

# PORTADRILL®

The 524-1 and 524-2 Portadrills are versatile rotary table drive machines for exploration and well drilling. They are equipped for mud rotary, air rotary and rotary percussion drilling. Designed for efficiency, ease of operation and simplified maintenance, these rigs have direct mechanical power and controls to rotary table, drawworks, mud pump, and air compressor.

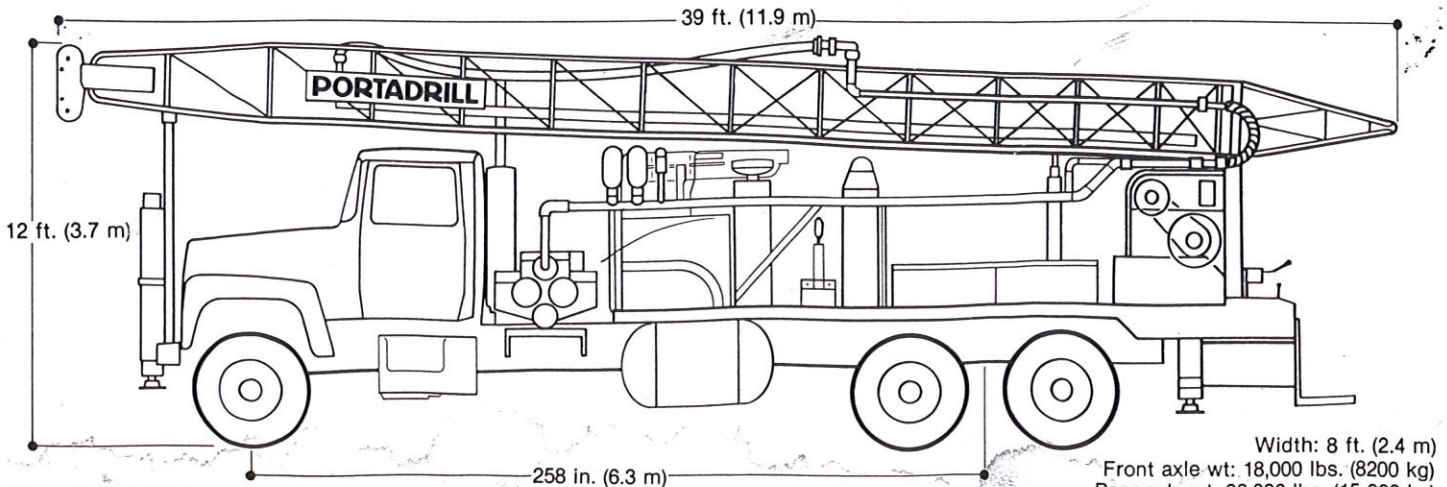
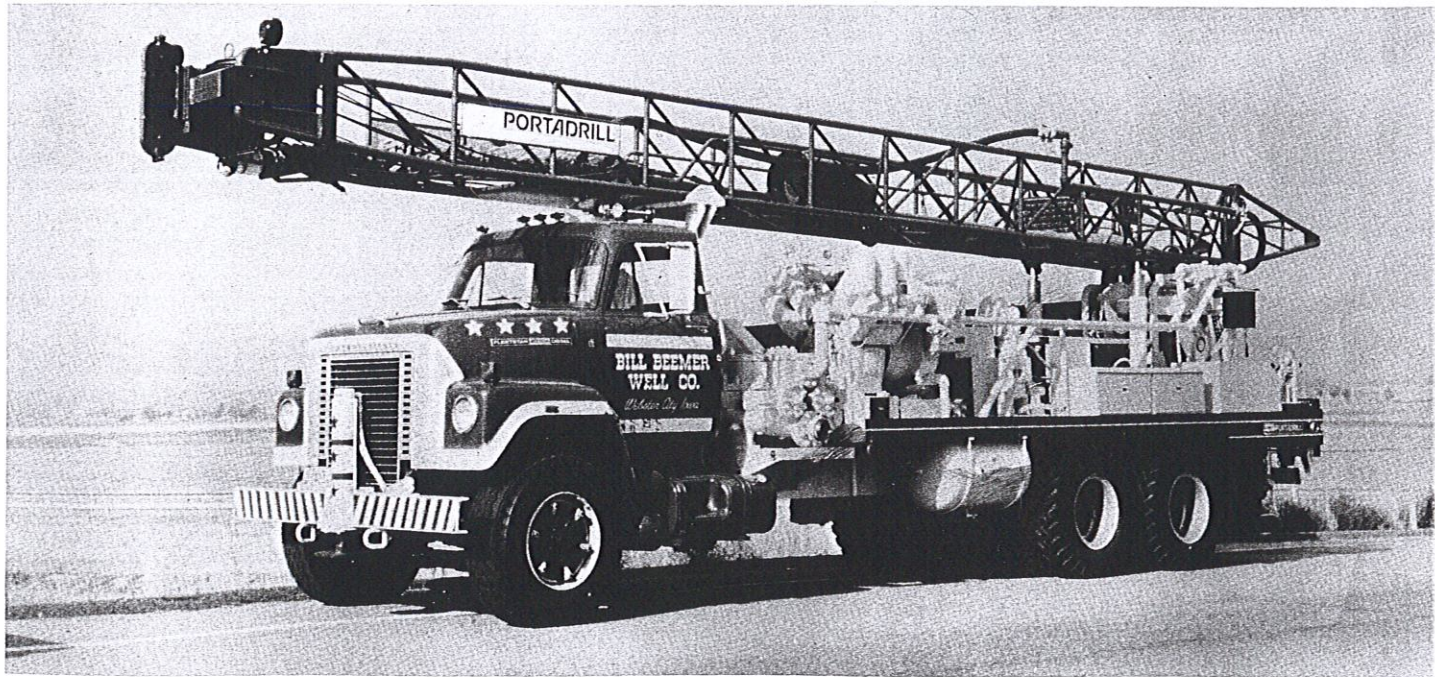
Standard equipment on both rigs includes an efficient air cooled, two cylinder, two-stage air compressor. The

524-1 has a 5" x 6" (127 mm x 152 mm) mud pump, a 5" (127 mm) opening hydraulically retractable rotary table and 2-part lines. The 524-2 has a 5½" x 8" (140 mm x 203 mm) mud pump, a 7½" (190 mm) rotary table and 3-part lines. Options to suit various drilling requirements are available on both rigs.

The deep-box section mast, with high tensile strength, tubular steel legs has 40,000 lbs. (18 140 kg) capacity and is raised and lowered hydraulically. Mast height is 38 ft. (11.6 m).

# 524-1 524-2

## ROTARY DRILLING MACHINE



### Dimensions: 524-1:

Length: 39 ft.  
Height: 12 ft. 3.7 m  
Width: 8 ft. (2.4 m)

Wheelbase: 216 in. (5.5 m)  
Front axle wt: 14,000 lbs. (6350 kg)  
Rear axle wt: 29,000 lbs. (13 200 kg)

### 524-2 Shown

Dimensions and weights may vary with mounting and optional equipment.



# PORTADRILL MODEL 524

## PULLDOWN

- Hydraulically powered through 2-speed mechanical transmission. Hydraulic controls for variable feed rate to 5.6 fpm (1.7 m. per min.) and down pressure to 20,000 lbs. (9060 kg.).
- 1-1/2" (3.8 cm.) pitch roller chains attached to swivel brackets feed full kelly length.

## BREAKOUT SYSTEM

- Oil field type breakout tong with unique shock hammer mounting. Pivots out of way when not in use.
- Powered breakout operation using rotary table and tong.
- Standard tong handles 2-7/8" O.D. to 3-1/2" O.D. tools (6.6 cm. to 8.8 cm.).
- Roller, lug or fork type breakout slips for use with 2-3/8" (6 cm.) or 2-7/8" (7.3 cm.) tool jointed pipe or 3-1/2" (8.9 cm.) flush joint pipe, as required.

## HYDRAULIC LEVELING JACKS

- Single front jack with 48" (122 cm.) stroke mounted in heavy-duty bumper assembly.
- Two rear mounted jacks, 24" (6.1 cm.) stroke.
- Level indicator at driller's station.

## INSTRUMENTATION & CONTROLS

- Instrument Panel
  - Air operated engine throttle.
  - Engine tachometer, starter switch, and engine gauges.
  - Rig gauges.
  - Rig lights switch.
  - Air compressor gauges.
- Driller's Station Controls
  - Drawworks controls.
  - Rotary table controls.
  - Mast lift control.
  - Water injection controls.
  - Table retraction.
  - Right, left and front jack controls.
  - Pulldown controls.
  - Compressor clutch control.
- Oteco mud line pressure gauge.

## DIMENSIONS (Approximate)

- Length with mast down: 37 ft. (11.3 m.)
- Length with mast up: 34 ft. (10.3 m.)
- Width: 8 ft. (2.44 m.)
- Height with mast down: 12 ft. (3.6 m.)
- Height with mast up: 42 ft. (12.8 m.)

## WEIGHT

- Standard rig and truck with 5" x 6" (12.7 x 15.2 cm.) mud pump and Atlas Copco DT2 compressor, without tools (approximate):
  - Front Axle: 10,500 lbs. (4578 kg.)
  - Rear Axle: 27,250 lbs. (12360 kg.)
  - Total: 37,750 lbs. (17125 kg.)

## TRUCK

- Suggested minimum truck specifications:
  - Cab-to-axle: 138" (350 cm.).
  - Front axle: 12,000 lbs. (5443 kg.) capacity. Tandem drive rear axle: 34,000 lbs. (15442 kg.) capacity.
  - Caterpillar 3208, 210 BHP diesel engine or equivalent (for DT2 compressor) with extra capacity cooling.
  - Heavy-duty electrical system.
  - 5-speed, direct-in-5th transmission. 8000 Series Spicer 3- or 4-speed auxiliary transmission with full torque, top mount PTO.
  - 10.00 x 20 12 PR tires.
  - 100 gallon (380 l.) fuel tank capacity.

## ACCESSORIES INCLUDED

- Roller bearing hoisting plug, pipe drive slips, breakout slips.
- Dust deflector hood.
- Two built-in tool boxes with locking handles.
- Six rubber mounted, sealed beam lights. Power supplied by truck electrical system.
- Self-storing driller's platform with removable center section.
- Mud pump wrenches.

## RECOMMENDED ADDITIONAL EQUIPMENT

- Drill pipe: 2-3/8" (6 cm.) or 2-7/8" (7.3 cm.) drill pipe in 20 ft. (6.1 m.) lengths.
- Drill pipe rack for 20 ft. lengths with fast slide.
- Tools: Rock bit subs, drilling stabilizers, rotary drill bits.
- 3/8" (9.6 mm.) dia. 6 x 19 hemp center right lay wire rope with 3/8" open socket for bailing drum. (Bailing line drum capacity: 1100 ft. [335 m.] )
- Portable mud pit. Mud mixer and hose.

## PRODUCTION OPTIONS

- Gardner-Denver 5-1/2" x 8" (14 x 20.3 cm.) FD-FXX mud pump.
- Portadrill air line lubricator installation:
  - Air powered, positive displacement, electrically phased, piston pump injects lubricant into air line for down-hole-tool.
  - Variable delivery rate — standard setting is 1 qt./hr (.95 l.).
  - 7 gallon (26.6 l.) capacity reservoir.
- 7-1/2" (19 cm.) hexagonal opening rotary table with kelly bushing.
- Optional choice of 7-1/2" hex. to 5" (12.7 cm.) square adapter bushing. For use with light weight breakout slips. 2-3/8" (6 cm.) and 2-7/8" (7.3 cm.) drill pipe with tool joints of 3-7/16" (8.7 cm.) O.D. or less and 3-1/2" (8.9 cm.) flush joint drill pipe.
- Mud pump transmission 4-speed, direct-in-4th.
- 8000 Series Spicer auxiliary transmission (if not supplied with truck chassis).
- 3-part line kelly and hoisting line.

NOTE: These specifications are subject to change without notice.



# PORTADRILL

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# TECHNICAL DATA

## PORTADRILL MODEL 524 ROTARY DRILLING MACHINE

DATA SHEET NO.: 524-03165

### ROTARY TABLE DRIVE

- Powered through a mechanical 5-speed transmission with reverse. Table speed range of 25 to 275 RPM.
- Spiral bevel ring gear and pinion with tapered roller bearing supports. Totally enclosed in oil bath lubricated case.
- 5" (12 cm.) square opening passes 5" O.D. tools.
- Hydraulically retractable 16 inches (40.6 cm.) to pass 12" (30 cm.) O.D. tools or casing.
- 7,000 ft. lbs. maximum torque.

### DRAWWORKS

- Powered through 10 inch (25.4 cm.), 2-plate clutch and spiral bevel ring gear and pinion.
- Double drum hoist for kelly and hoisting lines. Drums are grooved for cable spooling.
- 15,000 lbs. (6750 kg.) bare drum single line pull. (2-part line gives 30,000 lbs. [13500 kg.] pull).
- 18" x 4" (45.7 cm. x 10.2 cm.) cam actuated wrap-around mechanical brakes.
- Hook speed range from 0 to 175 feet (53.3 m.) per minute using 2-part line.
- Two-part 5/8" (16 mm.) 18 x 7 non-rotating hemp center wire rope for both kelly and hoist, each with 8-inch (20.3 cm.) traveling blocks.
- High speed bailing drum is chain driven from main drawworks shaft by a double roller chain. Spools 1100 ft. (335 m.) of 3/8" (9.5 mm.) wire rope at up to 400 ft. (122 m.) per minute. (Wire rope not included as standard equipment.)

### POWER TRAIN

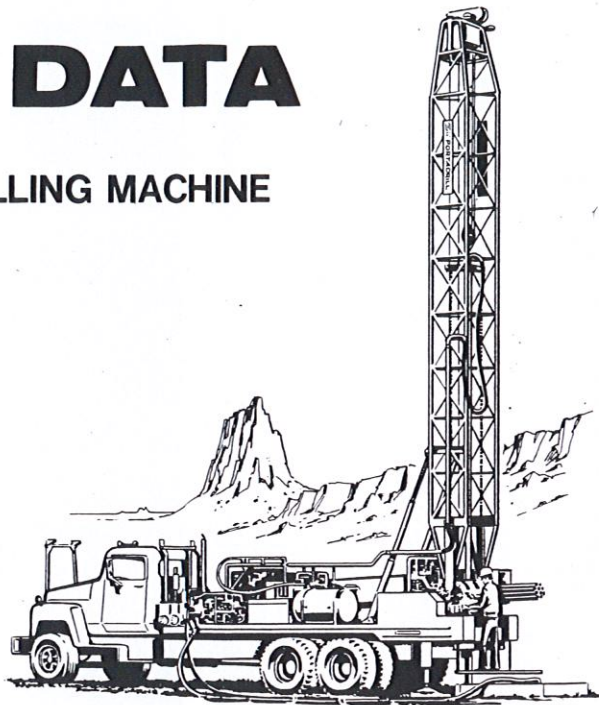
- Power transmitted from truck engine and transmission through automotive type auxiliary transmission (8000 Series Spicer) full-torque top mount PTO to rig power divider.
- Power divider with high speed triple roller chain running on heat treated sprockets and shafts in totally enclosed oil bath lubricated aluminum case.
- Power output transferred through end mount clutches with ball bearing throwout collars and universal joint torque tube drive lines to rig components.

### AIR SUPPLY

- Standard Air Compressor
  - Atlas Copco DT2, two-stage, two-cylinder, air cooled, double-acting compressor with a capacity of 470 CFM free air delivery (F.A.D.) at 55 psi at 1160 RPM (13.3 cu.m./min. at 3.87 kg./sq. cm. at 1160 RPM); 320 CFM F.A.D. at 125 psi at 825 RPM (9.06 cu. m./min. at 8.79 kg./sq. cm. at 825 RPM).
  - Driven direct from power transfer case through 10" (25.4 cm.) 2-plate disc clutch.
  - Air receiver tank.

### WATER INJECTION SYSTEM

- Duplex piston pump connected to air line. Includes flow indicator.
- Hydraulically powered with infinitely variable speed control provides 0 to 8 gpm at 250 psi (30 l. per min. at 17.6 kg./sq. cm.).
- Suction inlet with hammer union for connection to external water supply.



### MUD PUMP

- Standard Pump
  - Gardner-Denver 5" x 6" (12.7 cm. x 15.24 cm.) FG-FXG duplex power pump. 150 GPM (570 l.) at 75 spm. 4" x 33 ft. (10.2 cm x 10 m.) suction hose with strainer and hammer union. 2" (5.1 cm.) discharge line and hoses. Shear relief valve. Surge chambers. Oteco oil field type 0-1000 psi (70.3 kg./sq. cm.) pressure gauge. V-belt driven from power divider case through mechanical clutch to pump flywheel.
- Optional Mud Pump
  - Gardner-Denver 5-1/2" x 8" (14 cm. x 20.3 cm.) FD-FXX duplex power pump. 220 GPM (800 l.) at 70 spm. 4" x 33 ft. (10.2 cm. x 10m.) suction hose with strainer and hammer union. 2-1/2" (6.35 cm.) discharge line and hoses. Shear relief valve. Surge chambers. Oteco oil field type 0-100 psi (70.3 kg./sq. cm.) pressure gauge. V-belt driven from power divider case through mechanical clutch to large diameter pump flywheel.

### MAST ASSEMBLY

- Electric welded high tensile strength seamless tubular steel construction with two 19" (48.3 cm.) diameter ball bearing mounted crown block sheaves for hoisting and kelly lines.
- Deep box section design: 40,000 lb. (18000 kg.) rated capacity.
- 36 ft. (10.8 m.) clearance above rotary table to centerline of crown block sheaves.
- 24 ft. (7.3 m.) long, 3-1/2" (9 cm.) diameter round slotted kelly with saver sub and bushing.
- Two chrome-plated telescoping hydraulic cylinders raise and lower mast.

### SWIVEL

- 2" (5.1 cm.) dia. full opening.
- Single neoprene packing ring with adjustable packing gland.
- Three angular contact ball bearings support pulldown thrust and tool loads. 40,000 lbs. (18000 kg.) rated capacity.
- Heavy cast steel swivel brackets transmit pulldown through coil spring chain connectors.
- 2" (5.1 cm.) high pressure double wire braid hose with swivel joint connects swivel to mast standpipe. Cadmium plated safety chains.