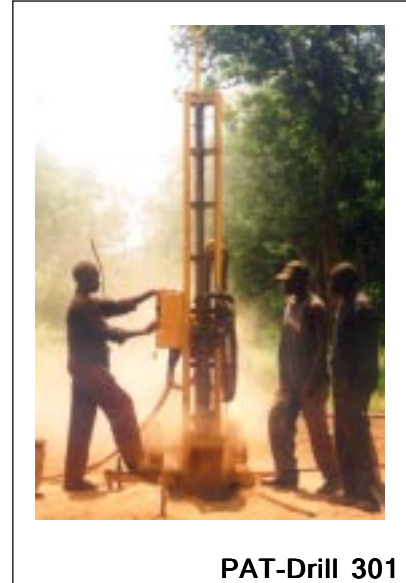


OUR DRILLING RIGS



PAT-Drill 201

Semi-manual operated, lightweight, portable drilling machine. PAT-Drill 201 is able to drill bore holes into alluvium to soft rock formations up to 60 m depth at 4"-8" (100-200 mm) diameter. Easy to assemble and operate.



PAT-Drill 301

PAT-Drill 301 is a compact and portable hydraulic drilling rig for both DTH-Hammer and rotary drilling. Boreholes in soft and hard rock formations can be drilled to depths exceeding 100 metres.



PAT-Drill 301T & PAT-Drill 301TP

PAT-Drill 301T combines an onboard power pack, drill pipe storage and foam pump on a single axle trailer. This makes for a quick set up in most locations and is an ideal multipurpose rig for many water well drilling operations.

PAT-Drill 301TP has an under slung hydraulic driven progressive cavity mud pump built in this high head pump can drill deeper faster than alternative skid mounted centrifugal mud pumps and takes its power direct from the trailer power pack.

OUR DRILLING RIG



PAT-Drill 401

PAT-Drill 401 is a rig especially designed to fit on a Toyota Land Cruiser 4WD pickup or alternatively can be mounted on a trailer or light truck with powerful pull back makes this a strong and full hydraulic services DTH-Hammer or Rotary drilling procedures. An independent deck engine mounted on board powers the unit.



PAT-Drill 501

PAT-Drill 501 is a drilling rig mounted on tandem axle trailer, robust and with full hydraulic services. Powered by a deck engine on board, with high torque rotation head and 3 metre length drill pipe capacity. Highly recommended for drilling in harsh underground formations or for long-term projects in remote areas.

PAT DRILLING RIGS PROPERTIES

Description	PAT-Drill 201	PAT-Drill 301	PAT-Drill 301T & 301TP	PAT-Drill 401	PAT-Drill 501
Geology drilled	Alluvial, soil, clay	All kinds	All kinds	All kinds	All kinds
Drill system and operation	Semi-manual	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Rig assembly	3 separate modules	3 separate modules	1 complete unit, main engine driven	1 complete unit, main engine driven	1 complete unit, main engine driven
Mobility	No	2 wheel trolley	2 wheel road trailer	2 wheel road trailer	4 wheel tandem road trailer
				Mounted on Toyota Land Cruiser	Mounted on 3-ton truck
Transportation	Load on/off pickup	Load on/off pickup	Towed by pickup or similar	Towed by pickup	Towed by pickup
				Mounted on Toyota Land Cruiser	Mounted on 3-ton truck
Drill depth*	0-60 m	0-100 m	0-150 m	0-200 m	0-200 m
Drill pipe (diameter x length)	50 mm x 1.5 m	60/76 mm x 2 m	60/76 mm x 2 m	60/76 mm x 2 m	60/76 mm x 3 m
Borehole diameter in alluvial, rotary drilling, mud flushing*	3 1/2" - 6 1/2" 90-165 mm	4" - 8" 100-200 mm	4" - 8" 100-200 mm	4" - 9" 100-225 mm	4" - 9" 100-225 mm
Borehole diameter in hard rock, DTH-Hammer drilling, air flushing*	Not recommended	4" - 6" 100-150 mm	4" - 6" 100-150 mm	4 1/2" - 6 1/2" 115-165 mm	4 1/2" - 6 1/2" 115-165 mm
Air drilling, DTH-Hammer		3"/4" Hammer	3"/4" Hammer	4"/5" Hammer	4"/5" Hammer
Button bit diameter	-	90-150 mm	90-150 mm	115-165 mm	115-165 mm
Air compressor		250-400 cfm, 7-12 bar	250-400 cfm, 7-12 bar	300-500 cfm, 7-12 bar	300-500 cfm, 7-12 bar
Foam pump	-	Engine driven, separate kit	Hydraulic driven, mounted on rig	Hydraulic driven, mounted on rig	Hydraulic driven, mounted on rig
Weight (basic rig)	250 kg	700 kg	T=1450 kg TP=1570 kg	2177 kg	3080 kg
Shipping information for a complete set	1.1 ton, 3 m ³	Mud & air drilling, one 20 ft container	Mud & air drilling, one 40 ft container	Mud & air drilling, one 40 ft container	Mud & air drilling, one 40 ft container

* Depends on geological conditions and skills of operators.

PAT is continuously improving its products, therefore technical specifications and contents are subject to change without prior notice. This catalog supercedes any other that predates it.

PAT-Drill 201

Semi-Manual Rotary Drilling Machine

Part no 20 1 0000



A typical complete set of PAT-Drill 201 comprises:

- Drilling unit basic rig
- Mud pump set
- Borehole development compressor set
- Drill pipe and Drill bits set
- Hand tools package

A manually operated hoist, lightweight, portable drilling machine able to drill bore holes up to 60 metre depth. Transportation of the equipment set by a one ton pickup truck. Very a easy to assemble and disassemble at the drilling site and can be operated by 3 operators.



Drilling Unit

Power Mast Kit

The 3-pole mast is 2.90 m high and made of high tensile steel. Two hand winches are mounted to pull-up or pull-down. On-site set up takes typically less than 30 minutes.

Top Head Drive

It is powered by a 4 HP HONDA gasoline engine directly linked to a 24:1 gearbox with a centrifugal clutch transmission, providing rotation speed of up to 120 rpm, and drill pipe torque of 198 Nm.

Break-out Ratchet

Simple reversible ratchet for disconnecting drill pipes.

Water Swivel

Proven swivel design for pumping water into rotating drill pipes. The swivel unit has good quality seals and bearings that are accessible to periodic easy replacement.

Rig Accessories

Accessories for a complete rig installation and drilling operation.

Weight : 250 kg

The PAT-Drill Rigs are popular choice for Government, United Nations, and Non-Government organizations (NGO) looking for appropriate and low cost drilling equipment to provide domestic water supplies to rural village communities at an economical price.

Mud Pump Set

The mud pump set is mounted on a steel skid, powered by a 13 HP gasoline engine, and mechanically driven by 2 V-Belts. Pump is 4" centrifugal, self-priming, 2 gate valves and hand primer pump. The complete unit comprises all hoses: 3" Suction, 1 1/2" pressure and drain hoses.

Pump displacement: 1000 litres/minute at 10 metres head

Skid unit weight: 110 kg

(Option: 10 hp diesel engine is available)



Drill Pipes Set

Basic unit includes 40 pieces of drill pipes, 1.5 meter long, 50 mm outer diameter to drill up to 60 m.



Borehole Development Compressor Set

The borehole development compressor is mounted on a steel skid, powered by an 13 HP gasoline engine, and mechanically driven by 2 V-Belts. Complete with flexible rubber hose system, mounted on a steelwork stand.

Compressor displacement: 27.1 cfm

Skid weight: 113 kg

(Option: 10 hp diesel engine is available)

Flexible hose system mounted on a combined reel & stand. 13 mm x 5 m flexible rubber hose with connections to compressor, and 13 mm x 50 m (Option: 80 m) flexible rubber hose with attached an air probes to insert in drilled borehole.

Net weight: 54 kg (50 m) or 84 kg (80 m)



Drill Bits Set

Tungsten Carbide Drill Bits.

Drag bits are available in a diameter range up to 8"/200 mm. three wings type, step or no step, BOX to PIN Reamers are also available. Suitable for drilling in alluvial soil as well soft rock.



PAT-Drill 301

Part no 31 1 1000-diesel, 31 1 1000-petrol

DTH-Hammer and Rotary Drilling Machine

PAT-Drill 301 is a compact and portable hydraulic drilling rig for both DTH-Hammer in rock formations, or rotary drilling in sedimentary deposits. Able to drill up to depths in excess of 100 metres.



The PAT-Drill 301 remains a popular PAT model having been developed and refined through 10 years of continuous production and deployment on a wide variety of international drilling projects. Through the years built in oil line lubricators, swing aside rotary head and casing clamp system and super efficient and robust hydraulic system make this one of the most versatile, portable and compact drilling rig of its category currently available anywhere in the world.

This design focuses on addressing the challenges whilst drilling in the most remote areas by integrating the concepts of a light fully modular kit, easy to operate and maintain.



The PAT-Drill Rigs are popular choice for Government, United Nations, and Non-Government organizations (NGO) looking for appropriate and low cost drilling equipment to provide domestic water supplies to rural village communities at an economical price.

PAT-Drill 301

Technical Data, Specifications

Technical Specification

MAST

3.15 m high, steelwork, weighing 320 kg, 2.25 m drill head stroke, 1800 kg. pullup capacity, with a break-out table that opens to 200 mm diameter. 2-wheel axle aids erecting the mast to a vertical position for drilling and aids moving the unit around site or loading/unloading the unit from a vehicle.

CONTROL PANEL

The control panel is mounted on the mast, and is equipped with 4 main levers for control of rotation head, pull and feed; 2 regulators for rotation and feed speed, and 3 system pressure gauges.

ROTATION HEAD

Hydraulic motor, driven via 3.875 : 1 reduction gearbox speed range: 0-40 rpm, torque: 1320 Nm

Swivel spindle 40 mm inside diameter, with V-packing seal suitable for air, foam and mud flushing. Safe working pressure of 20 bar. The unit is able to swing-a-side for easy casing installation.

HYDRAULIC POWER PACK

Hydraulic system is operated from a skid mounted engine, driven power pack with flexible hydraulic hoses with self sealing couplings to connect with the rig.

- Standard Engine: 10 HP 3600 rpm diesel engine, hand starting, air-cooled (optional 13 HP 3600 rpm petrol engine)
- Hydraulic system: VANE pump, max pressure 250 bar, 60 litres tank capacity.
- Hydraulic hose line: 2 pieces supply & return. 6 m long with quick release self-sealing type couplings to connect to the rig.
- Weight: 169 kg (diesel engine)
160 kg (petrol engine)

AIR LUBRICATION SYSTEM

Fitted lubricator of Venturi-type for DTH-Hammer drip-fully adjustable-lubrication. Built into mast unit with pipe control manifold for water, air & foam connections.

Max. pressure 20 bar
Oil tank capacity 4.5 litres

RIG ACCESSORIES

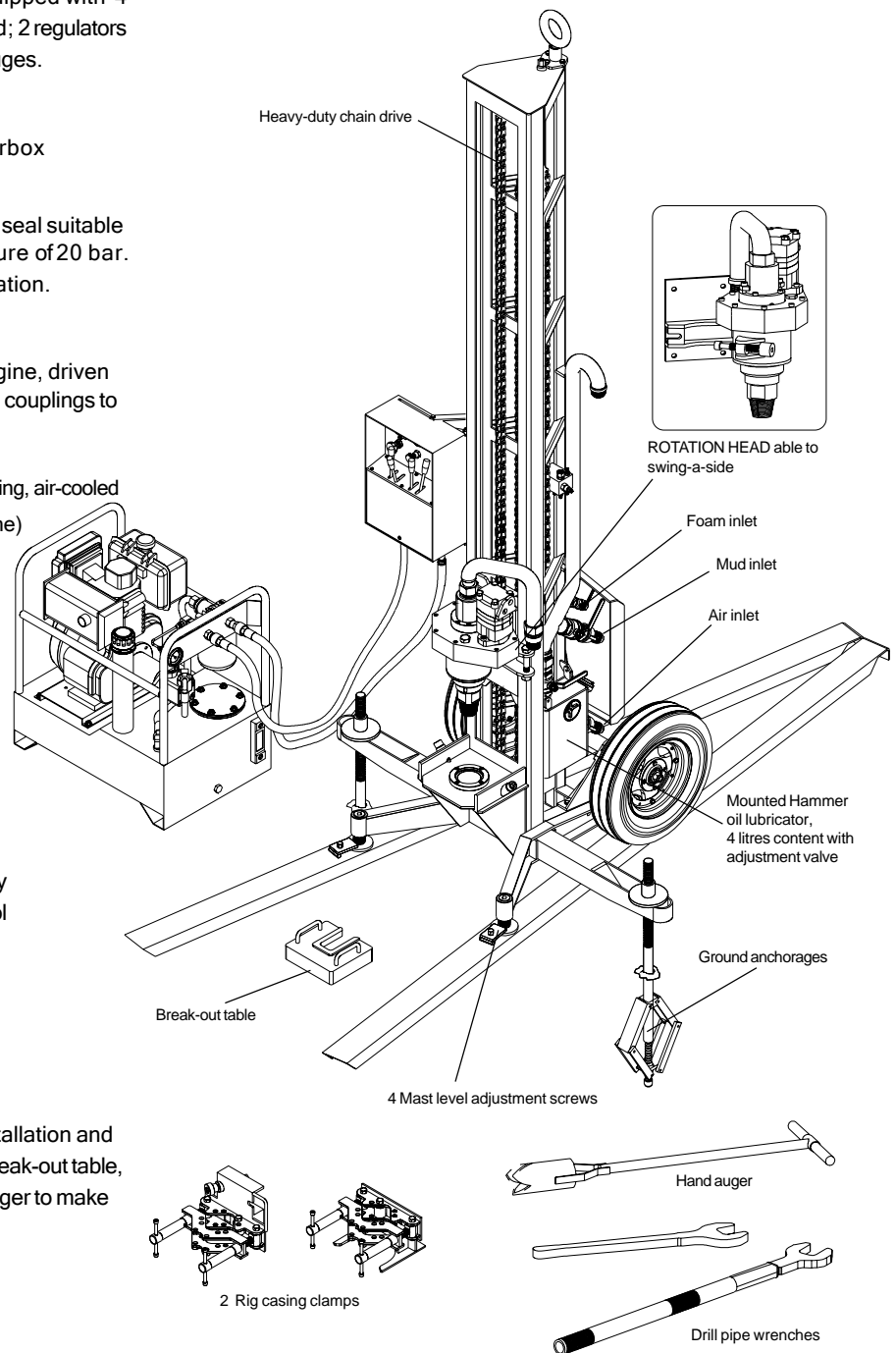
Accessories set include required tools for the rig installation and drilling operation comprises: Rig supporters bars, break-out table, drill pipe wrenches, ground anchorages, and hand auger to make anchorage holes, casing clamps and drill pipe rack.

WEIGHT : 700 kg (complete drilling unit)

Drilling Capacity

Hard rock, DTH-Hammer drilling operation:
4" - 6" (100-150 mm) borehole diameter

Alluvial deposits, rotary drilling operation:
4" - 8" (100-200 mm) borehole diameter



PAT-Drill 301T, 301TP

Part no 33 1 0000 (301T), 33 1 1000 (301TP)

Compact, Portable, Trailer-Mounted Drilling Rig

PAT-Drill 301T or PAT-Drill 301TP is a highly compact, mounted-on trailer hydraulic drilling rig, available with all drilling accessories, easy to set-up and move.

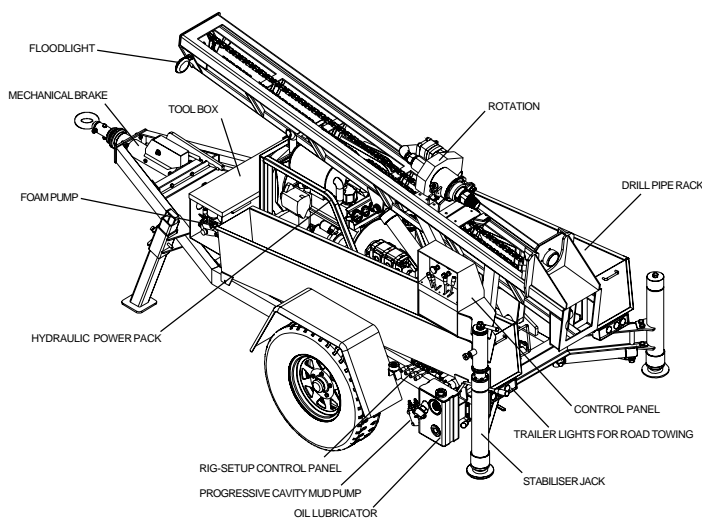
This is an ideal multipurpose rig, powerful, versatile and easy to transport across a variety of terrains.

(301TP Model) Fitted with a built in under slung progressive cavity high flow, high head mud pump powered by the deck engine makes a powerful all inclusive package for deep sedimentary drilling.



More facilities

- Heavy-duty trailer with mechanical overrun and auto reverse brakes.
- 2-front manual & 2-rear hydraulic jack stabilizers for rig leveling.
- Hydraulic-driven foam pump on board.
- Two floodlights for night time operation.



The PAT-Drill Rigs are popular choice for Government, United Nations, and Non-Government organizations (NGO) looking for appropriate and low cost drilling equipment to provide domestic water supplies to rural village communities at an economical price.

PAT-Drill 301T, 301TP

Technical Data, Specifications

RECOMMENDED HOLE RANGE

Medium & Hard rock, DTH-Hammer drilling operation:

3"- 5" model DTH-Hammer with capacity to drill
4"- 6 1/2" (100-165 mm) diameter

Soft formations, rotary drilling operation:

Drag bit 4"- 8" (100-200 mm) diameter

ROTATION HEAD

Single reduction gearbox, hydraulic motor driven, and variable rotation speed. Able to swing-a-side for easy casing installation. Swivel spindle 40 mm inside diameter, sub joint 2 3/8 API Reg Mod

Gear box ratio 3.875 : 1
Speed 0 - 55 rpm
Max. torque 1980 Nm

MAST

All steelwork, 3.15 metres high, break-out table to open 200 mm diameter. Mast raised to vertical from storage position by a hydraulic cylinder. The mast is also equipped with 2 floodlights for night time operation

FEED SYSTEM

Rotation head is raised and lowered by a hydraulic cylinder and heavy-duty transmission chain.

Head travelling stroke: 2.25 metres
Pull up
Capacity 2300 kg
Max. speed 19.5 metres/min
Pull down
Capacity 3480 kg
Max. speed 14.5 metres/min

OPERATION CONTROL PANEL

- 4 levers: controlling rotation head, pull and feed
- 2 regulators for rotation speed and pull/feed weight
- 4 system pressure gauges

HYDRAULIC POWER PACK

- Engine: 20 hp (15 Kw) at 2800 rpm, 3 cylinders, YANMAR diesel engine, water-cooled, electric start (Optional: 20 hp (15 Kw) petrol engine)
- Hydraulic system: double gear pump type, system pressure 250 bar max, 70-litres tank capacity
- Fuel tank: 25 litres

WATER / FOAM INJECTION PUMP

Triplex piston pump driven by a hydraulic motor.

Motor speed 450 rpm
Max. displacement 10 litres/min
Max. working pressure 30 bar

STABILISING JACKS

2 Rear jacks Hydraulic driven
2 Front jacks Manually operated jack

HYDRAULIC BREAK-OUT WRENCH

A hydraulic ram assist making and breaking drill pipe threaded connections

PROGRESSIVE CAVITY MUD PUMP (PAT-Drill 301TP only)

An under slung mounted, hydraulic motor driven progressive cavity mud pump capable of delivering 600 litres / minute @ 6 bar pressure supplied with 3" suction hose and 1 1/2" gunline hose

AIR LUBRICATION SYSTEM

Fitted lubricator of Venturi-type for drip lubrication-fully adjustable flow control-for DTH-Hammer

Max. pressure 20 bar
Oil tank capacity 6 litres

PIPE RACK

Each side containing 12 pcs. 76 mm pipe
15 pcs. 60 mm pipe

DRILL PIPE

Drill pipe length 2 metres
Drill pipe diameter 60 / 76 mm
Thread 2 3/8 API Reg Mod

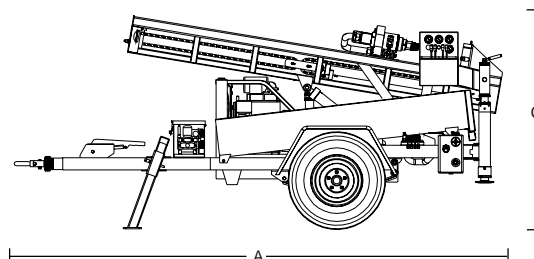
TRAILER

Towing Standard towing eye (ball optional)
Brake system mechanical brake for overrun, parking and auto reverse
Suspension 2 leaf springs and 2 shock absorbers
Trailer light Fitted trailer lights with 7 pin plug connection to vehicle system
Tyres 700-R15, 8 PLY

WEIGHT (without drill pipes): 1450 kg (PAT-Drill 301T)
1570 kg (PAT-Drill 301TP)

DIMENSIONS

Overall length (A) 4030 mm
Overall width 1690 mm
Overall height (C) 1750 mm



PAT-Drill 401

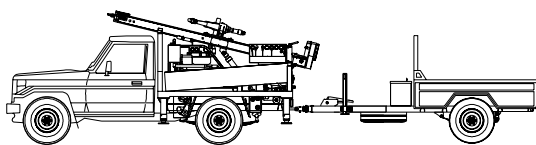
Part no 42 1 0000

Drilling Rig Mounted on Truck or Trailer

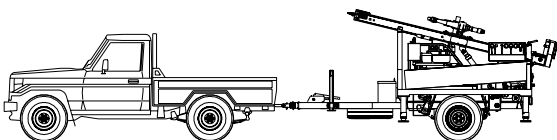
PAT-Drill 401 is a drilling rig, specially designed to be fitted on a Toyota Land Cruiser 4WD pickup, or alternative vehicle mountings.

PAT-Drill 401 is a compact with full hydraulic services for DTH-Hammer and rotary drilling.

An independent deck engine, mounted on board, powers the unit.



Drilling rig on Truck.



Drilling rig on Trailer.



The PAT-Drill Rigs are popular choice for Government, United Nations, and Non-Government organizations (NGO) looking for appropriate and low cost drilling equipment to provide domestic water supplies to rural village communities at an economical price.

Technical Data, Specifications

TOP HEAD ROTATION

Single reduction gearbox, hydraulic motor driven, and variable rotation speed. Ability swing-a-side for easy casing installation.

Swivel spindle 40 mm inside diameter, sub joint 2 3/8 API Reg Mod

Gear box ratio	4.75 :1
Max. torque	2460 Nm
Speed	0 - 60 rpm

FEED SYSTEM

Rotation head raised and lowered a hydraulic cylinder through heavy-duty transmission chain.

Head travelling stroke:	2.25 metres
Pull up	
Capacity	3500 kg
Max. speed	25.5 metres/min
Pull down	
Capacity	2560 kg
Max. speed	34.5 metres/min

HYDRAULIC POWER SYSTEM

Powered by deck engine, YANMAR diesel, 4 cylinders, 30 hp (22.5 Kw) at 2800 rpm, water-cooled, electric start, coupled to hydraulic pumps.

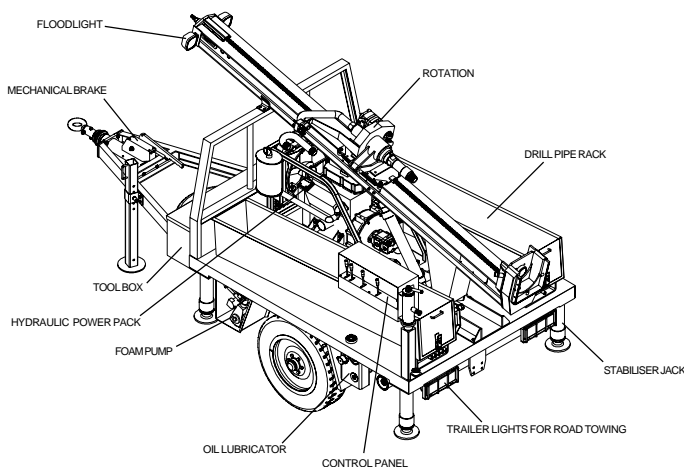
The hydraulic system with oil-cooling and 10-micron filtration.

System pressure	250 bar max.
Hydraulic tank capacity	125 litres
Oil cooling system	4100-5300 Kcal/hr at 40 C
Fuel tank	40 litres

WATER/FOAM INJECTION PUMP

Triplex piston pump driven by an hydraulic motor.

Motor speed	450 rpm
Max. displacement	10 litres/min
Max. working pressure	30 bar



STABILISING JACK

2 front and 2 rear jacks

Bore	80 mm
Stroke	350 mm
Extend footing	200 mm
Max. load push-up	6150 kg per jack

HYDRAULIC BREAK-OUT WRENCH

Break-out torque	7770 Nm
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AIR LUBRICATION SYSTEM

Fitted lubricator of Venturi-type for fully adjustable drip feed for DTH-Hammer drills

Max. pressure	20 bar
Oil tank capacity	4.5 litres

DRILL PIPE

Drill pipe length	2 metres
Drill pipe OD	76 mm
Thread	2 3/8 API Reg Mod

PIPE RACK

Containing	36 pieces
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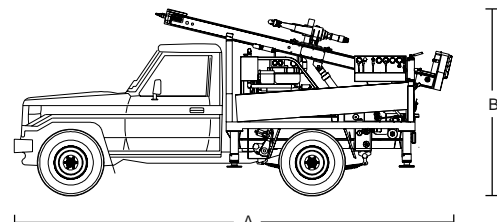
LIGHTING & ELECTRICAL SYSTEM 12 Volts DC

Mast	2 x 55 watt floodlight
Control panel	2 lights

TRAILER

Towing	Standard towing eye (ball optional)
Brake system	mechanical for overrun, auto-reversing and parking
Suspension	2 leaf springs and 2 shock absorbers
Trailer light	Fitted trailer lights with 7 pin plug connection to vehicle system
Tyres	750-R15, 12 PLY

WEIGHT : 2177 kg (without drill pipes)



DIMENSIONS

Overall length (A)	5340 mm
Overall width	1695 mm
Overall height (B)	2256 mm

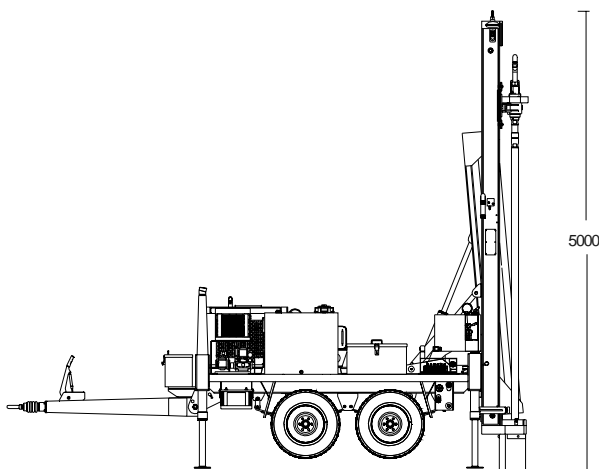
PAT-Drill 501

Part no 50 1 0000

Drilling Rig Mounted on Trailer

PAT-Drill 501 is a drilling rig mounted on tandem trailer. Robust with full hydraulic service, DTH-Hammer rotary drilling rig, ideal for deeper and more challenging water wells.

- An independent deck engine on board.
- High torque rotation head with dual hydraulic motors.
- Advantage, fast drilling with 3 metre Drill pipe, storage moves from transport to vertical to aid handling.
- All service functions well arranged on easily operated control panel



The PAT-Drill Rigs are popular choice for Government, United Nations, and Non-Government organizations (NGO) looking for appropriate and low cost drilling equipment to provide domestic water supplies to rural village communities at an economical price.

Technical Data, Specifications

TOP HEAD ROTATION

Single reduction gearbox, 2 hydraulic motors, variable rotation speed.
 Ability swing-a-side for easy casing installation.
 Swivel spindle 40 mm inside diameter, sub joint 2 3/8 API Reg Mod

Gear box ratio	4.75 :1
Max. torque	4840 Nm
Speed	0 - 50 rpm

FEED SYSTEM

Rotation head raised and lowered by a hydraulic cylinder through heavy-duty transmission chain.

Head travelling stroke:	3.25 metres
Pull-up	
Capacity	4350 kg
Max. speed	25.5 metres/min
Pull-down	
Capacity	2900 kg
Max. speed	38.5 metres/min

DRILL PIPE

Drill pipe length	3 metres
Drill pipe OD	76 mm
Thread	2 3/8 API Reg Mod

WATER/FOAM INJECTION PUMP

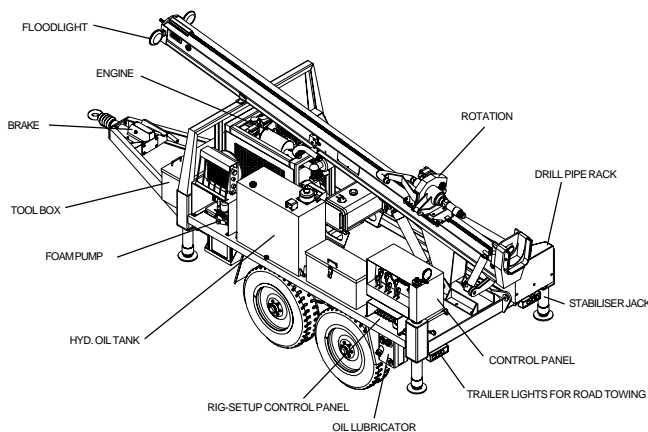
Triplex piston pump driven by an hydraulic motor.

Motor speed	450 rpm
Max. displacement	10 litres/min
Max. working pressure	30 bar

HYDRAULIC POWER SYSTEM

Powered by deck engine, YANMAR diesel, 4 cylinders, with turbocharger 52 hp (38.8 Kw) at 2800 rpm, water-cooled, electric start, coupled to hydraulic pumps. The hydraulic system with oil-cooling and 10-micron filtration.

System pressure	250 bar max.
Hydraulic tank capacity	125 litres
Oil cooling system	4100-5300 Kcal/hr at 40 C
Fuel tank	40 litres



STABILISING JACK

2 front and 2 rear jacks

Bore	80 mm
Stroke	500 mm
Max. load push-up	6150 kg per jack

HYDRAULIC BREAK-OUT WRENCH

Break-out torque	7770 Nm
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AIR LUBRICATION SYSTEM

Fitted lubricator of Venturi-type for adjustable drip feed to DTH-Hammer

Max. pressure	40 bar
Oil tank capacity	8.5 litres

PIPE RACK

Containing	24 pieces
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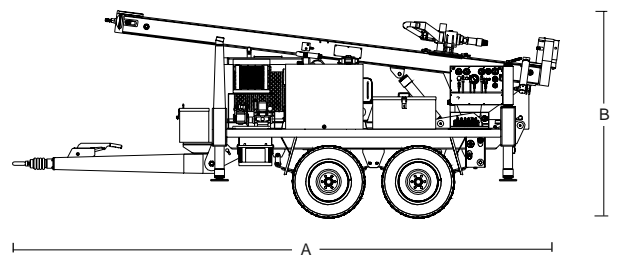
LIGHTING & ELECTRICAL SYSTEM 12 Volt DC

Mast	2 x 55 watt flooding lights
Control panel	1 floodlight and 2 background lights

TRAILER

Towing	Standard towing eye
Brake system	mechanical for overrun, auto-reversing and parking
Suspension	4 leaf springs and 4 shock absorbers
Trailer light	Fitted trailer lights with 7 pin plug connection to vehicle system
Tyres	750-R15, 12 PLY

WEIGHT : 3080 kg (without drill pipes)



DIMENSIONS

Overall length (A)	5643 mm
Overall width	1790 mm
Overall height (B)	2155 mm