

DU311

ITH longhole drill

Key features

Top drive	RH6230 with splined piston
Feed	CF706-F with fixed centralizer
Pipe arm	PA15 single axis
Pipe diameter	79 - 127 mm (Ø3 1/8" - 5")
Pipe length	4' - 5' - 6' (1 220 - 1 524 - 1 830 mm)
Pipe carousel	16, 20, 31, 32 pipe config.
Horizontal (single) slideover	HS130, 762 mm (30") movement
Minimum production drift size (H and W)	3 788 mm (6' feed)
Minimum RC drift size (H and W)	4 192 mm (165 1/8"), 6' feed
Drift width in T-section	3 500 mm (137 3/4")
Pivot point height	1 915 mm (75 3/8")
Transport height	2 837 mm (111 11/16")
Transport width	2 004 mm (78 5/8")
Transport length	8 618 mm (339 5/16")
Transport weight	22 700 kg

Sandvik DU311 is a highly versatile and compact ITH longhole drill fitted with an onboard booster and designed for underground mining in 3.2 x 3.2 m or larger production drifts. It is capable of drilling vertical and inclined fans, and single or parallel Ø89 – 254 mm (3 1/2" – 10") longholes up to 100 m in depth, using 3" to 8" in-the-hole hammers and Ø79 – 127 mm (3 1/8" – 5") pipes. The DU311 can be fitted with a RBH-24 head for Ø24" (610 mm) reaming in service support, or reaming up to Ø17 1/2" (445 mm) holes with 12" hammers in rapid raising. Additionally, it can also be used for exploratory Reverse Circulation (RC) drilling.

The DU311 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, PA15 single axis pipe arm, HS130 horizontal single slideover, ERIS drilling control panel and operator's safety canopy. The 360° feed rotation, wide slide-over, and feed tilt angles make the unit suitable for most mining methods, various service support applications, and exploratory RC drilling. The CANbus based drilling control system and drilling instrumentation ensure good control of the drilling operation.

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



Rock tools and hole diameters

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

Top drive

Type of rotation head	RH6230 with splined piston
Working pressure (rotation)	Up to 207 bar (3 000 psi)
Rotation motors	2 x ME12
Maximum torque	5 730 Nm (4 226 lb-ft)
Rotation speed	0 - 60 rpm
Weight	336 kg (739 lbs)
Length with spline piston	760 mm (30"), incl. saver sub

Feed and pipe arm

Type of feed	CF706-F
Type of pipe handler	PA15 single axis pipe arm
Pipe length (standard)	6' (1 830 mm)
Retaining centralizer	CF10 fixed centralizer
Drill table pass through	222 mm (8¾")
Set-off from stope face	520 mm (20½")
Feed force	70 kN (15 700 lbs)
Feed and return speed	Up to 0.3 m/s (1 ft/s)
Cuttings diverter	DV10
Hole distance from the wall	850 mm (33½") hose loop side 1 190 mm (46⅞") pipe arm side

Production feed dimensions

Type	CF706 (standard)	CF705 (option)	CF704 (option)
Pipe length	6' (1 830 mm)	5' (1 525 mm)	4' (1 220 mm)
Stinger extension (rear)	1 664 mm (65½")	1 511 mm (59½")	1 359 mm (53½")
Stinger extension (front)	803 mm (31⅝")	650 mm (25⅝")	498 mm (19⅝")
Total length	3 665 mm (144⅝")	3 360 mm (132¼")	3 055 mm (120¼")

RC feed dimensions

Type	CF706 (standard)	CF705 (option)	CF704 (option)
Pipe length	6' (1 830 mm)	5' (1 525 mm)	4' (1 220 mm)
Stinger extension (rear)	1 676 mm (66")	1 524 mm (60")	1 372 mm (54")
Stinger extension (front)	803 mm (31⅝")	650 mm (25⅝")	498 mm (19⅝")
Total length	4 071 mm (160¼")	3 766 mm (148¼")	3 461 mm (136¼")

Carousel capacities

Type	PC164 (option)	PC215 (option)	PC324 (option)	PC324 (option)
Storage capacity	16 + 1 pipes	20 + 1 pipes	32 + 1 pipes	31 + 1 pipes
Pipe diameter	79 - 102 mm (3⅞"- 4")	79 - 127 mm (3⅞"- 5")	79 - 89 mm (3⅞"-3½")	102 mm (4")
Max. hole length (6')	31.1 m (102')	38.4 m (126')	60.4 m (198')	58.5 m (192')
Max. hole length (5')	25.9 m (85')	32 m (105')	50.3 m (165')	48.8 m (160')
Max. hole length (4')	20.7 m (68')	25.6 m (84')	40.2 m (132')	39 m (128')
Hole distance from the wall	1 110 mm (43¾")	1 275 mm (50¾")	1 275 mm (50¾")	1 275 mm (50¾")

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	CF706 = 1 372 mm (54") CF705= 1 067 mm (42") CF704= 762 mm (30")
Pivot point height	1 915 mm (75⅜")
Laser offset from drill center	1 217 mm (47⅞")

Hydraulic system

Power pack	HP45 (45 kW)
Hydraulic pumps	1 x 100 cm³ and 1 x 74 cm³ (60 Hz) 1 x 130 cm³ and 1 x 90 cm³ (50 Hz)
Type of pump	Variable displacement axial piston
Filtration (pressure / return)	5 / 10μ
Oil tank volume	250 liters (66 gallons)
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 (50') cable
Drilling controls	Rotation controlled feed (Accra Feed) Depth and RPM monitoring
Diagnostic system	Comprehensive and interactive
Pipe handler control interface	Standard
Hole alignment system	Digital angle indicator and 2 x alignment laser

Electrical system

Standard voltages	380 – 690 V (60 Hz)
Total installed power	104 kW
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
Indicator lights	LED (24 V)
Red rear running / brake lights	2 x LED (24 V)
Parking lights	LED (24 V)
Amber flashing light	LED (24 V)
Sealed AGM batteries	2 x 12 V
Safety shutdowns and alarms	Low water pressure Low air pressure Low compressor oil pressure High compressor discharge temperature Low hydraulic oil level High hydraulic oil temperature
Electric quality monitoring	Phase loss or reversal protection Motor overload protection Voltmeter and ammeter Zener diode

Air and water systems

Onboard booster	KR551
Booster capacity (6 bar inlet)	20 m³/min at 24 bar (706 CFM at 350 psi)
Type of booster	Reciprocating
Booster electric motor	55 kW
Booster inlet pressure	4 – 7 bar (60 -100 psi)
Water booster pump	Triplex piston pump
Water pump capacity	27 l/min at 48 bar (7 gpm at 700 psi)
Hammer lubrication system	HLU unit with oil level sensor
Lubrication metering capacity	0 – 4 liters/h (0 - 1 gallon/h)
Lubrication tank capacity	32 liters (8.5 gallons)
Water outlet (low pressure)	Rear of the carrier

Operator's safety canopy

Canopy certification	FOPS / ROPS (ISO 3449 / 3471)
Type of canopy	Tramming
Unit height in tramming	2 837 mm (111 ¹¹ / ₁₆ "
Operator's seat	Crosswise mounted
Tramming cameras	Front and rear

Carrier

Type of carrier	Pegasus (frame-steered)
Carrier articulation	±40°
Rear axle oscillation	±10°
Ground clearance	267 mm (10 ¹ / ₂ "
Diesel engine	M-B OM904LA (110 kW Tier3)
Exhaust catalyzer	Standard
Transmission	Hydrostatic
Axles	Dana Spicer 123 (front and rear)
Tires	12.00 x 20 ITL solid rubber
Parking / emergency 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	Max. 20° (35%)
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 CD-rom

Optional items

Drilling system

*Cuttings diverter	For RBH-24 blind boring
*CF706-S standard feed	With split centralizer
*CF1306-S heavy hoist feed	With split centralizer
*PA15-R single axis pipe arm	V-30 W/DA101 or DA201 pipe loading
*PA25 dual axis pipe arm	Downhole w/manual pipe loading
*PA35 triple axis pipe arm	Uphole w/manual pipe loading
*PC164 carousel	16+1 pipes Ø79 - 102 mm (3 ¹ / ₈ " - 4")
*PC215 carousel	20+1 pipes Ø3 ¹ / ₈ " - 5" (79-127 mm)
*PC324 carousel	31+1 pipes Ø3 ¹ / ₈ " - 4" (79-102 mm)
Carousel insert	Converts carousel to use 1 ft shorter pipe

Conversion kit (with carousel)	From one pipe size to another
Conversion kit (with pipe arm)	From one pipe size to another
Remote thread lubrication	For use with RC pipe or ITH pipe in carousel
Petol chain wrench on feed	To open hammers with hydraulic cylinder
RC slip plate	Without spline breakout

Instrumentation

Access protector	Laser gate
Camera and monitoring	Includes 2 x remote cameras, 1 x display and 1 x ERIS panel with stand (this is addition to the standard ERIS panel and stand)
ERIS teleremote	With laser alignment
Portable angle indicator	

Cleaning system

High pressure washer with reel	Up to 48 bar (700psi)
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Greasing systems

*Automatic greasing system	For carrier and boom (Lincoln)
Manual greasing unit	Pump, reel and nozzle

Electric system

*Supply voltage	1 000 V (50 and 60 Hz) system
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Fire suppression system

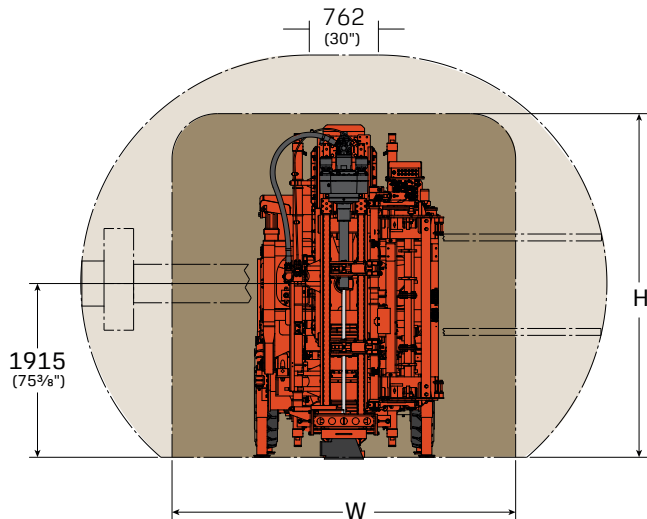
Automatic system	Ansul, (6 nozzles)
Manual system	Ansul, (6 nozzles)

Extra items

Harsh water advanced	Upgraded cylinders and hydraulic oil cooler with enhanced corrosion protection
Drilling package: RC	Top drive upgrade (RC swivel) Hydraulic centralizers with RC split plate Thread, forks and dual torque Discharge diameter 76 mm Center tube ID 64 mm (maximum)
Drilling package: RBH-24	CF1306-RS (blind bore) feed, split centra- lizer, PA15-R pipe arm and 50/50 stingers
Sheave kit KR551	For alternative flow discharge
Spare ERIS control panel	With tripod stand and 15 m cable
Spare wheel assembly	Rim and tire (for standard tires)
Documentation	Extra manuals (printed and CD)
Tools to specifications	For top drive, saver sub removal and the booster
*) Replaces standard feature	

Technical drawing

All dimensions in mm



Drilling module height **

	F
CF706-F (6') standard	3 665 mm (144 5/16")
CF705-F (5') option	3 360 mm (132 1/4")
CF704-F (4') option	3 055 mm (120 1/4")

**) Increase height by 406 mm (16") for RC drilling module

Minimum production drift size**

	H	W
CF706-F (6') standard	3 788 mm (149 1/4")	3 788 mm (149 1/4")
CF705-F (5') option	3 485 mm (137 3/16")	3 485 mm (137 3/16")
CF704-F (4') option	3 183 mm (125 5/16")	3 183 mm (125 5/16")

**) 100 mm (3 15/16") ground clearance

Maximum production drift size**

	H	W
CF706-F (6') standard	4 434 mm (174 9/16")	5 329 mm (209 13/16")
CF705-F (5') option	4 129 mm (162 9/16")	4 871 mm (191 3/4")
CF704-F (4') option	3 824 mm (150 9/16")	4 414 mm (173 3/4")

**) Rear stinger extended, front stinger retracted
Increase width by 419 mm (16 1/2") for RC drilling

Minimum RCD drift size**

	H	W
CF706-F (6') standard	4 192 mm (165 1/8")	4 192 mm (165 1/8")
CF705-F (5') option	3 889 mm (153 1/8")	3 889 mm (153 1/8")
CF704-F (4') option	3 586 mm (141 3/16")	3 586 mm (141 3/16")

**) 100 mm (3 15/16") ground clearance

***PC164 tramming height shown, add 105mm (4 1/8") to tramming height for PC215 / PC324 options

