SANY

SANY HEAVY MACHINERY LTD

http://www.sanyglobal.com

SY2000

Engine
Model: CUMMINS QSK38
Gross power: 810 kW @ 1800 rpm

Standard Bucket Capacity
Backhoe: 12 m^3 @ 1.8 t/m^3

Operating weight
Backhoe: 215t

- Performance & Productivity
- Durability & Reliability
- Safety

QUALITY CHANGES THE WORLD

Performance & Productivity

The SY2000 will outperform competition due to its powerful 810 kW Cummins engine, its first class digging force- and Its practical, superior digging scope.

Durability & Reliability

Based on SANY idea: Quality changes the World, the critical steel structures were developed by experts in Germany, using the latest FEA and fatigue analytic tools. All components are chosen from experienced mining equipment suppliers.

Safety

As the safety of operators and maintenance crew is the most important, any work place in and on the machine was designed to keep people safe, give them easy access and superior vision into the working area.

Performance & Productivity

Superior digging force

- Easy bucket fill & high fill factor

Superior reach at truck level

- Easy floor clean-up

Superior engine power

-Quick cycle time &
high productivity

Superior horizontal reach

- Fewer machine repositioning;
Efficient loading of large trucks

Independent oil cooling

-Max hydraulic system performance in hot ambient conditions

Perfect operator – machine match

- Easy operation & superior
controllability and productivity

Durability & Reliability

Rigid high strength / low stress structures designed for long structural component life.

State of the art highly efficient hydraulic system with minimum energy losses resulting in a moderate hydraulic oil temperature. Designed for superior component life.

Independent hydraulic oil cooling circuit providing full cooling capacity even during operating breaks.

Rigid triple raceway roller bearing connected to central lubrication system.

Kidney loop type oil filtration providing superior oil cleanliness.

Fixed pin design to reduce lubrication points.

Lifetime lubricated running under-carriage with fully automatic hydraulic track tensioning system.

Safety

Emergency egress passage with safe & easy access
Fully FOPS certified cab roof
Operator Protective Guard as option

Full size 45° boarding ladder
Full size slip resistant walkways throughout deck level
Centralized battery disconnect switch
Centralized starter isolator switch
Emergency boom down function
Fire suppression system provision
Easy component access
Save and comfortable access to boom cradle

Best possible visibility out of seated position
Floor window for proper track vision and safe manoeuvring on the bench.
360° Vision system to eliminate blind spots
E-Stop button for operator & trainer
E-Stop pull rope from ground level

Operator Comfort

Operator cab

Spacious “State of the art” modern operator cab with superior visibility
Low noise level due to use of sound insulation material
Superior HVAC climate control (dual system as option)

Operator station with

Ergonomic seat with integrated multi adjustable armrests & integrated controls
All machine controls in primary reach zone
Operator amenity features: cup holder; integrated stereo Radio with Bluetooth connectivity; wireless cell phone charging pad; Trainer seat and trainee seat for efficient trainin

TCO

Machine design for lowest possible Total Costs of Ownership means taking into account any aspect during overall machine lifetime, operation, maintenance, transport and repair.

Performance & Productivity

Optimum pass match to mining trucks

Variety of bucket sizes available as options

Low cycle time due to

Adequate engine power installed
Superior attachment layout optimizing the overall geometry
Optimized hydraulic system layout for best possible pressure and flow control
Digging force adequate for each relevant material
Swing system priority

Comfortable operator environment avoiding fatigue even in 12 hour shifts

Operator seat for relaxed sitting position
Ergonomic setup of controls
Superior visibility
Comfortable cab climate
Low noise profile

Quality & Reliability

Machine and component lifetime matched for utmost return on investment

Superior design and manufacturing process of welded structures

Component lifetimes achieved due to

· Use of mining proven quality components
· Improved power-matching of hydraulic system (reduced engine droop due to torque & speed control)
· Auto engine rpm reduction to low Idle during operating breaks
· Reduced hydraulic temperature due to independent hydraulic cooling system
· Superior hydraulic oil cleanliness through independent continuous kidney loop style filtration

Board-Control-System with (advanced diagnostics, trending, predictive maintenance)
Grease system with fault monitoring
Reduced lubrication points (fixed pivot pins)

Operating & Maintenance cost

Both operating as well as maintenance costs have been in focus during the design process

High fuel efficiency through reduced losses in hydraulic system
Fuel efficient engine
Spacious walk-through power module
Good component accessibility
Swing system accessibility due to attachment valves located on boom
Ground level accessible fluid service (fill and drain)

Extended maintenance intervals (component lifetime, service and overhaul intervals)
Commonality of components
Centralized lubrication
24+ hour fuel capacity
Quick machine assembly through modular structure
Reduced MTTR by Plug-And-Play Power Module
Hammer-free bucket tooth system for quick and easy exchange

QUALITY CHANGES THE WORLD

Maintainability

Service station

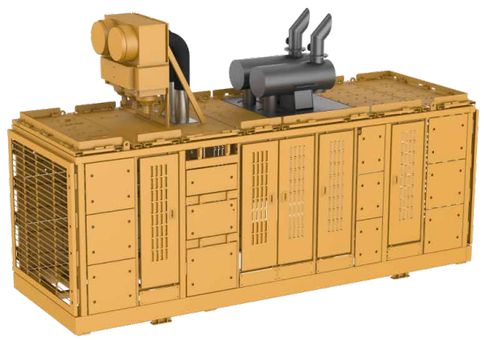
Service fluids can be comfortably drained and filled via a retractable service station.

Clean deck layout through main valve position on boom

Main hydraulic valves are positioned on the boom to free up installation space on the main deck and allow good access to swing transmission, swing valves and propel valves.

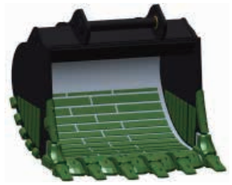
Plug and play power module

Power module is designed like a container. In case of component failures, entire module can be exchanged quickly and be repaired in comfortable workshop environment.



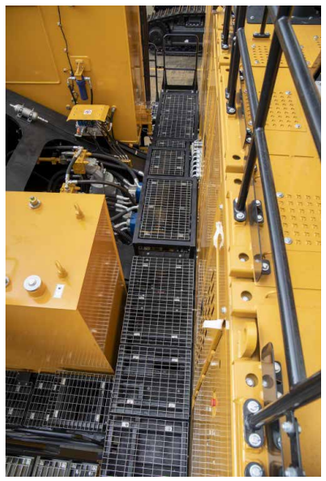
Bucket GET

Hammerless bucket tooth system for quick and easy changeout of ground engaging tools.



Component serviceability

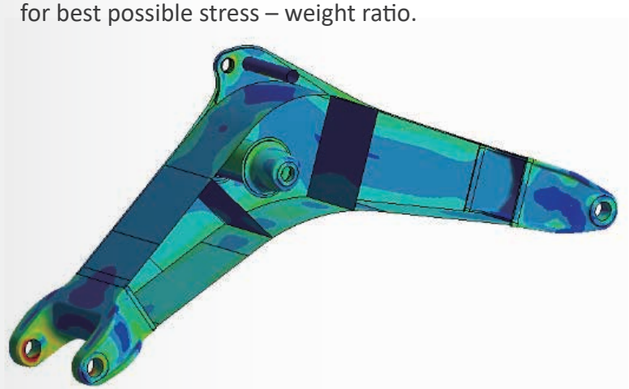
Full size slip resistant walkways on the machine deck level allow good access to all maintenance areas.



Attachment

Durability & Reliability

High strength structures with casted parts at pivot points for best possible stress – weight ratio.



Environment & Sustainability

Optimized lube quantities to minimize impact to environment.

Performance & Productivity

Design optimized for fast cycle times and superior reach to material & truck
High digging force ensure an easy, continuous and uninterrupted penetration into the face during bucket fill.

Safety & Maintenance

Boom walkway with handrail to ensure safe access to maintenance areas.

Operator comfort

Float function for boom down movement uses gravity rather than pump power to lower the attachment.

Uppercarriage & Drive Train

Durability & Reliability

Large displacement QSK38 engine with moderate power density for superior engine life in heavy duty mining application.
Large engine and hydraulic oil coolers with reversing fans for automatic cleaning cycles.

TCO

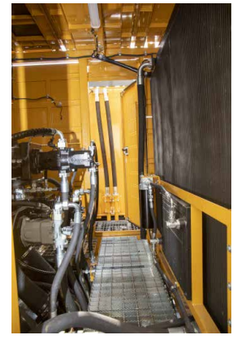
Parts commonality with other mining excavators.

Performance & Productivity

High horsepower engine to support fast cycle times.
Hydraulically driven fans with demand based control strategy to optimize cooling system performance.
Large size fuel tank ensuring 24h fuel coverage.

Maintainability

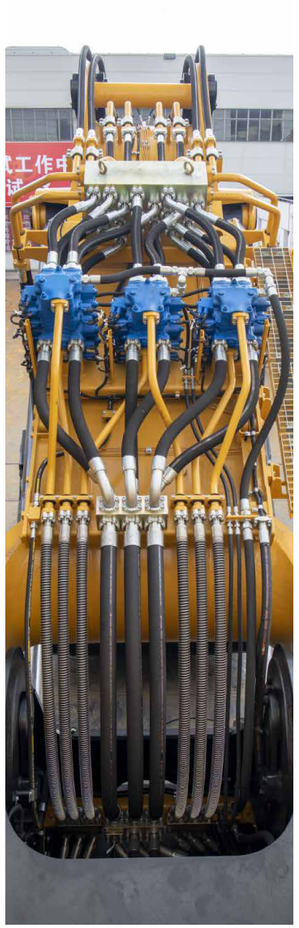
Container type power module for easy drive train exchange and minimum downtime in case of mayor drive train overhaul.
Good component access through spacious walkways.



Hydraulic system

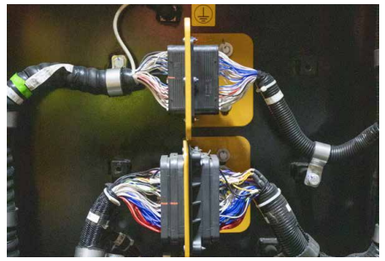
Durability & Reliability

Superior oil cleanliness through kidney loop type continuous oil filtration
Premium protection from external debris established by use of cylinder rod seals with double lip wiper



Maintainability

Cleaned up hydraulic installation on main deck by main valves located on boom
Save access to maintenance areas via boom walkway with handrail
Clean and easy replacement of hydraulic filter elements
Pressure test points for all relevant pressures support easy trouble shooting of the hydraulic system



Condition monitoring of hydraulic pump and motor case temperatures and contamination indication.

TCO

Long 1000h filter change interval
High parts commonality with other SANY machinery supports component rebuild and reuse
Highly efficient control system minimizes heat losses and saves fuel
Cool running hydraulics contribute to superior component life

Environment & Sustainability

Highly efficient hydraulic system keeps hydraulic losses to a minimum, resulting in lower heat emission into the environment

Performance & Productivity

Moderate oil temperature and maximum system performance by fully independent oil cooling circuit
Direct and sensitive joystick controls provide a perfect match between operator and machine, leading into superior controllability and productivity.
Common set of main pumps for maximum flexibility. Individual pump allocation based on operator demand.

Operator comfort

Open centre swing system with auto hold in neutral position
Float function for boom requiring no pump allocation
Operator joystick commands trigger instantaneous load and pressure independent direct cylinder movements

Electric system & Controls

Durability & Reliability

Mining proven electrical components from first-class suppliers
High commonality of parts to other SANY equipment
Heavy duty electrical wiring with IP65 protection with extended temperature ranges

Performance & Productivity

Improved power-matching of hydraulic system (reduced engine droop due to torque & speed control)
Auto engine rpm reduction to low Idle during operating breaks

Safety

Centralized and lockable battery disconnect switch
Centralized lockable starter disconnect switch
E/Stops at ground level, in the hydraulic compartment, in the engine compartment, and the operator cab
Birds Eye 360° view system
14 LED Work Lights
Floor light inside the cab
Electric horn, travel alarm, ladder alarm and beacon light guarantee a safe 24/7 operation

Maintainability

Monitoring for pump & motor case temperature
Fully integrated engine interface
Maintenance Lights
On-board diagnostic for service staff
Long-term data storage for maintenance
Control system strategy common with other excavator models

Operator comfort

CAN-based joysticks ensure a perfect match between joystick sensitivity and machine response
Automotive-style push button to start/stop the engine
Modern touchscreens for control, infotainment, HVAC control, and machine diagnostic capabilities

Undercarriage

Durability & Reliability

Carbody and track frames in FEA optimized steel box design
Lifetime lubricated running undercarriage components (roller & idler)
Robust travel motor guard
Hydraulic control valves and accumulators are well integrated and protected by the carbody structure

Performance & Productivity

Superior gradeability
Fully automatic track tensioning system

Summary

he SY2000 is designed and build to deliver solid performance and productivity in challenging mining environments.
It uses proven quality components and high strength structures to demonstrate reliable 24/7 operation.
A highly efficient and cool running hydraulic system enables economic operation resulting into low TCO.
Competitive acquisition and parts cost merged with solid productivity makes the SY2000 the first choice loading tool.

Specifications

Weights and Ground Pressure

Backhoe		
Operating weight	215 tonnes	225 tons
Standard Bucket capacity	12 m^3	15.7 yd^3
Standard Track Pads	810 mm	2 ft 7 in
Ground Pressure	21.1 N/cm^2	30.6 psi

Diesel engine

Make and Model	CUMMINS QSK38	
Engine Power ISO 14396	810 kW	1,086 hp
Rated speed	1800 min^{-1}	1,800 rpm
Displacement	37.7 L	2,300 in^3
Emission	Tier 2	
Fuel tank capacity	4300 L	1,136 gal

Hydraulically driven radiator fan with electronic speed control
Heavy duty air filter with pre cleaner
Additional water separator

Hydraulic oil cooling & filtration

Cooling circulation pump	1 x 800 l/min	1 x 211 gal/min
Cooling fan diameter	1600 mm	63 in

Cooling system is independent from all main circuits
Independent electronically controlled circulation pump
provides continuous cooling capability
Hydraulically driven cooling fan with electronic control
Continuous oil filtration through cooling oil return filter system

Specifications

Hydraulic System

Main pumps	6 x variable displacement	
	axial piston pumps for	
	attachment, swing, travel	
Max oil flow	6 x 425 l/min	6 x 112 gal/min
Max pressure attachment	325 bar	4712 psi
Max pressure swing	300 bar	4350 psi
Max pressure travel	325 bar	4712 psi
Hydraulic tank oil capacity	2900 l	766 gal

Electric System

System Voltage	24 V
Batteries (12V each)	6 x 220 Ah
Alternator amperage	175 A

Swing system

Swing drives	2 x planetary transmissions with axial piston motors
Parking brake	Wet spring loaded multidisk brake
Max swing speed	5 rpm

Battery isolator switch (lockable)
Starter lockout switch (lockable)
5 x E-Stop switches
14 x LED working light
4 x LED maintenance light
2 x access light
1 x beacon light on cab roof

Undercarriage

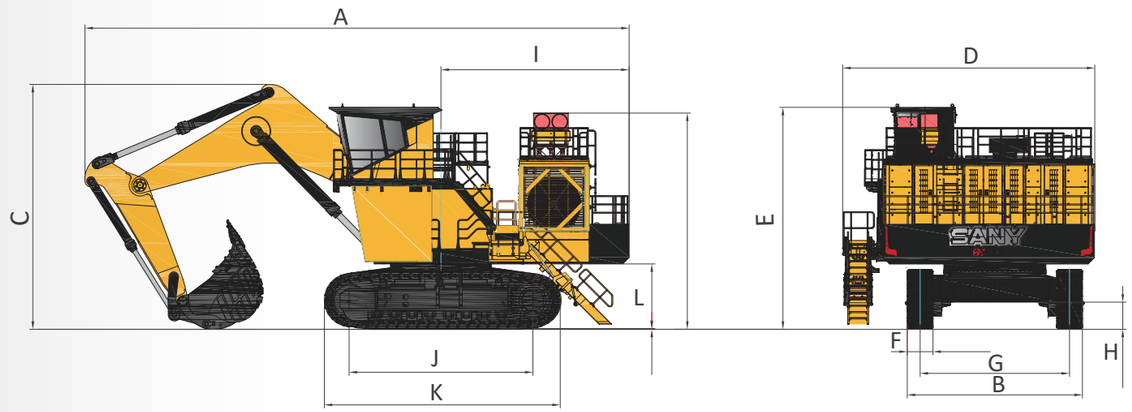
Travel speed (2 stages)		
Slow	1.1 km/h	0.7 mph
High	2.8 km/h	1.7 mph

Dimensions

BH Attachment

Machine dimension (mm)	**SY2000**
A. Overall length	17120
B. Lower width	5510
C. Total height	7530
D. Upper width	7930
E. Total height [top of cab]	6985
F. Standard Track Pads	810
G. Gauge	4700
H. Min. ground clearance	855
I. Tail swing radius	5920
J. Wheel track	5780
K. Track length	7420
L. Counterweight off ground	2055

Performance parameter	**SY2000**
Operating weight kg	215000
Bucket capacity m^3	12
Rated power Kw/rpm	810/1800
Travel Speed (high and low) km/h	2.8/1.1
Swing Speed rpm	5
Grade ability	30°
Bucket digging force kN	745
Arm digging force kN	687
Boom length mm	8750
Arm length mm	3900



Note: As the technology is constantly updated, materials and technical specifications are subject to change without notice, the machine in the photo may include the use of additional equipment.

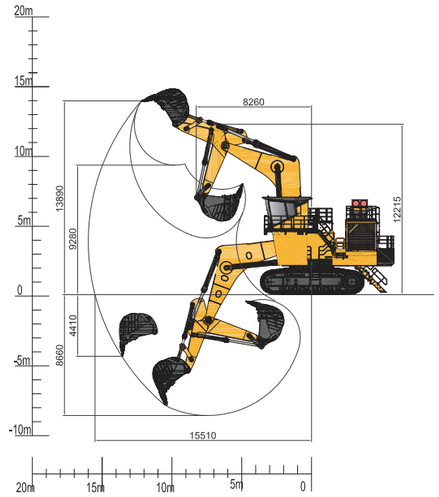
BH attachment

Digging curve boom 8.75 m (28 ft 8 in); stick 3.9 m (12 ft 10 in)

BH buckets

Capacity 1:1 (ISO 7451)	12 m³	15,7 yd³
Max.material density	1.8 t/m³	3,030 lb/yd³
Total width	2940 mm	9 ft 8 in
No. of teeth	6	

Other bucket sizes are available on special request



Working range

Max digging depth	8.7 m	28 ft 7 in
Max digging reach	15.5 m	52 ft 2 in
Max digging height	13.9 m	45 ft 7 in
Maximum vertical wall	4.4 m	14 ft 5 in
Minimum swing radius	8.3 m	27 ft 3 in
Maximum dumping height	9.3 m	30 ft 6 in

Digging force

Bucket digging force	745 kN	164785 lbf
Arm digging force	687 kN	158265 lbf

BH boom

Boom length	8750 mm	28 ft 8.49 in

BH stick

Arm length	3900 mm	12 ft 9.54 in

QUALITY CHANGES THE WORLD

Standard features & Options

Standard features

Engine and Drive train

Air cleaner with pre cleaner dust extraction
Fuel filter with water separator
Reversible hydraulically driven cooling fan
Spacious walk through power module

Electrical System

Alternator 24V / 175A
Batteries 4x 12V (440 Ah system capacity)
Battery isolator & starter motor isolator
Circuit breakers & Fuses
Signalling horn, travel alarm and beacon light
Illuminated switch panel
Radio with Bluetooth connectivity integrated in main display
Multiple E-Stop buttons throughout the machine deck
Ground level E-Stop pull switch
LED work lights; LED maintenance light; LED ladder light; LED boom work lights
Jump start receptacle

Hydraulic System

6x variable displacement pumps (3x tandem pumps) for attachment functions, swing and travel
High pressure filter screen for each pump
Return filter system
Fine filtration for servo system
Additional kidney loop filtration for cooling oil
Separate independent cooling system with variable flow rate
Hydraulically driven reversible oil cooling fan

Undercarriage

810 mm double grouser track shoe
2x 8 load rollers with track guard
2x 3 carrier rollers
Fully hydraulic track tensioning system with cushioning accumulator and pressure relieve function
2x planetary final drive with spring loaded travel brake

Operator cab

Spacious damper mounted pressurized operator cab with floor window, lockable door, large windshield with wiper and washer, floormat, emergency egress window
Air suspended and heated operator seat with integrated fully adjustable armrest and joystick position
Cup holder, wireless cell phone charging pad, 12V power outlet, multiple storage compartments, storage position & power outlet for personnel cooler box
Servo / pilot lock leaver to disable hydraulics when seat is left
Seat belt with seat belt indicator
360° Vision system
Retractable adjustable sun shield
Trainer seat
Heating, ventilation and air conditioning (HVAC) with multiple adjustable louvers
Heated rear view mirror
Floor light

Standard features & Options

Other

Automatic hydraulic swing holding brake
Spring loaded swing parking brake
Fuel tank with breather and fill cap
Fully automatic grease system for all joints including bucket
Hydraulically operated 45° boarding ladder
45° cab level access
Wide walkways and stairways with slip resistant surfaces
Remote data access system EVI

Optional Equipment

Optional equipment may vary. Consult your SANY dealer for details.

Bucket

Light material bucket, Heavy rock bucket

Environment

Undercarriage belly plate
Cold climate package

Safety

Operator Protective Front Guard (OPG)
Automatic fire suppression system

Operator comfort

Sun shades on outside of cab side windows
2nd cab sun protection roof

QUALITY CHANGES THE WORLD