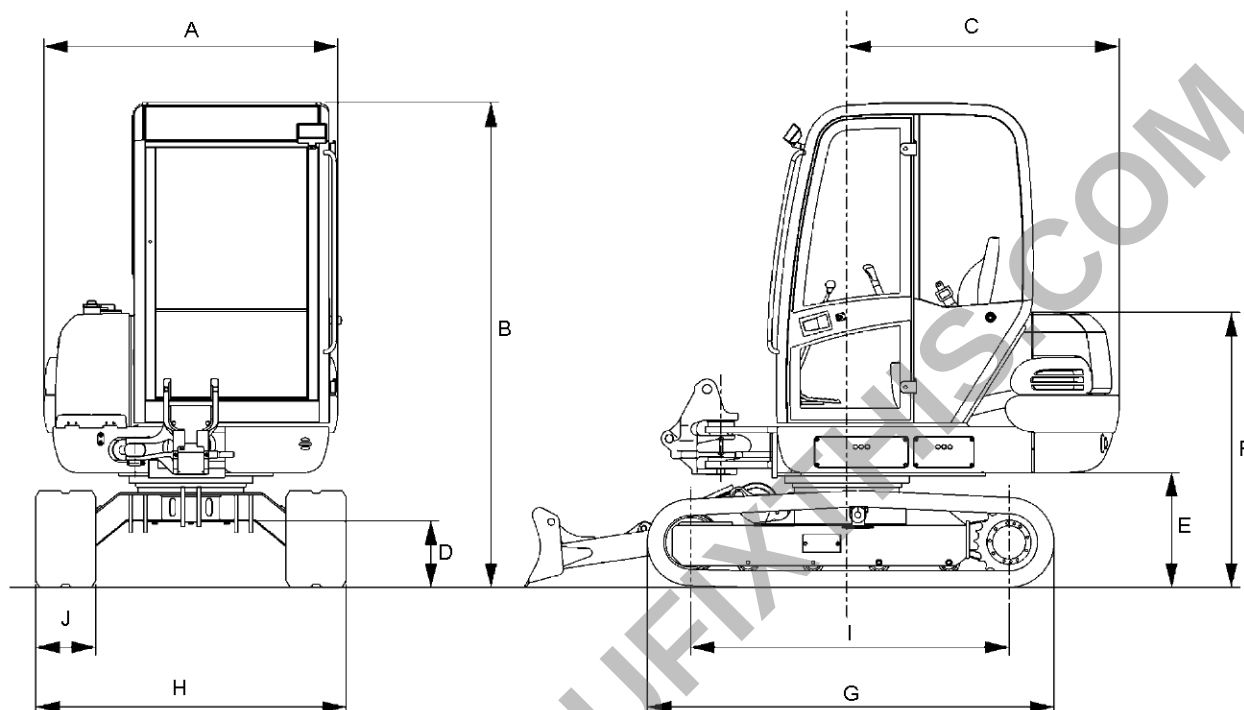


GENERAL / Specifications

SPECIFICATIONS

ZAXIS30, 35



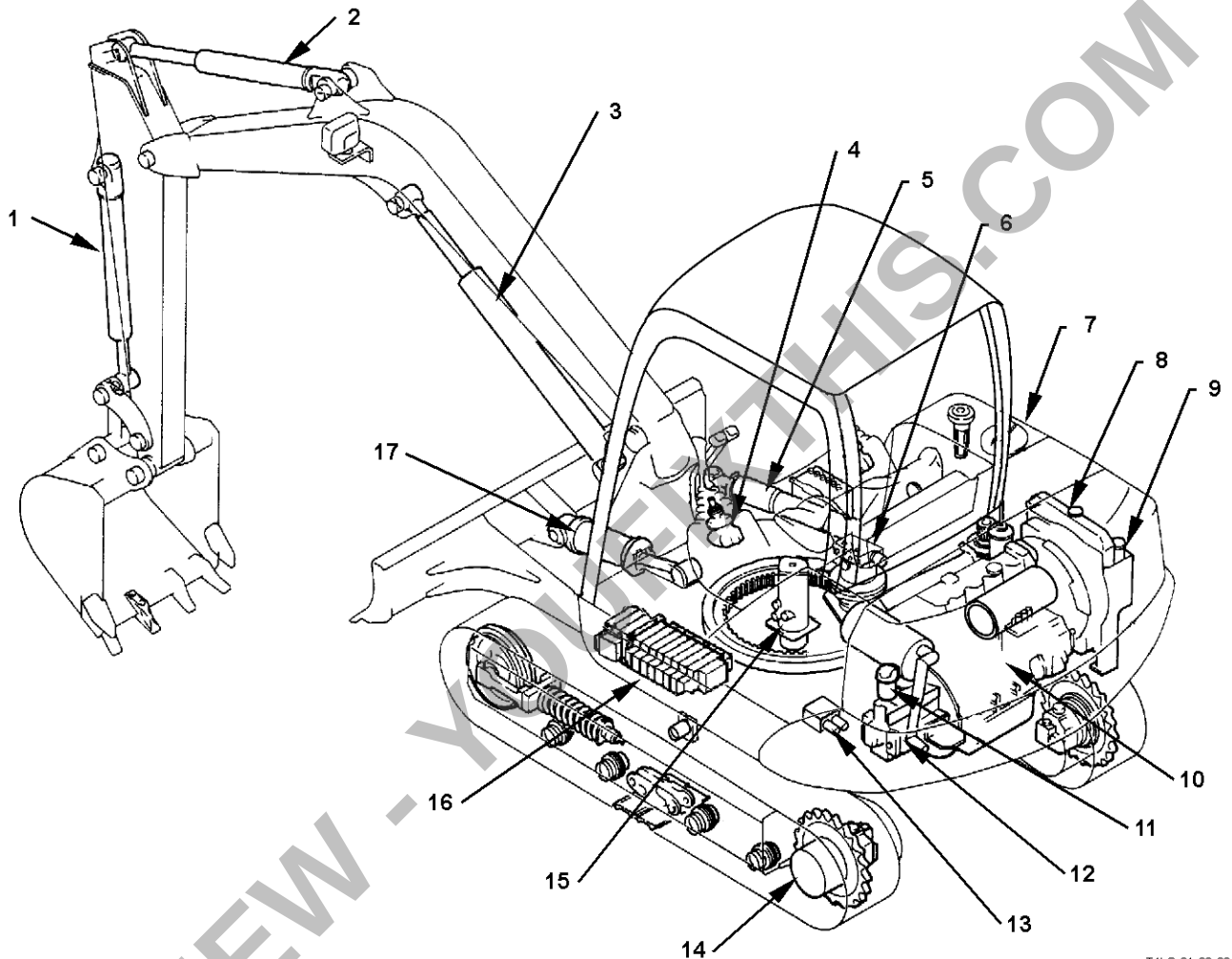
M1LS-12-001

Type		ZAXIS30		ZAXIS35	
		Canopy	Cab	Canopy	Cab
Type of Front-End Attachment		Boom Swing Type		Boom Swing Type	
Bucket Capacity (Heaped)	m ³ (yd ³)	PCSA 0.092 (0.12) CECE 0.08		PCSA 0.11 (0.14) CECE 0.10	
Operating Weight	kg (lb)	2875 (6340)	2960 (6530)	3100 (6830)	3185(7020)
Basic Machine Weight	kg (lb)	2100 (4630)	2185 (4820)	2270 (5000)	2355 (5190)
Engine	kW/min ⁻¹ (PS/rpm)	Kubota V1505 19.9/2300 (27.1/2300)			
A: Overall Width	mm (ft in)	1470 (4'10")			
B: Canopy Cab Height	mm (ft in)	2420 (7'11")			
C: Rear-End Swing Radius	mm (ft in)	1370 (4'6")		1390 (4'7")	
D: Minimum Ground Clearance	mm (ft in)	*330 (1'1")			
E: Counterweight Clearance	mm (ft in)	*575 (1'11")			
F: Engine Cover Height	mm (ft in)	*1370 (4'6")			
G: Undercarriage Length	mm (ft in)	2030 (6'8")			
H: Undercarriage Width	mm (ft in)	1550 (5'1")			
I: Sprocket Center to Idler Center	mm (ft in)	1595 (5'3")			
J: Track Shoe Width	mm (ft in)	300 (11.8") (Rubber Crawler)			
Ground Pressure	kPa (kgf/cm ² ,psi)	25.7 (0.26, 3.7)	27.0 (0.27, 3.8)	29.0 (0.30, 4.3)	30.0 (0.31, 4.4)
Swing Speed	min ⁻¹ (rpm)	8.8 (8.8)			
Travel Speed (fast/slow)	km/h (mph)	4.3/2.9 (2.7/1.8)			
Gradeability	(tan θ)	58% (30°)			

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

GENERAL / Component Layout

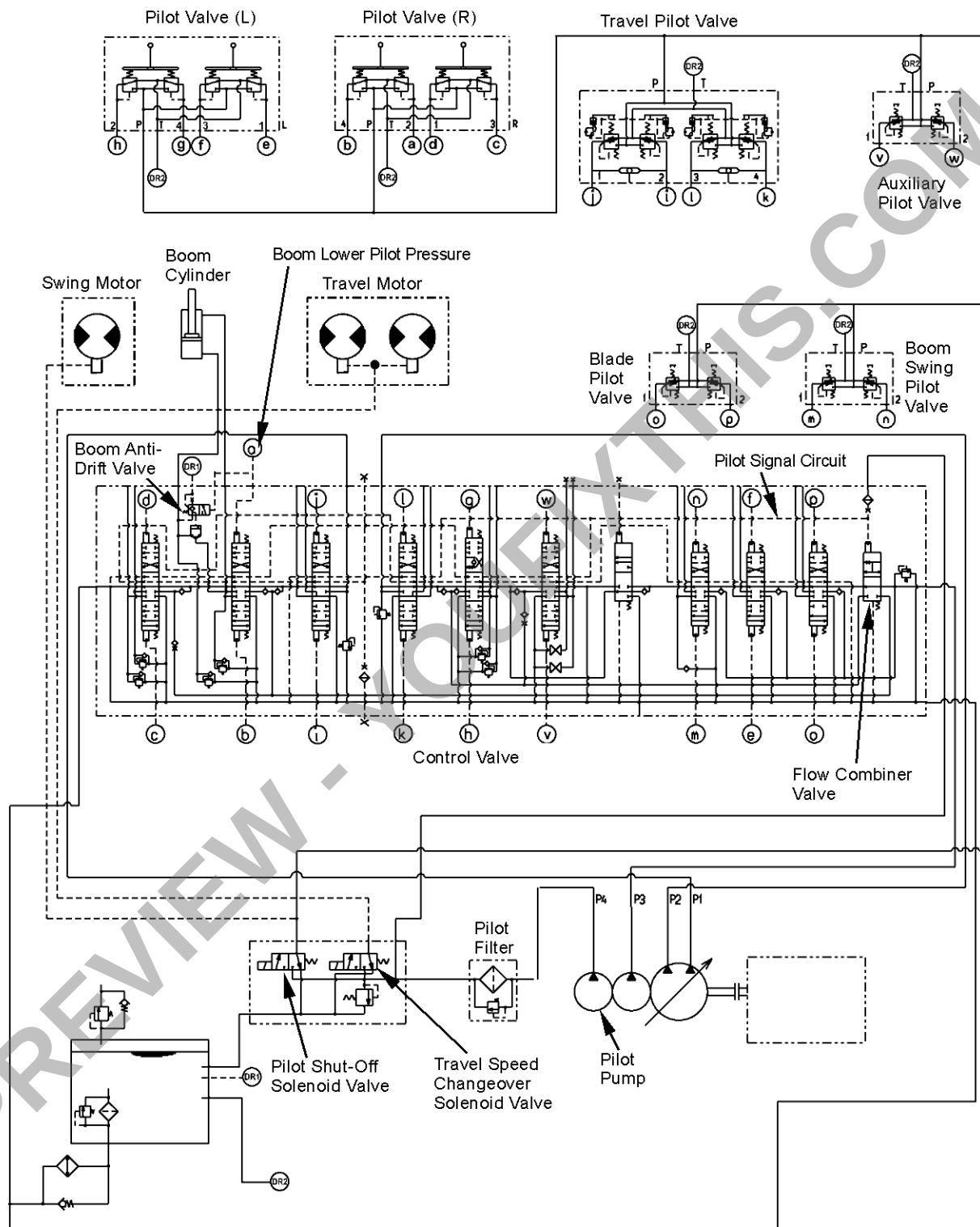
MAIN COMPONENTS



T1LS-01-02-004

SYSTEM / Hydraulic System

 NOTE: The figure below shows ZAXIS30, 35.



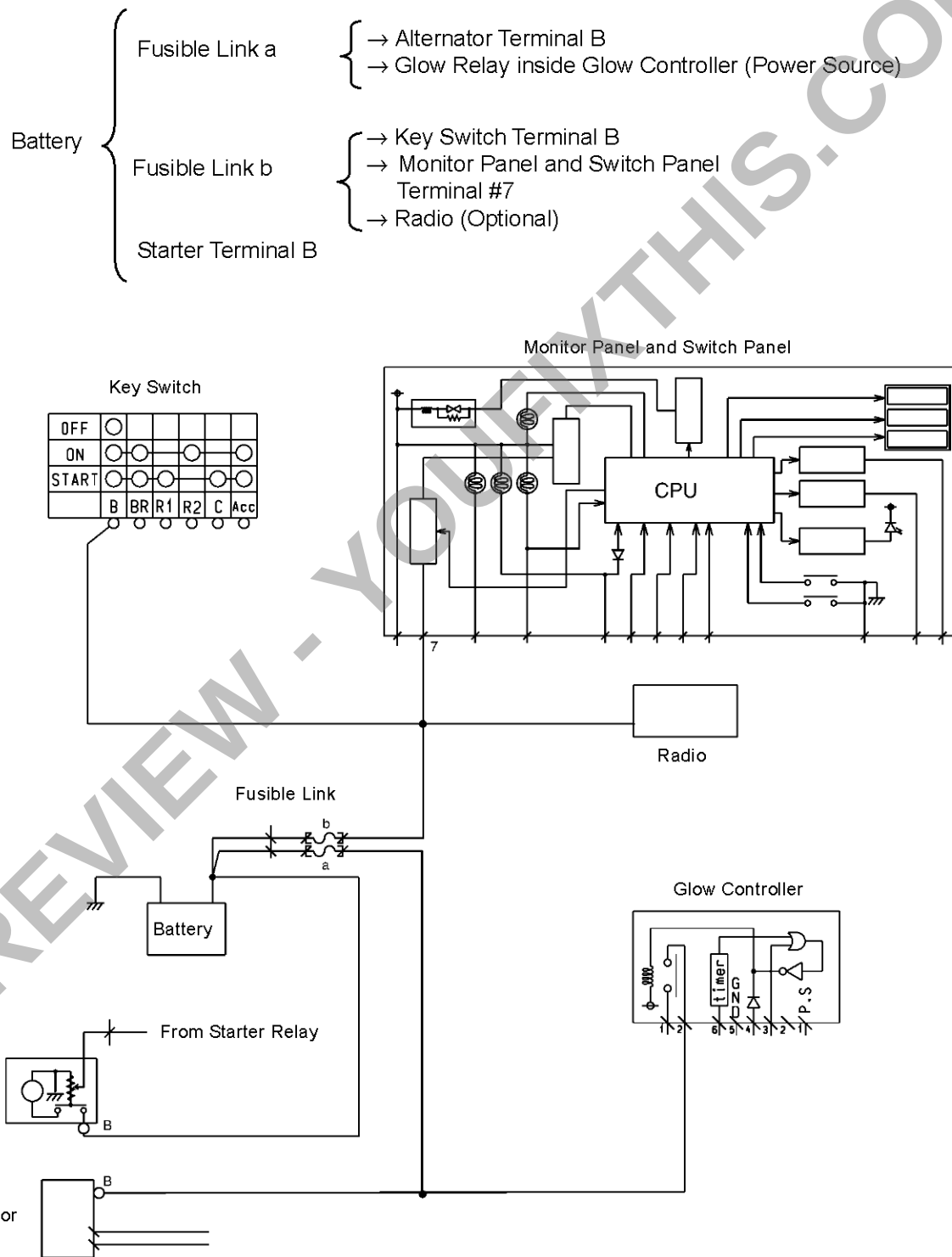
T1LS-02-01-001

- | | | | |
|---------------------|-------------------------|--------------------------|------------------------------------|
| a - Boom Lower | f - Left Swing | k - Right Travel Forward | p - Blade Raise |
| b - Boom Raise | g - Arm Roll-In | l - Right Travel Reverse | v - Auxiliary |
| c - Bucket Roll-In | h - Arm Roll-Out | m - Left Boom Swing | w - Auxiliary |
| d - Bucket Roll-Out | i - Left Travel Forward | n - Right Boom Swing | DR1 - Return to Hydraulic Oil Tank |
| e - Right Swing | j - Left Travel Reverse | o - Blade Lower | DR2 - Return to Hydraulic Oil Tank |

SYSTEM / Electrical System

POWER CIRCUIT (KEY SWITCH OFF)

The battery negative terminal is grounded to the vehicle frame. When the key is in the OFF position, electrical power from the positive battery terminal is supplied as follows.



T1LS-02-02-001

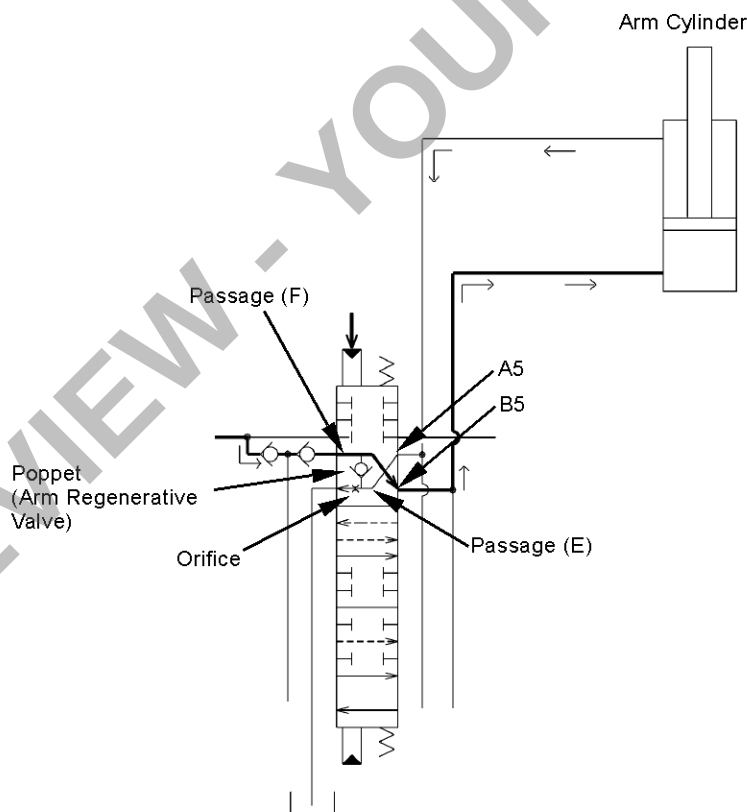
COMPONENT OPERATION / Control Valve

ARM REGENERATIVE VALVE (ZAXIS30, 35 ONLY)

The arm regenerative valve supplies the return oil from the arm cylinder rod side to the arm cylinder bottom circuit when the arm is rolled in to increase the arm roll-in speed and to prevent the occurrence of cavitation in the arm cylinder bottom circuit.

 **NOTE:** The orifice in passage (E) prevents the arm cylinder from being accelerated during arm roll-in operation by regulating the return oil from the cylinder rod side.

1. When rolling in arm with the boom raised, the pressure in the arm cylinder bottom side circuit becomes lower than the rod side circuit as the arm cylinder roll-in speed is accelerated by the arm and bucket weight.
2. Pressure oil from the cylinder rod side flows to port A5 and acts on the poppet of arm regenerative valve via passage (E).
3. Pressure oil from the cylinder rod side pushes to open the poppet of the arm regenerative valve.
4. When the poppet is opened, the pressure oil flows from port B5 to the arm cylinder bottom side via passage (F), so that it prevents the occurrence of cavitation.
5. When oil pressure in the arm cylinder bottom side becomes higher than the rod side during the digging operation, the pressure in the bottom side circuit (passage (F)) acts on the poppet (arm regenerative valve).
6. In this case, the poppet (arm regenerative valve) doesn't open. Therefore, the return oil from the arm cylinder rod side does not flow to the bottom side, but to the hydraulic oil tank.



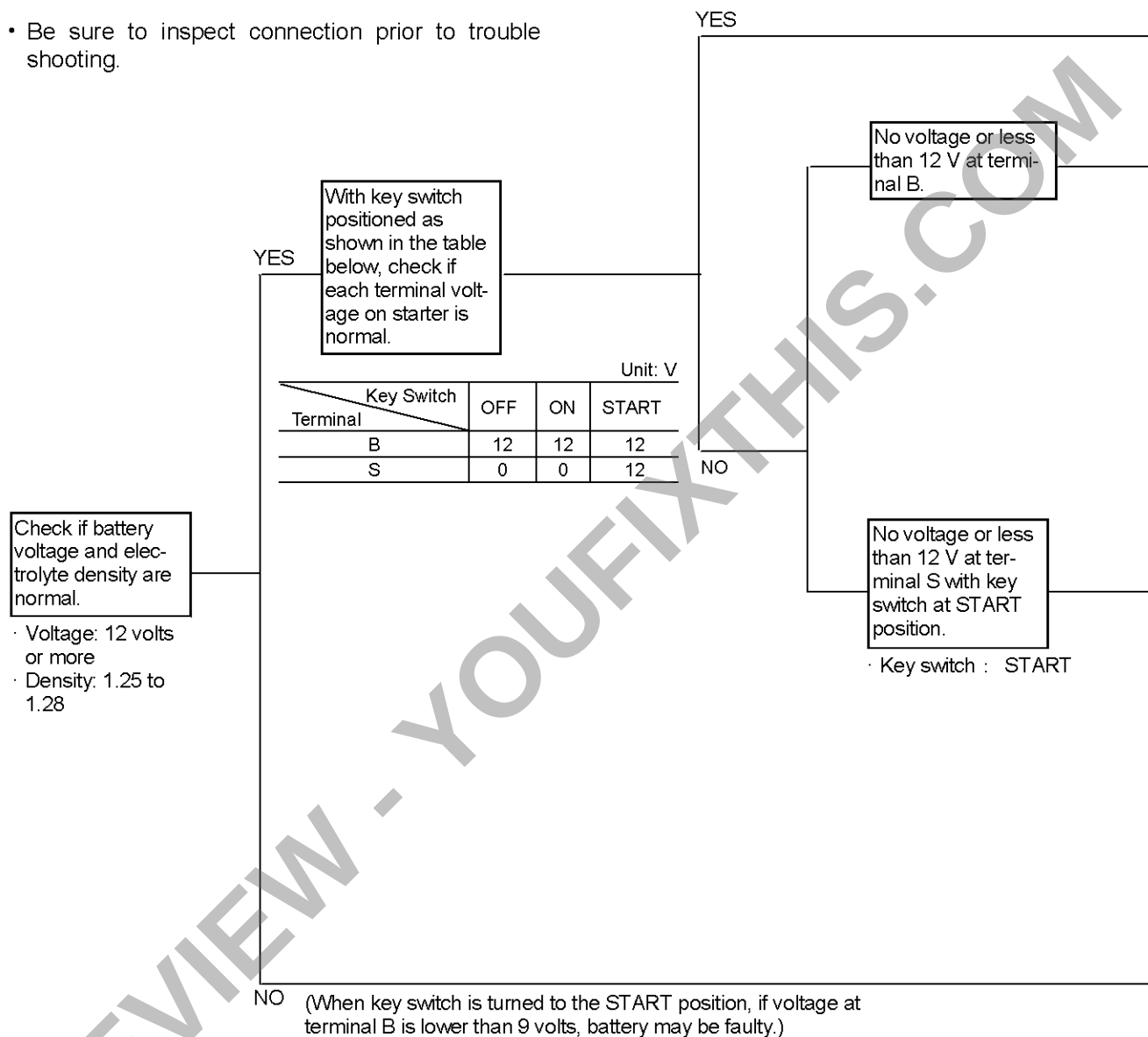
T1LS-03-03-009

TROUBLESHOOTING / Troubleshooting A

ENGINE SYSTEM TROUBLESHOOTING

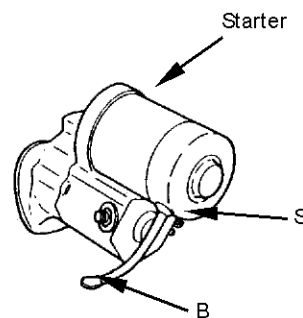
Starter does not rotate

- Be sure to inspect connection prior to trouble shooting.



Starter voltage check

1. Turn key switch to the ON or START position.
2. Contact minus (–) probe of a circuit tester to the machine (ground to unpainted area like bolt head) and plus (+) probe terminals to the starter terminal respectively, and check voltages. (Measure with the harness connected.)



T523-07-02-001

SAFETY

RECOGNIZE SAFETY INFORMATION

- This is the **SAFETY ALERT SYMBOL**.
 - When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.
 - Follow recommended precautions and safe operating practices.



001-E01A-0001-2

SA-001

UNDERSTAND SIGNAL WORDS

- On machine safety signs, signal words designating the degree or level of hazard - DANGER, WARNING, or CAUTION - are used with the safety alert symbol.
 - **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 - **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 - **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 - **DANGER or WARNING safety signs** are located near specific hazards. General precautions are listed on **CAUTION safety signs**.
- **CAUTION** also calls attention to safety messages in this manual.
- To avoid confusing machine protection with personal safety messages, a signal word **IMPORTANT** indicates a situation which, if not avoided, could result in damage to the machine.
-  **NOTE** indicates an additional explanation for an element of information.



IMPORTANT



SA-1223

002-E01A-0461-6

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Attn: Publications, Marketing & Product Support
Fax: 81-298-31-1162

Hitachi Ref. No.

SERVICE MANUAL REVISION REQUEST FORM

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FAX:

YOUR COMMENTS / SUGGESTIONS:

Attach photo or sketch if required.

If your need more space, please use another sheet.

REPLY:

(Copy this form for usage)

GENERAL / Component Specifications

CYLINDER

ZAXIS30

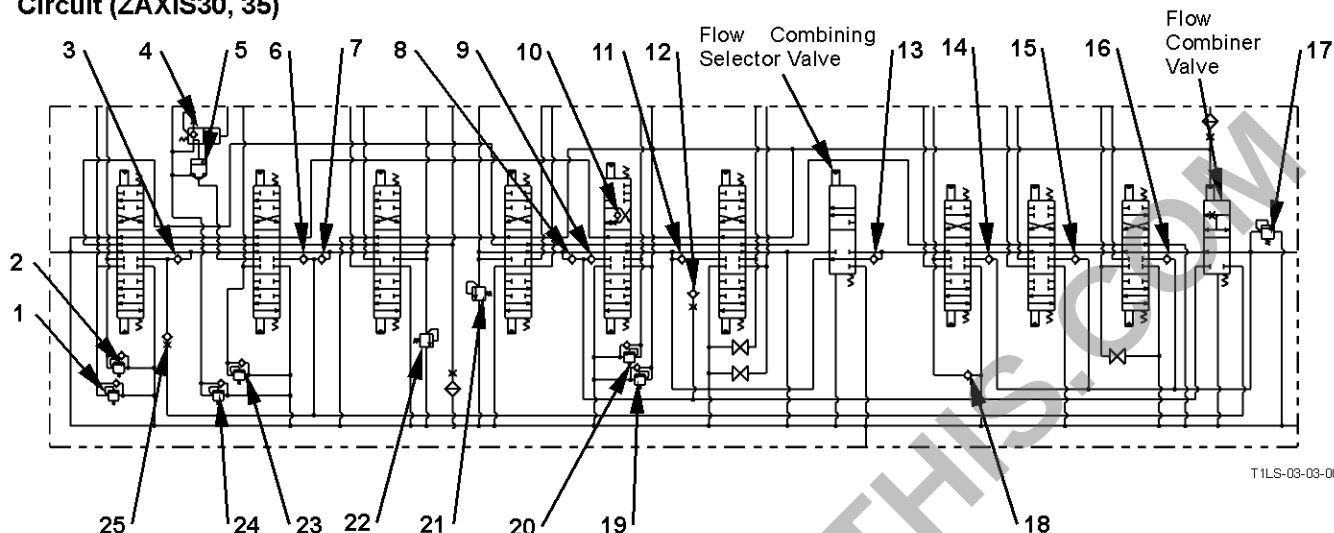
	Boom	Arm	
Rod Diameter	45 mm	40 mm	
Cylinder Bore.....	80 mm	75 mm	
Stroke	558 mm	560 mm	
Fully Retracted Length	913 mm	893 mm	
Plating Thickness	30 µm or more	←	
	Bucket	Boom Swing	Blade
Rod Diameter	40 mm	45 mm	45 mm
Cylinder Bore.....	65 mm	85 mm	90 mm
Stroke	440 mm	535 mm	130 mm
Fully Retracted Length	740 mm	853 mm	455 mm
Plating Thickness	30 µm or more	←	←

ZAXIS35

	Boom	Arm	
Rod Diameter	45 mm	45 mm	
Cylinder Bore.....	85 mm	80 mm	
Stroke	555 mm	594 mm	
Fully Retracted Length	915 mm	928 mm	
Plating Thickness	30 µm or more	←	
	Bucket	Boom Swing	Blade
Rod Diameter	40 mm	45 mm	45 mm
Cylinder Bore.....	70 mm	85 mm	90 mm
Stroke	445 mm	535 mm	130 mm
Fully Retracted Length	745 mm	853 mm	445 mm
Plating Thickness	30 µm or more	←	←

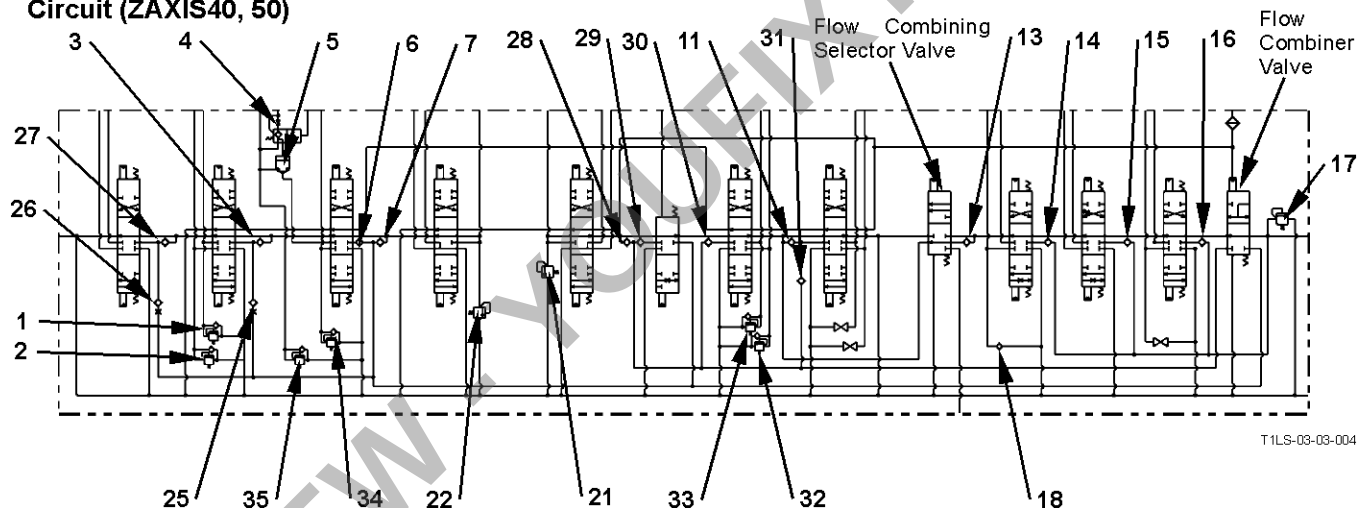
COMPONENT OPERATION / Control Valve

Circuit (ZAXIS30, 35)



T1LS-03-03-003

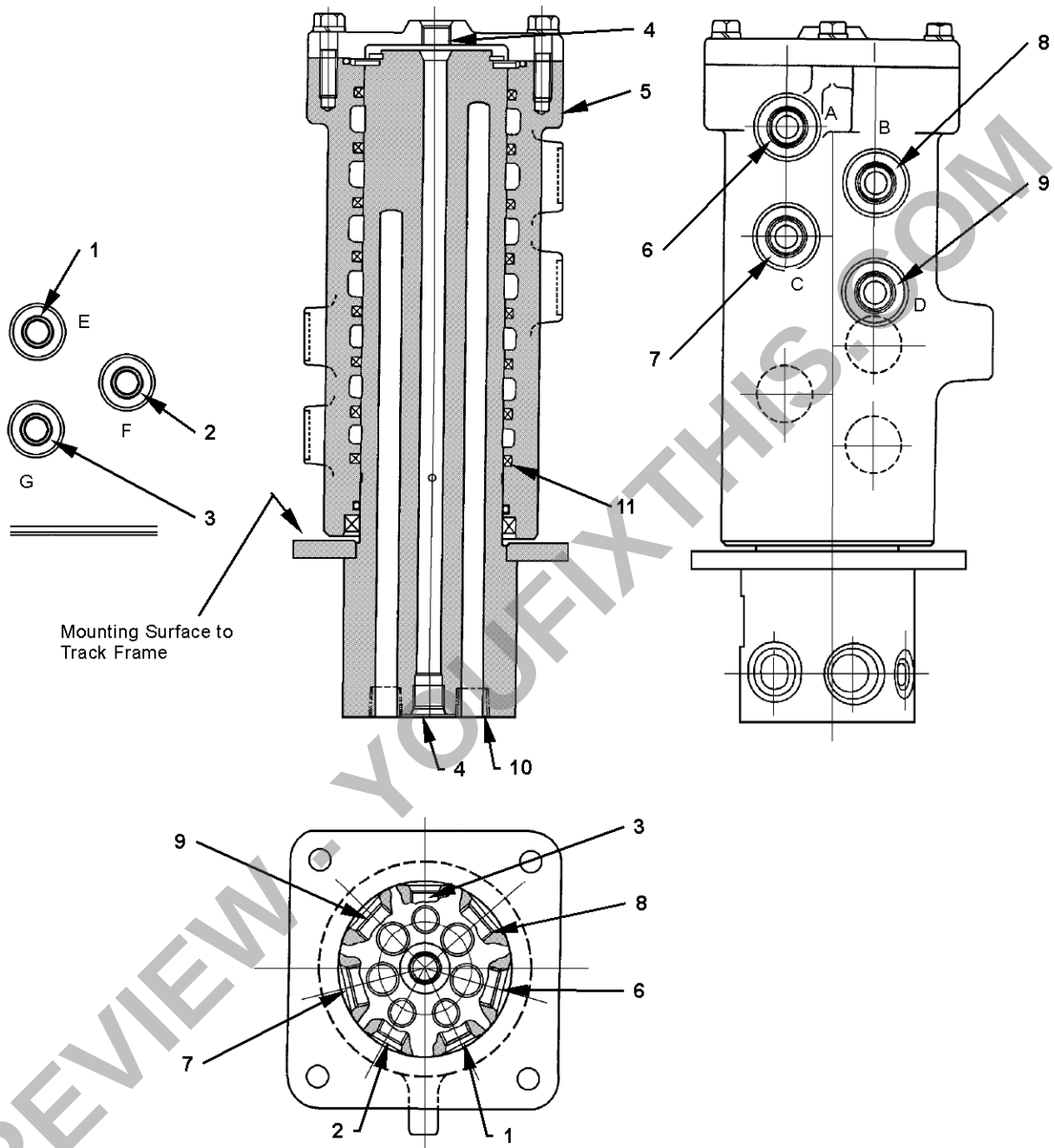
Circuit (ZAXIS40, 50)



T1LS-03-03-004

- | | | | |
|---|---|---|--|
| 1 - Overload Relief Valve (Bucket: Rod Side) | 10 - Arm Regenerative Valve | 19 - Overload Relief Valve (Arm: Bottom Side) | 28 - Load Check Valve (Boom 2 Tandem Circuit) |
| 2 - Overload Relief Valve (Bucket: Bottom Side) | 11 - Load Check Valve (Auxiliary Tandem Circuit) | 20 - Overload Relief Valve (Arm: Rod Side) | 29 - Load Check Valve (Boom 2 Tandem Circuit) |
| 3 - Load Check Valve (Bucket Tandem Circuit) | 12 - Check Valve (Orifice) (Auxiliary Parallel Circuit) | 21 - Main Relief Valve (Main Pump P2) | 30 - Load Check Valve (Arm 1 Parallel Circuit) |
| 4 - Boom Anti-Drift Valve (Selector Valve) | 13 - Load Check Valve (Main Pump P3 Parallel Circuit) | 22 - Main Relief Valve (Main Pump P1) | 31 - Load Check Valve (Auxiliary Parallel Circuit) |
| 5 - Boom Anti-Drift Valve (Check Valve) | 14 - Load Check Valve (Boom Swing Parallel Circuit) | 23 - Overload Relief Valve (Boom: Rod Side) | 32 - Overload Relief Valve (Arm 1: Rod Side) |
| 6 - Load Check Valve (Boom Tandem Circuit) | 15 - Load Check Valve (Swing Parallel Circuit) | 24 - Overload Relief Valve (Boom: Bottom Side) | 33 - Overload Relief Valve (Arm 1: Bottom Side) |
| 7 - Load Check Valve (Boom Tandem Circuit) | 16 - Load Check Valve (Blade Parallel Circuit) | 25 - Load Check Valve (Bucket Parallel Circuit) | 34 - Overload Relief Valve (Boom 1: Rod Side) |
| 8 - Load Check Valve (Arm Tandem Circuit) | 17 - Main Relief Valve (Main Pump P3) | 26 - Load Check Valve (Arm 2 Parallel Circuit) | 35 - Overload Relief Valve (Boom 1: Bottom Side) |
| 9 - Load Check Valve (Arm Tandem Circuit) | 18 - Make-Up Valve (Boom Swing: Bottom Side) | 27 - Load Check Valve (Arm 2 Tandem Circuit) | |

COMPONENT OPERATION / Others (Undercarriage)



1 - Port E (Blade Raise) /
Pressure Oil from Port E

2 - Port F (Blade Lower) /
Pressure Oil from Port F

3 - Port G (for Travel Speed
Changeover) / Pressure Oil
from Port G

4 - Port DR (Drain) / Pressure
Oil from Port DR

5 - Body

6 - Port A (Right Travel Forward
(ZAXIS40, 50: Right Travel
Reverse)) / Pressure Oil from
Port A

7 - Port C (Left Travel Forward
(ZAXIS40, 50: Left Travel
Reverse)) / Pressure Oil from
Port C

8 - Port B (Right Travel Reverse
(ZAXIS40, 50: Right Travel
Forward)) / Pressure Oil from
Port B

9 - Port D (Left Travel Reverse
(ZAXIS40, 50: Left Travel
Forward)) / Pressure Oil from
Port D

10 - Spindle

11 - Seal

12 - Travel Motor

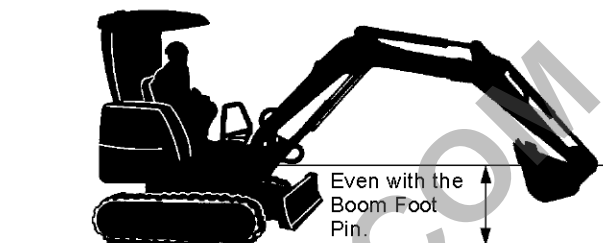
13 - Blade Cylinder

T554-03-03-002

OPERATIONAL PERFORMANCE TEST / Component Test

Measurement:

1. Drain Oil Volume at Swing Operation
 - 1-1. With the arm rolled out and bucket rolled in, hold the bucket so that the height of the arm top pin is even with the boom foot pin. The bucket must be empty.
 - 1-2. Start the engine. Operate swing lever to the full stroke. After swing speed reaches a constant maximum speed, collect the hydraulic oil from drain hose. Measure the time also.
 - 1-3. Repeat the measurement more than 3 times in both clockwise and counterclockwise directions, and calculate the average value.
 - 1-4. The measurement should be at least 45 seconds.



T570-06-03-003

2. Drain Oil Volume at Swing Lock Operation
 - 2-1. Seize the ground with bucket so that the machine does not move.
 - 2-2. Start the engine. Operate the swing lever to the full stroke. Collect the hydraulic oil from drain hose. Measure the time also.
 - 2-3. Repeat the measurement more than 3 times in both clockwise and counterclockwise directions, and calculate the average value.
 - 2-4. The measurement should be at least 45 seconds.

Evaluation:

Refer to T4-2 Table of Operational Performance Standard.

- * Conversion of Measured Value into the Per-Minute Value

Measure the amount of drain oil using a calibrated container. Then, convert the measured drain oil into the per-minute value using the following formula;

$$\Delta Q = 60 \times q / t$$

ΔQ : Per-Minute Drain Volume (L/min)

t : Time Measured (sec)

q : Measured Drain Oil Volume (L)

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