height)	12.4" (315 mm)
Gradeability	30°

\*Based on operating weight with ROPS.

### Dozer equipment

Type	Hydraulic angling and tilting, inside frame type
Weight	1,980 lbs (900 kg)
Blade:	
Length x height	95.7" x 27.1" (2,430 mm x 745 mm)
Tip angle	55°
Max. lift above ground	34.3" (870 mm)
Max. drop below ground	14.4" (365 mm)
Max. tilt adjustment	12.7" (350 mm)
Blade angle	25°

### Hydraulic cylinder

Type	Double acting, piston type
No. of cylinders—bore:	
Lift cylinder	2-3.54" (2-90 mm)
Tilt cylinder	1-3.54" (1-90 mm)
Angle cylinder	2-3.54" (2-90 mm)

### Hydraulic control unit

Weight	510 lb. (230 kg)
Maximum oil pressure	2,490 psi (175 kg/cm <sup>2</sup> )
Hydraulic oil pump:	
Type	Gear pump
Capacity (discharge flow)	18.2 U.S. Gal (69 ltr)/ min at engine 2,350 RPM
Location	Rear of engine
Control valve:	
Type	3-spool type

### Position:

Lift	Raise, hold, lower, float
Tilt	Right, hold, left
Angle	Right, hold, left

### Hydraulic oil tank:

Type	Equipped with external control valve
Location	Right side of operator's seat
Filter	Full-flow type

**Operating weight\*\*** ..... 14,436 lbs (6,554 kg)†

\*\*Total weight of D31A-16 Power Angle Tiltadozer with full fuel tank and with lubricants and coolant in the specified amounts (including weight of ROPS bracket, hydraulic controls)† Based on D31A-16 Power Angle Tiltadozer with 15¾" single shoe.

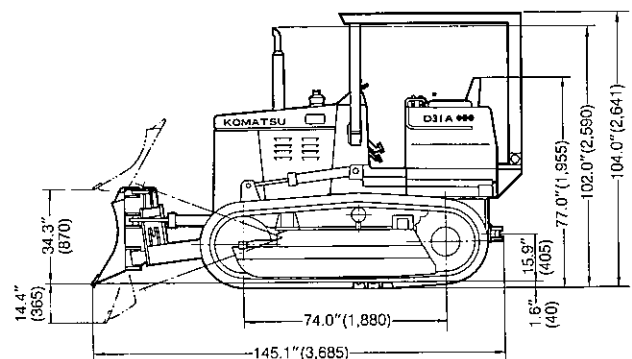
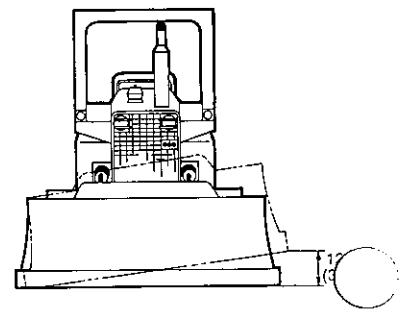
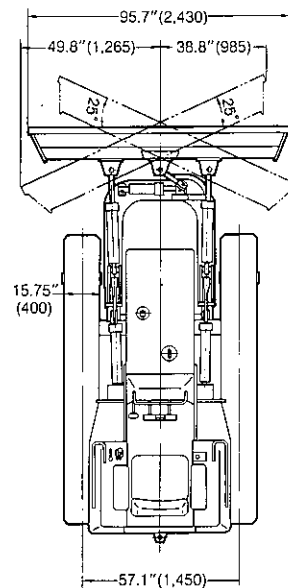
**Operating weight (with ROPS)†** .... 15,020 lbs (6,819 kg)

†Based on D31A-16 Power Angle Tiltadozer with 15¾" single shoe and ROPS installed.

### Optional shoes

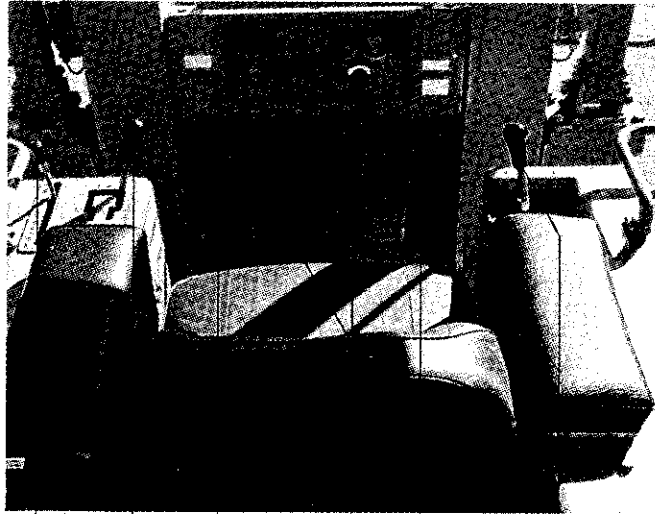
13.0" (330 mm) Single grouser shoe	7.7 psi (0.54 kg/cm <sup>2</sup> )
13.0" (330 mm) Snow shoe	7.5 psi (0.53 kg/cm <sup>2</sup> )
13.0" (330 mm) Flat shoe	7.8 psi (0.55 kg/cm <sup>2</sup> )
15.75" (400 mm) Triple shoe	6.4 psi (0.45 kg/cm <sup>2</sup> )

(Specifications are subject to change without notice.)



Figures in parentheses are millimeters.

## control features



**Throttle**  
Conveniently located next to shift lever.

**Inching Pedal**  
Allows precise maneuvering, dynamic digging and loading.

**Instruments**  
Clustered for fast, easy checking. Includes dust indicator, service meter, charge and oil pressure warning lights.

**Hydroshift**  
Single lever allows instant gear changes, positive touch-control shifting, with no clutch pedal.

**Steering Pedals**  
Are interconnected to adjustment-free clutches and brakes, leaving hands free. Simple to operate, even for beginners.

**Bucket Control Lever**  
A single lever controls both raising and dumping.

Comfort and ease of operation are the key words. Komatsu's control layout makes things easy for beginners or occasional operators, increases comfort and output for the seasoned pro.

- Spacious walk-through compartment allows easy entrance from either side.
- Thickly cushioned seat with padded armrests lessens fatigue, adjusts forward and backward 4.7" (120 mm).
- Engine noise and vibration levels are dramatically lower than any machine in this class. The rubber-mounted engine, totally sealed engine compartment, and fully enclosed floor let you work longer hours with remarkable comfort.
- Adjustment-free steering clutches and brakes require less maintenance, yet allow gradual or sharp turns with a single pedal.
- Vandalism protection package, including fuel tank cap, hydraulic tank cap, radiator cap, and panel cover cap is standard equipment.
- Backhoe can be operated from inside the operator's compartment.

## maintenance features

Nothing cuts construction production more than troublesome maintenance. The Komatsu D31S is engineered for quick, simple servicing and no daily maintenance. You get extra production and extra profits.

### **No Daily Under-carriage Maintenance**

Floating seals in the track and carrier rollers, idlers, keep dirt out and need no lubrication. Dust seals between track links and bushings prevent dirt and mud from entering the pin-to-bushing clearances, so tracks last longer and maintenance is minimized.

### **Sealed Loader Linkage**

Loader linkage needs no daily maintenance. All pins, including hinge pins, require greasing only quarterly.

### **Hydraulic Track Tension Adjustment**

Track tension is easily adjusted on the job site with a hand grease gun.

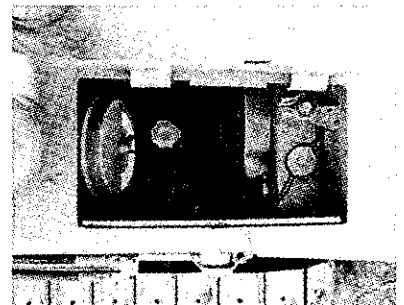
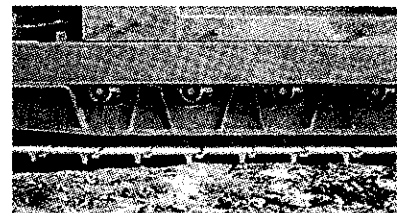
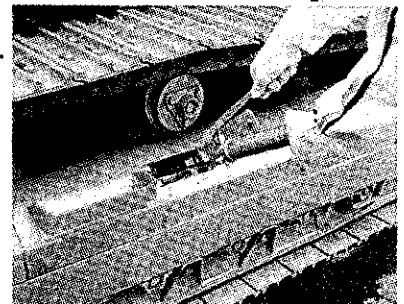
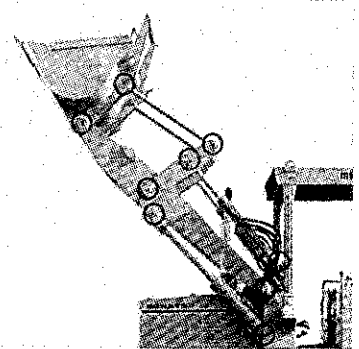
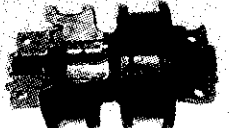
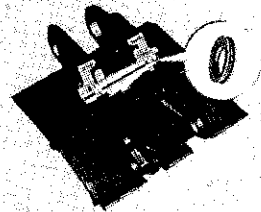
### **Track Roller Guards**

Track roller guards and track guiding guards are standard, protecting track rollers from impact.

### **Centralized Engine Checking**

Check engine oil level, air cleaner, and radiator water instantly from a single access panel.

In addition, the spin-on fuel, oil, and hydraulic filters and side-panel battery location make periodic servicing convenient.





#### REGIONAL OFFICES

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**Regional Office:** Fort Lee, New Jersey 07024  
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**Regional Office:** Norcross, Georgia 30093  
**Southwestern** 2224 East Randol Mill Road  
**Regional Office:** Arlington, Texas 76011

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**Western Region:** 31153 San Antonio Street  
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**Eastern Region:** 1601 Grandview Avenue  
Thorofare, New Jersey 08086  
**Southeastern Region:** 4274 Shackleford Road  
Norcross, Georgia 30093  
**Southwestern Region:** 2224 East Randol Mill Road  
Arlington, Texas 76011