
INTRODUCTION

TO THE READER

- This manual is written for an experienced technician to provide technical information needed to maintain and repair this machine.
- Be sure to thoroughly read this manual for correct product information and service procedures.
- If you have any questions or comments, at if you found any errors regarding the contents of this manual, please contact using "Service Manual Revision Request Form. at the end of this manual.
(Note: Do not tear off the form. Copy it for usage.):
Publications Marketing & Product Support
Hitachi Construction Machinery Co. Ltd.
TEL: 81-298-32-7173
FAX: 81-298-31-1162

ADDITIONAL REFERENCES

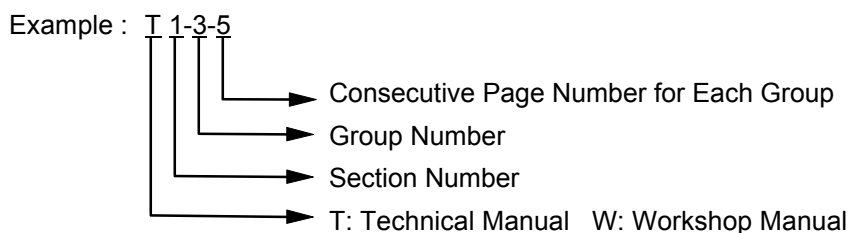
- Please refer to the materials listed below in addition to this manual.
 - The Operator's Manual
 - The Parts Catalog
- Operation Manual of the Engine
- Parts Catalog of the Engine
- Hitachi Training Material

MANUAL COMPOSITION

- This manual consists of three portions: the Technical Manual (Operational Principle), the Technical Manual (Troubleshooting) and the Workshop Manual.
- Information included in the Technical Manual (Operational Principle):
technical information needed for redeliver and delivery, operation and activation of all devices and systems.
- Information included in the Technical Manual (Troubleshooting):
technical information needed for operational performance tests, and troubleshooting procedures.
- Information included in the Workshop Manual:
technical information needed for maintenance and repair of the machine, tools and devices needed for maintenance and repair, maintenance standards, and removal/installation and assemble/disassemble procedures.

PAGE NUMBER


- Each page has a number, located on the center lower part of the page, and each number contains the following information:





INTRODUCTION

SAFETY ALERT SYMBOL AND HEADLINE NOTATIONS

In this manual, the following safety alert symbol and signal words are used to alert the reader to the potential for personal injury or machine damage.

 This is the safety alert symbol. When you see this symbol, be alert to the potential for personal injury. Never fail to follow the safety instructions prescribed along with the safety alert symbol. The safety alert symbol is also used to draw attention to component/part weights. To avoid injury and damage, be sure to use appropriate lifting techniques and equipment when lifting heavy parts.

-  **CAUTION:**
Indicated potentially hazardous situation which could, if not avoided, result in personal injury or death.
- **IMPORTANT:**
Indicates a situation which, if not conformed to the instructions, could result in damage to the machine.
-  **NOTE:**
Indicates supplementary technical information or know-how.

UNITS USED

- SI Units (International System of Units) are used in this manual. MKS system units and English units are also indicated in parentheses just behind SI units.

Example : 24.5 MPa (250 kgf/cm², 3560 psi)

A table for conversion from SI units to other system units is shown below for reference purposes.

Quantity	To Convert From	Into	Multiply By	Quantity	To Convert From	Into	Multiply By
Length	mm	in	0.03937	Pressure	MPa	kgf/cm ²	10.197
	mm	ft	0.003281		MPa	psi	145.0
Volume	L	US gal	0.2642	Power	kW	PS	1.360
	L	US qt	1.057		kW	HP	1.341
	m ³	yd ³	1.308	Temperature	°C	°F	°C×1.8+32
Weight	kg	lb	2.205	Velocity	km/h	mph	0.6214
Force	N	kgf	0.10197		min ⁻¹	rpm	1.0
	N	lbf	0.2248	Flow rate	L/min	US gpm	0.2642
Torque	N·m	kgf·m	1.0197		mL/rev	cc/rev	1.0
	N·m	lbf·ft	0.7375				

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All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes at any time without notice.

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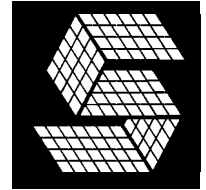
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SECTION 1 GENERAL



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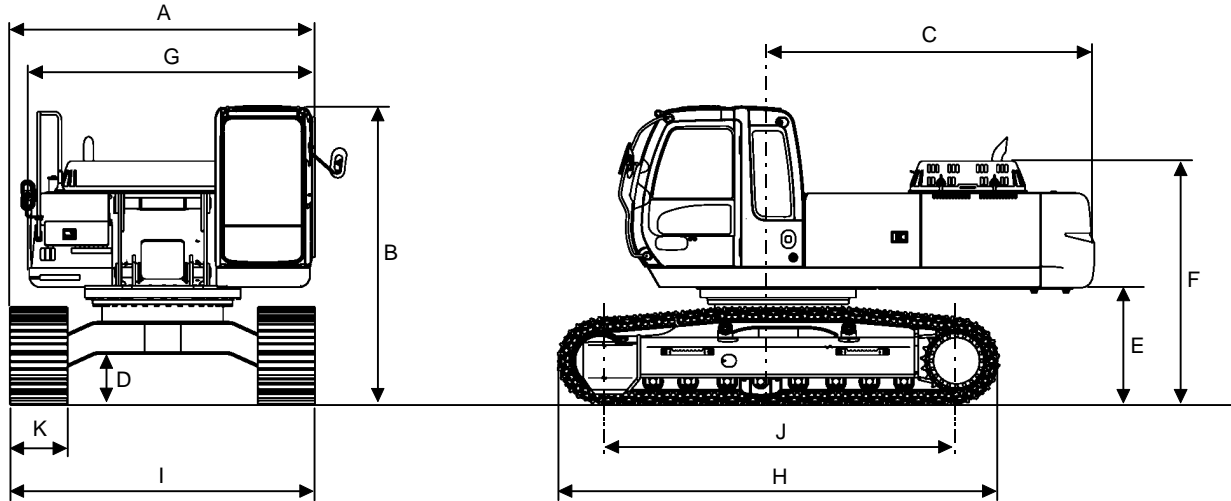
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GENERAL / Specifications

SPECIFICATIONS

ZAXIS330, ZAXIS330LC



M1HH-12-001

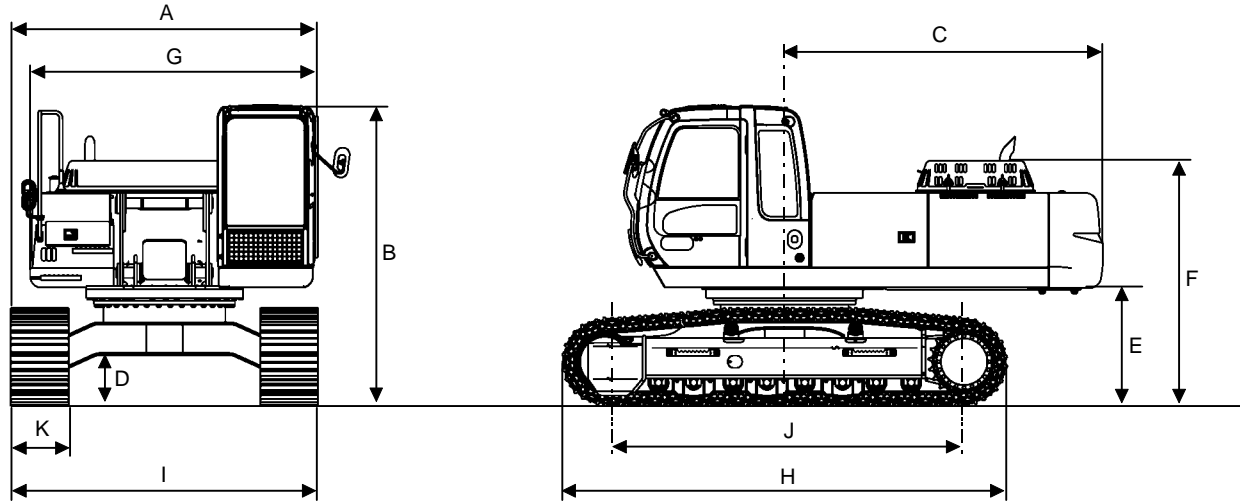
Model		ZAXIS330	ZAXIS330LC
Type of Front-End Attachment	—	3.2 m (10 ft 6 in) Standard Arm	
Bucket Capacity (Heaped)	m ³	PCSA 1.40 (1.83 yd ³), CECE 1.20	
Operating Weight	kg (lb)	31000 (68340)	31600 (69670)
Basic Machine Weight	kg (lb)	23600 (52030)	24200 (53350)
Engine	—	Isuzu AA-6HK1X 177 kW/1900 min ⁻¹ (240 PS/1900 rpm) *184 kW/2000 min ⁻¹ (250 PS/2000 rpm)	
A: Overall Width (Excluding rear view mirrors)	mm (ft-in)	3190 (10' 6")	3190 (10' 6")
B: Cab Height	mm (ft-in)	3120 (10' 3")	3140 (10' 4")
C: Rear End Swing Radius	mm (ft-in)	3320 (10' 11")	3320 (10' 11")
D: Minimum Ground Clearance	mm (ft-in)	*500 (1' 8")	*500 (1' 8")
E: Counterweight Clearance	mm (ft-in)	*1140 (3' 9")	*1160 (3' 10")
F: Engine Cover Height	mm (ft-in)	*2510 (8' 3")	*2530 (8' 4")
G: Overall Width of Upperstructure	mm (ft-in)	2995 (9' 10")	2995 (9' 10")
H: Undercarriage Length	mm (ft-in)	4640 (15' 3")	4940 (16' 3")
I: Undercarriage Width	mm (ft-in)	3190 (10' 6")	3190 (10' 6")
J: Sprocket Center to Idler Center	mm (ft-in)	3730 (12' 3")	4050 (12' 3")
K: Track Shoe Width	mm (in)	600 (24") (Grouser shoe)	
Ground Pressure	kPa (kgf/cm ² , psi)	63 (0.64, 9.1)	59 (0.60, 8.5)
Swing Speed	min ⁻¹ (rpm)	11.8	
Travel Speed (fast/low)	km/h (mph)	5.5/3.8 (3.4/2.4)	
Gradeability	(%)	35° (tanθ=70)	

NOTE: * HP mode

* The dimensions don't include the height of the shoe lug.

GENERAL / Specifications

ZAXIS350H, ZAXIS350LCH



M1HH-12-002

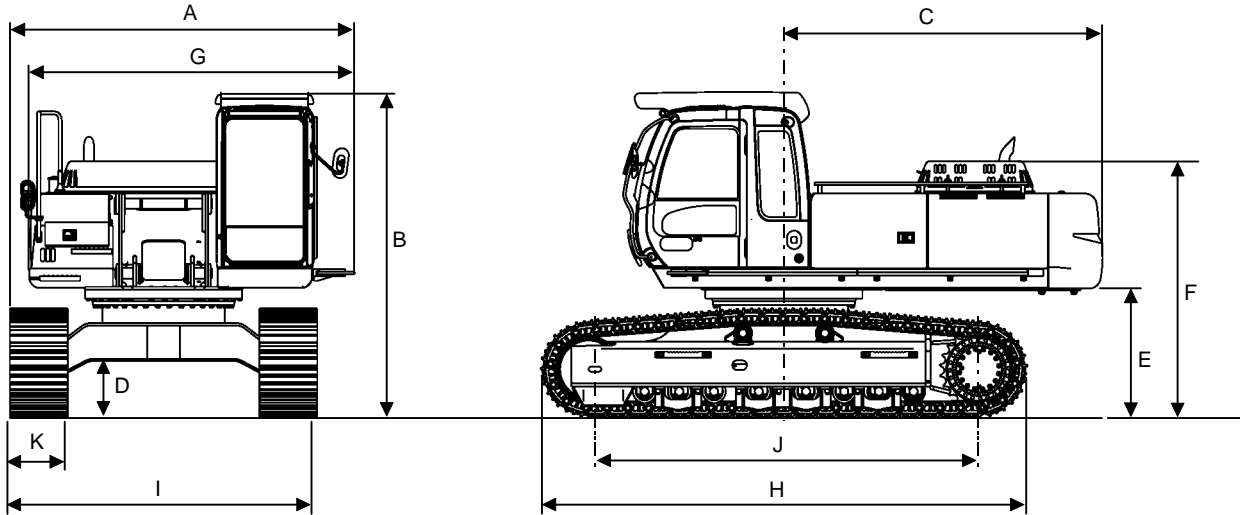
Model		ZAXIS350H	ZAXIS350LCH
Type of Front-End Attachment	—	3.2 m (10 ft 6 in) Standard Arm	
Bucket Capacity (Heaped)	m ³	PCSA 1.38 (1.81 yd ³), CECE 1.20	
Operating Weight	kg (lb)	32900 (72530)	33400 (73630)
Basic Machine Weight	kg (lb)	24900 (54890)	25400 (56000)
Engine	—	Isuzu AA-6HK1X 177 kW/1900 min ⁻¹ (240 PS/1900 rpm) * 184 kW/2000 min ⁻¹ (250 PS/2000 rpm)	
A: Overall Width (Excluding rear view mirrors)	mm (ft-in)	3190 (10' 6")	3190 (10' 6")
B: Cab Height	mm (ft-in)	3120 (10' 3")	3140 (10' 4")
C: Rear End Swing Radius	mm (ft-in)	3320 (10' 11")	3320 (10' 11")
D: Minimum Ground Clearance	mm (ft-in)	*500 (1' 8")	*500 (1' 8")
E: Counterweight Clearance	mm (ft-in)	*1140 (3' 9")	*1160 (3' 10")
F: Engine Cover Height	mm (ft-in)	*2510 (8' 3")	*2530 (8' 4")
G: Overall Width of Upperstructure	mm (ft-in)	2995 (9' 10")	2995 (9' 10")
H: Undercarriage Length	mm (ft-in)	4650 (15' 3")	4950 (16' 3")
I: Undercarriage Width	mm (ft-in)	3190 (10' 6")	3190 (10' 6")
J: Sprocket Center to Idler Center	mm (ft-in)	3730 (12' 3")	4050 (13' 3")
K: Track Shoe Width	mm (in)	600 (24") (Grouser shoe)	
Ground Pressure	kPa (kgf/cm ² , psi)	67 (0.68, 9.7)	63 (0.64, 9.1)
Swing Speed	min ⁻¹ (rpm)	11.8	
Travel Speed (fast/low)	km/h (mph)	5.5/3.8 (3.4/2.4)	
Gradeability	(%)	35° (tanθ=70)	

NOTE: * HP mode

* The dimensions don't include the height of the shoe lug.

GENERAL / Specifications

ZAXIS370MTH



M1HH-12-006

Model		ZAXIS350H
Type of Front-End Attachment	—	3.2 m (10 ft 6 in) Standard Arm
Bucket Capacity (Heaped)	m ³	PCSA 1.50 (2.0 yd ³), CECE 1.30
Operating Weight	kg (lb)	36300 (80030)
Basic Machine Weight	kg (lb)	28200 (62170)
Engine	—	Isuzu AA-6HK1X 177 kW/1900 min ⁻¹ (240 PS/1900 rpm) *184 kW/2000 min ⁻¹ (250 PS/2000 rpm)
A: Overall Width (Excluding rear view mirrors)	mm (ft-in)	3580 (11' 9")
B: Cab Height	mm (ft-in)	3380 (11' 1")
C: Rear End Swing Radius	mm (ft-in)	3320 (10' 11")
D: Minimum Ground Clearance	mm (ft-in)	*560 (1' 10")
E: Counterweight Clearance	mm (ft-in)	*1250 (4' 1")
F: Engine Cover Height	mm (ft-in)	*2620 (8' 7")
G: Overall Width of Upperstructure	mm (ft-in)	3380 (11' 1")
H: Undercarriage Length	mm (ft-in)	5060 (16' 7")
I: Undercarriage Width	mm (ft-in)	3190 (10' 6")
J: Sprocket Center to Idler Center	mm (ft-in)	4050 (13' 3")
K: Track Shoe Width	mm (in)	600 (24") (Grouser shoe)
Ground Pressure	kPa (kgf/cm ² , psi)	68 (0.69, 9.8)
Swing Speed	min ⁻¹ (rpm)	11.9
Travel Speed (fast/low)	km/h (mph)	5.3/3.2 (3.3/2.0)
Gradeability	(%)	35° (tanθ=70)

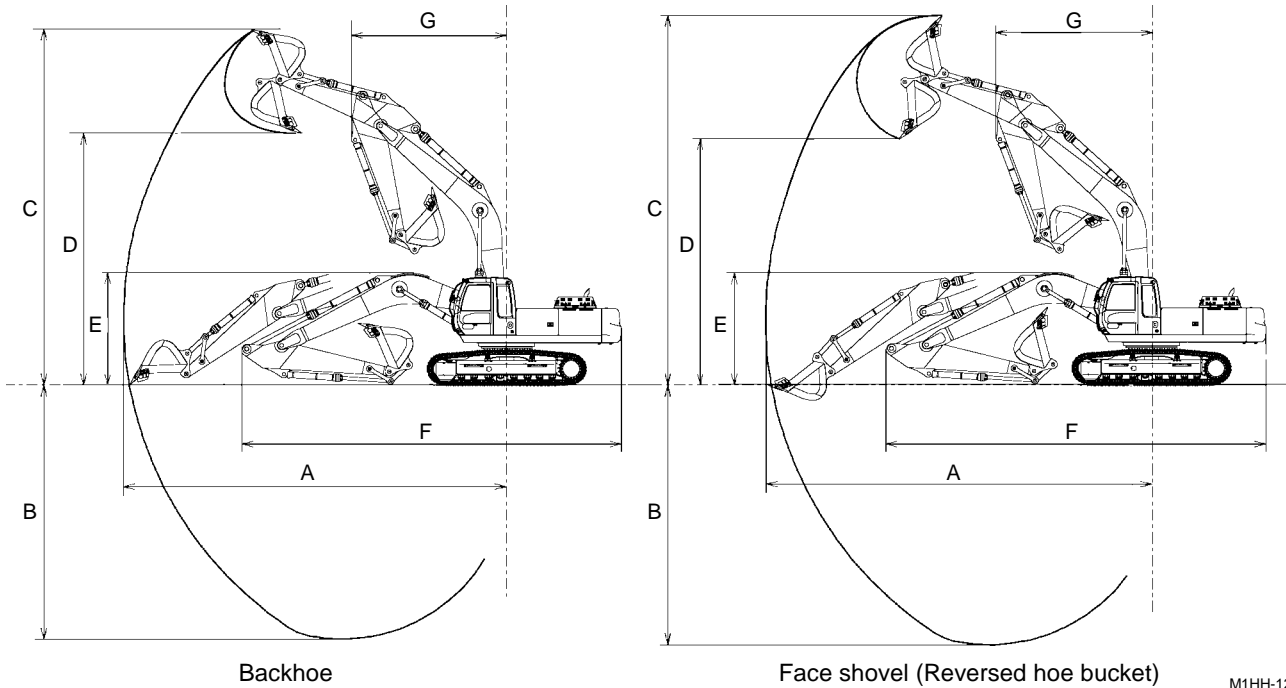
NOTE: * HP mode

* The dimensions don't include the height of the shoe lug.

GENERAL / Specifications

WORKING RANGE AND MACHINE DIMENSIONS FOR TRANSPORTATION

ZAXIS330, ZAXIS330LC



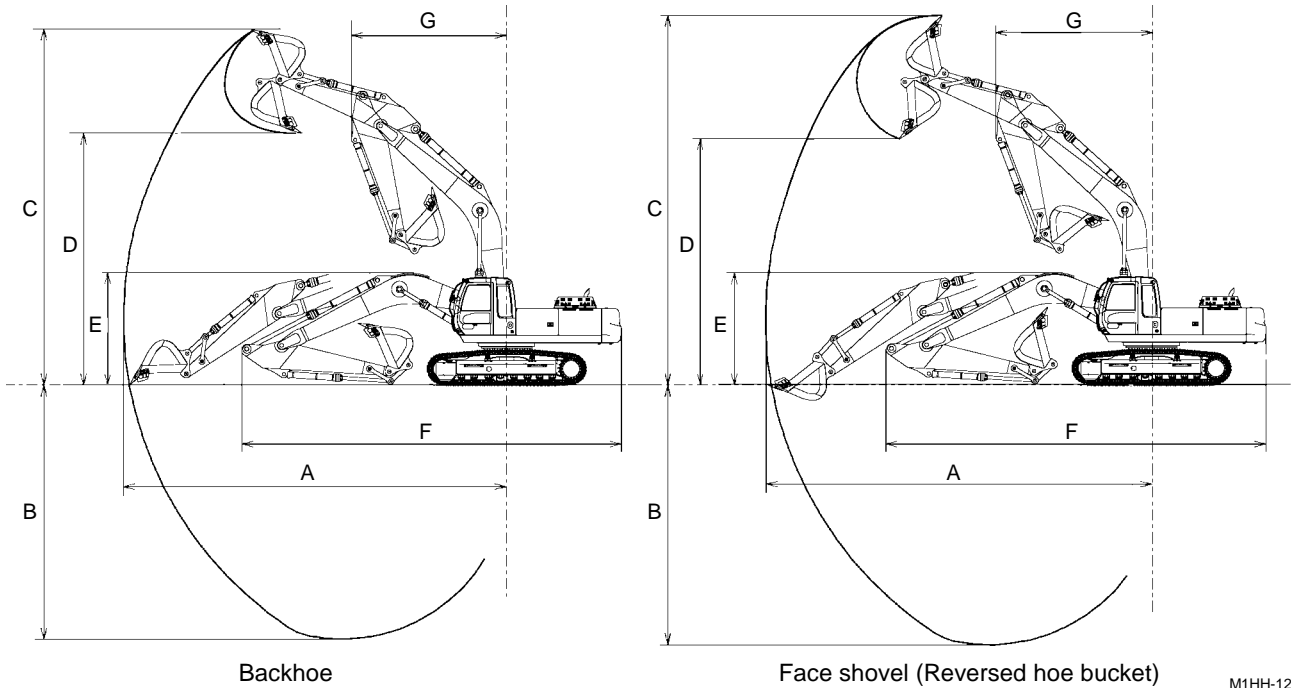
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Item	2.66 m (8 ft 9 in) Arm		3.2 m (10 ft 6 in) Standard Arm				4 m (13 ft 2 in) Arm					
			Backhoe		Shovel		Backhoe		Shovel			
	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
A: Maximum Digging Reach	10570	34' 8"	10800	35' 5"	11100	36' 5"	11330	37' 2"	11860	38' 11"	12090	39' 8"
B: Maximum Digging Depth	6850	22' 6"	7070	23' 2"	7380	24' 3"	7610	25' 0"	8180	26' 10"	8410	27' 7"
C: Maximum Cutting Height	9870	32' 5"	10380	34' 1"	10230	33' 7"	10680	35' 1"	10620	34' 10"	11050	36' 3"
D: Maximum Dumping Height	6830	22' 5"	6610	21' 8"	7130	23' 5"	6930	22' 9"	7500	24' 7"	7320	24' 0"
E: Transport Height	3470	11' 5"	3470	11' 5"	3230	10' 7"	3230	10' 7"	3570	11' 9"	3570	11' 9"
F: Overall Transport Length	11090	36' 5"	1190	36' 5"	10970	36' 0"	10970	36' 0"	11050	36' 3"	11050	36' 3"
G: Minimum Swing Radius	4570	15' 0"	4570	15' 0"	4490	14' 9"	4490	14' 9"	4520	14' 10"	4520	14' 10"

NOTE: Except for the "E: Transport Height," the dimensions don't include the height of the shoe lug.

GENERAL / Specifications

ZAXIS350H, ZAXIS350LCH



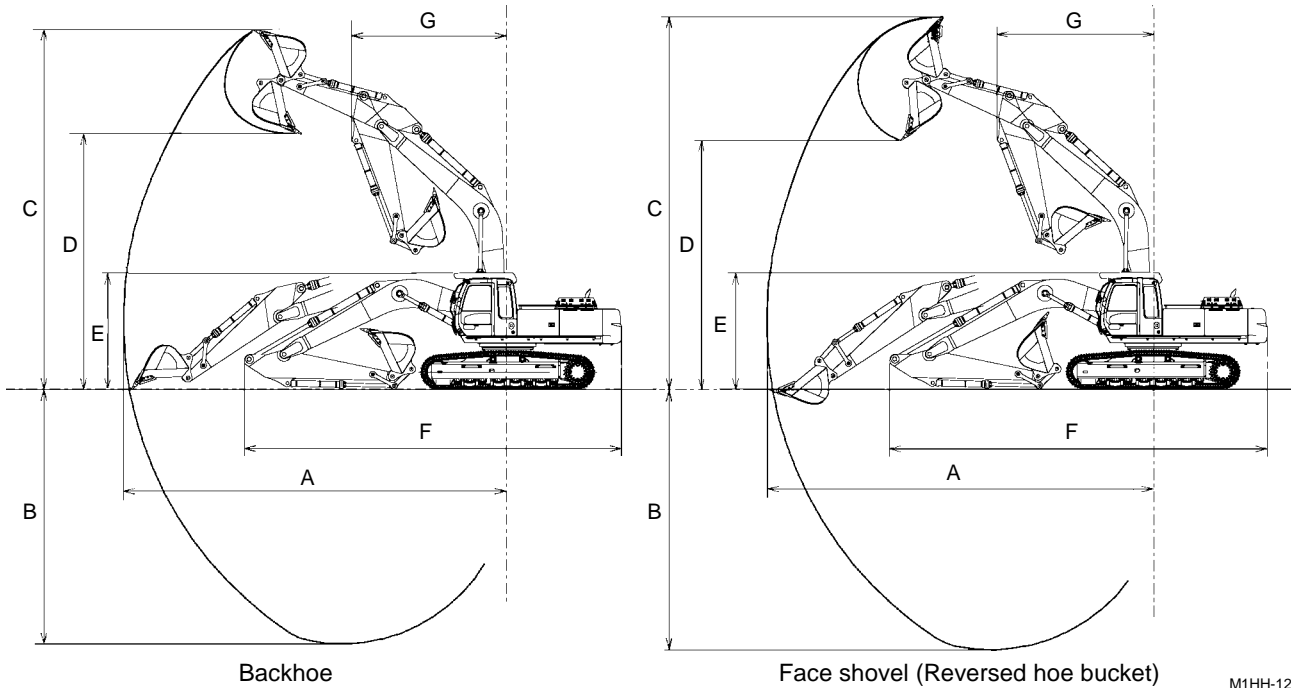
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Item	Category		3.2 m (10 ft 6 in) Standard Arm	
	Backhoe		Shovel	
	mm	ft·in	mm	ft·in
A: Maximum Digging Reach	11100	36' 5"	11330	37' 2"
B: Maximum Digging Depth	7380	24' 3"	7610	25' 0"
C: Maximum Cutting Height	10230	33' 7"	10680	35' 1"
D: Maximum Dumping Height	7130	23' 5"	6930	22' 9"
E: Transport Height	3230	10' 7"	3230	10' 7"
F: Overall Transport Length	10970	36' 0"	10970	36' 0"
G: Minimum Swing Radius	4490	14' 9"	4490	14' 9"

NOTE: Except for the "E: Transport Height," the dimensions do not include the height of the shoe lug.

GENERAL / Specifications

ZAXIS370MTH



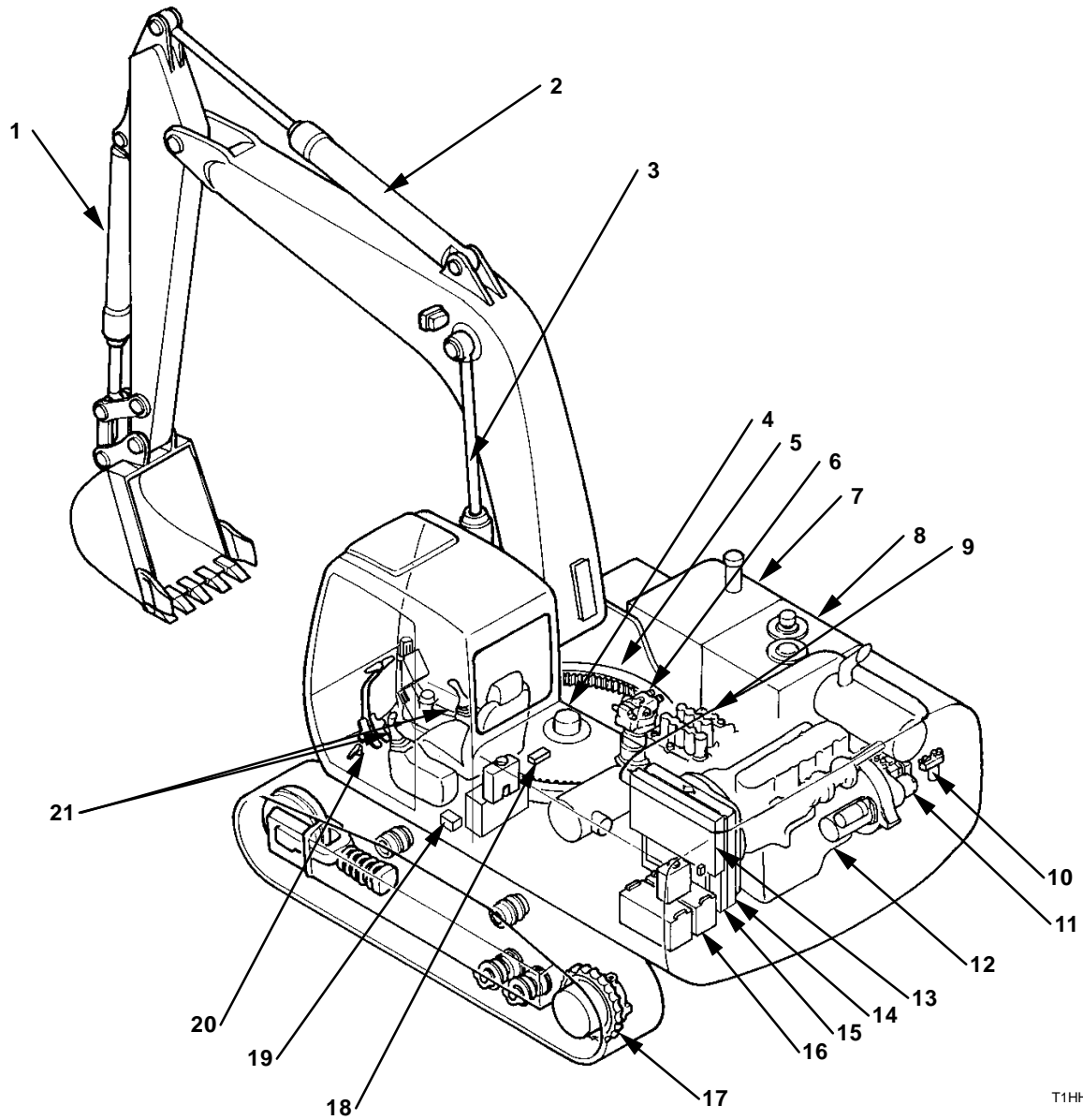
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Item	Category		3.2 m (10 ft 6 in) Standard Arm			
			Backhoe		Shovel	
			mm	ft·in	mm	ft·in
A: Maximum Digging Reach			11100	36' 5"	11330	37' 2"
B: Maximum Digging Depth			7270	23' 10"	7720	25' 4"
C: Maximum Cutting Height			10360	34' 0"	10810	35' 6"
D: Maximum Dumping Height			7240	23' 9"	7040	23' 1"
E: Transport Height			3380	11' 1"	3380	11' 1"
F: Overall Transport Length			10930	35' 10"	10930	35' 10"
G: Minimum Swing Radius			4490	14' 9"	4490	14' 9"

NOTE: Except for the "E: Transport Height," the dimensions do not include the height of the shoe lug.

GENERAL / Component Layout

MAIN COMPONENT LAYOUT



T1HH-01-02-001

1- Bucket Cylinder
2- Arm Cylinder
3- Boom Cylinder

4- Center Joint
5- Swing Bearing
6- Swing Device

7- Fuel Tank
8- Hydraulic Oil Tank
9- Control Valve

10- Pilot Filter and Pilot Relief Valve
11- Pump Device
12- Engine

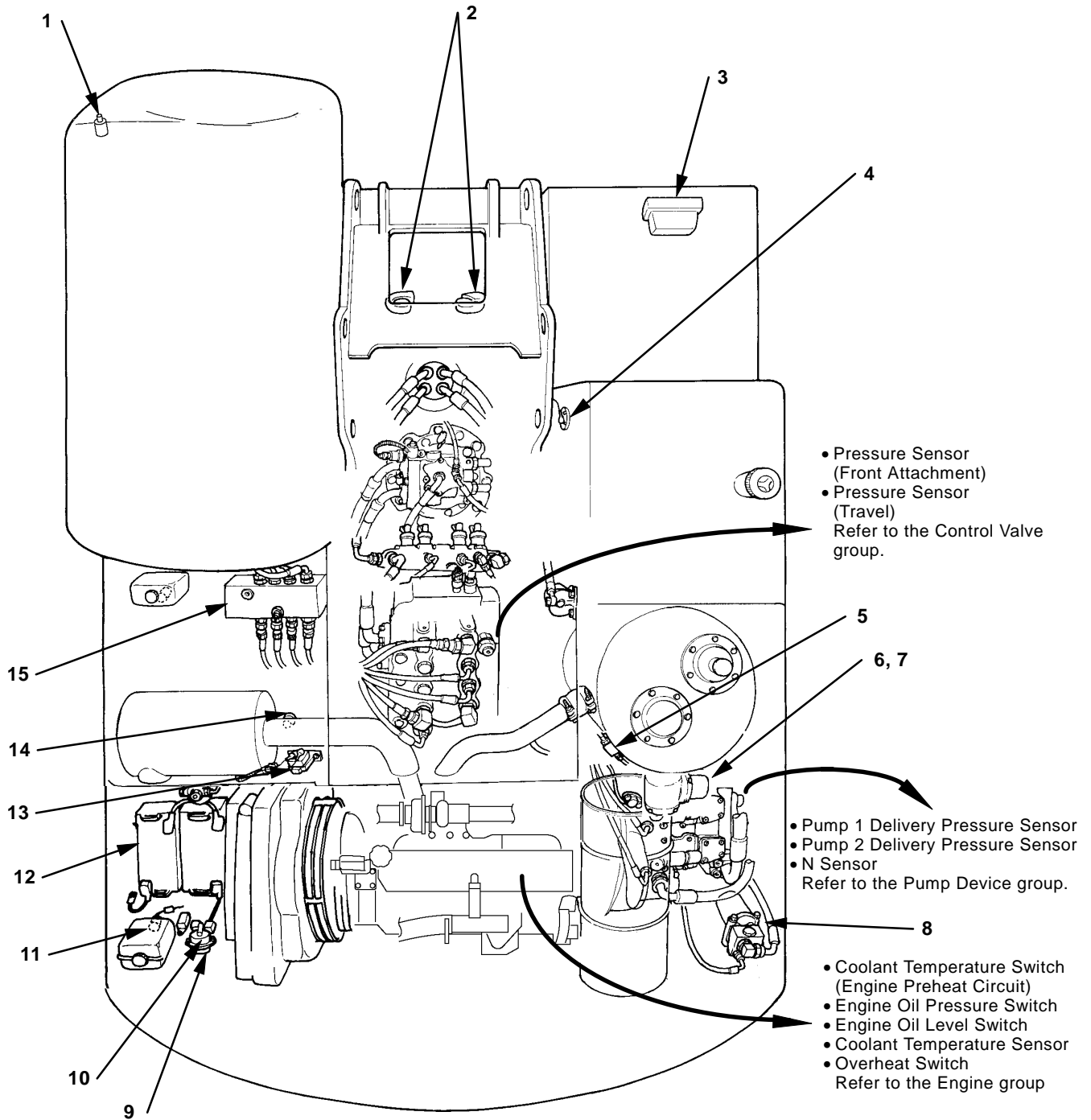
13- Intercooler
14- Radiator
15- Oil Cooler

16- Battery
17- Travel Device
18- Shockless Valve

19- Pilot Shut-Off Valve
20- Travel Pilot Valve
21- Front Attachment/Swing
Pilot Valve

GENERAL / Component Layout

ELECTRICAL COMPONENT LAYOUT (Overview)

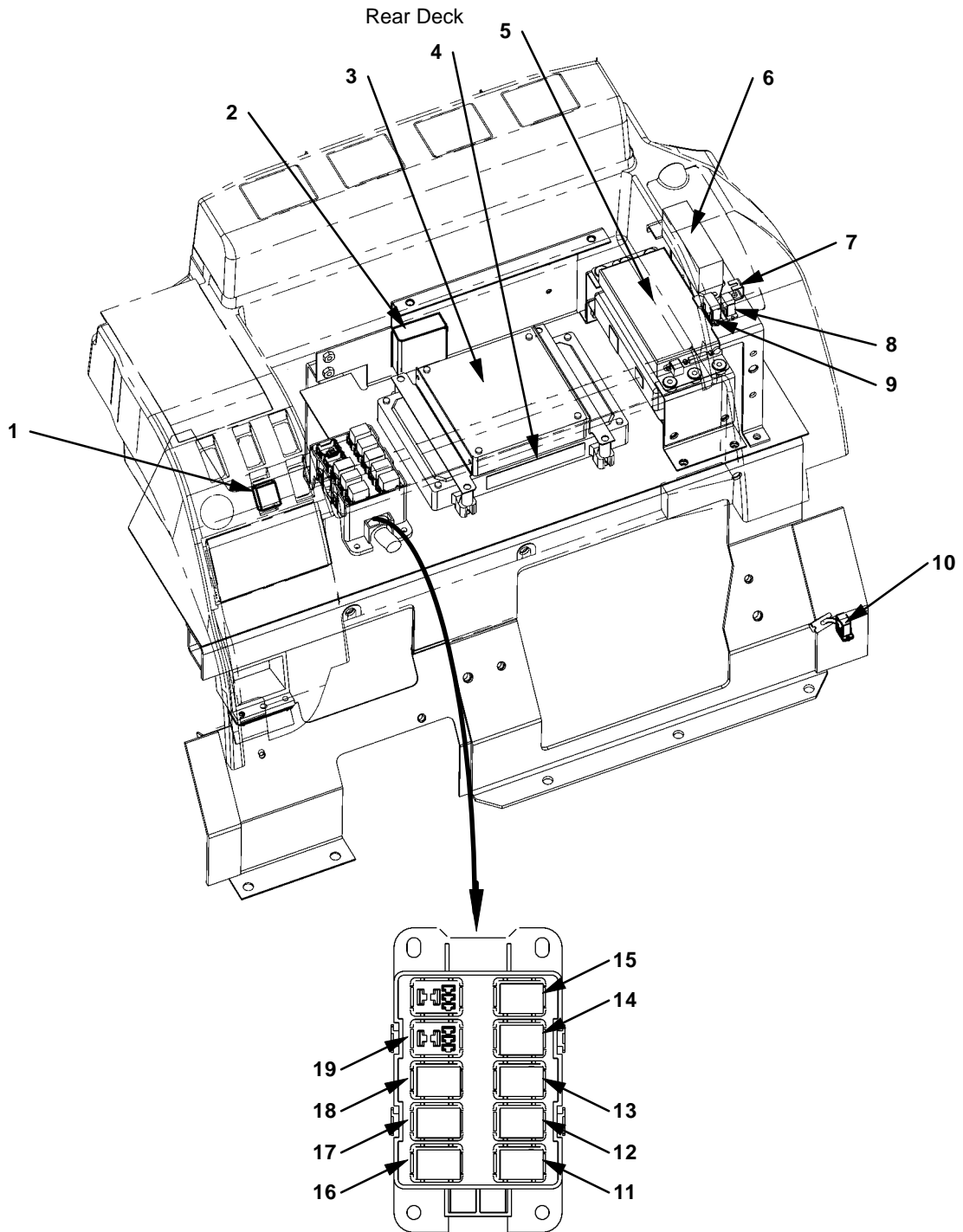


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|-----------------|---|---------------------------------|---|
| 1 - Wiper Motor | 5 - Pump 1 Control Pressure sensor (4-Spool Side) | 9 - Battery Relay | 13 - Starter Relay |
| 2 - Horn | 6 - EC Motor | 10 - Ambient Temperature Sensor | 14 - Air Cleaner Restriction Switch |
| 3 - Work Light | 7 - EC Sensor | 11 - Coolant Level Switch | 15 - Pressure Sensor (Boom Raise)
Pressure Sensor (Arm Roll-In)
Pressure Sensor (Swing) |
| 4 - Fuel Sensor | 8 - Pump 2 Control Pressure sensor (5-Spool Side)
Torque Control Solenoid Valve
Pump 2 Flow Rate Control Solenoid Valve | 12 - Battery | |

GENERAL / Component Layout

ELECTRICAL SYSTEM (Relays)



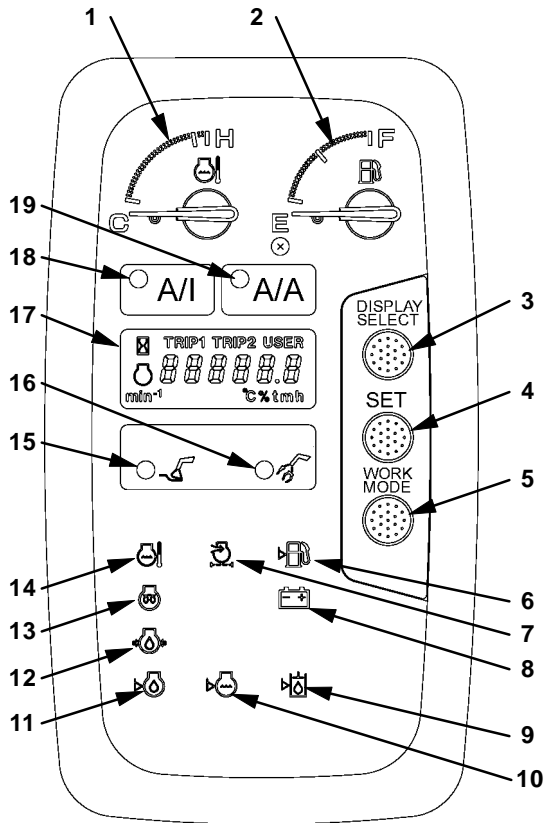
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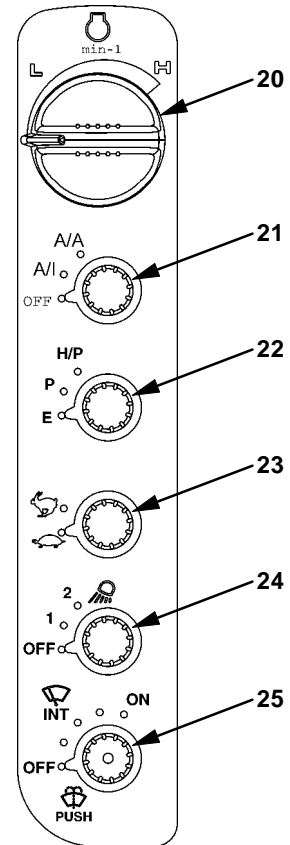
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|--|---|------------------------------|--------------------------|
| 1 - GPS ON/OFF Switch
(Satellite Navigation System
Equipped Machines only) | 6 - Fuse Box | 11 - Load Damp Relay (R1) | 16 - Wiper Relay A (R6) |
| 2 - QOS Controller | 7 - Learning Switch | 12 - Washer Relay (R2) | 17 - Wiper Relay B1 (R7) |
| 3 - ICX (Information Controller) | 8 - Dr. EX Connector to MC | 13 - Work Light Relay 2 (R3) | 18 - Wiper Relay B2 (R8) |
| 4 - MC (Main Controller) | 9 - Download Connector
(Not provided on Satellite
Terminal equipped machines) | 14 - Work Light Relay 1 (R4) | 19 - Wiper Relay B3 (R9) |
| 5 - Satellite Terminal (Optional) | 10 - Dr. EX Connector to ICX | 15 - Horn Relay (R5) | |

GENERAL / Component Layout

ELECTRICAL SYSTEM (Monitors and Switches)



T178-01-01-003

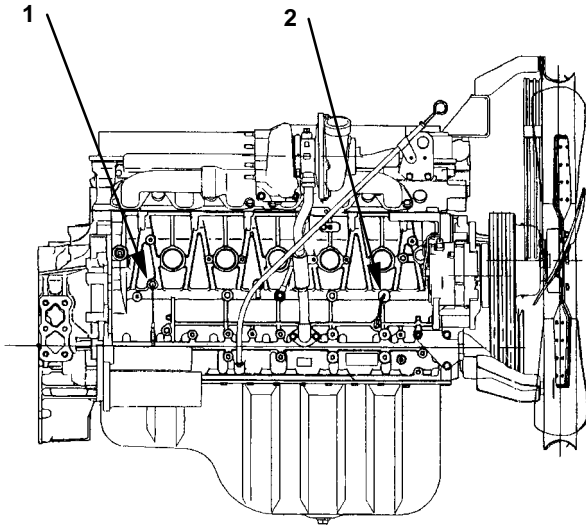


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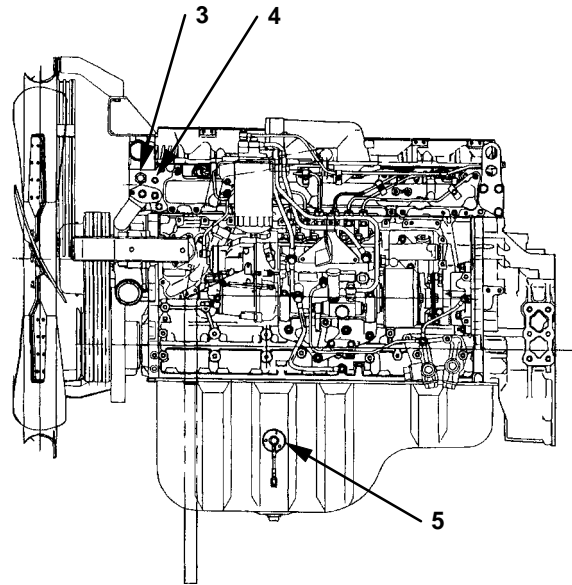
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|--------------------------------------|---|----------------------------------|--------------------------------------|
| 1 - Coolant Temperature Gauge | 8 - Alternator Indicator | 14 - Overheat Indicator | 20 - Engine Control Dial |
| 2 - Fuel Gauge | 9 - Hydraulic Oil Filter Indicator (Optional) | 15 - Digging Mode Indicator | 21 - Auto-Idle/Acceleration Selector |
| 3 - Display Selection Switch | 10 - Coolant Level Indicator | 16 - Attachment Mode Indicator | 22 - Power Mode Switch |
| 4 - SET Switch | 11 - Engine Oil Level Indicator | 17 - Liquid Crystal Display | 23 - Travel Mode Switch |
| 5 - Work Mode Switch | 12 - Engine Oil Pressure Indicator | 18 - Auto-Idle Indicator | 24 - Work Light Switch |
| 6 - Fuel Level Indicator | 13 - Preheat Indicator | 19 - Auto-Acceleration Indicator | 25 - Wiper/Washer Switch |
| 7 - Air Filter Restriction Indicator | | | |

GENERAL / Component Layout

ENGINE

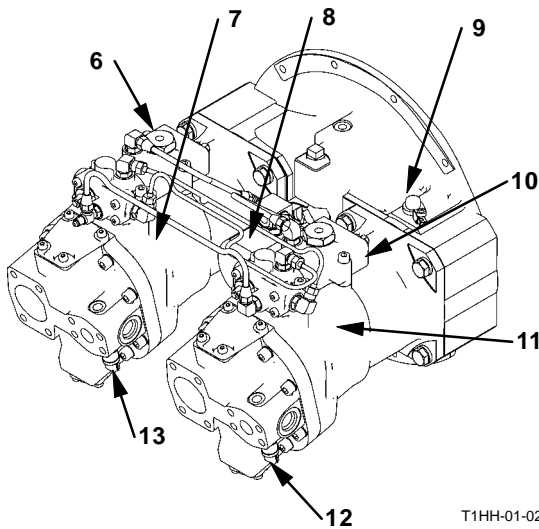


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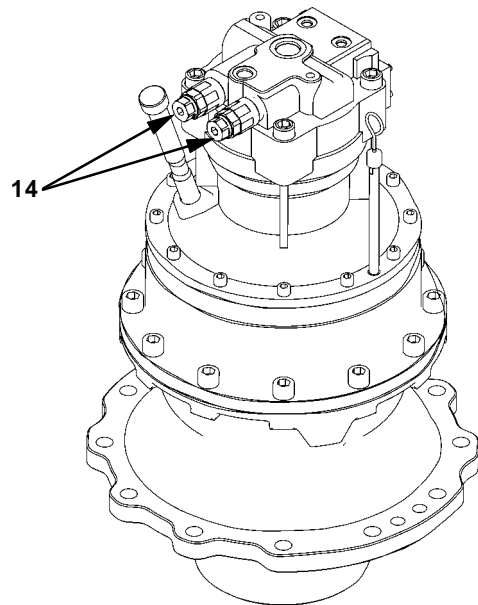
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PUMP DEVICE



T1HH-01-02-003

SWING DEVICE

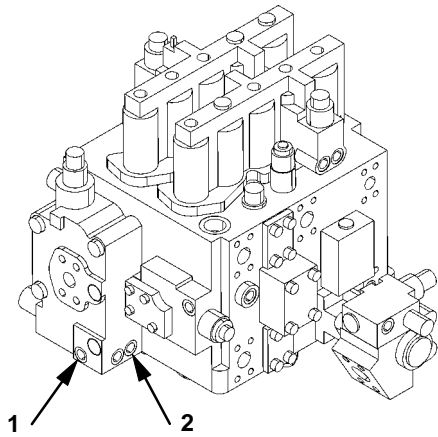


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|---|-----------------------------|-------------------------|--------------------------------------|
| 1 - Coolant Temperature Switch (Engine Preheat Circuit) | 5 - Engine Oil Level Switch | 9 - N Sensor | 12 - Pump 1 Delivery Pressure Sensor |
| 2 - Engine Oil Pressure Switch | 6 - Regulator (Pump 2) | 10 - Regulator (Pump 1) | 13 - Pump 2 Delivery Pressure Sensor |
| 3 - Overheat Switch | 7 - Pump 2 | 11 - Pump 1 | 14 - Swing Relief Valve |
| 4 - Coolant Temperature Sensor | 8 - Pilot Pump | | |

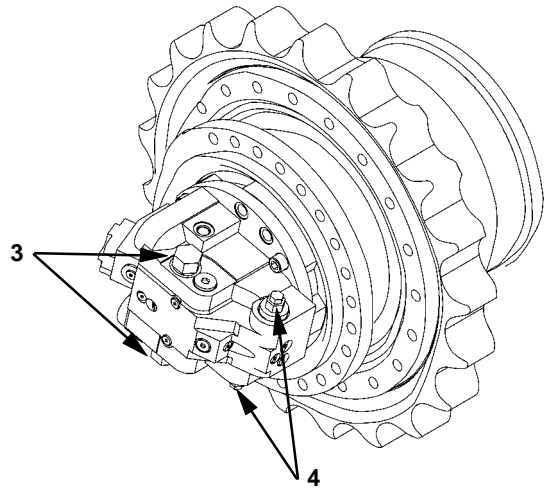
GENERAL / Component Layout

CONTROL VALVE



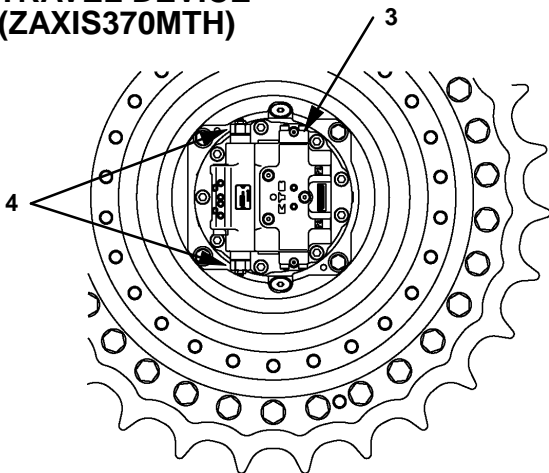
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TRAVEL DEVICE (ZAXIS330, ZAXIS350H)



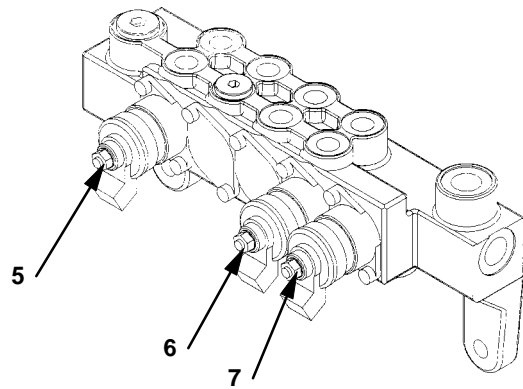
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TRAVEL DEVICE (ZAXIS370MTH)



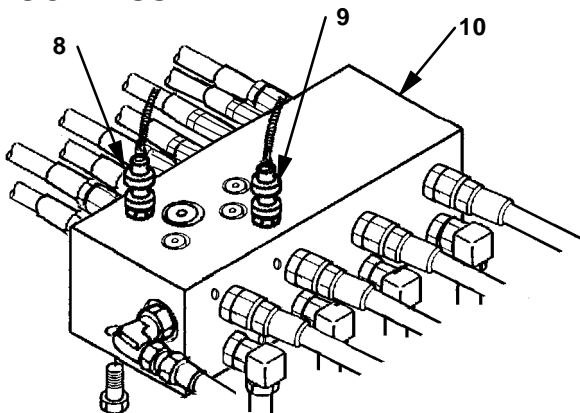
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SOLENOID VALVE UNIT



T1HH-01-02-008

SHOCKLESS VALVE



T173-03-06-001

- | | | | |
|------------------------------|------------------------------|------------------------------|----------------------------------|
| 1 - Pressure Sensor (Front) | 4 - Travel Relief Valve | 7 - Solenoid Valve Unit (SG) | 9 - Pressure Sensor (Boom Raise) |
| 2 - Pressure Sensor (Travel) | 5 - Solenoid Valve Unit (SC) | 8 - Pressure Sensor | 10 - Pressure Sensor (Swing) |
| 3 - Counterbalance Valve | 6 - Solenoid Valve Unit (SI) | (Arm Roll-In) | |

GENERAL / Component Specifications

ENGINE

Manufacturer	ISUZU
Model	AA-6HK1XQA
Type	Diesel, 4-Cycle, Water-cooled, Inline, Direct Injection
Cyl. No.- Bore × Stroke	6-115 mm × 125 mm (4.53 in × 4.92 in)
Piston Displacement	7790 cm ³ (475 in ³)
Rated Output.....	177 kW/1900 min ⁻¹ (240 PS/1900 rpm) HP Mode: 184 kW / 2000 min ⁻¹ (250 PS / 2000 rpm)
Compression Ratio	17.3
Dry Weight	650 kg (1430 lb)
Firing Order	1-5-3-6-2-4
Rotation Direction.....	Clockwise (Viewed from fan side)
Weight.....	650 kg (1430 lb)

COOLING SYSTEM

Cooling Fan.....	Dia. 850 mm (33.5 in), 6 Blades (N-Type Blade, Unequal Pitch), Draw-in Type
Fan Pulley Ratio	Engine rpm × 0.80
Thermostat.....	Cracking Temperature at Atmospheric Pressure: 82 °C (180 °F) Full Open(Stroke: 10 mm or more) Temperature: 95 °C (203 °F)
Water Pump	Centrifugal Belt Driven Type

LUBRICATION SYSTEM

Lubrication Pump Type	Gear Pump
Oil Filter	Full-Flow Paper Element Type with Bypass
Oil Cooler	Water Cooled Integral Type

STARTING SYSTEM

Motor	Magnetic Pinion Shift Reduction Type
Voltage / Output	24 V / 5.0 kW

PREHEAT SYSTEM

Preheating Method.....	Glow Plug (QOS Type)
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ENGINE STOP SYSTEM

Stop Method.....	Fuel Shut-Off
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