

Secure support program presented by a blast hole drill pioneer



Blast Hole Drill Operation Support System

What is F-MICAS ?

F-MICAS stands for “FRD Machine Information Control & Analysis System,” a blast hole drill operation support system developed by Furukawa Rock Drill.

The system collects operation data and alert information from blast hole drills, to support customers in their machine operation and maintenance.

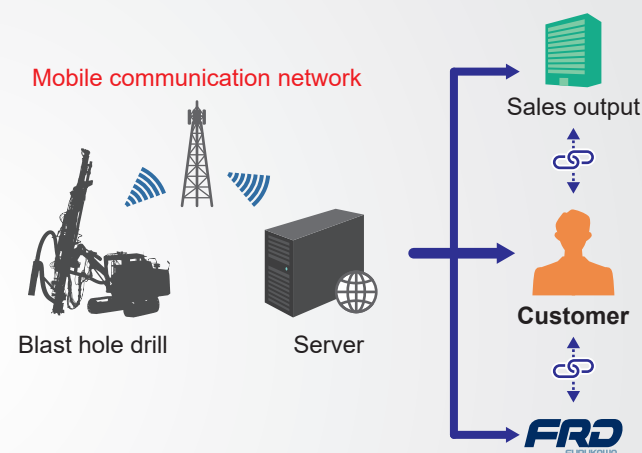
The customers can check their machine information by logging in to the special member site “F-MICAS Web Site.”

Structure of F-MICAS

The communication device equipped inside the operator cabin collects data from the machine, sending the data to the server via a mobile communication network.

For sites without such a network, the collected data can be stored in the device and exported to a USB drive, etc.

The sent data will be provided to the customer and FRD personnel over the internet. Sharing real-time data in this way can realize optimal machine support.



F-MICAS's 4 benefits

① Repair cost reduction

Early detection of problems prevents breakdowns and reduces repair costs.

② Efficient operation management

Daily and monthly reports are automatically generated from operational data, reducing operational management work costs.

③ Securing stable operation

Immediate alert notification and visualization of parts replacement guidelines contribute to decrease downtime and stable operation.

④ Improving drilling efficiency

Improve drilling efficiency by quantified hole depth, operating hours, and operation.

Swift and appropriate advice and consultation

FRD or its sales output will analyze and assess the customer's machine status from F-MICAS data, realizing preventive maintenance before occurrence of failure. We also propose ideal tool selection and work operation utilizing the data as necessary.

Customers can also receive professional work consultation (paid service) based on analysis reports.

- The colors in the photos may be different from the actual colors due to photographing and printing factors.
- The machine and equipment in this catalog may differ from the products delivered due to ongoing improvements.
- FRD Furukawa Rock Drill reserves the right to change specifications without prior notice.
- The photos shown include optional equipment. There may be some differences to the sales specifications.

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HCR L90 Series-E2306-F1

FRD
FURUKAWA

HCR L90
HCR L90s

EU Stage V / EPA Tier 4 Final



FRD FURUKAWA ROCK DRILL

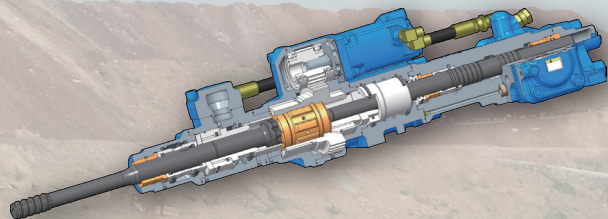
Our "L Series" stays one step ahead with advanced crawler drills

Evolutional High-Beat Drifter

The advanced drifter system features a high-powered hydraulic drifter, which not only provides stable drilling without wasted power, but also extends the life of the consumable parts.

Offering new enhancements to our drilling performance:

- ① Dual damper stabilizes the drifter operation and transmits the impact energy efficiently to the bedrock
- ② Wedge-shaped piston helps transmit energy efficiently
- ③ New piston operation mechanism has a piston axis asynchronous to the valve position

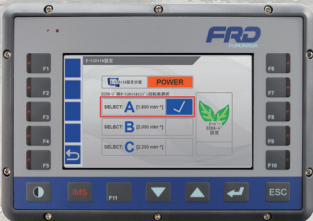


* Reverse percussion is available as an option.

Model	L90		L90s
Drifter	HD828S		HD826
Impact power	26 kW		26 kW
Impact rate	2,500 - 3,000 min ⁻¹		3,000 - 3,600 min ⁻¹
Rotation speed	0 - 190 min ⁻¹		0 - 190 min ⁻¹
Shank rod thread	T45, T51	ST58, GT60	T45, T51
Drill hole range	Φ76 ~ 127 mm	Φ102 ~ 127 mm	Φ76 ~ 115 mm

State-of-the-art fuel-efficiency technology : Super economy mode PLUS

When drilling (impact & blow operations), super economy mode PLUS allows the operator to select from 4 different engine speeds with the multiple display monitor: 2500 min⁻¹ (power mode), 1800, 2000 and 2200 min⁻¹ (super economy mode). By selecting the appropriate engine speed based on the rock characteristics, our low fuel consumption state-of-the-art technology helps improve fuel efficiency while maintaining impact performance.



Mode	Engine Speed
Super Economy Mode (Have a choice from 3 types of power)	1,800 min ⁻¹
	2,000 min ⁻¹
	2,200 min ⁻¹
Power Mode	2,500 min ⁻¹

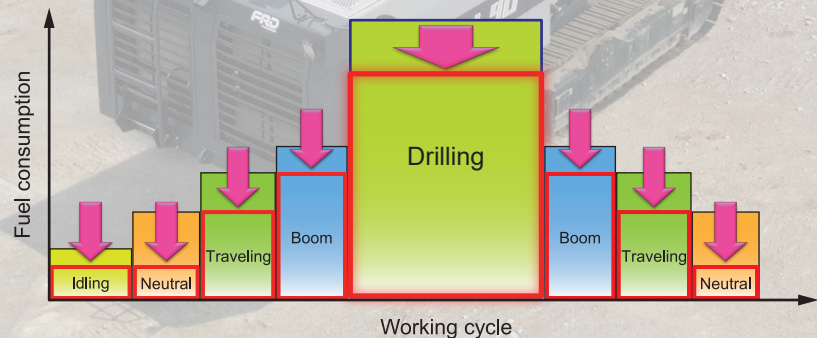
Addition of "Compressor low-pressure standby" and "Automatic throttle control" to Super economy mode further improves fuel efficiency.

Compressor low-pressure standby

Compressor low-pressure standby function minimizes compressor standby power at all times other than flushing. This reduces both fuel consumption and engine load.

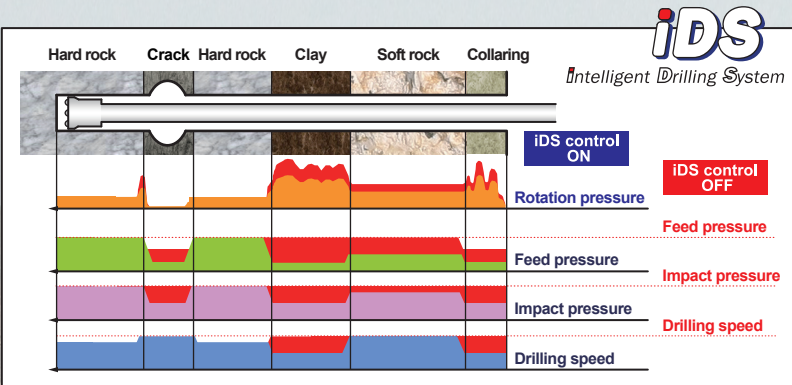
Automatic throttle control

Automatic throttle control switches engine speed automatically between the pre-set drilling engine speed and the rod changing engine speed.



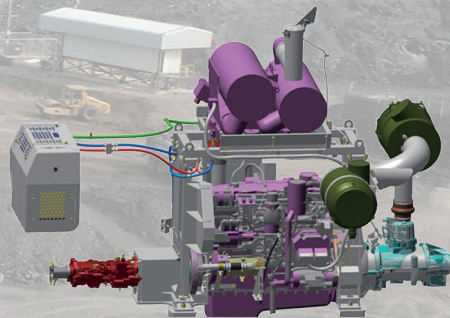
Semi-automatic drilling control : iDS (Intelligent Drilling System)

iDS (Intelligent Drilling System) comes standard equipped, providing automatic control to ensure the best drilling conditions while adapting to changes in the rock conditions. While maintaining balance among the 3-key elements of feed, rotation, and percussion, the conventional anti-jamming function detects abnormal rotational pressure or bit jamming and automatically stops or retracts the drifter to ensure smooth drilling.



Powered by EU Stage V / EPA Tier 4 Final engine

Our engines are designed using next-generation aftertreatment technology, offering excellent reliability and durability, as they meet requirements for EU Stage V and U.S. Tier 4 Final Rule for Control of Emissions.



Extension boom with wide operating range

The extension boom increases pattern flexibility. The boom lift and the boom swing are designed with a large angle, making it possible to drill over a wider area and minimize travel.



Comfortable Work Space To Reduce Operator Fatigue

HCR L90 HCR L90s



Cab standard equipment

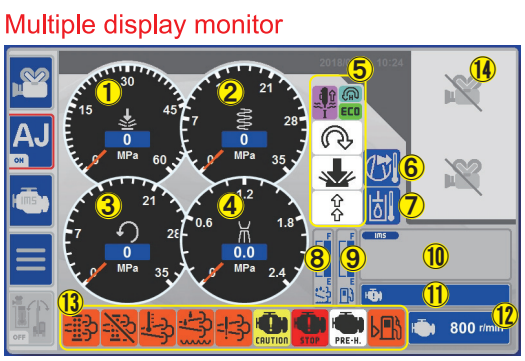
- Cup holder
- Luggage box
- Safety hammer
- Interior light
- Clinometer
- Rear console
 - ① FM/AM radio
 - ② Air conditioner control panel
 - ③ DC 12V power outlet
 - ④ Engine ECM connection port

Centralized control system - Multiple displays

The multiple displays are shown on a clear, 7-inch high resolution LCD panel that is easy to understand. The information display provides a variety of useful data, including crawler drill operation data, settings, an error log and parts that require maintenance.

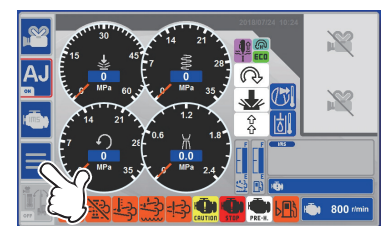


- ① Multiple display monitor
- ② Additional control switches
- ③ Subscreen switches
- ④ Function switches
- ① Impact pressure gauge
- ② Feed pressure gauge
- ③ Rotation pressure gauge
- ④ Flushing air pressure gauge
- ⑤ Drilling display
- ⑥ Discharge air temperature lamp
- ⑦ Hydraulic oil temperature lamp
- ⑧ DEF level gauge
- ⑨ Fuel level gauge
- ⑩ iMS screen
- ⑪ Engine fault code display
- ⑫ Engine speed display
- ⑬ Caution lamp
- ⑭ Monitoring camera screen



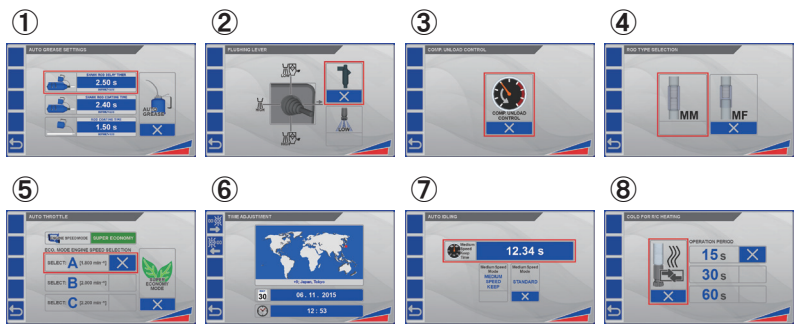
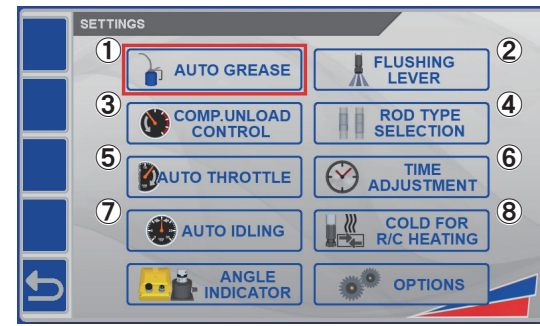
Troubleshooting

In the event of a fault or error... The operator can quickly check the status of each section on the crawler drill.



Settings screen

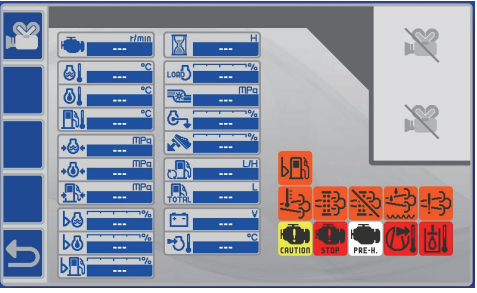
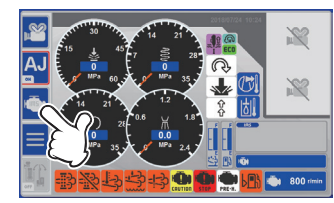
For easier and smooth drilling operation... The operator can customize the settings for an easy-to-use, personalized drilling setup.



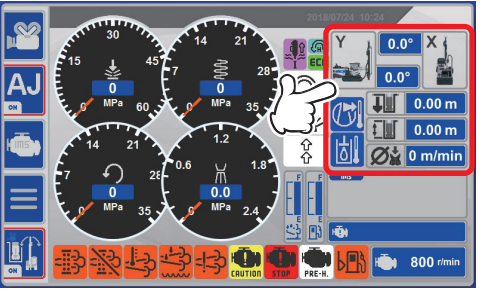
For even easier and smoother

Engine information screen

Various information related to the engine is displayed.



Drilling support (option)



Spacious cab with comfortable operating conditions

The cab has the ROPS/FOPS specifications (roll-over protective structure/falling-object protective structure) integrated into its design and has a wide field of vision in all directions.

Suspension seat with weight adjustment

The various adjustment functions allow the operator to customize the seat to his/her body for the perfect fit.



Safety lock lever

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

Sunshade and heat shielding

Roller blinds and tinted window options are available to block the sunlight and provide heat shielding.

Fresh air ducted air conditioner

The fresh air ducted air conditioner comes standard equipped. There are 3 locations available for the air outlet: front, floor vent and rear.

Right control box available for drilling operations

A console box fitted with drilling levers and switches is available on the right side at an ideal position for the operator.



Multi function drilling lever

A low effort drilling lever controls impact, feed and both rotations.

Joystick boom lever

The boom is controlled with an electric joystick lever. It is light to the touch, and the positioning is easy to control.

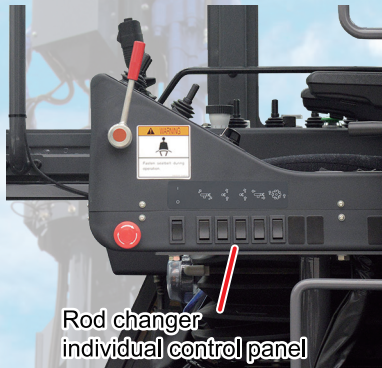


Left control box positioned for functionality

The left control box is positioned for functionality, with easy-to-use control switches, for example, for rod changer control, anti-jamming and mode selector.

Semi-automatic rod changer

With the semi-automatic rod changer, the operator can simply move the operation lever in a certain direction to perform a series of complex operations, from "adding" to "withdrawing" rods. With the rotary rack type, the operator can freely select a rod, which helps even out the lifespan of all the rods.

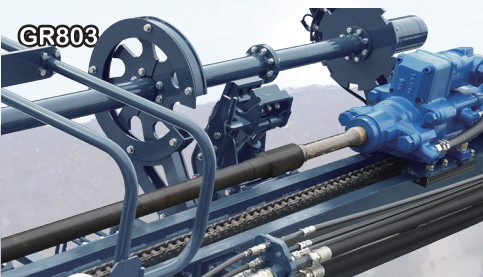


Rod changer individual control panel

There are individual control switches to adjust the rod changer located on the side of the left console box. These switches can be used to adjust the alignment or check the operation of the rod changer.

GR803 rod changer equipped with L90

Compliant with global standards, our rod changer is designed with a simple structure using few pieces, and it is equipped with the slide arm on the front and rear to grab a rod and swing it in. The rotary type magazine can store 7 rods on the 12 ft. specification and 6 rods on the 14 ft. specification.



GR802 rod changer equipped with L90s

The rod is grabbed by the slide arms at the front and rear, and then the slide arms slide and swing the rods in and out to add or withdraw them. This simple and quick operation ensures a short cycle time on the rod changer. The rotary type magazine can store 6 rods.



Improvement of work efficiency

Anti-jamming switch

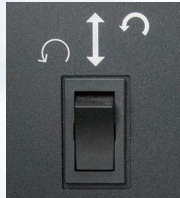
The anti-jamming switch has a function to preventing "jamming" from occurring when the bit or rod cannot be pulled out during drilling work, and a RP(reverse percussion) function for pulling out the rod using the percussion force of the drifter when the rod gets jammed during drilling. If the switch is set to position "I", "II" or "III", the drifter automatically reverses when a problem is detected in the main drilling to prevent "jamming".

* The RP (reverse percussion) is fitted to the drifter as an option when shipped from the factory.



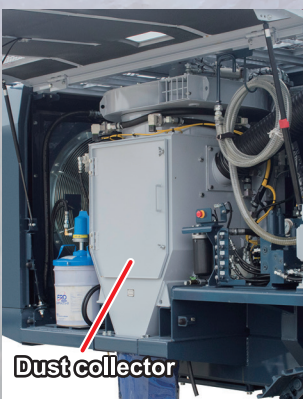
Mode selector switch

The operator can change the drilling mode based on the rock conditions. N mode is for standard drilling. When the impact pressure in standard drilling is too strong, such as in fracture zones or a clay layer, H mode is used to lower the impact pressure, increase the shank rod speed and maintain the drilling speed.



High-capacity compressor and dust collector

A 10 m³ free air delivery air compressor and a 40 m³ capacity dust collector is mounted inside the right side cover. High out-put compressor increases flushing air, provides faster drilling and decreases bit wear. This leaves flushing with more than enough capacity to significantly reduce residual cuttings and help shorten the cycle time. With the pre-cleaner capturing the large cuttings, the lifespan of the dust collector filter can be extended.



Mouth treatment

The suction cap adopts the guide rod mechanism. Durability and visibility of the drilled hole mouth are improved. Drilled hole mouth can be treated securely. The hydraulic centralizer holds the rod securely.



Suction cap (Slides up and down) Photo: L90s

Tough under carriage with hydraulic oscillation

Heavy-duty track frames provide strength and durability. Standard full track guards protect undercarriage, Track tension can be adjusted easily with a grease gun.

The left and right track frame is equipped with an oscillating system that oscillates on each side to match the contours of the road surface. The entire machine oscillates up-down 8.5 degrees total 17 degree to maintain machine level.



All daily maintenance can be performed at ground level. Gas spring cylinders allow the hinged service doors to be opened easily for access to all required maintenance requirements. Maintenance costs have also been reduced, because the structure includes waterproof couplers and weather-proof, water-resistant and oil-resistant cables to help prevent electrical problems.

Ample utility space

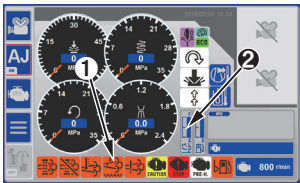
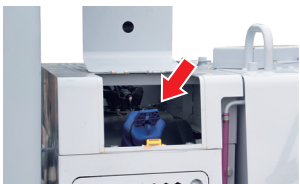
Tool box tray

Grease gun holder

Maintenance features to increase reliability

DEF tank with easy refilling

DEF can be refilled via the feed-water inlet located at the rear of the cab accessed from the step. The amount of DEF remaining can be checked using the DEF tank level gauge ①. If the remaining amount of DEF falls under a certain level, the warning light ② turns on.



Water separator

Remove coarse debris and water from the fuel.



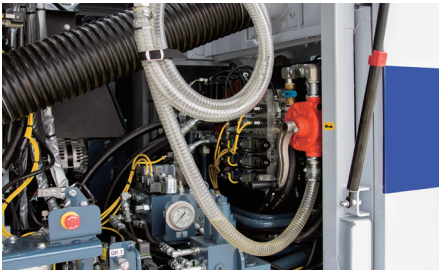
Fuel filter

Highly efficient filtration fuel filter. The inspection and replacement can be checked easily remotely.



Oil supply pump

The oil supply pump is used to fill the oil and helps prevent contamination of hydraulic oil.



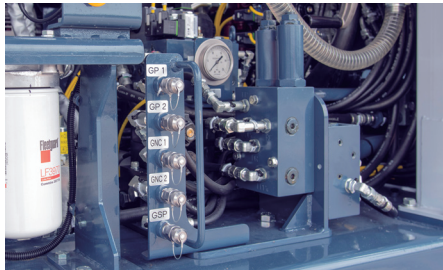
Air conditioner filter

The air conditioner filter can be installed and removed without using any tools.



Hydraulic gauge port

The hydraulic gauge port and drilling control valve unit are centralized and located.



More comfortable with more features!

More comfortable and safe

Emergency stop button

Stop the engine in the event of an emergency situation.



Head guards

Overhead window is steel gauge protected.



Long catwalk and large handrails

The crawler is equipped with large handrails and a long catwalk.



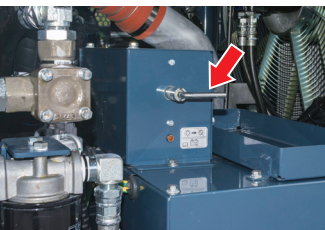
360° protective fan guard



Better safety (option)

Battery cutoff switch

This switch cuts off the power from the battery. All electrical components are shut down.



Rear view camera for safer travel



Emergency shutdown system

An emergency stop device can be equipped at the end of the guide shell.



Side view camera for safer travel



Low-noise design for quieter environment

Cab undercover

Improves cab airtightness and quietness.



Sound insulation material inside the engine cover

Reduce the noise from inside the engine room.



Cleaning fan positioned at rear

Minimize the impact of fan noise.



More features to cover important details

Automatic heating of hydraulic oil

Automatic heating starts when the hydraulic oil temperature is lower than 25°C after engine startup.

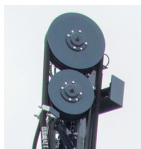


Hoses and piping clearly accessible for Maintenance



Double hose reels

Extends hose life, ensures longer service life and reduces service load.



Air filter

The air filter separates and removes the moisture in the air circuit.



Standard & Optional equipments

Unit	
Drifter	
Dual damper system	Standard
Reveres percussion	Optional
Guide shell	
Hydraulic centralizer	Standard
Sliding suction hood	Standard
Open-Close + Sliding suction hood	Optional
Synthetic wear plate for carriage	Optional
Pendulum type guide tilt angle meter	Standard
Boom	
Extension boom	Standard
Horizontal guide mounting reassembly	Optional
Undercarriage	
Single shoe	Optional
Triple shoe	Standard
Lifting eyes for transportation	Optional
Dust collector	
Pre-cleaner	Standard
Exhaust shutter	Standard
Cab	
ROPS/FOPS cab	Standard
Air conditioner	Standard
Suspension seat	Optional
Air suspension seat	Standard
Seat belt	Standard
IMS (Intelligent Monitoring System)	Standard
AM/FM Radio	Standard
DC12V power supply	Standard
Shading film	Optional
Roll curtains	Optional
Heat glass	Optional
Rotating light (Yellow)	Optional
Clinometer (Level)	Standard
Side mirror (left side of cab)	Standard
Side mirror (right side of the vehicle)	Standard
Rear view monitoring camera	Optional
Side vision monitoring camera	Optional
Additional lights	Optional
Interior light	Standard
Safetyn hammer	Standard
Cab undercover	Standard
Control	
Recombination of drilling lever operation direction	Optional
Lever-operated switch for boom control	Standard
iDS (Intelligent Drilling System)	Standard
Anti-jamming device	Standard
One-lever rod changer control	Standard
Rod changer individual control switches	Standard
Back-up alarm	Standard
Auto throttle control for impact and air flow	Standard
Others	
Pendulum type guide swing angle meter	Optional
Two-dimensional electric angle indicator	Optional
Three-dimensional electric angle indicator	Optional
Foldable operator side step	Optional
Water tank for water injection system	Optional
Emergency shut down system	Optional
Pre-cleaner for engine	Standard
Pre-cleaner for compressor	Standard
Hour meter for engine	Standard
Hour meter for drifter	Optional
Large tool box	Optional
Ladder for access rear engine cover	Optional
Heavy duty under cover	Standard
Water separator for engine	Standard
Winter package for anti-freeze	Optional
High capacity battery	Optional
Battery cut switch	Optional
Tool box tray	Standard
Grease gun holder	Standard

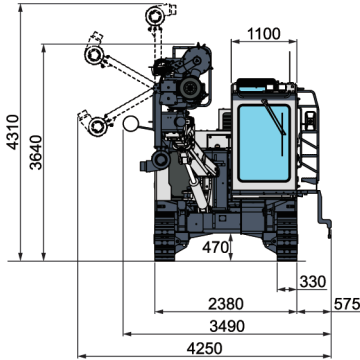
Specifications

Model	HCR L90	HCR L90s	
Dimensions & Weight			
Operating Weight *	16,810 kg	16,160 kg	
Overall Length	9,670 mm	10,335 mm	
Overall Width (Shipping)	3,490 (2,445) mm	3,490 (2,445) mm	
Overall Height (Shipping)	4,310 (3,375) mm	3,640 (3,210) mm	
Drifter			
Model	HD828S	HD826	
Weight (with Reverse Percussion)	271 kg (312 kg)	243 kg (282 kg)	
Impact Rate	2,500 - 3,000 min ⁻¹	3,000 - 3,600 min ⁻¹	
Rotating Speed	0 - 190 min ⁻¹	0 - 190 min ⁻¹	
Undercarriage			
Track Length	3,545 mm (Single Shoe) 3,490 mm (Triple Shoe)	3,545 mm (Single Shoe) 3,490 mm (Triple Shoe)	
Track Length on Ground	2,780 mm	2,780 mm	
Track Width	330 mm	330 mm	
Ground Pressure	89.8 kPa	86.3 kPa	
Ground Clearance	470 mm (Single Shoe) 440 mm (Triple Shoe)	470 mm (Single Shoe) 440 mm (Triple Shoe)	
Frame Oscillation Angle	±8.5°	±8.5°	
Tramming Speed	0 ~ 3.7 km/h	0 ~ 3.7 km/h	
Gradeability	57.7 % (30°)	57.7 % (30°)	
Maximum Traction Force	98.5 kN	98.5 kN	
Engine			
Model	B6.7 (Stage V, Tier4 Final)		
Type	Diesel, Water-cooled, 6 Cylinders		
Make	CUMMINS		
Power Output	194 kW / 2,500 min ⁻¹		
Fuel Capacity	425 L		
DEF Capacity	56.8 L		
Hydraulic Equipment			
Variable Displacement PV Pump	PV Pump x 2		
Fixed Displacement Pump	Gear Pump x 3		
Hydraulic Oil Reservoir Capacity	215 L		
Boom			
Model	JE326	JE326	
Type	Extension Boom	Extension Boom	
Boom Lift Angle	Up 41°, Down 20°	Up 45°, Down 20°	
Boom Swing Angle	Right 32°, Left 5°	Right 35°, Left 5°	
Boom Slide Length	900 mm	1,200 mm	
Guide Shell			
Model	GH832	GH832	
Length	8,700 mm	7,970 mm	
Feed Length (with Reverse Percussion)	For 12 Feet 4,595 (4,420) mm	For 12 Feet 4,590 mm (T45 : 4,415 mm) (T51 : 4,590 mm)	
	For 14 Feet 5,225 (5,050) mm		
Feed Type	Hydraulic Motor Driven Chain	Hydraulic Motor Driven Chain	
Guide Slide Length	1,500 mm	1,200 mm	
Guide Swing Angle	Right 25°, Left 90°	Right 30°, Left 90°	
Guide Tilt Angle	170°	170°	
Maximum Rod Pull-Out Force	34 kN	29.5 kN	
Compressor			
Model	PDS265-S37F		
Type	1 Stage Screw Compressor		
Free Air Delivery	10 m³/min		
Discharge Pressure	1.03 Mpa		
Dust Collector			
Model	A885		
Suction Capacity	40 m³/min		
Number of Filter Element	6		
Type of Dust Ejection	Automatic Air Pulse Jet		
Rod Changer			
Model	GR803		GR802
	For 12 Feet	For 14 Feet	For 12 Feet
Number of Rod Storage	7	6	6
Rod Length	3,660 mm	4,270 mm	3,660 mm
Bit and Rod			
	T45, T51	ST58, GT60	T45, T51
Bit Range	Φ 76 ~ 127 mm	Φ 102 ~ 127 mm	Φ 76 ~ 115 mm
Rod Diameter	45R, 51R	ST58, GT60	45R, 51R
Rod Length	3,660 mm (12 Feet)	4,270 mm (14 Feet)	3,660 mm (12 Feet)
Maximum Starter Rod Length	4,270 mm (14 Feet)	5,490 mm (18 Feet)	4,270 mm (14 Feet)
Electrics			
Battery	12V; 108 Ah / 5 h		
Light	24V; 70 W x 4		
Voltage	DC24V		
Operating Environment			
Ambient Temperature Range	-15°C ~ +45 °C		
Maximum Altitude	Max. 2,500 m		

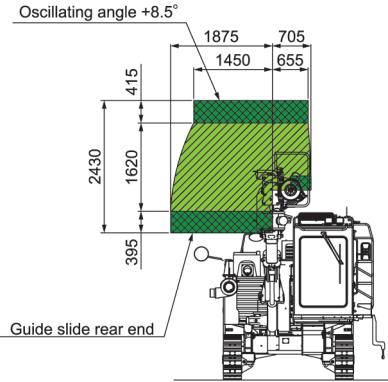
* "Overall Weight" includes weights of fuel and oils (full).

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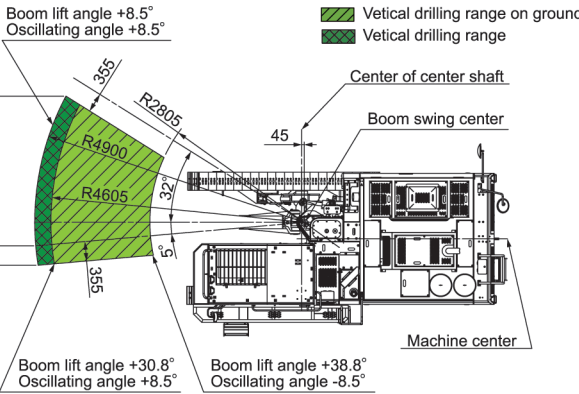
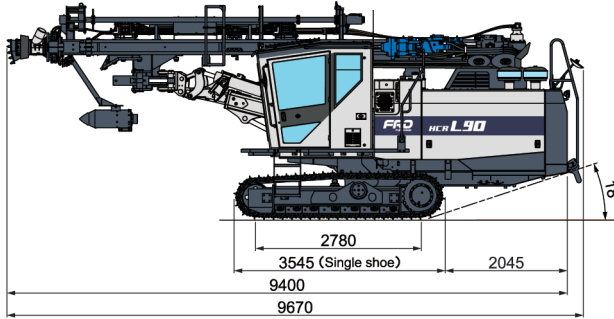
Dimensions (mm)



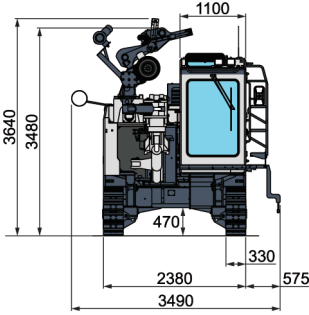
Drilling Coverage (mm)



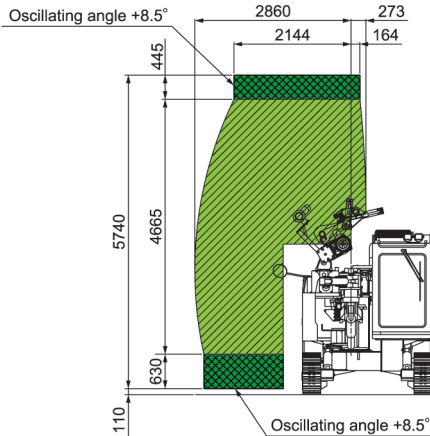
HCR L90



Dimensions (mm)



Drilling Coverage (mm)



HCR L90s

