Service Manual

TM180/220

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Section 2 - Care and Safety

Section 3 - Maintenance

Section A - Attachments

Section B - Body and Framework

Section C - Electrics

Section E - Hydraulics

Section F - Transmission

Section G - Brakes

Section H - Steering

Section K - Engine



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No Refrigerant Circulation

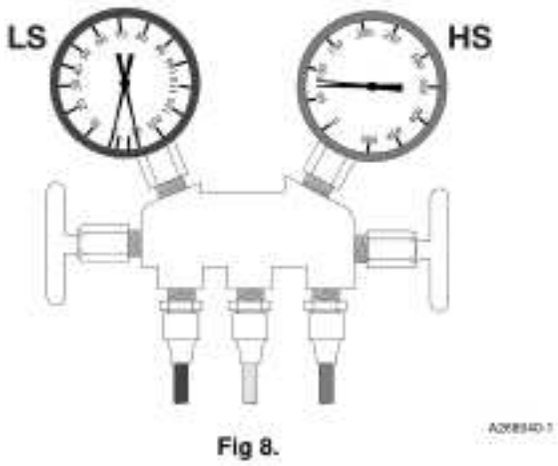


Fig 8.

Table 10. Gauge Readings

Gauge	Pressure
Low Side **LS**	Zero to negative: -1.0 bar (-1.1 kgf cm²)(-15 lbf in²)
High Side **HS**	Low: 5.4 bar (5.5 kgf cm²)(78 lbf in²)

Other Symptoms

Receiver Drier - Frost or moisture on tubes before and after receiver-drier.

Diagnosis

Refrigerant flow obstructed by dirt, moisture or gas leakage from expansion valve heat sensing tube.

Correction

1 Evacuate air Con. system.

2 Check heat sensing tube at expansion valve. Replace expansion valve if necessary.

3 Remove expansion valve and attempt removal of dirt. If dirt cannot be removed, replace expansion valve.

4 Replace receiver drier.

5 Charge system with R-134a.

6 Operate system and check performance.

Insufficient Cooling of Condenser or Refrigerant Overcharge

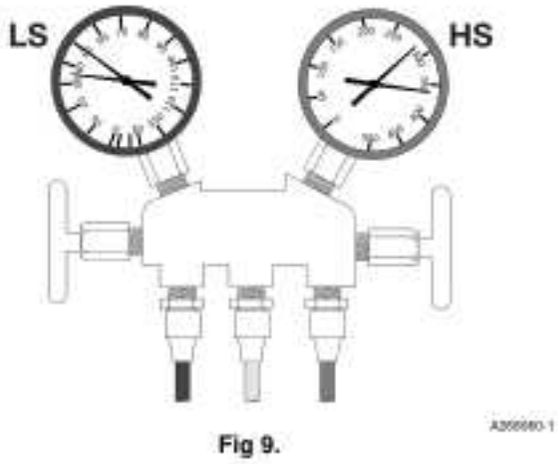


Fig 9.

Table 11. Gauge Readings

Gauge	Pressure
Low Side **LS**	High: 13.0 bar (3.0kgf cm²)(43 lbf in²)
High Side **HS**	High: 22.1 bar (22.5 kgf cm²)(320 lbf in²)

Diagnosis

Refrigerant overcharge, condenser cooling fins clogged with dirt or cooling fans malfunctioning.

Correction

1 Clean condenser cooling fins.

2 Check cooling fan operation.

3 Evacuate air con. system

4 Charge system with R-134a.

5 Operate system and check performance.

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40 kph Chassis Harness - CAD 332/T8934
Issue 3

Key to Connectors:

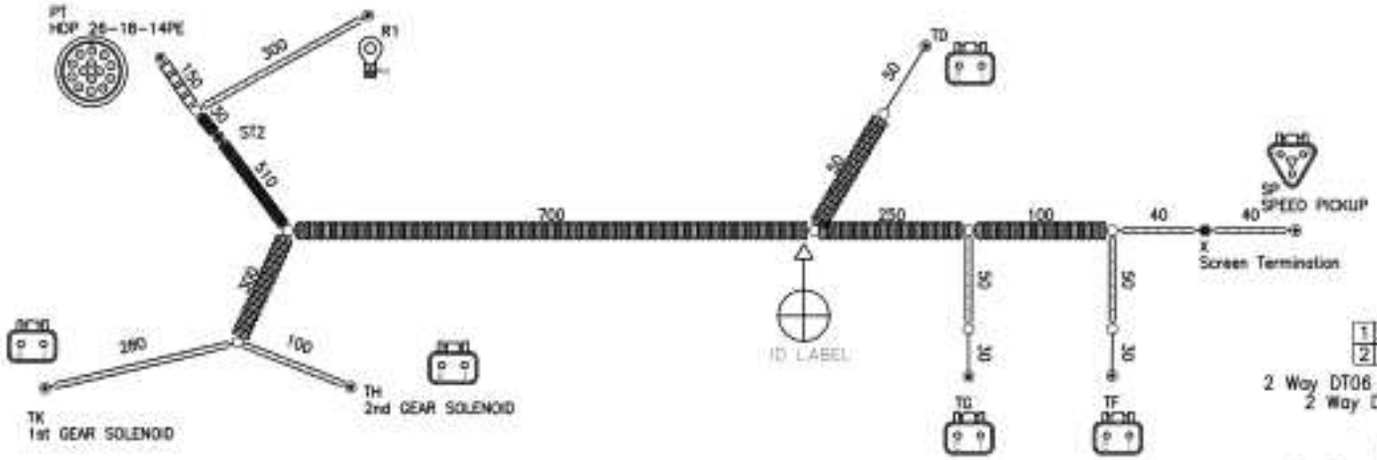
TD A6vm

Key to Connectors:

TF 1st Gear Signal
TG 2nd Gear Signal
TH 2nd Gear Solenoid
TK 1st Gear Solenoid

Key to Connectors:

SP Speed Pickup
X Screen Termination
PT Connector



TK
1st GEAR SOLENOID

1	2629A	1.0	PT-M
2	611G	1.0	ST2-2

2 Way DT06 Socket Housing : 1 : 7212/0052
2 Way DT06 Wedge : 1 : 7212/0031

R1

1	611	1.5	ST2-1

Ring Terminal M10 1.5-2.5 : 1 : 7207/1501
Adhesive Lined Heatshrink : 1 : 7000/3212

PT
HDP 26-18-14PE

A	2801F	0.75	SP-A	H	2802E	1.0	TG-1
B	BLUE	0.5	SP-C	J	2837C	1.0	TF-2
C	SCRN1	0.5	X-1	K	2810C	1.0	TG-2
D	RED	0.5	SP-B	L	7210/0030		
E	7210/0030			M	2629A	1.0	TK-1
F	7210/0030			N	2815A	1.0	TH-1
G	2802C	1.0	TF-1	P	2631A	1.0	TD-1

14 Way HDP Free Pin Housing (Receptacle) Size 18 Rev: 1: 332/S2212
Size 18 Plastic Jam Nut : 1 : 7210/0119
Size 18 Lockwasher : 1 : 7210/0120

ST2
Earth Splice

1	611	1.5	R1-1
2	611G	1.0	TK-2
3	611H	1.0	TH-2
4	611K	1.0	TD-2

In Line Ultrasonic Splice : 1 : 7000/3104
Adhesive Lined Heatshrink : 1 : 7000/3212

SP
SPEED PICKUP

A	2801F	0.75	PT-A
B	RED	0.5	PT-D
C	BLUE	0.5	PT-B

3 Way DT06 Socket Housing : 1 : 7213/0031
3 Way DT06 Wedge : 1 : 7213/0016

X
Screen Termination

1	SCRN1	0.5	PT-C

TD
A6VM

1	2831A	1.0	PT-P
2	611K	1.0	ST2-4

2 Way DT06 Socket Housing : 1 : 7212/0052
2 Way DT06 Wedge : 1 : 7212/0031

TF
1st Gear Signal

1	2802C	1.0	PT-G
2	2837C	1.0	PT-J

2 Way DT06 Socket Housing : 1 : 7212/0052
2 Way DT06 Wedge : 1 : 7212/0031

TG
2nd Gear Signal

1	2802E	1.0	PT-H
2	2810C	1.0	PT-K

2 Way DT06 Socket Housing : 1 : 7212/0052
2 Way DT06 Wedge : 1 : 7212/0031

TH
2nd GEAR SOLENOID

1	2815A	1.0	PT-N
2	611H	1.0	ST2-3

2 Way DT06 Socket Housing :1 : 7212/0052
2 Way DT06 Wedge : 1 : 7212/0031

332-T8934-3-1

Fig 31. 40 kph Chassis 332/T8934

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Dismantling and Assembly (TM220)

Note: *Before removing or dismantling the motor, check that its performance is as specified in* ***Technical Data****. If the performance is below that specified, the motor or the motor's gears should be renewed. Renewal of components such as gears, bearings and housing will not effect a permanent cure. If a motor's output is satisfactory but there is evidence of external leakage, it should be dismantled for re-sealing only. Before dismantling make sure the motors external body and the work area are thoroughly cleaned and are free from possible causes of contamination.*

For motor components, ⇨ *Fig 13. (🗋 E-78)*.

Dismantling

Prior to dismantling the unit, ensure that the exterior of the motor and working area are thoroughly cleaned and free of possible sources of contamination.

1 Mark items **1**, **2** and **3** to ensure correct re-assembly.

2 Remove key **11** from driveshaft.

3 Remove two bolts **16** and washers **15**.

4 Remove end cover **2**, body O-ring **29**, bush seals (**27** and **28**) and back-up seal **26**.

5 Turn motor over and separate flange **1** and body **3** using a soft faced hammer.

6 Remove retaining circlip **22**. Remove shaft seal **21** from flange ensuring that the shaft seal recess is not damaged.

7 DO NOT remove check valve **33**, but shake the flange to ensure that the valve internal ball can be heard moving. Ensure the check valve is tight in flange. Record the position of the valve relative to the gear housing.

8 Remove body O-ring **31**, bush seals (**27** and **28**) and backup seal **26**.

9 Before removing the internal components, mark the bushes **25** to denote the location in the body. On a plain area, away from the seal location and next to the driveshaft, mark:

F = Bush flange end

C = Bush cover end

10 With the unit standing on its back face, use a suitably blunt instrument to hold down bush **25** and pull the housing **3** over the bushes **25**.

11 Pull both bushes off the gears.

Inspection

1 Inspect O-ring grooves and shaft seal recess in mounting flange, these should be undamaged and free from burrs.

The motor must be renewed if any of the following defects are found:

a The coated bearings in bushes **25** are worn through revealing the bronze backing.

b The gear side faces are scored, often operation with contaminated fluid results in a distinct wear step coincident with the gear tooth root diameter, with corresponding wear on the bush faces.

c There is a noticeable wear groove on the driveshaft where the shaft seal lip runs.

d The faces of bushes **25** are scored.

Note: *It is not recommended that damaged gears/bodies or bushes are replaced individually as this will not effect a good repair.*

It is normal for the body to have a cut-in on the inlet side and this should be no deeper than 0.08 mm.

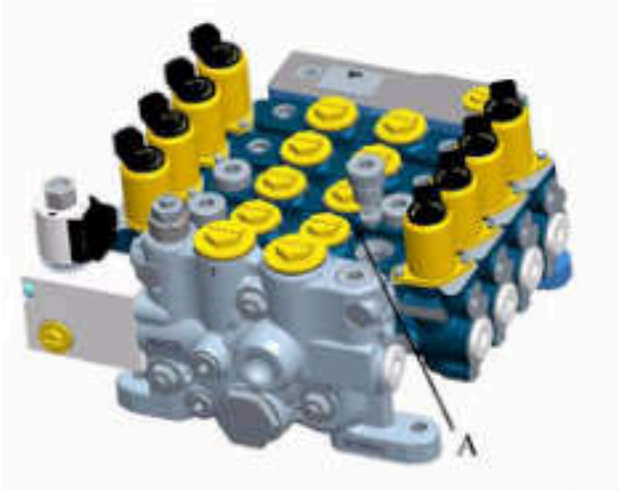
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Changing Components

1 Unscrew and remove the ARV **A**.

2 Install the new ARV and torque tighten to 45+/-4.7Nm.

Note: *The ARVs are non-adjustable. Before installation, check the setting that is etched on the top surface of the ARV.*



T056890-1

Fig 10.

1 Remove the screws **A**.

2 Pull the solenoid out of the valve.

If the solenoid is difficult to remove, turn the solenoid and use a flat blade screwdriver to lever the solenoid out of the cavity.

Be careful not to damage the housing.

3 Install the new solenoid and torque tighten the screws to 2.0+/-0.2 Nm.



T056890-2

Fig 11.

1 Unscrew and remove the LSRV **A**.

2 Install the new LSRV and torque tighten to 65 +/-6.8Nm.



T056890-3

Fig 12.

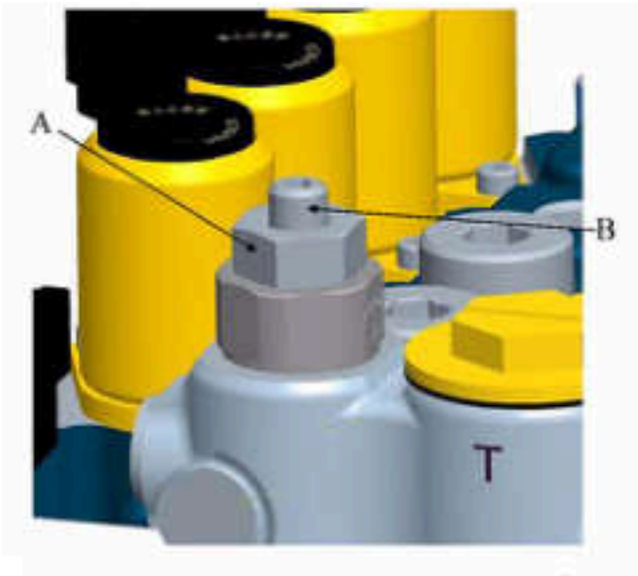
Resetting the LSRV:

1 Loosen the locknut. **A**

2 Adjust the setting screw **B** until the required setting is achieved.

3 Torque tighten the locknut to 9.5 +/- 1.4Nm.

4 Make sure that the setting has not changed.



T056890-4

Fig 13.

Detailed view of the LSRV.

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Instrument Panel

DIL Switches

Introduction

If a machine is installed with a different set of wheels and tyres or new dashboard, it is necessary to calibrate the dashboard DIL switch setting.

An incorrectly set up dashboard can cause incorrect speed readout to the operator. Refer to the procedure in this Section to set up the dashboard DIL switch setting.



Fig 1.

Set-up Procedure

1 Make the machine safe, **refer to Section 3 Maintenance**.

2 Turn the ignition switch to the OFF position.

3 Remove the instrument panel **A**.

4 Remove the square rubber grommet **B** from the back of the clock to get access to the DIL switches.

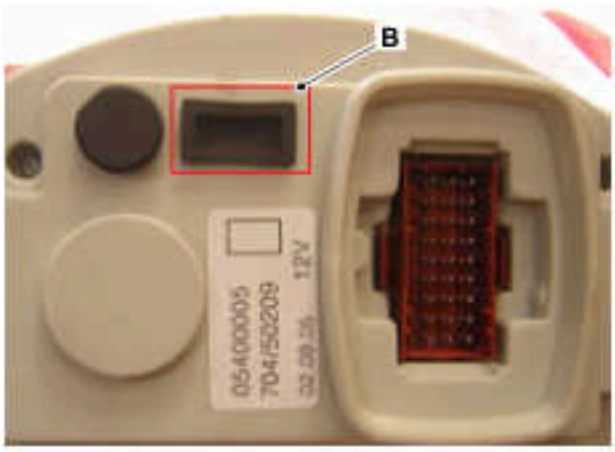


Fig 2.

5 Obtain the correct DIL switch number to match the wheel/tyre assembly, **refer to bulletin 4-200**.

6 Set the DIL switches as necessary, according to the table.



Fig 3.

Item	Description
C	DIL Switches
D	Numbers

7 Make sure that only one DIL switch is in ON position at any time, as otherwise the unit will not function correctly.

8 Install the square rubber grommet to the back of the clock of instrument panel.

9 Install the instrument panel.

10 Make sure all the appropriate connectors are properly secured.

11 Turn the ignition switch to the ON position.

12 Start the machine and test drive.

13 Check the speedometer for correct operation.

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