

Atlas Copco Drilling Solutions

Predator Drilling System Specifications



Sustainable Productivity

Atlas Copco



PREDATOR SPECIFICATIONS

PREDATOR | DRILL RIG

	U.S.	METRIC
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TRANSPORT MODE WEIGHTS & DIMENSIONS

overall length	46 ft 2 in	14 m
width	8 ft 6 in	2.6 m
height	14 ft 2 in	4.32 m
estimated weight (with fluids)	113,000 lb	51 256 kg

handling clearances (on hole center)

bottom of spindle to top of master bushing	58 ft 6 in	17.8 m
bottom of master bushing to ground level	10 ft 0 in	3.05 m

POWER TRAIN

engine	single deck mounted engine used to power the drill in transport and drilling mode	
manufacturer and model rating	CAT C-27 950 hp @ 1800 rpm	CAT C-27 708 kw @ 1800 rpm
cooling system	separate cooler with hydraulic fan, on demand electronic control and charge air cooler rated to 125° F (51° C)	

HYDRAULIC SYSTEM

pump drive gear box	5-pad gear box with lubrication pump and cooler — direct drive from rig engine	
pumps	(maximum rated performance as used on Predator)	
fast feed and rotation	576 hp @ 4600 psi	429 kW @ 329 bar
normal feed	242 hp @ 4600 psi	180 kW @ 329 bar
auxiliary functions	190 hp @ 4500 psi	142 kW @ 322 bar
substructure	190 hp @ 4500 psi	142 kW @ 322 bar
engine fan	93 hp @ 3200 psi	69 kW @ 229 bar
hydraulic cooler fan	132 hp @ 2800 psi	98 kW @ 193 bar*
charge for feed pump	1.5 hp @ 300 psi	1.1 kW @ 21 bar
	*Pump capacity - total fan demand is about 70 hp max	
cooling	single cooler with hydraulic fan, on demand electronic control, rated to 125° F (52° C)	
hydraulic tank	452 gal	1 711 liters
hydraulic filters	4 filters @ 3 micron	4 filters @ 3 micron
hydraulic carrier drive	The carrier uses a hydraulic drive system powered by the deck engine. The feed/rotation pump powers a hydraulic drive motor coupled to a clutch and manual transmission.	

MAST

length (transport length)	46 ft 2 in	13.9 m
width (road width)	8 ft 6 in	2.6 m
bottom of spindle to top of table	59 ft 1 in	17.9 m
bottom of saver sub to top of table	53 ft 5 in	16.2 m
design	Certified API 4F, 3 rd edition	
raising and lowering	twin hydraulic cylinders	

PREDATOR | DRILL RIG (CONT.)

	U.S.	METRIC
MAST (CONT.)		
feed system	Twin 4 x 20 in steel tubes with large diameter nylatron sheaves on the top and bottom. Carriage powered up and down by twin hydraulic feed cylinders. The carriage is connected to the top drive carriage with high-strength steel cables.	
components		
pulldown cables	7/8 in diameter, 75,000 lb breaking strength	(22.2 mm / 34 019 kg)
pullback cables	1 ½ diameter, 307,000 lb breaking strength	(38.1 mm / 139 253 kg)
2 upper sheaves (nylatron material)	45 in diameter	1143 mm diameter
4 lower sheaves (nylatron material)	20 in diameter	508 mm diameter
performance rating		
pullback (hoisting)	100 ton, 200,000 lb	91 tonnes, 90 718 kg
fast feed speed-up	0–120 ft/min. and 0–180 ft/min. with manual regeneration (0–36.4 m/min., 0–54 m/min.)	
pulldown	25 ton, 50,000 lb	23 tonnes, 22 680 kg
fast feed speed-down	0–140 ft/min.	0–42.4 m/min.
top drive system	Twin hydraulic motors, top drive mounted in a top drive carriage with 90° tip-out feature.	
specifications	Twin motor spur gear design with steel housing and pressure lubrication system. Rated for 100 ton operation with safety factor. Infinitely variable speed control in two torque ranges.	
high torque range	30,000 ft-lb @ 0–90 rpm	40 675 Nm @ 0–90 rpm
high speed range	15,000 ft-lb @ 0–180 rpm	20 340 Nm @ 0–180 rpm
by-pass rotation - high torque range	25 rpm	25 rpm
by-pass rotation - high speed range	50 rpm	50 rpm
spindle ID/lower connection	5 in / 6 5/8 FH box	127 mm / 6 5/8 FH box
swivel	3000 psi (215 bar) cartridge replacement chevron packings	
top drive carriage	Steel plate construction. Upper and lower feed cables are attached to the carriage. Top drive tip-out mechanism is part of the carriage. Carriage is guided on adjustable roller assemblies on feed carriage.	
top drive tip-out	0–90° twin cylinder top drive tip-out to 8000 lb (3 629 kg) load rating @ 0–45° with a 30 ft (9.1 m) pipe length.	

DRILL RIG ENCLOSURE

Sheet steel drill enclosure to reduce noise emissions and keep power components cleaner. Open roof with hinged side panels for maintenance operations.

CARRIER RIG MOUNTING

5-pad gear box with lubrication pump and cooler — direct drive from rig engine.

	U.S.	METRIC
performance		
max. road speed / max. speed creep mode	65 mph / 4 mph	105 kph / 6 kph
max. gradability	44%	44%
turning radius (curb-to-curb)	56 ft 6 in	17.2 m
GVWR	113,000 lb	51 256 kg
front axles	22,000 lb each	48 400 kg each
front suspension	44,000 lb – leaf spring	151 800 kg – leaf spring

PREDATOR | DRILL RIG (CONT.)

	U.S.	METRIC
GVWR (cont.)		
front tires and wheels	4 x 445 / 65R 225 – (both U.S. and metric)	
rear axles	23,000 lb each	10 433 kg each
rear suspension	69,000 lb walking beam	31 298 kg walking beam
rear tires and wheels	12 x 11R 22.5 14 ply – aluminum wheels	
brakes	air brakes with maxi-brake system	
steering	TWR TAS-85 integral power steering gear	
frame	twin 16 in (406 mm) H-beam frame members	
hydraulic drive system	Transport power provided by a single, deck mounted engine driving a hydraulic pump and motor. Power from the hydraulic motor runs through a clutch and manual transmission to the tridem rear axles.	
motor	500 hp	373 kW
clutch	15 ½ in twin plate	394 mm twin plate
transmission	8-speed, low-low with reverse – manual	
dynamic braking	hydrostatic braking – manual selection	

PREDATOR | SUBSTRUCTURE

A single load, hydraulic substructure and BOP house to elevate the rig over a 10 ft BOP stack. The substructure includes a hydraulic powerpack, a hydraulic boom crane, hydraulic blocking/leveling jacks, catwalks, railings, stairways, a large work floor with access ramps and a hydraulic rig elevation system. The table, master bushing, circulation piping manifold and slips are mounted on the substructure and travel with it.

	U.S.	METRIC
WEIGHTS & DIMENSIONS		
transport mode		
overall length	49 ft 0 in	14.8 m
width	11 ft 0 in	3.4 m
height	11 ft 1 in	3.5 m
estimated weight (incl. breakout tools and options)	85,000 lb	38 636 kg
drilling mode		
overall length (access ramps deployed, with stairways)	56 ft 6 in	17.1 m
width (including catwalks and stairways)	22 ft 4 in	6.7 m
height (including work floor railings)	14 ft 4 in	4.4 m

PERFORMANCE CLEARANCES & SPECIFICATIONS

capacity (drill string in the slips)	100 ton, 200,000 lb	91 tonnes, 90 718 kg
ground pressure (less rig)	2.8 psi	0.2 bar
ground pressure (including rig)	6.4 psi	0.46 bar
bottom of master bushing to ground (on hole center)	10 ft	3.0 m

BLOCKING JACKS

4 jacks with 22 in (539 mm) stroke to raise and level the substructure.

PREDATOR | SUBSTRUCTURE

	U.S.	METRIC
DEPLOYMENT		
generator plug in box	for lighting and deployment power pack	
catwalks and work floor	work floor hydraulic crane	
work floor railings and stairways	work floor hydraulic crane - uses rig hydraulic system	
rig elevation to drilling position	hydraulic with remote control - uses rig hydraulic system	
CATWALKS RAILINGS & STAIRWAYS		
All designed to ISO / SAE standards		
catwalks, stairways and work floor	steel - open grip strut material	
work floor railings	pre-formed steel tubing sections, drop-in sockets	
WORK FLOOR		
dimensions	10 ft x 22 ft, 220 ft ²	3 m x 6.7 m, 20.1 m ²
layout	10 ft x 10 ft (3 m x 3 m) fixed with two fold-up sections	
table opening	44 in (1 118 mm) with main bushing removed	
main bushing	steel adapter for master bushing – 100 ton (91 ton) load rated	
master bushing	standard 17 ½ in (445 mm) bushing with hydraulic slips	
drillers control console	Cast aluminum with sealed top plate. Mounted on a pedestal with height adjustment swing and rotate motion. Console can be mounted on the work floor or in a drill cabin. Optional control package for Class-1-Division-2 rated. All control levers and switches are safe for pressure washing.	
display	19 in (457 mm) full-color flat screen. Military field rated for temperature, moisture and lighting conditions. Display module is attached to the back of the drillers console. The screens include a drill monitoring screen, drill status screen, and a utility screen. Optional package for display module is Class-1-Division-2 rated.	
BREAKOUT SYSTEM		
slips	hydraulic operated pipe slips with master bushing	
capacity	150 ton, 300,000 lb	136 tonnes, 136 364 kg
diameter range (may require component changes)	2 7/8 in to 13 3/8 in	73 mm to 338 mm
iron roughneck	Mounted on a roller trolley to move forward to hole center and back into mast when not in use. Hydraulic roughneck height adjustment of 14 in (356 mm) roughneck clears hydraulic slips in low height position. Rigged up and down with floor crane. Jaw clamping force and makeup torque are adjustable from drillers console.	
capacity	3 ½ in to 8 in diameter range	(88.9 mm to 203 mm)
torque control (make up)	driller controlled with digital read out 0–65,000 ft/lb (0–89 195 Nm)	
torque (breakout)	fixed with digital read out 80,000 ft/lb (108 466 nm)	
upper and lower jaw clamping force control	driller controlled with digital read outs 0–20,000 lb (0–9 091 kg)	
controls	driller's console	

PREDATOR | SUBSTRUCTURE (CONT.)

	U.S.	METRIC
AIR/MUD MANIFOLD		
Mounted on the lower right side of the substructure for easy hook up at ground level.		
rating of components	3 ½ in ID piping & valves @ 3,000 psi (88.9 mm @ 215 bar)	
	2 in. plugged access port in vertical standpipe	
air hookups	2 primary compressors & booster compressor with dump drive, water injection and DHD lubricator ports.	
mud hook ups	2 mud pump input lines with drain valve	
HYDRAULIC FLOOR CRANE		
hoist max. capacity	7,000 lb	3 182 kg
capacity and reach – boom retracted	4,200 lb @ 14 ft	1 909 kg @ 4.2 m
capacity and reach – boom fully extended	2,500 lb @ 22 ft	1 136 kg @ 6.7 m
LIGHTING PACKAGE		
Six high output field flood lights. Positioned to light the work floor, drill rig deck, substructure, BOP house, pipe skate, catwalks and stairways.		
locations	Right and left rear corners of work floor, left & right catwalks, under work floor, under substructure deck.	
OPTIONAL WATER INJECTION		
Hydraulic powered triplex pump mounted on the substructure and piped into the air manifold for circulation water/foam.		
capacity	0–30 gpm @ 2000 psi	114 l/min. @ 143 bar
controls	on/off flow control on operators console	

PREDATOR | PIPE SKATE

A single load, hydraulic pipe and casing handling system. Attaches to the substructure. Hydraulic jacks for leveling and alignment. Designed to work with Predator tip-out top drive system to load and trip drill pipe, drill collars and casing. Features rapid deployment and a hands-free handling. Left and right fold-out racks are standard. Hydraulic power supplied by the rig hydraulic system.

Skate operations are controlled with a wireless remote control that can be operated from the ground or the rig work floor.

	U.S.	METRIC
WEIGHTS AND DIMENSIONS		
overall length	54 ft 6 in	16.6 m
width (in transport mode)	8 ft 6 in	2.6 m
width (left and right pipe racks fully deployed)	47 ft 11 in	14.6 m
height	4 ft 6 in	1.3 m
estimated weight (less pipe on tracks)	40,000 lb	18 182 kg

PREDATOR | PIPE SKATE (CONT.)

	U.S.	METRIC
CAPACITY		
lifting arm capacity (for 30 ft/9.1 m pipe)	8,000 lb	3 629 kg
drill pipe & collar handling		
length	oil field pipe and collars range II and III (28–45 ft)	range II and III (8.5–13.8 m)
diameter	4 ½ in to 8 ½ in	114 mm to 216 mm
casting handling		
length	oil field threaded & coupled casing range II and III (28–46 ft)	range II and III (8.5–13.9 m)
diameter	4 ½ in to 24 in	114 mm to 610 mm

PIPE RACKS

Left and right fold-out pipe racks for range II/III pipe lengths. Racks deploy manually with hydraulic jacks for leveling and to tip racks to roll pipe on or off lifting arm.

pipe rack capacity 4½ in x range III (left/right tracks)	30 pcs each side, max. weight 90,000 lb (40 823 kg) per side
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PIPE CONTROL MECHANISM

Pipe stops to position single pieces of pipe for lifting arm. Flippers to move single pipe on/off of lifting arm, roller pipe trollies on lifting arm to contain and control bottom end of pipe and avoid thread damage.

make-up/breakout jaws	Hydraulic clamping jaws to hold upper end of pipe for make-up/ breakout from top drive spindle. Clamp extends and retracts to move pipe to/from spindle for loading/unloading.
pipe arm positioning	Elevated at end of rig by two hydraulic cylinders to position pipe at work floor to thread up to top of drive spindle.
control system	Skate controls are on operator's console and separate wireless remote control.

Atlas Copco reserves the right to modify or change specifications without notice.



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