990
Wheel Loader

Technical Specifications

Configurations and features may vary by region. Please consult your Cat® dealer for availability in your area.

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990 Wheel Loader Specifications

Engine

Engine Model	Cat® C27	
Emissions (Option 1)	U.S. EPA Tier 4 Final/ EU Stage V	
Rated Speed	1,800 rpm	
Engine Power – ISO 14396:2002	586 kW	786 hp
Gross Power – SAE J1995:2014	597 kW	801 hp
Net Power – SAE J1349:2011 (Standard Ambient)	546 kW	732 hp
Net Power – SAE J1349:2011 (High Ambient)	508 kW	681 hp
Emissions (Option 2)	Emits equivalent to U.S. EPA Tier 2	
Rated Speed	1,800 rpm	
Engine Power – ISO 14396:2002	561 kW	752 hp
Gross Power – SAE J1995:2014	571 kW	766 hp
Net Power – SAE J1349:2011 (Standard Ambient)	521 kW	699 hp
Net Power – SAE J1349:2011 (High Ambient)	483 kW	648 hp
Bore	137.2 mm	5.4 in
Stroke	152.4 mm	6.0 in
Displacement	27.03 L	1,649.5 in^3
Peak Torque (1,200 rpm)	3557 N·m	2,624 lbf-ft
Torque Rise	18%	

- Net power advertised is the power available at the flywheel when the engine is equipped with fan at minimum speed, air intake system, exhaust system, and alternator.

Transmission

Transmission Type	Cat planetary power shift	
Forward 1	7.4 km/h	4.6 mph
Forward 2	13.2 km/h	8.2 mph
Forward 3	23.3 km/h	14.5 mph
Reverse 1	8.15 km/h	5.1 mph
Reverse 2	14.6 km/h	9.1 mph
Reverse 3	25.7 km/h	16.0 mph
Direct Drive Forward 1	Lock-up disabled	
Direct Drive Forward 2	13.2 km/h	8.2 mph
Direct Drive Forward 3	23.3 km/h	14.5 mph
Direct Drive Reverse 1	8.15 km/h	5.1 mph
Direct Drive Reverse 2	14.6 km/h	9.1 mph
Direct Drive Reverse 3	25.7 km/h	16.0 mph

- Travel speeds based on Michelin 45/65R39 LD D2**L5 tires.

Operating Specifications

Operating Weight – Standard	80 974 kg	178,517 lb
Rated Payload – Standard	15.9 tonnes	17.5 tons
Rated Payload – High Lift	15.9 tonnes	17.5 tons
Bucket Capacity Range	8.6 m^3- 10.0 m^3	11.25 yd^3- 13.0 yd^3
Cat Truck Match – Standard	773-775	
Cat Truck Match – High Lift	775-777	

Hydraulic System – Lift/Tilt

Lift/Tilt System – Circuit	Positive flow control	
Lift/Tilt System	Variable displacement piston	
Maximum Flow at 1,800 rpm	910 L/min	240 gal/min
Relief Valve Setting – Lift/Tilt	33 000 kPa	4,786 psi
Cylinders, Double Acting: Lift, Bore and Stroke	235 mm x 1287 mm	9.3 in x 50.7 in
Cylinders, Double Acting: Tilt, Bore and Stroke	292.1 mm x 820 mm	11.5 in x 32.3 in
Pilot System	Open loop and pressure reducing	
Pilot Relief Setting	3500 kPa	507 psi

Hydraulic Cycle Time

Rack Back	4.3 Seconds
Raise	8.6 Seconds
Dump	2.9 Seconds
Lower	3.7 Seconds
Lower Float Down	3.7 Seconds
Total Hydraulic Cycle Time (empty bucket)	13.8 Seconds

Hydraulic System – Steering

Steering System – Circuit	Pilot, load sensing	
Steering System – Pump	Variable displacement piston	
Maximum Flow at 1,400 rpm	364 L/min	96.2 gal/min
Relief Valve Setting – Steering	34 500 kPa	5,004 psi
Total Steering Angle	70°	

Air Conditioning System

- The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a or R1234yf. See the label or instruction manual for identification of the gas.
- If equipped with R134a (Global Warming Potential = 1430), the system contains 2.7 kg (5.9 lb) of refrigerant which has a CO_2 equivalent of 3.861 metric tonnes (4.256 tons).

Axles

Front	Fixed
Rear	Trunnion
Oscillation Angle	8.5°

Brakes

Brakes	ISO 3450:2011

Service Refill Capacities

Fuel Tank	1064 L	281.0 gal
Cooling System	208 L	54.9 gal
Engine Crankcase	75.7 L	20.0 gal
Transmission	110 L	29.1 gal
Differentials and Final Drives – Front	271 L	71.6 gal
Differentials and Final Drives – Rear	261 L	68.9 gal
Hydraulic System Factory Fill	795 L	210.0 gal
Hydraulic Tank (Implement and Hydraulic Fan)	261 L	68.9 gal
Hydraulic Tank (Steering and Braking)	132 L	34.9 gal

- Cat U.S. EPA Tier 4 Final/EU Stage V diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels** up to:
  – 20% biodiesel FAME (fatty acid methyl ester)*
  – 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels.

Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

*Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel (for use of blends higher than 20% biodiesel, consult your Cat dealer).

**Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.

– Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, API CK-4, and/or ACEA E9 specifications are required.

– Diesel Exhaust Fluid (DEF) that meets all requirements defined in ISO 22241-1:2006.

Sound Performance

Tier 4 Final/Stage V	
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	116 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)*
Machine Sound Power Level (ISO 6395:2008)	114 dB(A)*
Tier 2	
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	116 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)*
Machine Sound Power Level (ISO 6395:2008)	114 dB(A)*

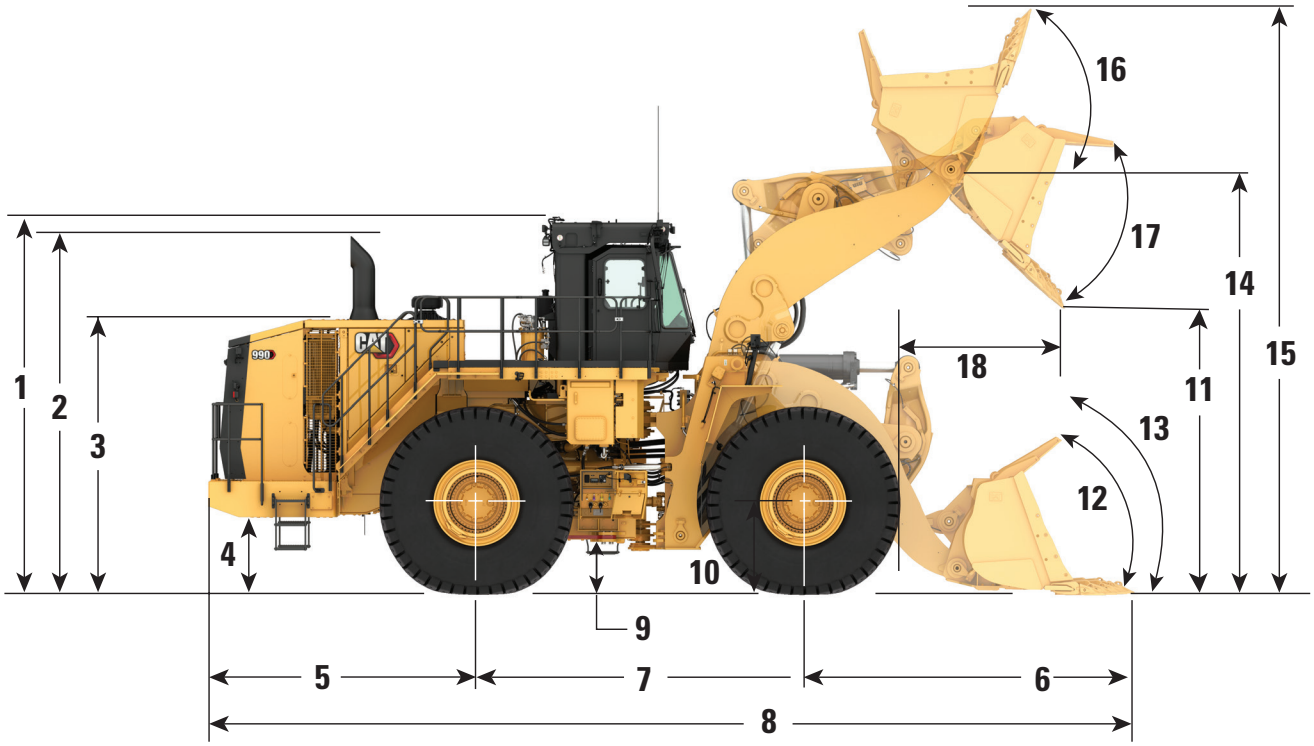
* Sound suppression equipped

- The machine sound power level was measured according to ISO 6395:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- The operator sound pressure level was measured according to ISO 6396:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- Hearing protection may be needed when the machine is operated with a cab that is not properly maintained or when the doors or windows are open for extended periods or in a noisy environment.

990 Wheel Loader Specifications

Dimensions

All dimensions are approximate.



		Standard Lift		High Lift	
1	Ground to Top of Rollover Protective Structure (ROPS)	5240 mm	17.2 ft	5240 mm	17.2 ft
2	Ground to Top of Exhaust Stacks	5049 mm	16.6 ft	5049 mm	16.6 ft
3	Ground to Top of Hood	3862 mm	12.7 ft	3862 mm	12.7 ft
4	Ground to Bumper Clearance	1079 mm	3.5 ft	1079 mm	3.5 ft
5	Rear Axle Centerline to Bumper	3795 mm	12.5 ft	3795 mm	12.5 ft
6	Front Axle Centerline to Bucket Tip	4689 mm	15.4 ft	5425 mm	17.8 ft
7	Wheelbase	4600 mm	15.1 ft	4600 mm	15.1 ft
8	Maximum Overall Length	13 084 mm	42.9 ft	13 820 mm	45.3 ft
9	Ground to Lower Hitch Clearance	596 mm	2.0 ft	596 mm	2.0 ft
10	Ground to Center of Front Axle	1290 mm	4.2 ft	1290 mm	4.2 ft
11	Clearance at Maximum Lift	4044 mm	7.2 ft	4521 mm	14.8 ft
12	Rack Back Angle at Ground Level	40.4 degrees		39.9 degrees	
13	Rack Back Angle at Carry	48.8 degrees		49.3 degrees	
14	B-Pin Height at Maximum Lift	6009 mm	19.7 ft	6470 mm	21.2 ft
15	Maximum Overall Height, Bucket Raised	8281 mm	27.2 ft	8742 mm	28.7 ft
16	Rack Angle at Maximum Lift	63.7 degrees		60.6 degrees	
17	Dump Angle at Maximum Lift	45 degrees		51 degrees	
18	Reach at Maximum Lift	2194 mm	7.2 ft	2583 mm	8.5 ft

Note: Specifications are calculated with 9.0 m^3 (11.8 yd^3) rock bucket and Bridgestone 45/65R39 VSDL One Star tires.

Bucket Capacity/Material Density Selection Guide

Standard Lift/High Lift
Rated Payload (Quarry Face) – 11.3 tonnes/12.5 tons

Material Density				Bucket Volume	
kg/m³	lb/yd³	tonnes/m³	tons/yd³	m³	yd³
1590-1750	2,692-2,962	1.59-1.75	1.35-1.48	10.0	13.0
1728-1902	2,917-3,208	1.73-1.90	1.46-1.60	9.2	12.0
1849-2035	3,125-3,438	1.85-2.03	1.56-1.71	8.6	11.2

Standard Lift/High Lift
Rated Payload (Loose Material) – 20 tonnes/22 tons

Material Density				Bucket Volume	
kg/m³	lb/yd³	tonnes/m³	tons/yd³	m³	yd³
1538-1692	2,588-2,847	1.54-1.69	1.29-1.42	13.0	17.0
1342-1477	2,256-2,482	1.34-1.48	1.13-1.24	14.9	19.5

Custom buckets are available upon request. Please work with your dealer for more information. Refer to the Large Wheel Loader Payload Policy.

990 Wheel Loader Specifications

Aggregate Package Operating Specifications – Standard Lift

For machines equipped with Bridgestone 45/65R39 VSDL One Star 6.7 bar (97 psi) pressure.

		990 Std Agg	
Bucket Type		**General Purpose**	**Coal**
Ground Engaging Tools		**Bolt-on Cutting Edges**	**Bolt-on Cutting Edges**
Cutting Edge Type		**Straight**	**Straight**
Bucket Part Number (Group Level)		**548-9350**	**451-5410**
Struck Capacity (ISO)	m^3	10.0	12.0
	yd^3	13.1	15.7
Heaped Capacity (ISO)	m^3	13.0	15.0
	yd^3	17.0	19.6
Bucket Width – Overall	mm	4480	4450
	ft	13.1	15.7
Clearance at 45° Dump (Edge)	mm	4091	4108
	ft	13.4	13.5
Reach at 45° Dump (Edge)	mm	2123	2109
	ft	7.0	6.9
Horizontal Arm and Level Bucket Reach (Edge)	mm	4247	4225
	ft	13.9	13.9
Digging Depth (Segment)	mm	151	149
	in	6.0	5.9
Overall Length – Bucket Level Ground	mm	13 018	12 994
	ft	42.7	42.6
Overall Height	mm	8541	8575
	ft	28.0	28.1
Loader Clearance Circle – Corner SAE Carry	mm	21 015	21 001
	ft	68.9	68.9
Rack Back Angle at SAE Carry	degrees	49.1	49.1
Full Dump at Maximum Lift	degrees	–45.0	–45.0
Tipping Load – Straight*	kg	49 825	50 799
	lb	109,844	111,993
Tipping Load – Straight (Tire Squash)*	kg	46 940	47 424
	lb	103,485	104,552
Tipping Load at Operating Weight (Articulated 35°)*	kg	44 309	45 222
	lb	97,685	99,698
Tipping Load at Operating Weight (Articulated 35°) (Tire Squash)*	kg	40 189	40 575
	lb	88,601	89,452
Breakout Force (SAE Rated)**	kN	544.1	550.4
	lbf	122,314	123,741
Operating Weight	kg	81 250	80 924
	lb	179,125	178,408
Weight Distribution at SAE Carry (Unloaded)			
Front	kg	44 358	43 767
	lb	97,793	96,489
Rear	kg	36 892	37 158
	lb	81,333	81,919
Loaded Machine Weight	kg	101 208	100 882
	lb	223,125	222,407
Weight Distribution at SAE Carry (Loaded)			
Front	kg	77 694	77 050
	lb	171,285	169,866
Rear	kg	23 514	23 832
	lb	51,840	52,542

*Static tipping loads and operating weights include full fluids and 80 kg (176 lb) operator.
**Breakout force is measured 102 mm (4 in) behind tip of cutting edge with bucket hinge pin as pivot.
Full compliance to ISO 14397-1:2007.

Aggregate Package Operating Specifications – High Lift

For machines equipped with Bridgestone 45/65R39 VSDL One Star 6.7 bar (97 psi) pressure.

		990 HL Agg	
Bucket Type		**General Purpose**	**Coal**
Ground Engaging Tools		**Bolt-on Cutting Edges**	**Bolt-on Cutting Edges**
Cutting Edge Type		**Straight**	**Straight**
Bucket Part Number (Group Level)		**548-9350**	**451-5410**
Struck Capacity (ISO)	m^3 yd^3	10.0 13.1	12.0 15.7
Heaped Capacity (ISO)	m^3 yd^3	13.0 17.0	15.0 19.6
Bucket Width – Overall	mm ft	4480 13.1	4450 15.7
Clearance at 45° Dump (Edge)	mm ft	4552 14.9	4569 15.0
Reach at 45° Dump (Edge)	mm ft	2512 8.2	2498 8.2
Horizontal Arm and Level Bucket Reach (Edge)	mm ft	4847 15.9	4825 15.8
Digging Depth (Segment)	mm in	193 7.6	191 7.5
Overall Length – Bucket Level Ground	mm ft	13 751 45.1	13 728 45.0
Overall Height	mm ft	9002 29.5	9036 29.6
Loader Clearance Circle – Corner SAE Carry	mm ft	21 698 71.2	21 682 71.1
Rack Back Angle at SAE Carry	degrees	49.5	49.4
Full Dump at Maximum Lift	degrees	–51.1	–51.1
Tipping Load – Straight*	kg lb	50 149 110,560	50 936 112,296
Tipping Load – Straight (Tire Squash)*	kg lb	47 551 104,832	47 886 105,570
Tipping Load at Operating Weight (Articulated 35°)*	kg lb	44 205 97,455	44 946 99,089
Tipping Load at Operating Weight (Articulated 35°) (Tire Squash)*	kg lb	40 153 88,522	40 409 89,086
Breakout Force (SAE Rated)**	kN lbf	513.0 115,321	519.0 116,673
Operating Weight	kg lb	88 691 195,529	88 365 194,812
Weight Distribution at SAE Carry (Unloaded)			
Front	kg lb	44 600 98,326	43 954 96,901
Rear	kg lb	44 091 97,204	44 412 97,911
Loaded Machine Weight	kg lb	108 649 239,529	108 323 238,811
Weight Distribution at SAE Carry (Loaded)			
Front	kg lb	81 288 179,210	80 586 177,661
Rear	kg lb	27 360 60,319	27 737 61,150

*Static tipping loads and operating weights include full fluids and 80 kg (176 lb) operator.
**Breakout force is measured 102 mm (4 in) behind tip of cutting edge with bucket hinge pin as pivot.
Full compliance to ISO 14397-1:2007.

990 Wheel Loader Specifications

Operating Specifications – Standard Lift

For machines equipped with Bridgestone 45/65R39 VSDL One Star 6.7 bar (97 psi) pressure.

		990 Std Lift Tires: 45/65R39 VSDL, SLR: 1203 mm			
Bucket Type		**Rock**	**Rock**	**Rock**	**HD Rock**
Ground Engaging Tool		**Teeth & Segments**	**Teeth & Segments**	**Teeth & Segments**	**Teeth & Segments**
Cutting Edge Type		**Spade**	**Spade**	**Spade**	**Spade**
Bucket Part Number (Group Level)		**499-7550**	**499-7560**	**499-7570**	**499-7580**
Struck Capacity (ISO)	m^3 yd^3	7.0 9.1	7.5 9.9	8.0 10.5	7.0 9.1
Heaped Capacity (ISO)	m^3 yd^3	8.5 11.1	9.0 11.8	10.0 13.0	8.5 11.1
Bucket Width – Overall	mm ft	4610 15.1	4610 15.1	4610 15.1	4610 15.1
Clearance at 45° Dump (Tooth Tip)	mm ft	4044 13.3	3997 13.1	3976 13.0	4023 13.2
Clearance at 45° Dump (Edge)	mm ft	4217 13.8	4169 13.7	4148 13.6	4217 13.8
Reach at 45° Dump (Tooth Tip)	mm ft	2193 7.2	2241 7.4	2262 7.4	2197 7.2
Reach at 45° Dump (Edge)	mm ft	2027 6.6	2074 6.8	2095 6.9	2027 6.6
Horizontal Arm and Level Bucket Reach (Tooth)	mm ft	4330 14.2	4397 14.4	4427 14.5	4347 14.3
Digging Depth (Segment)	mm in	130 5.1	130 5.1	130 5.1	130 5.1
Overall Length – Bucket Level Ground	mm ft	13 084 42.9	13 151 43.1	13 181 43.2	13 102 43.0
Overall Height	mm ft	8281 27.2	8346 27.4	8375 27.5	8281 27.2
Loader Clearance Circle (SAE carry with teeth)	mm ft	20 898 68.6	20 933 68.7	20 949 68.7	20 886 68.5
Rack Back Angle at SAE Carry	degrees	48.8	48.8	48.8	48.8
Full Dump at Maximum Lift	degrees	–45.0	–45.0	–45.0	–45.0
Tipping Load – Straight*	kg lb	46 060 101,546	45 814 101,002	45 853 101,089	44 961 99,122
Tipping Load – Straight (Tire Squash)*	kg lb	43 583 96,084	43 319 95,502	43 318 95,500	42 507 93,712
Tipping Load at Operating Weight (Articulated 35°)*	kg lb	41 029 90,453	40 790 89,927	40 810 89,970	39 928 88,025
Tipping Load at Operating Weight (Articulated 35°) (Tire Squash)*	kg lb	37 499 82,671	37 240 82,100	37 211 82,036	36 425 80,303
Breakout Force (SAE Rated)**	kN lbf	589.0 132,411	569.0 127,914	560.0 125,896	585.7 131,675
Operating Weight	kg lb	79 031 174,233	79 164 174,526	79 310 174,848	80 069 176,521
Weight Distribution at SAE Carry (Unloaded)					
Front	kg lb	45 350 99,979	45 608 100,548	45 851 101,085	47 087 103,809
Rear	kg lb	33 681 74,254	33 556 73,979	33 458 73,763	32 982 72,713
Loaded Machine Weight	kg lb	94 906 209,231	95 039 209,525	95 185 209,847	95 944 211,520
Weight Distribution at SAE Carry (Loaded)					
Front	kg lb	71 467 157,557	71 773 158,233	71 996 158,724	73 186 161,348
Rear	kg lb	23 439 51,675	23 266 51,292	23 189 51,122	22 758 50,172

*Static tipping loads and operating weights include full fluids and 80 kg (176 lb) operator.
**Breakout force is measured 102 mm (4 in) behind tip of cutting edge with bucket hinge pin as pivot.
Full compliance to ISO 14397-1:2007.

Operating Specifications – High Lift

For machines equipped with Bridgestone 45/65R39 VSDL One Star 6.7 bar (97 psi) pressure.

		990 High Lift Tires: 45/65R39 VSDL, SLR: 1203 mm			
Bucket Type		**Rock**	**Rock**	**Rock**	**HD Rock**
Ground Engaging Tool		**Teeth & Segments**	**Teeth & Segments**	**Teeth & Segments**	**Teeth & Segments**
Cutting Edge Type		**Spade**	**Spade**	**Spade**	**Spade**
Bucket Part Number (Group Level)		**499-7550**	**499-7560**	**499-7570**	**499-7580**
Struck Capacity (ISO)	m^3 yd^3	7.0 9.1	7.5 9.9	8.0 10.5	7.0 9.1
Heaped Capacity (ISO)	m^3 yd^3	8.5 11.1	9.0 11.8	10.0 13.0	8.5 11.1
Bucket Width – Overall	mm ft	4610 15.1	4610 15.1	4610 15.1	4610 15.1
Clearance at 45° Dump (Tooth Tip)	mm ft	4505 14.8	4458 14.6	4437 14.6	4484 14.7
Clearance at 45° Dump (Edge)	mm ft	4678 15.3	4630 15.2	4609 15.1	4678 15.3
Reach at 45° Dump (Tooth Tip)	mm ft	2583 8.5	2631 8.6	2651 8.7	2587 8.5
Reach at 45° Dump (Edge)	mm ft	2416 7.9	2463 8.1	2485 8.2	2416 7.9
Horizontal Arm and Level Bucket Reach (Tooth)	mm ft	4930 16.2	4997 16.4	5027 16.5	4947 16.2
Digging Depth (Segment)	mm in	172 6.8	172 6.8	172 6.8	172 6.8
Overall Length – Bucket Level Ground	mm ft	13 820 45.3	13 887 45.6	13 917 45.7	13 838 45.4
Overall Height	mm ft	8742 28.7	8807 28.9	8836 29.0	8742 28.7
Loader Clearance Circle (SAE carry with teeth)	mm ft	21 551 70.7	21 590 70.8	21 609 70.9	21 535 70.7
Rack Back Angle at SAE Carry	degrees	49.3	49.3	49.3	49.3
Full Dump at Maximum Lift	degrees	–51.1	–51.1	–51.1	–51.1
Tipping Load – Straight*	kg lb	42 209 93,054	41 962 92,509	41 939 92,460	41 136 90,690
Tipping Load – Straight (Tire Squash)*	kg lb	40 203 88,632	39 944 88,061	39 894 87,951	39 147 86,304
Tipping Load at Operating Weight (Articulated 35°)*	kg lb	37 248 82,117	37 010 81,593	36 973 81,511	36 172 79,746
Tipping Load at Operating Weight (Articulated 35°) (Tire Squash)*	kg lb	34 161 75,312	33 908 74,754	33 836 74,596	33 107 72,988
Breakout Force (SAE Rated)**	kN lbf	555.3 124,828	536.3 120,565	527.8 118,647	552.0 124,092
Operating Weight	kg lb	83 656 184,429	83 789 184,722	83 935 185,044	84 694 186,717
Weight Distribution at SAE Carry (Unloaded)					
Front	kg lb	47 067 103,765	47 347 104,382	47 615 104,973	48 980 107,982
Rear	kg lb	36 589 80,664	36 442 80,340	36 320 80,071	35 714 78,735
Loaded Machine Weight	kg lb	99 531 219,427	99 664 219,720	99 810 220,042	100 569 221,716
Weight Distribution at SAE Carry (Loaded)					
Front	kg lb	75 859 167,240	76 187 167,962	76 433 168,506	77 756 171,422
Rear	kg lb	23 672 52,187	23 477 51,758	23 377 51,537	22 813 50,294

*Static tipping loads and operating weights include full fluids and 80 kg (176 lb) operator.
**Breakout force is measured 102 mm (4 in) behind tip of cutting edge with bucket hinge pin as pivot.
Full compliance to ISO 14397-1:2007.

990 Wheel Loader Standard and Optional Equipment

Standard and Optional Equipment

Standard and optional equipment may vary. Consult your Cat® dealer for details.

	Standard	Optional
ELECTRICAL		
Alarm, back-up	✓	
Alternator, 150 amp	✓	
Batteries, maintenance free (2 – 1,400 CCA)	✓	
Converter, 10/15 amp, 24V to 12V	✓	
Deutsch component connectors	✓	
Electrical system, 24V	✓	
Electronic transmission control	✓	
Ground level starter lockout	✓	
Ground level transmission lockout	✓	
Lighting system, halogen (front and rear) lighting, access stairway, engine compartment	✓	
Starter, electric	✓	
Auxiliary start receptacle	✓	
OPERATOR ENVIRONMENT		
Air conditioner and heater with automatic temperature control	✓	
Cab precleaner, powered	✓	
Cab, sound suppressed and pressurized, rollover protective structure/falling objects protective structure (ROPS/FOPS)	✓	
Cat Detect, object detection system		✓
Cat Vision, rear vision camera system	✓	
CB radio ready	✓	
12-volt power port	✓	
Coat hook	✓	
Electro-hydraulic tilt and lift controls (seat mounted)	✓	
Flip-up armrest	✓	
Heater and defroster	✓	
Horn, electric	✓	
Implement hydraulic lockout	✓	
Instrumentation, gauges: engine coolant temperature, fuel level, ground speed, gear, hydraulic oil temperature, speedometer/ tachometer, torque converter temperature	✓	
Instrumentation, warning indicators: action alert system – three category, automatic transmission model enable status, brake malfunction, bucket float status, delayed engine shutdown status, engine idle shutdown status, engine malfunction, fuel economy mode enable status, hydraulic lockout, lockup clutch enable status, low fuel level, parking brake status, rimpull control enable status, seat belt warning, secondary steering (if equipped), throttle lock status, transmission gear	✓	

	Standard	Optional
OPERATOR ENVIRONMENT (CONTINUED)		
Keypad control with indicator lights	✓	
LED warning strobe		✓
Light, cab, dome	✓	
Lights, LED		✓
Lunchbox, beverage holders	✓	
Mirrors, heated		✓
Mirrors, rearview (externally mounted)	✓	
Premium seat with heated and actively cooled leather, adjustable lumbar support, air adjustable bolsters on the seat and backrest, seat cushion tilt adjustment, and adjustable-length seat cushion	✓	
Radio, AM/FM/CD/MP3, Bluetooth® with Satellite Sirius		✓
Seat belt minder	✓	
Seat belt, retractable, 76 mm (3 in) wide	✓	
Steering and Transmission Integrated Control (STIC™) system with steering lock	✓	
Tinted glass	✓	
Trainer seat with lap belt	✓	
Vital Information Management System (VIMS™) with graphical information display: external data port, customizable operator profiles, cycle timer, integral Cat Production Measurement	✓	
Wet-arm wipers/washers (front, rear, and corner) intermittent front wiper	✓	
Window pull-down visor		✓
POWERTRAIN		
Antifreeze, -50° C (-58° F)		✓
Autolube – linkage, cylinder, and hitch pins		✓
Axle oil cooling		✓
Axle-shift oil-disc service brake	✓	
Brakes, oil-disc, full hydraulic, enclosed	✓	
Case drain screens	✓	
Cat Clean Emission Module (CEM) – Tier 4 only	✓	
Deluxe hydraulic filtration		✓
Demand fan	✓	
Electro-hydraulic parking brake	✓	
Engine, C27	✓	
Engine block heater 120V or 240V		✓
Engine oil change system, high speed, Wiggins		✓
Fuel lines, heated		✓
Fuel priming pump (electric)	✓	
Ground level engine shutdown switch	✓	
High ambient cooling – software		✓
Hydraulic oil, Arctic -40° C (-40° F)		✓
Mufflers (under hood) – Tier 2 equivalent only	✓	

Standard and Optional Equipment

Standard and optional equipment may vary. Consult your Cat dealer for details.

	Standard	Optional
POWERTRAIN (CONTINUED)		
Precleaner engine air intake	✓	
Radiator, aluminum modular radiator (AMR)	✓	
Ride control		✓
Secondary steering		✓
Separated cooling system	✓	
Starting aid, ether, manual override	✓	
Throttle lock	✓	
Torque converter, impeller clutch (ICTC) with lock-up clutch (LUC), rimpull control system	✓	
Transmission, 534 mm (21 in) planetary power shift (electronic) (3F/3R)	✓	
OTHER		
Access ladder, powered		✓
Automatic lift kickout/positioner	✓	
Automatic retarding control (ARC)		✓
Axle oscillation stop		✓
Axle temperature sensor	✓	
Cab mounts, heavy duty		✓
Couplings, Cat O-ring face seals	✓	
Deluxe service center		✓
Economy mode with on demand throttle	✓	
Emergency secondary egress ladder	✓	
Engine, crankcase 500-hour interval with CH4	✓	
Engine idle management: auto idle kickdown, delayed engine shutdown, engine idle shutdown	✓	

	Standard	Optional
OTHER (CONTINUED)		
Fast fill fuel system (Shaw-Aero)		✓
Fenders, front and rear roading		✓
Fenders, steel (front)	✓	
Ground level lockable battery disconnect switch	✓	
Grouped/labeled lube points	✓	
Guards, crankcase and powertrain	✓	
Hitch, drawbar with pin	✓	
Hoses, Cat XT™	✓	
Oil sampling valves	✓	
Positive flow control hydraulic system	✓	
Premixed 50% concentration of extended life coolant with freeze protection to -34° C (-29° F)	✓	
Product Link™	✓	
Sight gauges: hydraulic tanks, steering/fan and implement/brake, and transmission	✓	
Sound suppression, engine enclosure		✓
Stairway, left and right rear access	✓	
Steering, load sensing	✓	
Tire pressure monitoring system		✓
Toe kicks	✓	
Vandalism protection caplocks	✓	
Venturi stack	✓	
Wheel chocks		✓
OTHER OPTIONAL CONFIGURATIONS		
Millyard		✓
Steel mill		✓

990 Environmental Declaration

The following information applies to the machine at the time of final manufacture as configured for sale in the regions covered in this document. The content of this declaration is valid as of the date issued; however, content related to machine features and specifications are subject to change without notice. For additional information, please see the machine's Operation and Maintenance Manual.

For more information on sustainability in action and our progress, please visit https://www.caterpillar.com/en/company/sustainability.

Engine

- The Cat® C27 engine is available in configurations that meet U.S. EPA Tier 4 Final and EU Stage V emission standards or emits equivalent to U.S. EPA Tier 2.
- Cat Tier 4 Final and Stage V diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels*** up to:
  - ✓ 20% biodiesel FAME (fatty acid methyl ester)*
  - ✓ 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels
- Cat engines equivalent to Tier 2, are compatible with diesel fuel blended with the following lower-carbon intensity fuels up to:
  - ✓ 100% biodiesel FAME (fatty acid methyl ester)**
  - ✓ 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels

  Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

**Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel.*

***For use of blends higher than 20% biodiesel, consult your Cat dealer.*

****Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.*

Air Conditioning System

- The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a or R1234yf. See the label or instruction manual for identification of the gas.
- If equipped with R134a (Global Warming Potential = 1430), the system contains 2.7 kg (5.9 lb) of refrigerant which has a CO_2 equivalent of 3.861 metric tonnes (4.256 tons).

Paint

- Based on best available knowledge, the maximum allowable concentration, measured in parts per million (PPM), of the following heavy metals in paint are:
  - Barium < 0.01%
  - Cadmium < 0.01%
  - Chromium < 0.01%
  - Lead < 0.01%

Oils and Fluids

- Caterpillar factory fills with ethylene glycol coolants. Cat Diesel Engine Antifreeze/Coolant (DEAC) and Cat Extended Life Coolant (ELC) can be recycled. Consult your Cat dealer for more information.
- Cat Bio HYDO™ Advanced is an EU Ecolabel approved biodegradable hydraulic oil.
- Additional fluids are likely to be present, please consult the Operations and Maintenance Manual or the Application and Installation guide for complete fluid recommendations and maintenance intervals.

Features and Technology

- The following features and technology may contribute to fuel savings and/or carbon reduction. Features may vary. Consult your Cat dealer for details.
  - ECO mode minimizes fuel consumption for light applications
  - Load sensing hydraulics produce flow and pressure on-demand and only in amounts necessary to perform the needed functions
  - Reduce fuel burn while idling with engine idle shutdown
  - Extended maintenance intervals reduce fluid and filter consumption

Recycling

- The materials included in machines are categorized as below with approximate weight percentage. Because of variations of product configurations, the following values in the table may vary.

Material Type	Weight Percentage
Steel	69.07%
Iron	11.38%
Nonferrous Metal	1.61%
Mixed Metal	0.63%
Mixed-Metal & Nonmetal	0.00%
Plastic	1.75%
Rubber	10.2%
Mixed Nonmetallic	0.02%
Fluid	2.96%
Other	1.89%
Uncategorized	0.49%
Total	100%

- A machine with higher recyclability rate will ensure more efficient usage of valuable natural resources and enhance end-of-life value of the product. According to ISO 16714 (Earthmoving machinery – Recyclability and recoverability – Terminology and calculation method), recyclability rate is defined as percentage by mass (mass fraction in percent) of the new machine potentially able to be recycled, reused, or both. All parts in the bill of material are first evaluated by component type based on a list of components defined by the ISO 16714 and Japan CEMA (Construction Equipment Manufacturers Association) standards. Remaining parts are further evaluated for recyclability based on material type.

  Because of variations of product configurations, the following value in the table may vary.

Recyclability – 98%

990
Millyard

The Cat® 990 Millyard package provides the additional performance, productivity, and safety that is demanded in the millyard.

Proven Reliability

- Cat C27 engine is built and tested to meet your most demanding applications.
- Long engine life and improved fuel efficiency with reduced rated speed.
- Designed for long life, rebuildability, and higher resale value.
- Maximum responsiveness with Steering and Transmission Integrated Control (STIC™).
- Durable construction withstands the toughest loading conditions and multiple lifecycles.

Durability

- World-class transmission for long life and consistent, smooth shifting; specifically designed for millyard applications.
- Advanced filtration system for extended performance and reliability of the hydraulic system.
- Advanced impeller clutch torque converter (ICTC) and rimpull control system (RCS) help to reduce tire slippage and wear, improve fuel efficiency, and reduce cost per ton.
- Linkage pin joints have optional auto-lube system to help ensure long life.
- Heavy-duty steering cylinder mounts and axle mounting help ensure increased structural integrity.

Achieve Greater Fuel Efficiency and Productivity

- Two engine emission options are available that meet U.S. EPA Tier 4 Final and EU Stage V emission standards or emit equivalent to U.S. EPA Tier 2.
- Positive flow control (PFC) hydraulic system helps increase efficiency and responsiveness with consistent performance.
- Planetary power shift transmission for maximum uptime.
- Convenient, responsive, electro-hydraulic controls help increase operator productivity.
- Integrated steering and transmission controls.
- Operators can monitor tire pressure during operation with any change sending a fault code to VisionLink®, helping to prevent premature tire failure.

Superior Fuel Efficiency

- Increased fuel efficiency material per gallon of fuel.
- Economy mode for reduced rated engine speed and to help fuel consumption.
- Positive flow-control hydraulics for full flow on demand at low engine speeds.
- Engine idle shutdown for less fuel used while idling.
- Fully integrated electronic engine controls help make your fuel go farther.

Reduced Maintenance Time and Other Costs

- 10% lower maintenance costs.
- Grouped service points.
- Electro-hydraulic controls.
- Swing-out engine compartment service doors.
- Ecology drains to prevent spills.
- Ground level access to transmission control valves.
- Vital Information Management System (VIMS™) notifications to resolve problems before failure.
- Long life, rebuildability, and high resale value.

Easy, Comfortable Operator Environment

- World-class operator comfort and ergonomics.
- Premium seat with heated and actively cooled leather, adjustable lumbar support, air adjustable bolsters on the seat and backrest, seat cushion tilt adjustment, and adjustable-length seat cushion.
- Easy-to-reach levers and controls with seat-mounted implement pod to reduce fatigue.
- Ergonomic switch placement and displays with large backlit switches, LED indicators, and ISO symbols.
- Optional heated mirrors.
- Two-position rocker switch activates the electro-hydraulic parking brake.
- Reduced vibrations from isolated cab mounts and seat air suspension.
- Achieve precise positioning for easy loading in tight areas with 35 degrees of steering articulation.
- Precise machine control by load-sensing hydraulic steering system.

Purpose-Built Specialty Arrangements Millyard

- Designed to meet the demands of millyard applications.
- Designed for durability, ensuring availability in multiple lifecycles.
- Equipped with 45 degree angle access ladders and standard Cat Vision for enhanced safety.
- Cat forks are designed for maximum productivity and durability.
- Integrates front camera mounting location for maximum visibility to all fork tips during truck unloading.

990 Millyard Machine Specifications

Engine

Engine Model	Cat® C27	
Emissions (Option 1)	U.S. EPA Tier 4 Final/ EU Stage V	
Rated Speed	1,800 rpm	
Engine Power – ISO 14396:2002	586 kW	786 hp
Gross Power – SAE J1995:2014	597 kW	801 hp
Net Power – SAE J1349:2011 (Standard Ambient)	546 kW	732 hp
Net Power – SAE J1349:2011 (High Ambient)	508 kW	681 hp
Emissions (Option 2)	Emits equivalent to U.S. EPA Tier 2	
Rated Speed	1,800 rpm	
Engine Power – ISO 14396:2002	561 kW	752 hp
Gross Power – SAE J1995:2014	571 kW	766 hp
Net Power – SAE J1349:2011 (Standard Ambient)	521 kW	699 hp
Net Power – SAE J1349:2011 (High Ambient)	483 kW	648 hp
Bore	137.2 mm	5.4 in
Stroke	152.4 mm	6.0 in
Displacement	27.03 L	1,649.5 in^3
Peak Torque (1,200 rpm)	3557 N·m	2,624 lbf-ft
Torque Rise	18%	

- Net power advertised is the power available at the flywheel when the engine is equipped with fan at minimum speed, air intake system, exhaust system, and alternator.

Operating Specifications

Operating Weight	91 807 kg	202,398 lb
Tipping Load		
Straight	42 180 kg	92,990 lb
Articulated	37 148 kg	81,896 lb

Transmission

Transmission Type	Cat planetary power shift	
Forward 1	7.4 km/h	4.6 mph
Forward 2	13.2 km/h	8.2 mph
Forward 3	23.3 km/h	14.5 mph
Reverse 1	8.15 km/h	5.1 mph
Reverse 2	14.6 km/h	9.1 mph
Reverse 3	25.7 km/h	16.0 mph
Direct Drive Forward 1	Lock-up disabled	
Direct Drive Forward 2	13.2 km/h	8.2 mph
Direct Drive Forward 3	23.3 km/h	14.5 mph
Direct Drive Reverse 1	8.15 km/h	5.1 mph
Direct Drive Reverse 2	14.6 km/h	9.1 mph
Direct Drive Reverse 3	25.7 km/h	16.0 mph

- Travel speeds based on Michelin 45/65R39 LD D2**L5 tires.

Hydraulic System – Lift/Tilt

Lift/Tilt System – Circuit	Positive flow control	
Lift/Tilt System	Variable displacement piston	
Maximum Flow at 1,800 rpm	910 L/min	240 gal/min
Relief Valve Setting – Lift/Tilt	33 000 kPa	4,786 psi
Cylinders, Double Acting: Lift, Bore and Stroke	254 mm × 1264 mm	10.0 in × 49.8 in
Cylinders, Double Acting: Tilt, Bore and Stroke	317.5 mm × 819 mm	12.5 in × 32.2 in
Pilot System	Open loop and pressure reducing	
Relief Valve Setting	3500 kPa	507 psi

Hydraulic Cycle Time

Rack Back	4.8 Seconds
Raise	9.4 Seconds
Dump	2.9 Seconds
Lower	3.7 Seconds
Lower Float Down	3.6 Seconds

Hydraulic System – Steering

Steering System – Circuit	Pilot, load sensing	
Steering System – Pump	Piston, variable displacement	
Maximum Flow @ 1,400 rpm	358 L/min	94.5 gal/min
Relief Valve Setting – Steering	32 000 kPa	4,641 psi
Total Steering Angle	70°	

Service Refill Capacities

Fuel Tank	1064 L	281.0 gal
Cooling System	208 L	54.9 gal
Engine Crankcase	75.7 L	20.0 gal
Transmission	110 L	29.1 gal
Differentials and Final Drives – Front	271 L	71.6 gal
Differentials and Final Drives – Rear	261 L	68.9 gal
Hydraulic System Factory Fill	795 L	210.0 gal
Hydraulic Tank (Implement and Hydraulic Fan)	261 L	68.9 gal
Hydraulic Tank (Steering and Braking)	132 L	34.9 gal

- Cat U.S. EPA Tier 4 Final/EU Stage V diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels** up to:
  – 20% biodiesel FAME (fatty acid methyl ester)*
  – 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels.

Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

*Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel (for use of blends higher than 20% biodiesel, consult your Cat dealer).

**Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.

– Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, API CK-4, and/or ACEA E9 specifications are required.

– Diesel Exhaust Fluid (DEF) that meets all requirements defined in ISO 22241-1:2006.

Axles

Front	Fixed
Rear	Trunnion
Oscillation Angle	5.5°

Brakes

Brakes	ISO 3450:2011

Sound Performance

Tier 4 Final/Stage V	
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	116 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)*
Machine Sound Power Level (ISO 6395:2008)	114 dB(A)*
Tier 2	
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	116 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)*
Machine Sound Power Level (ISO 6395:2008)	114 dB(A)*

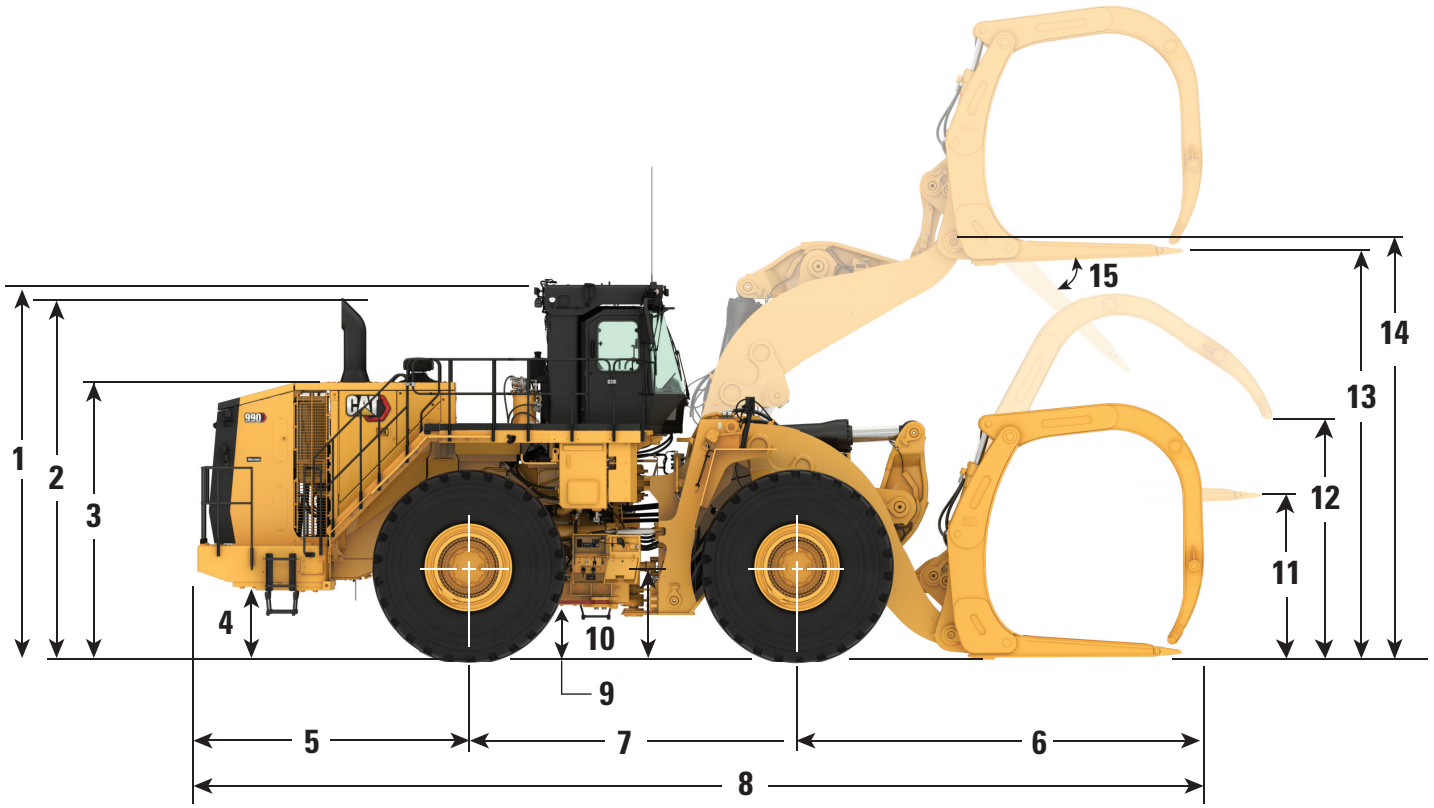
* Sound suppression equipped

- The machine sound power level was measured according to ISO 6395:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- The operator sound pressure level was measured according to ISO 6396:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- Hearing protection may be needed when the machine is operated with a cab that is not properly maintained or when the doors or windows are open for extended periods or in a noisy environment.

990 Millyard Machine Specifications

Dimensions

All dimensions are approximate.



		Millyard Linkage	
1	Ground to Top of Rollover Protective Structure (ROPS)	5240 mm	17.2 ft
2	Ground to Top of Exhaust Stack	5049 mm	16.6 ft
3	Ground to Top of Hood	3862 mm	12.7 ft
4	Ground to Bumper Clearance	959 mm	3.1 ft
5	Rear Axle Centerline to Bumper	3795 mm	12.5 ft
6	Front Axle Centerline to Fork Tip	5445 mm	17.9 ft
7	Wheelbase	4600 mm	15.1 ft
8	Maximum Overall Length	13 840 mm	45.4 ft
9	Ground to Lower Hitch Clearance	596 mm	2.0 ft
10	Ground to Center of Front Axle	1186 mm	3.9 ft
11	Fork Height with Level Arms	2780 mm	9.1 ft
12	Fork Top Clamp Opening	3715 mm	12.2 ft
13	Fork Height at Maximum Lift	5662 mm	18.6 ft
14	Hinge Pin Height at Maximum Lift	5904 mm	19.4 ft
15	Dump Angle at Maximum Lift	29.3 degrees	

Standard and Optional Equipment

Standard and optional equipment may vary. Consult your Cat® dealer for details.

	Standard	Optional
ELECTRICAL		
Alarm, back-up	✓	
Alternator, 150 amp	✓	
Batteries, maintenance free (2 – 1,400 CCA)	✓	
Converter, 10/15 amp, 24V to 12V	✓	
Deutsch component connectors	✓	
Electrical system, 24V	✓	
Electronic transmission control	✓	
Ground level starter lockout	✓	
Ground level transmission lockout	✓	
Lighting system, halogen (front and rear) lighting, access stairway, engine compartment	✓	
Starter, electric	✓	
Auxiliary start receptacle	✓	
OPERATOR ENVIRONMENT		
Air conditioner and heater with automatic temperature control	✓	
Cab precleaner, powered	✓	
Cab, sound suppressed and pressurized, rollover protective structure/falling objects protective structure (ROPS/FOPS)	✓	
Cat Detect, object detection system		✓
Cat Vision, rear vision camera system	✓	
CB radio ready	✓	
12-volt power port	✓	
Coat hook	✓	
Electro-hydraulic tilt and lift controls (seat mounted)	✓	
Flip-up armrest	✓	
Heater and defroster	✓	
Horn, electric	✓	
Implement hydraulic lockout	✓	
Instrumentation, gauges: engine coolant temperature, fuel level, ground speed, gear, hydraulic oil temperature, speedometer/ tachometer, torque converter temperature	✓	
Instrumentation, warning indicators: action alert system – three category, automatic transmission model enable status, brake malfunction, bucket float status, delayed engine shutdown status, engine idle shutdown status, engine malfunction, fuel economy mode enable status, hydraulic lockout, lockup clutch enable status, low fuel level, parking brake status, rimpull control enable status, seat belt warning, secondary steering (if equipped), throttle lock status, transmission gear	✓	

	Standard	Optional
OPERATOR ENVIRONMENT (CONTINUED)		
Keypad control with indicator lights	✓	
LED warning strobe		✓
Light, cab, dome	✓	
Lights, LED		✓
Lunchbox, beverage holders	✓	
Mirrors, heated		✓
Mirrors, rearview (externally mounted)	✓	
Premium seat with heated and actively cooled leather, adjustable lumbar support, air adjustable bolsters on the seat and backrest, seat cushion tilt adjustment, and adjustable-length seat cushion	✓	
Radio, AM/FM/CD/MP3, Bluetooth® with Satellite Sirius		✓
Seat belt minder	✓	
Seat belt, retractable, 76 mm (3 in) wide	✓	
Steering and Transmission Integrated Control (STIC™) system with steering lock	✓	
Tinted glass	✓	
Trainer seat with lap belt	✓	
Vital Information Management System (VIMS™) with graphical information display: external data port, customizable operator profiles, cycle timer, integral Cat Production Measurement	✓	
Wet-arm wipers/washers (front, rear, and corner) intermittent front wiper	✓	
Window pull-down visor		✓
POWERTRAIN		
Antifreeze, -50° C (-58° F)		✓
Autolube – linkage, cylinder, and hitch pins		✓
Axle oil cooling		✓
Axle-shift oil-disc service brake	✓	
Brakes, oil-disc, full hydraulic, enclosed	✓	
Case drain screens	✓	
Cat Clean Emission Module (CEM) – Tier 4 only	✓	
Deluxe hydraulic filtration		✓
Demand fan	✓	
Electro-hydraulic parking brake	✓	
Engine, C27	✓	
Engine block heater 120V or 240V		✓
Engine oil change system, high speed, Wiggins		✓
Fuel lines, heated		✓
Fuel priming pump (electric)	✓	
Ground level engine shutdown switch	✓	
High ambient cooling – software		✓
Hydraulic oil, Arctic -40° C (-40° F)		✓
Mufflers (under hood) – Tier 2 equivalent only	✓	

990 Millyard Machine Standard and Optional Equipment

Standard and Optional Equipment

Standard and optional equipment may vary. Consult your Cat dealer for details.

	Standard	Optional
POWERTRAIN (CONTINUED)		
Precleaner engine air intake	✓	
Radiator, aluminum modular radiator (AMR)	✓	
Ride control		✓
Secondary steering		✓
Separated cooling system	✓	
Starting aid, ether, manual override	✓	
Throttle lock	✓	
Torque converter, impeller clutch (ICTC) with lock-up clutch (LUC), rimpull control system	✓	
Transmission, 534 mm (21 in) planetary power shift (electronic) (3F/3R)	✓	
OTHER		
Access ladder, powered		✓
Automatic lift kickout/positioner	✓	
Automatic retarding control (ARC)		✓
Axle oscillation stop		✓
Axle temperature sensor	✓	
Cab mounts, heavy duty		✓
Couplings, Cat O-ring face seals	✓	
Deluxe service center		✓
Economy mode with on demand throttle	✓	
Emergency secondary egress ladder	✓	
Engine, crankcase 500-hour interval with CH4	✓	
Engine idle management: auto idle kickdown, delayed engine shutdown, engine idle shutdown	✓	

	Standard	Optional
OTHER (CONTINUED)		
Fast fill fuel system (Shaw-Aero)		✓
Fenders, front and rear roading		✓
Fenders, steel (front)	✓	
Ground level lockable battery disconnect switch	✓	
Grouped/labeled lube points	✓	
Guards, crankcase and powertrain	✓	
Hitch, drawbar with pin	✓	
Hoses, Cat XT™	✓	
Oil sampling valves	✓	
Positive flow control hydraulic system	✓	
Premixed 50% concentration of extended life coolant with freeze protection to -34° C (-29° F)	✓	
Product Link™	✓	
Sight gauges: hydraulic tanks, steering/fan and implement/brake, and transmission	✓	
Sound suppression, engine enclosure		✓
Stairway, left and right rear access	✓	
Steering, load sensing	✓	
Tire pressure monitoring system		✓
Toe kicks	✓	
Vandalism protection caplocks	✓	
Venturi stack	✓	
Wheel chocks		✓

990

Steel Mill

The Cat® 990 Steel Mill package provides the additional performance, productivity, and safety that is demanded in the steel mill.

Proven Reliability

- Cat C27 engine is built and tested to meet your most demanding applications.
- Long engine life and improved fuel efficiency with reduced rated speed.
- Designed for long life, rebuildability, and higher resale value.
- Maximum responsiveness with Steering and Transmission Integrated Control (STIC™).
- Durable construction withstands the toughest loading conditions and multiple lifecycles.

Durability

- World-class transmission for long life and consistent, smooth shifting; specifically designed for steel mill applications.
- Advanced filtration system for extended performance and reliability of the hydraulic system.
- Advanced impeller clutch torque converter (ICTC) and rimpull control system (RCS) help to reduce tire slippage and wear, improve fuel efficiency, and reduce cost per ton.
- Linkage pin joints have optional auto-lube system to ensure long life.
- Heavy-duty steering cylinder mounts and axle mounting help ensure increased structural integrity.

Achieve Greater Fuel Efficiency and Productivity

- Two engine emission options are available that meet U.S. EPA Tier 4 Final and EU Stage V emission standards or emit equivalent to U.S. EPA Tier 2.
- Positive flow control (PFC) hydraulic system helps increase efficiency, bucket feel, and responsiveness with consistent performance.
- Excellent visibility to the bucket edges and work area through a Z-bar linkage.
- Planetary power shift transmission for maximum uptime.
- Convenient, responsive, electro-hydraulic controls help increase operator productivity.
- Superior digging, higher bucket fill factors, reduced dig times.

Superior Fuel Efficiency

- Increased fuel efficiency material per gallon of fuel.
- Economy mode for reduced rated engine speed and reduced fuel consumption.
- Positive flow-control hydraulics for full flow on demand at low engine speeds.
- Engine idle shutdown for less fuel used while idling.
- Fully integrated electronic engine controls help make your fuel go farther.

Reduced Maintenance Time and Other Costs

- 10% lower maintenance costs.
- Grouped service points.
- Electro-hydraulic controls.
- Swing-out engine compartment service doors.
- Ecology drains to prevent spills.
- Ground level access to transmission control valves.
- Vital Information Management System (VIMS™) notifications to resolve problems before failure.
- Long life, rebuildability, and high resale value.

Easy, Comfortable Operator Environment

- World-class operator comfort and ergonomics.
- Premium seat with heated and actively cooled leather, adjustable lumbar support, air adjustable bolsters on the seat and backrest, seat cushion tilt adjustment, and adjustable-length seat cushion.
- Easy-to-reach levers and controls with seat-mounted implement pod to help reduce fatigue.
- Ergonomic switch placement and displays with large backlit switches, LED indicators, and ISO symbols.
- Optional heated mirrors.
- Two-position rocker switch activates the electro-hydraulic parking brake.
- Reduced vibrations from isolated cab mounts and seat air suspension.
- Achieve precise positioning for easy loading in tight areas with 35 degrees of steering articulation.
- Precise machine control by load-sensing hydraulic steering system.

Purpose-Built Specialty Arrangements Steel Mill

- World-class safety, operator comfort, and efficiency in pit digging and skull handling applications.
- Efficiency of manual throttle and ergonomics of throttle lock.
- Equipped with extra heat protection to key hoses and harnesses for improved reliability.
- Equipped with transmission and parking brake override controls at ground level and in the operator's cab.

990 Steel Mill Machine Specifications

Engine

Engine Model	Cat® C27	
Emissions (Option 1)	U.S. EPA Tier 4 Final/ EU Stage V	
Rated Speed	1,800 rpm	
Engine Power – ISO 14396:2002	586 kW	786 hp
Gross Power – SAE J1995:2014	597 kW	801 hp
Net Power – SAE J1349:2011 (Standard Ambient)	546 kW	732 hp
Net Power – SAE J1349:2011 (High Ambient)	508 kW	681 hp
Emissions (Option 2)	Emits equivalent to U.S. EPA Tier 2	
Rated Speed	1,800 rpm	
Engine Power – ISO 14396:2002	561 kW	752 hp
Gross Power – SAE J1995:2014	571 kW	766 hp
Net Power – SAE J1349:2011 (Standard Ambient)	521 kW	699 hp
Net Power – SAE J1349:2011 (High Ambient)	483 kW	648 hp
Bore	137.2 mm	5.4 in
Stroke	152.4 mm	6.0 in
Displacement	27.03 L	1,649.5 in^3
Peak Torque (1,200 rpm)	3557 N·m	2,624 lbf-ft
Torque Rise	18%	

- Net power advertised is the power available at the flywheel when the engine is equipped with fan at minimum speed, air intake system, exhaust system, and alternator.

Operating Specifications

Operating Weight	92 848 kg	204,693 lb
Rated Payload – Standard	15.88 tonnes	17.5 tons
Bucket Capacity Range	8.6 m^3- 9.2 m^3	11.25 yd^3- 12.0 yd^3
Cat Truck Match – Standard	773-775	

Transmission

Transmission Type	Cat planetary power shift	
Forward 1	7.4 km/h	4.6 mph
Forward 2	13.2 km/h	8.2 mph
Forward 3	23.3 km/h	14.5 mph
Reverse 1	8.15 km/h	5.1 mph
Reverse 2	14.6 km/h	9.1 mph
Reverse 3	25.7 km/h	16.0 mph
Direct Drive Forward 1	Lock-up disabled	
Direct Drive Forward 2	13.2 km/h	8.2 mph
Direct Drive Forward 3	23.3 km/h	14.5 mph
Direct Drive Reverse 1	8.15 km/h	5.1 mph
Direct Drive Reverse 2	14.6 km/h	9.1 mph
Direct Drive Reverse 3	25.7 km/h	16.0 mph

- Travel speeds based on Michelin 45/65R39 LD D2**L5 tires.

Hydraulic System – Lift/Tilt

Lift/Tilt System – Circuit	Positive flow control	
Lift/Tilt System	Variable displacement piston	
Maximum Flow at 1,800 rpm	910 L/min	240 gal/min
Relief Valve Setting – Lift/Tilt	33 000 kPa	4,786 psi
Cylinders, Double Acting: Lift, Bore and Stroke	254 mm × 1264 mm	10.0 in × 49.8 in
Cylinders, Double Acting: Tilt, Bore and Stroke	317.5 mm × 819 mm	12.5 in × 32.2 in
Pilot System	Open loop and pressure reducing	
Relief Valve Setting	3500 kPa	507 psi

Hydraulic Cycle Time

Rack Back	4.8 Seconds
Raise	9.4 Seconds
Dump	2.9 Seconds
Lower	3.7 Seconds
Lower Float Down	3.6 Seconds
Total Hydraulic Cycle Time (empty bucket)	15.9 Seconds

Hydraulic System – Steering

Steering System – Circuit	Pilot, load sensing	
Steering System – Pump	Piston, variable displacement	
Maximum Flow @ 1,400 rpm	358 L/min	94.5 gal/min
Relief Valve Setting – Steering	32 000 kPa	4,641 psi
Total Steering Angle	70°	

Service Refill Capacities

Fuel Tank	1064 L	281.0 gal
Cooling System	208 L	54.9 gal
Engine Crankcase	75.7 L	20.0 gal
Transmission	110 L	29.1 gal
Differentials and Final Drives – Front	271 L	71.6 gal
Differentials and Final Drives – Rear	261 L	68.9 gal
Hydraulic System Factory Fill	795 L	210.0 gal
Hydraulic Tank (Implement and Hydraulic Fan)	261 L	68.9 gal
Hydraulic Tank (Steering and Braking)	132 L	34.9 gal

- Cat U.S. EPA Tier 4 Final/EU Stage V diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels** up to:
  – 20% biodiesel FAME (fatty acid methyl ester)*
  – 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels.

Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

*Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel (for use of blends higher than 20% biodiesel, consult your Cat dealer).

**Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.

– Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, API CK-4, and/or ACEA E9 specifications are required.

– Diesel Exhaust Fluid (DEF) that meets all requirements defined in ISO 22241-1:2006.

Axles

Front	Fixed
Rear	Trunnion
Oscillation Angle	5.5°

Brakes

Brakes	ISO 3450:2011

Sound Performance

Tier 4 Final/Stage V	
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	116 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)*
Machine Sound Power Level (ISO 6395:2008)	114 dB(A)*
Tier 2	
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	116 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)*
Machine Sound Power Level (ISO 6395:2008)	114 dB(A)*

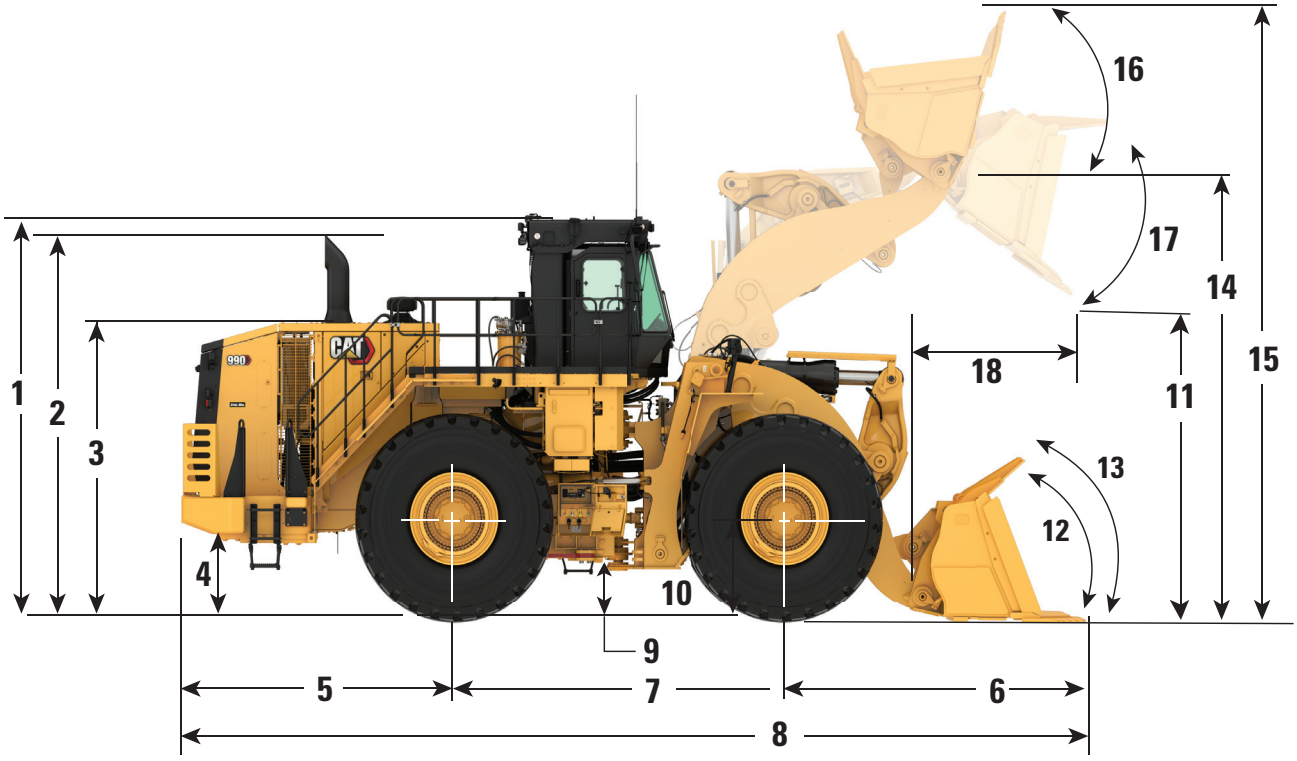
* Sound suppression equipped

- The machine sound power level was measured according to ISO 6395:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- The operator sound pressure level was measured according to ISO 6396:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- Hearing protection may be needed when the machine is operated with a cab that is not properly maintained or when the doors or windows are open for extended periods or in a noisy environment.

990 Steel Mill Machine Specifications

Dimensions

All dimensions are approximate.



		Standard Lift	
1	Ground to Top of Rollover Protective Structure (ROPS)	5240 mm	17.2 ft
2	Ground to Top of Exhaust Stacks	5049 mm	16.6 ft
3	Ground to Top of Hood	3862 mm	12.7 ft
4	Ground to Bumper Clearance	1079 mm	3.5 ft
5	Rear Axle Centerline to Bumper	3795 mm	12.5 ft
6	Front Axle Centerline to Bucket Tip	4532 mm	14.9 ft
7	Wheelbase	4600 mm	15.1 ft
8	Maximum Overall Length	12 927 mm	42.4 ft
9	Ground to Lower Hitch Clearance	596 mm	2.0 ft
10	Ground to Center of Front Axle	1186 mm	3.9 ft
11	Clearance at Maximum Lift	4011 mm	13.2 ft
12	Rack Back Angle at Ground Level	40.3 degrees	
13	Rack Back Angle at Carry	48.7 degrees	
14	B-Pin Height at Maximum Lift	5904 mm	19.4 ft
15	Maximum Overall Height, Bucket Raised	8214 mm	26.9 ft
16	Rack Angle at Maximum Lift	63.8 degrees	
17	Dump Angle at Maximum Lift	46.8 degrees	
18	Reach at Maximum Lift	2128 mm	7.0 ft

Operating Specifications – Standard Lift

		990K Standard, Tires: 45/65 R39 XLDD2, PN: 381-7084 SLR: 1186 mm	
Bucket Type		Slag	
Ground Engaging Tool		Serrated	J600
Cutting Edge Type		Spade	
Bucket Part Number		451-4880	451-4890
Struck Capacity	m^3	7.4	7.8
	yd^3	9.7	10.2
Heaped Capacity (Rated)	m^3	9.2	8.6
	yd^3	12.0	11.2
Bucket Width	mm	4708	4500
	ft	15.4	14.8
Dump Clearance at Full Lift and 45° Discharge (Bare)	mm	4128	4339
	ft	13.5	14.2
Dump Clearance at Full Lift and 45° Discharge (with Teeth)	mm	4077	4056
	ft	13.4	13.3
Reach at Full Lift and 45° Discharge (Bare)	mm	2131	1940
	ft	7.0	6.4
Reach at Full Lift and 45° Discharge (with Teeth)	mm	2193	2154
	ft	7.2	7.1
Reach with Lift Arms Horizontal and Bucket Level (with Teeth)	mm	4177	4164
	ft	13.7	13.7
Digging Depth (Segment)	mm	107	93
	in	4.2	3.7
Overall Length (Bucket Level on Ground)	mm	12 733	12 709
	ft	41.8	41.7
Overall Height with Bucket at Full Raise	mm	8231	8007
	ft	27.0	26.3
Loader Clearance Turning Radius (SAE Carry with Teeth)	mm	20 920	20 954
	ft	68.6	68.7
Full Dump Angle	deg	–46.8	–46.8
Static Tipping Load – Straight (Rigid Tire)	kg	66 782	68 511
	lb	147,229	151,038
Static Tipping Load – Straight (Tire Squash)	kg	62 455	64 071
	lb	137,688	141,251
Static Tipping Load – Full Turn (Articulated 35°) (Rigid Tire)	kg	59 023	60 713
	lb	130,122	133,848
Static Tipping Load – Full Turn (Articulated 35°) (Tire Squash)	kg	53 272	54 798
	lb	117,444	120,808
Static Tipping Load – Bucket Level on Ground (Rigid Tire)	kg	52 141	57 076
	lb	114,950	125,830
Static Tipping Load – Bucket Level on Ground (Tire Squash)	kg	48 287	52 858
	lb	106,454	116,530
Breakout Force	kN	691	806
	lbf	155,529	181,311
Operating Weight	kg	92 848	91 472
	lb	204,693	201,659
Weight Distribution at SAE Carry (Unloaded)			
Front	kg	43 713	41 424
	lb	96,370	91,322
Rear	kg	49 135	50 048
	lb	108,322	110,337
Weight Distribution at SAE Carry (Loaded)			
Front	kg	69 913	67 535
	lb	154,129	148,888
Rear	kg	38 810	39 812
	lb	85,562	87,769

Michelin XLDD2 2 Star with 6.3 bar (92 psi) pressure.

990 Steel Mill Machine Standard and Optional Equipment

Standard and Optional Equipment

Standard and optional equipment may vary. Consult your Cat® dealer for details.

	Standard	Optional
ELECTRICAL		
Alarm, back-up	✓	
Alternator, 150 amp	✓	
Batteries, maintenance free (2 – 1,400 CCA)	✓	
Converter, 10/15 amp, 24V to 12V	✓	
Deutsch component connectors	✓	
Electrical system, 24V	✓	
Electronic transmission control	✓	
Ground level starter lockout	✓	
Ground level transmission lockout	✓	
Lighting system, halogen (front and rear) lighting, access stairway, engine compartment	✓	
Starter, electric	✓	
Auxiliary start receptacle	✓	
OPERATOR ENVIRONMENT		
Air conditioner and heater with automatic temperature control	✓	
Cab precleaner, powered	✓	
Cab, sound suppressed and pressurized, rollover protective structure/falling objects protective structure (ROPS/FOPS)	✓	
Cat Detect, object detection system		✓
Cat Vision, rear vision camera system	✓	
CB radio ready	✓	
12-volt power port	✓	
Coat hook	✓	
Electro-hydraulic tilt and lift controls (seat mounted)	✓	
Flip-up armrest	✓	
Heater and defroster	✓	
Horn, electric	✓	
Implement hydraulic lockout	✓	
Instrumentation, gauges: engine coolant temperature, fuel level, ground speed, gear, hydraulic oil temperature, speedometer/ tachometer, torque converter temperature	✓	
Instrumentation, warning indicators: action alert system – three category, automatic transmission model enable status, brake malfunction, bucket float status, delayed engine shutdown status, engine idle shutdown status, engine malfunction, fuel economy mode enable status, hydraulic lockout, lockup clutch enable status, low fuel level, parking brake status, rimpull control enable status, seat belt warning, secondary steering (if equipped), throttle lock status, transmission gear	✓	

	Standard	Optional
OPERATOR ENVIRONMENT (CONTINUED)		
Keypad control with indicator lights	✓	
LED warning strobe		✓
Light, cab, dome	✓	
Lights, LED		✓
Lunchbox, beverage holders	✓	
Mirrors, heated		✓
Mirrors, rearview (externally mounted)	✓	
Premium seat with heated and actively cooled leather, adjustable lumbar support, air adjustable bolsters on the seat and backrest, seat cushion tilt adjustment, and adjustable-length seat cushion	✓	
Radio, AM/FM/CD/MP3, Bluetooth® with Satellite Sirius		✓
Seat belt minder	✓	
Seat belt, retractable, 76 mm (3 in) wide	✓	
Steering and Transmission Integrated Control (STIC™) system with steering lock	✓	
Tinted glass	✓	
Trainer seat with lap belt	✓	
Vital Information Management System (VIMS™) with graphical information display: external data port, customizable operator profiles, cycle timer, integral Cat Production Measurement	✓	
Wet-arm wipers/washers (front, rear, and corner) intermittent front wiper	✓	
Window pull-down visor		✓
POWERTRAIN		
Antifreeze, -50° C (-58° F)		✓
Autolube – linkage, cylinder, and hitch pins		✓
Axle oil cooling		✓
Axle-shift oil-disc service brake	✓	
Brakes, oil-disc, full hydraulic, enclosed	✓	
Case drain screens	✓	
Cat Clean Emission Module (CEM) – Tier 4 only	✓	
Deluxe hydraulic filtration		✓
Demand fan	✓	
Electro-hydraulic parking brake	✓	
Engine, C27	✓	
Engine block heater 120V or 240V		✓
Engine oil change system, high speed, Wiggins		✓
Fuel lines, heated		✓
Fuel priming pump (electric)	✓	
Ground level engine shutdown switch	✓	
High ambient cooling – software		✓
Hydraulic oil, Arctic -40° C (-40° F)		✓
Mufflers (under hood) – Tier 2 equivalent only	✓	

Standard and Optional Equipment

Standard and optional equipment may vary. Consult your Cat dealer for details.

	Standard	Optional
POWERTRAIN (CONTINUED)		
Precleaner engine air intake	✓	
Radiator, aluminum modular radiator (AMR)	✓	
Ride control		✓
Secondary steering		✓
Separated cooling system	✓	
Starting aid, ether, manual override	✓	
Throttle lock	✓	
Torque converter, impeller clutch (ICTC) with lock-up clutch (LUC), rimpull control system	✓	
Transmission, 534 mm (21 in) planetary power shift (electronic) (3F/3R)	✓	
OTHER		
Access ladder, powered		✓
Automatic lift kickout/positioner	✓	
Automatic retarding control (ARC)		✓
Axle oscillation stop		✓
Axle temperature sensor	✓	
Cab mounts, heavy duty		✓
Couplings, Cat O-ring face seals	✓	
Deluxe service center		✓
Economy mode with on demand throttle	✓	
Emergency secondary egress ladder	✓	
Engine, crankcase 500-hour interval with CH4	✓	
Engine idle management: auto idle kickdown, delayed engine shutdown, engine idle shutdown	✓	

	Standard	Optional
OTHER (CONTINUED)		
Fast fill fuel system (Shaw-Aero)		✓
Fenders, front and rear roading		✓
Fenders, steel (front)	✓	
Ground level lockable battery disconnect switch	✓	
Grouped/labeled lube points	✓	
Guards, crankcase and powertrain	✓	
Hitch, drawbar with pin	✓	
Hoses, Cat XT™	✓	
Oil sampling valves	✓	
Positive flow control hydraulic system	✓	
Premixed 50% concentration of extended life coolant with freeze protection to -34° C (-29° F)	✓	
Product Link™	✓	
Sight gauges: hydraulic tanks, steering/fan and implement/brake, and transmission	✓	
Sound suppression, engine enclosure		✓
Stairway, left and right rear access	✓	
Steering, load sensing	✓	
Tire pressure monitoring system		✓
Toe kicks	✓	
Vandalism protection caplocks	✓	
Venturi stack	✓	
Wheel chocks		✓

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Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat dealer for available options.

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Replaces: AEXQ3708-00
Build Number: 11A & 11B
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