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MOBILE DRILLING
AND WORKOVER RIG WF 125 SA

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MOBILE DRILLING AND WORKOVER RIG
WF 125 SA

FIELD OF APPLICATION

The **WF 125 SA** drilling and workover rig is mounted on a truck chassis and performs the following jobs:

Workover jobs down to 7,200 m (23,622 ft), such as:

- tubing running in / pulling out;
- sucker-rod running in / pulling out;
- submersible-pump running in / pulling out;

Repairs and remedying jobs, such as:

- casing out-of-roundness removal;
- cement-stopper removal;
- sand-stopper removal;
- fishing jobs;

Christmas-tree installation and removal;

Drilling jobs:

- the drilling and workover rig **WF 125 SA** can be used for jobs of geologic or water drilling down to 2,100 m (6,890 ft) with drill pipes of 4.½", the limit of the max. hook load covering 125 mton (281,000 lbs / 1,250 kN).

The main rig equipments are manufactured according to API standards current editions as follows: the MU-136 mast, the (4+2).28.750 GF-136 crownblock and the substructure according to API 4F; 4-28.750 MC-136 hook block and CH-136 Swivel according to API 8C, TFI-21 Draw-works and Rotary table MRS-205 according to API 7K. Rig working temperature range is: - 29°C to + 50°C.

DESCRIPTION

The **WF 125 SA** drilling and workover rig is mounted on a six (6) axles 12x8 truck chassis and is driven by two CATERPILLAR C9 ACERT diesel engines (300 HP / 224 kW / 2,200 rpm). Each engine is coupled with a CATERPILLAR TH31-E61 hydromechanical transmission, so that 6+1 Revers speed stages are realized. Transmitting the power from CAT power unit to the truck axles or to the rig equipments is be done through a totalizing / distribution box.

The **WF125 SA** drilling and workover rig is highly mobile, having the main working equipments mounted on the rig truck, and the mud tanks, mud pumps, cooling system and air compressor mounted on special semitrailers, so that the rig can rapidly move between drilling or workover sites.
The equipments mounted on the rig truck are the following: CAT power unit, right angle gear, TFI-21 draw-works, hydromatic brake, MU-136 mast, mast base, mast hydraulic raisers, dead end drum, rotary table transmissions, hydraulic control panel, hydraulic oil tank etc.
The well site mounting is done by the means of hydraulic equipments and devices: hydraulic jacks for leveling the rig truck; hydraulic cylinders to raise (fold) the mast; hydraulic cylinder to telescope the upper section of the mast.

The working effort of the rig's personnel is reduced due to the powered-equipment on the rig floor supplied and controlled from the rig hydraulic or air system, such as:

- device to make-up / break-out the pipe threads - actuated by hydraulic cylinder;
- hydraulic tong balancer with hydraulic cylinders for sustaining the tongs;
- hydraulically actuated Cat Head;
- 3 mton (6600 lbs) air actuated service winch.

The rig is equipped with one drum TFI-21 draw-works API 7K, with lebus groove for 28 mm (1.1/8") drilling line driven by the CAT power unit on the truck.

The MU-136 mast, 136 mton (150 UStон), is manufactured according to API 4F, and has two "U" shape sections and foldable racking board.

The substructure is foldable type, manufactured according to API 4F, having the rig floor height of 4.6 m (15 ft), and the distance below rotary beam 3.66 m and rotary maximum capacity of 136 mton (150 UStон).

The rig is provided with two GMP 3 PN 700 CAT unitized mud pumps, 250 bar (3600 PSI) maximum WP; 42.7 l/s (675 GPM) max. flow with 7.1/2" liner for each pump and mud system of 171 cu.m total mud volume.

The electric system provides the lighting of the rig, the earthing system and the driving of the rig electrical equipments. The electric system is supplied by two CAT C15 Prime power generator sets.

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SPECIFICATIONS

• Max. hook load / 8 lines	125 mton (138 US ton / 1,250 kN)
• Max. recommended working depth (hook-load limit of 125 tf / 138 US ton) with:	
tubing of 2.⅞"	7,200 m (23,622 ft)
drill pipes of 4.½"	2,100 m / 6890 ft

• Length of the pipe stands to be handled	18 m / 59 ft
• Drilling wireline diameter	28 mm (1.⅛")
• String-up system	4 x 5 (eight lines)

• Rig Truck Chassis type	72.600 MFEG
transport dimensions / equipment mounted	19,500 x 3,000 x 5,105 mm
axle base (axle 1-axle 2 + axle 2 – axle 3 + axle 3 – axle 4 + axle 4 – axle 5 + axle 5 – axle 6	2050+2050+3100+2050+2050 mm
truck wheels formula	12 x 8
wheel track	2,320 mm
min. clearance	320 mm
wheels:	
tyres	15.5 / 80 R 20
rims	10.00 W-20
max. rig transport speed	50 km/hr
service brake	integral air type
parking brake	it works mechanically through an air control.
rig driving type	Diesel-hydromechanical type
driving engine number	2
driving engine type	CAT C9 ACERT 300 HP / 224 kW at 2,200 rpm
hydromechanical-transmission type	CAT TH31-E61 c/w 6+1 Rev. speed stages and hydraulic torque converter
hydromechanical-transmission number	2

• Mast type	MU-136, “U” shape foldable mast, according to API 4F
max. hook load on 8 lines	136 mton (150 UStоn / 1,360 kN)
section number	2 (two) rectangular U-shape sections
mast height (from the ground up to the crown-block beams)	33 m
mast folding	by 2 (two) hydraulic cylinders
mast telescoping	by 1 (one) hydraulic cylinders
racking platform of the monkey board:	
tubing of 2 ⅞"	7,500 m / 24606 ft
rill pipes of 4 ½"	2,100 m / 6890 ft
monkey-board mounting levels from the ground:	21.35 m / 22.35 m

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• Mast type	MU-136, “U” shape foldable mast, according to API 4F
mast line guys:	
mast-to-truck-chassis line guys	2 pcs, Ø 22 mm
mast-to-ground line guys	4 pcs, Ø 16 mm
racking board storage capacity in double stands of 18 m (59 ft) for:	
tubing of 2.⅞"	7,200 m / 23,622 ft
drill pipes of 4.½"	2,100 m / 6890 ft
racking board line:	
racking board-to-ground line guys	2 pcs, Ø 16 mm
max. wind speed:	
loaded hook and stands on the monkey board	70 km/hr (37 knots)
unloaded hook but stands on the monkey board	130 km/hr (70 knots)
unloaded hook and no stands on the monkey board	170 km/hr (93 knots)

• Substructure	folding monoblock parallelogram, according to API 4F.
max. load / the rotary-table beams	136 mton (150 US ton / 1.360 kN)
max. load / the setbacks	90 mton (100 US ton / 900 kN)
max. load applied simultaneously	226 mton (250 US ton / 2,260 kN)
drill-floor height	4.60 m / 15.10 ft
clear height under the rotary-table beams	3.66 m / 12 ft
substructure folding	by the means of the traveling equipment of the rig
drill-floor dimensions	7.2 x 6.6 m

• Draw-works	TFI – 21 one drum, according to API 7K.
max. line pull	21 tf (23 US ton / 210 kN)
main brake for the drum	band type
main drum:	
wireline diameter	28 mm (1.⅛")
diameter / length	560 / 930 mm
brake-rim diameter / width	1,120 / 269 mm
brake-rim cooling	forced by pressurized water
coupling	AVB 900x250
auxiliary brake	FH 560 hydraulic type
max. output temperature	70 – 80 C deg
max. operating pressure	4 bar (0.4 MPa)
max. speed	800 rpm
max. torque at 300 rpm	14.8 kN.m

• Crown Block	(4+2).28.750.GF-136, according to API 4F
max. hook load on 8 lines	136 mton (150 UStоn / 1,360 kN)
number of sheaves / crown block	4
number of running sheaves	1
number of dead-line sheaves	1
sheave diameter for drilling line of Ø28 mm	750 mm
sheave diameter for sand-line of Ø 14 mm	530 mm

• Hook Block	4.28.750.MC-136, according to API 8C
max. hook load on 8 lines	136 mton (150 UStоn / 1,360 kN)
sheave number	4
sheave diameter for drilling wireline of Ø28 mm	750 mm

• Swivel	CH 136, according to API 8C
max. static load on 8 lines	136 mton (150 US ton)
min. bore for fluid	70 mm (2.¾")
max. working pressure	210 bar (3045 PSI/ 21 MPa)
max. speed	300 rpm
threaded connection between the stem and the sub	4.½" REG-LH
thread connection between the sub and the kelly	6.⅝" REG-LH
thread for connection with the rotary hose	LP 3"

• Rotary Table	MRS – 205, according to API 7K
max. static load	320 tf (720,000 lbs / 3,200 kN)
max. opening	520.7 mm (20.½")
max. transmitted power	500 HP
max. rotor speed	300 rpm

• Mud System	
total mud volume, as follows:	171 cu.m.
trap tank	10 cu.m.
cleaning tank	41 cu.m.
mud tank	3 x 40 cu.m. = 120 cu.m.
water volume (brake cooling / mud-system needs)	45 cu.m.
chemicals volume	2.5 cu.m.
number of cleaning stages, as follows:	3
screening: linear motion shale shaker	SV-UP-01
desanding: desander	6 x 8"
desiltering: desilter	12 x 4"
degassing - degasser	atmospherical type
mud weight	1100 to 2200 kgf / cu.m.

• Fuel System to supply the rig engines, the generator sets and the unitized pumps.	
total volume of stored fuel, as follows:	51 cu.m (320 BBL)
daily tank	4 cu.m (25 BBL)
storing tank	19 cu.m (120 BBL)
storing tank	28 cu.m (176 BBL)

• Electric System	grounded, normal (dust / rain proof) and explosion-proof construction.
supply voltage for:	
power receivers	3 x 380 V; 50 Hz
normal-lighting receivers	220 ac V; 50 Hz
safety-lighting receivers	24 V dc

• Prime Generator set	PRIME CATERPILLAR C15 1500 rpm; 400 V generator, with battery start-up.
number of electric generator	2
power	440 kW; 550 kVA
speed	1 500 rpm
voltage	3 x 400 / 231 V
frequency	50 Hz

• Mud Pumps	3 PN-700 CAT triplex single acting type
number of mud pumps	2
max. input-shaft power	700 CP
max. working pressure (w. liners of 5")	250 bar (3600 PSI)
max. design flow rate (w. liners of 7.½")	42.7 l/s (675 GPM)
driving engines	CAT 3412 TA (761 kW; 1020 HP; 1,200 rpm)
hydraulic torque converter	NATIONAL C300-80
number of power units for each pump	1

• Working temperature range	- 29°C to + 50°C

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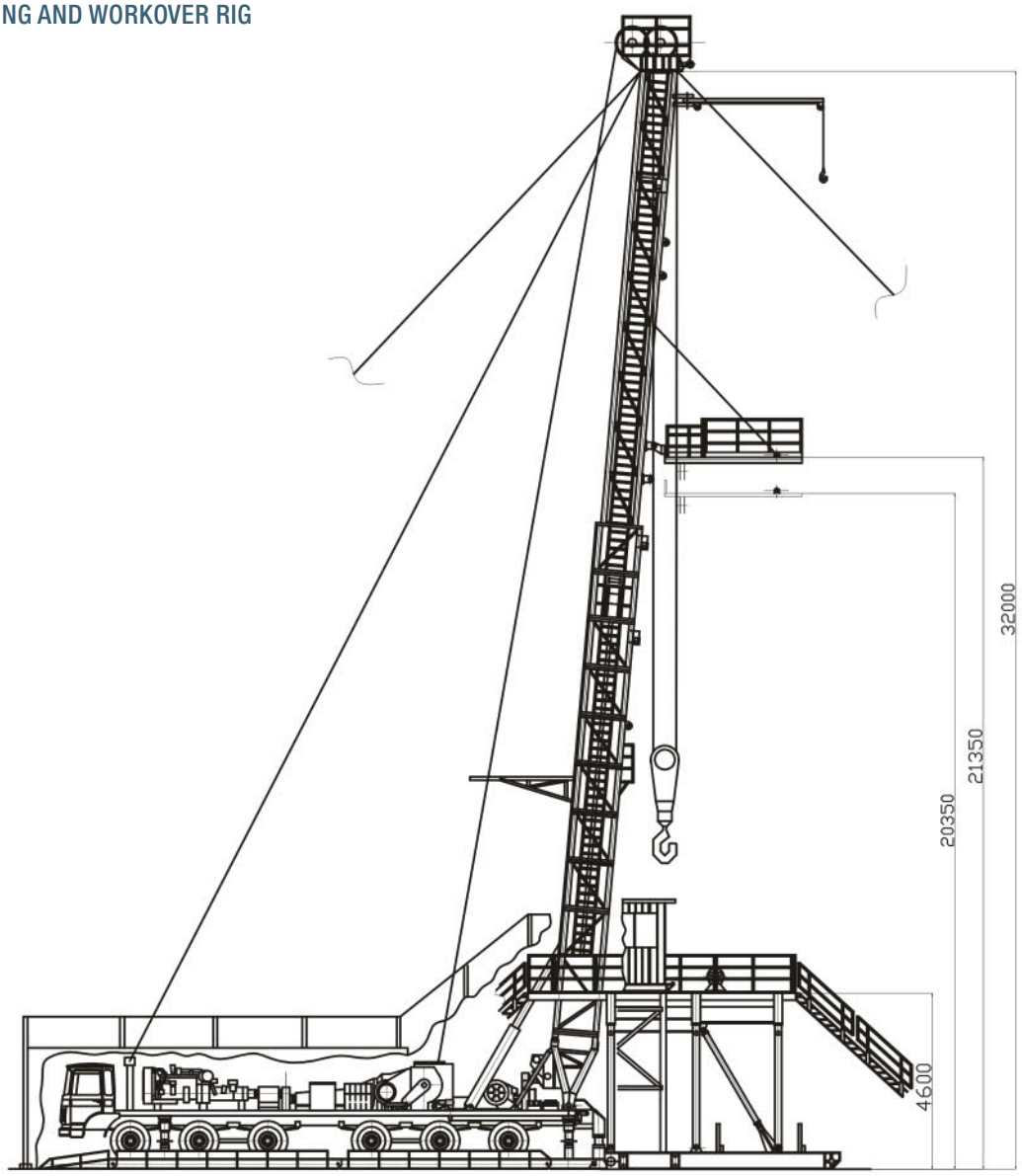
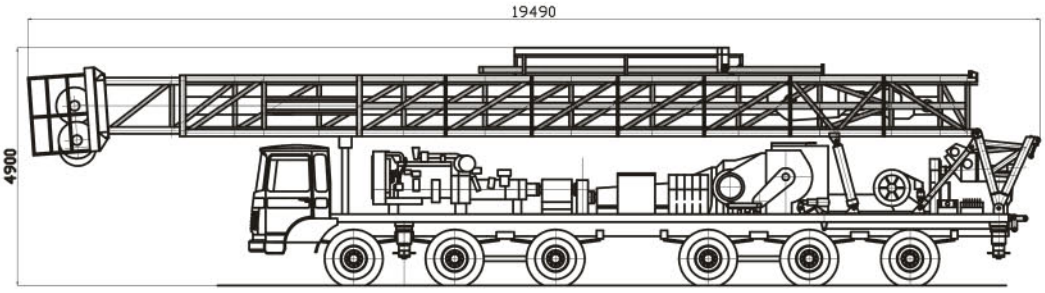


WF125 SA MOBILE DRILLING & WORKOVER RIG IN DRILLING POSITION



WF125 SA MOBILE DRILLING & WORKOVER RIG IN TRANSPORT POSITION

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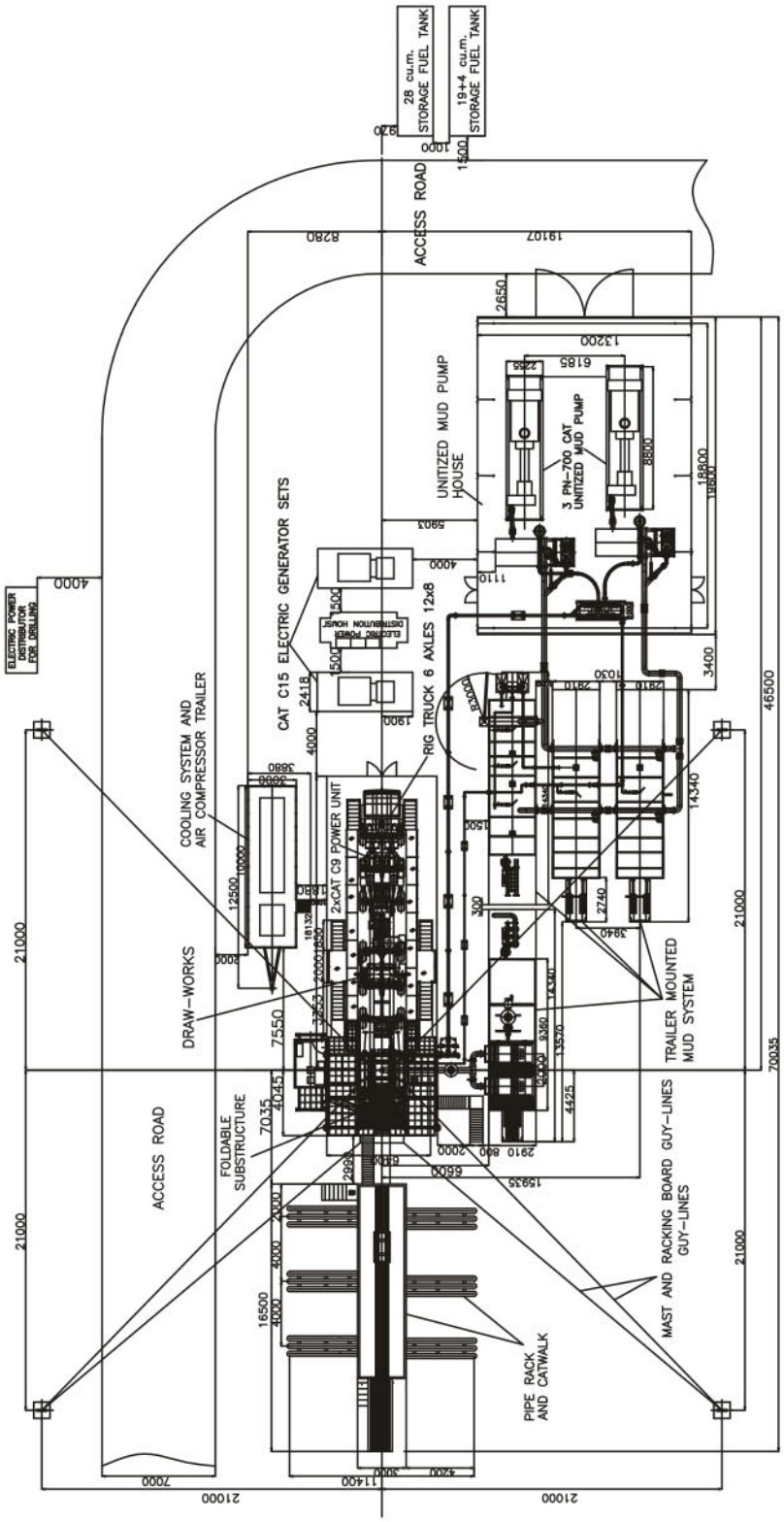
LAY-OUT FOR WF 125 SA
MOBILE DRILLING WORKOVER RIG
(operations in arctic regions)



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