

DU411

ITH LONGHOLE DRILL

TECHNICAL SPECIFICATION

Sandvik DU411 is a highly versatile and compact ITH longhole drill fitted with an onboard booster and designed for underground mining in 4 x 4 m or larger production drifts. It is capable of drilling vertical and inclined fans and single or parallel Ø89 – 254 mm (3½" – 10") longholes up to 100 m in depth, using 3" to 8" in-the-hole hammers and Ø76 – 127 mm (3" – 5") pipes. The DU411 can be fitted with a V-30 head for Ø30" (762 mm) reaming in service support, or reaming up to Ø17½" (445 mm) holes with 12" hammers in rapid raising.

The DU411 is mounted on a 4-wheel drive frame-steered and diesel-powered carrier. It is equipped with the RH6230 top drive, CF706-F feed with fixed centralizer, PC174 carousel, HS130 horizontal single slideover, ERIS drilling control panel and operator's safety canopy. The 360° feed rotation, wide slideover and feed tilt angles make the unit suitable for most mining methods and various service support applications. The CANbus based drilling control system and drilling instrumentation ensure good control of the drilling operation.

The layout of the Aries carrier is designed for good stability, ensuring fast and safe tramming in mine drifts. All service points are accessible from ground level.

KEY FEATURES

Top drive	RH6230 with splined piston
Feed	CF706-F with fixed centralizer
Drill pipe carousel	PC164 (16 pipes)
Drill pipe diameter	Ø3" - 4" (76 - 102 mm)
Drill pipe length	4' - 6' (1 220 - 1 830 mm)
Horizontal (single) slideover	HS130 (762 mm movement)
Minimum drift size (H and W)	3 807 mm (6' feed)
Drift width in T-section	4 150 mm (minimum)
Pivot point height	1 902 mm
Transport height	2 616 mm
Transport width	2 235 mm
Transport length	9 050 mm
Transport weight	21 770 kg

ROCK TOOLS AND HOLE DIAMETERS

ITH hammer	Pipe Ø (mm)	Hole Ø (mm)	Hole Ø (in)
3"	79	89 - 102	3½ - 4
4"	79	115 - 127	4½ - 5
5"	89	140 - 152	5½ - 6
6"	102	165 - 203	6½ - 8
8"	127	216 - 254	8½ - 10
12"	127	Up to 445	Up to 17½
V-30	127	762*	30"

**) By reaming*



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TOP DRIVE

Type of rotation head	RH6230 with splined piston
Working pressure	Up to 207 bar (rotation)
Rotation motors	2 x ME12
Maximum torque	5 730 Nm
Rotation speed	0 - 60 rpm
Weight	336 kg
Length with spline piston	760 mm (including saver sub)

FEED AND CAROUSEL

Type of feed	CF706-F
Pipe length (standard)	6' (1 830 mm)
Retaining centralizer	CF10 fixed centralizer
Drill table pass through	222 mm (8 ¾")
Set-off from stope face	300 mm
Feed force	70 kN
Feed and return speed	Up to 0.3 m/s
Stinger extension (rear)	1 780 mm (5' and 6') 910 mm (4')
Stinger extension (front)	560 mm (5' and 6') 910 mm (4')
Cuttings diverter	DV10

FEED DIMENSIONS

Type	CF706 (standard)	CF705 (option)	CF704 (option)
Pipe length	6' (1 830 mm)	5' (1 525 mm)	4' (1 220 mm)
Total length	3 607 mm	3 302 mm	2 997 mm

CAROUSEL CAPACITIES

Type	PC164 (standard)	PC215 (option)	PC324 (option)
Storage capacity	16 pipes	20 pipes	31 pipes
Pipe diameter	3"-4" (76-102 mm)	3"-5" (76-127 mm)	3"-4" (76-102 mm)
Max. hole length (6')	28.7 m	36.3 m	56.4 m
Max. hole length (5')	23.9 m	30.2 m	47.0 m
Max. hole length (4')	19.0 m	24.1 m	37.5 m

LONGHOLE BOOM

Operating principle	Horizontal single slideover
Type of boom	HS130 (762 mm movement)
Feed tilt (back / forward)	90° / 15°
Feed roll-over	360°
Feed travel	1 370 mm (6') 1 143 mm (5') 914 mm (4')
Pivot point height	1 900 mm
Laser offset from drill center	1 110 mm

HYDRAULIC SYSTEM

Powerpack	HP45 (45 kW)
Hydraulic pumps	1 x 100 cc and 1 x 74 cc (60 Hz) 1 x 130 cc and 1 x 90 cc (50 Hz)
Type of pumps	Variable displacement axial piston
Filtration (pressure / return)	5 µ / 10 µ
Oil tank volume	265 liters
Cooler for hydraulic oil	Shell and tube type oil-to-water cooler

DRILLING CONTROL SYSTEM

Type of control system	CAN (control area network)
Control panel	ERIS portable control panel
Control screen	12" (16:10) color screen
Stand for control panel	Tripod type with 15 m cable
Drilling controls	Rotation controlled feed (Accra Feed)
Diagnostic system	Comprehensive and interactive
Pipe handler control interface	Standard
Hole alignment system	Digital angle indicator
MySandvik remote monitoring	With confirmation readiness

ELECTRIC SYSTEM

Standard voltages	380 - 690 V (60 Hz)
Total installed power	92 kW (depends on booster size)
Main switch gear	MSE
Allowed voltage fluctuation	± 10%
Starting method	Delta-Wye
Automatic cable reel	CRH with limit stop
Cable reel remote control	At operator station and cable reel
Front and rear lights (combined working and driving)	6 x 50 W (24 V) LED
Carrier positioning lights	2 x Laser type
Indicator lights	LED (24V)
Parking lights	LED (24V)
Amber flashing light	LED (24V)
Sealed AGM batteries	2 x 12 V
Safety shutdowns and alarms	Low water pressure Low compressor oil pressure High discharge air pressure Low hydraulic oil level High hydraulic oil temperature
Safety features	Phase loss or reversal protection Motor overload protection Voltmeter and ammeter Zener diode

AIR AND WATER SYSTEM

Onboard booster	KR551
Booster capacity (6 bar inlet)	20 m³/min at 24 bar
Type of booster	Reciprocating
Booster electric motor	55 kW
Booster inlet pressure	4 - 7 bar
Water booster pump	Triplex piston pump
Water pump capacity	27 l/min at 48 bar
Hammer lubrication system	HLU unit with oil level sensor
Lubrication metering capacity	0 - 4 liters / h
Lubrication tank capacity	32 liters
Water outlet (low pressure)	Rear of the carrier

OPERATOR'S SAFETY CANOPY

Canopy certification	FOPS / ROPS (ISO3449 / 3471)
Type of canopy	Tramming
Unit height in tramming	2 640 mm
Operator's seat	Crosswise mounted
Tramming cameras	Front and rear

CARRIER

Type of carrier	Aries (frame-steered)
Carrier articulation	± 35°
Rear axle oscillation	± 10°
Ground clearance	215 mm
Diesel engine	MB OM904LA (110 kW Tier3)
Exhaust catalyzer	Standard
Transmission	Clark 32000 (hydrodynamic)
Axles	Dana 113 (front and rear)
Tires	12.00-20 ITL solid rubber
Brakes	SAHR fail safe wet disc brakes
Tramming speed	Horizontal (0%): 10 km/h 8°=1:7=14%: 7 km/h
Powerpack tramming	Horizontal (0%): 10 km/h
Gradeability / sideways tilt	Max. 20° (35%)
Carrier hydraulic jacks	2 x CJ16 jacks (front) 2 x CJ16 jacks (rear)
Fuel tank	114 liters
Oil tank filling pump	Electric
Centralized greasing points	Standard
Tramming alarm	Standard
Colour scheme	Sandvik standard
Documentation	2 x Operator's manual 2 x Maintenance manual 2 x Parts manual (in English only) 1 x Toolman CD

OPTIONAL ITEMS

Drilling system

*HS260 double slideover	1 524 mm horizontal movement
*DV30 cuttings diverter	For V-30 blind boring
Front and rear stingers	With 50/50 extension
*CF706-S standard feed	With split centralizer
*CF1306-S heavy hoist feed	With split centralizer
Removal of carousel	Feed without carousel and without pipe arm
*PA15 single axis pipe arm	Remove carousel
*PA15-V single axis pipe arm	Remove carousel
*PA25 dual axis pipe arm	Remove carousel
*PC165 carousel	For 16 pipes Ø3"-5" (76-127 mm)
*PC215 carousel	For 20 pipes Ø3"-5" (76-127 mm)
*PC254 carousel	For 24 pipes Ø3"-4" (76-102 mm)
*PC324 carousel	For 31 pipes Ø3"-4" (76-102 mm)
PC324-RC carousel	For reverse circulation
Conversion kit (with carousel)	From one pipe size to another
Conversion kit (no carousel)	From one pipe size to another
Remote thread lubrication	For use with carousel
Petol chain wrench on feed	To open hammers with hydraulic cylinder
RC slip plate	Without spline breakout

Instrumentation system

Hole depth and RPM monitoring	For RH6230 top drive
Portable angle indicator	With laser alignment
Camera and monitoring package	For drilling
Access protector	Laser gate

OPTIONAL ITEMS

Cleaning system

High pressure system with reel	Up to 48 bar
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Greasing system

Automatic system	Carrier and boom (Lincoln)
Manual greasing unit	Pump, reel and nozzle

Electric system

*Voltage option	1 000 V (60 Hz) system
*Supply frequency option	50 Hz (not compatible with 1 000 V)

Air and water system

*Booster upgrade to KS921	20 m³/min at 28 bar (from 6 bar inlet) Electric motor 90 kW (60 Hz)
*Booster upgrade to KS1121	27 m³/min at 28 bar (from 6 bar inlet) Electric motor 110 kW (60 Hz)
*Booster upgrade to KS1501	37 m³/min at 28 bar (from 6 bar inlet) Electric motor 150 kW (60 Hz)
*HP compressor KH421	15.6 m³/min at 24 bar for 1 000 V
Pressure reducing safety valve	<7 bar inlet air (onboard screw boosters)

Fire suppression system

Automatic system	Ansul (10 nozzles)
Manual system	Ansul (10 nozzles)

Carrier

Fast filling and evacuation system	For fuel (Wiggins)
Wheel chocks and holders	For fuel, oil and coolant (Wiggins) One on each side

Extra items

Drilling package: RC	Top drive upgrade (RC swivel) Hydraulic centralizers with RC slip plate Thread, forks and dual torque system Discharge diameter 76 mm Center tube ID 64 mm (maximum) CF1306-VS (blind bore) feed, split centralizer, PA15-V pipe arm and 50/50 stingers
Drilling package V-30	Top drive upgrade (Wassara) Water swivel and stainless plumbing Water pulse dampening system For alternative flow discharge With tripod stand and 15 m cable RH6230 with splined piston Rim and tire (for standard tires) For top drive, saver sub removal and the booster
Drilling package: Wassara	Top drive upgrade (Wassara) Water swivel and stainless plumbing Water pulse dampening system For alternative flow discharge With tripod stand and 15 m cable RH6230 with splined piston Rim and tire (for standard tires) For top drive, saver sub removal and the booster
Sheave kit KR551	For alternative flow discharge
Spare ERIS control panel	With tripod stand and 15 m cable
Spare rotation head	RH6230 with splined piston
Spare wheel assembly	Rim and tire (for standard tires)
Tools to specifications	For top drive, saver sub removal and the booster
Documentation	Extra manuals (printed and CD)

*) replaces standard feature

MINIMUM PRODUCTION DRIFT SIZE**

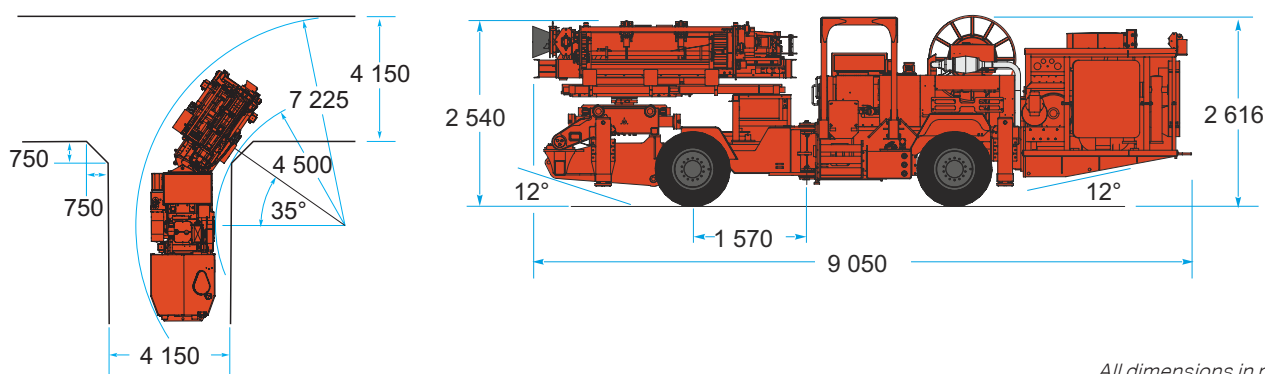
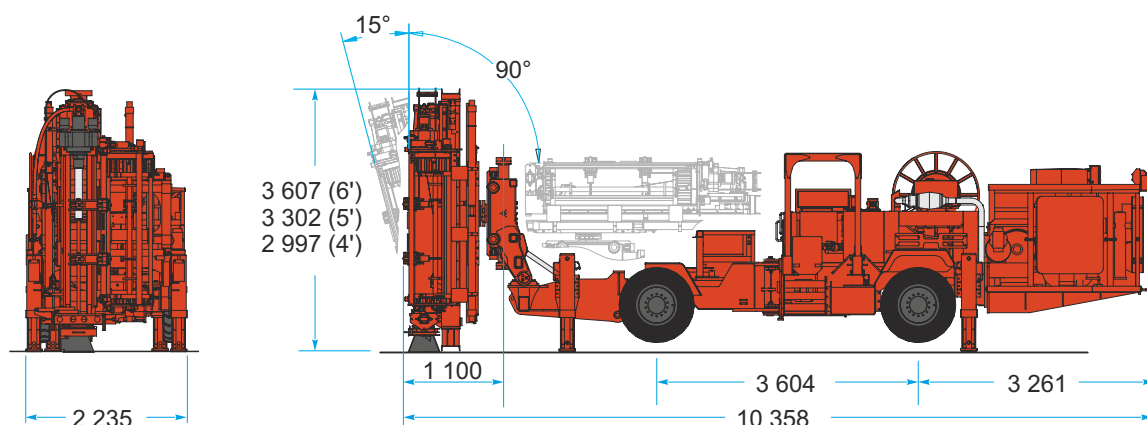
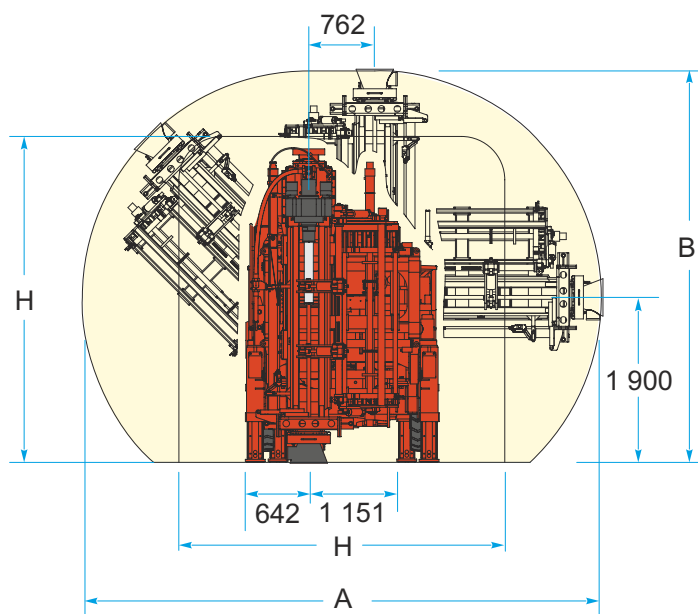
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CF706-F	3 807 mm
CF705-F	3 502 mm
CF704-F	3 197 mm

**j 100 mm clearance

MAXIMUM PRODUCTION DRIFT SIZE**

	A	B
CF704-F mm	5 075	4 059
CF705-F mm	5 532	4 288
CF706-F mm	5 989	4 516

**j Rear stinger extended, front stinger retracted



All dimensions in mm

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