

939C Hystat Track-Type Loader

Engine

Four-stroke cycle, in-line six cylinder Cat 3046 turbocharged diesel engine.

Ratings at 2400 RPM*	kW	HP
Gross power	74.6	100
Net power	67.9	90

The following ratings apply at 2400 RPM when tested under the specific standard conditions for the specified standard:

Net Power	kW	HP	PS
Caterpillar	67.9	91	—
ISO 9249	67.9	91	—
EEC 80/1269	67.9	91	—
SAE J1349	67.1	90	—
DIN 70020	70.1	94	95

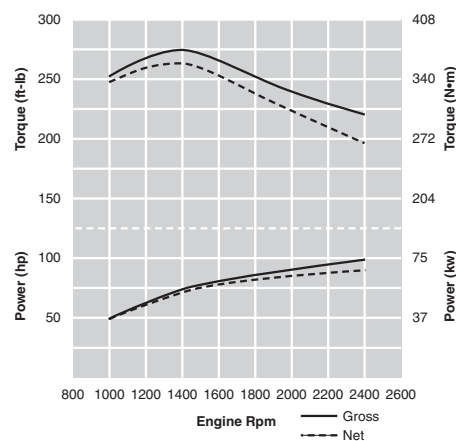
Dimensions

Bore	94 mm	3.7 in
Stroke	120 mm	4.7 in
Displacement	5 liters	305 in ³

*Power rating conditions

- based on standard air 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 engine is equipped with fan, air cleaner, muffler and alternator
- no derating required up to 2300 m (7500 ft) altitude

Engine Performance Curve



Features

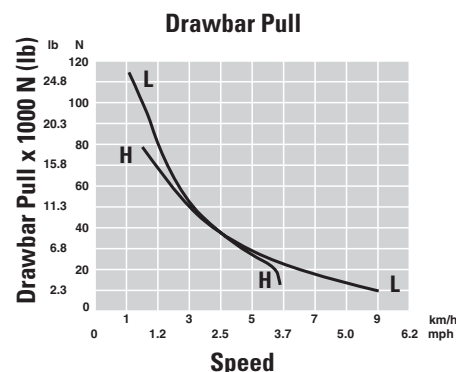
- turbocharger
- direct-injection fuel system with individual adjustment free injection pumps and valves
- electric fuel shutoff solenoid
- one-piece head with two valves per cylinder
- composition steel laminated head gasket
- aluminum pistons with cast iron insert, two compression rings and one oil ring
- high carbon steel forged iron connecting rods
- steel-backed aluminum bearings with lead-tin overlay
- seven main bearing forged crankshaft, fully counterweighted and hardened
- oil pump, gear driven from the crankshaft
- piston cooling jets
- multi-plate, water-cooled oil cooler
- belt-driven water pump
- conventional core radiator with 533 mm (21 in) fan
- dry-type air cleaner with primary and secondary elements and a restriction indicator
- 12-volt direct-electric, gear reduction starter with terminal shielding
- 55-amp alternator standard with ROPS canopy; 90-amp alternator standard with optional cab
- 12-volt, 900 cca, group 31, maintenance free battery with disconnect switch
- in-cylinder glow plugs with built-in temperature switch
- vertically mounted, spin-on oil and fuel filters

Hystat Transmission

Dual-path, hydrostatic drive provides infinitely variable speeds up to 9.0 km/h (5.6 mph), forward or reverse.

Features

- each track is driven by a separate variable-displacement piston pump and motor combination
- drive pumps: two variable-displacement, slipper-axial piston pumps mounted tandem-style to engine flywheel housing
- track motors: two 2-speed, link-type piston motors mounted inboard of main frame at the final drives
- full flow filtering of hydrostatic charge system oil
- relief valve settings: 42 000 kPa/420 bar/6100 psi
- charging pumps: two gear-type, one per drive circuit



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Implement Hydraulics

Open-centered, parallel system. System is completely sealed.

Implement system, gear-type pump

Output at rated engine RPM and 6895 kPa (1000 psi)	133 liters/min	35 gpm
Relief valve setting (main)	19 820 kPa	2875 psi
Cylinders,		
Lift, double acting: bore and stroke	114 x 607 mm	4.5 in x 23.9 in
Tilt, double acting: bore and stroke	102 x 622 mm	4.0 in x 24.5 in

Hydraulic cycle time

Raise	5.6 seconds
Dump	2.4 seconds
Lower, empty, float down	2.9 seconds
Total	10.9 seconds

Bucket controls

Lift circuit (raise, hold, lower, float) automatic kickout in raise can be activated on/off by switch.

Tilt circuit (tilt-back, hold, dump, regen dump) automatic bucket positioner-adjustable to desired digging angle.

Features

- large-capacity single section gear pump
- lines are steel tubing and high pressure XT-3™ hose with o-ring face seals at connections
- system sealed to keep out wear-causing dirt
- protected by two 7 micron filters which help prevent foreign material from entering reservoir
- standard two-valve hydraulics for lift and tilt
- optional three-valve hydraulics for lift, tilt and MP bucket
- optional four-valve hydraulics for lift, tilt, MP bucket and rear implement
- spring-centered, double acting valves with precision metering
- needle bearing yokes on all major pivot points
- single lever control for lift and tilt
- automatic bucket positioner and lift kick out
- multi-function capability for fast truck loading and material spreading applications

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Final Drives

Hystat System Features

- double-reduction, with outboard planetary gear set
- mounted independently of track frames to isolate them from machine weight and ground-induced shock loads
- externally mounted for easy maintenance and service

Weights

(Approximate)

	kg	lb
GP	9,484	20,908
MP	10,030	22,113

* Operating weight with OROPS, 406.4 mm (16 in) track, bucket, recommended counterweight, operator, no teeth/segments, fully fueled.

Steering and Braking

Hystat System Steering Features

- single lever steering and direction control
- moving control lever left or right slows that track, causing machine to turn smoothly in that direction with full power to both tracks
- full lever movement left or right causes that track to stop
- hydrostatic steering eliminates steering clutches and brakes, eliminates adjustments too

Hystat Service Brake Features

- hydrostatic (dynamic) braking through machine drive system using transmission control lever or center brake pedal

Hystat Parking Brake Features

- wet, multi-disc brakes located between each hydraulic track motor and final drive
- spring applied, hydraulically released by oil pressure from hydrostatic charge circuit
- automatically applied when the engine stops, or in the event of transmission hydraulic oil pressure loss
- operator applied when the center pedal is fully depressed, or when the parking brake lever is in the “park” position
- Hystat control system meets SAE J1026-APR90

Service Refill Capacities

Hystat System Capacities

	Liters	Gallons
Fuel tank	157	41.4
Crankcase and filter	13	3.4
Final drives each side	14.7	3.9
Cooling system	21	5.5
Hydraulic tank	56.8	15

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Cab

Caterpillar cab and Rollover Protective Structure (ROPS).

Features

- modular design
- tinted windows
- sliding right and rear windows
- electric wiper/washer controls
- nine adjustable ventilation ducts with three-speed fan
- front and rear wipers and washers
- sunvisor
- dome light
- speakers, antenna, wiring and radio bracket
- cigarette lighter and ashtray
- cloth suspension seat and headrest
- 76.2 mm (3 in) seat belt
- coat hook
- key lock
- insulated rubber floormat
- meets Falling Object Protective Structure (FOPS) criteria SAE J395a, SAE J231-JAN81, and ISO 3449-1992

Canopy

Rollover Protective Structure (ROPS). ROPS canopy is required in U.S.A.

Features

- vinyl suspension seat
- sound suppression headliner
- 76.2 mm (3 in) seat belt
- wide angle rearview mirror
- meets ROPS criteria SAE J1040-MAY94 and ISO 3471-1994
- meets Falling Object Protective Structure (FOPS) criteria SAE J395a, SAE J231-JAN81, and ISO 3449-1992

Undercarriage

Rebuildable, deep hardened steel components.

	Standard
Shoe width	406 mm (16 in)
Length of track on ground	2145 mm (84.4 in)
Track gauge	1549 mm (61 in)
Ground contact area	17,415 cm ² (2700 in ²)
Ground pressure *	53.67 kPa (7.79 psi)
Number of rollers (each side)	6
Number of shoes (each side)	37

* Equipped with general purpose bucket

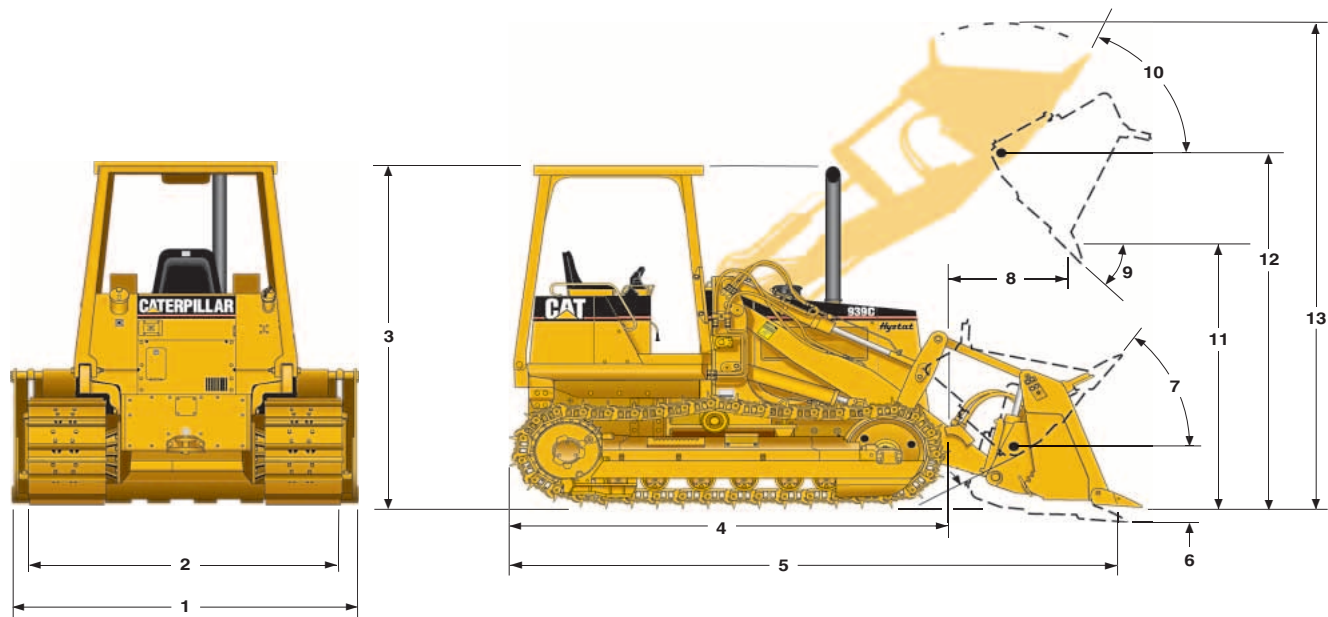
Features

- Sealed and Lubricated Track
- hydraulic track adjusters
- box section track roller frames
- bolt-on rear track guiding guards
- full length recoil guarding with sprocket guards and wipers
- serrated, two-piece split master link
- double-grouser shoes
- segmented sprocket
- sealed and lubricated rollers and idlers

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Loader Dimensions

Approximate dimensions are applicable to all 939C Hystat Track-Type Loaders.



Dimensions (equipped with GP bucket)		Standard	
1	Overall machine width with bucket	2160 mm	85 in
2	Overall machine width without bucket	1955 mm	77 in
3	Machine height to top of cab	2766 mm	109 in
4	Length to front of track	2978 mm	117 in
5	Overall machine length	4359 mm	171.6 in
6	Digging Depth	127 mm	5 in
7	Maximum rollback at carry position	50.2°	
8	Reach at full lift height	866 mm	34 in
9	S.A.E. specified dump angle	45°	
10	Maximum rollback, fully raised	64.9°	
11	Dump clearance at full height and 45° discharge	2677 mm	105 in
12	Height to bucket hinge pin	3346 mm	131.7 in
13	Overall machine height, bucket fully raised	4384 mm	172.6 in
	Ground clearance	368 mm	14.5 in
	Grouser height	37 mm	1.4 in

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Operation Specifications

		GP Bucket	MP Bucket
		Bare	Bare
Rated Bucket capacity ^β	m ³	1.15	1.15
(Nominal Heaped)	yd ³	1.5	1.5
Struck Capacity ^β	m ³	0.95	0.95
	yd ³	1.25	1.25
Bucket Width	mm	2160	2160
	in	85	85
Dump Clearance at full lift and 45 discharge ^β	mm	2667	2604
	in	105	102.5
Reach at full lift and 45 discharge ^β	mm	866	877
	in	34.1	34.5
Digging depth ^β	mm	127	165
	in	5.0	6.5
Overall machine length	mm	4359	4359
	in	171.6	171.6
Overall machine height with bucket at full raise	mm	4384	4384
	in	172.6	172.6
Static tipping load *	kg	6607	6396
	lb	14,565	14,100
Breakout force	kN	89.9	92.0
	lb	20,200	20,688
Operating weight **	kg	9484	10 030
	lb	20,908	22,113

β Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers. SAE Standard **J732 FEB80** and SAE Standard **J742 OCT79** govern loader ratings.

* Measured at operating weight with ROPS canopy.

** Includes coolant, lubricants, full fuel tank, ROPS cab, bucket, 75 kg/165 lb operator and recommended counterweight.

Machine stability can be affected by the addition of other attachments. Add or subtract the following to/from machine operating weight and static tipping load:

	Change in Operating Weight		Change In Static Tipping Load	
Cab, ROPS	+204 kg	+450 lb	+253 kg	+558 lb
Bucket teeth (long) & segments	+179 kg	+394 lb	-226 kg	-498 lb
Air Conditioner	+77 kg	+170 lb	+84 kg	+185 lb
457 mm (18 in) shoes	+108 kg	+238 lb	+76 kg	+168 lb
Ripper with 3 teeth (includes removal of 294.8 kg (650 lb) rear counterweight)	+13 kg	+29 lb	+48 kg	+106 lb
Rear counterweight (per plate)	+116 kg	+255 lb	+195 kg	+430 lb

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Optional Equipment

Optional equipment may vary. Consult your Caterpillar dealer for specifics. Approximate changes in operating weights.

	kg	lb
Air conditioning, cab	66	146
Back up alarm (required in U.S.A.)	*	*
Batteries, 12-volt, heavy duty, maintenance free, two 900 cca with disconnect switch	30	65
Buckets:		
General Purpose: 1.2 m ³ (1.5 yd ³)	*	*
Multi-purpose: 1.2 m ³ (1.5 yd ³)	*	*
Bucket cutting edge, bolt-on:		
3-piece for GP and MP buckets	143	315
7-piece for use with bucket teeth	73	161
Bucket teeth, short, bolt-on:		
Set of 8 for GP and MP buckets	97	213
Bucket teeth, long, bolt-on:		
Set of 8 for GP and MP buckets	100	221
Cab, ROPS and mounting, includes 90-amp alternator, air pressurizer, air filter, heater, front and rear windshield wipers and washers, rearview mirror, sunvisor, speakers and antenna, ashtray, cigarette lighter, coat hook and key lock	204	450
Canopy, ROPS and mounting, includes rearview mirror and headliner (required in U.S.A.)	*	*

* Included in operating weight.

Available Rear Counterweights

To provide optimum performance for each machine configuration, nine counterweight options are available ranging from 99 kg (217 lb) to 849 kg (1870 lb).

	kg	lb
Ether start aid	4	9
Guards:		
Bottom, heavy duty	58	128
Rock, idler	45	110
Roller, full length	67	148
Heater, open canopy	36	80
Hydraulic arrangement:		
3-valve, 1-lever bucket control MP bucket	16	36
3-valve, 1-lever bucket control, ripper	10	21
4-valve, 1-lever bucket control MP bucket, ripper	25	56
Lights, ROPS mounted, two front, one rear	15	32
Pre-cleaner with pre-screener	1	2
Ripper, includes three teeth and hydraulic cylinder	249	549
Ripper teeth, additional	12	26
Screens:		
Rear, for use w/ROPS canopy	30	66
Rear, for use w/ROPS cab w/o air conditioning	31	69
Rear, for use w/ROPS cab with air conditioning	24	53
Side	50	111
Seat, Caterpillar Contour Series with adjustable backrest and 76.2 mm (3 in) retractable seat belt	28	62
Sweeps, logging	78	172
Tracks: double grouser:		
Sealed and Lubricated, 37-section, 457 mm (18 in) shoes	108	238