



DE7200 Series
DE8232 Series

BRAKE TESTERS

Installation
Operation
Maintenance



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Changes to this manual are as shown below. Revised or additional issues of this manual are available from Tecaletit Garage Equipment Co. Ltd. PLYMOUTH PL7 5JY.

Minor changes are indicated by the use of a broad line adjacent to the affected text.

PUBLICATION	ISSUE CHANGES	TEXT AFFECTED
17/06/99	Issue a	N/A

MODEL NO:

SERIAL NO:

DATE OF INSTALLATION:

INSTALLED BY:

HEALTH AND SAFETY PRECAUTIONS

In order to comply with your responsibilities under the Health and Safety at Work Act 1974, it is essential that this brake tester and any optional accessories are sited, installed, operated, and maintained by *competent persons in accordance with the instructions in this manual.



* A COMPETENT PERSON SHOULD BE A MINIMUM OF 18 YEARS OF AGE AND HAVE A MINIMUM QUALIFICATION OF NVQ 3 (OR AN EQUIVALENT QUALIFICATION) AND / OR EXPERIENCE WITHIN THEIR OWN FIELD OF RESPONSIBILITY, E.G. INSTALLATION ENGINEERING, AUTOMOBILE ENGINEERING ETC.



IT IS IMPORTANT THAT ALL PERSONS INSTALLING, OPERATING OR MAINTAINING THIS BRAKE TESTER AND ANY OPTIONAL ACCESSORIES MUST ALSO BE FAMILIAR WITH THE LAYOUT OF THE EQUIPMENT, SAFETY PRECAUTIONS, EMERGENCY SHUTDOWN PROCEDURES AND VEHICLE BRAKING SYSTEMS. APPROPRIATE TRAINING WILL BE REQUIRED, PRIOR TO, INSTALLING, USING OR MAINTAINING THIS BRAKE TESTER.

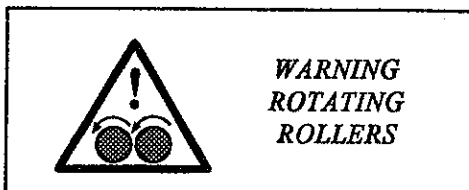
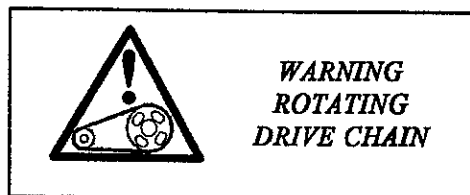
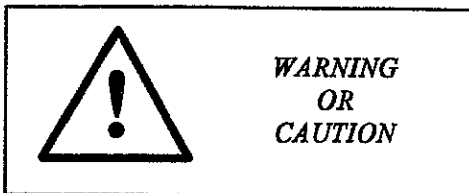
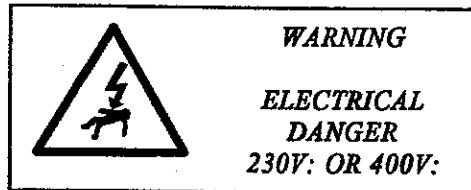
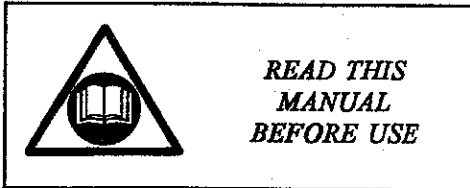
WARNINGS, CAUTIONS AND NOTES

'WARNING' is used in the text of this manual to identify specific hazards which can cause injury or death.

'CAUTION' is used in the text of this manual to identify incorrect procedures which can cause damage to the brake tester.

'NOTE' is used in the text of this manual to draw attention to specific points of importance.

WARNING SYMBOLS



Type Typ	<input type="text"/>	Année Year Jahr	<input type="text"/>
No de série Serial No. Fabrik Nr.	<input type="text"/>		<input type="text"/>
Date d'installation Installation Date Einrichtungsdatum	<input type="text"/>		
Alimentation électrique Electrical supply Elektr. Anschluß		230V	<input type="checkbox"/>
		3 x 400 + E (50Hz)	<input type="checkbox"/>
Puissance Power Leistung	<input type="text"/> kW	3 x 400 + N+E (50Hz)	<input type="checkbox"/>
Pression d'air Air pressure Druckluftversorgung	Max. <input type="text"/>	Min. <input type="text"/>	Pression hydraulique Max. working pressure Max. Betriebsdruck <input type="text"/> Bar
MAX CHARGE NOMINALE CAPACITY TRAGFAHIGKEIT		<input type="text"/>	Kg
<input type="checkbox"/>	Fogautolube SA 58440 Myennes France		CE
<input type="checkbox"/>	Tecalmit Garage Equipment PLYMOUTH PL7 5JY United Kingdom		

Draw 6122-000

CE Identification plate



Warning Label

DE7200 Series Car Brake Tester and DE8232 Series Car and LGV Brake Tester
(Approved by the Vehicle Inspectorate for statutory vehicle testing)

DESCRIPTION

The DE7200 Series and DE8232 Series brake testers are similar in basic design. They consist of three main assemblies:

Console	This provides the operator with a visual display of brake force.
Roller bed assemblies	These two units (LH and RH) are recessed in the floor and are used to rotate the road wheel.
Pedestal or Wall mtd. Control Box	This unit contains the contactors for motor control and the remote control and printer ports.

Console

This houses the microprocessor that controls all the functions of the roller bed, the display of brake force and the imbalance readings.

The analogue display of brake force is in the form of two concentric circles of Light Emitting Diodes (LED's), red and green representing left and right hand roller sets respectively. The DE7200 display is divided into 5kg increments up to 240kg and then 10kg increments to 600kg full scale. On the DE8232 the display has two automatic ranges 0 - 625 Kg for Class IV vehicles and 0 - 1250 kg for Class VII Vehicles. When testing one wheel, the appropriate analogue display will show the brake force developed and any brake force fluctuation.

The DE7200 Series central digital display remains blank until either the wheel-slip detector operates or the stop button is pressed. At this point the analogue display will 'blank' out and the digital display will register the maximum brake force achieved in kg.

The DE8232 central display shows '0625' indicating that the analogue scale is in the 0 - 625 kg range. If the brake force is > 625kg then the analogue scale on the display automatically changes to 0 - 1250 kg. At this point the digital display will show '1250'. The operating range 0625 - 1250 will remain until the roller bed wheel-slip detector has operated or the hold to run switch on the remote control is released. At this point the analogue display will return to zero and the digital display will indicate the maximum brake force achieved. Should both roller sets be started, then both analogue displays will show any imbalance of brake force between the two wheels.

DE7200 pressing the STOP button at any time during this test will stop the motors and the digital display will show the maximum % imbalance that has occurred between left and right hand wheels during the test. At the same time the analogue displays will re-illuminate to the positions corresponding to the maximum imbalance.

DE8232 releasing the START button at any time during this test will stop the motors and the digital display will show the maximum % imbalance that has occurred between left and right hand wheels during the test. At the same time the analogue displays will re-illuminate to the positions corresponding to the maximum imbalance.

Roller Beds

Each roller bed assembly consists of a pair of gritted rollers, mounted in bearings, on a welded steel frame. The rollers are coupled together via a chain drive. The power unit on the DE7200 Series drives the rollers via a second chain drive. The power unit on the DE8232 Series drives the rollers via a triple V belt. The torque reaction produced by applying the vehicle brakes is resisted by a shear-beam load cell bolted to the power unit casing. The load cell generates a signal that is proportional to the brake force being developed at the roller surface.

A pivoting wheel-slip roller is mounted between the two gritted rollers and is spring loaded against the vehicle tyre under test. Rotation of the wheel, causes the wheel-slip roller to spin and generate a signal in an adjacent sensor. This signal is proportional to the surface speed of the tyre and is compared with the known surface speed of the driving rollers. The results are compared and a point is automatically selected at which maximum brake force is achieved.

NOTE: If wheel-slip (wheel lock) occurs during an imbalance test, the rollers will automatically stop and the digital display will not show the imbalance. In this case repeat the test, applying the brakes to achieve a reading, approximately 10% less than the previous result (See Section 7 for the full test procedure)

Control Box or Pedestal

The motor starters are located separately from the microprocessor and are positioned in either the control box, when the console is wall mounted remotely from the roller bed or in the pedestal when the console is wall mounted. The control box/pedestal houses:

- a) Emergency stop switch
- b) Rotary isolator switch
- c) A pair of direct on line starters to switch the motors
- d) The sensor and control circuit board for the infrared remote control when fitted. (Optional extra)
- e) A socket for the remote control handset (Standard fitting)
- f) Printer port.

ACCESSORIES

Remote Control (Wired)

A remote control handset is supplied with each machine and is connected to the pedestal or wall mtd. Control box, via a coiled cable and plug. NOTE: The stop button stops both motors simultaneously.

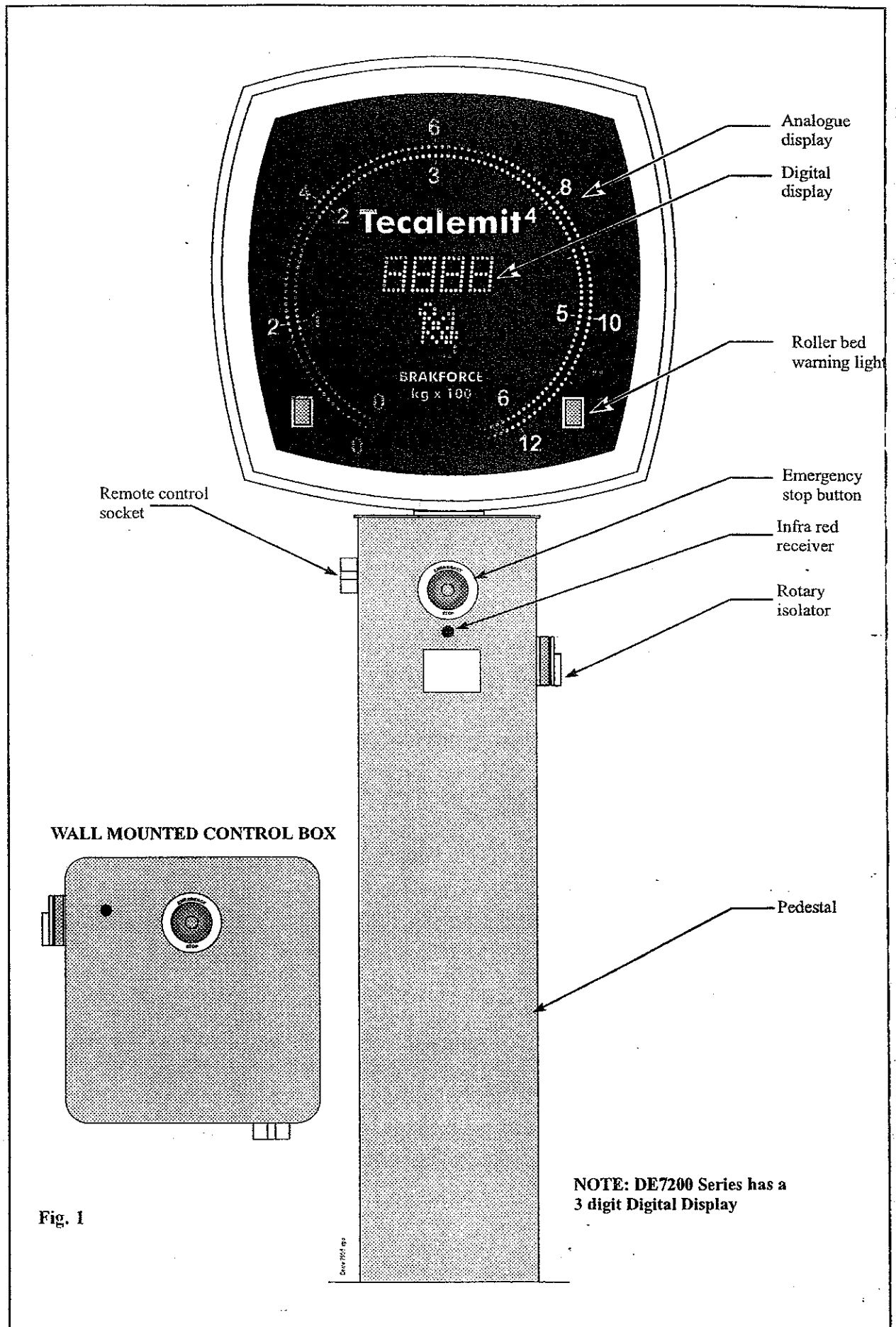
Infrared Remote Control

This unit can be supplied as a optional extra. It replaces the wired remote control which should be unplugged and stored for stand-by use. This control consists of an infrared transmitter having three press buttons, which operate in the same way as the wired remote control.

NOTE: The stop button stops both motors simultaneously. To prevent unauthorised use, the IR control will only have command of the brake tester if the wired remote control plug has been replaced by the infrared plug. This is supplied with the infrared remote control.

Printer

This unit can be supplied as an optional extra and enables the operator to retain the results of the brake test. With this option the brake system efficiencies can easily be calculated and printed, after the operator has entered the vehicle weight. See Printer section.



OPERATION PRINCIPALS

With a vehicle in position on the roller beds, pressing the start button will start the motor and rotate both rollers and wheel. The wheel will then rotate the wheel-slip roller, producing a signal that is proportional to its speed.

NOTE: The motor(s) will not start unless the appropriate wheel(s) are in position on the roller beds. If a single wheel is positioned on either roller bed, then only that roller bed can be operated.

Application of the vehicle brake produces a retarding force between roller surface and tyre, this in turn generates a torque reaction at the gearbox which is resisted by the shear beam load cell. A signal from the load cell is sent to the microprocessor, which enables the appropriate analogue display to be illuminated to the position, that represents the brake force in kgf. As the brake is applied further, the brake force will rise to a maximum level.

The relative speed of the wheel to the roller is monitored by the wheel-slip roller. The brake tester will then stop the roller when the wheel starts to slip in order to prevent tyre damage. At this point the brake force has reached a maximum value which is shown on both the digital and analogue displays.

CUSTOMER'S RESPONSIBILITY



CAUTION: THE CABLES, FITTING AND ASSOCIATED EQUIPMENT MUST BE INSTALLED BY A SUITABLY QUALIFIED PERSON AND CONFORM TO ALL THE REQUIREMENTS OF THE CURRENT EDITION OF THE IEE REGULATIONS. THE ELECTRICAL SUPPLY TO THE PREMISES MUST BE ADEQUATE AND ACCEPTABLE TO THE LOCAL ELECTRICITY SUPPLY AUTHORITY.

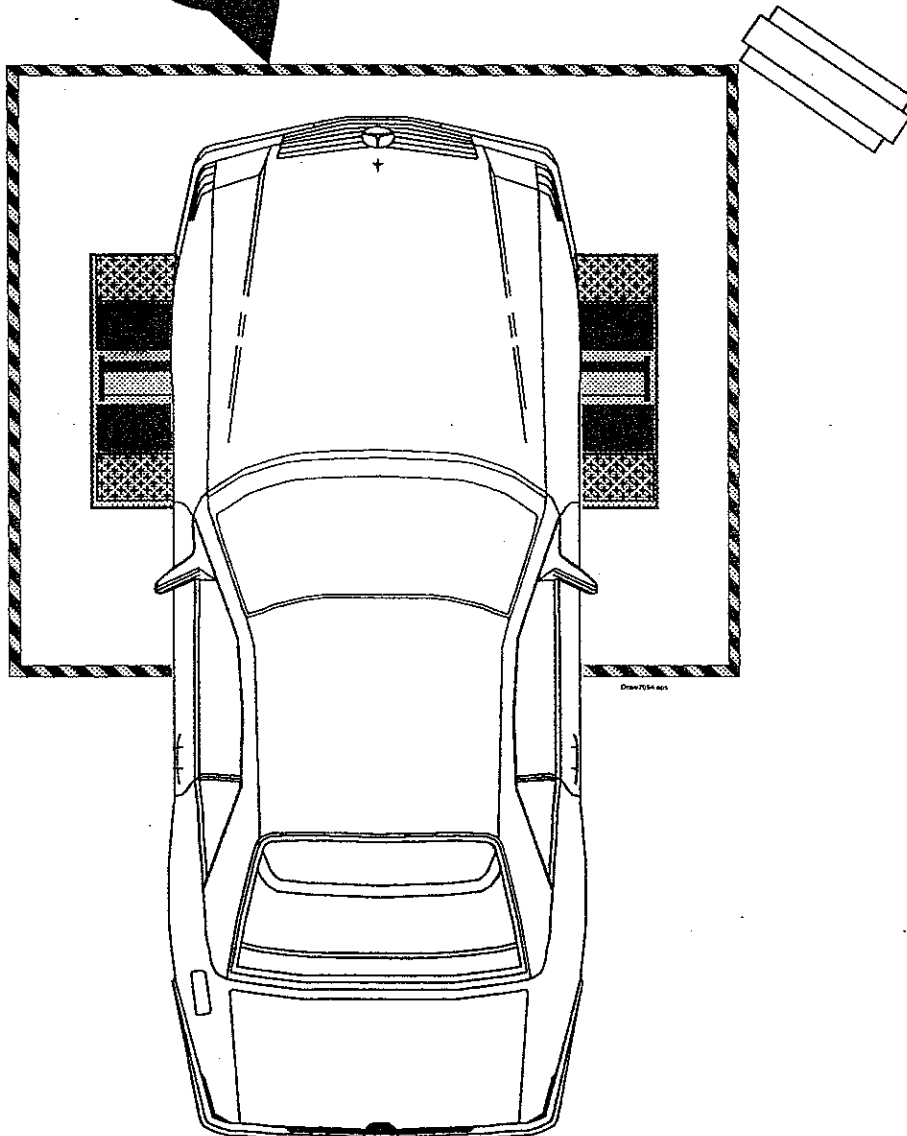
General

- Provision of an electrical supply to a suitably fused disconnecter, which is normally situated adjacent to the control box/pedestal. See specifications.
- Fused disconnecter (see Technical Specification page 33)
- Provision of the electrical supply from the fused disconnecter to the control box/pedestal.
- Connection of the motor cables to the contactors in the control box/pedestal.
- Connection and testing of earth bonding from the roller beds and control box/pedestal to the incoming supply.
- Electrical safety test of the completed installation in accordance with the current edition of the IEE regulations.
- Provision of *metallic* ducting, trunking, conduit etc. to protect cables from damage in the following areas:
 - (i) Incoming mains supply to the fused disconnecter.
 - (ii) From the fused disconnecter to the control box/pedestal.
 - (iii) From the control box/pedestal to the floor prior to routing to the roller beds.
- To minimise the effects of electro magnetic interference
- Ensure that *all* exposed metalwork that forms part of the installation i.e. framework, enclosures, ducting, trunking and conduit etc. is bonded to the earth terminal in the control box.
- Ensure that any joints are constructed to reduce RFI to a minimum. i.e. free from gaps etc.
- Preparation of the roller beds recess in accordance with the relevant Installation Diagram.
- Two 50mm (minimum) diameter ducts, a minimum of 150mm apart, except when they enter the pedestal and roller bed. These ducts must be free from obstruction and have a draw rope to enable motor and signal cables to be pulled through. NOTE: The mains cable and signal cables must run in *separate* ducts. Standard cable length is 12 meters, longer cable lengths are available at additional cost. Any additional cable length must be specified at the time of ordering.
- Drainage is recommended and must be in accordance with local authority specifications.
- DE7200 Series Shaded areas 232mm below surrounding floor to be truly level.

- The thickness of wall and base to be decided between the customer and architect.
- Ensure that when wall mounted consoles and control boxes are to be installed, that they will be mounted on walls of adequate construction.
- Provide danger zone making in accordance with Fig 2
- The supply of suitable assistance and equipment for moving and lifting/lowering the roller bed assemblies into position.
DE7200 Series, use the four holes on the outside of the roller bed casing.
DE8232 Series using a suitable lifting sling around the rollers.
- Ensure that all persons assisting the Tecalemit engineer are suitably trained. All equipment used must satisfy the requirements of the Manual Handling Operations Regulation 1992 and the Health and Safety at Work Act 1974, PUWER etc.
- If required on the DE7200, grout the 'alignment gap' around the roller bed in place of the standard seal.
- To ascertain from the local petroleum supply officer, that the proposed installation satisfies the necessary requirements.
- Having ensured that all the above requirements have been met, inform Tecalemit Garage Equipment.
- Ensure that the brake tester must be stored in a dry area prior to installation. See Specifications for environmental conditions etc.



WARNING: DO ENTER THE DANGER ZONE WHEN THE BRAKE TESTER IS SWITCHED ON OR BEING OPERATED



DANGER ZONE MARKING
100mm wide stripes on a
300mm pitch at 45°
Painted yellow

Fig. 2

TECALEMIT'S RESPONSIBILITY

- Installation of roller beds into a prepared recess complying with the relevant installation diagram
NOTE: This does not include grouting of the DE7200 Series 'alignment gap' by the installation engineer.
- Installation of console in a suitable floor or wall position. (See customer's responsibilities)
- Installation of wall mounted control box. (If specified)
- Initial calibration.
- Guidance on use of the machine.

INSTALLATION - DE7200 Series

The position of the pit and console should be discussed with a Tecalemit sales engineer, attention being paid to the vehicle approach direction and console position. The console must be sited so that the operator can see the console face when testing the front or rear wheels. Excessive manoeuvring of the vehicle to position it on to the rollers is undesirable and should be avoided.

NOTE: If the equipment is to be used for statutory (MOT) testing it must be located in accordance with department of Transport Vehicle Inspectorate's requirements.



CAUTION: THE FOLLOWING INSTRUCTIONS COVER THE ADJUSTMENT OF MECHANICAL AND ELECTRICAL EQUIPMENT. ONLY COMPETENT PERSONS SHOULD BE EMPLOYED TO INSTALL THE DE7200 SERIES BRAKE TESTER. CERTAIN ADJUSTMENTS TO THE ELECTRICAL CONTROLS REQUIRE THE ELECTRICAL SUPPLY BEING SWITCHED ON DURING THE INSTALLATION. EXTREME CARE MUST BE TAKEN DURING THESE OPERATIONS. NOTE: EACH ROLLER BED WEIGHS 200KG.

Roller beds

Installation of the roller beds is as follows:

- Using the four lifting points on the sides of the welded frame, lower each roller bed centrally into the recess ensuring that the motor is on the 'drive-on' side. The weight of each roller bed is 250kg.
- Ensure that the roller beds are level and flush with the surrounding floor (shim if required).
- Ensure that roller beds are aligned together at 90° to the 'drive-on' direction.
- Ensure that all of the roller bed support frame has an even contact with the recess floor (shim if required).
- Retain the roller beds in position with the wedges supplied.
- Fit the rubber seal around the roller bed frame. If required the *customer* can grout the gap around the roller bed as follows:
 - (i) Mask the roller bed lifting points.
 - (ii) Fill the gap from the bottom of the recess to within 50mm of the floor surface with a proprietary gap filling compound (aerosol expanding foam) following manufacturers instructions.
 - (iii) Grout to the surrounding floor level ensuring that the grout does not enter the roller bed.

Pedestal/Control Box and Wall Mounting Bracket

Site the pedestal or wall mounting bracket in a suitable position so that the console can be easily viewed at all stages during the test. The pedestal/control box should also be sited so that the operator has good access to the emergency switch at all times. If an infrared control is being used, then the pedestal/control box must be positioned so that the Infrared receiver can receive a signal at all stages of a test. (See Fig. 1)

Using the pedestal/control box or wall mounting bracket as a template, mark out the location of the fixing holes. Drill the holes as required and then bolt into position.

Electrical Connections

The electrical connection should be made in accordance with the relevant wiring diagram. (See Customer's responsibility).

Electro Magnetic Interference

To reduce the effects of electro magnetic interference from the brake tester, four identical ferrite sleeve suppressors are used to absorb radio frequency emissions from the cable. In production one ferrite sleeve is fitted to the printer ribbon cable. During installation three additional ferrite sleeves Fig. 3 are fitted as follows:

- Slide two ferrite sleeves 'A' over the 18 core cable before guiding the cable through the grommet in the side of the chassis. These are a tight fit on the cable and will remain in the position shown.
- Slide the ferrite sleeve 'B' over the 'wheel in position' and 'load cell' cables. Fit the cable tie Part No. 27233-509 as close as possible to the top of the console pivot tube to retain the ferrite sleeve in position.

On pedestal mounted versions a braided link is fitted between the display and the pedestal as shown in Fig. 3. On wall mounted versions, earth bonding continuity is maintained by the metallic ducting/trunking.

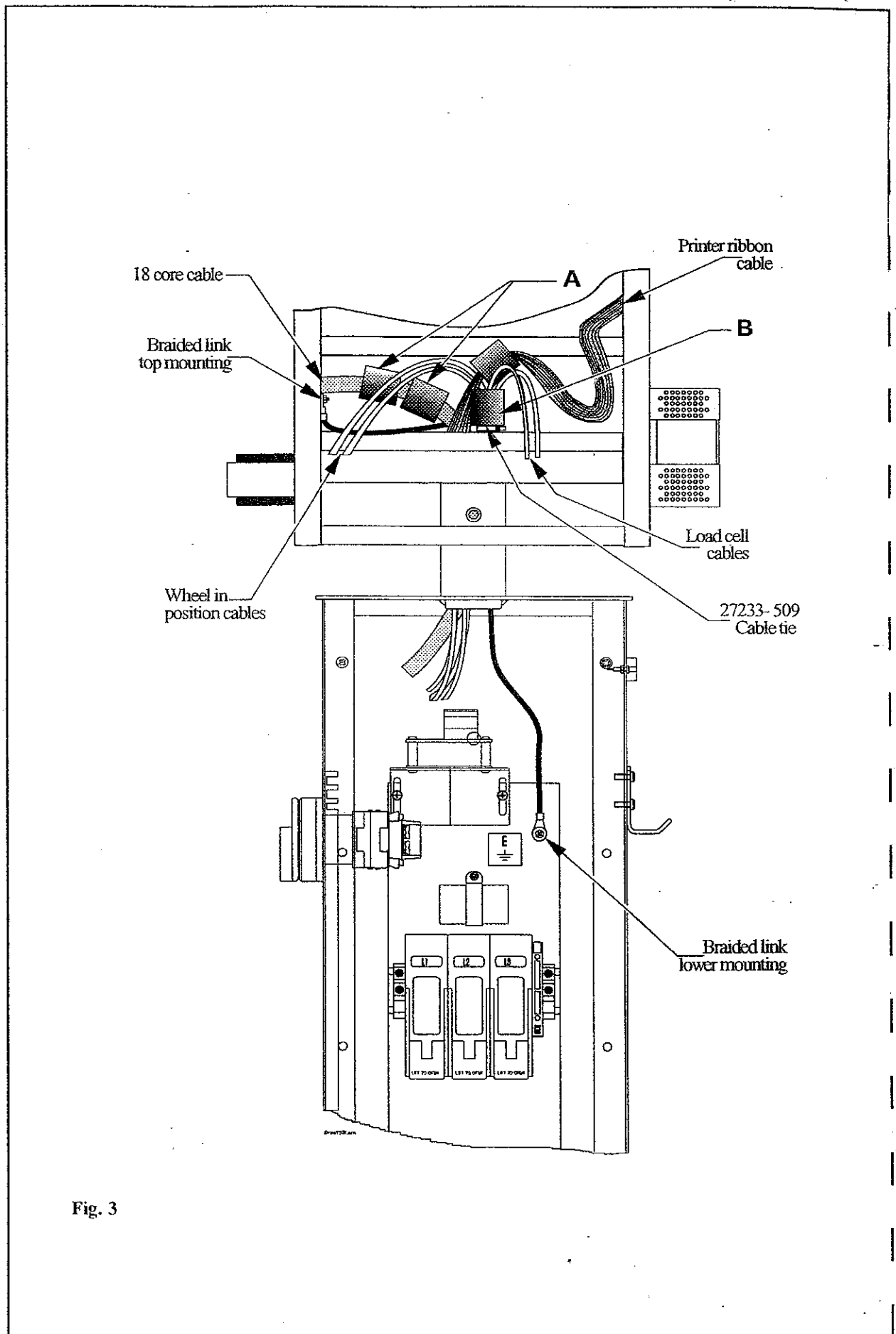


Fig. 3

INSTALLATION - DE8232 SERIES

Ensure that the appropriate safety precautions are taken prior to and during the installation. The roller bed assembly is supplied in two sections. They each weigh 350kg each. Ensure that the rollerbeds are positioned so that the gearbox is in on the side of the 'drive on direction'. Each section is lowered into the floor recess using an appropriate capacity sling. Ensure that the sling is correctly located so that the roller bed remains correctly supported and level during the entire lifting and installation process.

Shim as necessary to ensure correct alignment of the rollers. Position the bridge section between the roller bed angle brackets. Bolt the two roller beds and bridge section together. Tighten the four main jacking screws in the sides of the frame to secure the roller beds in position.

The pedestal or wall mounting bracket should be located in the desired position. Secure to the floor or wall as appropriate with the anchor bolts provided. If a wall mounted console is to be installed, then the control box should be located so that the operator has good access to the rotary isolator. If an infrared remote control is being used, then it is important to ensure that there are no obstructions between from the vehicle to the infrared receiver.

Complete the electrical connections in accordance with the appropriate wiring diagram. Seal the cable entry in the pedestal with the compound supplied. Check that the direction of rotation of the motors is in accordance with the arrow on the gearbox casing.

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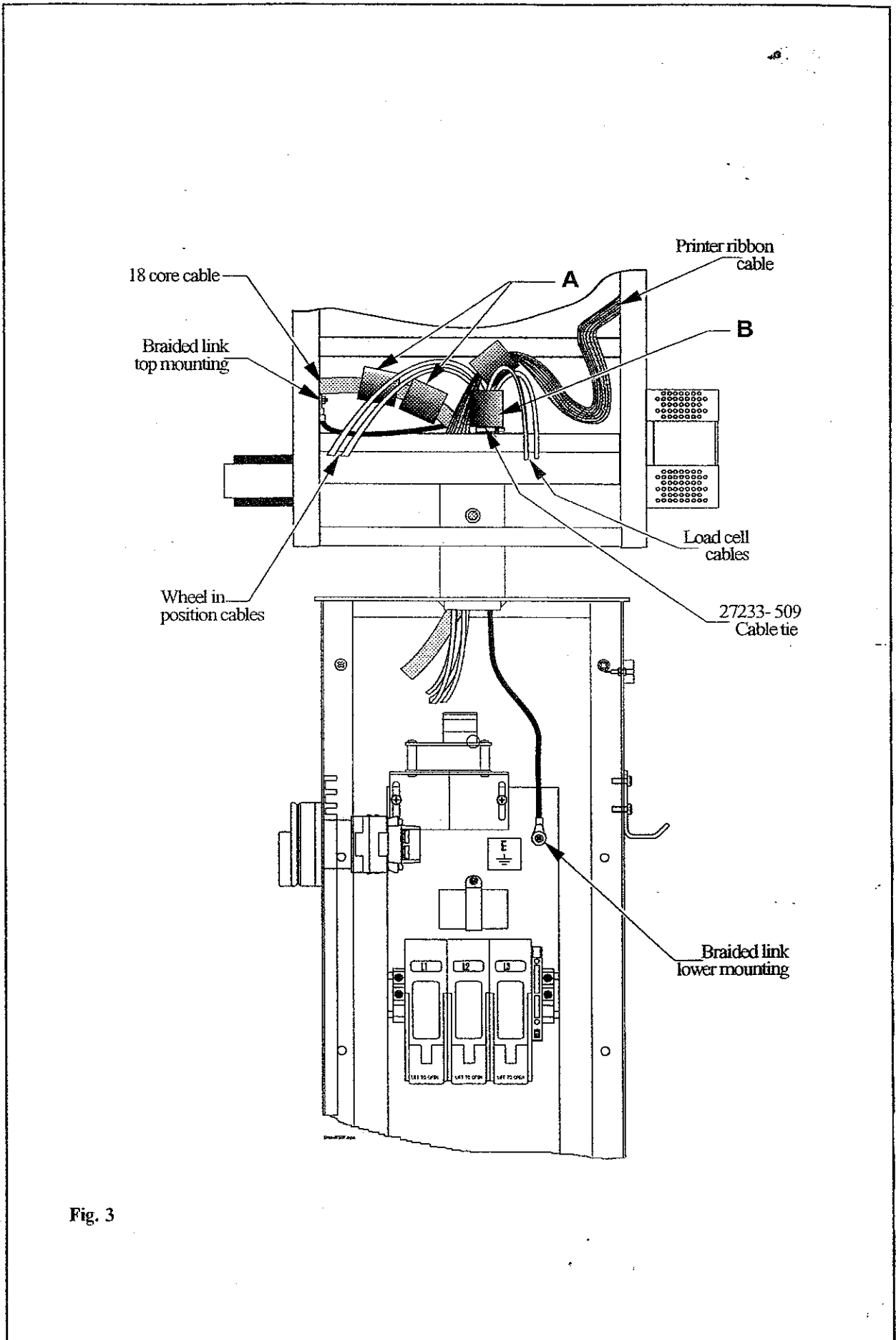


Fig. 3

GENERAL SAFETY PRECAUTIONS



WARNING: BEFORE USING THE BRAKE TESTER, THE OPERATOR MUST BE FAMILIAR WITH THE EMERGENCY SHUTDOWN PROCEDURE. DURING THE TEST THE OPERATOR MUST ENSURE THAT THE DANGER ZONE IS CLEAR OF PERSONNEL, TOOLS AND EQUIPMENT BEFORE STARTING EACH STAGE OF THE TEST.

EMERGENCY SHUTDOWN PROCEDURE FIG. 4

In the event of an emergency, these procedures must be followed:

- (1) Press the STOP button on the remote control, (if in the vehicle). This will stop both sets of rollers.
- (2) Push the red emergency switch, to isolate the electrical supply to the roller bed and stop both sets of rollers.
- (3) Turn the isolator switch to the OFF position on the pedestal or control box, (padlock if required) this will isolate the electrical supply to the roller bed and console/control box.

MISUSE

The DE7200 series brake tester is designed for use as a brake tester for statutory testing of class III and class IV vehicles (MOT Test) and for brake diagnostic purposes only. It must **NOT** be used for any other purpose e.g.

- 'Bedding in' of brake linings.
- Brake adjustment.
- Diagnosis of vehicle faults e.g. Transmission noises, tyre examination etc.
- Any purpose requiring the operator to be in the danger zone See Fig. 2, other than conducting a brake test, when the operator remains in the vehicle, or for maintenance, calibration purposes. (authorised personnel only).

SAFETY PRECAUTIONS DURING USE



- (1) **WARNING: DO NOT ENTER THE DANGER ZONE WHILE THE BRAKE TESTER IS SWITCHED ON OR DURING A BRAKE TEST.**

- (2) Verify that the vehicle submitted for test is suitable in all respects for testing on a roller brake tester. Vehicles not suitable include:
 - (i) Four wheel drive vehicles
 - (ii) Vehicles with belt driven transmission.
 - (iii) Vehicles with limited slip differentials.
 - (iv) Vehicles with a servo that only operates when the vehicle is moving.
 - (v) Vehicles with an axle weight of more than 2000kg (DE7200 Series) 3000kg (DE8232 Series).

NOTE: This list may not be complete, the operator must ensure vehicle suitability prior to testing.

- (3) The tyres are in good condition, correctly inflated and are free from mud and stones.
- (4) Automatic vehicles must not be tested with the selector in the 'P' (parked position).
- (5) Ensure that the rollers have stopped and that they cannot be accidentally restarted *before* leaving the vehicle and also that the hard wired control cable does not come into contact with the rollers at any stage during a test.

- (6) Do not stand on or walk over the rollers at any time.
- (7) Ensure the appropriate wheels are chocked during a test.
- (8) Ensure the hard wired remote control is stored safely *before* driving away from the danger zone.
- (9) When the brake tester is not in use, the rotary isolator should be turned off (padlocked if required) and the roller cover plates must be in position.

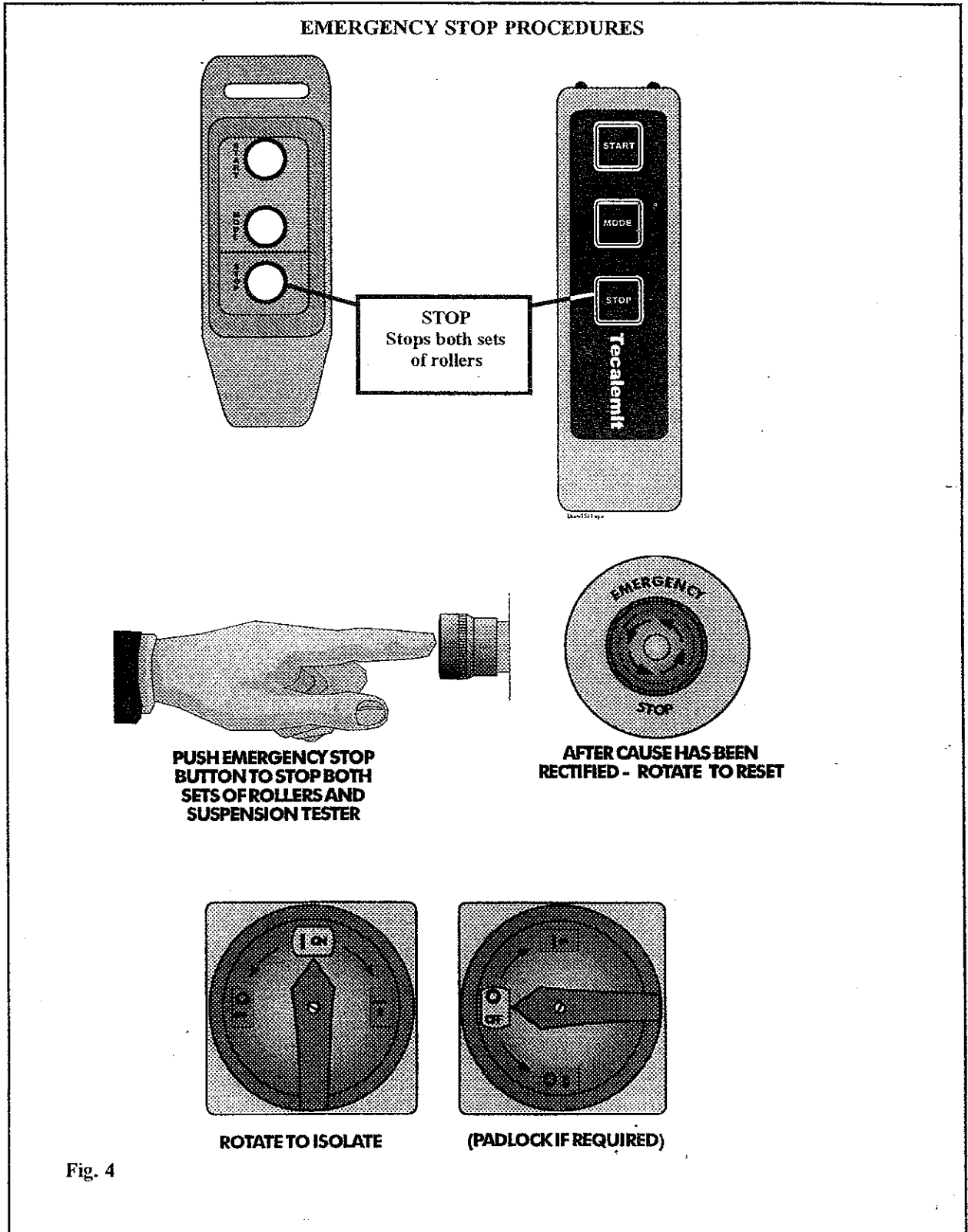


Fig. 4

OPERATION OF THE BRAKE TESTER

The following operating instructions are based upon the MOT Testers Manual, which is available from HMSO Bookshops.



WARNING: THE SAFETY PRECAUTIONS MUST BE OBSERVED AT ALL TIMES.

- 1 Determine whether the vehicle has a split (dual) braking system.
- 2 The vehicle should be driven on in the correct direction until the front wheels rest squarely in the rollers. Check that the tyres are clear of the side and centre cover plates. Turn the isolator to the ON position, start both sets of rollers, using the remote control. Allow the vehicle to align itself in the rollers. Stop the rollers and chock the rear wheels.
- 3 Start one set of rollers and gradually depress the service brake (foot brake) until wheel-slip occurs, the rollers will stop automatically when this point is reached. If the brake is unable to achieve wheel-slip, press the stop button when the braking effort reaches a maximum on the display, this will stop the rollers and retain the reading for a record to be taken. Repeat this operation for the other front wheel. Note the maximum value of the readings.
- 4 Start both sets of rollers, then gradually depress the service brake and observe the way in which the braking effort for each wheel builds up. From the previous test, the value at which the wheel-slip will occur is known and the service brake must be released just *prior* to this point. (If wheel-slip has occurred then repeat the test again.)

Gradually release the service brake and observe the way in which the braking effort at each wheel reduces. Stop the rollers.

The imbalance in braking effort between the wheels, will be indicated on the central display as a percentage value, while the brake forces at which this imbalance occurred will be shown on the analogue display.

NOTE: The imbalance function does not operate when the brake effort at either wheel is less than 40kg.

- 5 If the vehicle has a parking brake (hand brake) that operates on the front wheels, repeat stage 3, using the parking brake and keeping the ratchet disengaged at all times.
- 6 Having released the brakes, drive the vehicle forward until the rear wheels are located in the rollers, run the rollers together to align the vehicle. Stop both sets of rollers and chock the front wheels.

NOTE: For front wheel drive vehicles: start both roller sets and reverse out of the rollers before driving forward to engage the rear wheels. For rear wheel drive, start the rollers before reversing off at the end of the test. If the wheels in the roller are not the driving wheels, there is no need to start the rollers before moving off.

- 7 With one set of rollers revolving at a time, gradually depress the service brake (foot brake) to determine the maximum braking effort at each rear wheel.
- 8 Having noted these maximum braking efforts, release the service brake and then start both roller sets. Again, gradually depress the service brake and observe the way in which the braking builds up. Gradually release the service brake and observe how the braking effort at each wheel reduces.
- 9 If the parking brake (hand brake) operates on the rear wheels, repeat stage 3 using the parking brake and keeping the ratchet disengaged at all times.

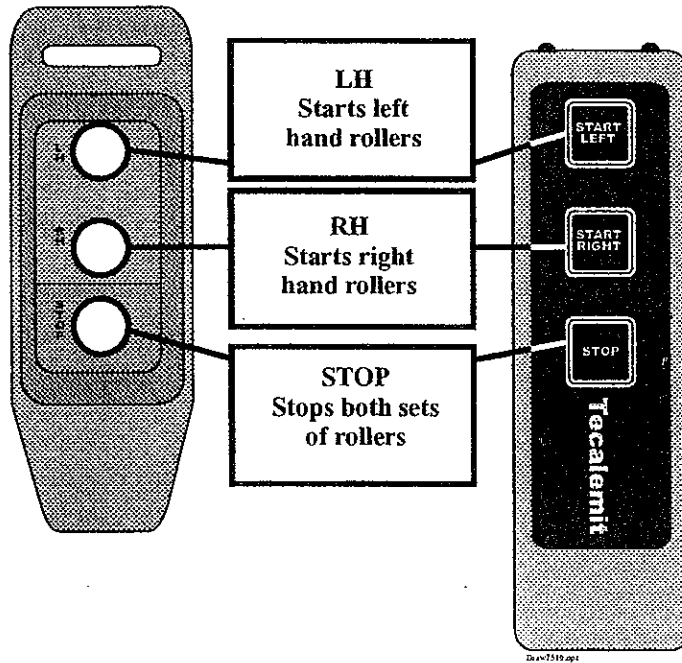


Fig. 5

OA 50532 PRINTER DESCRIPTION

The Brake Tester printer uses a standard paper roll, (although similar results can be achieved with any Epson ESC/P Code compatible printers having wider paper width). The printer option produces an enhanced report and allows a record of the results to be retained. If the vehicle weight is entered by the operator, then brake efficiency is calculated automatically.

The printed results require the brake tester to be operated in a predetermined sequence, so that the results for each wheel appear in the correct position on the printout.

NOTE: If the printer option has been fitted after the original installation, there will be a change in function of the buttons on the remote control. A new label will need to be fitted that will show START, MODE and STOP (See Fig. 6). For Printer operation, refer to the manual supplied with printer.

Operation

When the electrical supply is switched on the tester first initialises the display by illuminating all the LED's and the roller bed warning lights. The tester is ready for operation, when the digital display Digits shows '0'.

There are eight test modes and three functional modes, which are as follows:

MODE	DESCRIPTION	OPERATION
0	ALIGNMENT OF FRONT WHEELS	FUNCTIONAL
1	LH FRONT SERVICE BRAKE	TEST
2	RH FRONT SERVICE BRAKE	TEST
3	FRONT IMBALANCE	TEST
4	DRIVE OUT	FUNCTIONAL
5	LH REAR SERVICE BRAKE	TEST
6	RH REAR SERVICE BRAKE	TEST
7	REAR IMBALANCE	TEST
8	LH REAR PARKING BRAKE	TEST
9	RH REAR PARKING BRAKE	TEST
10	DRIVE OUT & PRINT OUT	FUNCTIONAL

The mode number is shown on the digital display. This can be changed by pressing the MODE button on the remote control. If this button is kept pressed, it will increment automatically. Each time the MODE button is pressed, the mode number will increment once.

When the correct mode number has been selected, the brake test can be started by pressing the START button. The appropriate motor(s) will start. The test and display of brake force is as described in Section 'Operation'.

At the end of each test, the result is displayed alternatively with the mode number to remind the operator of the current mode. Pressing the MODE button once will retain this mode, to allow the test to be repeated. Pressing a second time will advance the sequence to the next test mode. Any of the tests can be repeated by remaining at, or advancing to the mode number required. When MODE 10 is completed, the mode number will return to '0'.

NOTE: If a test is repeated, the latest result will appear on the printout.

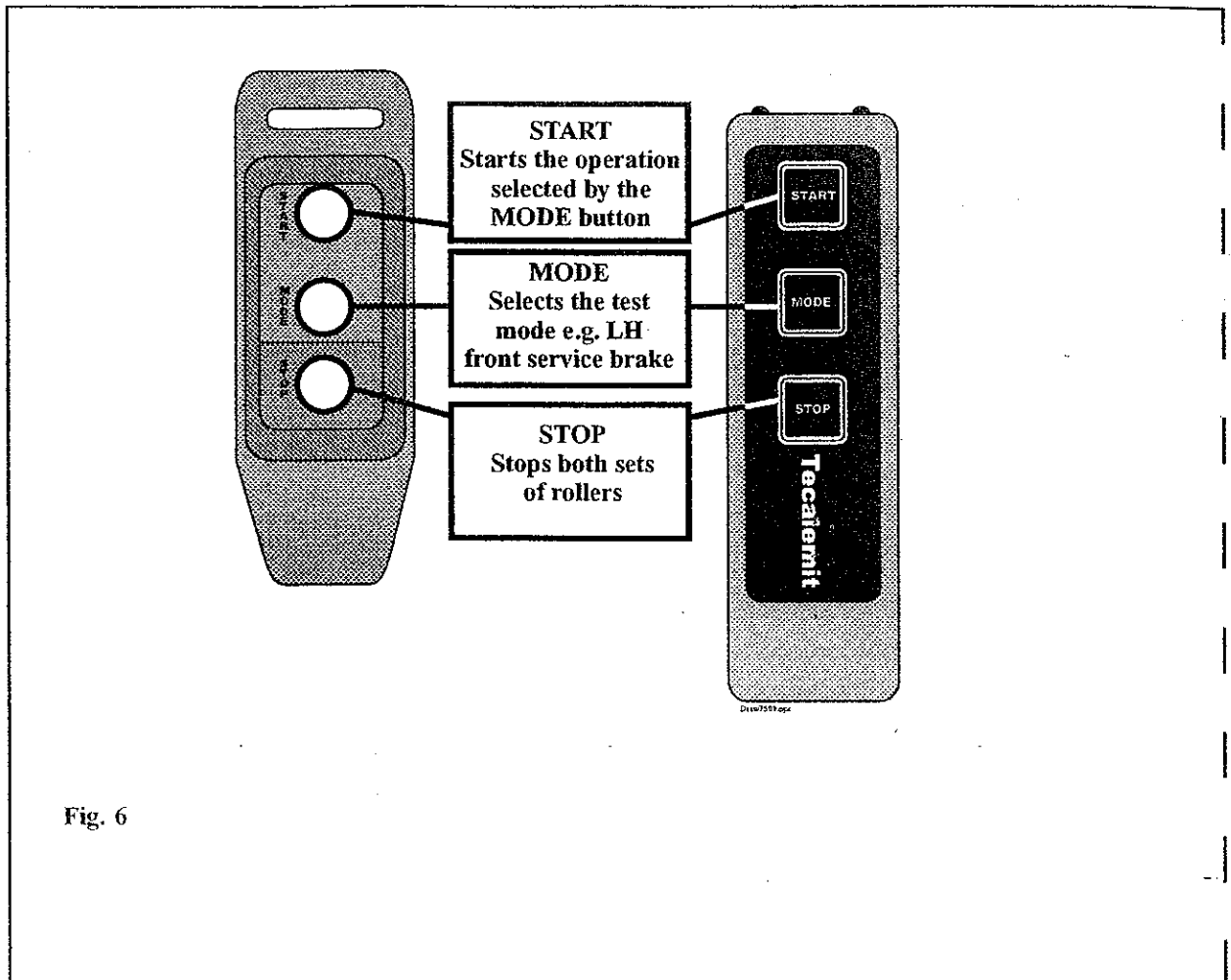


Fig. 6

Dip Switch Settings

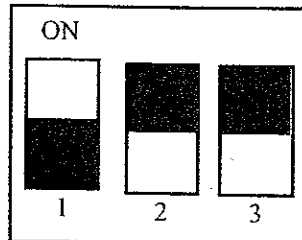
The OA50532 printer has DIP switches located in a compartment on the mechanical frame of the printer. To check that these have been set correctly, proceed as follows:

- Open the printer cover.
- Remove the ribbon cassette.
- With care, manually push the print head to the right hand side of the printer.
- Grasp the fin of the DIP switch compartment cover, slide it to the left and remove it.
- Set the DIP switches as shown below. DIP switch 1 is the upper set and DIP switch 2 is the lower set.

SW1							
1	2	3	4	5	6 *	7	8
off	on	on	off	on	on	off	off

* OFF When 11" paper is used

SW2							
1	2	3	4	5	6	7	8
on	on	off	off	off	off	on	off



Printout of Test Results

The printout is in one of two formats:

- With calculation of Brake Efficiencies. (See Fig. 7) If a calculation of brake efficiencies is required, obtain the vehicle weight from the weight chart and enter the values as shown in 8.3
- Without calculation of Brake Efficiencies. (See Fig 8). If brake efficiency calculations are not required, press the start button twice, the printer will then begin printing the results as Fig 9, at the same time both rollers will be started, to allow the vehicle to be driven out of the rollers.

Weight Input

To enter weight, proceed as follows:

- Select mode 10. Press START the display will change to '000'kg
- Keeping the MODE button pressed will increment the weight in 100 Kg steps from 500 – 3000 Kg. Pressing the MODE button *repeatedly*, the value of the weight will increase by 10 Kg each time.

NOTE: The display will show the vehicle weight in 10 Kg units. e.g. A weight of 1120 Kg will be represented by a display of 112Kg.

Press START to confirm the weight value selected. The rollers will then *automatically* start to assist the vehicle to be driven out.

TEST RESULTS - EXAMPLES OF TYPICAL PRINTOUTS

Fig. 7

```

*****
*           Your brakes have been tested on           *
*           Our Tecalemit DE7200 with                 *
*           The following results:-                   *
*****

                BRAKE DATA
                Kg Brake force

                Left      Right      Total

Front          200      210      0410
Rear           105      140      0245
                -----
                0655

Park           070      098      0168

Max. front %
Imb At        065      082      21%

Max. rear %
Imb At        061      073      16%

Vehicle Weight      870Kg

Efficiency
Service Brake      75%
Parking Brake      19%

*****

                VEHICLE DATA

Reg No. .... A981 JFJ .....
Make ..... Ford .....
Model ..... Fiesta 1.1GL .....
Year ..... 1983 .....

Tested by ..... R. Vascotti .....
Date ..... 15th June 1999 .....

*****

*           Thank you for your visit           *
*****
    
```

Fig. 8

```

*****
*           Your brakes have been tested on           *
*           Our Tecalemit DE7200 with                 *
*           The following results:-                   *
*****

                BRAKE DATA
                Kg Brake force

                Left      Right      Total

Front          200      210      0410
Rear           105      140      0245
                -----
                0655

Park           070      098      0168

Max. front %
Imb At        065      082      21%

Max. rear %
Imb At        061      073      16%

Vehicle Weight      ..870.. Kg

Efficiency
Service Brake      ..75....%
Parking Brake      ..19.....%

*****

                VEHICLE DATA

Reg No. .... A981 JFJ .....
Make ..... Ford .....
Model ..... Fiesta 1.1GL .....
Year ..... 1983 .....

Tested by ..... R. Vascotti .....
Date ..... 15th June 1999 .....

*****

*           Thank you for your visit           *
*****
    
```

CALCULATING BRAKE PERFORMANCE

To calculate brake performance proceed as follows:

- Add together the total braking effort, recorded from all the wheels of the vehicle when the service brake is applied. Add together the total braking effort recorded from the appropriate wheels when the parking brake is applied.
- Determine from the data chart provided the weight of the vehicle – the chart figure includes 140kg allowance for the driver, fuel and tools.

Using the figures obtained from above, the following efficiencies may be calculated on paper, as illustrated or by means of the brake efficiency calculator provided.

$$\text{The \% brake efficiency of the service brake} = \frac{\text{Total Braking Effort for Service Brake (kg)}}{\text{Weight of Vehicle from Chart (kg)}} \times 100$$

$$\text{The \% brake efficiency of the parking brake} = \frac{\text{Total Braking Effort for Parking Brake (kg)}}{\text{Weight of Vehicle From Chart (kg)}} \times 100$$

The imbalance for the braking effort when the service brake is applied is calculated by the tester and displayed as a percentage. This should not exceed 25%.

The imbalance calculation

$$\% \text{ Imbalance} = \frac{\text{Higher Brake Effort} - \text{Lower Brake Effort}}{\text{Higher Brake Effort}} \times 100$$

INTERPRETING THE RESULTS

When the rollers are started, prior to the application, a low brake force reading may be observed due to friction of bearings, etc. Readings are normally slightly higher on the driver's side. If the readings are unduly high, then a binding brake defect is indicated.

The following results may be observed, when the brakes are applied.

DISPLAY READING	REASON
Slow, regular fluctuation	Oval brake drums or distorted discs.
Regular jump at each road wheel revolution	Localised corrosion or wear or cracked drum or disc.
Rapid Oscillation	Glazed, oily or wet linings.
Delayed fall on pedestal release	Sticking shoes or pads
Slow build up and low readings	Grease on shoes or pads
Sudden fall.	Hydraulic leakage

As a guide an efficiency of 80% is very good and an efficiency of 60% is average. Defects can be analysed, then repairs or adjustment made to correct the problem, and the brake system re-tested.



WARNING: DO NOT CARRY OUT ANY REPAIRS OR ADJUSTMENTS TO THE VEHICLE WHILST IT IS IN THE DANGER ZONE.

MAINTENANCE

WARNING: BEFORE UNDERTAKING ANY MAINTENANCE PROCEDURES, THE OPERATOR MUST READ AND UNDERSTAND THE SAFETY PRECAUTIONS



ISOLATE AND PADLOCK THE ELECTRICAL SUPPLY BEFORE MOVING COVER PLATES.

THE ROLLERS MUST NOT BE OPERATED WITHOUT THE CHAIN AND MOTOR COVER PLATES IN POSITION.



DO NOT ATTEMPT TO LUBRICATE THE DRIVE CHAINS WHEN THE ROLLERS ARE IN POSITION.

SUITABLE WARNINGS MUST BE GIVEN TO ALL PERSONNEL, LIKELY TO BE AFFECTED DURING ALL MAINTENANCE PROCEDURES.

DAILY

- Isolate the electrical supply and padlock the disconnecter on the pedestal/control box, using the appropriate personal protective equipment, remove any contamination from the roller surface i.e. mud, oil, etc. This should be disposed via a licenced local authority waste disposal operator.
- Before using the machine and with the electrical supply reconnected, complete the following checks:
 - (i) position a vehicle with the front wheels correctly aligned on the rollers, chock rear wheels.
 - (ii) Press the start button on the remote control.
 - (iii) Press the stop button on the remote control, the rollers should stop within 2 seconds
 - (iv) Press the start button on the remote control, with the aid of an assistant press the emergency stop switch, (See Fig. 4) the rollers should stop within 2 seconds. Confirm that the switch remains latched in. (See Fig 4)

WEEKLY

- Check the operation of the wheel in position (WIP) switch as follows:
 - (i) Ensure that the danger zone is clear of personnel, tools and equipment throughout the test.
 - (ii) Without a vehicle in position on the roller beds, press the start button, the rollers should in the six monthly maintenance section.
- Isolate the electrical supply and padlock the disconnecter. Using the appropriate personal protective equipment, remove any accumulation of dirt, oil, tyre dust etc. from the roller bed.

SIX MONTHLY

CAUTION: ISOLATE THE ELECTRICAL SUPPLY BY ROTATING THE ISOLATOR SWITCH ON THE PEDESTAL/CONTROL BOX AND PADLOCK IN THE 'OFF' POSITION BEFORE REMOVING COVER PLATES.

- Inspect all moving parts for wear or damage.
- Inspect all structural components, for cracks and damage.
- Inspect the surface of the roller and check the condition of the gritted coating.
- All grub screws, nuts and screws etc. should be checked for tightness.
- Lubricate the chain drive using a heavy gear oil.
- Adjust Drive Belts. (DE8232 Series only)
- Check and adjust if necessary the wheel in position (WIP) switch as follows:
 - (i) With the isolator padlocked in the off position.
 - (ii) Remove the rear cover of the console.
 - (iii) Connect a continuity tester across terminals 1 & 2 of Terminal block 'C'.
 - (iv) Depress the wheel-slip roller until the WIP safety switch contacts close, this should occur within a further movement of 10mm.
 - (v) Adjustment of the WIP switch can be achieved by moving the switch left or right on its two mounting points.
- Check the distance between the proximity detector and the wheel-slip roller, this should be 0.8mm.
- Grease the roller and power unit pillow blocks with metallic soap based grease NLGI Grade 2.

Calibration

Calibration of the brake tester is carried out as part of the initial installation. If the brake tester is used for the statutory testing of vehicles, then it should be calibrated every six months, Calibrations should be completed by Tecalemit Garage Equipment Service Department.

FAULT FINDING

PRINTER FAULTS	POWER SUPPLY	POWER CABLE	CABLE TO COMPUTER	PRINTER IS OFF LINE	PRINTER DIP SW'S	PAPER JAM	PRINT HEAD POSITION	RIBBON CARTRIDGE	ERROR CONDITION	SW ON DIGITAL I/O	-12V RAIL
PRINTER INOPERATIVE - POWER LIGHT ON			•	•	•					•	•
PRINTER INOPERATIVE - POWER LIGHT OFF	•	•									
PAPER NOT FEEDING						•					
PRINTER RESULTS - FAINT							•	•			
P. OUT LAMP FLASHING									•		

MOTOR FAULTS	CAL SW	SLIP DETECTORS	SLIP ADJUSTMENT	DIGITAL I/O	PS PCB	WS PCB	WP SW	WIRED RCU	DUMMY PLUG	IR TRANSMITTER	IR RECEIVER	FUSE F2	FUSE F3	OVERLOAD RELAYS	3 PHASE FUSES	EMERGENCY STOP	ISOLATOR
MOTOR WILL NOT START	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•
ONE MOTOR WILL NOT START				•	•	•	•	•		•	•						
MOTOR START AND THEN STOP	•	•	•														
MOTORS STOP PREMATURELY			•														

DISPLAY FAULTS	LOAD CELLS	AMPLIFIER PCB	ANALOGUE I/O	12V RAIL FAULT	5V RAIL FAULT	INTERFERENCE	LINEAR PSU	WIRING FAULT	DISPLAY CONTROL	RIBBON CABLE	DIGITAL I/O	DISPLAY MODULE	CPU PCB	AUX. CONTACT
DISPLAY DOES NOT ILLUMINATE				•	•				•					
INITIALISATION FAULT			•		•						•		•	
NUMERICS DO NOT 'BLANK'									•		•			•
FRAGMENTED DISPLAY									•			•		
ANALOGUE REMAINS AT FULL SCALE	•	•	•											
CANNOT CALIBRATE	•						•							
NIL RESPONSE FROM BRAKE FORCE	•									•				
ANALOGUE DISPLAY FLASHES						•								
LOSS OF SENSITIVITY	•													
ZERO DRIFT	•													

DE7200/8232 SERIES BRAKE TESTERS

SPECIFICATION DE7200 SERIES

General	DE7200 Series	DE8232 Series
Maximum permitted axle load	2000kg	3000kg
Motor (x2)	2kw each	5.5kW each
Roller diameter	155mm	200mm
Minimum width between rollers	825mm	-
Maximum width over rollers	2045mm	-
Equivalent road speed	2km/hr	2km/hr
DE7200 Series Brake force display	Dual concentric analogue display nom. 300, dia... Reading 0-600kg, 3 digit central display 0-600kg.	
DE8232 Series Brake force display	Dual concentric analogue display nom. 300, dia... Auto ranging 0-1250kg, 4 digit central display 0-1250kg.	
Roller bed assembly weight (each)	200kg	350kg

Environmental Conditions:

Console and roller beds
Temperature range C⁰

Operating	10 to 40
Non operating	10 to 50
Shipping	30 to 60

Relative Humidity

Operating	20% - 80%
(Non Condensing)	
Non-Operating	5% - 90%

Shipping Specifications Both roller beds, console and control box/pedestal are packed on a pallet and shrink wrapped. Handling by forklift, storage must be within above environmental conditions

Concrete Specification

C:35

Ducts

50mm diameter (minimum)

Noise level DE7200 Series

66dB (A) 1000mm from roller bed cover plate

Electrical supply

DE7200 DE7200/101

3ph 400V 50Hz:
3 wire + neutral + earth
20 Amp min. load capacity

Disconnecter Standard/Type
Fuse Standard/ Type

EN60947-3/IEC947-3 (MEM reference 15KXTN2CF)
BS88 Part2/IEC69-1-2 (MEM) reference 20SA2M25)

DE7201 DE7201/101

1 ph 230V 50Hz
30 Amp min. load capacity

Disconnecter Standard/Type
Fuse Standard/Type

EN60947-3/IEC947-3 (MEM reference 30KXSC2CF)
BS88 Part2/IEC69-1-2 (MEM reference 32SB3)

DE7200/8232 SERIES BRAKE TESTERS

DE8232 3ph 400V 50Hz:
3 wire + neutral + earth

Disconnecter Standard/Type EN60947-3/IEC947-3 (MEM reference)
Fuse Standard/ Type BS88 Part2/IEC69-1-2 (MEM) reference)

Safety

Recommended fire extinguisher CO2

Tyre dust – Occupational exposure 10mg/m3 8 hour TWA (Time Weight Average) total inhalable dust.
5mg/m3 8 hour TWA total respirable dust.

Dimensions and weights

Display DE7200/DE8232 Series

Size: 480mm x 480mm x 310mm
Weight 28kg

Pedestal DE7200/DE8232 Series

Height: 1000mm
Weight 14kg

Control Box DE7200/DE8232 Series

Size: 315mm x 315mm x 185mm
Weight 17kg

Printer Interface Specifications

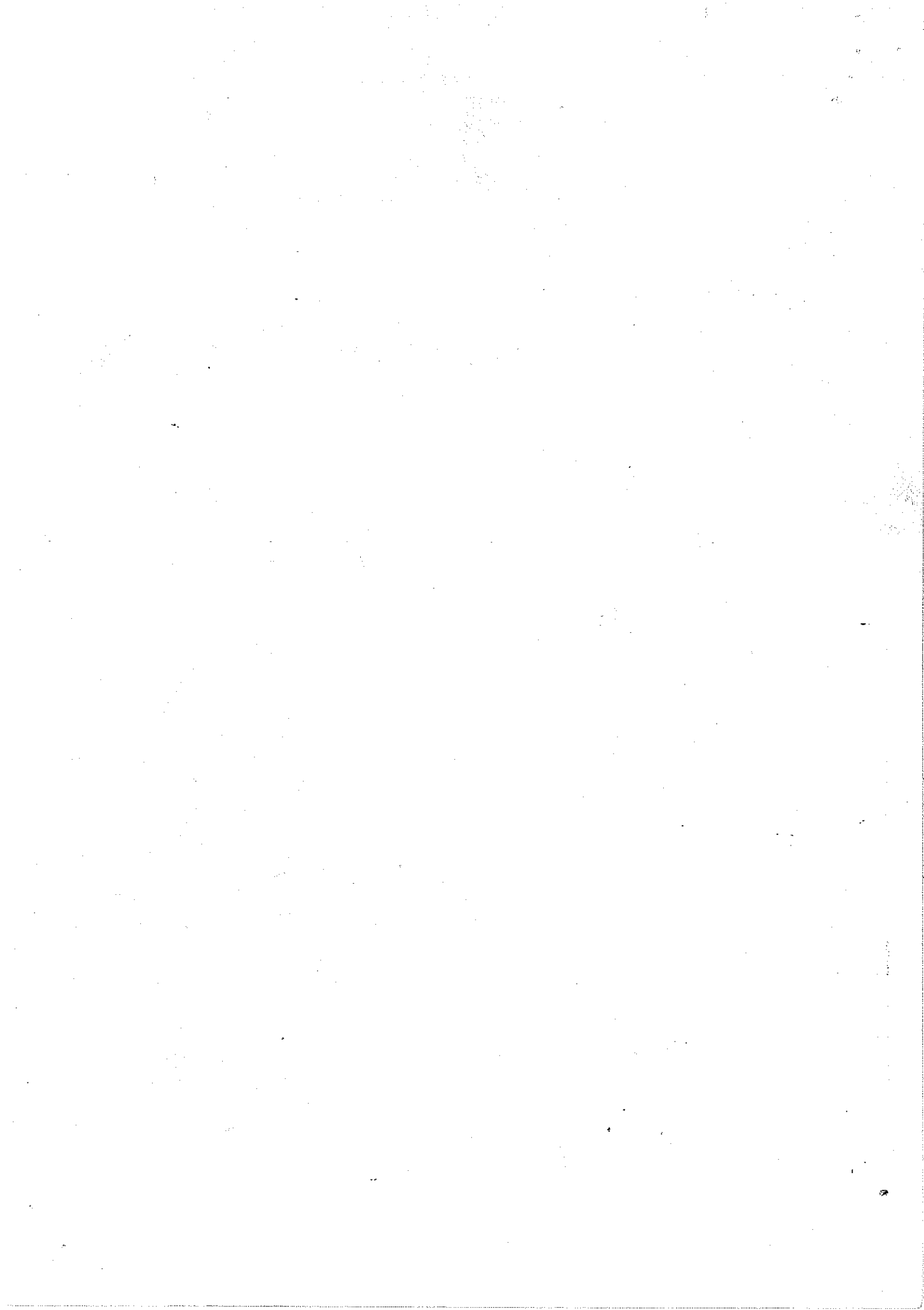
Item	Description
Interface System	RS232-C, 9-pin plug Equivalent to DB-9P (Cannon)
Data Input	Serial Input
Bit Rate	9600 baud
Data Word Length	8 bits
Parity	none
Number of Stop Bits	2

Printer Interface Connections

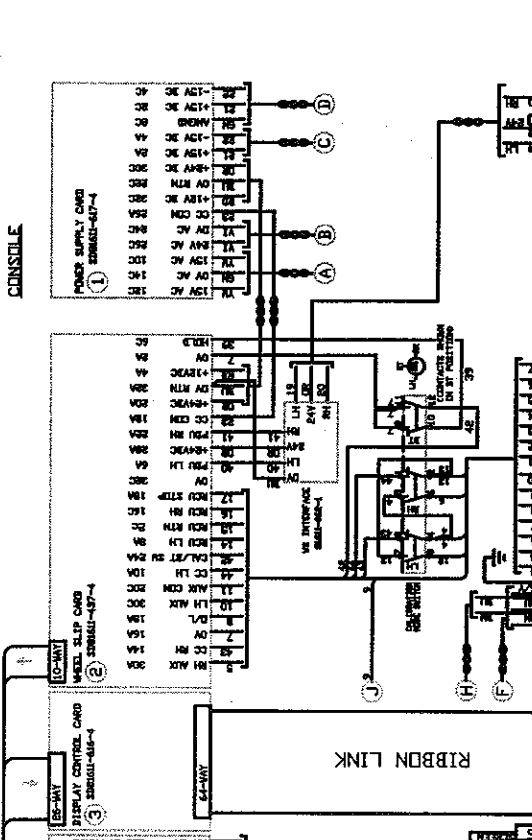
Pin No	Signal	Direction
3	TX	To Printer
5	Signal Ground	-
8	CTS	From Printer

Vibration

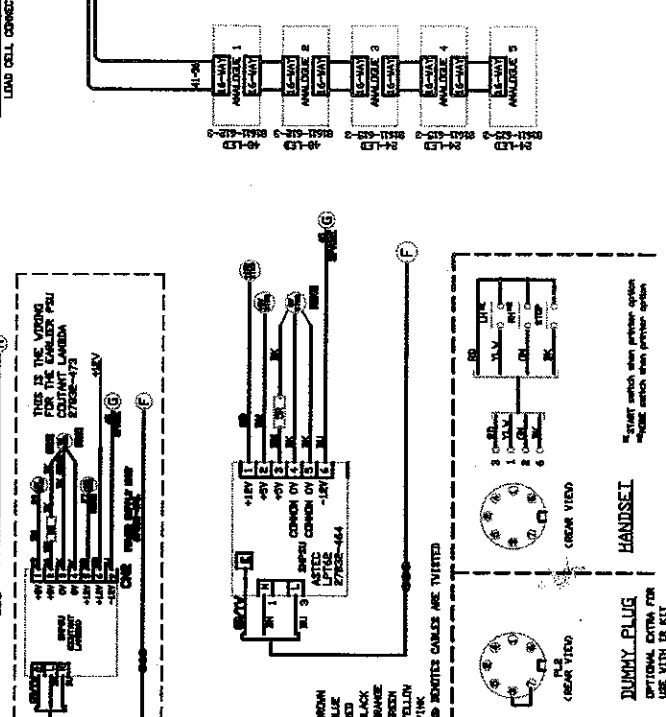
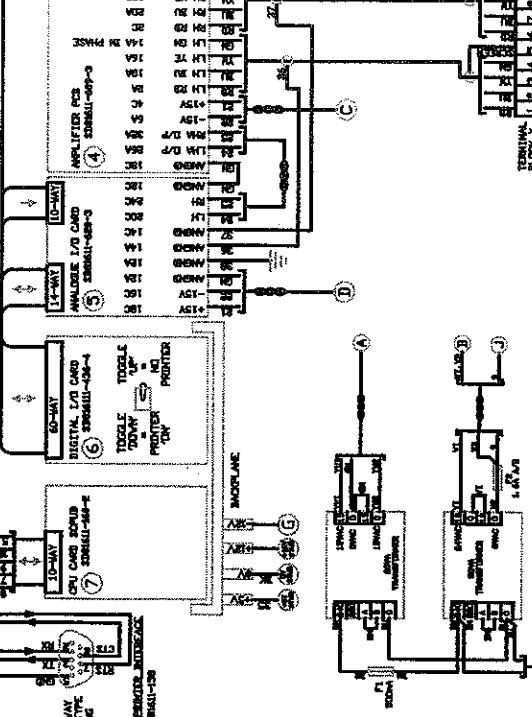
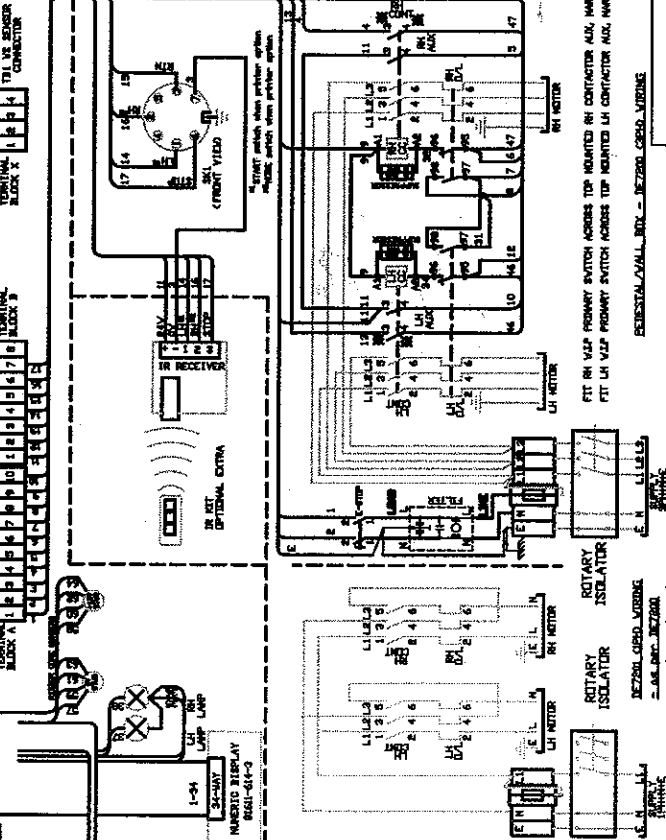
Experience has shown that most of the vibrations produced by the roller beds is reduced to a minimum level by the vehicle suspension.



CONSOLE



RIBBON LINK



IN IRON
IN BLUE
IN BLACK
IN BRASS
IN GREEN
IN YELLOW
IN PINK

GROUND SIGNALS CABLES ARE TWISTED

CLEAR VIEW

HANDSET

DUMMY PLUG FOR USE WITH IR NET

START switch when printer option required switch when printer option required

POWER SUPPLY CARD MODEL-SLIP-47-4

MODEL SLIP CARD MODEL-SLIP-47-4

DISPLAY CONTROL CARD MODEL-SLIP-47-4

AMPLIFIER PCB MODEL-SLIP-47-4

ANALOGUE I/O CARD MODEL-SLIP-47-4

DIGITAL I/O CARD MODEL-SLIP-47-4

SENTER INTERFACE MODEL-SLIP-47-4

TERMINAL BLOCK V

TERMINAL BLOCK W

TERMINAL BLOCK X

TERMINAL BLOCK Y

TERMINAL BLOCK Z

TERMINAL BLOCK 1

TERMINAL BLOCK 2

TERMINAL BLOCK 3

TERMINAL BLOCK 4

TERMINAL BLOCK 5

TERMINAL BLOCK 6

TERMINAL BLOCK 7

TERMINAL BLOCK 8

TERMINAL BLOCK 9

TERMINAL BLOCK 10

TERMINAL BLOCK 11

TERMINAL BLOCK 12

TERMINAL BLOCK 13

TERMINAL BLOCK 14

TERMINAL BLOCK 15

TERMINAL BLOCK 16

TERMINAL BLOCK 17

TERMINAL BLOCK 18

TERMINAL BLOCK 19

TERMINAL BLOCK 20

TERMINAL BLOCK 21

TERMINAL BLOCK 22

TERMINAL BLOCK 23

TERMINAL BLOCK 24

TERMINAL BLOCK 25

TERMINAL BLOCK 26

TERMINAL BLOCK 27

TERMINAL BLOCK 28

TERMINAL BLOCK 29

TERMINAL BLOCK 30

TERMINAL BLOCK 31

IR RECEPTOR

IR RECD

OPTICAL EXTRA

ROTARY ISOLATOR

ROTARY ISOLATOR 2

ROTARY ISOLATOR 3

ROTARY ISOLATOR 4

ROTARY ISOLATOR 5

TERMINAL BLOCK 1

TERMINAL BLOCK 2

TERMINAL BLOCK 3

TERMINAL BLOCK 4

TERMINAL BLOCK 5

TERMINAL BLOCK 6

TERMINAL BLOCK 7

TERMINAL BLOCK 8

TERMINAL BLOCK 9

TERMINAL BLOCK 10

TERMINAL BLOCK 11

TERMINAL BLOCK 12

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