

HITACHI

Training Text

ZAXIS

200-3 class

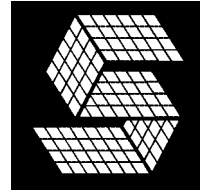
240-3 class

270-3 class

OPERATIONAL PRINCIPLE

Technical Training Center

SECTION 1 GENERAL



—CONTENTS—

Group 1 Specifications

Specifications	T1-1-1
Working Ranges.....	T1-1-4

Group 2 Component Layout

Main Components	T1-2-1
Electrical System (Overview).....	T1-2-3
Engine.....	T1-2-8
Pump Device.....	T1-2-9
Swing Device	T1-2-9
Control Valve.....	T1-2-10
Signal Control Valve	T1-2-10
Solenoid Valve Unit	T1-2-11
Travel Device	T1-2-11

Group 3 Component Specifications

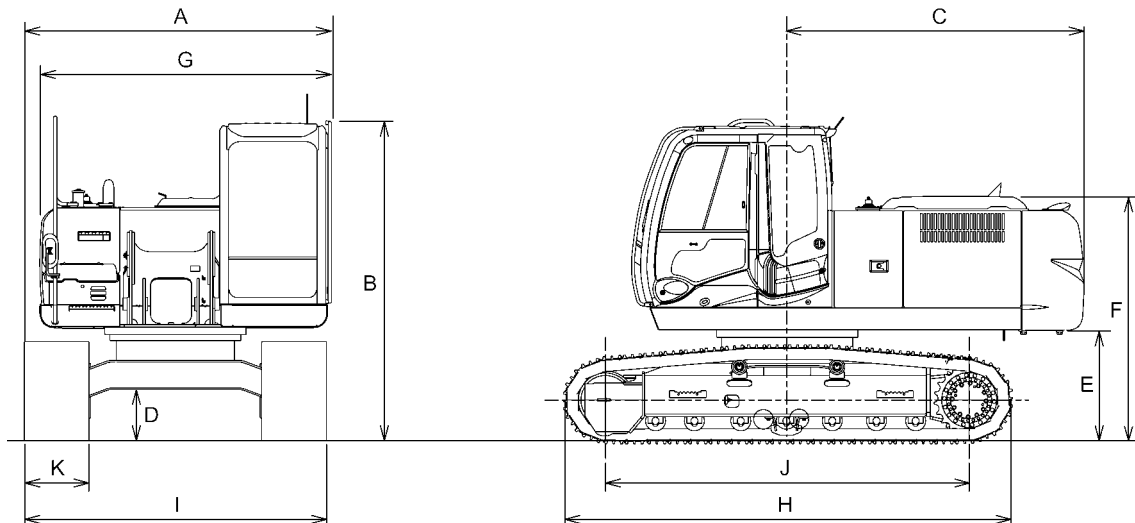
Engine.....	T1-3-1
Engine Accessories	T1-3-7
Hydraulic Component	T1-3-9
Electrical Component	T1-3-16

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GENERAL / Specifications

SPECIFICATIONS

ZAXIS200-3



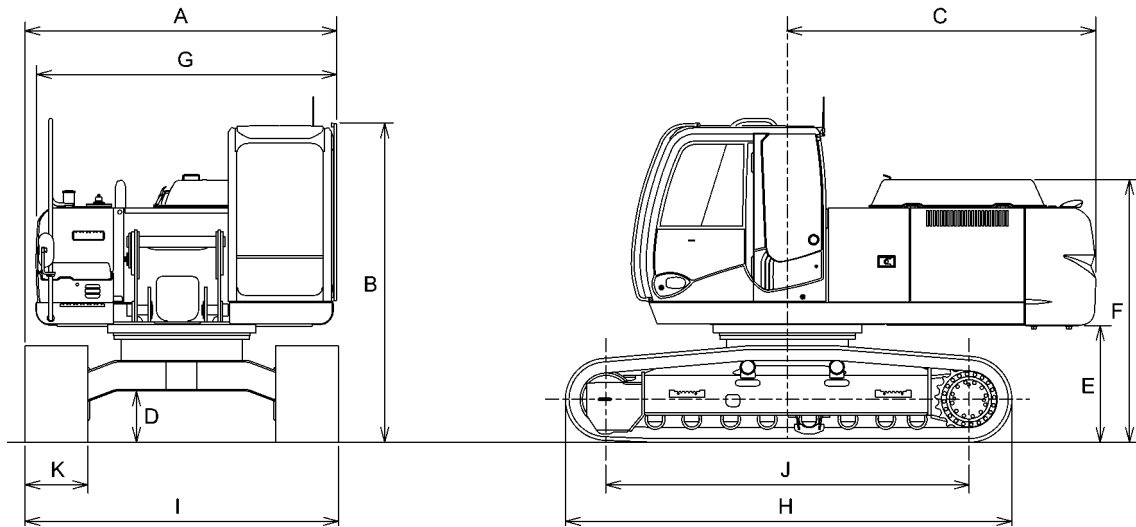
T1V1-01-01-006

Model	ZAXIS200-3
Type of Front-End Attachment	2.91 m (9 ft 7 in) Arm
Bucket Capacity (Heaped)	PCSA 0.8 m ³ (1.05 yd ³), CECE 0.7 m ³
Operating Weight	19800 kg (43700 lb)
Basic Machine Weight	15400 kg (34000 lb)
Engine	Isuzu AH-4HK1XYSA-02 122 kW/2000 min ⁻¹ (166 PS/2000 rpm) (HP Mode)
A: Overall Width (Excluding back mirrors)	2800 mm (9 ft 2 in)
B: Cab Height	2950 mm (9 ft 8 in)
C: Rear End Swing Radius	2750 mm (9 ft 0 in)
D: Minimum Ground Clearance	* 450 mm (18 in)
E: Counterweight Clearance	* 1030 mm (3 ft 5 in)
F: Engine Cover Height	* 2270 mm (7 ft 5 in)
G: Overall Width of Upperstructure	2710 mm (8 ft 11 in)
H: Undercarriage Length	4170 mm (13 ft 8 in)
I: Undercarriage Width	2800 mm (9 ft 2 in)
J: Sprocket Center to Idler Center	3370 mm (11 ft 1 in)
K: Track Shoe Width	600 mm (24 in) (Grouser shoe)
Ground Pressure	44 kPa (0.45 kgf/cm ² , 6.4 psi)
Swing Speed	13.3 min ⁻¹ (rpm)
Travel Speed (fast/slow)	5.5/3.5 km/h (3.4/2.2 mph)
Gradeability	35° (tan θ = 0.70)

NOTE: "*" The dimensions do not include height of the shoe lug.

GENERAL / Specifications

ZAXIS240-3



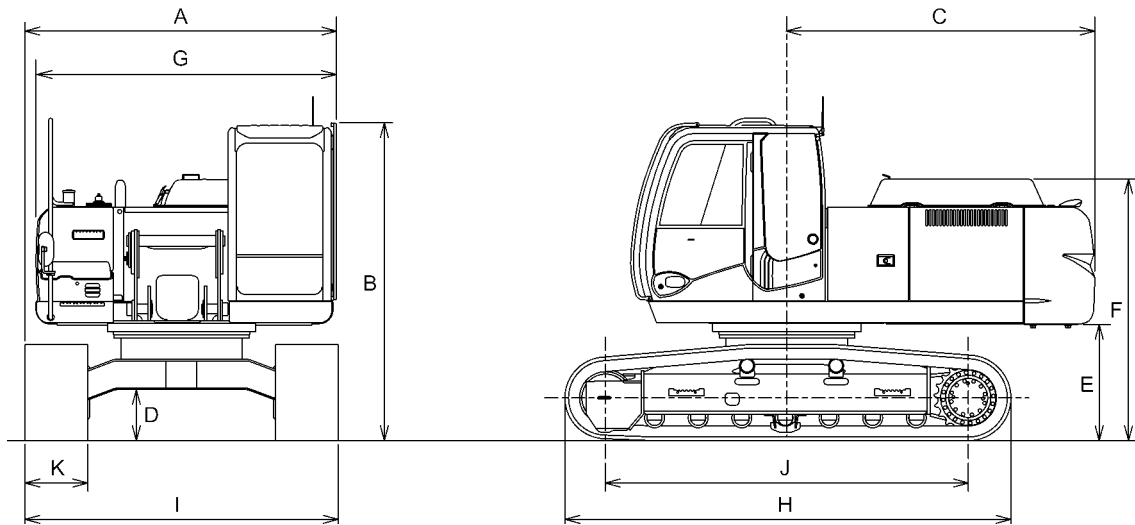
T1V1-01-01-001

Model	ZAXIS240-3
Type of Front-End Attachment	2.96 m (9 ft 9 in) Arm
Bucket Capacity (Heaped)	PCSA 1.0 m ³ (1.3 yd ³), CECE 0.9 m ³
Operating Weight	23400 kg (51600 lb)
Basic Machine Weight	17800 kg (39200 lb)
Engine	Isuzu AH-4HK1XYSA-01 132 kW/2000 min ⁻¹ (180 PS/2000 rpm)
A: Overall Width (Excluding back mirrors)	2990 mm (9 ft 10 in)
B: Cab Height	3010 mm (9 ft 11 in)
C: Rear End Swing Radius	2940 mm (9 ft 8 in)
D: Minimum Ground Clearance	*460 mm (18 in)
E: Counterweight Clearance	* 1090 mm (3 ft 7 in)
F: Engine Cover Height	* 2425 mm (7 ft 12 in)
G: Overall Width of Upperstructure	2890 mm (9 ft 6 in)
H: Undercarriage Length	4260 mm (13 ft 12 in)
I: Undercarriage Width	2990 mm (9 ft 10 in)
J: Sprocket Center to Idler Center	3463 mm (11 ft 4 in)
K: Track Shoe Width	600 mm (24 in) (Grouser shoe)
Ground Pressure	51 kPa (0.52 kgf/cm ² , 7.4 psi)
Swing Speed	13.5 min ⁻¹ (rpm)
Travel Speed (fast/slow)	5.5/3.4 km/h (3.4/2.1 mph)
Gradeability	35° (tan θ = 0.70)

NOTE: "*" The dimensions do not include height of the shoe lug.

GENERAL / Specifications

ZAXIS270-3



T1V1-01-01-003

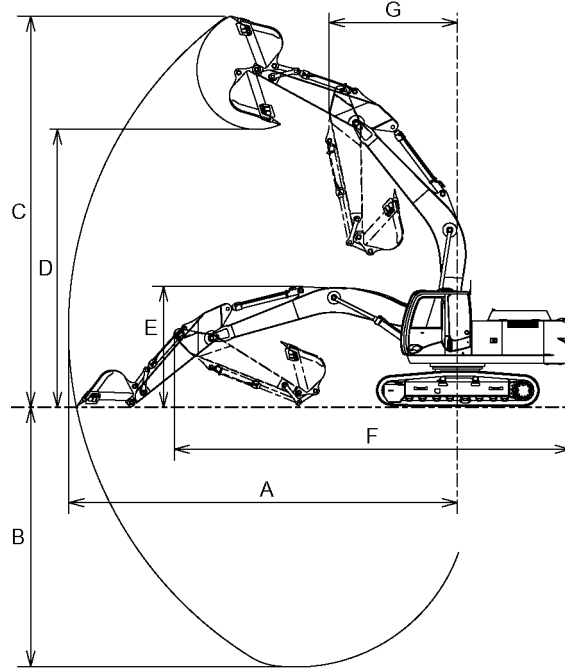
Model	ZAXIS270-3
Type of Front-End Attachment	3.11 m (10 ft 2 in) Arm
Bucket Capacity (Heaped)	PCSA 1.1 m ³ (1.44 yd ³), CECE 1.0 m ³
Operating Weight	27300 kg (60200 lb)
Basic Machine Weight	21300 kg (47000 lb)
Engine	Isuzu AH-4HK1XYSA-03 140 kW/2100 min ⁻¹ (190 PS/2150 rpm)
A: Overall Width (Excluding back mirrors)	3190 mm (10 ft 6 in)
B: Cab Height	3100 mm (10 ft 2 in)
C: Rear End Swing Radius	2940 mm (9 ft 8 in)
D: Minimum Ground Clearance	*510 mm (20 in)
E: Counterweight Clearance	*1180 mm (3 ft 11 in)
F: Engine Cover Height	*2515 mm (8 ft 3 in)
G: Overall Width of Upperstructure	2890 mm (9 ft 6 in)
H: Undercarriage Length	4670 mm (15 ft 4 in)
I: Undercarriage Width	3190 mm (10 ft 6 in)
J: Sprocket Center to Idler Center	3728 mm (12 ft 3 in)
K: Track Shoe Width	600 mm (24 in) (Grouser shoe)
Ground Pressure	55 kPa (0.56 kgf/cm ² , 8.0 psi)
Swing Speed	12.6 min ⁻¹ (rpm)
Travel Speed (fast/slow)	5.5 / 3.3 km/h (3.4 / 2.1 mph)
Gradeability	35° (tan θ = 0.70)

NOTE: "*" The dimensions do not include height of the shoe lug.

GENERAL / Specifications

WORKING RANGES

ZAXIS200-3



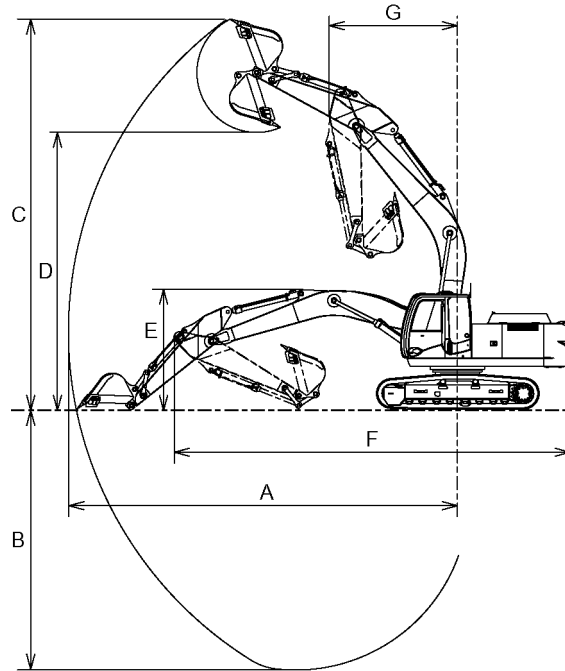
T1V1-01-01-002

Model		ZAXIS200-3					
Item	Category	2.42 m (7 ft 11in) Arm		2.91 m (9 ft 7 in) Arm		2.91 m (9 ft 7 in) Arm + 1.5 EX Arm	
		mm	ft·in	mm	ft·in	mm	ft·in
A:	Maximum Digging Reach	9430	30'11"	9920	32'7"	11260	36'11"
B:	Maximum Digging Depth	6180	20'3"	6670	21'11"	8160	26'9"
C:	Maximum Cutting Height	9670	31'9"	10040	32'11"	10220	33'6"
D:	Maximum Dumping Height	6830	22'5"	7180	23'7"	7410	24'4"
E:	Transport Height	3180	10'5"	3100	10'2"	-	-
F:	Overall Transport Length	9605	31'6"	9510	31'2"	-	-
G:	Minimum Swing Radius	3280	10'9"	3540	11'7"	3540	11'7"

NOTE: The dimensions do not include height of the shoe lug (except Item E).

GENERAL / Specifications

ZAXIS240-3 (Machine with Mono Boom)



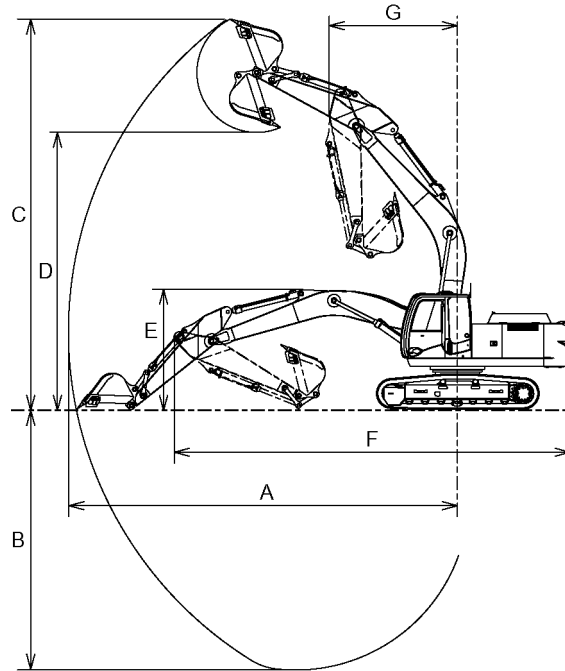
T1V1-01-01-002

Model		ZAXIS240-3							
Category		2.19 m (7 ft 3 in) Arm		2.5 m (8 ft 2 in) Arm		2.96 m (9 ft 9 in) Arm		3.61 m (11 ft 10 in) Arm	
Item		mm	ft·in	mm	ft·in	mm	ft·in	mm	ft·in
A: Maximum Digging Reach		9660	31'8"	9880	32'5"	10290	33'9"	10910	35'10"
B: Maximum Digging Depth		6190	20'4"	6500	21'4"	6960	22'10"	7610	24'12"
C: Maximum Cutting Height		10000	32'10"	9950	32'8"	10160	33'4"	10560	34'8"
D: Maximum Dumping Height		6970	10'4"	6990	22'11"	7200	23'8"	7580	24'10"
E: Transport Height		3340	11'11"	3370	11'1"	3070	10'1"	3320	10'11"
F: Overall Transport Length		10240	33'7"	10270	33'8"	10150	33'4"	10200	33'6"
G: Minimum Swing Radius		3580	11'9"	3480	11'5"	3440	11'3"	3430	11'3"

NOTE: The dimensions do not include height of the shoe lug (except Item E).

GENERAL / Specifications

ZAXIS270-3 (Machine with Mono Boom)



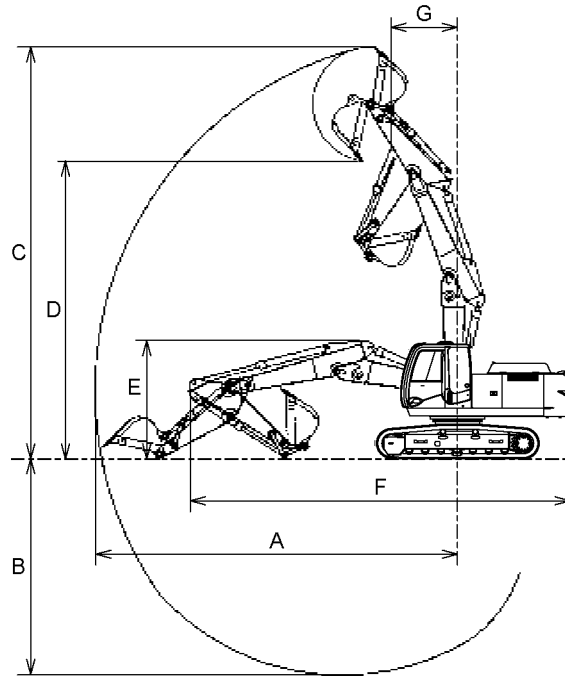
T1V1-01-01-004

Model		ZAXIS270-3					
Category		2.42 m (7 ft 11 in) Arm		3.11 m (10 ft 2 in) Arm		3.76 m (12 ft 4 in) Arm	
Item	Category	mm	ft·in	mm	ft·in	mm	ft·in
A:	Maximum Digging Reach	10060	33'0"	10710	35'2"	11270	36'12"
B:	Maximum Digging Depth	6540	21'6"	7230	23'9"	7880	25'10"
C:	Maximum Cutting Height	9890	32'5"	10260	33'8"	10460	34'4"
D:	Maximum Dumping Height	6970	22'10"	7310	23'12"	7520	24'8"
E:	Transport Height	3410	11'2"	3170	10'5"	3310	10'10"
F:	Overall Transport Length	10440	34'3"	10340	33'11"	10390	34'1"
G:	Minimum Swing Radius	4070	13'4"	3910	12'10"	3900	12'10"

NOTE: The dimensions do not include height of the shoe lug (except Item E).

GENERAL / Specifications

ZAXIS240-3 (Machine with 2-Piece Boom)



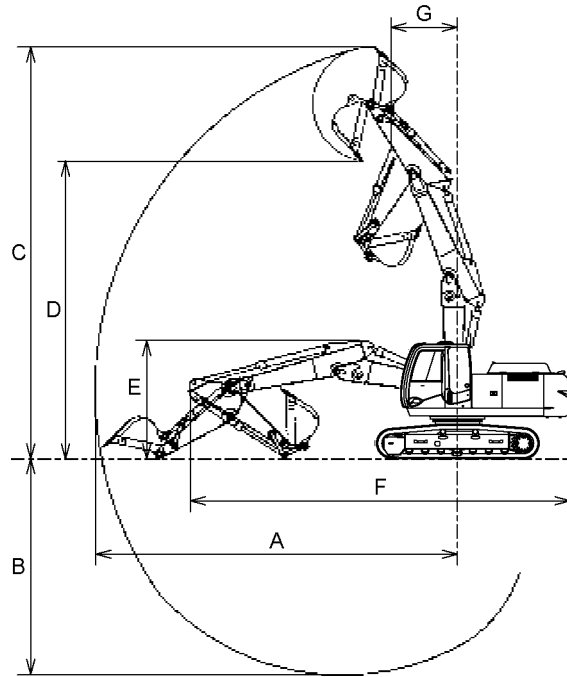
T1V1-01-01-005

Model	ZAXIS240-3							
	2.19 m (7 ft 3 in) Arm		2.5 m (8 ft 2 in) Arm		2.96 m (9 ft 9 in) Arm		3.61 m (11 ft 10 in) Arm	
Category	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
A: Maximum Digging Reach	9770	32'1"	10010	32'10"	10430	34'3"	11070	36'4"
B: Maximum Digging Depth	5810	19'1"	6080	19'11"	6530	21'5"	7190	23'7"
C: Maximum Cutting Height	11300	37'1"	11470	37'8"	11840	38'10"	12420	40'9"
D: Maximum Dumping Height	8210	27'1"	8350	27'5"	8720	28'7"	9300	30'6"
E: Transport Height	3150	10'4"	3200	10'6"	3090	10'2"	3340	10'12"
F: Overall Transport Length	10230	33'7"	10250	33'8"	10220	33'6"	10190	33'5"
G: Minimum Swing Radius	2500	8'2"	2560	8'5"	2310	7'7"	2610	8'7"

NOTE: The dimensions do not include height of the shoe lug (except Item E).

GENERAL / Specifications

ZAXIS270-3 (Machine with 2-Piece Boom)



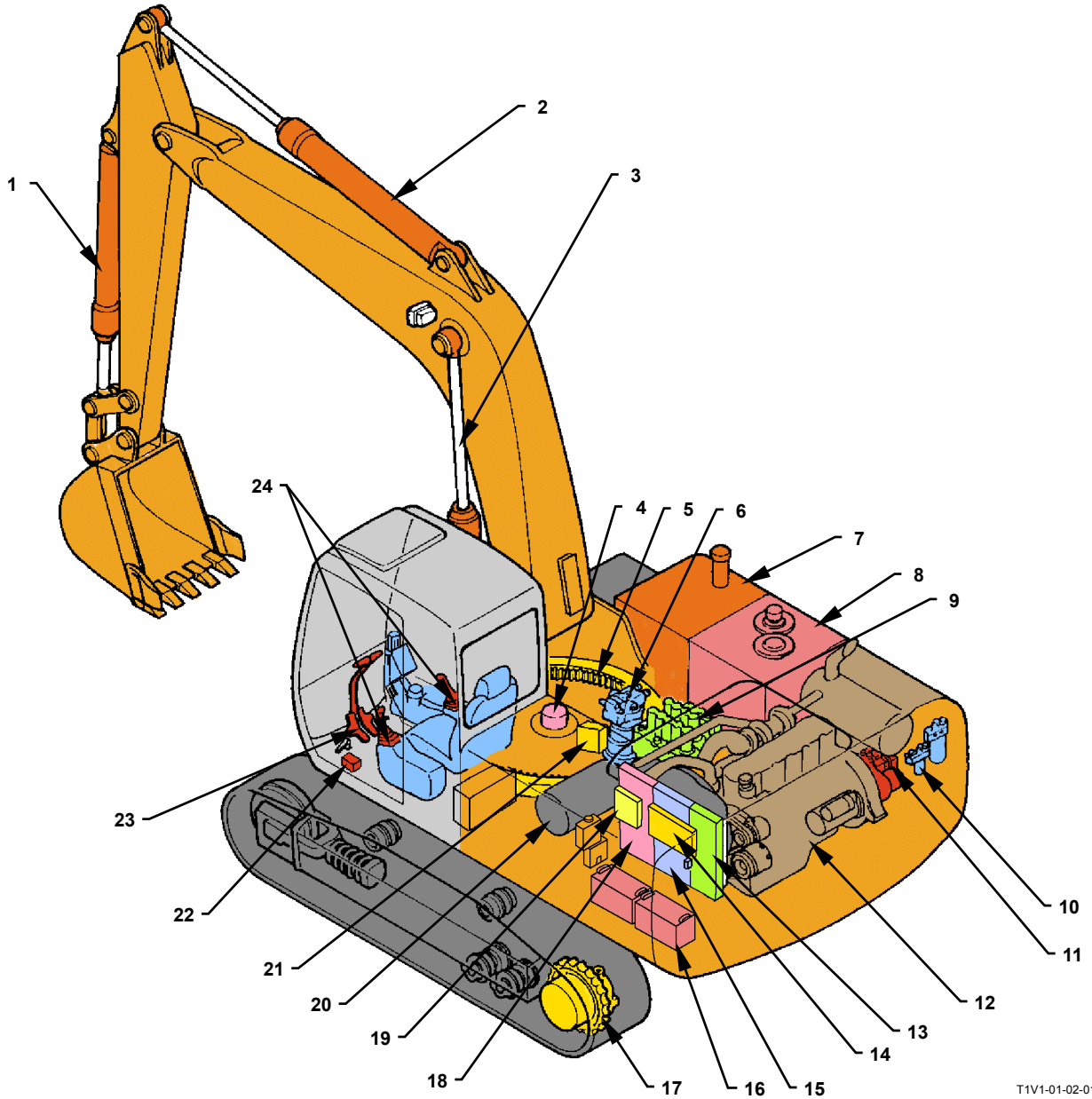
T1V1-01-01-005

Item	Model		ZAXIS270-3					
	Category		2.42 m (7 ft 11 in) Arm		3.11 m (10 ft 2 in) Arm		3.76 m (12 ft 4 in) Arm	
			mm	ft-in	mm	ft-in	mm	ft-in
A: Maximum Digging Reach			10070	36'4"	10740	35'3"	11330	37'2"
B: Maximum Digging Depth			6020	19'9"	6690	21'11"	7330	24'1"
C: Maximum Cutting Height			11500	37'9"	12080	39'8"	12550	41'2"
D: Maximum Dumping Height			8390	27'6"	8960	29'5"	9430	30'11"
E: Transport Height			3220	10'7"	3150	10'4"	3380	11'1"
F: Overall Transport Length			10330	33'10"	10300	33'10"	10310	33'9"
G: Minimum Swing Radius			2820	9'3"	2580	8'6"	2740	8'12"

NOTE: The dimensions do not include height of the shoe lug (except Item E).

GENERAL / Component Layout

MAIN COMPONENTS

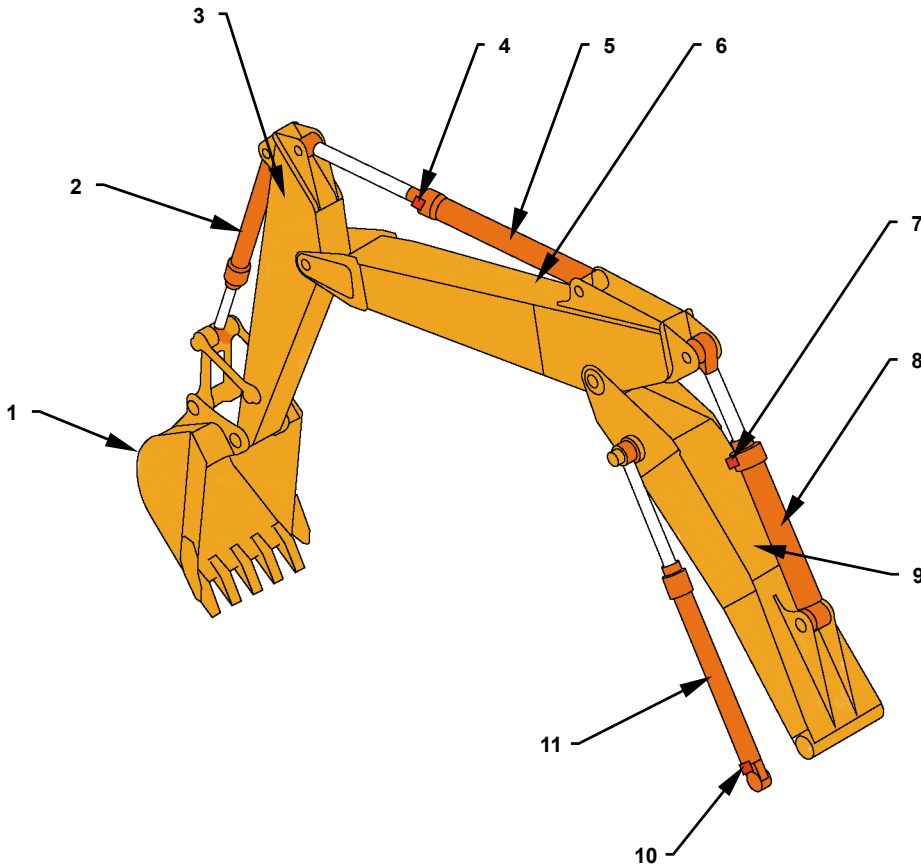


T1V1-01-02-013C

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|---------------------|---------------------------------------|--------------------------------|---|
| 1 - Bucket Cylinder | 7 - Fuel Tank | 13 - Intercooler | 19 - Fuel Cooler |
| 2 - Arm Cylinder | 8 - Hydraulic Oil Tank | 14 - Air Conditioner Condenser | 20 - Air Cleaner |
| 3 - Boom Cylinder | 9 - Control Valve | 15 - Radiator | 21 - Signal Control Valve |
| 4 - Center Joint | 10 - Pilot Filter/ Pilot Relief Valve | 16 - Battery | 22 - Pilot Shut-Off Solenoid Valve |
| 5 - Swing Bearing | 11 - Pump Device | 17 - Travel Device | 23 - Travel Pilot Valve |
| 6 - Swing Device | 12 - Engine | 18 - Oil Cooler | 24 - Front Attachment / Swing Pilot Valve |

GENERAL / Component Layout

Front Attachment (2-Piece Boom)

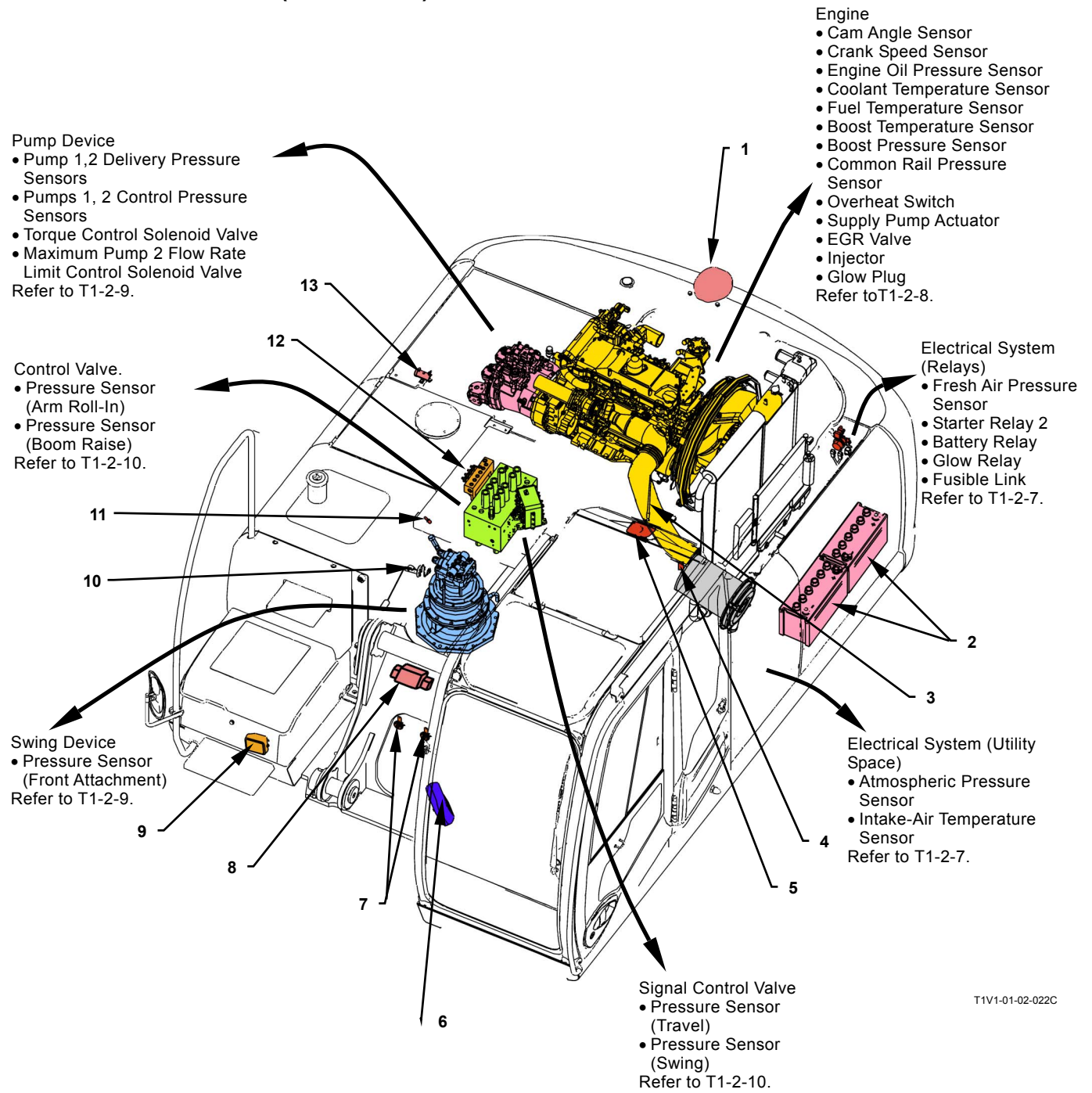


T1V1-01-02-006C

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|---------------------|---------------------------------------|---|---|
| 1 - Bucket | 4 - Hose Rupture Valve (Arm Cylinder) | 7 - Hose Rupture Valve (Positioning Cylinder) | 10 - Hose Rupture Valve (Boom Cylinder) |
| 2 - Bucket Cylinder | 5 - Arm Cylinder | 8 - Positioning Cylinder | 11 - Boom Cylinder |
| 3 - Arm | 6 - Upper Boom | 9 - Bottom Boom | |

GENERAL / Component Layout

ELECTRICAL SYSTEM (OVERVIEW)

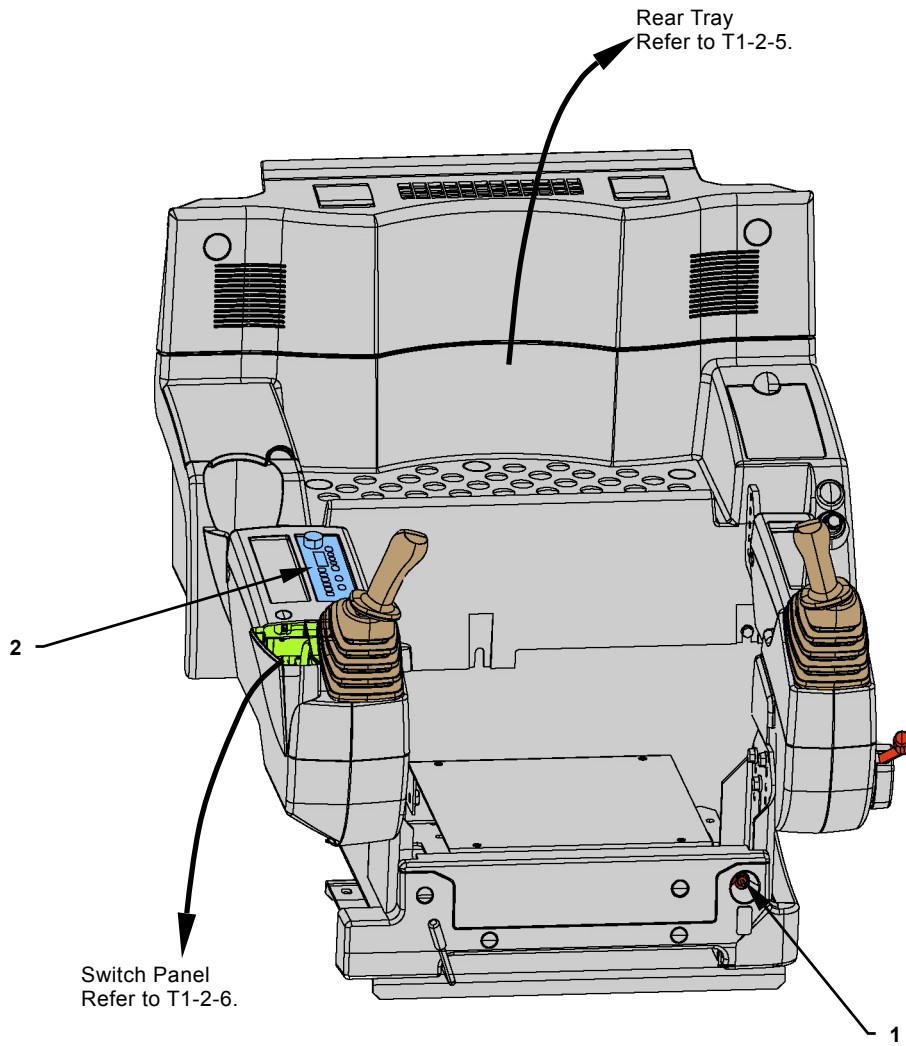


T1V1-01-02-022C

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|-----------------------------------|--|---|---------------------------------------|
| 1 - Rear View Camera | 5 - GPS (Global Positioning System) Aerial | 8 - Positioning Control Valve (2-Piece Boom Machine Only) | 11 - Hydraulic Oil Temperature Sensor |
| 2 - Battery | 6 - Monitor Unit | 9 - Working Light | 12 - Solenoid Valve Unit |
| 3 - Communication Aerial | 7 - Horn | 10 - Fuel Sensor | 13 - Solenoid Pump |
| 4 - Air Filter Restriction Switch | | | |

GENERAL / Component Layout

Electrical System (In Cab)

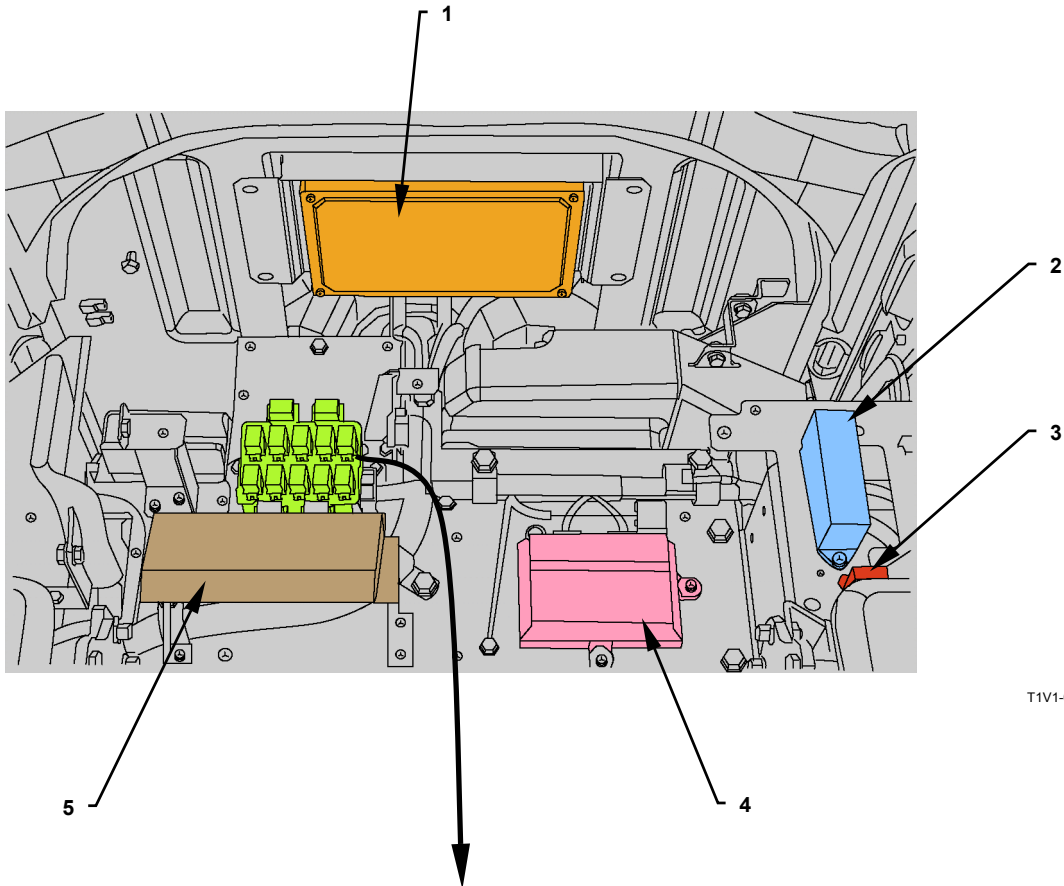


T1V1-01-02-011C

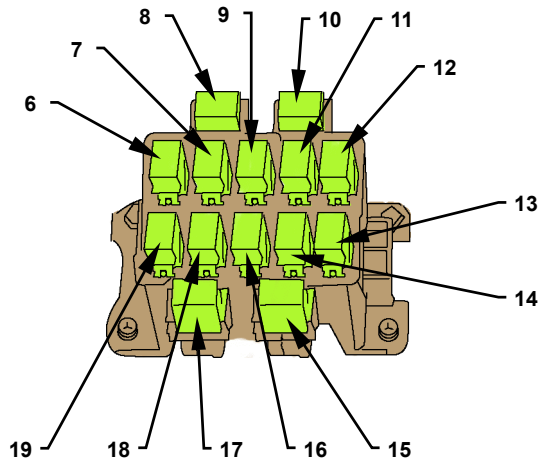
- 1 - Engine Stop Switch 2 - Radio

GENERAL / Component Layout

Electrical System (Rear Tray)



T1V1-01-02-007C

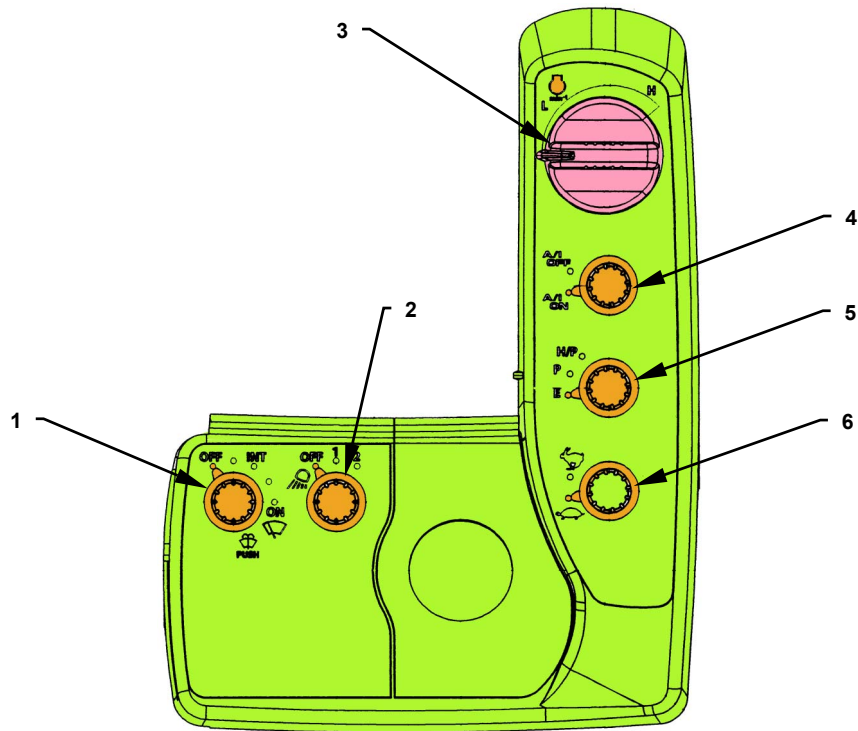


T1V1-01-02-009C

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|--|---------------------------------------|---|---|
| 1 - MC (Main Controller) | 6 - Starter Relay 2 (R5) | 11 - Pilot Shut-Off Relay (R12) | 16 - Light Relay 2 (R8) |
| 2 - Fuse Box | 7 - Starter Cut Relay (R4) | 12 - Load Damp Relay (R1) | 17 - ECM (Engine Control Module) Main Relay (R14) |
| 3 - Dr. ZX Connector (Download Connector Using Combinedly) | 8 - OFF Relay (Air Conditioner) (R12) | 13 - Wiper Relay (R6) | 18 - Washer Relay (R9) |
| 4 - ICF (Information Controller) | 9 - Security Horn Relay (R3) | 14 - Light Relay 1 (R7) | 19 - Horn Relay (R10) |
| 5 - Satellite Communication Terminal (Optional) | 10 - Air Conditioner Relay (R11) | 15 - MAX HI Relay (Air Conditioner) (R13) | |

GENERAL / Component Layout

Electrical System (Switch Panel)



T1V1-04-02-001C

1 - Wiper / Washer Switch
2 - Working Light Switch

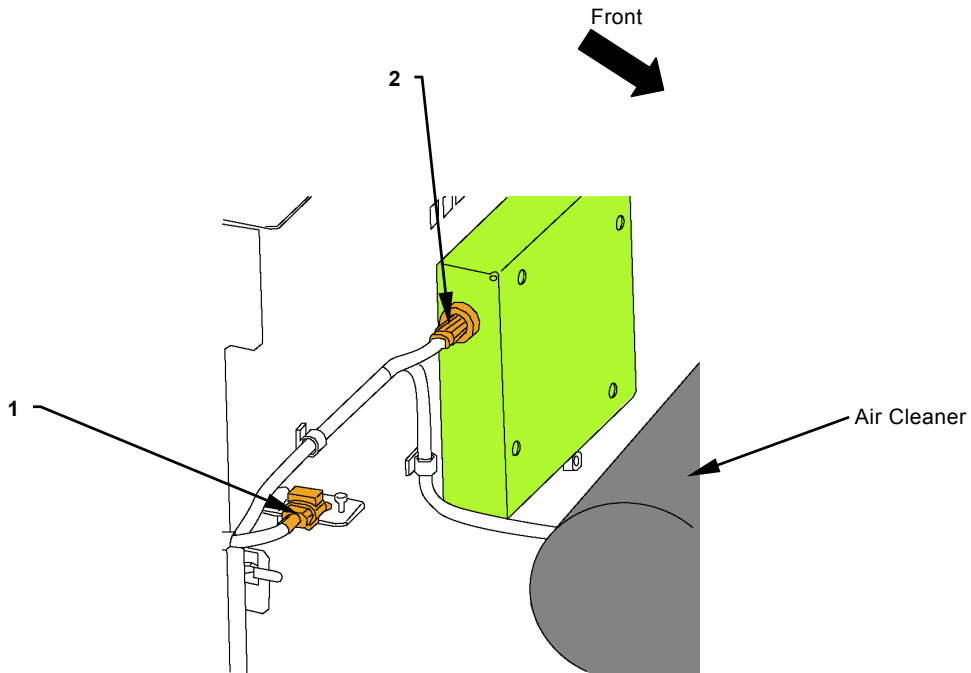
3 - Engine Control Dial
4 - Auto-Idle Switch

5 - Power Mode Switch

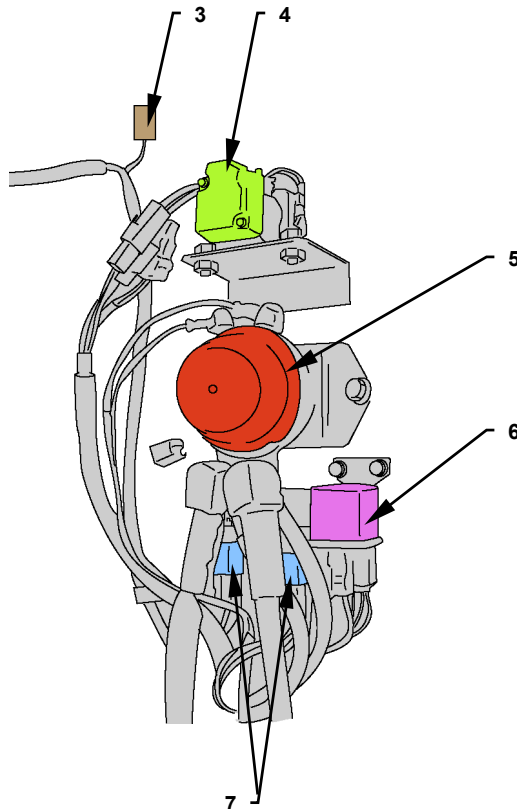
6 - Travel Mode Switch

GENERAL / Component Layout

Electrical System (Utility Space)



Electrical System (Relays)



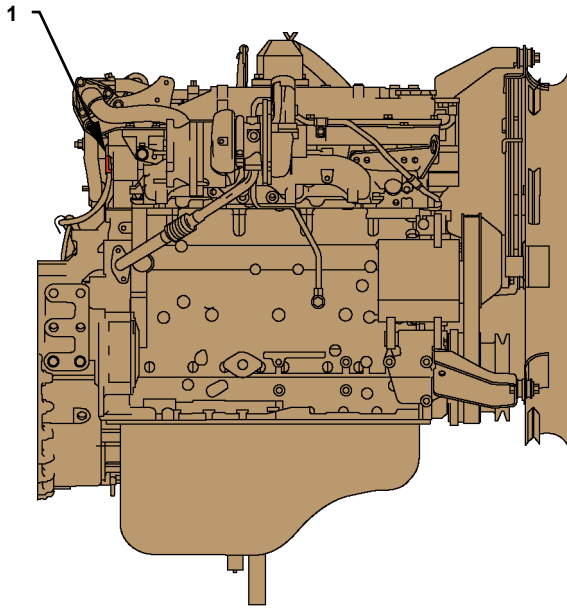
T1V1-01-02-012C

T1V1-01-02-018C

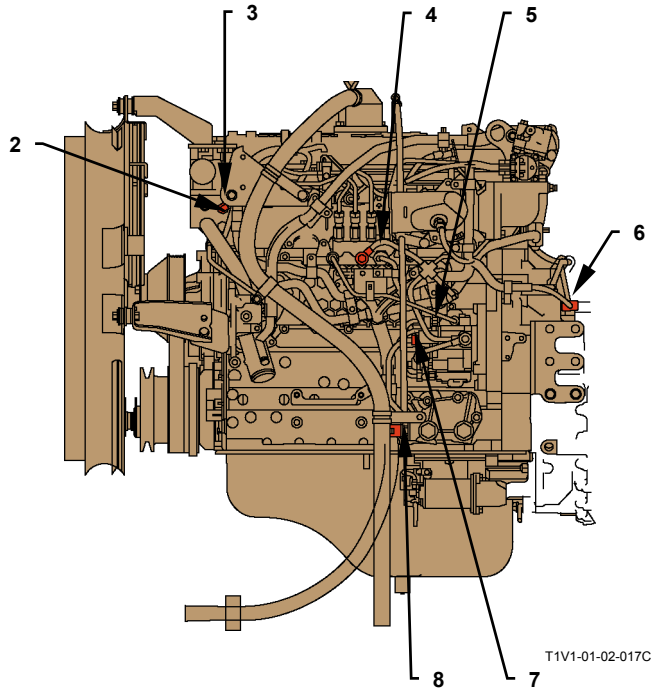
- | | | | |
|-----------------------------------|-------------------------------|-------------------|------------------|
| 1 - Atmospheric Pressure Sensor | 3 - Fresh Air Pressure Sensor | 5 - Battery Relay | 7 - Fusible Link |
| 2 - Intake-Air Temperature Sensor | 4 - Starter Relay 2 | 6 - Glow Relay | |

GENERAL / Component Layout

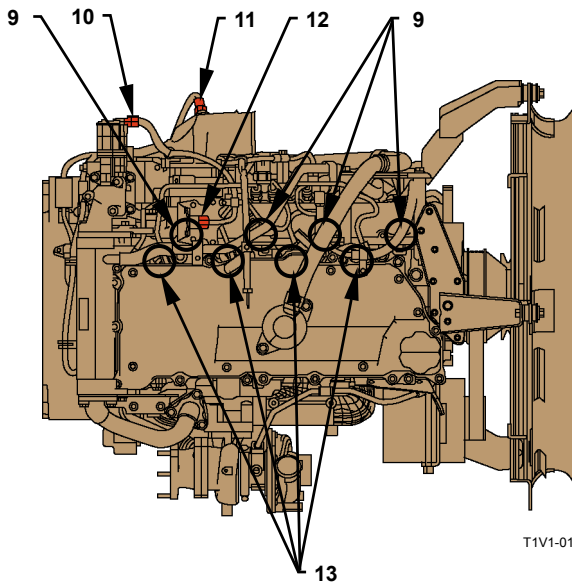
ENGINE



T1V1-01-02-016C



T1V1-01-02-017C

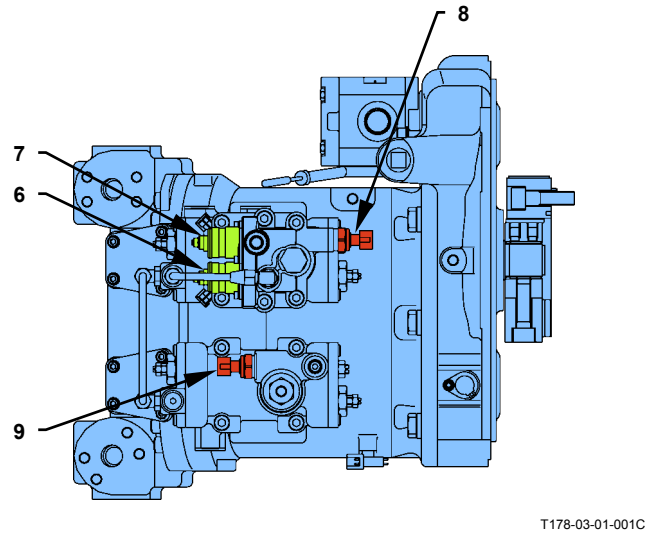
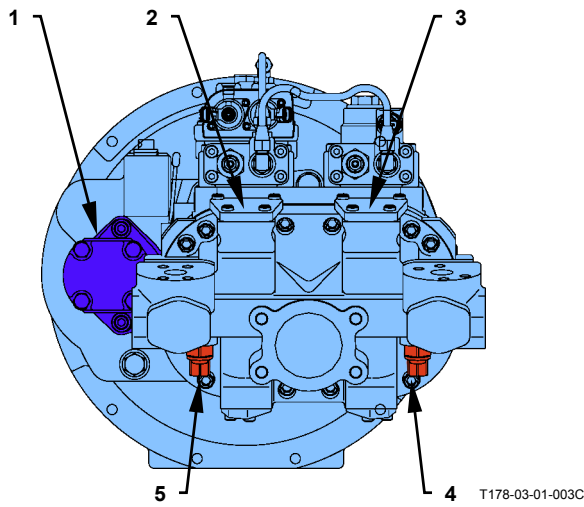


T1V1-01-02-015C

- | | | | |
|---------------------------------|-----------------------------|--|-------------------------------|
| 1 - Cam Angle Sensor | 5 - Fuel Temperature Sensor | 8 - Hydraulic Oil Pressure Sensor | 11 - Boost Temperature Sensor |
| 2 - Overheat Switch | 6 - Crank Speed Sensor | 9 - Injector | 12 - Boost Pressure Sensor |
| 3 - Coolant temperature sensor | 7 - Supply Pump Actuator | 10 - EGR (Exhaust Gas Recirculation) Valve | 13 - Glow Plug |
| 4 - Common Rail Pressure Sensor | | | |

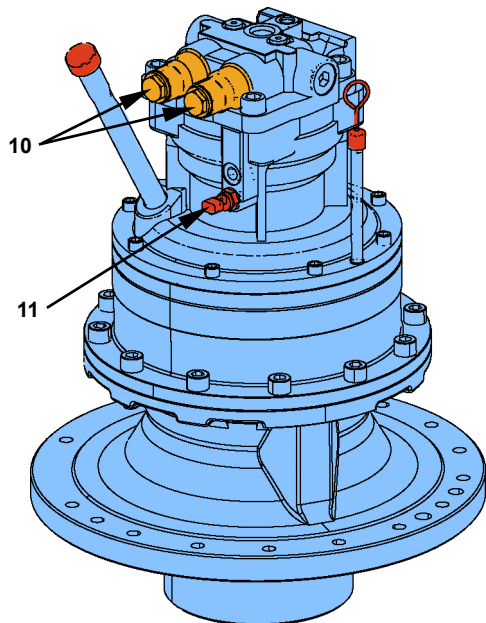
GENERAL / Component Layout

PUMP DEVICE

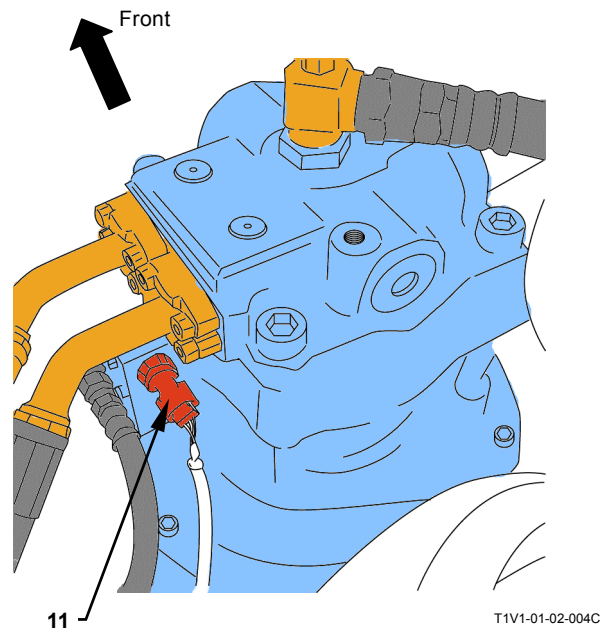


SWING DEVICE

ZX200-3 class, ZX240-3 class



ZX270-3 class



1 - Pilot Pump

2 - Pump 2

3 - Pump 1

4 - Pump 1 Delivery Pressure Sensor

5 - Pump 2 Delivery Pressure Sensor

6 - Torque Control Solenoid Valve

7 - Maximum Pump 2 Flow Rate Limit Control Solenoid Valve

8 - Pump 2 Control Pressure Sensor

9 - Pump 1 Control Pressure Sensor

10 - Swing Relief Valve

11 - Pressure Sensor (Front Attachment)