

DU311-T ITH LONGHOLE DRILL

TECHNICAL SPECIFICATION

Sandvik DU311-T is a highly maneuverable, versatile, and compact ITH longhole drill that is designed for several different drilling applications in 4 x 4 m or larger production drifts. There is an optional onboard reciprocating air booster, and there are also several different tow behind air booster packages available, with a full range of air flows and pressures to suit the drilling application. It is capable of drilling vertical and inclined fans, and single or parallel Ø89–254 mm (3½"–10") longholes up to 150 m in depth, using 3" to 8" in-the-hole hammers and Ø79–127 mm (3"–5") pipes. The DU311-T can also 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. Additionally, it can also be used for exploratory Reverse Circulation (RC) drilling.

The DU311-T is track mounted and equipped with the RH6230 top drive, CF706-F feed with fixed centralizer, PA15 single axis pipe arm, HS130 horizontal single slide-over, and ERIS drilling control panel. 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 Orion carrier is designed for good stability, ensuring 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
Pipe arm	PA15 single axis
Pipe diameter	79 - 127 mm (Ø3½" - 5")
Pipe length	1 220 - 1 830 mm (4' - 6')
Horizontal (single) slide-over	HS130, 762 mm (30") movement
Minimum drift size (H and W)	3 788 mm (149½"), 6' feed
Drift width in T-section	Min. 3 000 mm (118")
Pivot point height	1 788 mm (70")
Transport height	Max. 3 010 mm (118½") with 32 rod carousel
Transport width	2 130 mm (84")
with diesel engine option	Max. 5 920 mm (233") with diesel engine option
Transport weight	18000 kg (39 500 lbs)

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*



1. SANDVIK DU311-T - ITH LONGHOLE DRILL

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 (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 (8 ¾")
Set-off from stope face	720 mm (28¾")
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 (46¾") 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 (31½")	650 mm (25½")	498 mm (19%)
Total length	3 665 mm (144¾")	3 360 mm (132¼")	3 055 mm (120¼")

RC FEED DIMENSIONS

Type	CF706 (option)	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 (31½")	650 mm (25½")	498 mm (19%)
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 slide-over
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 line height	1 790 mm (70")
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 rate (pressure/return)	5 / 10µ
Oil tank volume	265 liters (70 gallons)
Cooler for hydraulic oil	Shell and tube type oil-to-water cooler
Auxiliary hydraulics outlet	For pipe handler

DRILLING CONTROL SYSTEM

Type of control system	CAN (control area network)
Control panel	ERIS portable control panel
Control screen	12" (16:10) colour screen
Stand for control panel	Tripod type with 15 m (50') cable
Drilling controls	Rotation controlled feed (AccraFeed) Depth and RPM monitoring
Diagnostics system	Comprehensive and interactive
Pipe handler control interface	Standard
Hole alignment system	Digital angle indicator and 2 x alignment laser

ELECTRIC SYSTEM

Standard voltages	380 – 690 V (50 or 60 Hz)
Total installed power	104 kW (139 hp)
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
Tramming lights	2 x 50 W (24 V) LED
Working lights	2 x 50 W (24 V) LED
Indicator lights	LED (24 V)
Amber flashing light	LED (24 V)
Sealed AGM batteries	2 x 12 V (w/diesel engine option)
Safety shutdowns and alarms	Low water pressure Low compressor oil pressure High discharge air pressure Low hydraulic oil level High hydraulic oil temperature
Electric quality monitoring	Phase loss or reversal protection Motor overload protection Voltmeter, amperage, earth continuity control

AIR AND WATER SYSTEM

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 gallons/h)
Lubrication tank capacity	32 liters (8½ gallons)
Water outlet (low pressure)	Rear of the carrier

CARRIER

Type of carrier	Orion (tracked)
Track type	Triple grouser
Track width	305 mm (12")
Ground clearance	180 mm (7")
Transmission	Hydrostatic
Brakes	SAHR fail safe wet disc brakes
Operator tramming platform	Forward facing
Power for tramming	Electric and diesel engine (option)
Tramming speed (horizontal)	High gear: 2.2 km/h Low gear: 1.2 km/h
Gradeability	20° (35 %)
Carrier hydraulic jacks	2 x CJ16 jacks (front) 2 x CJ16 jacks (rear)
Oil tank filling pump	Electric
Centralized greasing points	Standard
Tramming alarm	Standard
Knowledge Box™	Connectivity solution (TS2-535)
Colour scheme	Sandvik standard
Documentation	2 x Operator's manual 2 x Maintenance manual 2 x Parts manual (English only) 1 x Electronic manuals

AIR BOOSTER OPTIONS

Onboard KR551 reciprocating booster	20 m³/min (700 scfm) at 24 bar (350 psi)
**KR551 trailer reciprocating booster	20 m³/min (700 scfm) at 24 bar (350 psi)
**KS921 trailer booster	24 m³/min (850 scfm) at 28 bar (400 psi) for 50 Hz, or 22 m³/min (770 scfm) at 28 bar (400 psi) for 60 Hz, or 17 m³/min (600 scfm) at 34 bar (500 psi) for 50 Hz, or 20 m³/min (720 scfm) at 34 bar (500 psi) for 60 Hz
**KS1121 trailer booster	30 m³/min (1 050 scfm) at 28 bar (400 psi) for 50 or 60 Hz, or 22 m³/min (760 scfm) at 34 bar (500 psi) for 60 Hz, or 22 m³/min (790 scfm) at 34 bar (500 psi) for 50 Hz
**KS1501 trailer booster	37 m³/min (1 300 scfm) at 28 bar (400 psi) for 50 or 60 Hz

****Note:** Refer to KR551, KS921, KS1121, and KS1501 booster product technical specifications for additional information about the trailer mounted boosters. Trailer mounted boosters can be used in conjunction the optional onboard KR551 booster, but in this configuration the onboard compressor will unload once 350 psi is exceeded. An onboard KR551 booster may not be needed depending upon drilling application and the model of trailer booster selected. Additionally, the trailer hitch option is required in order to tow a booster with the DU311-T.

OPTIONAL ITEMS

Drilling system

*DV30 cuttings diverter	For V-30 blind boring
*CF706-S standard feed	With split centralizer
*CF1306-S heavy hoist feed	With split centralizer
*PA15-V 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 (3⅝" - 4")
*PC215 carousel	20+1 pipes Ø3⅝"- 5" (79-127 mm)
*PC324 carousel	31+1 pipes Ø3⅝"- 4" (79-102 mm)
Carousel insert	Converts carousel to use 1 ft short-er 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)

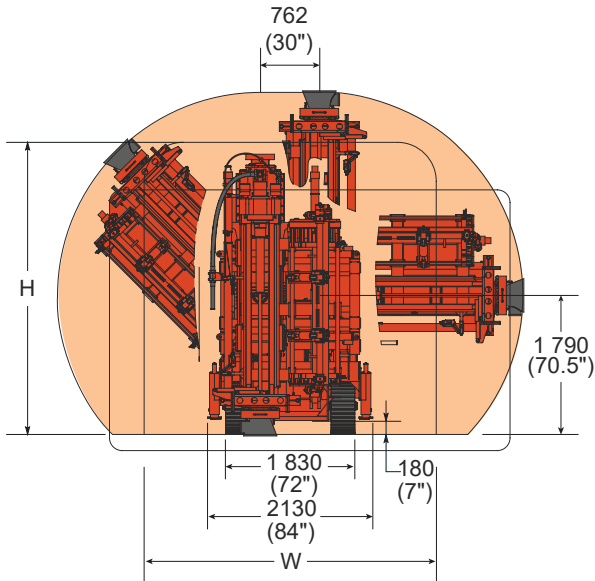
Carrier

Diesel engine	Deutz D914L4 (Tier4i) and 20 liters (5 gallons) fuel tank
Fast filling and evacuation system	For fuel (Wiggins)
Hitch on carrier	For fuel, oil and coolant (Wiggins) For towing booster (trailer)

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 slip plate Thread, forks and dual torque system Discharge diameter 76 mm Center tube ID 64 mm (maximum)
Drilling package: V-30	CF1306-VS (blind bore feed), split centralizer, PA15-V single axis pipe arm, and RH6250 with splined piston
Sheave kit for KR551 booster	For alternative flow discharge
Spare ERIS control panel	With tripod stand and 15 m (50 ft) cable
Spare rotation head	RH6230 or RH6250 (for V-30)
Documentation	Extra manuals (printed and electronic manuals)
Tools to specifications	For top drive, saver sub removal and the booster

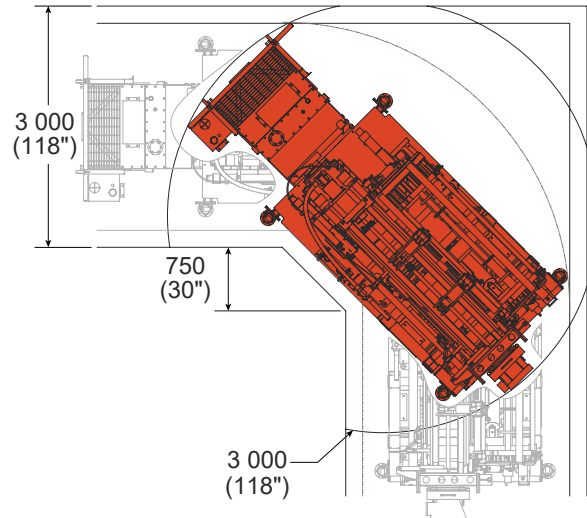
**) Replaces standard feature*



MINIMUM PRODUCTION DRIFT SIZE*

	H	W
CF706-F (standard)	3 788 mm (149¼")	3 788 mm (149¼")
CF705-F (option)	3 485 mm (137¾")	3 485 mm (137¾")
CF704-F (option)	3 183 mm (125⅝")	3 183 mm (125⅝")

*) 100 mm (35/16") clearance. Increase drift dimensions by 406 mm (16") for RC drilling module



MAXIMUM PRODUCTION DRIFT SIZE**

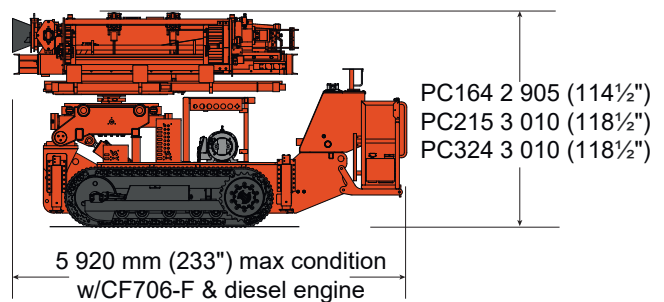
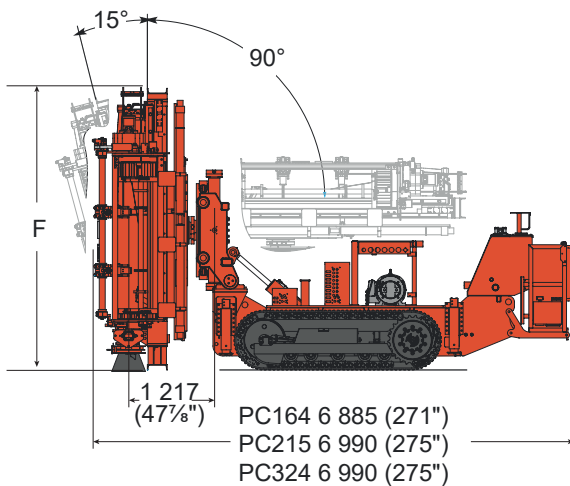
	H	W
CF706-F (standard)	4 310 mm (169¾")	5 329 mm (209⅜")
CF705-F (option)	4 004 mm (157½")	4 871 mm (191¾")
CF704-F (option)	3 700 mm (145½")	4 414 mm (173¾")

**) Rear stinger extended, front stinger retracted

DRILLING MODULE HEIGHT***

	F
CF706-F (standard)	3 665 mm (144⅝")
CF705-F (option)	3 360 mm (132¼")
CF704-F (option)	3 055 mm (120¼")

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



All dimensions in mm

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4. SANDVIK DU311-T - ITH LONGHOLE DRILL