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**FRD**  
FURUKAWA

**DOWN THE HOLE DRILL**

**DCR20**

Tier3 / Euro Stage - 3

Drill hole range :  $\phi$ 89mm - 165mm



**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

**DCR20**



Furukawa's new boom mounted type Down the Hole Drill



# 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, turbo-charged 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.



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

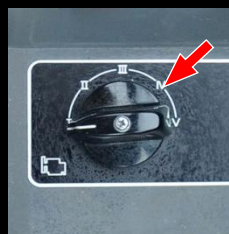
## Digital engine indicator



Easy check engine condition in the Cab.

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

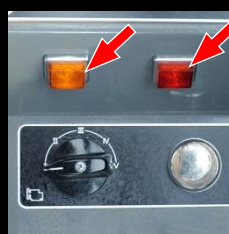
## Engine throttle control



Adjust the engine speed.

- Position I : 1,250 min<sup>-1</sup>
- Position II : 1,600 min<sup>-1</sup>
- Position III : 1,800 min<sup>-1</sup>
- Position IV : 2,000 min<sup>-1</sup>
- Position V : 2,100 min<sup>-1</sup>

## 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 1,600 min<sup>-1</sup>
- 1,800 min<sup>-1</sup>
- 2,000 min<sup>-1</sup>
- According to rock condition
- "Hard" work 2,100 min<sup>-1</sup>

### New economy mode

( Have a choice from 3 types of power )

### Power mode

( Previous model has only this mode for drilling )

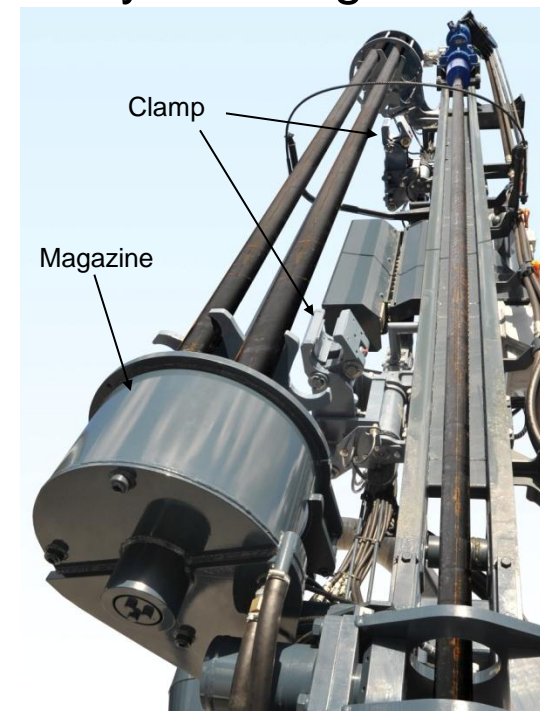
For the hole cleaning, Engine speed automatically increases up 2,100 min<sup>-1</sup>. As a result, even in economy mode, you can realize the perfect cleaning as power mode does.

## 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.

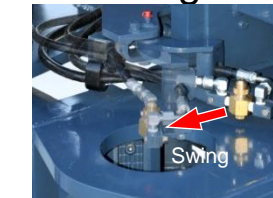
## Rod changer control switches



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



## IMS (Intelligent Monitoring System)

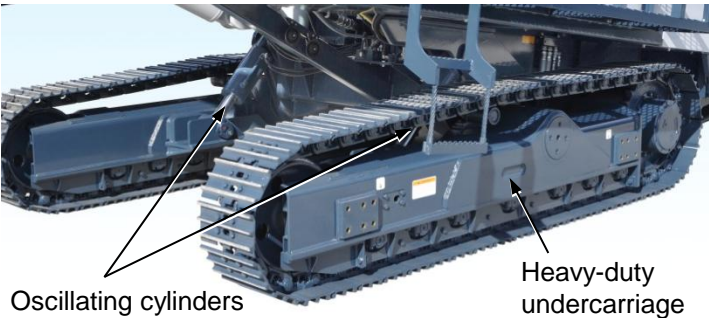
The IMS display shows the condition of the machine and the failure during the operation, indicating information and engine flash codes. If fault is indicated on the display, buzzer sounds to warn the operator. The IMS II ( if equipped ) indicates the information on the periodical inspection maintenance.



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

## Heavy duty undercarriage & oscillating

Heavy-duty track flames 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.

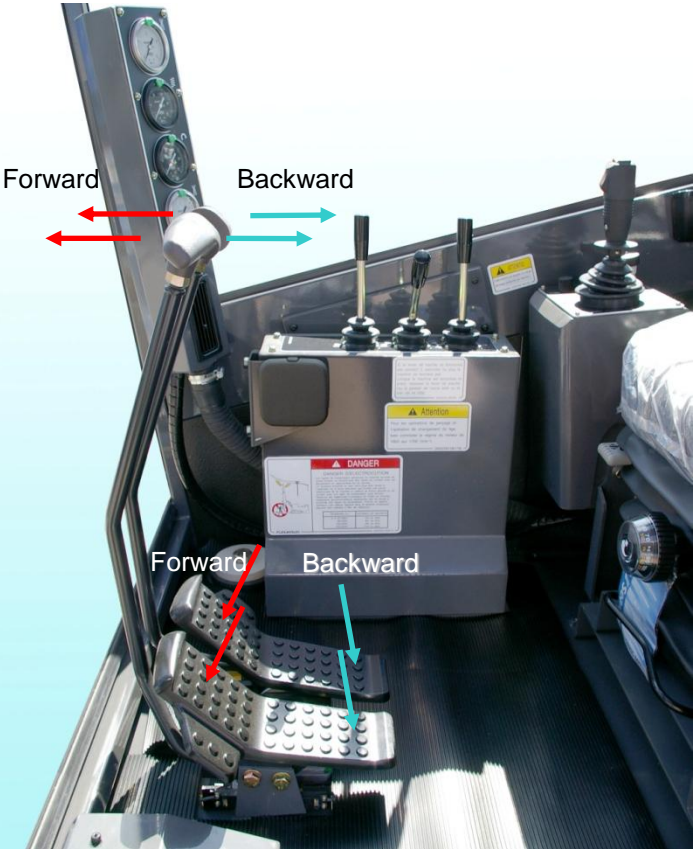


Independent track oscillation provides safe tramming in any time.

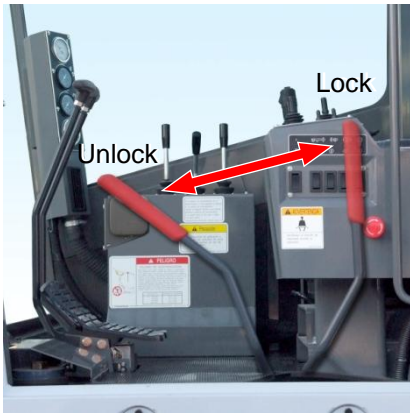


without track oscillation

## Travel levers



## Safety lock lever



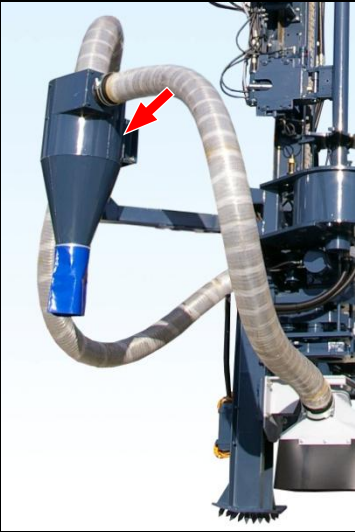
Stops the traveling function and the function of the rod changer operation.

## 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.

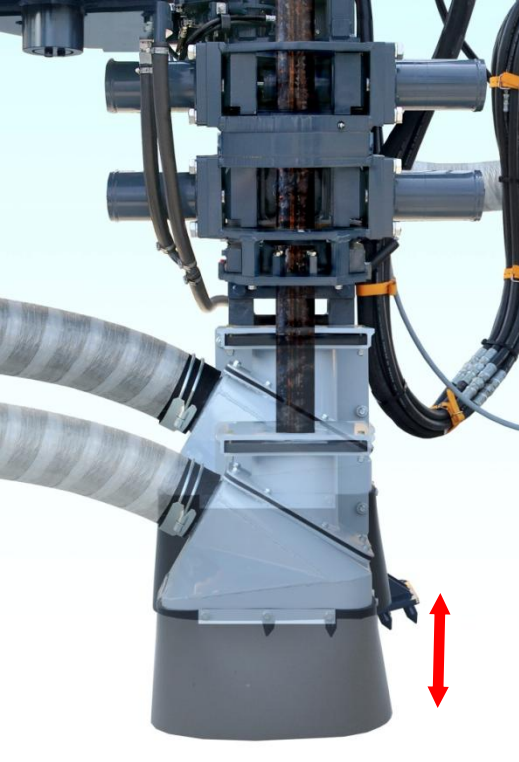


Dust collector



Pre-cleaner

## Easy to check hole



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



# Maneuverability, Safety & Visibility



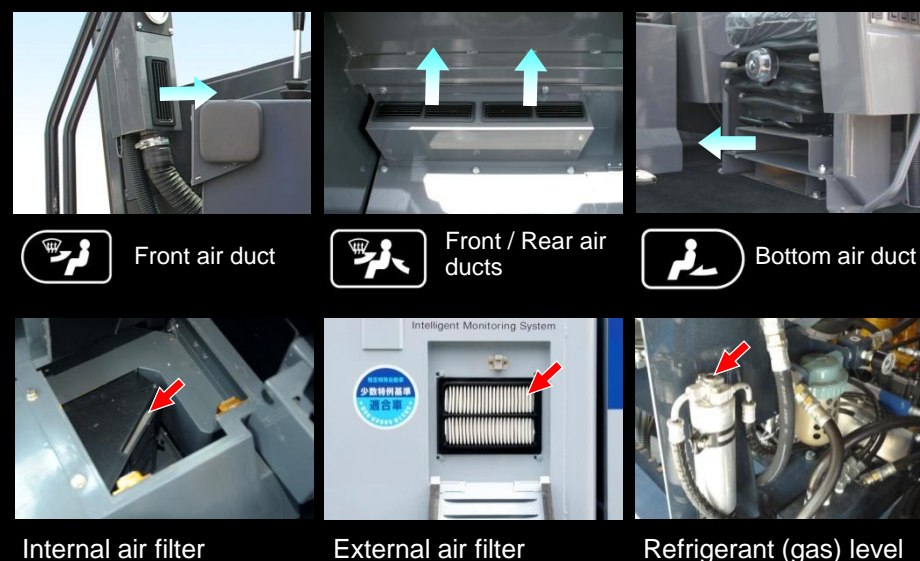
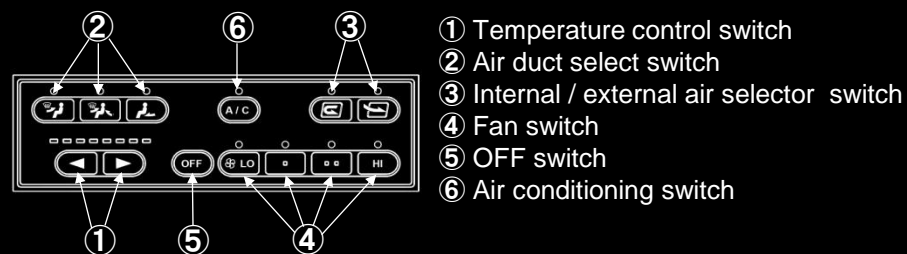
## Smooth operation in comfortable cabin

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.

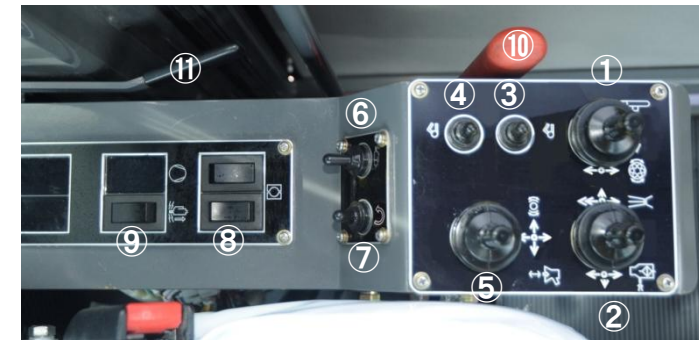


ROPS : Roll-Over Protective Structures  
FOPS : Falling-Object Protective Structures

## Air conditioner control panel

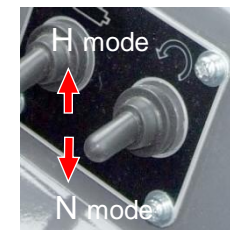


## Left console box



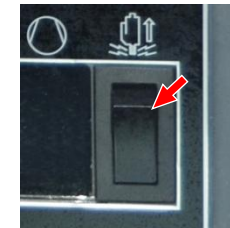
- 1 Rod changer control lever
- 2 Air flushing lever
- 3 Upper clamp switch
- 4 Lower clamp switch
- 5 Hood / loosening lever
- 6 Greasing switch
- 7 Mode selector switch
- 8 Rod guide switch
- 9 Anti-Jamming switch
- 10 Safety lock lever
- 11 Door unlock lever

## Mode selector



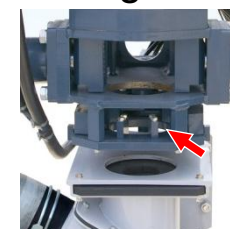
A mode switching hydraulic circuit performs switching between N mode for homogeneous rocks and H mode for hard rocks, thus enabling safe and speedy drilling.

## Anti-jamming device

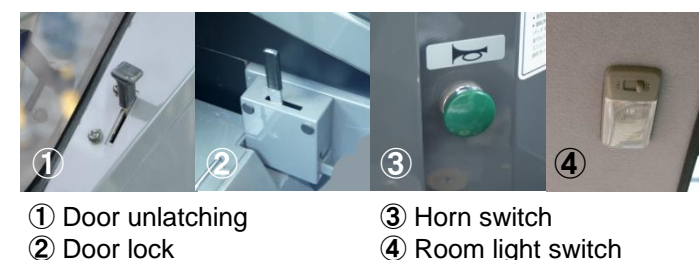


An anti-jamming device optimizes the drilling condition for a variety of rock types, thus offering extended bit and rod life, and consequent reduction in running cost.

## Rod guide device



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



## Right console box

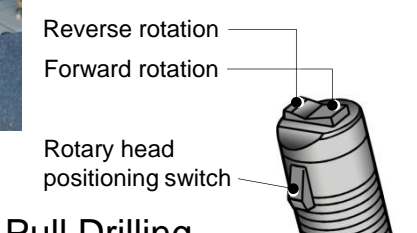


- 1 Drill control lever
- 2 Feed forward speed adjust dial
- 3 Feed forward pressure adjust handle
- 4 Engine monitor lamps    Orange : Diagnostic lamp  
Red : Warning lamp
- 5 Engine throttle switch
- 6 Starter switch
- 7 Air conditioner control panel
- 8 Rotation speed adjust handle for rod changer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

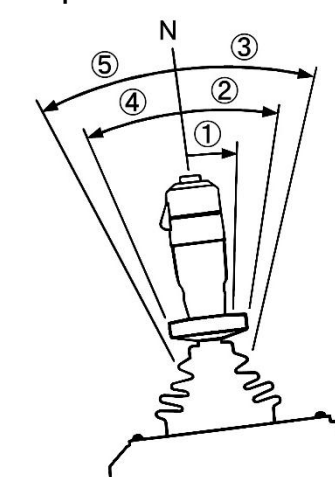
## Joystick operation



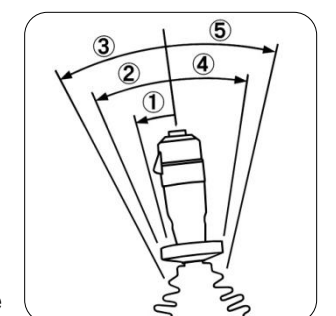
Drill control lever controls feed forward or reverse. And rotation switch on top of the control lever controls rod rotation direction.



## Lever of standard Pull Drilling Specification



- 1 Feed forward (Normal feed) position (Anti-jamming OFF)
- 2 Feed forward (Normal feed) position (Anti-jamming ON)
- 3 Feed forward (Fast feed) position
- 4 Feed reverse (Normal feed) position
- 5 Feed reverse (Fast feed) position





# Minimizes operator fatigue



## 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

## 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



## 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



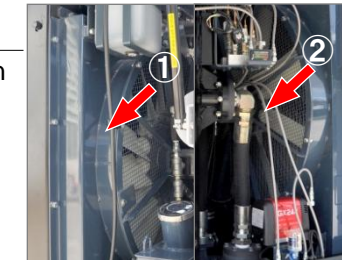
- ① Headlight
- ② Rear work light
- ③ Speakers
- ④ Cup holder
- ⑤ Fire extinguisher
- ⑥ Evacuation hammer (if equipped)
- ⑦ Seat belt
- ⑧ Emergency stop (if equipped)

## 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

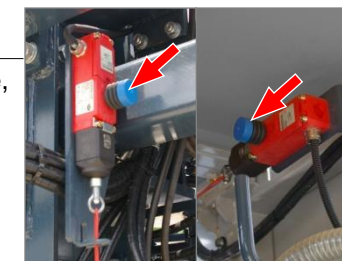
To prevent from falling during work on the top of engine room.



## 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.



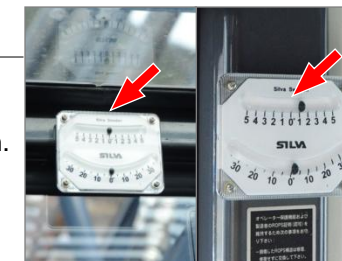
### Emergency stop system

Stops the engine in an emergency.



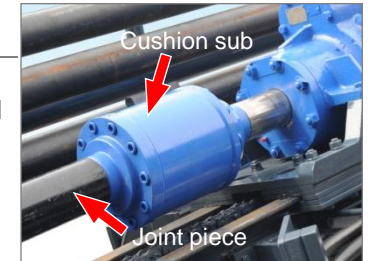
### Clinometer

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

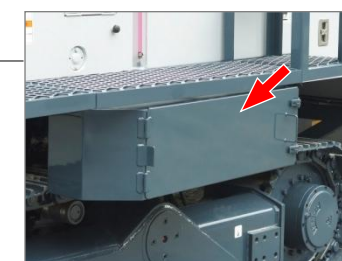
Battery cut-off switch shuts off energizing circuits from the battery.



### Side door mirror



### Tool box



### Switchboard for cold area



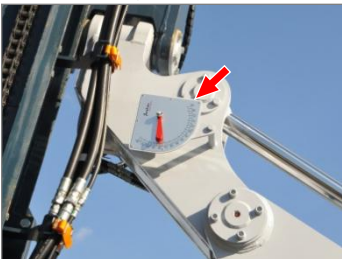


# Easy Maintenance & Safety Functions.

## 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.

Boom angle indicator



Gas assisted dampers



## 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

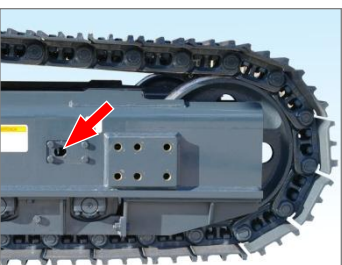
## Access to the left side cover



- 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

## Main check points for daily maintenance

Track tension



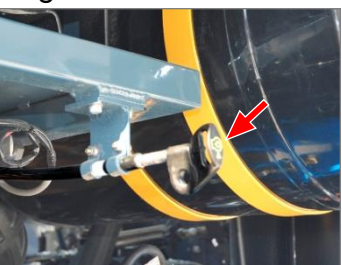
Air filter



Pre-cleaner



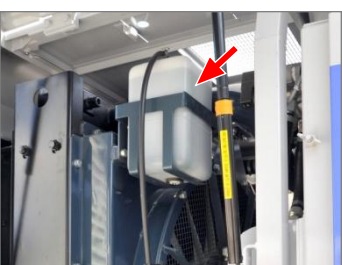
Engine oil level



Compressor oil level



Coolant level



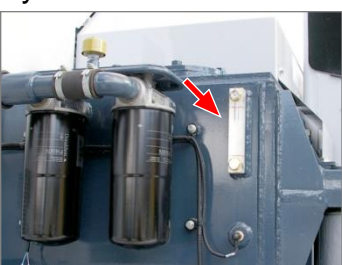
Rock drill oil level



Fuel / Water separator



Hydraulic oil level



Reduction gear box





■ Overall drawing [mm]

Model		DCR20
Overall dimension		
Mass	20,100 kg	
Overall length	10,645 mm	
Overall width	4,330 mm	
Overall width for transportation	2,400 mm	
Overall height	3,800 mm	
Traveling unit		
Track length	3,570 mm	
Ground contact length	2,865 mm	
Track width	330 mm	
Ground clearance	502 mm	
Oscillating angle	± 7.5°	
Traveling speed	0~3.6 km/h	
Grade ability	25 deg	
Max. traction force	105 kN	
Drill motor		
Max. Rotation torque	3.25 kN·m	
Max. rotation speed	120 min <sup>-1</sup>	
Drilling bit range	89 ~ 165 mm	
Engine		
Model	CAT C-13	
Type	Turbo-charged & air to air after cooled diesel, direct fuel injection, electronic governor	
Output	328 kW / 2,100 min <sup>-1</sup>	
Fuel tank capacity	700 liter	
Hydraulic pump		
Main pump	Tandem variable displacement pump	
Dust collector pump	Gear pump	
Boom/Fan/Pilot line pump	Tandem gear pump	
Compressor		
Model	Airman PDSK 900	
Type	Screw, double stage, oil-cooled	
Max. Air delivery	2.5 MPa	
Max. Free Air Delivery	24.3 m <sup>3</sup> /min	
Boom		
Boom swing angle	30° (R) - 13° (L)	
Boom lift angle	49° (UP) - 14° (Down)	
Guide shell		
Length	9,964 mm	
Feed distance	5,678 mm	
Guide slide distance	1,200 mm	
Foot slide distance	300 mm	
Guide swing angle	(L) 77° - (R) 16°	
Guide tilt angle	130°	
Max. pulling force	30 kN	
Feed system	Hydraulic motor	
Rod changer		
Rod length	5,000mm	
Rod size (Thread size)	φ 76mm, φ 89mm, (2 3/8 inch) φ 102mm, (3 7/8 inch)	
Greasing	Automatic	
Rod capacity	8pcs.	
Dust collector		
Suction air volume	70 m <sup>3</sup> /min	
Air filter	10 pcs.	
Dust removal system	Air pulse jet	
Suction cap	Sliding	
Inner diameter of dust hose	D150 mm	
Pre-cleaner	standard	

●Above specification might be changed without any notice

