Open front screen

Service Manual

(Supplement)

532H, 537H

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* This manual is a supplement to the Loadall Service Manual. The information covers the 532H machine from serial number 770970 and the 537H machine from serial number 773560, unless specified otherwise.

* **Note:** Only those areas of the machines which are different from the non-hydrostatic version are dealt with here. For all other aspects refer to the Service Manual.

Unless specified otherwise, all references to 'Service Manual' in this supplement are to be taken as meaning the appropriate publication listed below.

9803/3660	Loadall Service Manual (English)
9803/3661	Loadall Service Manual (French)
9803/3662	Loadall Service Manual (German).

⚠ CAUTION

Hydraulic cleanliness is absolutely essential when working on hydrostatic drive systems. Orifices in the pump and motor can be blocked by even the tiniest particle - e.g. a thread from a cloth. You must maintain the highest level of cleanliness when working on any part of the system.
5-3-4-7

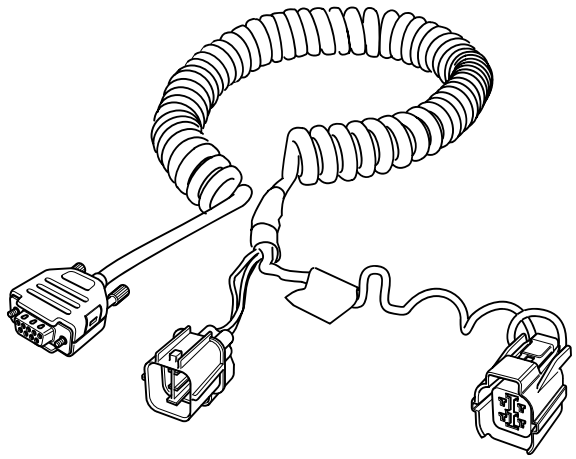
Care and Safety

* Before carrying out any maintenance procedures on this machine, make sure you read the Care and Safety information in Section 2 of the Service Manual. The relevant information in that Section should be observed as well as any care and safety information contained in this supplement.

Service Tools

Section C - Electrics

892/00931 **Communication Cable**



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* Before carrying out any maintenance procedures on this machine, make sure you read the Care and Safety information in Section 2 of the Service Manual. The relevant information in that Section should be observed as well as any care and safety information contained in this manual.

Operating Safety

⚠ CAUTION

Parking Brake

The parking brake must not be used to slow the machine from travelling speed, except in an emergency, otherwise the efficiency of the brake will be reduced. Whenever the parking brake has been used in an emergency, always renew the brake pads.

4-2-1-1/1

Maintenance Safety

⚠ WARNING

Parking Brake

Before adjusting the parking brake, make sure that the machine is on level ground. Put chocks each side of all four wheels. Disconnect the battery so that the engine cannot be started. If you do not take these precautions the machine could run over you.

BRAK 1-5

⚠ CAUTION

Hydraulic Cleanliness

Hydraulic cleanliness is absolutely essential when working on hydrostatic drive systems. Orifices in the pump and motor can be blocked by even the tiniest particle - e.g. a thread from a cloth. You must maintain the highest level of cleanliness when working on any part of the system.

5-3-4-7

⚠ WARNING

Hydraulic Fluid Pressure

Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.

INT-3-1-10/1

⚠ WARNING

Hydraulic Fluid Pressure

Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses or couplings, vent the pressure trapped in the hoses in accordance with the instructions given in this publication.

HYD 1-5

⚠ WARNING

Working Beneath the Machine

Make the machine safe before getting underneath it. Park the machine on level ground. Make sure the engine is stopped, the parking brake is engaged and the transmission is in neutral. Disconnect the battery. Chock all four wheels.

5-3-2-1

⚠ WARNING

Lifting Equipment

You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job.

INT-1-3-7

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* The information in this section covers only those areas of the machines which are different from the standard non-hydrostatic machines. Therefore it must be used in conjunction with the information given in the Service Manual.

Fluids, Lubricants, Capacities and Specifications

Note: The drop box oil must be drained after the first 100 hours operation and replaced by the appropriate recommended grade as shown in the lubrication chart.

ITEM	CAPACITY Litres (Gal)	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
Hydraulic tank	†131 (28.8)	**JCB Extreme Performance Multigrade Hydraulic Fluid**	JCB: 4002/1600 (ISO VG 46)
Drop Box	‡2.4 (0.52)	**JCB HD90 Gear Oil**	SAE 90/API GL5

†**Note:** This is the tank capacity. The total hydraulic system capacity depends on the machine specification. Fill with all hydraulic rams closed.

‡**Note:** This is a nominal capacity. The system must be filled to the lower of the two level plugs, see **Checking and Changing the Drop Box Oil Level**.

* **The following schedule is provided as an addition to the checks described in the Service Manual.**

Pre-start Cold Checks Service Points and Fluid Levels	**Operation**	**Daily 10 Hr**	**Weekly 50 Hr**	**6 Monthly 500 Hr**	**Yearly 1000 Hr**	**2 Yearly 2000 Hr**
HYDRAULICS						
Transmission Charge Filter (See **Note**)	Change			•	•	•
TRANSMISSION						
Drop box oil level	Check			•	•	•
* Drop box oil (See **Note**)	Change				•	•

Functional Test and Final Inspection	**Operation**	**Daily 10 Hr**	**Weekly 50 Hr**	**6 Monthly 500 Hr**	**Yearly 1000 Hr**	**2 Yearly 2000 Hr**
TRANSMISSION AND AXLES						
HI/LO Mode Selection Switch	Check	•	•	•	•	•

Note: The Transmission Charge Filter and Drop Box Oil must also be changed after the first 100 hours of machine operation.

⚠ CAUTION

If the machine is disabled due to engine failure, the transmission pump will be starved of lubrication. You must follow this procedure to prevent damage to the pump.

5-2-5-10

⚠ CAUTION

Check the brakes of the vehicle used to tow the machine before proceeding.

12-6-1-7

1 Using suitable lifting equipment, remove any payload from the machine.

2 Attach a rigid tow bar between a suitable connection point on the machine and the towing vehicle.

3 Place chocks both sides of each wheel on the disabled machine.

If the machine is to be towed a short distance, the two multi-function valves should be opened. The machine should only be towed the minimum distance required to load it onto a transporter. The transporter should be positioned as close as possible to the machine. If it is necessary to tow the machine for any distance (e.g. 1km), the propshafts should be removed - in this instance the multi-function valves do not need to be opened.

Note: With the propshafts removed, the parking brake will be inoperable.

4 Remove the propshafts or open the two multi-function valves, as follows:

5 From both multi-function valves remove plastic plugs **A**. Using an Allen key, rotate the adjusters revealed under the plugs three turns anticlockwise.

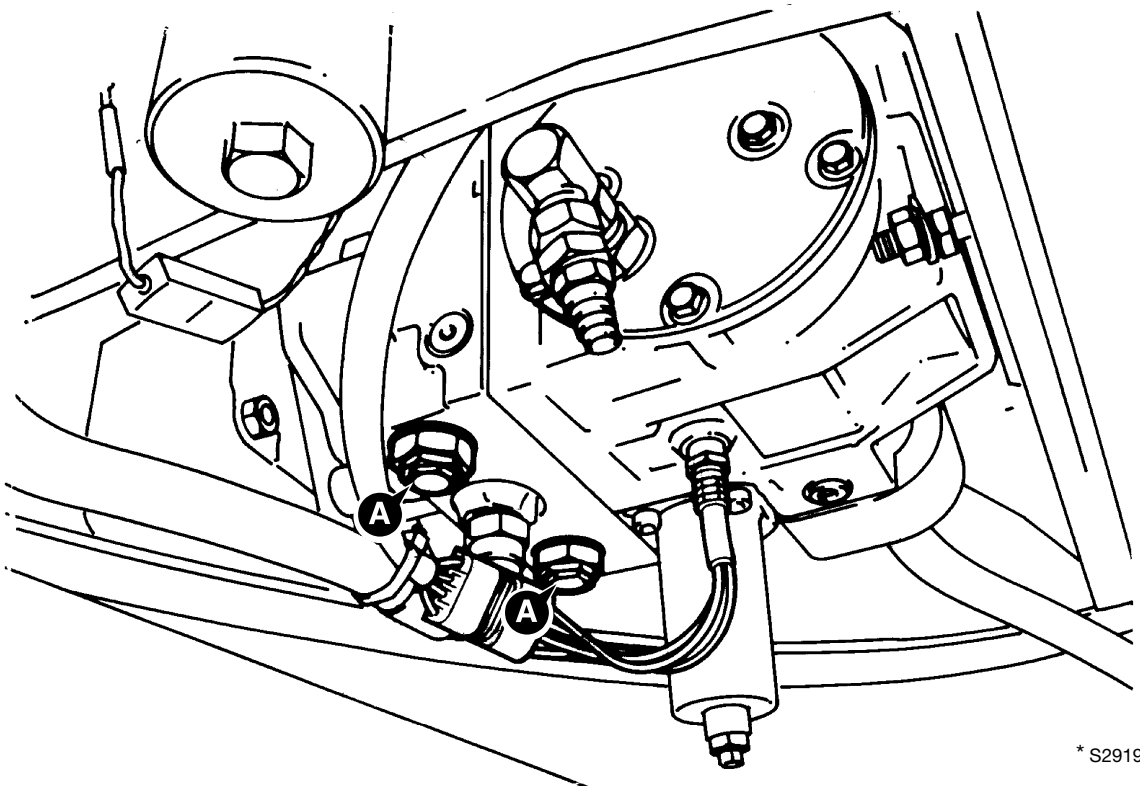
Note: Do not rotate the multi-function valves more than three and a half turns as this will result in loss of hydraulic fluid.

6 Remove the wheel chocks from each wheel and slowly tow the machine to a place of repair. Tow the machine the minimum distance necessary. When towing is complete, place chocks both sides of each wheel.

7 Close the multi-function valves: rotate the two multi-function valve adjusters three turns clockwise. Fit plastic plugs **A**.

8 Remove the tow bar and wheel chocks.

Note: In the illustration below, the transmission guard has been removed for clarity.



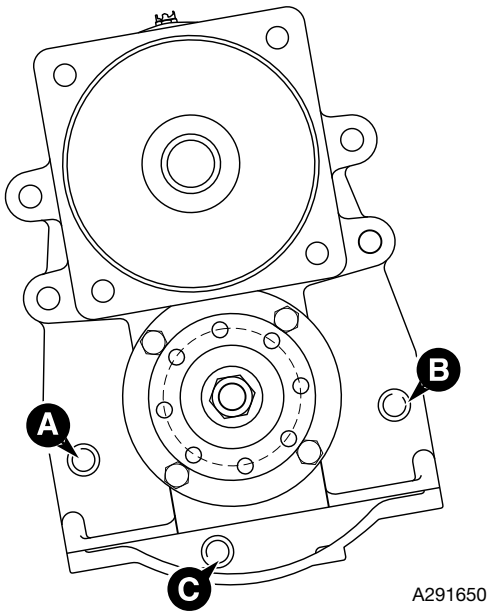
* S291942

1 Park the machine on firm level ground. Engage the parking brake and remove the starter key.

2 Clean the area around the level plug **A** and remove the plug. Oil should be level with the bottom of the hole. Add recommended oil if necessary through plug **B**. Clean all plugs before refitting.

3 Drain the oil from plug **C** at the recommended change period.

(See **Fluids, Lubricants, Capacities and Specifications** for capacity.)



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⚠ WARNING

Make the machine safe before getting underneath it. Park the machine on level ground. Make sure the engine is stopped, the parking brake is engaged and the transmission is in neutral. Disconnect the battery. Chock all four wheels.

5-3-2-1

If the transmission charge filter warning lamp illuminates, renew the filter as soon as possible to prevent possible damage to the transmission due to oil contamination.

Note: The warning lamp may illuminate during the initial start-up period. The lamp should extinguish when the transmission oil reaches operating temperature.

Park the machine on firm level ground. Make sure the parking brake is engaged. Fully retract the boom and lower to the ground. Stop the engine. Remove the starter key. Isolate the battery, see **Battery Isolator** (Maintenance section - main Operator Handbook), to make sure the engine cannot be started.

Operate the controls and remove the tank cap to vent residual hydraulic pressure.

⚠ CAUTION

Ensure that dirt etc. does not enter the hydraulic system during this job.

5-3-4-4

⚠ CAUTION

Hydraulic cleanliness is absolutely essential when working on hydrostatic drive systems. Orifices in the pump and motor can be blocked by even the tiniest particle - eg a thread from a cloth. You must maintain the highest level of cleanliness when working on any part of the system.

5-3-4-7

Canister Filter

1 Clean the area around the filter body.

⚠ WARNING

You will have to get beneath the machine to drain the oil and change the filter. Make sure the machine cannot be moved or the engine started while you perform these jobs.

5-3-2-3/1

2 Place a container of suitable size beneath the machine to catch any excess oil.

3 From under the machine, unscrew and remove the filter bowl **A**. The bowl will contain hydraulic fluid; keep your face clear of spilling fluid.

⚠ CAUTION

When the bowl is removed, oil will gush out. Keep to one side when you remove the bowl.

5-3-4-8

4 Remove old element **B**.

5 Fit the new element:

- **a** Clean the mating faces on the new element and filter holder.
- **b** Smear the seal **C** with hydraulic fluid.
- **c** Screw the new element in place, tighten to 100 Nm.

6 Add hydraulic fluid, see **Checking the Fluid Level** in main Operator Handbook. **ENSURE THAT YOU USE THE FLUID SPECIFIED IN THIS PUBLICATION.**

⚠ WARNING

Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.

INT-3-1-10/1

7 Check for leaks:

- **a** Make sure the filler cap is replaced.
- **b** Remove the Engine Shut-Off Solenoid (ESOS) connector on the engine injector pump and turn the engine over with the starter key for 30 seconds. Re-connect the ESOS.

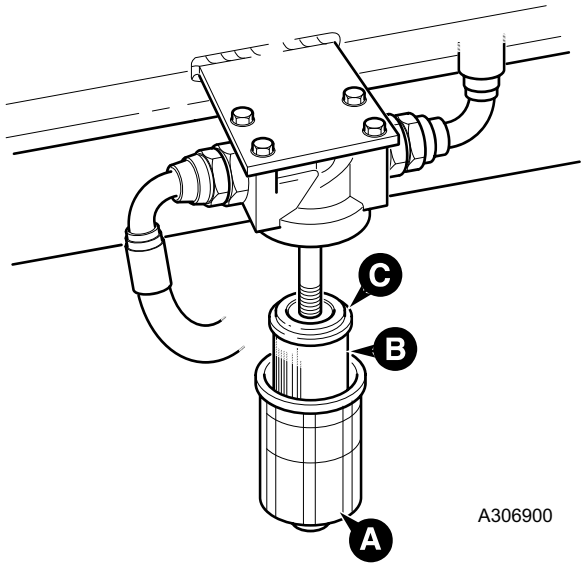
⚠ WARNING

Make the machine safe before getting beneath it. Park the machine on level ground. Make sure the engine is stopped, the parking brake is engaged and the transmission is in neutral. Disconnect the battery. Chock all four wheels.

5-3-2-1

- **c** Check for leaks at the filter.
- **d** Re-check the hydraulic oil level.

8 Perform the Start-up Procedure, to fill and bleed the hydraulic system (see **Start-up Procedure**).



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* Please note that it is not possible to perform a functional test of the parking brake as described in the Service Manual. Instructions for adjusting the parking brake are given in Section G of this manual.

Contents

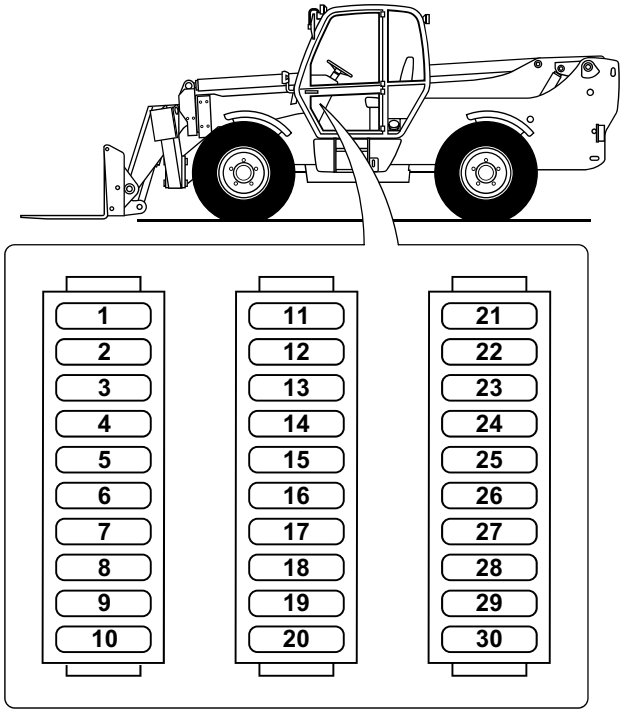
The electrical circuit of this machine is in most respects identical to that on non-hydrostatic machines.

The major items which are specific to this machine are the transmission controller, the drive pump and motor solenoids, engine speed and brake pressure sensors and the Hi Lo switch in the cab. There is no 2WD/4WD selector switch.

The current supplied to the forward/reverse solenoid on the drive motor is a pulse width modulating current.

Any current measured for diagnostic purposes must not be taken as an exact value, only as an indication that a current is present.

Fuse Identification



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This illustration shows a typical fuse installation.

The electrical circuits are protected by fuses. The fuses are located in a fuse box, as shown. If a fuse blows, find out why before fitting a new one.

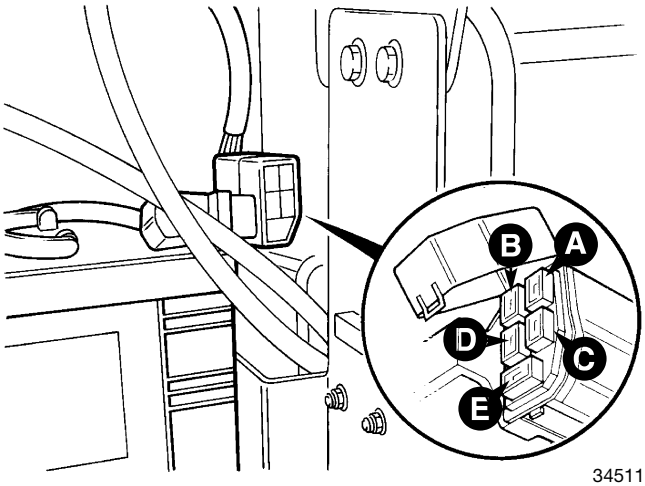
Additional fuse links are fitted at the battery positive terminal.

Note: The radio fuse may have a higher rating, depending on the type of radio fitted. Check radio fitting instructions.

	Circuit	Rating
1	Boom isolator	7.5
2	Auxiliary controls	10
3	Safe Load Indicator	5
4	Heater	15
5	Air conditioning, face fan	15
6	Wipers	15
7	Radio, clock, heated seat	5
8	Instrument panel	7.5
9	Direction indicators	10
10	NOT USED	
11	Starter relay	5
12	Engine shut-off solenoid (ESOS)	5
13	Steer mode selector	7.5
14	Hydrostatic drive system	15
15	Brake lights	5
16	Auxiliary socket	10
17	Brake switch	10
18	Rear work light	7.5
19	Reverse lights & warning buzzer	7.5
20	NOT USED	
21	Right hand side light	10
22	Left hand side light	10
23	Dip beam lights	10
24	Main beam lights	10
25	Front working light	10
26	Rear fog light option	5
27	NOT USED	
28	Horn, headlight flash	10
29	Warning beacon, Interior light	5
30	Hazard warning lights	15

Fuse Links

	Circuit	Rating
A	Horn, Hazard warning lights, Beacon, Interior light	40
B	Road lights, Working lights	40
C	SLI, Heater, Wipers, Radio, Instruments	50
D	ESOS, Forward/reverse switch, Brake lights	40
E	NOT USED	80



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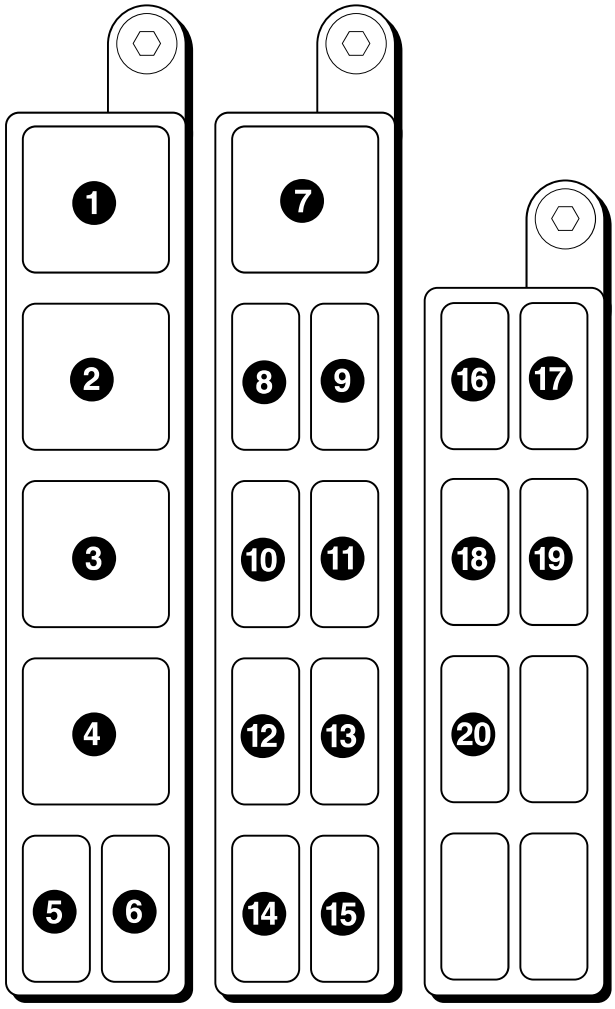
Relay Identification

1 Audible alarm
2 Neutral start
3 IGN Feed 1
4 IGN Feed 2
5 NOT USED
6 Parkbrake

7 Hazard warning lights
8 Sidelights
9 NOT USED
10 Sway isolation
11 Stabiliser isolation
12 NOT USED
13 NOT USED
14 Reverse 2
15 2-Wheel drive brakes

16 Reverse isolation
17 Forward isolation
18 NOT USED
19 NOT USED
20 NOT USED
21 NOT USED
22 NOT USED
23 NOT USED



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Diagnostic LEDs

The controller incorporates four LEDs which indicate the condition of the transmission control system. The LEDs and their functions are as follows:

LED 1 (Green) Monitors the external voltage (after the starter switch) when the engine is running. If the voltage is correct this LED will be permanently lit.

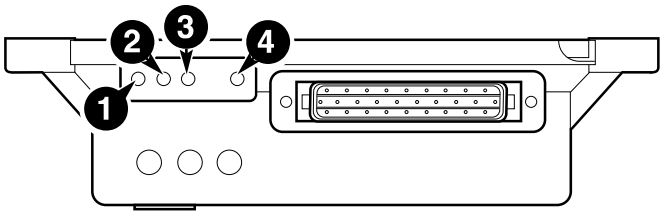
LED 2 (Green) Monitors the controller's internal 5V DC supply. If the voltage is within limits this LED will be permanently lit.

LED 3 (Yellow) Software Check. Normally flashes continuously at a rate of one flash per second.

LED 4 (Red) System error indicator. This LED is normally not lit. If the controller detects a fault in the system the LED will flash. It will flash in a pattern which is determined by the nature of the fault. The pattern is based on a repeating sequence of four flashes, which are either long or short (rather like Morse Code). The actual pattern of flashes indicates the nature of the fault. (See following page.)

The LED error signals and their causes are described on the next page. Note that two or more LEDs may be indicating errors at the same time.

Note: The controller is a non-serviceable part. If an internal error is signalled or if the controller is defective in any other way, the controller must be replaced by a new one.



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* Diagnostic Software

The controller is fitted with a diagnostic connector. This allows a portable PC type computer with the necessary software and communications cable to read any internal fault codes generated by the system.

The computer will interpret any fault code generated and provide a visual indication of the problem.

Instructions for the installation of the software and interpretation of the diagnostic display will be covered in the next update to this manual. See **Service Tools** (Section 1).

LED 1 Error

If this LED remains unlit, the controller has lost its supply from the ignition switch (engine running).

Remedy - check the ignition switch wiring and connections.

LED 2 Error

If this LED remains unlit, there is an internal error.

Remedy - Renew the controller.

LED 3 Error

If this LED flashes at a rate of approx. 10 flashes per second, or remains unlit, there is a software fault. The programming may have been lost or there may be a short-circuit in the external wiring.

Remedy - Check external wiring for short circuits. If none found, renew the controller.

* LED 4 Error

The following table lists the various flash patterns of LED 4 and their related errors

Flash Pattern	Error	Action
— ▪ ▪ ▪	Sensor supply voltage out of range	Check sensor supply voltage (5 Volt) at sensors, sensor wiring and sensors
————	Susmic Controller internal error	Renew controller
— — ▪ ▪	Brake Pressure Sensor signal incorrect	Check sensor, sensor wiring and connections Check sensor supply voltage (5 Volt) at sensor
▪ ▪ — ▪	Speed Sensor signal not picked up during startup	Check speed sensor wiring and connections Check sensor supply voltage (5 Volt) at sensor
— ▪ — ▪	Control Current error	Check pump control valve solenoid wiring and solenoid coil circuits for open or short-circuit
▪ — — ▪	Forward/Reverse Switch short-circuit	Check Forward/Reverse switch and wiring
— — —▪	Speed Sensor signal interrupted	Check speed sensor wiring and connector Check sensor supply voltage (5 Volt) at sensor

Note:

▪ ▪ — ▪	The speed sensor error will flash when the engine is not running and the ignition is switched on.

Key

1 Battery isolator
2 Battery
3 Starter motor
4 Starter motor solenoid
5 Thermostart
6 Starter switch
7 Neutral start relay
8 Fusible link
9 Fusible link
10 Ignition feed relay 1
11 Ignition feed relay 2
12 Engine shut-off solenoid (ESOS)
13 Rear worklight
14 Rear worklight switch
15 Front worklights
16 Front worklight switch
17 Auxiliary power connector
18 Brake light relay
19 Brake switch
20 Brake lights
21 Reverse light
22 Reverse alarm
23 Reverse relay 2
24 Parkbrake switch
25 Parkbrake relay
26 Heated seat option
27 Radio cassette
28 Digital clock
29 Transducer - safe load indicator
30 Readout box - safe load indicator
31 Fusible link
32 Instrument panel
33 Air filter blocked switch
34 Engine oil pressure switch
35 Transmission oil temperature switch
36 Transmission oil pressure switch
37 Water temperature switch
38 Buzzer
39 Fuel gauge sender
40 Water temperature sensor
41 Alternator
42 Stabilizer switch and warning lamp - Left hand
43 Stabilizer switch and warning lamp - right hand