

ZAXIS-3 series

HITACHI

**ZAXIS**  
450  
470H  
470LCH



## HYDRAULIC EXCAVATOR

- **Model Code:** Backhoe ZX470LCH-3  
Loading shovel ZX450-3 / ZX470H-3
- **Engine Rated Power:** 260 kW (349 HP)
- **Operating Weight:** Backhoe ZX470LCH-3: 48 100 kg  
Loading shovel ZX450-3: 47 200 kg /  
ZX470H-3: 48 100 kg
- **Backhoe Bucket:** SAE, PCSA Heaped: 2.9 - 4.5 m<sup>3</sup>
- **Loading Shovel Bucket:** PCSA Heaped: 2.3 - 2.8 m<sup>3</sup>

# The New Generation Hydraulic Excavators

The HITACHI ZAXIS-3 series new-generation hydraulic excavators are packed with a host of technological features - clean engine, HITACHI advanced hydraulic technologies, with strong undercarriage and front attachment, plus well matching of power and speed. The ZAXIS-3 series can get the job done with proven productivity, durability, and reliability, especially in heavy-duty excavation and quarry operations.

- Clean engine complies with the emission EU Stage III A
- The advanced low noise design complies with the EU noise regulation 2000 / 14 / EC, STAGE II



### **Productivity**

Increased digging force  
Enhanced boom recirculation system  
Boom mode selector  
Larger-diameter front piping  
Combined operation of boom and arm  
New bucket regenerative system  
High power yet low fuel consumption  
Common rail type fuel injection system  
Cooled EGR system

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### **Durability and reliability**

Increased loading capacity of swing circle  
Strengthened track links  
Pressed master pins  
Strengthened idler pedestal  
Strengthened idler bracket  
Strengthened upper roller bracket  
Full track guard provided standard (ZAXIS 470H / 470LCH)  
5% increase in strength with stronger pin material  
Strengthened general-purpose bucket  
Strengthened H-bucket for heavy-duty

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### **Operator comfort**

High visibility inside cab  
Short stroke levers  
Wide foot space  
Comfort designed seat  
Improved controllability and operator comfort

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### **Multi function monitor**

Maintenance support  
Attachment support system  
Rear view camera  
Theft deterrent system  
Fuel consumption monitoring

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### **Maintenance**

Parallel arrangement of the cooling pack  
Conveniently located inspection points  
Automatic lubrication / repositioned bucket lubricating points  
Enlarged fuel tank  
Extended hydraulic oil Filter change intervals

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### **Safety measures**

CRES II cab  
(ZAXIS 450 is standard equipped)  
H/R cab  
(ZAXIS 470H / 470LCH is standard equipped)  
Cab right guard  
Evacuation hammer  
Pilot control shut-off lever

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### **Environment measures**

A cleaner machine  
A quieter machine  
A recyclable machine

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# World-Class Productivity

To yield high production yet maintain low fuel consumption, such was the objective of the development of a new engine and hydraulic system for the ZAXIS 470LCH/450/470H.

**Production: Approx. 14% Increase**

(vs. Conventional Model)



## Advanced Hydraulic Technologies

### Increased Digging Force

7% more bucket digging force and 8% more arm digging force.

(At power boost mode)  
(vs. Conventional model)

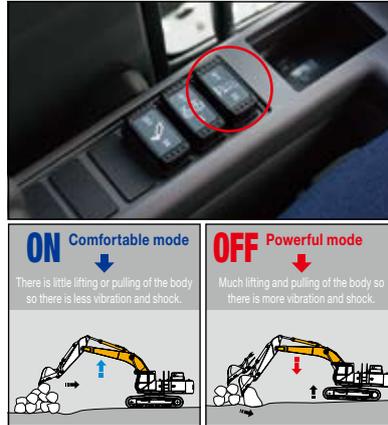
### Enhanced Boom Recirculation System

In combined operation of boom lower and arm, arm speed can be increased by approximately 15% over the conventional. Pressurized oil from boom cylinder bottom side is delivered to boom cylinder rod side to lower the boom, assisted by boom weight. Conventionally, pressurised oil from pump is delivered to boom cylinder rod side to lower the boom. The new system also allows an efficient combined operation of swing and lowering the boom.



### Boom Mode Selector

The amount the body can be lifted or pulled by the front of machine can be ON or OFF selected. This helps to provide for more comfortable operation and contributes to longer component service life.

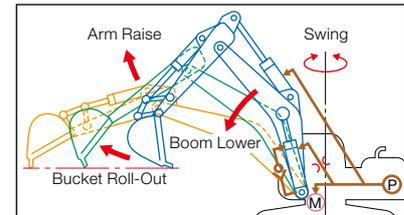


### Larger-Diameter Front Piping

Arm piping is increased in diameter to reduce hydraulic loss (theoretically 7%) for speedy front operation.

### Combined Operation of Boom and Arm

In combined operation of swing + boom lower + arm roll-out, or in leveling (boom lower + arm roll-out), arm roll-out speed can be increased greatly. Here's why. A variable throttle, provided in the arm circuit, adjusts the flow when needed to reduce hydraulic loss in combined operation with arm roll-out.



### New Bucket Regenerative System

Swift bucket actions can be done in combined operation for excavation through the new bucket regenerative circuit. When the load to the bucket is light, pressurized oil from bucket cylinder rod side is delivered through a regenerative valve to bucket cylinder bottom side for the effective use of hydraulic energy.

## Development Concept of New Engine

### High Power Yet Low Fuel Consumption

4% Increase in output

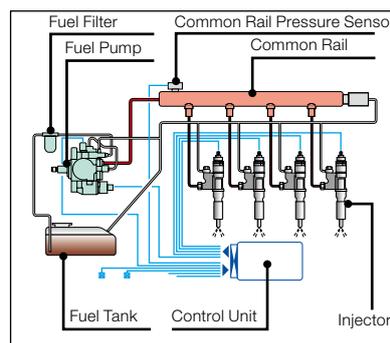
(vs. Conventional model)

- 260 kW (349 HP) / 1 800 min<sup>-1</sup>

The new clean engine, complying with the emission regulations Tier 3 in US (EPA) and EU Stage III, can reduce fuel costs by electronic control.

### Common Rail Type Fuel Injection System

Electronic control common rail type fuel injection system drives an integrated fuel pump at an ultrahigh pressure to distribute fuel to each injector per cylinder through a common rail. This enables optimum combustion to generate big horsepower, and reduce PM\* and fuel consumption.

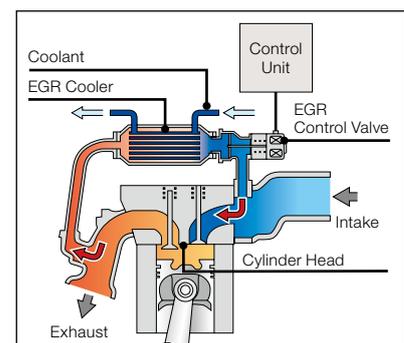


### Cooled EGR\*\* System

Exhaust gas is partially mixed with suction air to lower combustion temperature for reducing NOx and fuel consumption. What's more, the EGR cooler cools down exhaust gas to increase air concentration for complete combustion, reducing PM\*.

\*Particulate Matter

\*\*Exhaust Gas Recirculation



# A Solid Base for a Long Life

Strengthened undercarriage for higher durability even in heavy-duty applications.



## Strengthened Undercarriage

### Increased Loading Capacity of Swing Bearing

The swing circle ball bearing utilizes more balls to boost the loading capacity of the swing circle by approximately 6%, allowing stable swing even in tough operation.

*(vs. Conventional model)*

### Strengthened Track Links

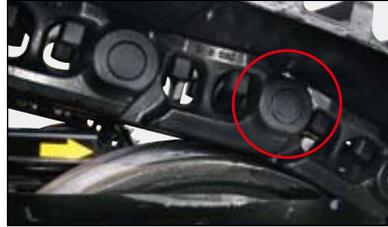
The boss diameter of each track link is increased by approximately 19%. The thickness of each track link is also increased by approximately 57%. Thickened track links extend service life.

*(vs. Conventional model)*



### Pressed Master Pins

The master pin of each track link is pressed, instead of master pin using a pin retention to avoid disengagement.



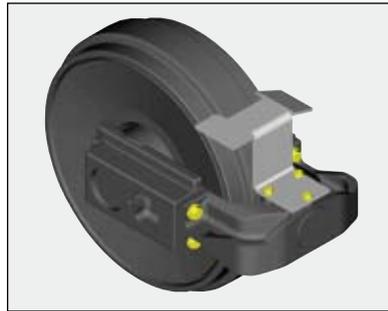
### Strengthened Idler Pedestal

The bearing length of the idler pedestal is extended by approximately 67% to increase durability and service life.

*(vs. Conventional model)*

### Strengthened Idler Bracket

The idler bracket is thickened for rigidity to prevent deformation and increase durability.



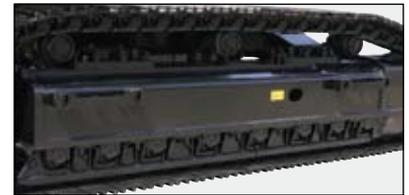
### Strengthened Upper Roller Bracket

The upper roller bracket wall thickness is increased for higher strength.



### Full Track Guard Provided Standard (ZAXIS 470H / 470LCH)

On the H-specification machines, full track guards are provided standard. Full track guards protect track links and lower rollers from damage and deformation. Moreover, they also keep out stones, preventing the overload to the undercarriage to reduce wear and damage.



## Strengthened Front Components

### 5% Increase in Strength with Stronger Pin Material

The strength of pins, used in the arm and boom, is increased by 5%, using harder steel material.

*(vs. Conventional model)*



### Strengthened H-Bucket for Heavy-Duty

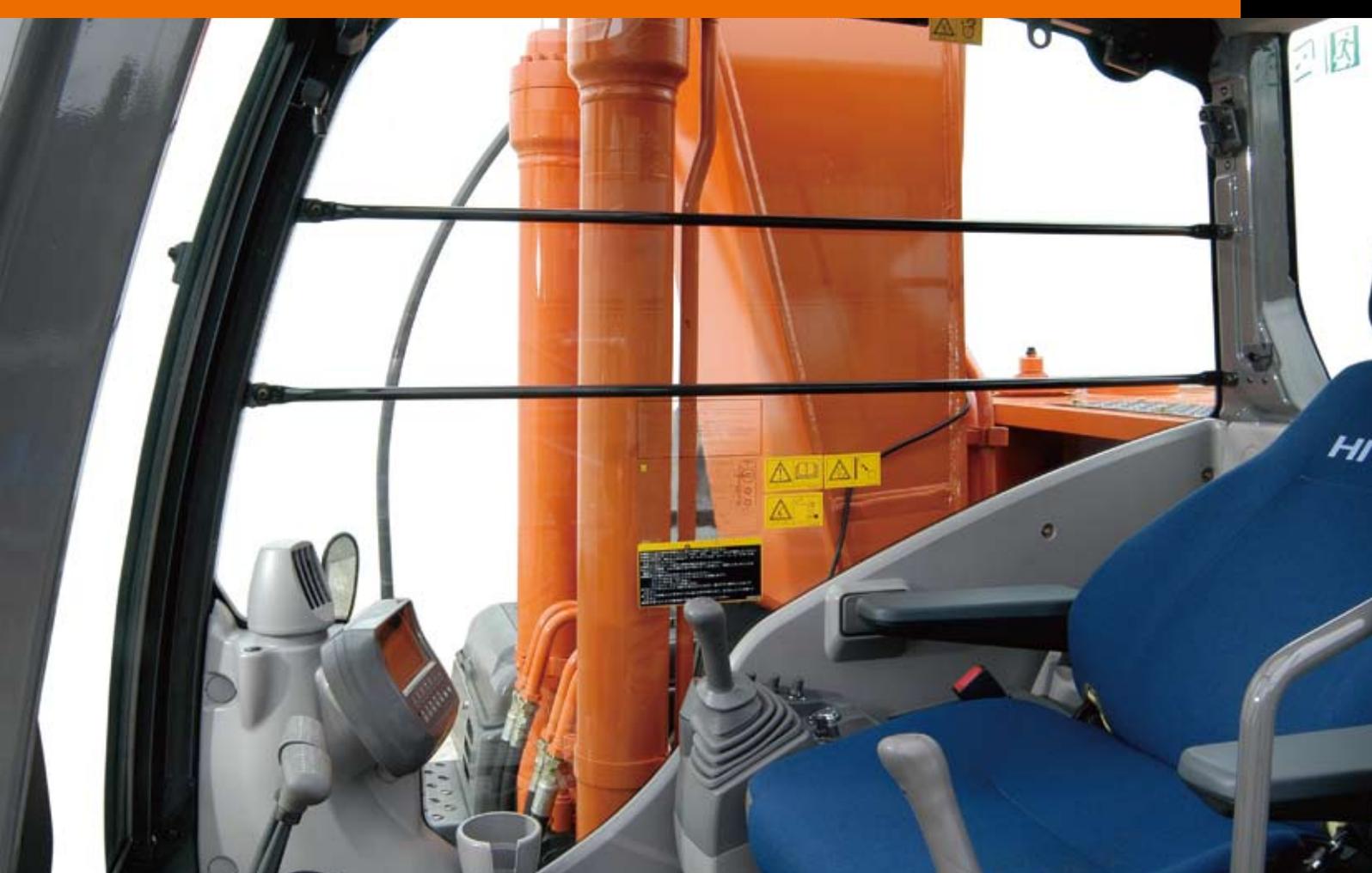
The heavy-duty bucket (rock bucket) is reshaped, and bucket parts are strengthened to increase durability.



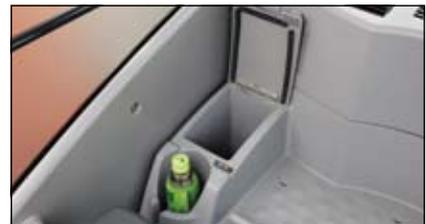
## A New Standard in Operator Comfort

The operator's seat of the ZAXIS-3 series gives the operator an excellent view of the jobsite. On the widescreen color LCD monitor the operator can see what is behind the machine. Ample legroom, short stroke levers and a large seat ensure optimum working conditions for the operator during long hours.





The ZAXIS-3 series cab has been redesigned to meet demands of customers. From the operator's seat the operator has an excellent view of the jobsite. On the widescreen color LCD monitor the operator can see machine conditions and with the rear view camera, what is behind the machine. Ample legroom, short stroke levers and a suspension seat ensure optimum working conditions. The seat features horizontal, vertical adjustments and has a backrest contoured for comfort, with a HITACHI logo.



Wide adjustable armrests and a retractable seat belt are included. Short stroke levers allow for continuous operation with less fatigue. The cab is pressurized to keep out dust. Noise and vibrations are kept to a minimum due to the elastic mounts, filled with silicone oil, the cab rests on.

Visibility is improved especially for the right downward view. Sliding windows on the front (ZAXIS 450) and side enable direct communication between operator and other workers. Foot space has increased and travel pedals have been redesigned for easier operation. A flat floor allows for easy cleaning. Ergonomic controls and switches, fully automatic air conditioner and a radio complete the package.

# Embedded Information Technology

The ZAXIS-3 series is equipped with a widescreen color LCD monitor with adjustable contrast for day and night shifts. With the monitor the operator can check maintenance intervals, select work modes, monitor fuel consumption, and connect to the rear view camera. A theft deterrent system and multi-language selection are also available.

## Multi function monitor



The color LCD monitor, located in the cab, indicates coolant temperature, fuel level, and maintenance data. It also allows one-touch adjustment of the attachment. The display can also be adjusted to day or night shift.

## Attachment support system (work mode selector)

Excavation: Work mode selection window

**Breaker 1:**  
Selected for small-flow breaker

Maximum Pump Flow Rate	200.0 l/min
Maximum Engine Speed	1700 rpm
Wake Selector	Accumulator
2 Speed Selector	OFF
Secondary Hydraulic	Wash Selector

**Breaker 2:**  
Selected for medium-flow breaker

Maximum Pump Flow Rate	250.0 l/min
Maximum Engine Speed	1700 rpm
Wake Selector	Accumulator
2 Speed Selector	OFF
Secondary Hydraulic	Wash Selector

**Breaker 3:**  
Selected for large-flow breaker

Maximum Pump Flow Rate	280.0 l/min
Maximum Engine Speed	1700 rpm
Wake Selector	Accumulator
2 Speed Selector	OFF
Secondary Hydraulic	Wash Selector

The work mode can be selected from the multi-function monitor inside the cab. Pump flow in the selected work mode can be monitored.

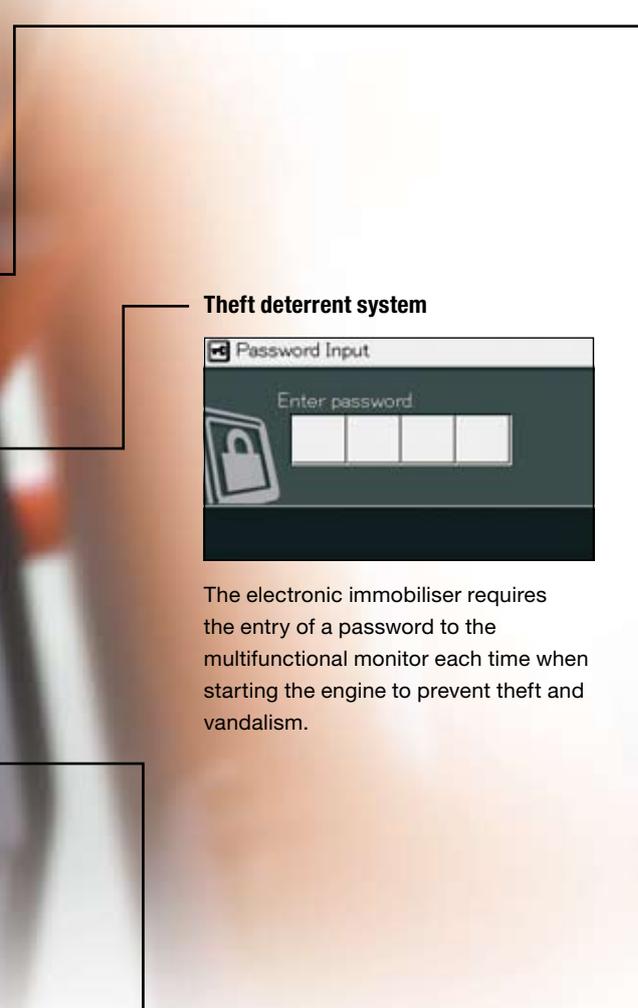
## Maintenance support

Replacement timing of hydraulic oil and fuel filters is alerted to the operator through the LCD monitor according to the schedule preset by the user each time when turning the key switch. The scheduled maintenance can prevent the failure of the machine.

## Multi-language selection

The menu allows selection from 12 languages.



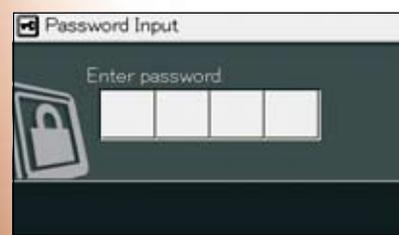


### Rear view camera



The widescreen color LCD, teamed up with the rear view camera on the counterweight, gives the operator unobstructed rearward viewing. The rear view camera automatically works when traveling, and can also be manually turned on with a select switch on the monitor.

### Theft deterrent system



The electronic immobiliser requires the entry of a password to the multifunctional monitor each time when starting the engine to prevent theft and vandalism.

### Fuel consumption monitoring



Fuel consumption per operating hour is computed, and the result is displayed on the LCD monitor. This information suggests refuelling timing, and guides energy-saving operation and efficient job management.

# Simplified Maintenance

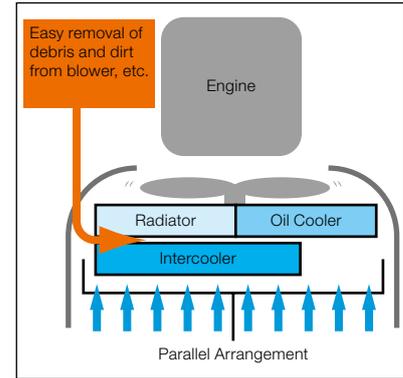
Focusing on simplified maintenance, including easy inspection, service and cleaning.



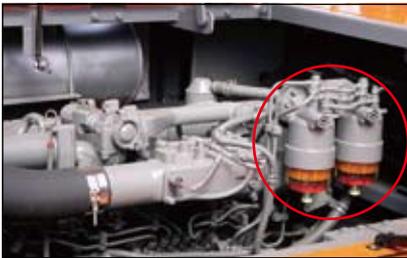
## Parallel Arrangement of the Cooling Pack



The radiator and oil cooler are laid out in a parallel arrangement, instead of the conventional in-line arrangement. This parallel arrangement is significantly easier to clean around the engine. The air conditioner condenser can be opened for easy cleaning of the condenser and the radiator located behind.



## Conveniently Located Inspection Points



In addition to a pre-filter, dual main fuel filters are provided standard to reduce clogging of the fuel line to the engine. The engine oil pan is fitted with a drain coupler. When draining, an associated drain hose is connected to the drain coupler. The drain coupler is reliable, avoiding oil leakage and vandalism. The sidewalk is widened from 340 mm (Conventional model) to 510 mm for smooth walking from cab to rear. The sidewalk is the field-proven split type that permits the detaching of its rear when traveling or operating on rough terrain.

The fresh air filter for the air conditioner is relocated to cab door side from conventional location behind the operator seat. This allows easy cleaning and replacement of the fresh air filter, like the air circulation filter inside the cab.

## Extended Maintenance Intervals

### Automatic Lubrication / Repositioned Bucket Lubricating Points

The front attachment is automatically lubricated (when optional auto-grease lubricator is equipped), except for bucket lubricating points at the top of arm that are repositioned for side lubrication.

### Enlarged Fuel Tank

The fuel tank is enlarged, increasing the capacity from 650 liters (Conventional model) to 725 liters. Refueling intervals (when filled fully) extend from 17 to 18 hours.

### Extended Hydraulic Oil Filter Change Intervals

Hydraulic oil filter change intervals are extended from 500 hours (Conventional model) to 1 000 hours to help reduce running costs.

# Safety Features

An array of safety devices for enhanced safety.



## Protecting the Operator from Tipping Accident

### CRES II Cab

**(ZAXIS 450 is standard equipped)**

The CRES II cab is designed to help with "just in case" protection for the operator. Safety in case of tipping is improved. The cab top can withstand nine-fold loading.



### H/R Cab

**(ZAXIS 470LCH / 470H are standard equipped)**

The H/R cab utilizes the reinforced front window and FOPS\* at the roof for protection against falling objects. The front glass window, made of straight-laminated, is fixed to shut out dirt and debris. The cab provided with a full guard satisfies the OPG\*\* (Level II) cab requirements stipulated by ISO.

\*Falling Object Protective Structure  
\*\*Operator Protective Guards



## Additional Features

### Cab Right Guard



### Evacuation Hammer



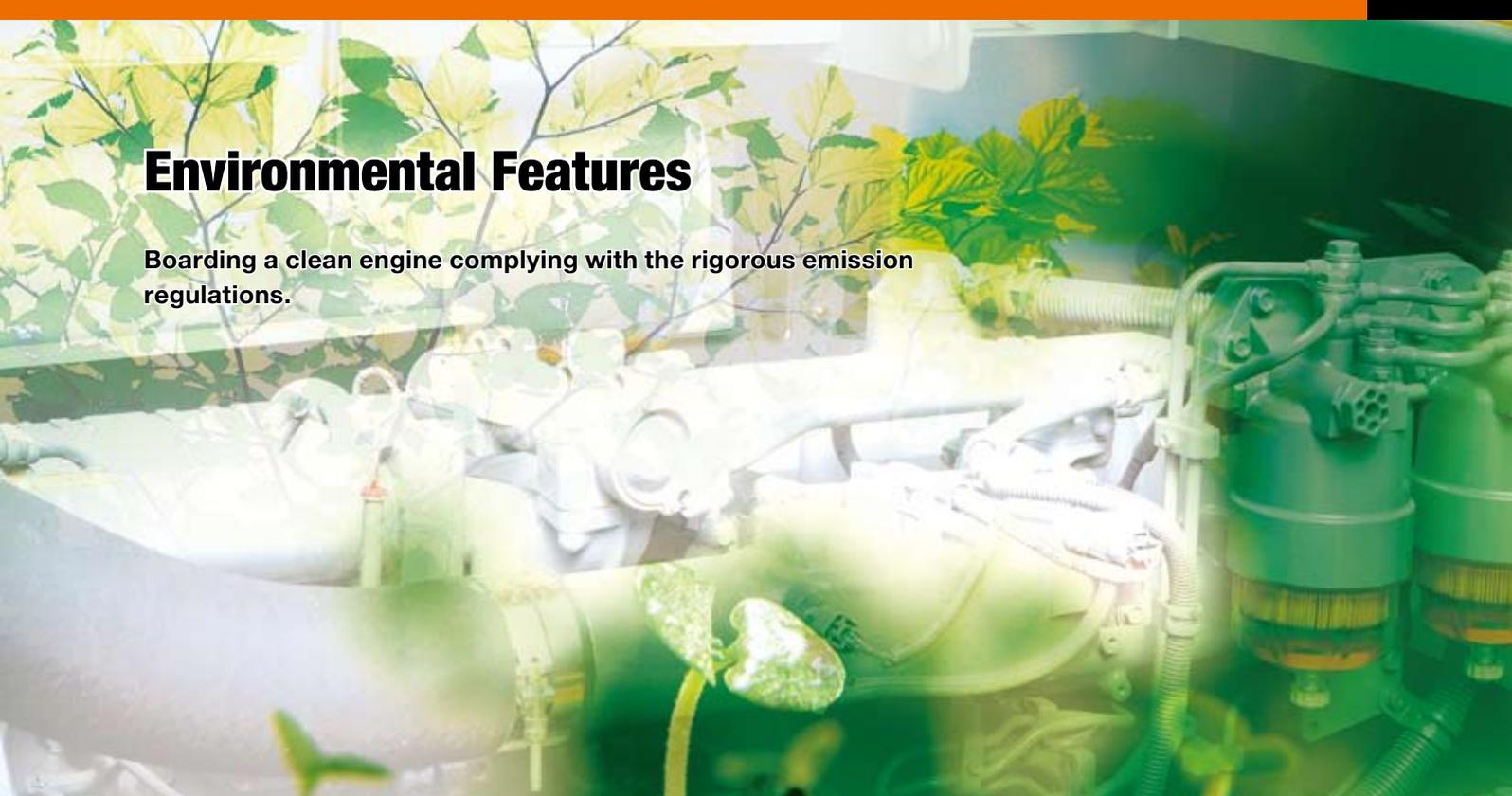
### Pilot Control Shut-Off Lever



Other features include a retractable seat belt, evacuation hammer and emergency engine shut-off switch. A shut-off lever for pilot control helps to prevent unintentional movements.

# Environmental Features

Boarding a clean engine complying with the rigorous emission regulations.

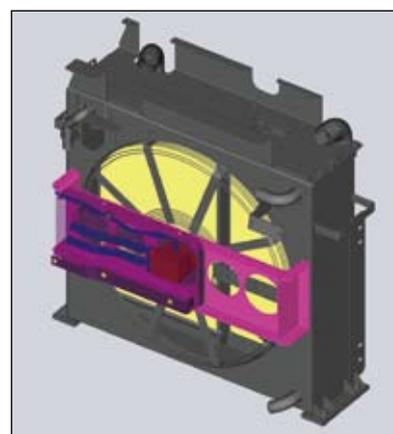


## A Cleaner Machine

The ZAXIS-3 series is equipped with a clean but powerful engine to comply with Tier 3, and Stage III A. An engine emission regulations effective in the U.S. EPA and European Union from 2006. Exhaust gas is partly re-combusted to reduce particulate matter (PM) output and lower nitrogen oxide (NOx) levels.

## A Quieter Machine

Engine noise is reduced by approximately 2 dB with the robust engine. It goes without saying that the engine meets the EU noise regulations. The engine cooling fan is a large 1 120 mm diameter variable-speed electro-hydraulic fan. This fan automatically starts when temperature comes into the high temperature range, ensuring low noise operation. A proven large muffler is provided to reduce sound and exhaust emissions greatly.



## A Recyclable Machine

Over 97% of the ZAXIS-3 series can be recycled. All resin parts are marked to facilitate recycling. The machine is completely lead-free. The radiator and oil cooler are made from aluminium and all wires are lead-less. In addition, biodegradable hydraulic oil is available for jobsites where special environmental care is required.



# Parts & Service

Over the years, we have gained experience in one of the most competitive service markets in the world - Japan. Using our know-how in dealing directly with customers, we have created a worldwide support system that is highly capable.

## Parts

HITACHI only offers genuine high quality parts. We guarantee that these parts have high performance and long life. We manage around 1 000 000 types of parts all around the world. They are designed and built to be the best match for your HITACHI equipment. HITACHI has a global parts distribution network that makes sure you get what

you need as quickly as possible. We have more than 150 dealers worldwide who provide the closest support for your needs. In most cases, your dealer will have the replacement part that you require. If a dealer does not have a certain part, he can order it from four fully stocked parts depots located across the world. These distribution

centers are all connected by a on-line system that gives them access to shared information on stocks, such as the number and type of available parts. The depots, which in turn are stocked by a parts center in Japan, minimize delivery time and enable you to get your parts as efficiently and quickly as possible.

## Service

Our goal is to "keep customer equipment at a maximum performance level". To fulfil this goal, we have set more than 150 dealers all over the world. They have highly trained technicians, and provide a number of support programs. HITACHI provides a unique extended warranty program

called HITACHI Extended Life Program, or HELP. To minimize downtime during troubleshooting, we developed a PDA based diagnostic system called "Dr. ZX". To keep our customers' equipment in top running shape, good service is indispensable. We believe personnel training is the key to providing the

best service. If you would like more information regarding parts and/or service, please ask your nearest HITACHI dealer. Not all programs and/or services are available in every market or region.



# SPECIFICATIONS

## ZX470LCH-3 BACKHOE

### ENGINE

Model .....	Isuzu AH-6WG1XYSA-01
Type .....	4-cycle water-cooled, direct injection
Aspiration .....	Turbocharged
No. of cylinders .....	6
Rated power	
ISO 9249, net .....	H/P mode:
(Without Fan)	260 kW (349 HP) at 1 800 min <sup>-1</sup> (rpm)
EEC 80/1269, net ..	H/P mode:
(Without Fan)	260 kW (349 HP) at 1 800 min <sup>-1</sup> (rpm)
SAE J1349, net ....	H/P mode:
(Without Fan)	260 kW (349 HP) at 1 800 min <sup>-1</sup> (rpm)
Maximum torque .....	1 580 Nm (161 kgf m) at 1 500 min <sup>-1</sup> (rpm)
Piston displacement ..	15.681 L
Bore and stroke .....	147 mm x 154 mm
Batteries .....	2 x 12 V / 170 AH

### HYDRAULIC SYSTEM

- Work mode selector
    - General purpose mode / Attachment mode
  - Engine speed sensing system
- |                     |  |
|---------------------|--|
| Main pumps .....    | 2 variable displacement axial piston pumps |
| Maximum oil flow .. | 2 x 360 L/min                              |
| Pilot pump .....    | 1 gear pump                                |
| Maximum oil flow .. | 30 L/min                                   |

### Hydraulic Motors

Travel .....	2 axial piston motors with parking brake
Swing .....	2 axial piston motors

### Relief Valve Settings

Implement circuit .....	31.9 MPa (325 kgf/cm <sup>2</sup> )
Swing circuit .....	28.4 MPa (290 kgf/cm <sup>2</sup> )
Travel circuit .....	34.3 MPa (350 kgf/cm <sup>2</sup> )
Pilot circuit .....	3.9 MPa (40 kgf/cm <sup>2</sup> )
Power boost .....	34.3 MPa (350 kgf/cm <sup>2</sup> )

### Hydraulic Cylinders

High-strength piston rods and tubes. Cylinder cushion mechanisms provided in boom and arm cylinders to absorb shock at stroke ends.

### Dimensions

	Quantity	Bore	Rod diameter
Boom	2	170 mm	115 mm
Arm	1	190 mm	130 mm
Bucket	1	170 mm	120 mm

### Hydraulic Filters

Hydraulic circuits use high-quality hydraulic filters. A suction filter is incorporated in the suction line, and full-flow filters in the return line and swing/travel motor drain lines.

### CONTROLS

Pilot controls. Hitachi's original shockless valve.

Implement levers .....	2
Travel levers with pedals .....	2

### UPPERSTRUCTURE

#### Revolving Frame

Welded sturdy box construction, using heavy-gauge steel plates for ruggedness. D-section frame for resistance to deformation.

#### Swing Device

Axial piston motor with planetary reduction gear is bathed in oil. Swing circle is single-row, shear-type ball bearing with inductionhardened internal gear. Internal gear and pinion gear are immersed in lubricant. Swing parking brake is spring-set/hydraulic-released disc type.

Swing speed .....	9.0 min <sup>-1</sup> (rpm)
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#### Operator's Cab

Independent spacious cab, 1 005 mm wide by 1 795 mm high, conforming to ISO\* Standards. (OPG top gourd fitted Level II, ISO 10262 compliant cab) Reinforced glass windows on 4 sides for visibility.

Reclining seat with armrests; adjustable with or without control levers.

\* International Standardization Organization

### UNDERCARRIAGE

#### Tracks

Tractor-type undercarriage. Welded track frame using selected materials. Side frame bolted to track frame. Lubricated track rollers, idlers, and sprockets with floating seals. Track shoes with triple grousers made of induction-hardened rolled alloy. Heat-treated connecting pins with dirt seals. Hydraulic (grease) track adjusters with shock-absorbing recoil springs.

#### Numbers of Rollers and Shoes on Each Side

Upper rollers .....	3
Lower rollers .....	9
Track shoes .....	53
Full track guard .....	1

#### Travel Device

Each track driven by axial piston motor through reduction gear for counterrotation of the tracks. Sprockets are replaceable. Parking brake is spring-set/hydraulic-released disc type. Automatic transmission system: High-Low.

Travel speeds .....	High: 0 to 5.5 km/h
	Low: 0 to 3.4 km/h

Maximum traction force .....	319 kN (32 500 kgf)
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Gradeability .....	70% (35 degree ) continuous
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## WEIGHTS AND GROUND PRESSURE

### ZX470LCH-3:

Equipped with 7.0 m H-boom, 3.4 m H-arm, and 1.9 m<sup>3</sup> rock bucket (SAE, PCSA heaped).

Shoe type	Shoe width	Operating weight	Ground pressure
Triple grouser	600 mm	48 100 kg	82 kPa (0.84 kgf/cm <sup>2</sup> )
	750 mm	49 000 kg	67 kPa (0.68 kgf/cm <sup>2</sup> )
	900 mm	49 700 kg	56 kPa (0.57 kgf/cm <sup>2</sup> )

Shoe for use 650 mm: Quarry ground. Dry riverbed. Solid ground.  
750 mm: Mid-Solid ground. Soft ground.  
900 mm: Soft ground.

## SERVICE REFILL CAPACITIES

Fuel tank .....	725.0 L
Engine coolant .....	55.0 L
Engine oil .....	57.0 L
Swing device (each side) .....	6.5 L
Travel device (each side) .....	11.0 L
Hydraulic system .....	560.0 L
Hydraulic oil tank .....	330.0 L

## BACKHOE ATTACHMENTS

Boom and arms are of all-welded, box-section design. A number of boom and arms are available. Bucket is of all-welded, high-strength steel structure. The ZAXIS 470LCH is a heavy duty type and equipped with a reinforced H-boom or BE-boom and H-arm or BE-arm.

### Backhoe Buckets

Capacity		Width		No. of teeth	Weight	Recommendation			
SAE, PCSA heaped	CECE heaped	Without side cutters	With side cutters			ZX470LCH-3			
						6.3 m BE-boom		7.0 m H-boom	
				2.5 m BE-arm	2.9 m BE-arm	2.9 m BE-arm	3.4 m H-arm		
<sup>1</sup> 1.9 m <sup>3</sup>	1.7 m <sup>3</sup>	1 480 mm	1 500 mm	5	2 070 kg	●	●	●	●
<sup>1</sup> 2.1 m <sup>3</sup>	1.8 m <sup>3</sup>	1 560 mm	1 580 mm	5	2 170 kg	●	●	●	–
<sup>1</sup> 2.3 m <sup>3</sup>	2.0 m <sup>3</sup>	1 680 mm	1 700 mm	5	2 260 kg	●	●	–	–
<sup>1</sup> 2.5 m <sup>3</sup>	2.2 m <sup>3</sup>	1 800 mm	1 820 mm	5	2 360 kg	●	–	–	–
<sup>2</sup> 1.3 m <sup>3</sup>	1.2 m <sup>3</sup>	1 170 mm	–	3	2 330 kg	●	●	●	●
One-point ripper				1	1 260 kg	●	●	●	●

<sup>1</sup> Rock bucket

● Heavy-duty service

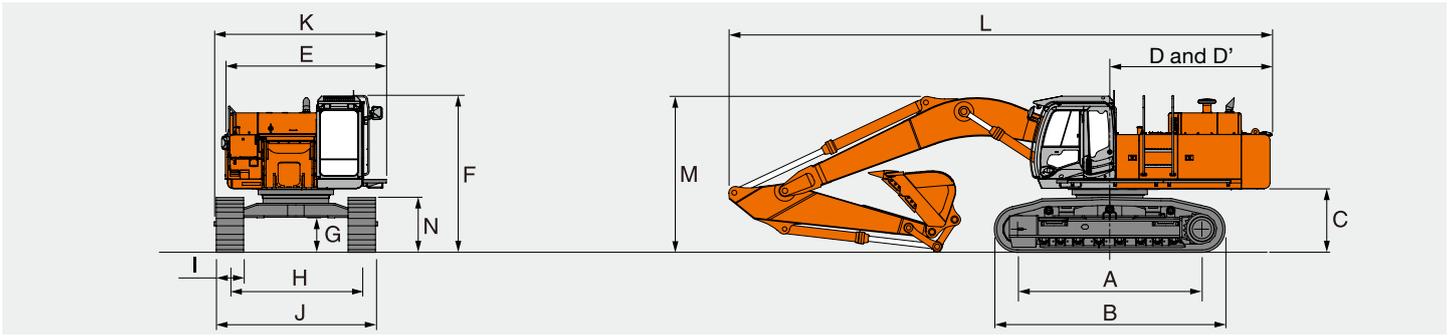
<sup>2</sup> Ripper bucket

– Not applicable

# SPECIFICATIONS

## ZX470LCH-3 BACKHOE

### DIMENSIONS



Unit: mm

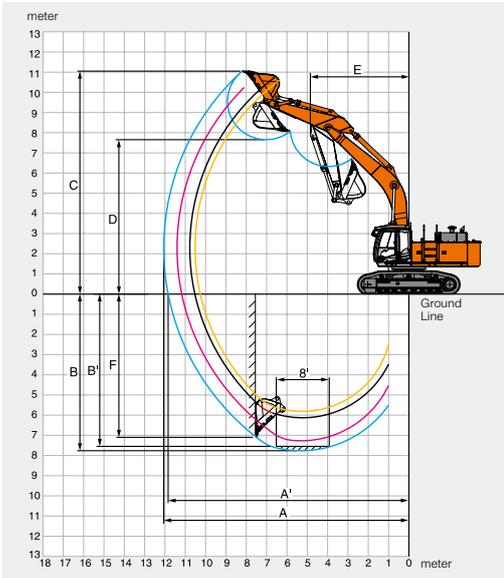
	ZX470LCH-3 <sup>1,2</sup>		
A Distance between tumblers	4 470		
B Undercarriage length	5 470		
<sup>1</sup> C Counterweight clearance	1 360		
D Rear-end swing radius	3 645		
D' Rear-end length	3 560		
E Overall width of upperstructure	3 530		
F Overall height of cab	3 450		
<sup>1</sup> G Min. ground clearance	723		
H Track gauge: Extended/Retracted	2 890 / 2 390		
I Track shoe width	G 600		
J Undercarriage width Extended/Retracted	G 600 3 490 / 2 990	G 750 3 640 / 3 140	G 900 3 790 / 3 290
K Overall width	3 770		
L Overall length	11 910		
M Overall height of boom	3 480		
N Track height	1 220		

<sup>1</sup> Excluding track shoe lug. G: Triple grouser shoe

<sup>2</sup> Equipped with 7.0 m H-boom and 3.4 m H-arm

### WORKING RANGES

Unit: mm



Arm length	ZX470LCH-3			
	6.3 m BE-boom		7.0 m H-boom	
	2.5 m BE-arm	2.9 m BE-arm	2.9 m BE-arm	3.4 m H-arm
A Max. digging reach	10 460	10 750	11 330	12 060
A' Max. digging reach (on ground)	10 210	10 500	11 090	11 840
B Max. digging depth	5 790	6 130	7 200	7 770
B' Max. digging depth (B' level)	5 620	5 970	7 000	7 630
C Max. cutting height	10 660	10 790	10 170	11 060
D Max. dumping height	7 320	7 440	7 100	7 650
E Min. swing radius	4 090	3 930	5 020	4 840
F Max. vertical wall	4 260	4 650	4 270	7 100
Bucket digging force* ISO	287 kN (29 300 kgf)	287 kN (29 300 kgf)	287 kN (29 300 kgf)	288 kN (29 400 kgf)
Bucket digging force* SAE: PCSA	258 kN (26 300 kgf)	258 kN (26 300 kgf)	258 kN (26 300 kgf)	250 kN (25 500 kgf)
Arm crowd force* ISO	293 kN (29 900 kgf)	256 kN (26 100 kgf)	256 kN (26 100 kgf)	218 kN (22 200 kgf)
Arm crowd force* SAE: PCSA	286 kN (29 200 kgf)	249 kN (25 400 kgf)	249 kN (25 400 kgf)	209 kN (21 300 kgf)

Excluding track shoe lug \* At power boost



# EQUIPMENT / TRANSPORTATION

## ZX470LCH-3 BACKHOE

### STANDARD EQUIPMENT

Standard equipment may vary by country, so please consult your Hitachi dealer for details.

#### ENGINE

- H/P mode control
- P mode control
- E mode control
- 50 A alternator
- Dry-type air double filter with evacuator valve (with air filter restriction switch for monitor)
- Cartridge-type engine oil filter
- Cartridge-type fuel filter
- Fuel pre-filter
- Radiator, oil cooler and intercooler with dust protective net
- Radiator reserve tank
- Fan guard
- Isolation-mounted engine
- Auto-idle system

#### HYDRAULIC SYSTEM

- Work mode selector
- Engine speed sensing system
- E-P control system
- Power boost
- Auto power lift
- Boom mode selector system
- Shockless valve in pilot circuit
- Control valve with main relief valve
- Extra port for control valve
- Suction filter
- Full-flow filter
- Pilot filter
- Drain filter
- Quick warm-up system for pilot circuit

#### CAB

- H/R cab
- OPG top guard fitted Level II (ISO 10262) compliant cab
- ROPS for excavators compliant cab
- All-weather sound suppressed steel cab
- Laminated round glass (green color) front window
- Front windows on upper, lower and left side can be opened
- 6 fluid-filled elastic mounts
- Intermittent windshield wipers
- Front window washer
- Adjustable reclining suspension seat with adjustable armrests
- Footrest
- Electric double horn
- AM-FM radio with digital clock
- Auto-idle selector
- Retractable seat belt
- Drink holder
- Cigarette lighter
- Ashtray
- Storage box
- Glove compartment
- Floor mat
- Short wrist control levers
- Pilot control shut-off lever
- Auto control air conditioner
- Pilot control shut-off lever
- Engine shut-off switch
- Transparent roof with side curtain
- Sun visor

#### MONITOR SYSTEM

- Display of meters: water temperature, hour, fuel rate, clock
- Other displays: work mode, auto-idle, glow, rear view monitor, operating conditions, etc
- Alarms: overheat, engine warning, engine oil pressure, alternator, minimum fuel level, hydraulic filter restriction, air filter restriction, work mode, overload, etc
- Alarm buzzers: overheat, engine oil pressure, overload

#### LIGHTS

- 2 working lights

#### UPPERSTRUCTURE

- 4.5 mm thickness undercover
- 9 150 kg counterweight
- Fuel level float
- Rear view camera
- 170 Ah batteries
- Hydraulic oil level gauge
- Tool box
- Utility space
- Rear view mirror (right & left side)
- Swing parking brake
- Ladder
- Electrical fuel refilling pump with auto-stop
- Electric grease gun with hose-reel

#### UNDERCARRIAGE

- Travel parking brake
- Travel motor covers
- Hydraulic track adjuster
- Idler track guard
- Bolt-on sprocket
- Upper and lower rollers
- Reinforced track links with pin seals
- 2 track guard (each side)
- 600 mm triple grouser shoes

#### FRONT ATTACHMENTS

- Flanged pin
- Monolithically cast bucket link A
- Centralized lubrication system
- Dirt seal on all bucket pins
- 7.0 m H-boom and 3.4 m H-arm
- Damage prevention plate and square bars
- 1.9 m<sup>3</sup> (SAE, PCSA heaped) rock bucket (with dual type side shrouds)

#### MISCELLANEOUS

- Standard tool kit
- Lockable machine covers
- Lockable fuel refilling cap
- Skid-resistant tapes, plates and handrails
- Travel direction mark on track frame
- Onboard information controller

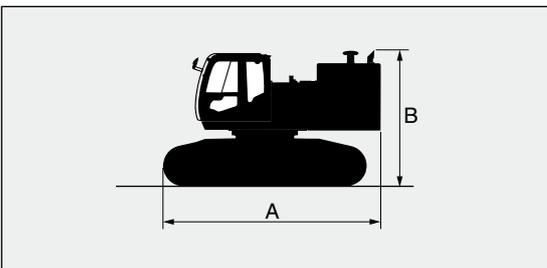
### OPTIONAL EQUIPMENT

Optional equipment may vary by country, so please consult your Hitachi dealer for details.

- Hose rupture valves
- Swing motion alarm device with lamps
- Travel motion alarm device
- Pre cleaner
- Rain guard for cab
- Attachment basic piping
- Accessories for breaker
- Accessories for breaker & crusher
- Accessories for 2 speed selector
- 12 V power source
- Additional fuse box
- Overload alarm
- Front glass lower guard
- Front glass upper guard
- H/R cab (with 2 cab lights)
- Suspension seat with heater
- Air suspension seat with heater
- Additional working light (for boom)
- Track undercover
- Full track guard
- 6.3 m BE-boom
- 2.5 m BE-arm
- 2.9 m BE-arm
- 750 mm shoe with standard track guard
- 900 mm shoe with standard track guard

### TRANSPORTATION

#### BASIC MACHINE (WITHOUT COUNTERWEIGHT)

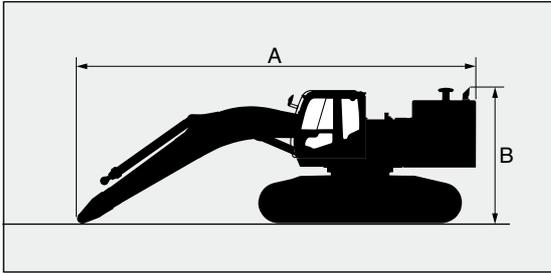


	Shoe width	Overall width*	Weight	A	B
ZX470LCH-3	600 mm	3 000 mm	29 100 kg	5 630 mm	3 450 mm
	750 mm	3 140 mm	29 900 kg		
	900 mm	3 290 mm	30 500 kg		

\* Undercarriage retracted

## TRANSPORTATION

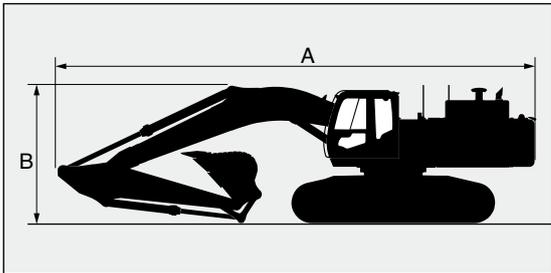
### BASIC MACHINE FITTED WITH BOOM AND NO SIDEWALK



	Boom length	Shoe width	Overall width*	Weight	A	B
ZX450LCH-3	6.3 m BE	600 mm	3 000 mm	34 400 kg	9 090 mm	3 450 mm
		750 mm	3 140 mm	35 200 kg		
		900 mm	3 290 mm	35 800 kg		
	7.0 m H	600 mm	3 000 mm	34 200 kg	9 860 mm	
		750 mm	3 140 mm	35 000 kg		
		900 mm	3 290 mm	35 600 kg		

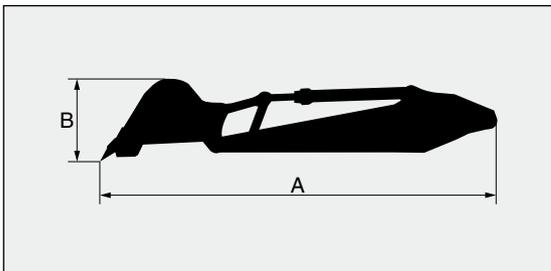
\* Undercarriage retracted

### BASIC MACHINE WITH FRONT AND SIDEWALK



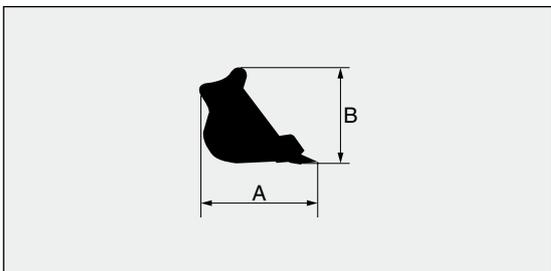
Boom length		6.3 m BE		7.0 m H	
Arm length		2.5 m BE	2.9 m BE	2.9 m BE	3.4 m H
ZX470LCH-3	A	11 560 mm	11 220 mm	12 000 mm	11 910 mm
	B	4 300 mm	3 740 mm	3 600 mm	3 480 mm

### ARM AND BUCKET



Arm	Bucket SAE, PCSA heaped	A	B	Overall width	Weight
2.5 m BE	2.50 m <sup>3</sup>	5 650 mm	1 470 mm	1 820 mm	5 010 kg
2.9 m BE	2.30 m <sup>3</sup>	5 950 mm	1 460 mm	1 700 mm	4 800 kg
3.4 m H	1.90 m <sup>3</sup>	6 440 mm	1 300 mm	1 500 mm	4 630 kg

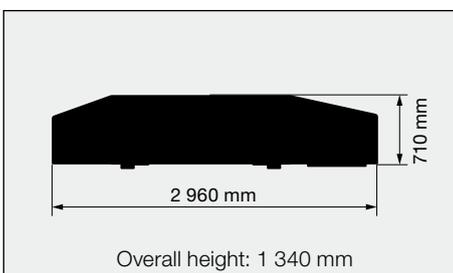
### BUCKET



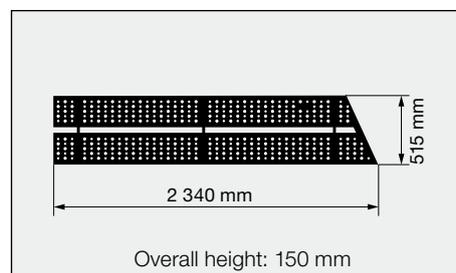
Rock bucket

Bucket		A	B	Overall width	Weight
SAE, PCSA heaped	CECE heaped				
1.90 m <sup>3</sup>	1.70 m <sup>3</sup>	2 030 mm	1 480 mm	1 500 mm	2 070 kg
2.10 m <sup>3</sup>	1.80 m <sup>3</sup>	1 950 mm	1 650 mm	1 580 mm	2 170 kg
2.30 m <sup>3</sup>	2.00 m <sup>3</sup>	1 950 mm	1 650 mm	1 700 mm	2 260 kg
2.50 m <sup>3</sup>	2.20 m <sup>3</sup>	1 950 mm	1 650 mm	1 820 mm	2 360 kg

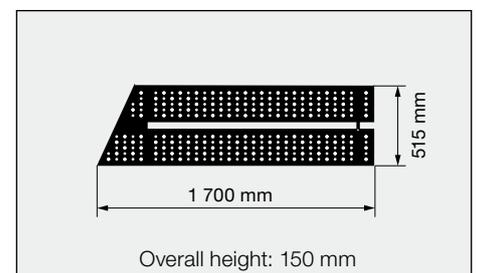
### COUNTERWEIGHT 9 150 kg



### LEFT SIDEWALK 44 kg



### LEFT SIDEWALK 30 kg



# SPECIFICATIONS

## ZX450-3 / ZX470H-3 LOADING SHOVEL

### ENGINE

Model .....	Isuzu AH-6WG1XYSA-01
Type .....	4-cycle water-cooled, direct injection
Aspiration .....	Turbocharged
No. of cylinders .....	6
Rated power	
ISO 9249,	H/P mode:
Without Fan net .....	260 kW (349 HP) at 1 800 min <sup>-1</sup> (rpm)
EEC 80/1269,	H/P mode:
Without Fan net .....	260 kW (349 HP) at 1 800 min <sup>-1</sup> (rpm)
SAE J1349,	H/P mode:
Without Fan net .....	260 kW (349 HP) at 1 800 min <sup>-1</sup> (rpm)
Maximum torque .....	1 580 N·m (161 kgf·m) at 1 500 min <sup>-1</sup> (rpm)
Piston displacement ..	15.681 L
Bore and stroke .....	147 mm x 154 mm
Batteries .....	2 x 12 V / 170 AH

### HYDRAULIC SYSTEM

- Engine speed sensing system
- |                     |  |
|---------------------|--|
| Main pumps .....    | 2 variable displacement axial piston pumps |
| Maximum oil flow .. | 2 x 360 L/min                              |
| Pilot pump .....    | 1 gear pump                                |
| Maximum oil flow .. | 30 L/min                                   |

### Hydraulic Motors

Travel .....	2 axial piston motors with parking brake
Swing .....	2 axial piston motors

### Relief Valve Settings

Implement circuit .....	27.9 MPa (285 kgf/cm <sup>2</sup> )
Swing circuit .....	28.4 MPa (290 kgf/cm <sup>2</sup> )
Travel circuit .....	34.3 MPa (350 kgf/cm <sup>2</sup> )
Pilot circuit .....	3.9 MPa (40 kgf/cm <sup>2</sup> )

### Hydraulic Cylinders

High-strength piston rods and tubes. Cylinder cushion mechanisms provided in boom and arm cylinders to absorb shock at stroke ends.

### Dimensions

	Quantity	Bore	Rod diameter
Boom	2	170 mm	115 mm
Arm	1	170 mm	115 mm
Level	1	170 mm	115 mm
Bucket	2	150 mm	115 mm
Dump	2	100 mm	65 mm

### Hydraulic Filters

Hydraulic circuits use high-quality hydraulic filters. A suction filter is incorporated in the suction line, and full-flow filters in the return line and swing/travel motor drain lines.

### CONTROLS

Pilot controls. Hitachi's original shockless valve.

Implement levers .....	2
Travel levers with pedals .....	2

### UPPERSTRUCTURE

#### Revolving Frame

Welded sturdy box construction, using heavy-gauge steel plates for ruggedness. D-section frame for resistance to deformation.

#### Swing Device

Axial piston motor with planetary reduction gear is bathed in oil. Swing circle is single-row, shear-type ball bearing with induction-hardened internal gear. Internal gear and pinion gear are immersed in lubricant. Swing parking brake is spring-set/hydraulic-released disc type.

Swing speed .....	9.0 min <sup>-1</sup> (rpm)
-------------------	-----------------------------

#### Operator's Cab

Independent spacious cab, 1 005 mm wide by 1 795 mm high, conforming to ISO\* Standards. (OPG top gourd fitted Level II, ISO 10262 compliant cab) Reinforced glass windows on 4 sides for visibility.

Reclining seat with armrests; adjustable with or without control levers.

\* International Standardization Organization

### UNDERCARRIAGE

#### Tracks

Tractor-type undercarriage. Welded track frame using selected materials. Side frame bolted to track frame. Lubricated track rollers, idlers, and sprockets with floating seals. Track shoes with triple grousers made of induction-hardened rolled alloy. Heat-treated connecting pins with dirt seals. Hydraulic (grease) track adjusters with shock-absorbing recoil springs.

#### Numbers of Rollers and Shoes on Each Side

Upper rollers .....	3
Lower rollers .....	8
Track shoes .....	47
Track guard .....	2: ZX450-3
Full track guard .....	1: ZX470H-3

#### Travel Device

Each track driven by axial piston motor through reduction gear for counterrotation of the tracks. Sprockets are replaceable. Parking brake is spring-set/hydraulic-released disc type. Automatic transmission system: High-Low.

Travel speeds .....	High: 0 to 5.5 km/h
	Low: 0 to 3.4 km/h

Maximum traction force .....	319 kN (32 500 kgf)
------------------------------	---------------------

Gradeability .....	70% (35 degree ) continuous
--------------------	-----------------------------

## WEIGHTS AND GROUND PRESSURE

### ZX450-3:

Equipped with 2.6 m<sup>3</sup> bottom dump bucket.

Shoe type	Shoe width	Operating weight	Ground pressure
Triple grouser	600 mm	47 200 kg	88 kPa (0.90 kgf/cm <sup>2</sup> )

### ZX470H-3:

Equipped with 2.3 m<sup>3</sup> bottom dump bucket.

Shoe type	Shoe width	Operating weight	Ground pressure
Triple grouser	600 mm	48 100 kg	90 kPa (0.91 kgf/cm <sup>2</sup> )

## LOADING SHOVEL ATTACHMENTS

Boom and arm are of all-welded, low-stress full-box section design. Efficient, automatic horizontal crowding achieved by one-lever control because the parallel link mechanism keeps the bucket digging angle constant, and the level cylinder circuit maintains the bucket height constant.

### Loading Shovel Bucket (heaped)

Type	Capacity	Width	No. of teeth	Weight	Remarks
Bottom dump	2.30 m <sup>3</sup>	1 860 mm	6	3 380 kg	Rock bucket
	2.60 m <sup>3</sup>	2 030 mm	6	3 050 kg	General purpose bucket
Tilt dump	2.60 m <sup>3</sup>	1 900 mm	6	2 740 kg	Rock bucket
	2.80 m <sup>3</sup>	2 000 mm	6	2 820 kg	General purpose bucket

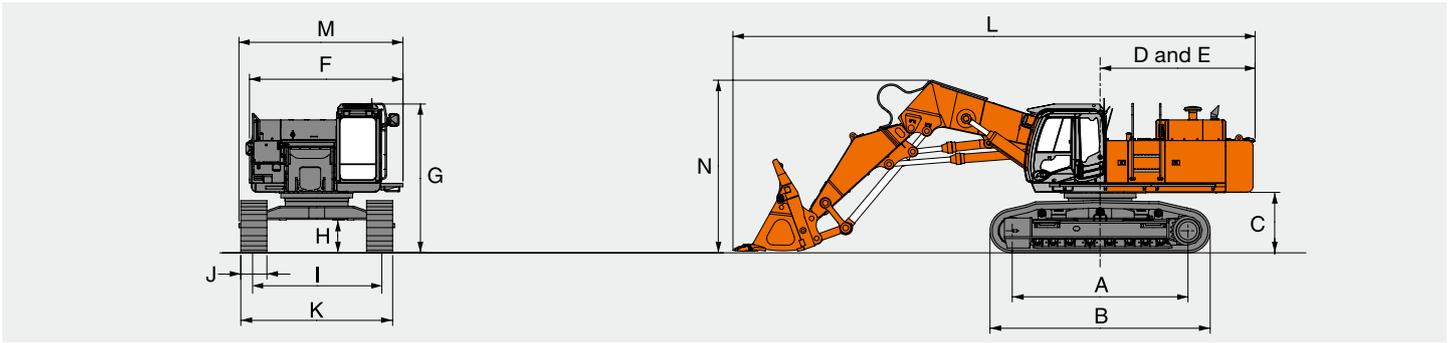
## SERVICE REFILL CAPACITIES

Fuel tank .....	725.0 L
Engine coolant .....	55.0 L
Engine oil .....	57.0 L
Swing device (each side) .....	6.5 L
Travel device (each side) .....	11.0 L
Hydraulic system .....	560.0 L
Hydraulic oil tank .....	330.0 L

# SPECIFICATIONS

## ZX450-3 / ZX470H-3 LOADING SHOVEL

### DIMENSIONS



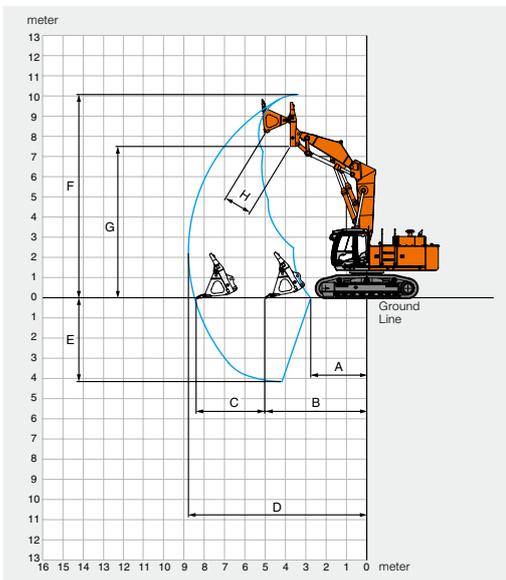
Unit: mm

	ZX450-3	ZX470H-3
A Distance between tumblers	4 040	
B Undercarriage length	5 040	
* C Counterweight clearance	1 360	
D Rear-end swing radius	3 645	
E Rear-end length	3 560	
F Overall width of upperstructure	3 530	
G Overall height of cab	3 330	3 450
* H Min. ground clearance	723	
I Track gauge	2 890	
J Track shoe width	600	
K Undercarriage width Extended/Retracted	3 490 / 2 990	
L Overall length	12 000	
M Overall width	3 770	
N Overall height of boom	3 960	

\* Excluding track shoe lug.

### WORKING RANGES

Unit: mm



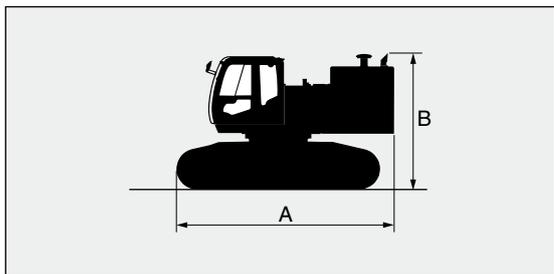
	ZX450-3 / ZX470H-3	
	Bottom dump type	Tilt dump type
A Min. digging distance	2 750	2 220
B Min. Level crowding distance	5 010	4 970
C Level crowding distance	3 370	3 390
D Max. digging reach	8 760	8 720
E Max. digging depth	4 130	4 100
F Max. cutting height	10 070	10 030
G Max. dumping height	7 500	4 420
H Max. bucket opening width	1 390	-
Crowding force kN (kgf)	296 (30 200)	305 (31 000)
Breakout force kN (kgf)	271 (27 600)	259 (26 400)

Excluding track shoe lug

# TRANSPORTATION

## TRANSPORTATION

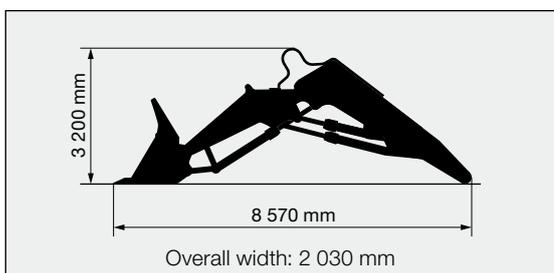
### BASIC MACHINE (WITHOUT COUNTERWEIGHT)



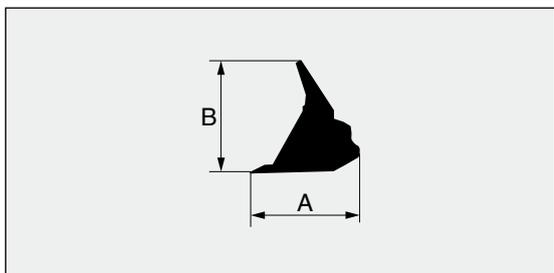
	Shoe width	Overall width*	Weight	A	B
ZX450-3	600 mm	3 000 mm	27 600 kg	5 410 mm	3 420 mm
ZX470H-3	600 mm	3 000 mm	28 200 kg	5 410 mm	3 450 mm

\* Undercarriage retracted

### Front assembly 9 470 kg with 2.6 m<sup>3</sup> bottom dump bucket

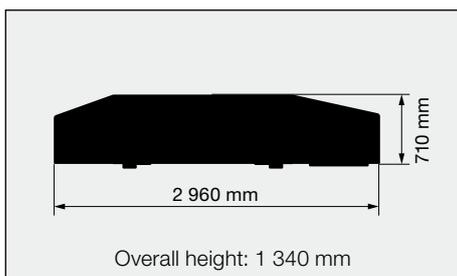


### BUCKET

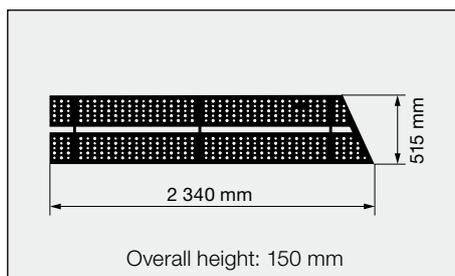


Type	Capacity	A	B	Width	Weight
Bottom dump	2.30 m <sup>3</sup>	2 060 mm	2 140 mm	1 860 mm	3 380 kg
	2.60 m <sup>3</sup>	2 020 mm	2 140 mm	2 030 mm	3 050 kg
Tilt dump	2.60 m <sup>3</sup>	1 950 mm	2 050 mm	1 900 mm	2 740 kg
	2.80 m <sup>3</sup>	1 950 mm	2 050 mm	2 000 mm	2 820 kg

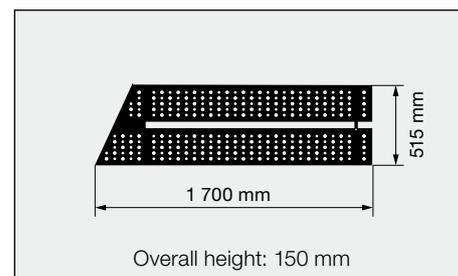
### COUNTERWEIGHT 9 150 kg



### LEFT SIDEWALK 44 kg



### LEFT SIDEWALK 30 kg



# EQUIPMENT

## ZX450-3 / ZX470H-3 LOADING SHOVEL

### STANDARD EQUIPMENT

Standard equipment may vary by country, so please consult your Hitachi dealer for details.

#### ENGINE

- H/P mode control
- P mode control
- E mode control
- 50 A alternator
- Dry-type air double filter with evacuator valve (with air filter restriction switch for monitor)
- Cartridge-type engine oil filter
- Cartridge-type fuel filter
- Fuel pre-filter
- Radiator, oil cooler and intercooler with dust protective net
- Radiator reserve tank
- Fan guard
- Isolation-mounted engine
- Auto-idle system

#### HYDRAULIC SYSTEM

- Engine speed sensing system
- E-P control system
- Shockless valve in pilot circuit
- Control valve with main relief valve
- Suction filter
- Full-flow filter
- Pilot filter
- Drain filter
- Quick warm-up system for pilot circuit

#### CAB

- CRES II cab (ZX450-3)
- OPG top guard fitted Level I (ISO 10262) compliant cab (ZX450-3)
- H/R cab (ZX470H-3)
- OPG top guard fitted Level II (ISO 10262) compliant cab (ZX470H-3)
- ROPS for excavators compliant cab
- All-weather sound suppressed steel cab
- Laminated round glass (green color) front window
- Front windows on upper, lower and left side can be opened
- 6 fluid-filled elastic mounts
- Intermittent windshield wipers
- Front window washer
- Adjustable reclining suspension seat with adjustable armrests
- Electric double horn
- AM-FM radio with digital clock
- Auto-idle selector
- Retractable seat belt
- Drink holder
- Cigarette lighter
- Ashtray
- Storage box
- Glove compartment
- Floor mat
- Short wrist control levers
- Pilot control shut-off lever
- Auto control air conditioner
- Pilot control shut-off lever
- Engine shut-off switch
- Transparent roof with side curtain
- Sun visor

#### MONITOR SYSTEM

- Display of meters: water temperature, hour, fuel rate, clock
- Other displays: auto-idle, glow, rear view monitor, operating conditions, etc
- Alarms: overheat, engine warning, engine oil pressure, alternator, minimum fuel level, hydraulic filter restriction, air filter restriction, work mode, overload, etc
- Alarm buzzers: overheat, engine oil pressure, overload

#### LIGHTS

- 2 working lights

#### UPPERSTRUCTURE

- Undercover (ZX450-3)
- 4.5 mm thickness undercover (ZX470H-3)
- 9 150 kg counterweight
- Fuel level float
- Rear view camera
- 170 Ah batteries
- Hydraulic oil level gauge
- Tool box
- Utility space
- Rear view mirror (right & left side)
- Swing parking brake
- Ladder
- Electrical fuel refilling pump with auto-stop
- Electric grease gun with hose-reel

#### UNDERCARRIAGE

- Travel parking brake
- Travel motor covers
- Hydraulic track adjuster
- Idler track guard
- Bolt-on sprocket
- Upper and lower rollers
- Reinforced track links with pin seals
- 2 track guard (each side)
- 600 mm triple grouser shoes

#### FRONT ATTACHMENTS

- Loading shovel front with Auto-leveling Crowd mechanism
- Dual-support-type boom/arm/bucket pin linkage
- Double lip pin seals plus O-ring with protector ring at arm top
- 2.6 m<sup>3</sup> (heaped) bottom dump general purpose bucket (ZX450-3)
- 2.3 m<sup>3</sup> (heaped) bottom dump rock bucket (ZX470H-3)

#### MISCELLANEOUS

- Standard tool kit
- Lockable machine covers
- Lockable fuel refilling cap
- Skid-resistant tapes, plates and handrails
- Travel direction mark on track frame
- Onboard information controller

### OPTIONAL EQUIPMENT

Optional equipment may vary by country, so please consult your Hitachi dealer for details.

- Swing motion alarm device with lamps
- Travel motion alarm device
- Pre cleaner
- 2 cab lights (for CRES II cab)
- Rain guard for cab
- 12 V power source
- Additional fuse box
- Front glass lower guard
- Front glass upper guard
- H/R cab (with 2 cab lights)
- Air suspension seat with heater
- Additional working light (for boom)
- Track undercover
- Full track guard
- 2.8 m<sup>3</sup> (heaped) tilt dump general purpose bucket
- 2.6 m<sup>3</sup> (heaped) tilt dump rock bucket

Prior to operating this machine, including satellite communication system, in a country other than a country of its intended use, it may be necessary to make modifications to it so that it complies with the local regulatory standards (including safety standards) and legal requirements of that particular country. Please do not export or operate this machine outside the country of its intended use until such compliance has been confirmed. Please contact your Hitachi dealer in case of questions about compliance.

These specifications are subject to change without notice.

Illustrations and photos show the standard models, and may or may not include optional equipment, accessories, and all standard equipment with some differences in color and features. Before use, read and understand the Operator's Manual for proper operation.