

D90KS and 1190E blasthole drills

Sandvik is a high-technology engineering group with world-leading positions in selected areas – tools for metal working, advanced materials technology, and mining and construction. We are represented in 130 countries.

Sandvik Mining and Construction represents one third of the overall Sandvik Group and serves a broad range of customers in construction, mineral exploration, mining and bulk materials handling. Our construction expertise covers quarrying, tunneling, demolition and recycling, and other civil engineering applications. Our mining products and services support customers on the surface and under ground, in all mineral, coal and metal mining applications from exploration to ore transportation.





1190E shown in copper mining application

Diesel vs electric for dynamic production

BUILT TO LAST!

Rotary blasthole drills from Sandvik set the standard for productivity, durability, and cost effectiveness. These machines are built for continuous drilling in some of the harshest operating environments in the world. Proven designs, rigid lattice style masts, heavy duty pulldown chains, and durable power groups place these rigs in a class of their own. Structural strength, easy maintenance, and world-wide support, all maximize drilling time and keep you on top of your production schedule. Sandvik also offers the world's widest range of tools and accessories for rock drilling. Equip these drills with products that are renowned for quality and high performance and you build a complete drilling system unmatched in productivity. Choose the right Sandvik rig for your needs and count on it to perform for years to come.

PROVEN DRILLS FOR DEPENDABLE OPERATION

The D90KS and 1190E are powerhouse crawler mounted blasthole drills. Based on a similar platform, but with different standard configuratons and well developed options, each machine is built for optimum performance in a broad range of mining applications. Whether you are powered by electric motor or diesel engine you have the best of both worlds at your control. With their heavy duty frames and undercarriages, it is no wonder they have built such a reputation for longevity and solid performance.

Consider Sandvik your source for equipment that meets the challenges of adapting to rugged mining environments. The D90KS and 1190E have proven their worth around the world in the mines of Australia, North and South America, Europe, Africa and Asia, most commonly in coal or metal mines. These drills are rugged, dependable, with downtime at a minimum. Plenty of power to get the job done. With these aggressive drills in your fleet you can focus on your real work. Production.



D90KS

The D90KS is a diesel-powered, crawler-mounted blasthole drill for mining. It is equipped with low pressure air for rotary drilling. The D90KS with excellent visibility, powerful slewing, and strut-less mast support, results in high mobility, good hole-spotting, and maximum productive time. The exceptionally operator-friendly D90KS has a high record of reliability proven at high altitude and in the harshest desert and arctic conditions.

- 229 to 349 mm (9" to 13 3/4") diameter holes
- Single pass depths up to 20 m (65')
- Pulldown 400 kN (90 000 lbf)
- Bit load up to 523 kN (118 000 lbf)

1190E

The 1190E is an electrically-powered, crawler-mounted blasthole drill for mining. It is equipped with low pressure air for rotary drilling. The drill when equipped for single pass drilling excels, including when angle drilling. The 1190E delivers on increasing productivity significantly, in particular in soft and medium hard rock, like in coal mining and metals mining.

- 229 to 349 mm (9" to 13 3/4") diameter holes
- Single pass depths up to 20 m (65')
- Pulldown 400 kN (90 000 lbf)
- Bit load up to 523 kN (118 000 lbf)

Robust design for extreme environments



PRODUCTIVE OPERATOR'S ENVIRONMENT

- Excellent visibility of the drilling operation
- The cabin on the D90KS and 1190E promote higher productivity with quicker holespotting
 - Fast set-up for drilling
- Comfortable environment with shock mounted cab
- Roller sunshades to reduce glare
- Thermal insulation and noise reduction to 80 dBA
- Drill controls arranged logically on the console
 - Ease of operation
 - Intuitive fast learning
- Air conditioning/heating/pressurizing unit for operator comfort and less fatigue
- FOPS approved in compliance with mining safety requirements
- Dragline style cab provides ample work space for a trainer



POWERFUL DRILLING PLATFORM

- Wide flange I-beam rails on main frames
 - W 27" X 161 lbf, ASTM alloy A572, grade 50 steel
 - Solid support for mounted components
- 350 (D90KS), 375 (1190E) class undercarriages
 - Excellent stability for the drill
 - Total reliability on difficult grades
 - Hydrostatic drive power: 133 kW (178 hp) per track for both drills

The effective handling of drill pipe contributes to shorter cycle times and more holes drilled.

Increasing the driller's comfort and functionality, supports a safer environment and contributes to greater work output.

Moving and set-up are important parts of the drilling cycle. To overcome the rugged terrain in a mining environment, Sandvik drills deliver top performance from strong, structurally sound undercarriages and heavy duty frames.

The 19,5 m (64') headstroke single-pass mast on the D90KS or 1190E will provide a hole up to 20 m (65') deep in one pass. Mast construction is ASTM A500, 344 MPa (50 000 psi) steel, minimum yield. Mast length is 22,25 m (73')

Sandvik hydraulic systems manage power operation with few moving parts, produce abundant power, work under extreme operating conditions, and are self lubricating.

Even the best systems fail from time to time. Open design, full perimeter walkways for quicker servicing, all components very accessible, these provide for lower maintenance costs and ease of service. The D90KS and 1190E offer the quick access that keeps you up and running.



EFFICIENT HYDRAULICS

- Closed loop system for rotation, feed, track and fan circuits
 - Lowers operating costs
 - Reduces power consumption
- Large 1155 L (305 gal) pressurized hydraulic oil reservoir
 - Reduces the number of oil cycles
 - Lowers oil temperatures
 - Extends service intervals
- 5 µm (5 micron) filtration
 - Cleaner system
 - Extends component life
 - Lowers maintenance costs



OPTIMIZED POWER DELIVERY

- Diesel engine, matched for low pressure compressors and required volume
 - Long life and lower fuel consumption
- Tier III C32 engine rated 839 kW (1125 hp)
 - Effectively operating at 1800 rpm
 - Provides optimum power at lower cycling times and better efficiency
- A range of compressors producing flushing air for better cuttings removal
 - 74 - 84,9 m³/min (2600 - 3000 SCFM) @ 5,5 Bar (80 psi)
 - The compressor is mounted to a flex-coupling in line with the engine for efficient power transfer
- Cooling systems -26°C (-15°F) up to 54°C (130° F) ambient temperature
 - Direct drive fan
 - Fan is hydraulically delayed during start-up of engine for maximum torque
- An optional cold weather package lowers the temperature range for frigid conditions down to arctic weather

Engineered for longevity through structural integrity



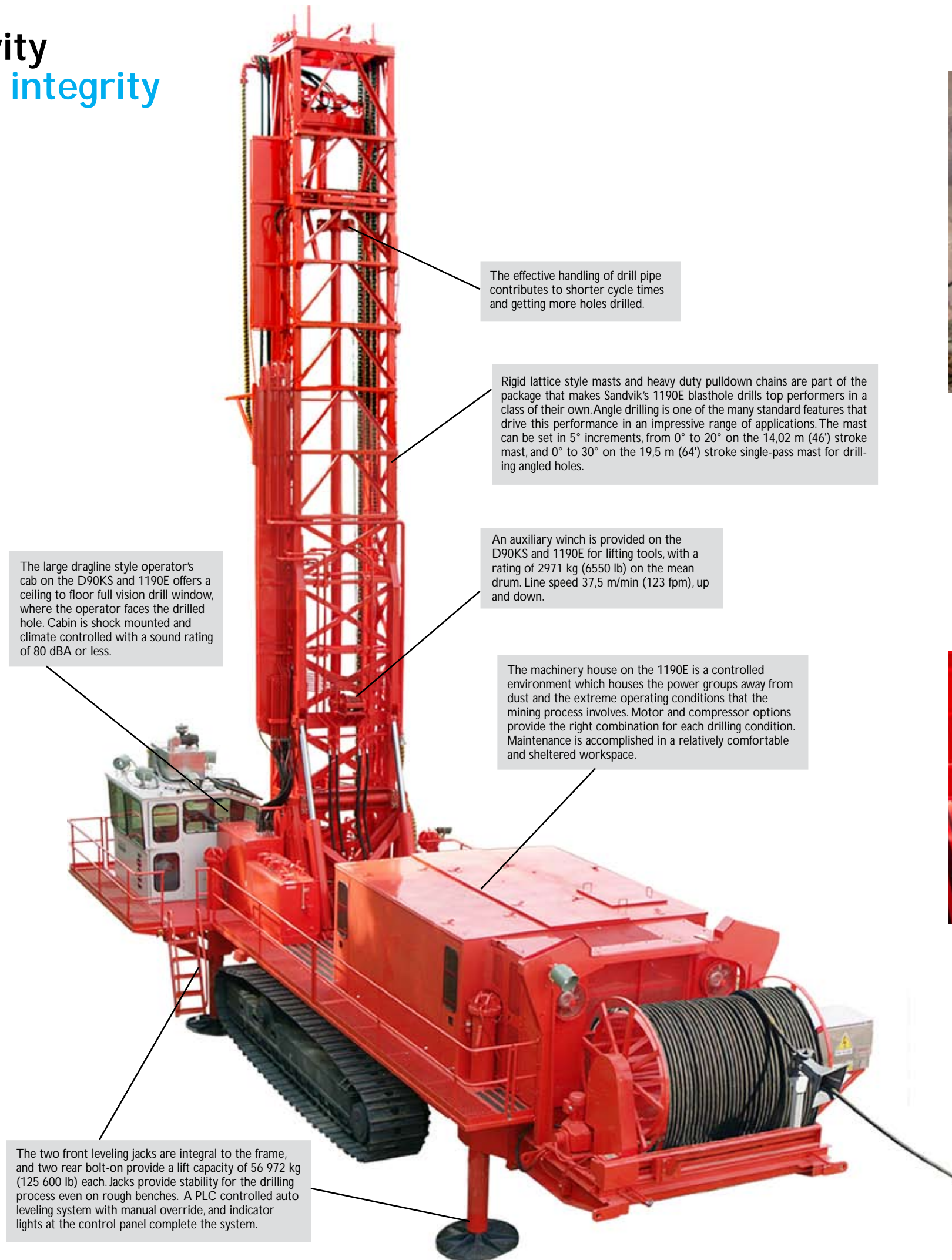
POWERFUL MAST RAISING

- D90KS and 1190E mast pedestal and pivot and raising area use 3/4" back plating with full length cylinder to pivot lugs to distribute stress
- The mast can be fully raised in less than a minute
 - Higher productivity with quicker hole-spotting
 - Fast set-up for drilling
- Two 228,6 mm (9") bore cylinders with a 1727 mm (68") stroke, raise and lower the mast with 707,1 kN (158 964 lbf) lift capacity, each



POWERFUL ROTARY HEAD

- The rotary heads on the D90KS and 1190E are available with alternate speed and torque combinations
 - 16 869 Nm (149 300 lbf) @ 97 RPM standard
 - 13 965 Nm (123 600 lbf) @ 118 RPM optional
 - 11 276 Nm (99 800 lbf) @ 145 RPM optional
 - 9 333 Nm (82 600 lbf) @ 175 RPM optional
 - Result is higher productivity through better delivery of rotary rpm and torque
- The planetary is driven by dual axial piston motors
 - Maximum simplicity of rotation system
 - Total reliability
 - Maximum rotary horse power: 172 kW (230 hp) for both drills



The effective handling of drill pipe contributes to shorter cycle times and getting more holes drilled.

Rigid lattice style masts and heavy duty pulldown chains are part of the package that makes Sandvik's 1190E blasthole drills top performers in a class of their own. Angle drilling is one of the many standard features that drive this performance in an impressive range of applications. The mast can be set in 5° increments, from 0° to 20° on the 14,02 m (46') stroke mast, and 0° to 30° on the 19,5 m (64') stroke single-pass mast for drilling angled holes.

An auxiliary winch is provided on the D90KS and 1190E for lifting tools, with a rating of 2971 kg (6550 lb) on the main drum. Line speed 37,5 m/min (123 fpm), up and down.

The machinery house on the 1190E is a controlled environment which houses the power groups away from dust and the extreme operating conditions that the mining process involves. Motor and compressor options provide the right combination for each drilling condition. Maintenance is accomplished in a relatively comfortable and sheltered workspace.

The large dragline style operator's cab on the D90KS and 1190E offers a ceiling to floor full vision drill window, where the operator faces the drilled hole. Cabin is shock mounted and climate controlled with a sound rating of 80 dBA or less.

The two front leveling jacks are integral to the frame, and two rear bolt-on provide a lift capacity of 56 972 kg (125 600 lb) each. Jacks provide stability for the drilling process even on rough benches. A PLC controlled auto leveling system with manual override, and indicator lights at the control panel complete the system.



CABLE REEL FOR SITE ACCESS (OPTION)

- Drum type with electric drive
 - Located front of mast rest
 - 3 phase motor with hydrodynamic torque unit
 - Chain drive to cable drum
- 426 m (1400 ft) of #2 AWG SHDGC cable, two wraps
 - Capability to drill on larger benches
- NEMA type 4 enclosure
 - Shielded 8000 volt 3 conductor cable TECK 90
 - 600 volt 3 conductor cable, #2, #12 and #14 type SIS
 - 600 volt single conductor



OPTIMIZED POWER DELIVERY

- 1190E electric motors, matched for low pressure compressors and required volume
 - Long life
- Electric motors rated 671 kW (900 hp) @ 1500 rpm, 50 Hz or 746 kW (1000 hp) @ 1800 rpm, 60 Hz
 - Provide optimum power at lower cycling times and better efficiency
- Compressors producing flushing air for better cuttings removal
 - 80 m³/min (2830 SCFM) @ 4,1 Bar (60 psi) 50 Hz, or
 - 94,4 m³/min (3335 SCFM) @ 4,1 Bar (60 psi) 60 Hz
 - The compressor is mounted directly to a flexible coupling in line with the motor for efficient power transfer
- Cooling systems -26°C (-15°F) up to 54°C (130°F) ambient temperature
 - Direct drive fan
 - Fan is hydraulically delayed during start-up of motor for maximum torque
- An optional cold weather package lowers the temperature range from frigid conditions down to arctic weather

Innovations for excellence

leading with versatility



EFFECTIVE ANGLE DRILLING

- Two hydraulic powered lock pins lock the drill table to the main frame
- The D90KS and 1190E mast can be locked from 0° to 20° in 5° increments (standard mast) and from 0° to 30° on the single pass mast
 - Flexibility for improved bench construction and elimination of unbroken rock
 - Better blasting, accurately drilled holes lead to better rock fragmentation
- Operation is controlled from the operator's cab with lighted indicator at control panel for lock and unlock
- Auxiliary pipe support, pivots on mast with hydraulic cylinders for swing and clamp
 - Positions and centers drill pipe for accuracy when lining up drill hole
 - Swing angle 90°
 - A travelling centralizer is incuded on the single-pass mast
- Adjustable angle workdeck to 20° by chain supports from the table

QUALITY DUST SUPPRESSION SYSTEMS (OPTION)

- D90KS and 1190E offer optional water injection and dry dust control systems
 - Control valve for water flow in cab
 - Integrity of sealing capacity of deck shroud is key
- Water injection system is 34 L/min (9 gpm) with max flow rate 31 Bar (450 psi)
 - 3785 L (1000 gal) tank capacity
 - Effective control of respirable dust
- Dry dust collector has 198 m³/min (7000 scfm) air flow
 - Fan creates a negative pressure inside enclosure, capturing dust as it exits the hole during drilling
 - Dust is removed in the collector, and clean air is exhausted through the fan
- Ease of access to key components of the system and their easy maintenance provide an efficient suppression system

EFFICIENT HYDRAULIC SYSTEM TEST STATION

- The D90KS and 1190E include a system for complete hydraulic system diagnostics
- The system provides low and high pressure checks
 - Servo pressure checks
 - Lockable cover for security of system
 - Factory pressure settings sheet
- Stand is mounted on the deck at hydraulic pumps
- 3 test guages with two selector switches in a steel housing with hinged cover
 - Hosed lines to 16 different hydraulic pressure points
 - Provides a cleaner hydraulic system

UNIQUE DIGITAL DISPLAYS FOR DRILL MONITORING AND ELECTRONIC DEPTH COUNTER

- The D90KS and 1190E offer a computer monitoring system designed to alert the operator of a malfunction in any of the drill operating systems
 - Audible alarm
 - Warning lights
 - Auto- shut down
 - System monitors
 - Engine/Motor, compressor, hydraulics, fuel, filters and fluids
 - The sensing unit is mounted on the control panel in the cab
- An electronic depth counter (EDC) is included on the D90KS and 1190E, a monitor is located at the console in the operator's cab and features
 - Drilled hole depth
 - Penetration rate
 - Shift production rate
 - Bit position from the bottom of the hole
 - Drill pipe protection system
 - Warns operator if an attempt is made to tram the drill with drill pipe in the ground

D90KS popular options

Compressor option 84,9 m³/min (3000 SCFM) @ 5,5 Bar (80 psi),

Multiple dry dust collection and water injection systems

Central lubrication system, automatic, 208 L (55 gal)

Various rotary head speed/torque combinations

Cold and arctic weather equipment

Benefits

Improved hole cleaning
Better air delivery at higher elevation

Advanced chip removal and dust suppression
Meets or exceeds regulatory standards

Auto lubrication for preventing extreme wear on parts
Cost effective preventive maintenance

Capability to fine tune drilling in various ground conditions

Enables operation in extreme environments

1190E popular options

Four pod inside loader 8 5/8" - 10 3/4" pipe, standard mast or six pod loader, up to 8 5/8" pipe 12,2 m (40'), standard mast

Multiple dry dust collection and water injection systems

Cable reel for 366 m (1200') SHD-GC 8 kV cable

Various rotary head speed/torque combinations

Cold and arctic weather equipment

Benefits

Increased drilled depth capacity
Higher production rates

Advanced chip removal and dust suppression
Meets or exceeds regulatory standards

Capability to drill on larger benches
Deliver more holes

Capability to fine tune drilling in various ground conditions

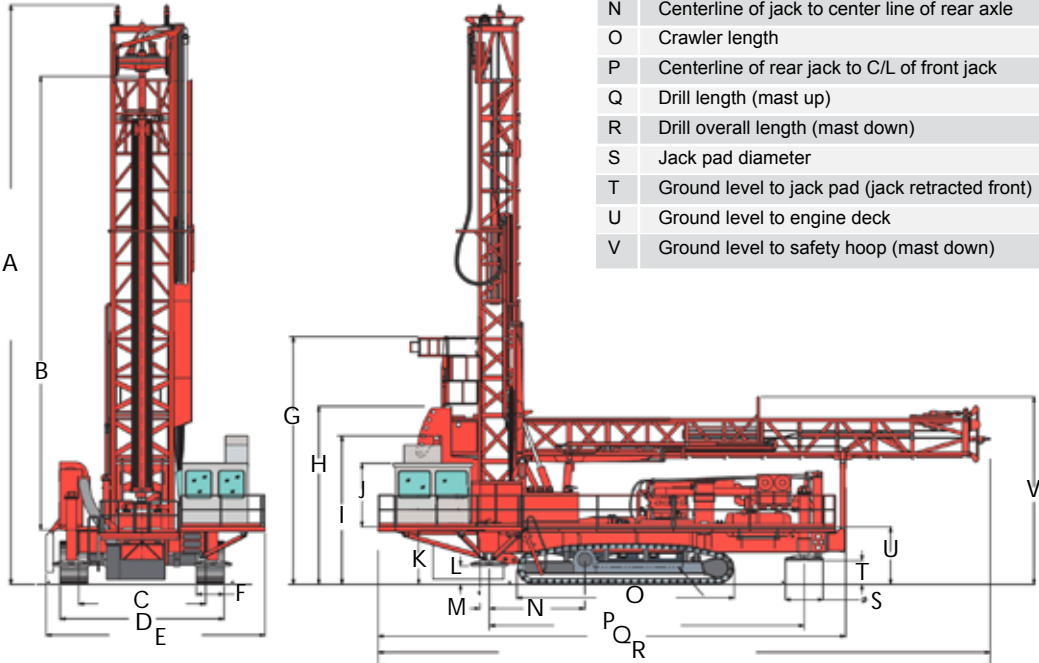
Enables operation in cold down to extreme environments

Technical Data

D90KS		
Hole diameter	229 mm - 349 mm (9"-13-3/4")	
Drill pipe	12,2 m (40')	
Hole depth	20 m (65') single pass, 85 m (279') multi-pass	
Undercarriage	350 class Excavator	
Max pulldown	400 kN (90 000 lbf)	
Bit load	523 kN (118 000 lbf)	
Engine	839 kW (1125 hp) @ 1800 RPM	
Compressor	74 m³/min (2600 scfm) 5,5 Bar (80 psi)	
Feed rate	0-21,6 m/min (0-71 fpm)	
Hoist rate	0-36,6 m/min (0-120 fpm)	
Rotation speed	0-97 RPM	
Rotation torque	16 900 Nm (149 570 in-lb)	
Operating weight	104 328 kg (230 000 lb) variable based on tooling and options	
Shipping Dimensions	Multi-pass with mach-house	Single-pass with mach-house
Mast assembly length	17,91 m (58' 9")	23,8 m (78' 0")
Mast assembly width	2,95 m (9' 8")	2,59 m (8' 6")
Mast assembly height	2,34 m (7' 8")	2,51 m (8' 3")
Mast assembly weight	28 123 kg (62 000 lb)	27 783 kg (61 250 lb)
Base/frame length	17,32 m (56' 10")	13,92 m (45' 8")
Base/frame width	4,32 m (14' 2")	4,11 m (13' 6")
Base/frame height	4,06 m (13' 4")	3,86 m (12' 8")
Base/frame weight	65 317 kg (144 000 lb)	52 617 kg (116 000 lb)
Track assembly, #1 + #2 wt	31 752 kg (70 000 lb)	31 752 kg (70 000 lb)

Performance ratings are based upon optimum conditions. This capacity may vary according to operating location. Sandvik reserves the right to amend these specifications without notice. Shipping dimensions vary with option selected.

Dimension locations		46' headstroke		72' single-pass	
A	Mast up (height)	19,3 m	63' 6"	26,7 m	87' 6"
B	Bullshaft to drill table	2,6 m	49' 6"	2,6 m	49' 6"
C	Inside jack to inside jack width	4,3 m	13' 6"	4,3 m	13' 6"
D	Width over tracks	5,3 m	17' 6"	5,3 m	17' 6"
E	Overall machine width (operating)	0,8 m	23' 4"	0,8 m	23' 4"
F	Track pad width	0,9 m	35 1/5"	16,5 m	35 1/5"
G	Height ground to top work deck (mast down)	8,2 m	27' 0"	8,2 m	27' 0"
H	Height ground to top drill table (mast down)	5,2 m	19' 5"	5,2 m	19' 5"
I	Ground level to top air conditioner unit	4,8 m	15' 9"	4,8 m	15' 9 "
J	Inside cab height	1,9 m	78"	1,9 m	78"
K	Ground level to drill table (mast up)	1,8 m	71 1/8"	1,8 m	71 1/8"
L	Ground level to jack pad (jack retracted rear)	0,6 m	24"	0,6 m	24"
M	Centerline of jack to C/L of drilled hole	0,3 m	12"	0,3 m	12"
N	Centerline of jack to center line of rear axle	3,1 m	10' 2"	3,1 m	10' 2"
O	Crawler length	7,1 m	23' 2"	7,1 m	23' 2"
P	Centerline of rear jack to C/L of front jack	10,2 m	34' 0"	10,2 m	34' 0"
Q	Drill length (mast up)	14,4 m	49' 9"	14,4 m	49' 9"
R	Drill overall length (mast down)	19,9 m	65' 2"	19,9 m	65' 2"
S	Jack pad diameter	1,2 m	48"	1,2 m	48"
T	Ground level to jack pad (jack retracted front)	0,8 m	31"	0,8 m	31"
U	Ground level to engine deck	1,9 m	6' 3"	1,9 m	6' 3"
V	Ground level to safety hoop (mast down)	6,2 m	20' 5"	6,2 m	20' 5"



Technical Data

1190E		
Hole diameter	229 mm - 349 mm (9"-13 3/4")	
Drill pipe	12,2 m (40')	
Hole depth	20 m (65') single pass	
Undercarriage	375 class Excavator	
Max pulldown	400 kN (90 000 lbf)	
Bit load	523 kN (118 000 lbf)	
Electric motor	671 kW (900 hp) @ 1500 RPM with 50 Hz current, or 746 kW (1000 hp) @ 1800 RPM with 60 Hz current	
Compressor	80 m³/min (2830 scfm) 4,1 Bar (60 psi), 50 Hz, or 94,4 m³/min (3335 scfm) 4,1 Bar (60 psi), 60 Hz	
Feed rate	0-17 m/min (0-56 fpm)	
Hoist rate	0-17 m/min (0-56 fpm)	
Rotation speed	0-131 RPM	
Rotation torque	16 900 Nm (149 570 in-lb)	
Operating weight	140 614 kg (310 000 lb) variable based on tooling and options	
Shipping Dimensions	Multi-pass with machinery-house	Single-pass (no mach house)
Mast assembly length	17,91 m (58' 9")	23,8 m (78' 0")
Mast assembly width	2,95 m (9' 8")	2,59 m (8' 6")
Mast assembly height	2,34 m (7' 8")	2,51 m (8' 3")
Mast assembly weight	28 123 kg (62 000 lb)	27 783 kg (61 250 lb)
Base/frame length	17,32 m (56' 10")	13,92 m (45' 8")
Base/frame width	4,32 m (14' 2")	4,11 m (13' 6")
Base/frame height	4,06 m (13' 4")	3,86 m (12' 8")
Base/frame weight	65 317 kg (144 000 lb)	52 617 kg (116 000 lb)
Cable reel / mast rest weight	4 853 kg (10 700 lb)	4 990 kg (11 000 lb)
Track assembly, #1 + #2 weight	31 752 kg (70 000 lb)	31 752 kg (70 000 lb)

Performance ratings are based upon optimum conditions. This capacity may vary according to operating location. Sandvik reserves the right to amend these specifications without notice. Shipping dimensions vary with option selected.

Dimension locations		46' headstroke		72' single-pass	
A	Mast up (height)	19,3 m	63' 3"	26,7 m	87' 6"
B	Outside (left) machine to centerline of drill hole	2,7 m	8' 9"	2,7 m	8' 9"
C	Outside (right) machine to centerline of drill hole	3,4 m	13' 0"	3,4 m	13' 0"
D	Deck to mast pivot	2,3 m	7' 6"	2,3 m	7' 6"
E	Outside frame to centerline left rear jack	0,4 m	15"	0,4 m	15"
F	Track pad width	0,9 m	35, 4"	0,9 m	35' 4"
G	Centerline to centerline of rear jacks	4,6 m	15'	4,6 m	15'
H	Outside right crawler to outside machine right	1,7 m	5' 6"	1,7 m	5' 6"
I	Inside jack pedestal to inside jack pedestal	4,1 m	13' 6"	4,1 m	13' 6"
J	Width over tracks	5,3 m	17' 6"	5,3 m	17' 6"
K	Operating width of machine	6,7 m	21' 10"	6,7 m	21' 10"
L	Ground level to top of workdeck mast down	8,3 m	27' 3"	8,3 m	27' 3"
M	Overall drill length with mast up	17,8 m	58' 6"	17,8 m	58' 6"
N	Ground to jack pad rear when raised	0,8 m	30 1/2"	0,8 m	30 1/2"
O	Centerline rear jack to crawler track	0,81 m	2' 7"	0,81 m	2' 7"
P	Rear frame to crawler track	1,1 m	3' 7"	1,1 m	3' 7"
Q	Overall crawler track length	7,4 m	24' 5"	7,4 m	24' 5"
R	Ground level to water tank	0,6 m	1' 10"	0,6 m	1' 10"
S	Jack pad diameter	1,2 m	48"	1,2 m	48"
T	Ground to jack pad front when raised	0,88 m	34 1/2"	0,88 m	34' 1/2"
U	Front track to centerline front jack	2,3 m	7' 6"	2,3 m	7' 6"
V	Centerline front jack to front of machine	3,9 m	12' 11"	3,9 m	12' 11"
W	Rear of machine to centerline rear jack	3,4 m	11' 0"	3,4 m	11' 0"
X	Drill overall length (mast up)	17,5 m	57' 6"	17,5 m	57' 6"
Y	Drill overall length (mast down)	19,9 m	65' 2"	27,3 m	89' 5"

