

Consallen Forager-55 Cable Tool Rigs

CABLE TOOL DRILLING

Cable percussion (cable tool) drilling is the simplest, most reliable, and economical technology available for drilling water wells. It is a drill-in-any-material and self contained method - requires no pumps, mud pits or chemicals, but will drill through rock, including material containing lost circulation zones, like limestone.

Cable tool drilling uses a string of tools suspended from a 'cable' which are hoisted and dropped to break up the material in the bottom of a hole. A slurry is formed by adding some water, which is then bailed out. Other tools allow very rapid drilling, without water, in clays and sands having some clay content.

It is a non-invasive, sensitive drilling method which is particularly appropriate for smaller water sources, which other methods might overlook or seal off with mud. It will allow the discovery, testing and development of a water source, rather than simply finding a potential geology. For the same reasons, cable tool drilling is also appropriate for site investigations,

remedial, prospecting & environmental drilling. The Forager-55 cable tool machine works using a drill string of 250 Kg. Brutally strong but scaled to be convenient for shipping, and back yard drilling. Very low inputs - quick one man set-up and operation. Competes on both cost and effectiveness with rotary and does more for the money; covers the entire range of materials. Nothing extra to buy if the ground is harder than you thought. Faster and cheaper than hand digging for rural wells programmes. An entry level machine for small contractors.



FORAGER-55 - Standard model

- Drill string max weight 250 Kg
- Hoisting up to 60 m/min
- Drum capacity 60m of 13mm wire
- Frame hoisting capacity 5,000 Kg
- Engine nominal size 4.5 Kw (6 hp) at 3,600 rpm
- Road wheels and towing gear
- Max length of drill string 2.67m (8'-6")
- Length on the road 3.8m (12'-6") overall
- Towing weight 125 Kg; wheel set capacity 350 Kg
- Delivered complete with galvanised finish & split legs

A short **video film** is available on a CD showing this machine working on site investigation (piezometer) wells in UK - request a copy of the CD by e-mail.

RIG ELEMENTS & COMPONENTS

DRILLING WINCH - WIRE DRUM TYPE

The **standard** machines feature high quality wire drum **free-fall** drilling winches of different speeds and capacities, depending on the engine power available and the gear ratios chosen. Winches are entirely mechanical, and clutch-less, with internal gear boxes. They are operated using two identical disc brakes. Drums have capacities up to 100 metres of 10mm non rotating crane wire, or 60m (200 ft.) of 1/2" left-lay drilling wire (0.63 Kg/m), and can be supplied with a dividing plate giving 'working' and 'storage' sides. An important feature of these winches is the absolutely **FREE** free fall of the drill string when the hoist lever is released, to give maximum impact of the tools in the hole.

The hoist brake is hand operated using a large lever, and a foot operated brake is used to hold the load by directly braking the drum. The foot brake can be locked 'on' using a simple catch, which is disengaged by a movement of the operator's foot. Another mechanically engaged bolt can be used to lock the mechanism to prevent unauthorised use of the machine.

The operating system using two brakes is particularly robust - more so than employing a clutch - and the components are interchangeable and 'external' for easy replacement of brake pads. The pads themselves can be refurbished using any readily available friction material, including that which can be recycled from commercial vehicle brake shoes. Spare pads and adhesive can also be supplied as 'spares' by airmail.

Winches can be supplied with a cat head for hoisting/hauling or sand line operations using a fibre rope, as an optional extra.

The standard winch is belt driven, with a weatherproof cover. Alternatives include chain drive with an oil bath chain case, and hydraulic drive using a standard motor. All covers and cases comply with the EU 'Machinery Directive'. Hydraulic drive allows use of a remote power pack to drive the winch. Control remains the two-brake method whatever drive is employed.



FREE-FALL drum winch

(front drum cover removed - belt drive shown right)

- Hand lever (galvanised) causes the winch to reel in
- Foot pedal applies the lock-down/kick off drum brake
- A shoot bolt can be used to lock the drum mechanically.
- Available separately to buy (or lease in some markets).

On **basic** machines, the winch is a capstan (cat head) type employing a fibre rope of from 20 to 25mm diameter. They are available as either direct engine geared drive, or hydraulically driven using a separate power pack.

OTHER USES FOR THE EQUIPMENT

Tripod type drilling machines shown here lend themselves to activities other than plain cable percussion drilling, utilising the free fall features offered by the particularly robust type of wire winch. Several of the following can also be undertaken using the capstan winch option.

- Driven wells (drive points or well points) can be made either at ground level or after drilling a pilot hole. The tripod format allows a straight and effective blow by a falling weight.
- The chiselling action of a falling string of tools may be used for both simple jet, and hydraulic percussion drilling with water flush & hand oscillation. This equipment is versatile and reliable in many common formations, using elementary tools.
- Piles may be driven for foundations using the free fall winch for bottom or top driving, with a portable piling frame. It may be convenient to use an hydraulic power pack to power the winch for this work. The frame and winch can be hauled about the site using the winch, rough terrain forklift, or on its own wheels if supplied.
- Rigs in the tripod format can be used to obtain U4 and U100 undisturbed samples, and to perform standard penetration tests (SPTs). Percussion drilling does not alter the strata, and continuous sampling is possible at a size allowing full analysis, including strength testing - ideal for geo-environmental work and prospecting. The tripod format provides the strength needed to extract these types of drive-tube samples. The use of snatch blocks multiplies the heave provided by the winch several times over.

RENTAL OPTIONS

In some markets, a rental option is available. A kit can be supplied for use with other standard equipment available locally. The kit is composed of a winch, fittings to construct a drilling frame with standard scaffolding tubes, and drilling tools. Locally rented scaffolding and an hydraulic power pack are required to complete the drilling rig set-up.

On completion of the project, the rented equipment is returned to the rental shop. The system reduces the amount of material it is necessary to purchase and transport, but provides a solution to the drilling problem where either a contractor is not interested in the work, or is not available at the location. Kits can be either rented or purchased from Consallen.

MORE INFORMATION

We have a CD containing video of the Forager-55 being used in UK for the placing of piezometers as part of a site investigation for stability of slopes. If you supply us with a mailing address, and a description of the work you wish to undertake, we will send you a copy.