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FRD FURUKAWA ROCK DRILL CO.,LTD.

2-6-4, Otemachi, Chiyoda-ku, Tokyo 100-8370, Japan
Phone +81-3-6636-9521 Fax +81-3-6636-9555

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DOWN THE HOLE DRILL **DCR20**

Tier3 / Euro Stage - 3

Drill hole range : $\phi 89\text{mm} - 165\text{mm}$



FRD FURUKAWA ROCK DRILL

Mobile, Maneuverable and Durable Middle class down the hole drill DCR20

- Smooth operation in comfortable cabin
- Drilling on any kind of rock
- ◆ Air conditioned FOPS / ROPS cab
- ◆ Ergonomically engineered machine and drill controls
- ◆ High pressure and large capacity compressor
- ◆ Large dust collector
- ◆ Accurate positioning with boom swing like crawler drill
- ◆ Good visibility of bit with sliding suction cap
- ◆ Fast traveling with tough track
- ◆ Easy maintenance with large access door
- ◆ Tier 3 low emission engine



Furukawa's new boom mounted type Down the Hole Drill

DCR20

Maximizes operator performance with the ultimate in drilling technology.



Powerful CAT engine is fully compliant with Tire3 / Euro stage-3 emission control. It gives full control for easy drilling.

Low-emission engine

High power, low noise, turbocharged 6-cylinder engine with electronic fuel injection.



Thanks to advanced hydraulic and pneumatic technology, output energy can be transferred to each component with minimum power loss. These systems support high productivity.



CAUTION

The diesel fuel quality greatly affects the performance and life of the engine. Use only clean, high quality fuel.

Digital engine indicator



Easy check engine condition in the Cab.

- Engine rpm
- Engine hour meter
- Engine coolant temp
- Fuel oil level etc.

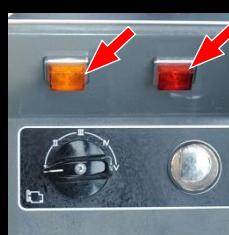
Engine throttle control



Adjust the engine speed.

- Position I : 1,250 min⁻¹
- Position II : 1,600 min⁻¹
- Position III : 1,800 min⁻¹
- Position IV : 2,000 min⁻¹
- Position V : 2,100 min⁻¹

Engine Diagnostic Monitor



Engine caution lamp (red)

The warning lamp indicates a serious malfunction in the engine.

Engine diagnostic lamp (orange)

This alert indicator is used to indicate the existence of active fault in the engine with flashing codes. Flash code is also indicated on the IMS display.

Newly designed economy mode

By using power-saving switch, fuel consumption is reduced during "light" work conditions. While drilling, Engine speed can be adjusted lower than power mode. Engine speed can be selected from one of following speed.

"Light" work
↑
According to
rock condition
↓
"Hard" work

1,600 min⁻¹
1,800 min⁻¹
2,000 min⁻¹
2,100 min⁻¹

New economy mode
(Have a choice from 3 types of power)

Power mode
(Previous model has only this mode for drilling)

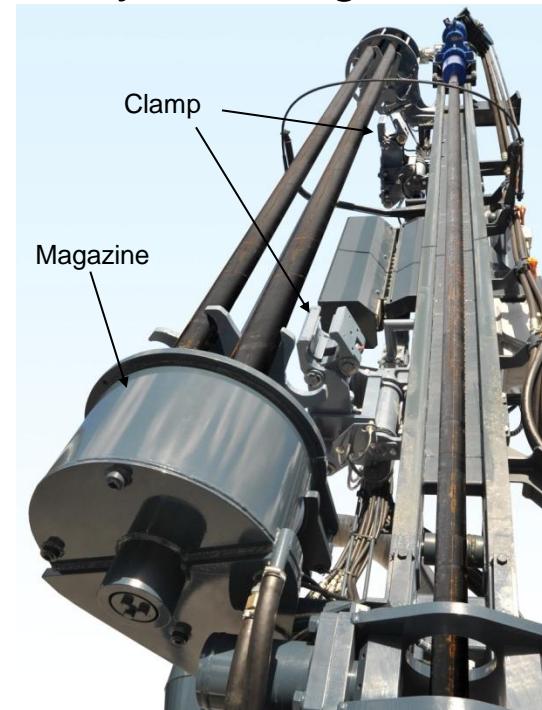
For the hole cleaning, Engine speed automatically increases up 2,100 min⁻¹. As a result, even in economy mode, you can realize the perfect cleaning as power mode does.

Mini-compressor



Mini-compressor starts running and unload valve closes and compressor stops temporarily.

Easy handling rod changer



Shorten the time of adding and withdrawing extension rods. Permits the operator to add and withdraw rods using a single lever, and to select which rods in the magazine to use, thereby spreading the wear evenly among all the rods in the magazine and helping to reduce costs.

Rod changer control lever



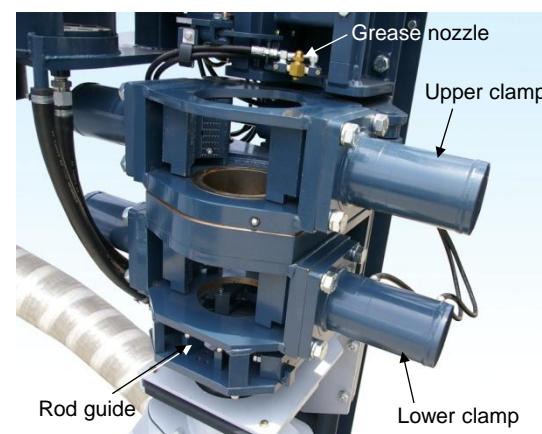
The sequence of rod changer operation from rod addition to rod collection is controlled with the rod changer control lever.

Rod changer control switches



When centering the rod changer or checking the rod changer movement, select manual mode with Manual/Auto select switch.

- ① Manual / Auto selector switch
- ② Swing switch
- ③ Clamp switch
- ④ Shutter switch
- ⑤ Magazine rotation switch



Handling the grease nozzle



The grease switch is moved to the upward position. Grease nozzle ejects grease to the threads of the shank rod or rod.



Loosening device

- ① Upper clamp switch (Close ⇔ Open)
- ② Lower clamp switch (Close ⇔ Open)
- ③ Upper clamp loosening lever switch
Leftward position : swings in looseness direction
Rightward position : swings in tightness direction

Easy operation and improved - reliability



High capacity compressor & Dust collector

High out-put compressor increases flushing air, provides faster drilling and decreases bit wear. The upgraded dust collector has a suction capacity. The dust collector includes an effective pre-cleaner to reduce the escape available for difficult drilling conditions.



Dust collector



Pre-cleaner

Easy to check hole



Sliding suction cap can be raised to allow a fast visual check of operation.

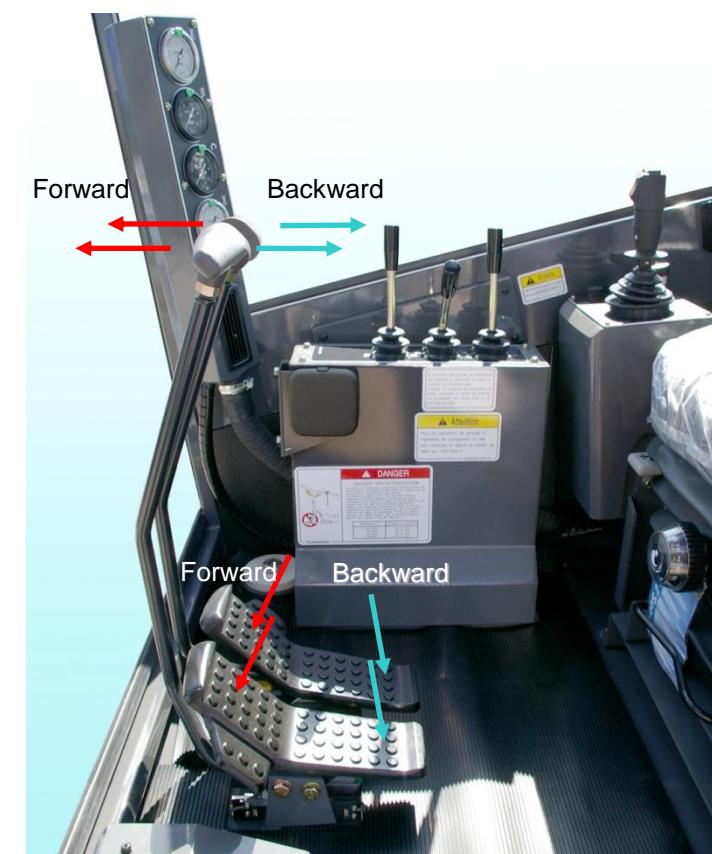
IMS (Intelligent Monitoring System)

The IMS display shows the condition of the machine and the failure during the operation, indicating information and engine flash codes. If fault is indicated on the display, buzzer sounds to warn the operator. The IMS II (if equipped) indicates the information on the periodical inspection maintenance.



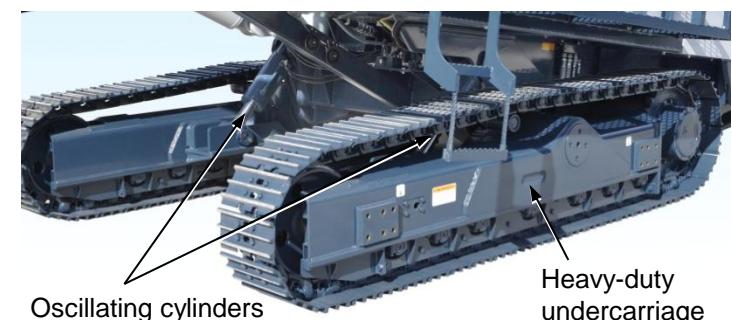
- ① IMS display
- ② Compressor discharge temperature gauge
- ③ Hydraulic oil temperature gauge
- ④ Engine monitor
- ⑤ Buzzer
- ⑥ Rock drill oil lamp

Travel levers



Heavy duty undercarriage & oscillating

Heavy-duty track frames provide strength and durability. One-piece drive sprockets are manufactured with hardened surfaces for longer life. Heavy-duty track links are forged from high-manganese alloy steel, and pins and bushings are induction-hardened. Standard full track guards protect undercarriage. Track tension can be adjusted easily with a grease gun. The entire machine oscillates up-down 7.5 degrees total 15 degree to maintain machine level.

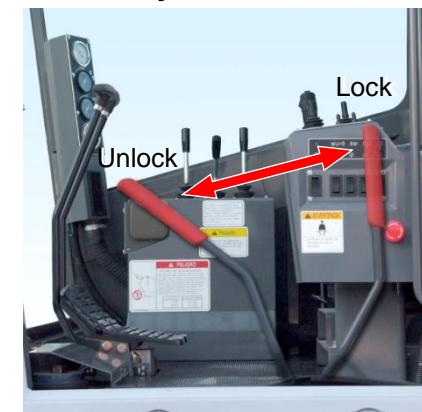


Independent track oscillation provides safe tramping in any time.



without track oscillation

Safety lock lever



Stops the traveling function and the function of the rod changer operation.



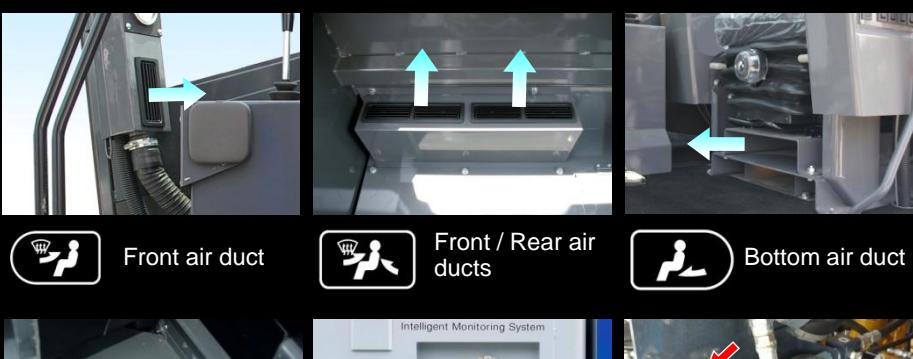
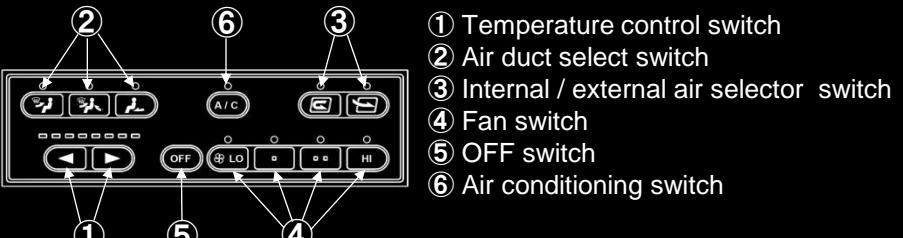
Smooth operation in comfortable cabin

Wide cab provides large windows at the front and on the right side maximize operator visibility. Cab is air conditioned and pressurized with filter air to keep out dust.



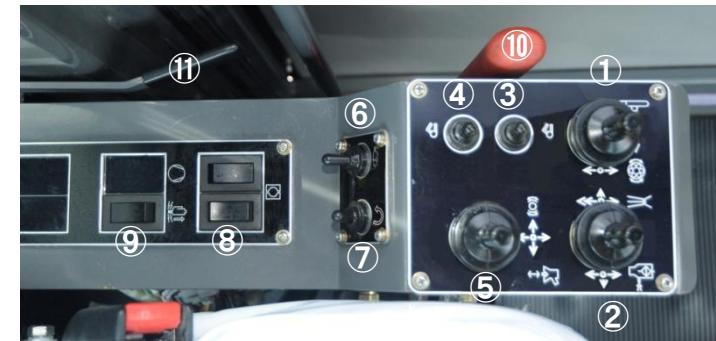
ROPS : Roll-Over Protective Structures
FOPS : Falling-Object Protective Structures

Air conditioner control panel



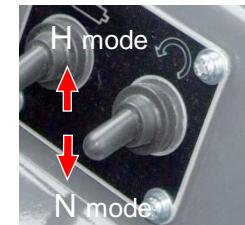
Internal air filter
External air filter
Refrigerant (gas) level

Left console box



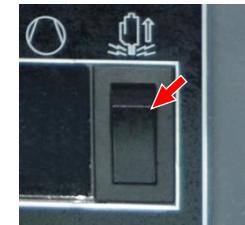
- ① Rod changer control lever
- ② Air flushing lever
- ③ Upper clamp switch
- ④ Lower clamp switch
- ⑤ Hood / loosening lever
- ⑥ Greasing switch
- ⑦ Mode selector switch
- ⑧ Rod guide switch
- ⑨ Anti-Jamming switch
- ⑩ Safety lock lever
- ⑪ Door unlock lever

Mode selector



A mode switching hydraulic circuit performs switching between N mode for homogeneous rocks and H mode for hard rocks, thus enabling safe and speedy drilling.

Anti-jamming device



An anti-jamming device optimizes the drilling condition for a variety of rock types, thus offering extended bit and rod life, and consequent reduction in running cost.

Rod guide device



Rod guide on the loosening side opens and closes with this switch.



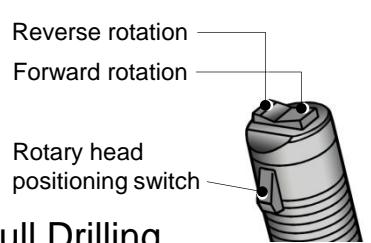
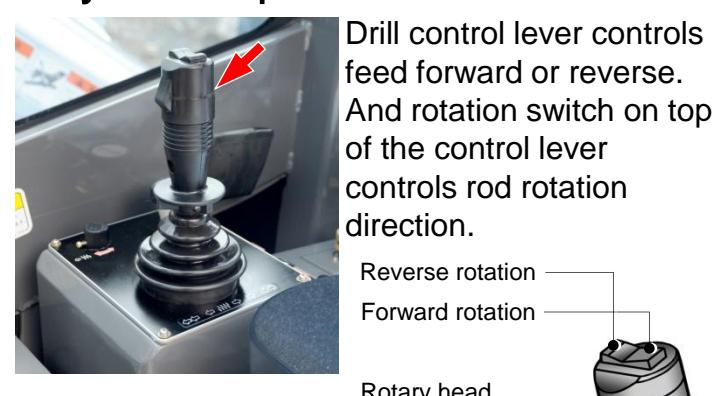
- ① Door unlatching
- ② Door lock
- ③ Horn switch
- ④ Room light switch

Right console box

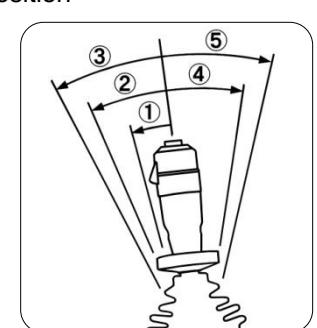
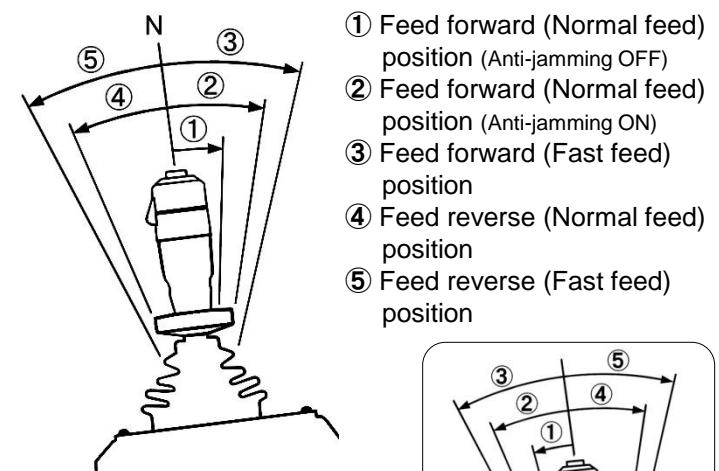


- ① Drill control lever
- ② Feed forward speed adjust dial
- ③ Feed forward pressure adjust handle
- ④ Engine monitor lamps Orange : Diagnostic lamp
 Red : Warning lamp
- ⑤ Engine throttle switch
- ⑥ Starter switch
- ⑦ Air conditioner control panel
- ⑧ Rotation speed adjust handle for rod changer
- ⑨ Rotation speed adjust handle for drilling rod
- ⑩ Horn switch
- ⑪ Ashtray

Joystick operation



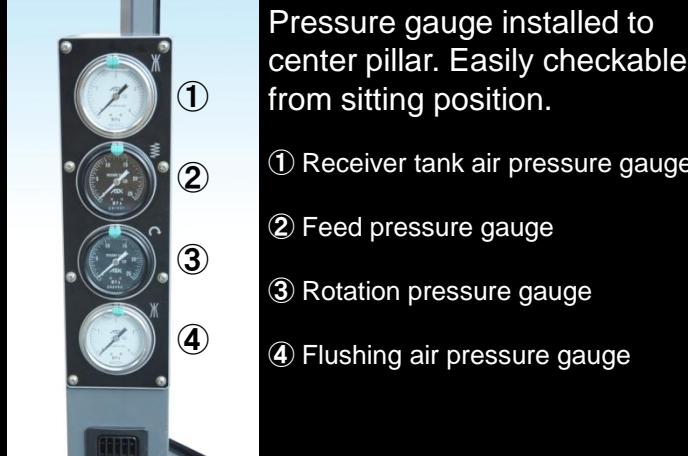
Lever of standard Pull Drilling Specification



Push drilling is selectable



Pillar mounted gauges



Pressure gauge installed to center pillar. Easily checkable from sitting position.

- ① Receiver tank air pressure gauge
- ② Feed pressure gauge
- ③ Rotation pressure gauge
- ④ Flushing air pressure gauge



Operator's seat

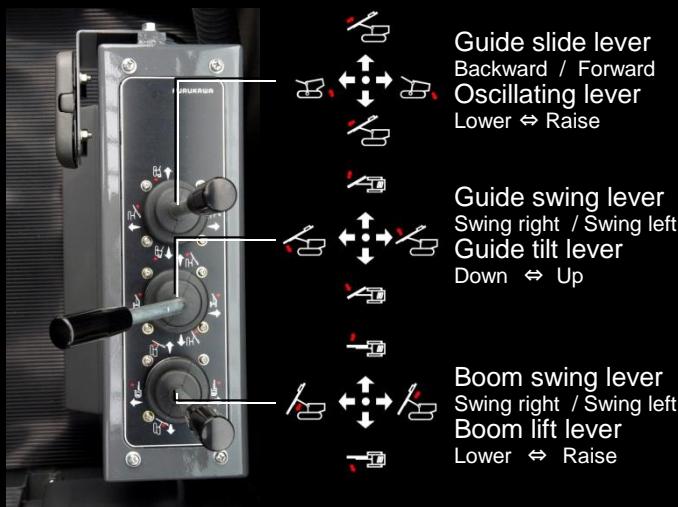
Seat fore / aft adjustment, Suspension adjustment, Reclining adjustment, Seat tilt adjustment, Armrest angle adjustment, Headrest adjustment

Additional interior equipment



- ① Headlight switch
- ② Rear work light switch
- ③ Front wiper switch
- ④ Roof wiper switch
- ⑤ Radio
- ⑥ Headlight
- ⑦ Rear work light
- ⑧ Speakers
- ⑨ Cup holder
- ⑩ Fire extinguisher
- ⑪ Evacuation hammer (if equipped)
- ⑫ Seat belt
- ⑬ Emergency stop (if equipped)

Boom control box



Guide slide lever
Backward / Forward
Oscillating lever
Lower ⇄ Raise

Guide swing lever
Swing right / Swing left
Guide tilt lever
Down ⇄ Up

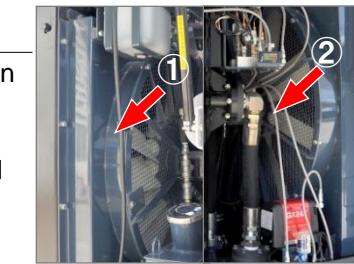
Boom swing lever
Swing right / Swing left
Boom lift lever
Lower ⇄ Raise

For Safety equipment

Fan guard

Safe guard against rotating fan

- ① Radiator of Engine
- ② Oil cooler for hydraulic and compressor



Lock the door and covers

When you leave the machine, be sure to lock the door and covers to prevent machine theft or unexpected trouble.



Head guards

Roof is reinforced and overhead window is steel gauge protected.



Slip proof mat

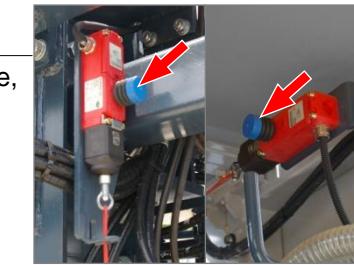
To prevent from falling during work on the top of engine room.



Optional equipment

Emergency stop system

To emergency stop the engine, pull the red wire or press the emergency stop button which are located on the guide shell or in the engine room.



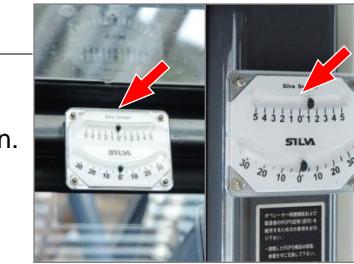
Emergency stop system

Stops the engine in an emergency.



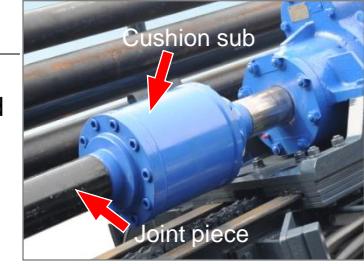
Clinometer

Clinometer indicates incline angle of machine in front and rear and left and right direction.



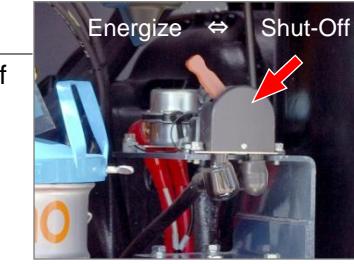
Cushion sub

Recommended installation dimensions of cushion sub and joint piece.

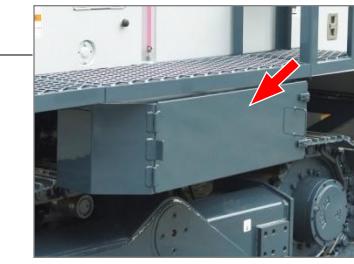


Battery Cut-Off switch

Battery cut-off switch shuts off energizing circuits from the battery.



Tool box



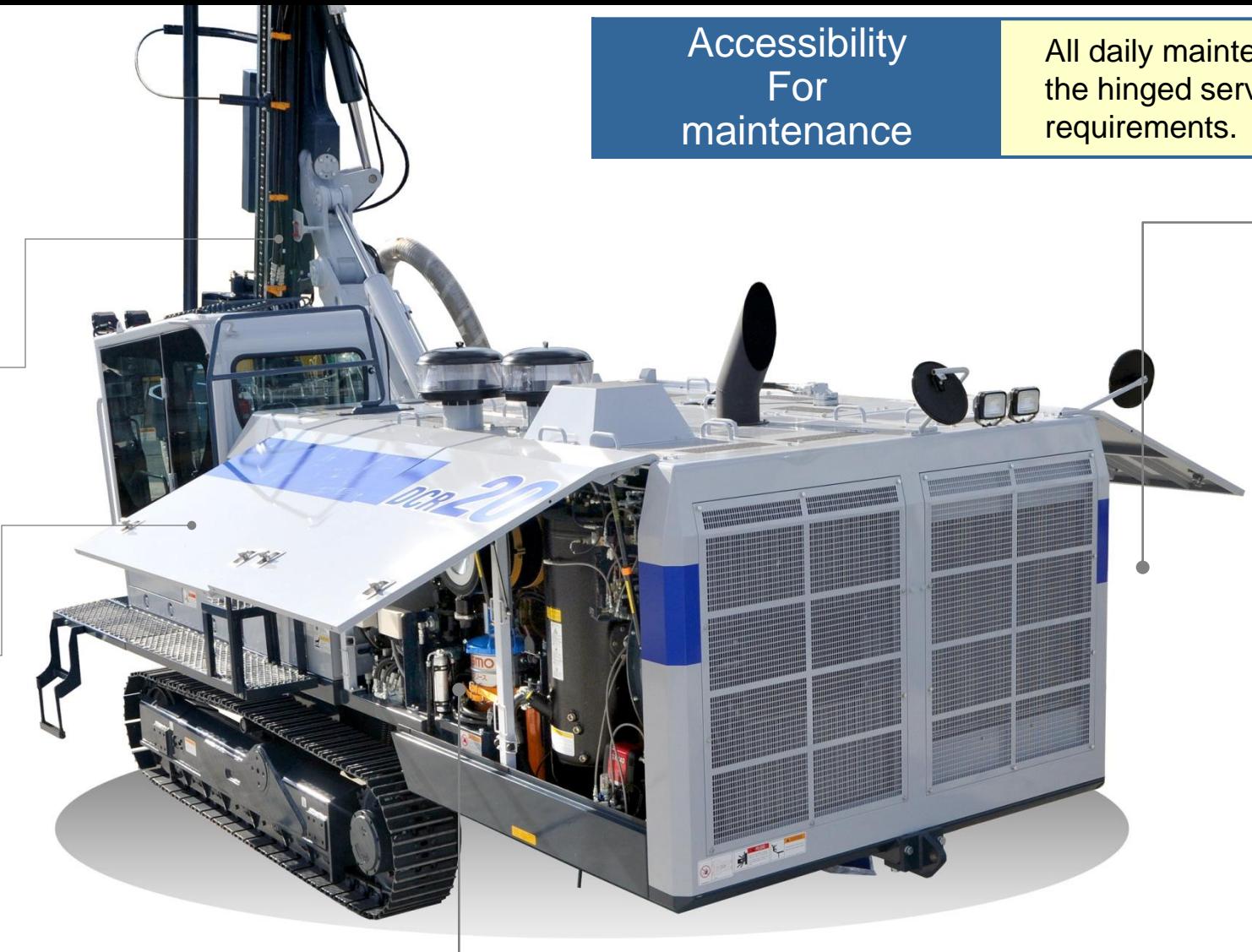
Switchboard for cold area



Boom angle indicator



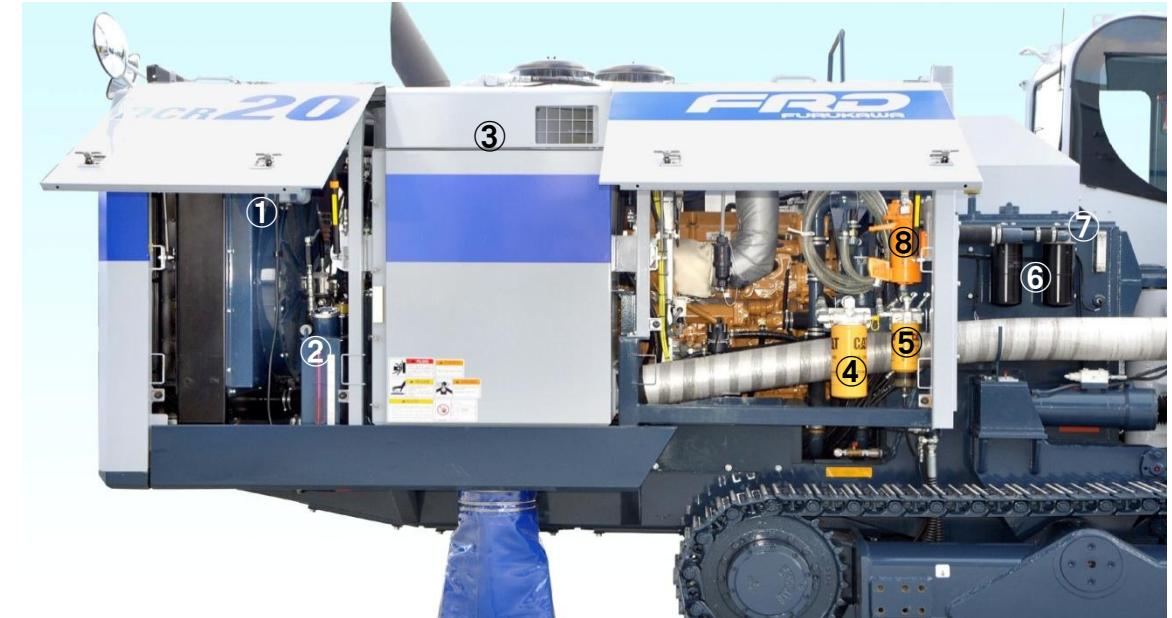
Gas assisted dampers



Accessibility For maintenance

All daily maintenance can be performed at ground level. Gas-assisted dampers allow the hinged service doors to be opened easily for access to all required maintenance requirements.

Access to the right side cover



- ① Radiator for engine coolant
- ② Rock drill oil tank
- ③ Dust collector
- ④ Engine oil filter element

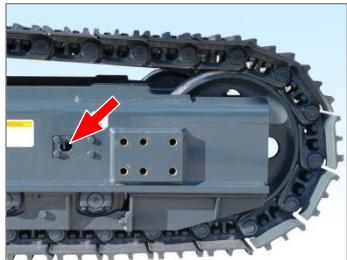
- ⑤ Fuel filter and water separator
- ⑥ Return oil filter element
- ⑦ Hydraulic tank
- ⑧ Hydraulic oil pump

Access to the left side cover



Main check points for daily maintenance

Track tension



Air filter



Pre-cleaner



Engine oil level



Compressor oil level



Coolant level



Rock drill oil level



Fuel / Water separator



Hydraulic oil level



Reduction gear box

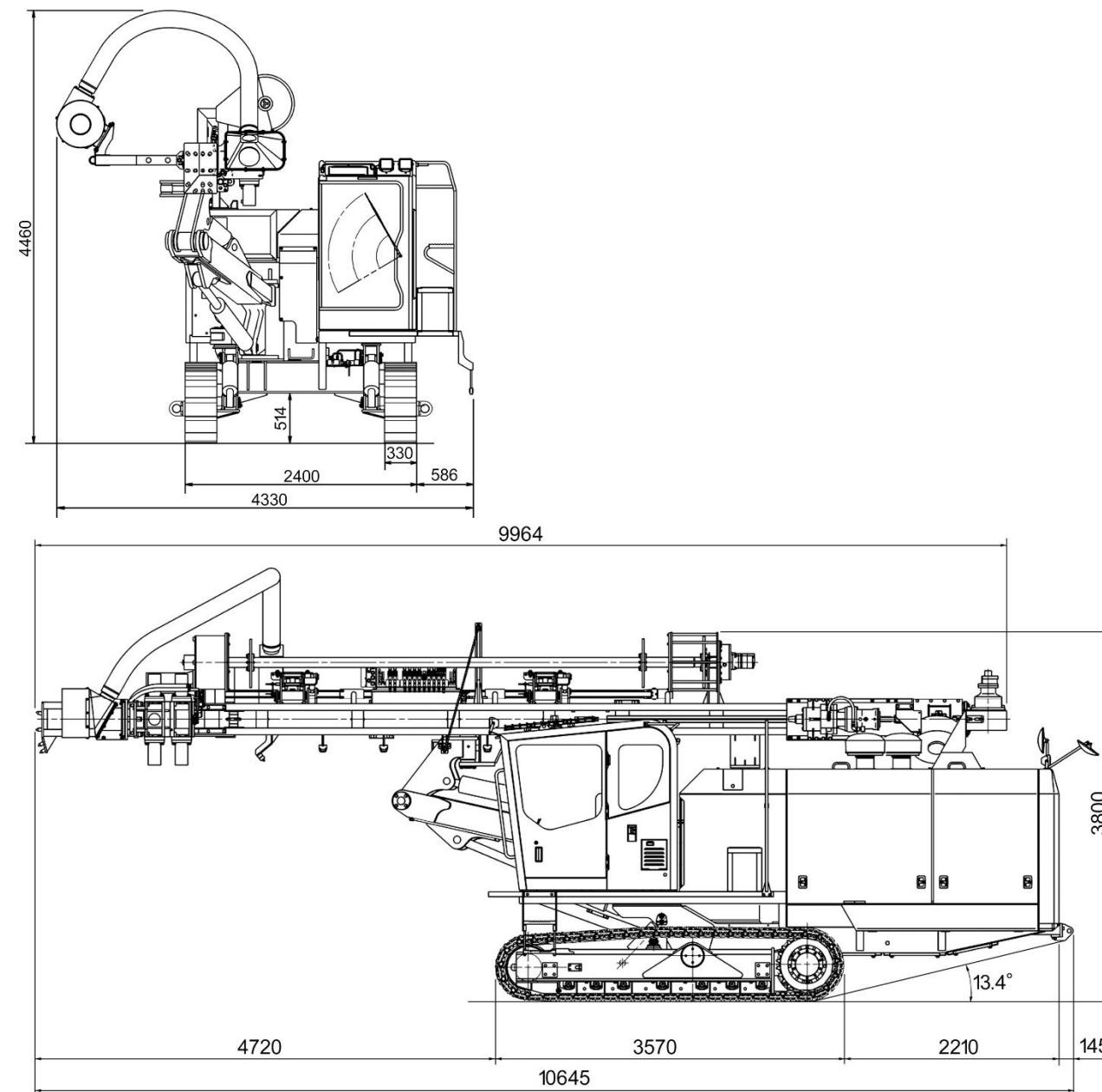


- ① Fuel tank
- ② Electric control board
- ③ Fuse box
- ④ Batteries
- ⑤ Grease pump
- ⑥ Air cleaner for engine

- ⑦ Air cleaner for compressor
- ⑧ Battery Cut-Off switch
- ⑨ Oil filter for compressor
- ⑩ Air receiver tank
- ⑪ Mini compressor
- ⑫ Oil cooler

Unit		Model	DCR20
Rotary head			Overall dimension
Reduction gear	Standard	Mass	20,100 kg
Drill motor	Standard	Overall length	10,645 mm
Guide shell			Overall width
Loosening system	Standard	Overall width for transportation	4,330 mm
Slide able suction hood	Standard	Overall height	2,400 mm
Synthetic wear plate for carriage	Standard	Traveling unit	
Rod changer			Track length
Rod length	5m	Standard	3,570 mm
	6m	Optional	Ground contact length
Rod size	76mm, 89mm, 102mm	Select	330 mm
Rod capacity	8pcs. (Rod length : 5m)	Standard	Ground clearance
	4pcs. (Rod length : 6m)	Optional	Oscillating angle
Boom			Traveling speed
Fix boom	Standard	Grade ability	±7.5°
Undercarriage			0~3.6 km/h
Triple shoe	Standard	Max. traction force	25 deg
Lifting eyes for transportation	Optional	Drill motor	105 kN
Dust collector			Max. Rotation torque
Pre-cleaner	Standard	Max. rotation speed	3.25 kN-m
Folding bracket for pre-cleaner	Standard	Drilling bit range	120 min ⁻¹
Exhaust shutter	Standard	Engine	
Cab			Model
ROPS/FOPS cab	Standard	Type	CAT C-13
Suspension seat	Standard	Output	Turbo-charged & air to air after cooled diesel, direct fuel injection, electronic governor
Seat belt	Standard	Fuel tank capacity	328 kW / 2,100 min ⁻¹
Air conditioner	Standard	Hydraulic pump	
AM/FM radio	Standard	Main pump	700 liter
Intelligent Monitoring System	Standard	Dust collector pump	Tandem variable displacement pump
Leveler	Standard	Boom/Fan/Pilot line pump	Gear pump
Fire extinguisher	Standard	Compressor	
Evacuation hammer	Standard	Model	Tandem gear pump
Catwalk	Standard	Type	Airman PDSK 900
Side door mirror	Optional	Max. Air delivery	Screw, double stage, oil-cooled
Rotating light (yellow)	Optional	Max. Free Air Delivery	2.5 MPa
Rear View Monitoring Camera (color)	Optional	Boom	
Additional lights	Optional	Boom swing angle	24.3 m ³ /min
Control			Boom lift angle
Direct boom control	Standard	(L) 30° (R) - 13° (L)	49° (UP) - 14° (Down)
Pull drilling specification	Standard	Guide shell	
Push drilling specification	Optional	Length	Guide shell
Anti-jamming system for rotation pressure	Standard	Feed distance	9,964 mm
Engine throttle dial	Standard	Guide slide distance	5,678 mm
Auto throttle control for impact and air flow	Standard	Foot slide distance	1,200 mm
Joystick controlled rod changer	Standard	Guide swing angle	300 mm
Manual over-ride for rod changer	Standard	Guide tilt angle	(L) 77° - (R) 16°
Automatic oscillation lock	Standard	Max. pulling force	130°
Back-up alarm	Standard	Feed system	30 kN
Others			Rod changer
Guide tilt angle indicator by pendulum	Standard	Rod length	Hydraulic motor
2 Dimensional electric angle indicator	Optional	Rod size (Thread size)	5,000mm
3 Dimensional electric angle indicator	Optional	Greasing	ϕ 76mm, ϕ 89mm, (2 3/8 inch)
Water tank for water injection system	Optional	Rod capacity	ϕ 102mm, (3 7/8 inch)
Emergency shut down system	Optional	Dust collector	
Hour meter for engine	Standard	Suction air volume	Automatic
Water separator for engine	Standard	Air filter	8pcs.
Pre cleaner (engine, compressor)	Standard	Dust removal system	70 m ³ /min
Battery cut-off	Optional	Suction cap	10 pcs.
Heavy duty under cover	Standard	Inner diameter of dust hose	Air pulse jet
Rear stabilizer	Optional	Pre-cleaner	Sliding
Winter package	Optional		D150 mm
Tool box	Optional		standard

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■ Vertical drilling coverage

