

RD20/RD20XC/APL Drill Rigs

Oil and Gas Drilling



The Industry Standard

Approximately 300 RD20's operating worldwide have earned a reputation for reliability, strength and drilling performance. The RD20 XC is based on the Epiroc RD20, the most successful shallow oil and gas rig in the 120,000 lb (53 metric tonnes) class.

The RD20 is highly mobile, rapid to rig up and flexible enough to adapt to almost any location requirements. The patented, carriage feed system and detached table design provide exceptional performance and economy, as well as the structural strength to handle the toughest drilling conditions. The RD20's 755 HP (563 kW) deck engine provides the hydraulic power and on board, high pressure air to achieve top performance.

The RD20 is a compact, hydraulic top drive rig that can reduce operating costs whether it's drilling presets or drilling oil, gas and CBM wells to TD.

The RD20 XC is a new configuration of the RD20 designed with extra capabilities to meet the more demanding requirements of today's shallow oil and gas drilling applications.

Automatic Pipe Loader

Designed exclusively for the RD20 or RD20 XC, Automatic Pipe Loader (APL) is a reliable, hands-free pipe-and-casing handling system that has a major impact on enhancing efficiency, safety and performance during the drilling process. APL is a skid-mounted load that is simple to mobilize and rig up. A wireless control module and hands-free operation reduce manual labor, enhance efficiency and reduce pipe-handling time and cost.





Powerful Feed System

The patented carriage feed system is the heart of the RD20. It delivers a full 110,000 lbf. (489 kN) of pullback to the RD20II and 120,000 lbf. (533 kN) to the RD20III. This system delivers rapid feed speeds as well as precise weight and speed control. You'll benefit from optimal mechanical efficiency not available with competitive machines. The derrick eliminates compressive loads on the upper derrick, even at full pullback.

Superior Pipe Handling

One of the primary advantages of the RD20 is its simplicity and effectiveness handling drill pipe. The whole process of changing or adding drill pipe with the RD20 normally takes between 45 and 60 seconds. This is much quicker than handling drill pipe on a conventional drill rig. The RD20 uses either a standard 2-pod loader or an optional 7-pipe carousel. During the drilling process, either the carousel or loader can be loaded continuously from the pipe tubs or trailers behind the drill rig using the dedicated pipe handling hoist and jib boom. To change drill pipe, the RD20 uses a square chuck, which is set into a recessed opening in the master bushing. This not only holds the drill string in the table, but acts as a back up wrench to prevent the drill string from turning during makeup and breakout.

Tough Mobile Carrier

Mobility is another key advantage of the RD20, a completely self contained drilling rig mounted on a 10 X 6 tridem carrier. The separate 425-hp engine and drive train move the rig down the road at standard highway speeds while providing ample power for off the road maneuverability. A Jake brake and no spin rear axles further enhance off road control and mobility. This ability to get to the job ready to work reduces set up time and costs.

Innovation and proven technology

The RD20 and RD20XC are adaptable to rig up on the ground or on a wide range of float or substructure configurations. The pipe handling system can be adapted to a pipe trailer, tubs, v-door or automated pipe loader.



+ Top drive with elevator links (XC only)

A mounting assembly for the links is secured to the top-drive case. Rated for 120,000 lb (54 tonnes) — plus a safety factor — this design enables the links to tip in/out to handle pipe, collars and casing. Cylinders are attached to the mounting assembly and each link to tip the links out from hole center and back. The spindle sub includes a floating sub and saver sub. The hydraulic elevators open/close and lock with cylinders mounted on the elevators. A dual-caliper spindle brake is available for directional drilling. Virtually hands free pipe handling is easy, whether from a trailer, tubs, v-door or automated pipe loader.



+ High torque table and wrenches (XC only)

The RD20XC table assembly has been lowered 12 in (305 mm) to make additional working space for the elevator system and breakout wrenches. The table has a 26 in (660 mm) available opening and is fitted with a 17 ½ in (455 mm) API split master bushings. This table assembly is a strong, solid base that is supported on all sides to handle tough drilling loads. Additionally, the dual breakout/make up wrenches can handle up to 50,000 ft-lbs of torque.



+ Air/mud piping (XC only)

The RD20XC mud piping has been redesigned to accommodate higher pressures. The air manifold is set up to handle auxiliary compressors and a booster system. The main air valve and blow-down valve are actuated from the driller's console. Connections for water injection and DHD lubricator are included. The mud piping is set up for a wide range of oil field mud systems. It includes a manual gate valve, a connection and valve for a mixer line, and a heavy-duty mud gauge. Air and mud connections are at the side of the deck for easy access.



+ The RD20 XC is available with a directional-drilling brake system. (XC only)

This enables the operator to lock the top drive spindle in any position for the full 360° of rotation. The locking mechanism consists of a dual-caliper and disc system attached to the spindle and mounted just below the top-drive case. The system is activated from the console and can be feathered to fine tune a specific directional position. The directional-drilling brake system is rated to hold up to 8,000 lbf-ft of rotational torque. This is a very effective, rugged system that is easy to operate and maintain.



⊕ Features & Benefits

The patented **carriage feed system** delivers a full 110,000 lb (50,000 kg) or 120,000 (54,500 kg) of pullback (depending on the model) while providing rapid feed speeds as well as precise weight and speed control.

The tough, **mobile, 8 x 4 or 10 x 6 carrier**, depending on model, is completely self contained.

A **425 HP** engine and drive train move the rig down the road at standard highway speeds while providing ample power for off road maneuverability.

The RD20 handles a **wide range of drilling applications**, including 3 in (76 mm), 1,500 or 3,000 psi circulation piping.

The RD20 handles **Range II or Range III**

(depending on the model) casing with ease.

RD20 II and RD20 III handles "**RD20**" style **external flush drill pipe**: 4 ½ in OD x 30 ft length

RD20 XC handles **oilfield external upset "Bottleneck" drill pipe**: 2 7/8 in to 4 ½ in OD, Range 2 lengths



Epiroc Service Agreements

Epiroc provides several types of service agreements to meet operational requirements and to secure your productivity.

Variable price repairs—Service when you need it

Fixed price repairs—Service with controlled cost

Equipment Audit—Scheduled equipment quality control

Preventive Maintenance Programs—Peace of mind and focus on core business

Technical specifications

RD20 II

Carrier

Custom tandem chassis built to Epiroc specifications

Wheelbase	226 in	5.7 m
GVWR	86,000 lb	39,010 kg

Powerpack Standard Tier 4F Caterpillar 755 HP/522 kW @ 1800 rpm

Export: Cummins QSK-19C engine, 756 hp/522 kW at 1800 rpm, IR HR2.5 over/under screw air end 1250/350 at 1800 rp, engine silencer

Derrick Dimensions

Custom tandem chassis built to Epiroc specifications

L x W x D	51 ft x 11 1/2 in x 48 1/2 in x 41 in	15.6 m x 1.2 m x 1.0 m
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Feed system

Pullback	110,000 lbf	489 kN
Pulldown	30,000 lbf	60.5 kN
Drill Feed Rate	22 ft/min	6.7 m/min
Fast Feed Up (regen on)	141 ft/min	42.9 m/min
Fast Feed Down	176 ft/min	53.6 m/min

Rotary Head

4SF-2-12 spur gear head, 0-120 RPM, 8,000 ft-lbf torque, Piping: 3 in (76 mm) circulation rated at 1,500 psi working pressure

Jib Boom & Hoist

Lifting capacity, bare drum	4,000 lb	1,814 kg
Line Speed, bare drum	100 ft/min	30.5 m/min

Casing Hoist

Lifting capacity, maximum	4,000 lb	1,814 kg
Line Speed, maximum	60 ft/min	18.3 m/min

Options RD20 II

Collar-handling package

Drill pipe carousel

Water injection

Hydraulic table levelling jacks

Compressor disconnect

Mud manifold

DHD lube

CAT C27 800 hp Deck Engine

RD20 III

Carrier

Custom tandem chassis built to Epiroc specifications

Wheelbase	281 in	7.1 m
GVWR	113,000 lb	51,364 kg

Powerpack

Cummins QSK-19C engine, 756 hp/522 kW at 1800 rpm, IR HR2.5 over/under screw air end 1250/350 at 1800 rp, engine silencer

Derrick Dimensions

Custom tandem chassis built to Epiroc specifications

L x W x D	61 ft x 11 1/2 in x 48 1/2 in	18.9 m x 1.2 m x 1.0 m
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Feed system

Pullback	120,000 lbf	489 kN
Pulldown	30,000 lbf	60.5 kN
Drill Feed Rate	29 ft/min	8.8 m/min
Fast Feed Up (regen on)	106 ft/min	32.3 m/min
Fast Feed Down	180 ft/min	54.9 m/min

Rotary Head

4SF-2-12 spur gear head, 0-120 RPM, 8,000 ft-lbf torque, Piping: 3 in (76 mm) circulation rated at 1,500 psi working pressure

Jib Boom & Hoist

Lifting capacity, bare drum	4,000 lb	1,814 kg
Line Speed, bare drum	225 ft/min	68.5 m/min

Casing Hoist

Lifting capacity, maximum	7,500 lb	3,402 kg
Line Speed, maximum	106 ft/min	18.3 m/min

Options RD20 III

Collar-handling package

Drill pipe carousel

Water injection

Hydraulic table levelling jacks

Compressor disconnect

Mud manifold

DHD lube

CE MARK/ATEX Certification on the drilling apparatus

Technical specifications

RD20 XC

Rig performance

Hookload	120,000 lb	54.4 tonnes
Pulldown	30,000 lbf	13,636 kg
Fast feed up	106 ft/min	32.3 m/min
Fast feed down	180 ft/min	54.9 m/min
Drill feed	29 ft/min	8.8 m/min
Torque	8,000 lbf-ft	10.8 kNm
Speed	0-120 RPM	0-120 RPM
Spindle	3 in	76.2 mm
Swivel Type	5 in / 6 5/8 FH box	127 mm / 6 5/8 FH box
Opening	2 ½ in	63.5 mm

Carrier

Twin H-beam main frame - reinforced	16 in	406.4 mm
5-axle, custom carrier	425 hp	317 kW diesel engine
8-speed transmission	Manual with lo - lo and reverse	
Tridem rear axles with lockers	23,000 lb each	10,433 kg each
Tandem front steering axles	22,000 lb each	9,979 kg each

Derrick

Length	61 ft 11 ½ in	18.88 m
Width 4	8 1/2 in	1.23 m
Depth	41 in	1.04 m
Top of table to spindle	51 ft 6 in	5.7 m
Table to ground (rig sitting on tires)	44 in	1,118 mm
Width (including catwalks and stairways)	22 ft 4 in	6.81 m
Table to ground (jacks fully extended) 92"	92 in	2,337 mm

Rig Dimensions

Height derrick down	13 ft 10 in	4.22 m
Height derrick up	62 ft 6 in	19.05 m
Width	8 ft 4 in	2.54 m
Shipping weight (less tooling)	88,000 lb	40,000 kg

RD20 XC Unique Specifications, Tip Out Links

Forged steel	150 ton	136 tonnes
Length	60 in	1,524 mm
Tip out	hydraulic cylinder on each link	
Angle	0-90° from vertical	
Control	Driller's console	

Table & Master Bushing

Type	folding with twin hydraulic jacks	
Max opening	26 in	660 mm
API split master bushing	17 ½ in	445 mm
Capacity	60 ton	54.4 tonnes

High Torque Make Up & Break Out Wrench

Forged steel	petol chain wrenches hydraulic cylinder actuated flip-over wrench heads	
Wrench Torque	50,000 lbf-ft	678 kNm
Adjustable size range	3 to 8 ¼ in	76-210 mm
Height adj. BO	13 in	330 mm
Height adj. MU	13 in	330 mm
Control	Driller's console	

Circulation Manifold-Fluid (XC Model)

Capacity	3,000 psi	206.8 bar
Diameter	3 in	76.2 mm
Main valve	Hydraulically actuated	
Mixer line	Manually actuated	
Pressure gauge in line Air/Mud hose	3 in	76.2 mm
Capacity	3,000 psi	206.8 bar



Technical specifications

RD20 XC (cont.)

Circulation Manifold - Air

Capacity	1,500 psi	103.4 bar
Diameter	2 ½ in	63.5 mm
Main valve	Hydraulically actuated	
Blow down	Electrically actuated	
Isolation valve	Manually actuated	
Aux. comp. in	2 ½ in	
To Booster	3 in	
From Booster	2 ½ in	
Air/Mud hose	3 in	
Capacity	1,500 psi	

Drill Pipe Elevators

Forged Steel	100 ton	90.7 tonnes
Size	2 7/8 - 5 in	73 - 127 mm
Actuation	Hydraulic cylinders open/close & lock	
Control	Driller's console	

**United in performance.
Inspired by innovation.**

Performance unites us, innovation inspires us, and commitment drives us to keep moving forward. Count on Epiroc to deliver the solutions you need to succeed today and the technology to lead tomorrow.
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