



## Technical description

The Titon 405 is a diesel powered, self-contained crawler mounted drilling rig designed for DTH blasthole drilling in the mining, quarry and construction industries. The drill is equipped with an operator's cabin, fix

boom, dry dust collector and drill pipe changer. The Titon 405 is designed for drilling 90-152 mm diameter holes to depths of up to 40 meters when equipped with 89 mm diameter drill pipes (5000 mm in length).

## Undercarriage

The undercarriage is a solid heavy-duty excavator type steel construction mounted on two track assemblies and a track oscillation shaft. The independently (hydraulically) oscillating tracks are fitted with chain linked triple bar grouser plates and equipped with chain guides. Track chains are tensioned by a hydraulic grease cylinder on the idler wheel.

Track gauge	[mm]	2050
Track plate width	[mm]	350
Ground pressure	[kN/m <sup>2</sup> ]	97,2
Ground clearance	[mm]	350
Track oscillation	[°]	+/- 10

The hydraulic axial piston type tramming motors are equipped with 3-stage planetary gears in the hub of the driving wheel with integrated, spring loaded, multiple disc safety brakes.

Tractive force	[kN]	140
Gradeability, 1st gear	[° or %]	36,5 or 75,5
Tramming speed, 1st gear	[km/h]	0...2,4
Gradeability, 2nd gear	[° or %]	18 or 32,5
Tramming speed, 2nd gear	[km/h]	0...4

An in-line mounted powerpack consisting of a diesel engine, hydraulic pumps and air compressor is mounted on a robust steel frame.

## Diesel engine

The Titon 405 is equipped with a water-cooled, turbo charged, 4-cycle direct injected CAT diesel engine. It is equipped with an air purification system and fulfills exhaust gas emission standards Meets TIER 3, Stage III a emission requirements. Tier 3 refers to EPA (U.S.) standards. Stage IIIA refers to European standards. The engine features low fuel consumption, low noise level and has long service intervals for efficient and environmentally friendly operation.

Manufacturer and type	CAT 11 ACERT	
Type of cooling system	water-cooled	
Power output (SAE)	[kW/rpm]	261/2100
Number of cylinders		6
Displacement/stroke	[cm <sup>3</sup> ]	11094
Max. torque and		
Rotation speed	[Nm/rpm]	1187/2100
Specific fuel consumption	[g/kWh]	235
Low idle speed	[rpm]	800

## Hydraulic pumps

The hydraulic gear pumps are powered through an engine-integrated gearbox. Gear pumps are simple in construction and easy to maintain with low filtration requirements.

A double axial pump for tramming motors, rotation motor, dust collector, feed motor :

Manufacturer and type		REXROTH
Displacement	[l/min]	126,126
Max. Pressure	[bar]	320,320

A double gear pump for hydraulic oil cooler, compressor oil cooler , water cooler and SLU22 oiler:

Manufacturer and type	SAUER DANFOSS	
Displacement	[l/min]	50,50
Max. Pressure	[bar]	250,250

A gear pump for hydraulic cylinders, magazine functions and pilot lines:

Manufacturer and type	SAUER DANFOSS	
Displacement	[l/min]	32
Max. pressure	[bar]	200

Operating pressure settings in the hydraulic system are:

Tramming motors	[bar]	320
Rotation motor	[bar]	180
Feed motor	[bar]	200
Dust collector fan motor	[bar]	165
Hydraulic oil cooler	[bar]	180
Compressor oil cooler	[bar]	180
Water cooler	[bar]	210
Hydraulic control system	[bar]	35
Cylinders	[bar]	250
Pipe changer	[bar]	180

## Air compressor

The Titon 405 is equipped with a low noise screw type air compressor, an air receiver and a pneumatic control system.

Manufacturer and type	GHH CF series	
Air delivery	[m <sup>3</sup> /min/ cfm]	17 / 600
Operating pressure	[bar/psi]	24 / 348

The compressor unit is an oil-injected, double stage rotary screw compressor consisting of two helical asymmetric rotors mounted on a rotor casing.

The unit comes standard with a compressor control operated by an ON/OFF switch, which can be adjusted to decrease the air volume and pressure for efficient drill hole collaring.

## Lubrication device

The drill is equipped with an adjustable SLU22 airline lubrication device for flushing head, drill pipes and DTH hammer.

Displacement/stroke	[cm <sup>3</sup> ]	0,85...1,25
Strokes per minute	[drops]	2...30
Tank size	[liters]	22

## Hydraulic system and tanks

The Titon 405 is equipped with separate hydraulic oil and a fuel tank. The hydraulic oil tank is fitted with an integrated return filter element for cleaning hydraulic oil, a tank ventilation filter, an oil level indicator with an integrated electrical level control switch and a manual filling pump.

Hydraulic oil tank capacity	[litres]	360
Fuel tank capacity	[litres]	640
Filter rating hydraulic tank	[m]	10
Max. ambient temperature	[°C]	50

The drill is equipped with two combined coolers; one for engine coolant and for air and another for compressor oil and hydraulic oil. The coolers are constructed of robust steel pipes, which provide a large cooling surface. The cooling fans consist of a hydraulic motor and a wing type propeller.

## Drill feed

The feed is a motor-chain type fitted with a rotation head and hose reel. The rotation head cradle slides on steel and plastic guides to reduce feed wear. A tube-clamping device on the feed facilitates easy coupling and uncoupling of pipes. The rotation head is equipped with a 3-stage planetary gear and Danfoss hydraulic motor for smooth rotation and maximum torque.

Rotation head travel	[mm]	5740
Feed travel	[mm]	1200
Feed/pullback force	[kN]	32
Feed/retract speed	[m/s]	0...0,32
Fast feed/retract speed	[m/s]	0...0,8
Rotation head type		R.R510FS
Max. rotation torque	[Nm]	3200
Rotation speed (variable)	[rpm]	0...100

## Drill pipe changer

A hydraulically controlled revolver type magazine pipe changer stores up to 7 drill pipes. An additional pipe can be held in the feed. Short selector arms and movements make pipe adding and uncoupling easy and fast. The top support of the pipe magazine consists of a latch mechanism and a hydraulic motor that revolves the magazine.

Pipe storing capacity		
76 mm pipes	7 + 1 (Optional)	
89 mm pipes	7 + 1	
102 mm pipes	6 + 1 (Optional)	
114 mm pipes	5+1 (Optional)	

## Retaining centralizer

A hydraulically operated retaining centralizer is equipped with a pipe centering and uncoupling device. Wear parts on pipe clamps are easy to change.

## Suction hood

The feed on Titon 405 is equipped with a hydraulically controlled adjustable suction hood. A rubber type hood seals the collar of the hole effectively thereby minimizing dust in work site air. A moveable suction head also helps the operator to monitor flushing and ensures easy collaring of holes.

## Boom

The fixed boom of the Titon 405 is built of square steel profile.

Boom lift (up/down)	[°]	40 + 35
Boom swing (left/right)	[°]	0 - 50
Feed tilt	[°]	40 - 90
Feed swing (left/right)	[°]	30 - 95
Horizontal drilling coverage	[m2]	1,47

## Operator's cabin

The FOPSII/ROPS operator's cabin is equipped with heating and air conditioning system. Certified noise level inside the cabin is lower than 85 dB(A). Other features include a window wiper and washing system, protective grills, fire extinguisher, emergency exit window (the rear and the side window can be destroyed with the emergency hammer), a multi-position suspension seat and an IS22 electric angle indicator which is showing at a display in the control panel. The control panel in the cabin is fitted with joysticks for drilling, boom controls and tramming. Two working lights and two tramming spotlights are mounted at the front of the machine and two working lights at the rear. Radio with tape is also a standard feature in the cabin (CD optional).

## Electric system

The 24 V electric system includes an electric control panel for engine, drilling and tramming. The drill is equipped with a reversing alarm and is fitted with two 12 V batteries.

There is a stop system for emergencies:

Emergency stop switch at the control panel in the cabin

Emergency stop ripcord at the feed

## Dust collection system

The dust collector on Titon 405 is equipped with a hydraulically driven suction fan with adjustable air blows that are activated at each pipe change. Filter cleaning is externally controlled. The fan does not need to be dismounted for filter change.

Suction capacity 100 mm WG	[m3/min]	35
Suction capacity 500 mm WG	[m3/min]	28
Number of filter elements		24
Filter cleaning air pressure	[bar]	7

## Accessories

The following accessories are included in the delivery of the standard basic unit:

Suction hood rubber  
Suction hose (to dust collector)  
Air lock  
Hose clips

Set of Rollex hoses  
Operator's manual  
Spare parts manual  
Set of spray paints  
2 Fire extinguishers

## Dimensions for transportation

Total length	[mm]	11434
Width	[mm]	2480
Total height (with dust collector)	[mm]	3125
Weight	[kg]	20000

