

T4 Diagnostic System User Manual



DTC 4005A



Whilst every care has been taken in the preparation of the information contained in this manual, details and specifications are subject to change without notice. Neither the Manufacturer nor the Dealer supplying this manual will be liable for the consequences resulting from any inaccuracy of the information contained in this manual under any circumstances.

No part of this document may be reproduced, transmitted or published in any form or by any means without the prior permission of Omitec Information Services Ltd.

TestBook™ and DeskJet™ are registered trademarks of Hewlett Packard Corporation. Dell™ and Latitude™ are registered trademarks of Dell Computer Corporation. SpeedStep™ and Pentium™ are registered trademarks of Intel Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation. Other trademarks and trade names may be used in this document, Omitec Information Services Ltd. disclaims any proprietary interest in trademarks and trade names other than its own.

Publication Part No: DTC 4005A
Published by Omitec Information Services Ltd. on behalf of Land Rover
© Omitec Information Services Ltd.
1st. edition copy - April 2001

Preface

This manual is designed to assist you with the correct assembly, operation and maintenance of your T4 diagnostic system. Note that the diagnostic system utilises interactive technology, so that much of the information you need to operate the T4 successfully will be contained either in the system software or on the CD-ROMs accompanying the T4 system. It is recommended that you use this manual in conjunction with your T4 equipment.

Warnings, Cautions and Notes



NOTE: Is used to emphasise important and helpful information.



CAUTION: Is used to emphasise important information and procedures which must be followed to avoid damage to system components.



WARNING: Is used to indicate potentially hazardous situations and procedures which must be followed precisely to avoid serious injury.

Glossary of Abbreviations and Symbols

The following abbreviations are used throughout this manual:

Abbreviation	Term or Description	Abbreviation	Term or Description
AC	Alternating Current	LCD	Liquid Crystal Display
CD	Compact Disc	LED	Light Emitting Diode
CD-ROM	Compact Disc Read Only Memory	LH	Left Hand
°C	degrees Centigrade	MB	MegaBytes
cm/s	centimetres per second	mm	millimetres
©	Copyright	ms	milliseconds
DC	Direct Current	OBD	On-Board Diagnostics
DIN	DeutscheIndustrie Normen (German Industrial Standards)	Ω	Ohms
ECU	Electronic Control Unit	%	Percentage
EOBD	European On-Board Diagnostics	PC	Personal Computer
EU3	European Union 3 (relates European exhaust-emissions legislation; also known as EOBD-3)	RAM	Random Access Memory
FPGA	Field Programmable Gate Array	RH	Right Hand
GB	GigaBytes	SAE	Society of Automotive Engineers
Hz	Hertz	TestBook™-1	TestBook™-1 Diagnostic System
ID	Identification	T4	T4 Diagnostic System
IEC	International Electrotechnical Commission (electrical standards organisation)	TFT	Thin-film transistor
“	inches	™	Trademark
ISO	International Standards Organization	TIM	TestBook Interface Module
k	Thousand	V	Volts
kg	kilogrammes	VIN	Vehicle Identification Number
J1962	SAE standard for vehicle connector and diagnostic test equipment connectors	VCSI	Vehicle Communication Serial Interface
LAN	Local Area Network	VOM	Volt Ohm Module
lbs	pounds (weight)		

CONTENTS

Page

Preface	iii
Warnings, Cautions and Notes.	iii
Glossary of Abbreviations and Symbols	iv

INTRODUCTION

INTRODUCTION	1
------------------------	---

HARDWARE & INSTALLATION

T4 INSTALLATION GUIDE	3
Unpacking Your T4 Equipment	3
Full T4 Package	3
TestBook™-1 to T4 upgrade package	3

T4 Full Kit:

T4 exploded view (including trolley)	4
T4 Trolley base assembly	6
T4 Trolley cabinet assembly	6
Rear Cable Management Bar Attachment	7
Front Cabinet Handle Attachments	8
T4 Hand Held Tester Diagnostic Port Attachment	8
Power Supply Distribution Unit	9
TIM Unit (where supplied)	9
LAN Hub (where supplied)	9
Trolley Cabinet Top Plinth Assembly	10
Cable Storage Bracket Attachment	10
Laptop PC Case / Laptop PC Attachment	11
Printer Installation	11
Printer Paper Collection Tray Attachment	12
Laptop PC to Laptop PC case Installation	13
Laptop PC Cable Connections	13

TestBook™-1 to T4 Upgrade Kit:

TestBook™-1 to T4 Upgrade Package	15
TestBook™-1 to T4 Upgrade - exploded view (including trolley).	16
TestBook™-1 to T4 Upgrade Procedure.	18
Tools required	18
Mounting Bracket Fixing Accessories	18
Diagnostic Port Fixing Accessories	18
TestBook™-1 Disassembly	18
Diagnostic Port Attachment	20
Printer/T4 Power Supply Support Bracket Refit	21
TestBook™-1 to T4 Mounting Bracket Attachment	23
T4 Laptop PC Case Mounting	24
Laptop PC to Laptop PC case Installation	25
Laptop PC Cable Connections	25
Kensington Lock (optional fitting)	26
T4 System Cables (DTC4004A)	28
Trolley Wheels	32
T4 VCSI Extension Lead (DTC4007B)	32

CONTENTS

Page

- PREPARING A SITE FOR T4 33
- T4 LABELS 34
 - Laptop PC Case 34
 - T4 Hand Held Tester Diagnostic Port 34
 - T4 Hand Held Tester 34
 - TestBook™-1 to T4 upgrade trolley 35
 - Additional labels 35
- PARTS CODE LIST 36
- T4 LAPTOP PC COMPONENTS 37
 - Laptop PC (Front View) - General 37
 - Laptop PC (Right Hand Side) 37
 - Laptop PC (Left Hand Side) 37
 - Laptop PC (Rear View) 38
 - Laptop PC (Bottom View) 38
- T4 HAND HELD TESTER COMPONENTS 39
 - General Care and Cleaning 39
 - Safety Precautions 39
- T4 HAND HELD TESTER OPERATION 40
 - Display screen 40
 - Key pad 40
 - 25-way "D" Type Diagnostic Connector socket 41
 - 8-way Mini-DIN Connector socket 41
 - Power socket 41
 - Network port 41
 - EOBD J1962 (16 pin) Connector Harness 41
 - T4 Hand Held Tester Reprogramming 41
- T4 SPECIFICATIONS 42
 - Interface 42
 - T4 Laptop PC Accessories 42
 - Volts Ohm Measurement Capabilities 43
 - VOM Specification 43
 - Vehicle Communication Serial Interface (VCSI) 43
 - Power Sources 44
 - Mechanical Design 44
- PHYSICAL SPECIFICATIONS 45
 - Dimensions and Weight 45
 - Laptop PC Display 45
 - Laptop PC Battery 45
 - Laptop PC Power Supply Adapter 45
 - Connectors 45
- ENVIRONMENTAL SPECIFICATIONS 46

CONTENTS	Page
PROTECTING YOUR T4	47
CLEANING T4	47
Cleaning the T4 laptop PC case	48
Cleaning the T4 Laptop PC Display Window	48
Cleaning the Touch Pad	48
Cleaning the T4 Hand Held Tester	48
Cleaning the T4 Hand Held Tester Diagnostic Port	48
POWERING T4	49
INTERNAL POWER (T4 Laptop PC)	50
USING THE TOUCH PAD	50
COMPACT DISCS (CDs)	51
Using Compact Discs	51
Playing a Compact Disc	51
CD Cleaning Procedure	52
BEGINNING WORK WITH T4	53
Turning ON T4	53
Configuration	56
SCREEN FORMAT	60
HOW TO VIEW PICTURES	60
Picture Options	61
Control Panel Options	62
RETURN DESTINATION MENU	63
Welcome	63
Model Selection	63
Manual Selection	63
Section Selection	63
Category Selection	63
Title Selection	63
INTEGRITY TESTS	64
How to Interpret the Results of the T4 Integrity Tests	65
ROVING PROBE TEST	66
How to Interpret the Results of the Roving Probe Test	67
LAN CONNECTION TEST	68
FILE SYSTEM	68

CONTENTS	Page
DIAGNOSTICS - GENERAL	
GETTING STARTED	69
DIAGNOSTIC CONTROL PANEL BUTTONS	71
Abort	71
Back Track	71
Print	71
Help	71
Continue	71
DIAGNOSTICS - LAND ROVER	
VIN PREFIX	73
CABLING GUIDE	74
T4 CABLES	80
T4 ERROR CODES	97
T4 RDS Error Codes	97
Action Key	97
HELPDESK	
DEALER CHECK LIST (BEFORE YOU RING)	99
Help Us to Help You	99
Vehicle Details and Reported Fault	99
Full details of Test type	99
Full details of any difficulties you've had using T4.	99
Cabling Drawing Reference used	99
LOCAL TELEPHONE NUMBERS	101
HELP DESK	102
EXCHANGE TIMES	102
T4 Laptop PC's, Hand Held Testers, Diagnostic Ports, Printers, TIM Units, Cables and Power supplies	102
Compact Discs (CDs)	102
Returns	102
DEALER RESPONSIBILITIES	103
SERVICE LEVEL	103
T4 and TIM units	103
Exclusions	103
Compact Discs	103
Printer	104
Cables	104
Trolley and Power Supplies	104
T4 EXCHANGE MATRIX	105
T4 CABLES	106

INTRODUCTION

This manual provides information for the following:

- Assembly and operation instructions for a new T4 Diagnostic kit.
- Upgrading the TestBook™-1 system to the new T4 standard.

T4 is the latest model in a series of advanced vehicle diagnostic tools. The TestBook™ programme has successfully applied the most recent advances in Information Technology to provide easy to use diagnostic tools for the rapid analysis, servicing and repair of a sophisticated range of modern day vehicles.

T4 is a portable computer-based diagnostic tool designed to assist a service technician to perform the diagnostic analyses of electrical systems, engine management systems, transmission systems and a range of other electronic based control systems utilised in automotive vehicles.

The T4 software user interface screen prompts the service technician to enter commands for selecting equipment self tests, retrieving diagnostic information, running vehicle diagnostics and changing vehicle configurations.

TestBook™ has already made a major contribution to raising standards of customer satisfaction and improving the business success of dealerships and their staff. T4 utilises sophisticated software to provide an enhanced user-friendly solution to further this reputation.

As with any progressive activity, successive generations of TestBook™ have benefited from the feedback gained from the real-life experiences of end-users. In order for future diagnostic developments to be equally successful, we always welcome your comments and suggestions on how the equipment and support services can be improved.

Although every effort is made to produce accurate and up to date support literature, this User Manual should not be regarded as an infallible guide to current specification, nor does it constitute an offer for the fitment of any particular system or component.

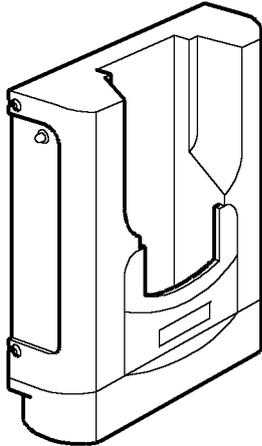
T4 has been designed for ease of use with both diagnostic software and CD-ROM based "RAVE" technical information.

The latest T4 provides compliance with the latest EU3 and OBD II emissions standards.



One of the primary features of the new T4 diagnostic system is the inclusion of the T4 Hand Held Tester with Diagnostic Port. The Hand Held Tester provides a convenient, easy to use, portable solution for many diagnostic applications encountered in an automotive technician's daily routine.

The T4 Hand Held Tester is powered directly from a vehicle's J1962 diagnostic connector, and operates as a stand alone unit to provide generic scan-tool functionality as well as fault code reading / clearing, live data and basic configuration functions for a wide range of systems.



T4016

New and revised programs can be quickly and easily downloaded to the T4 Hand Held Tester. The new software code is electronically transferred from the T4 laptop PC via an ethernet connection to the VCSI on the dedicated Diagnostic Port and into the T4 Hand Held Tester via the printed circuit board which interfaces between the T4 Hand Held Tester and its Diagnostic Port.

A new high quality trolley provides a convenient workstation for mounting the main T4 components and housing a printer and the VOM/VCSI electronics. The laptop PC is housed in a robust lockable casing for security and protection when not in use. The trolley also contains storage for CD-ROMs and interface cables.

An upgrade kit is also available which uses the previous TestBook™-1 trolley and printer.

This manual contains instructions for assembling a T4 trolley and also for converting a TestBook™-1 trolley for T4 use.

T4 INSTALLATION GUIDE

Unpacking Your T4 Equipment

Before unpacking and using your T4, remember that it is a sophisticated item of electronic equipment. Although T4 has been designed to be robust for general workshop use, it still needs to be handled with greater care than most other items of workshop equipment.

Carefully remove the equipment from its packaging and lay it out on a clean dry area such as an empty workbench or table. Check off the individual items supplied with each T4 kit (refer to the parts code checklist at the end of this section and the packaging labels supplied with your kit). **See “Parts Code List” on page 36.**

If any items are missing, please contact your Help Desk. **See “LOCAL TELEPHONE NUMBERS” on page 107.**



NOTE: Contents inspection should only be performed using the packaging labels provided with your kit referenced against the parts code checklist provided in this section of the user guide.

Full T4 Package

The full T4 package, including trolley is supplied in a kit form which can easily be assembled using the instructions provided in this manual.



NOTE: Some items shown may be optional extras which are supplied at extra cost if required.

A full exploded view of a T4 system including trolley is supplied on the following pages with components annotated to demonstrate a typical T4 set up and assist with the assembly operation. **See “T4 exploded view (including trolley)” on page 4.**

TestBook™-1 to T4 upgrade package

Instructions for upgrading a TestBook™-1 trolley for T4 use is provided later in this document. The upgrade kit includes the T4 laptop PC, T4 Hand Held Tester and Diagnostic Port and a kit of parts for converting the existing TestBook™-1 trolley for T4 use.

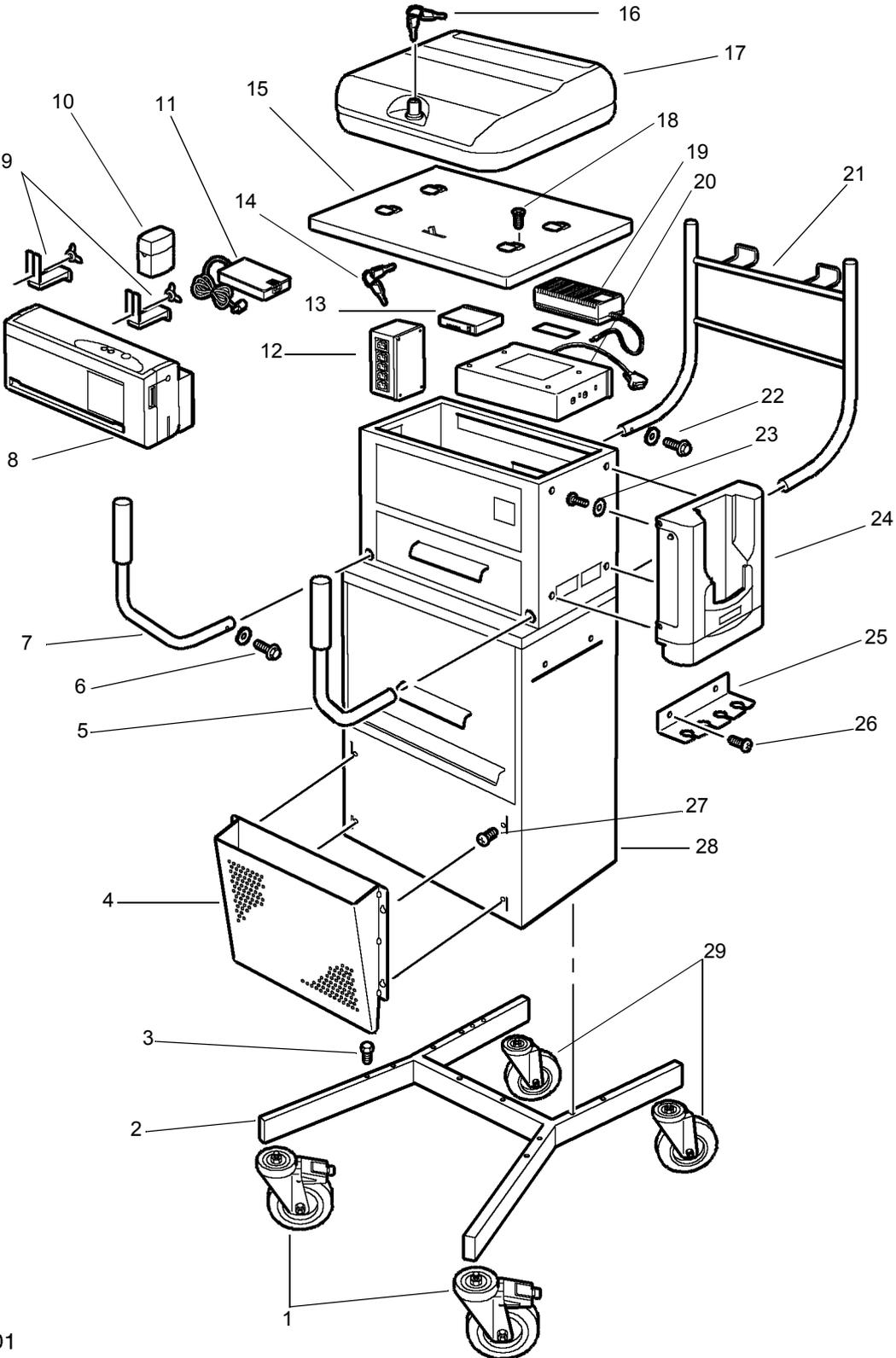
A full exploded view of an upgraded T4 system including TestBook™-1 trolley is supplied later in this section with components annotated to demonstrate a typical T4 upgrade set up and assist with the assembly operation.

See “TestBook™-1 to T4 Upgrade - exploded view (including trolley)” on page 16.

HARDWARE & INSTALLATION



T4 exploded view (including trolley)

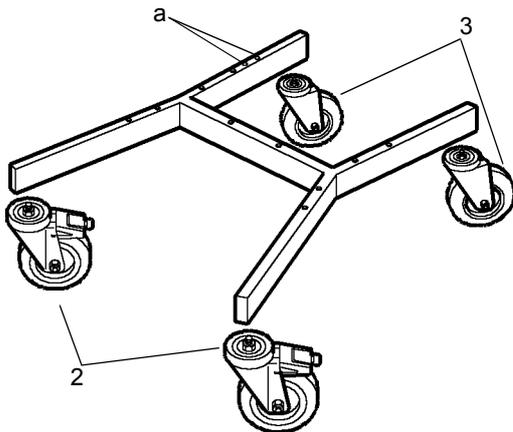


T4001

T4 parts key

1. Locking wheels (2 off)
2. H-frame base
3. Trolley cabinet to H-frame base fixing bolts (6 off)
4. Printer output paper tray
5. Front RH handle
6. Front handle fixing bolt and locking washer (one per handle)
7. Front LH handle
8. DeskJet™ 350 Printer
9. Printer fixing brackets and wing nuts (2 off)
10. Spare printer cartridge
11. Printer power supply adapter
12. AC power supply distribution pack (5-way)
13. LAN hub unit (ethernet hub - optional accessory)
14. Laptop PC case to plinth camlatch keys
15. Trolley plinth and laptop PC case mounting platform
16. Laptop PC case lock keys
17. Laptop PC case (containing Dell laptop PC)
18. Plinth countersunk mounting screws (8 off)
19. TIM power supply adapter and Velcro fixing (optional accessory)
20. TIM unit (optional accessory)
21. Cable Management Bar
22. Cable Management Bar fixing bolts and locking washers (2 off - one per side)
23. T4 Hand Held Tester Diagnostic Port mounting screws and locking washers (4 off - from inside cabinet)
24. T4 Hand Held Tester Diagnostic Port (T4 Hand Held Tester not shown)
25. Cable storage bracket (2 off, one each side of cabinet)
26. Cable storage bracket fixing screws (3 off per bracket)
27. Printer paper output tray mounting screws (4 off)
28. Trolley main column / cabinet
29. Free-running wheels (2 off)

T4 Trolley base assembly



T4002

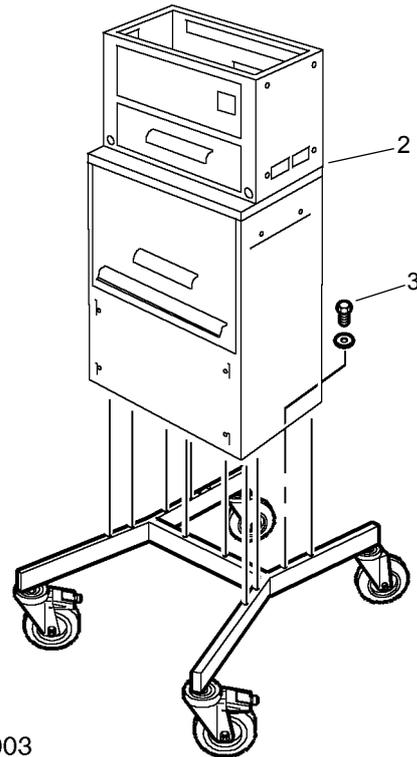
1. Remove the Main Column / Cabinet and accessories for the trolley from its packaging, and ensure all the following components are included:

Pack 1 of 3 (trolley base):

 - H-frame - 1 off
 - Locking wheels - 2 off
 - Free-running wheels - 2 off
2. Fit the two locking wheels to the front of the H-frame by screwing the wheel studs into the threads provided on the underside of the H-frame.
3. Fit the two free-running wheels to the rear of the H-frame base, by screwing the wheel bolts into the threads provided at the underside of the H-frame.

NOTE: The upper side of the rear left hand arm of the H-frame has two additional holes for fitment of an accessory (See “a” in illustration T4002 above). Use this as a reference to ensure the locking wheels are fitted in the correct position at the front of the H-frame base.

T4 Trolley cabinet assembly



T4003

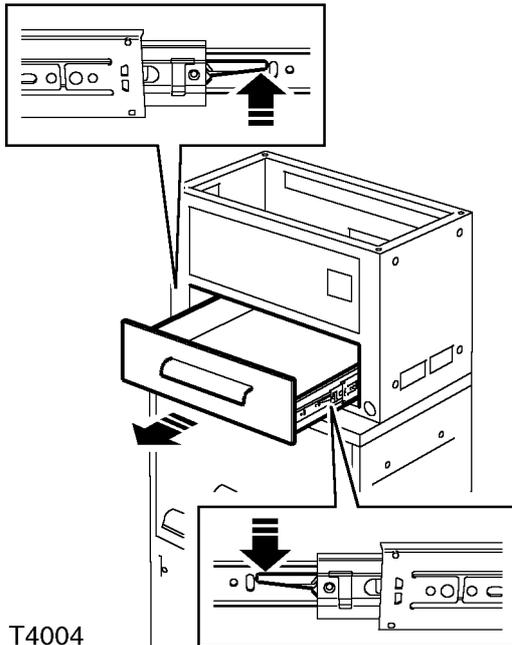
1. Remove the cabinet and accessories from its packaging, and ensure all the following components are included:

Pack 2 of 3 & Pack 3 of 3:

 - Trolley Main Column / Cabinet - 1 off
 - Trolley fixings accessory bag - 1off (located in top drawer of cabinet)
 - Trolley 3-metre ACpower supply cable set - 1 off (located in top drawer of cabinet)
 - Front handles (with fitted grips) - 2 off
 - Rear Cable Management Bar (with fitted end caps) - 1off
 - Printer paper collection tray - 1 off
 - Cable storage brackets - 2 off
 - Cabinet top plinth - 1 off
2. Position the cabinet on top of the base, ensuring the front of cabinet is facing the two locking wheels.
3. Fix the cabinet to base using the 6 mounting bolts (M8 x 20mm) and 6 locking washers (M8).

NOTE: The main column / cabinet comes complete with drawers, power distribution and printer cables already fitted.

Rear Cable Management Bar Attachment

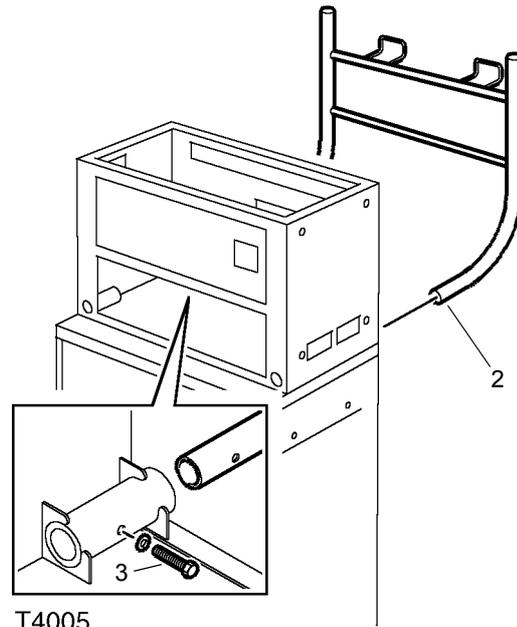


T4004

1. Remove the upper drawer from the trolley cabinet;
 - Open drawer
 - Raise latch on LH side drawer slider rail; lower latch on RH side drawer slider rail.
 - Remove drawer from cabinet.



NOTE: In some cases drawer slider latches may operate in opposite orientation to that indicated above.



T4005

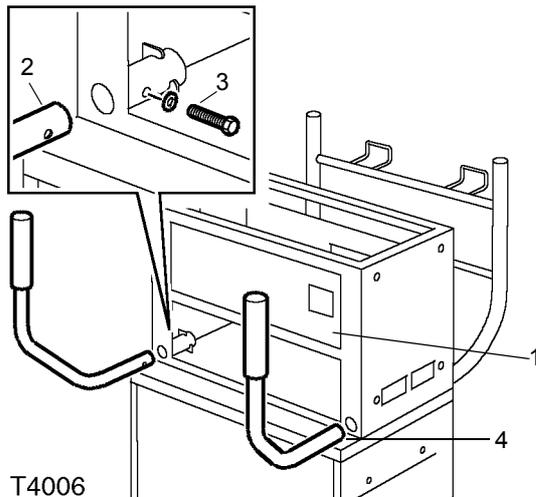
2. Lightly grease the ends of the Cable Management Bar with petroleum jelly and push into apertures at the rear of the cabinet.



NOTE: Cable Management Bar ends may require some lateral force to ensure they are aligned to the mounting apertures.

3. Secure the ends of the Cable Management bar using 2 off M6 x 25mm socket head cap screws.

Front Cabinet Handle Attachments



CAUTION: Each of the front cabinet handles are specific for the left or right hand sides; ensure you attach the correct handle to the corresponding side of the cabinet, otherwise the cabinet upper drawer and top door will not open.

1. Ensure the cabinet's top door is in the fully closed position.

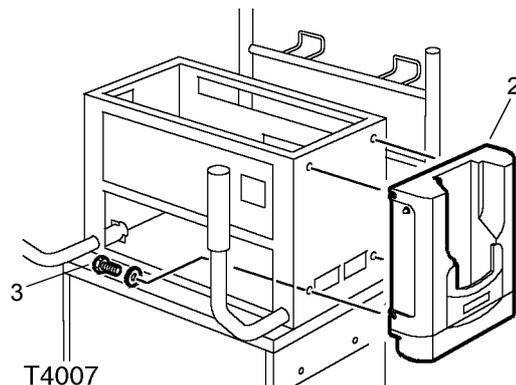
CAUTION: If the cabinet's top door is left in the open position, and the left handle is fitted in position, the door cannot then be closed.

2. Lightly grease the end of the left handle and insert into the aperture on the front left hand side of the trolley cabinet.
3. Lock the LH handle in position using 1 off M6 x 25mm socket head cap screw.
4. Lightly grease the end of the right handle and insert into the aperture on the front right hand side of the trolley cabinet.
5. Lock the RH handle in position using 1 off M6 x 25mm socket head cap screw.

T4 Hand Held Tester Diagnostic Port Attachment



1. Remove the T4 Hand Held Tester components from their packaging and check the contents against the packaging label. Items should include:
 - T4 Hand Held Tester Diagnostic Port (DTC 4002A) - 1 off
 - T4 Hand Held Tester Diagnostic Port fixings - 4 screws and locking washers.



2. Align the Diagnostic Port to the mounting holes on the right side of the upper trolley cabinet.
3. Fix the Diagnostic Port to the trolley cabinet with 4 off M5 x 6mm screws and locking washers. Screws pass through from inside of cabinet at upper drawer and top door levels.

NOTE: Locking washers are fitted directly under screw heads.

Power Supply Distribution Unit

The 5 way power supply distribution unit is already installed in the trolley cabinet and will provide connection for AC power supply cables which will be routed through the cabinet to provide power supplies to the following components:

- Lap top computer
- Printer
- T4 Hand Held Tester Diagnostic Port
- TIM Unit (where fitted)
- LAN hub (where fitted)

The power distribution unit is attached to the inside of the upper trolley cabinet at the left hand side and is secured to the cabinet by 2 off M4 x 6mm Posidriv screws and locking washers.



NOTE: The printer power supply cable is already connected to the AC power supply distribution outlet and routed through the trolley cabinet.

TIM Unit (where supplied)

The TIM unit is an optional accessory, which is located inside the top right hand side of the trolley cabinet. The TIM unit is secured to the upper cabinet shelf with two screws, so that the TIM unit connector and sockets can be accessed through an aperture at the back of the trolley cabinet.

An AC to 18V DC power supply converter for the TIM unit is attached to the top of the TIM unit by a Velcro strip. The AC power supply lead to the converter is connected to the 5-way AC power supply distribution unit and the DC connector from the converter connects to the TIM unit.

LAN Hub (where supplied)

The LAN hub is an optional accessory, which is located inside the top left hand side of the trolley cabinet. The LAN hub is secured to the upper cabinet shelf with two raised screws which locate into slots in the bottom of the LAN hub case.

Place 2 off M3 x 8mm screws into the 2 holes on the upper cabinet shelf where the LAN hub will locate. Screw the heads of the M3 screws to within 1.5 mm of the panel shelf to leave the screw heads slightly raised.

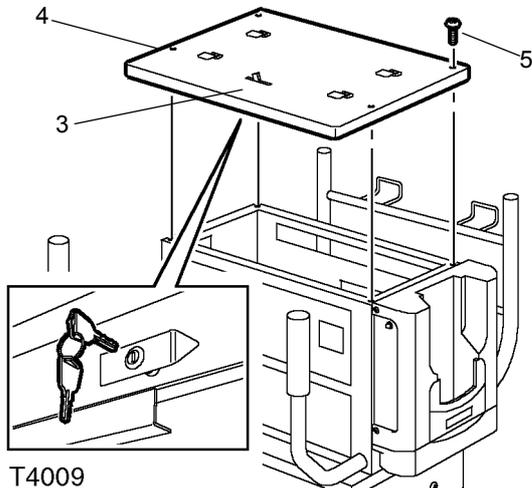
To locate the LAN hub unit, place the unit over the raised screw heads and then slide the unit towards the left hand side of the trolley cabinet so that the LAN connection sockets can be accessed through the aperture at the back of the trolley cabinet.

The power supply for the LAN hub is 5V DC which is supplied from an AC to DC converter which is to be located on the trolley cabinet upper shelf using the Velcro strip supplied.

HARDWARE & INSTALLATION

Trolley Cabinet Top Plinth Assembly

1. Replace the upper trolley cabinet drawer, by aligning the slider rails on the drawer and cabinet and pushing the drawer in to its fully closed position.
2. Ensure the trolley upper cabinet door is in the closed position and latched shut.

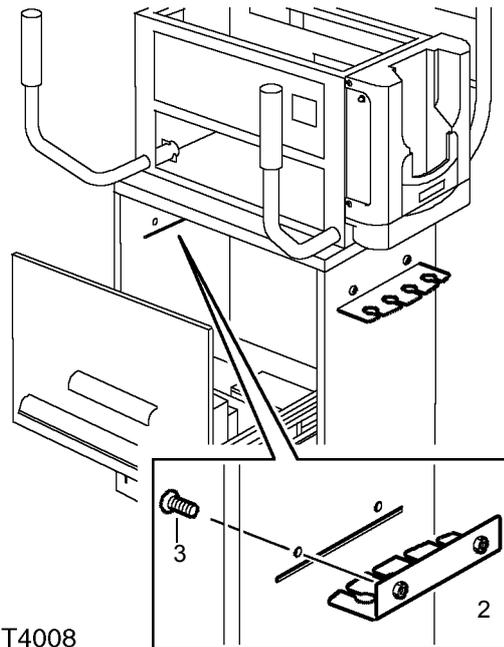


3. Attach the Camlock to the plinth by inserting the lock barrel and cam through the hole of the lock bracket on the front underside of the plinth. Check the orientation of the camlock and that the lock operates correctly (i.e when the lock keys are turned the locking bar rotates through the slot in the top of the plinth). Fit and tighten the locking nut to the back of the lock barrel.

NOTE: The cam does not need to be removed from the lock barrel in order for it to pass through the hole in the plinth's lock bracket or pass the locking nut over it.

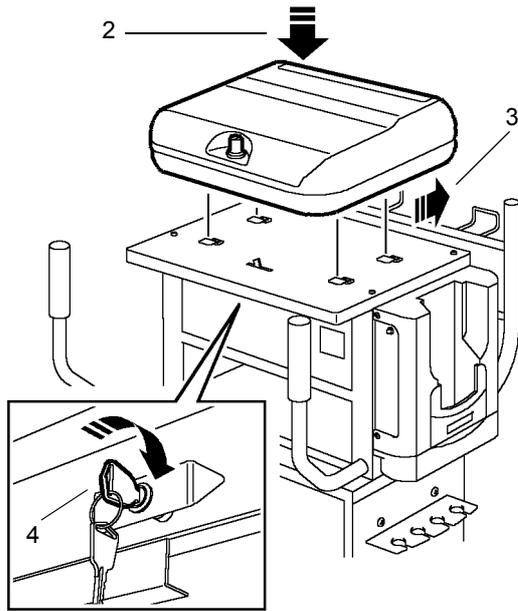
4. Align the plinth to the top of the cabinet, ensuring the lock is at the front face of the cabinet and the PC case locating tags uppermost.
5. Secure the plinth to the trolley cabinet using the 8 off M4 x 6mm countersunk screws supplied with the kit.

Cable Storage Bracket Attachment



1. Pull out lower cabinet drawer for access to the inner cabinet.
2. Push one of the cable brackets through the slot in the left side of the cabinet and align the bracket fixing nuts with the holes in the side of the cabinet.
3. Secure the bracket in place using 3 off M4 x 6mm fixing screws and locking washers.
4. Repeat the above procedure to secure the remaining cable bracket to the right side of the trolley.
5. Close the lower cabinet drawer.

Laptop PC Case / Laptop PC Attachment



T4010

The laptop PC case is normally supplied with the laptop PC already fitted. If the laptop PC has been supplied separately from the PC case, and/or the laptop PC has been removed from the PC case prior to full T4 installation, the laptop PC will have to be installed into the laptop PC case as described later in this section - **See "Laptop PC to Laptop PC case Installation" on page 13.**

1. Unpack the laptop PC case and laptop PC from its packaging and check the contents against the components listed on the packaging label.
2. Align the locating slots in the bottom of the PC case with the lugs on the trolley plinth.
3. Slide the laptop PC case towards the rear of the trolley plinth.

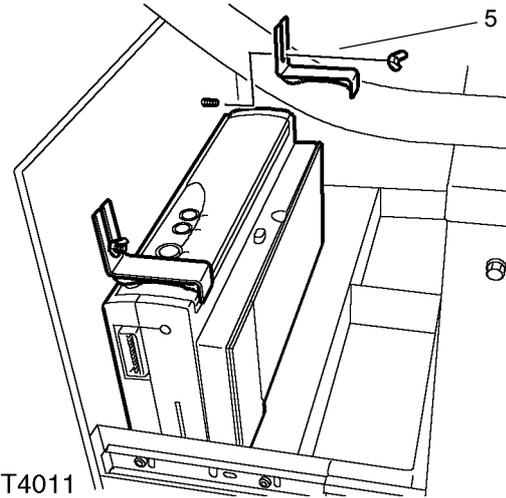
NOTE: If the ends of the locating lugs are pressed down, it will not be easy to locate the laptop PC case correctly. In this instance gently lever up the ends of the locating lugs using a flat bladed screwdriver to facilitate easier location and attachment of the PC laptop case to the mounting bracket; note the gap should be between 7.5 mm & 8 mm.

4. Lock the laptop PC case in position and remove the keys from the lock. Store the keys in a secure location.

NOTE: The keys can only be removed in the locked condition.

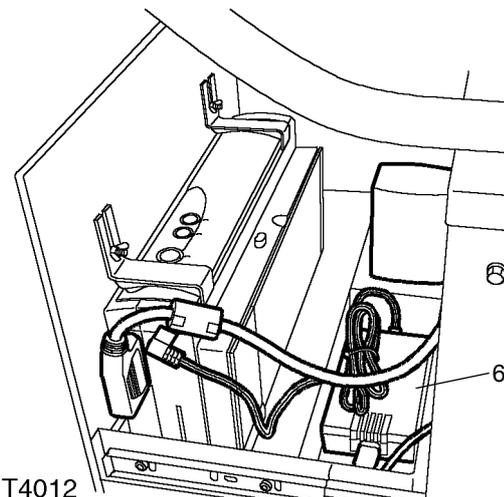
Printer Installation

1. Unpack the printer components and check them against the parts contents listed in the printer booklet.
2. Ensure the printer cartridge is correctly assembled to the printer unit (*refer to the printer booklet supplied with the printer*).
3. Open the trolley cabinet lower drawer.



T4011

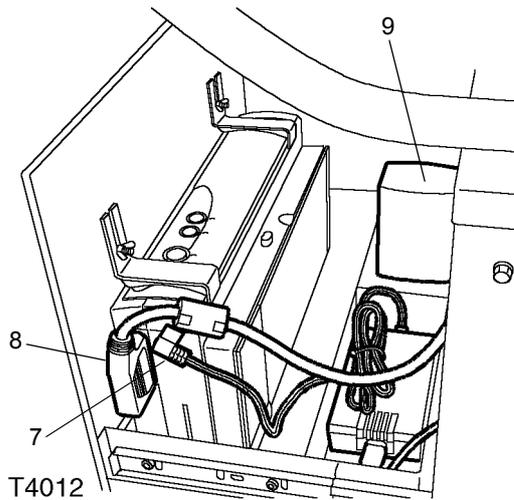
4. Place the printer in the front of the drawer with the control panel face up.
5. Secure the printer in position against the front of the door by using the two brackets, wing nuts and studs in the front of the drawer. Finger tighten the wing nuts.



T4012

6. Insert the printer power supply into the right hand side of the drawer, behind the printer, and connect the AC power supply 2 pin plug to the printer power supply unit.

NOTE: The AC power supply cable for the printer's AC to DC converter is already installed inside the trolley cabinet.



7. Connect the power supply unit DC lead to the printer power input socket.
8. Connect the printer parallel port cable to the printer.

NOTE: The printer cable is already installed in the trolley cabinet. The printer connector may be orientated with the cable facing upwards (as shown above), or downwards.

9. Place the spare printer cartridge container into the compartment at the left hand side of the drawer, behind the printer.

NOTE: Refer to the printer booklet supplied with the printer for details concerning loading paper, replacing toner and printer settings etc.

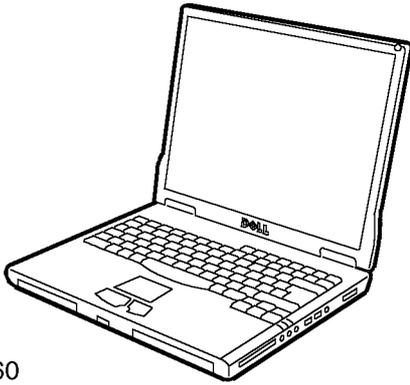
Printer Paper Collection Tray Attachment

1. Unpack the printer paper collection tray and fixings (4 off M5 x 10mm screws).
2. Tighten the screws into the holes on the front of the trolley cabinet so that the screw heads are raised approximately 2mm from the front face of the trolley cabinet.
See "T4 exploded view (including trolley)" on page 4.
3. Position the eyelets in the flange of the paper over the screw heads and lower the printer paper collection tray into position on the front of the trolley cabinet.

NOTE: The paper tray may need removing occasionally to remove paper debris.

NOTE: Leave the printer paper collection tray screws sufficiently loose to facilitate easy removal of the paper tray.

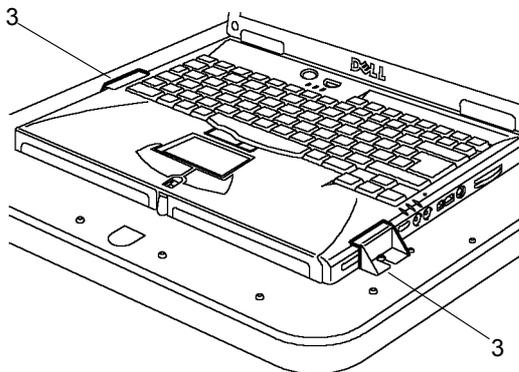
Laptop PC to Laptop PC case Installation



T4060

The laptop PC comes supplied already installed in the laptop PC case. If the laptop PC is removed from the laptop PC case at any time, it should be installed as follows:

1. Use the keys to unlock the laptop PC case and twist the lock to release the latch assembly, then raise the laptop PC case lid.
2. Place the laptop on the bed of the laptop PC case, with the CD drive drawer towards the front of the trolley cabinet.



T4070

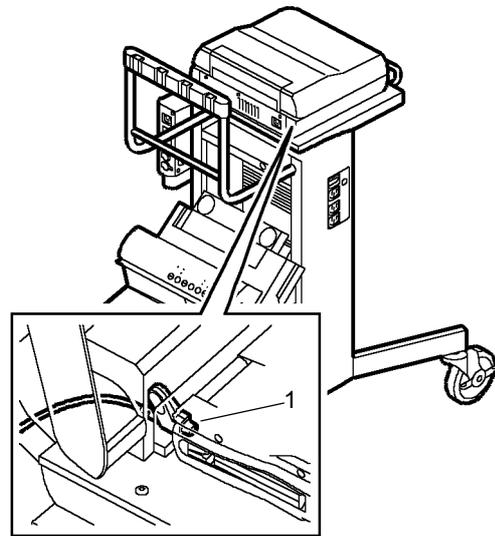
3. Secure the laptop PC to the bed of the laptop PC case using the two brackets and fixing screws provided.

NOTE: The base of the brackets are slotted to allow them to slide into place, with the top of the bracket securing each side of the laptop PC below the closed display screen.

Laptop PC Cable Connections

NOTE: The laptop PC case contains the laptop PC power supply adapter and connections for the LAN and modem units. If the laptop PC is removed from the case at any time, the following connections have to be made when the laptop PC is re-installed in the case.

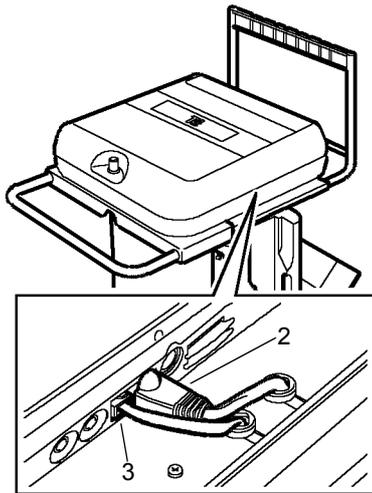
NOTE: The following illustrations show the T4 laptop PC installed on a TestBook™-1 upgraded trolley, but the laptop connections will remain identical for a full T4 unit.



T4071

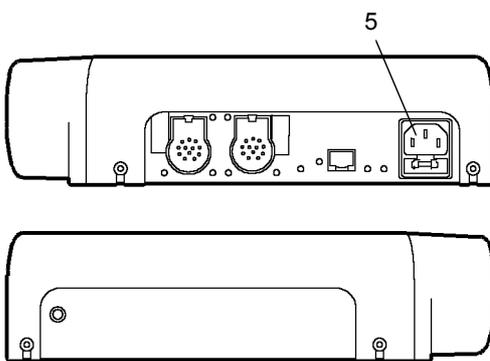
1. Connect the DC adapter power supply connector to the socket at the rear left hand side of the laptop PC.

NOTE: Ensure the connector is fully inserted into the socket, otherwise the laptop PC's battery will not be recharged when the main AC power supply is switched on.



T4072

2. Insert the LAN cable connector in the LAN socket on the right hand side of the laptop PC.
3. Insert the modem connector in the modem socket on the right hand side of the laptop PC.
4. Connect the IEC AC power supply plug to the Laptop PC, which runs from the AC power supply distribution unit on the inside of the cabinet. **See “T4 exploded view (including trolley)” on page 4 (i.e. the AC power supply cable should be connected between item 12 and item 17).**



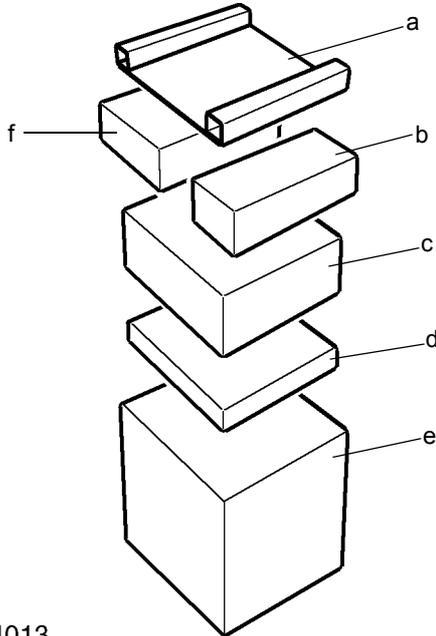
T4068

5. Connect the second IEC AC power supply plug to the AC power supply socket on the rear side of the T4 Hand Held Tester Diagnostic Port, which also runs from the AC power supply distribution unit on the inside of the cabinet.

6. The AC power supply cables referred to in items 4) and 5) above will run through the horizontal slot at the back of the T4 trolley cabinet in order to connect to the AC Power Supply Distribution Unit inside the cabinet. **See “T4 exploded view (including trolley)” on page 4 (i.e. the AC power supply cable should be connected between item 24 and item 12).**
7. Connect the printer AC power supply cable plug to a free socket on the AC power supply distribution unit (if not already connected).
8. Connect the plug of the AC power supply cable from the TIM unit power supply adapter to a free socket on the AC power supply distribution unit on the inside of the trolley cabinet (where applicable). **See “T4 exploded view (including trolley)” on page 4 (i.e. connect AC power supply cable from item 19 to item 12).**
9. Connect the plug of the AC power supply cable from the power supply adapter for the LAN hub to a free socket on the AC power supply distribution unit on the inside of the trolley cabinet (where applicable). **See “T4 exploded view (including trolley)” on page 4 (i.e. connect AC power supply cable from item 13 to item 12).**
10. Tidy the cables at the rear of the trolley cabinet using the tie straps provided.
11. Plug the main AC power supply cable into the socket on the outside of the trolley (AC distribution unit).
12. Check that all AC power supply cable connections are secure before plugging the main AC power supply cable into the local AC power supply socket.

TestBook™-1 to T4 Upgrade Package

 **NOTE: If you are using a TestBook™-1 Trolley, this gives a convenient, purpose-designed location for your T4 Diagnostic System.**



T4013

1. Remove the separate boxes from the outer packaging and check all items are present in accordance with the packing label attached to the outside of the box:
 - a Accessories
 - b T4 Hand Held Tester
 - c Laptop PC and case
 - d TestBook™-1 to T4 mounting bracket
 - e Outer packaging
 - f Diagnostic Port

 **NOTE: Labels similar to the ones shown in the illustration in the next column are attached to the component packaging; check the package contents off against the details shown on the labels. See "Parts Code List" on page 36 for assistance with identifying part codes against components.**

DTC4102C

JOINT

CONTENTS:

DTC4001A	DTC4008A
DTC4002A	DTC4009A
DTC4004A	DTC4011A
DTC4005A	DTC4015A
DTC4006A	LD2005A
DTC4006B	

plus DELL LAPTOP ACCESSORIES
(45647 / 93649 / 071PXH)



Manufactured in the UK by

Omitec

Instrumentation Ltd.

A309438

DTC4001A

T4 HAND HELD TESTER

CONTENTS: DTC4001A
DTC4013A
DTC4014A



A309462

Manufactured in the UK by **Omitec** Instrumentation Ltd.

DTC4006B

SOFTWARE PACK B LAND ROVER

CONTENTS: T4 SYSTEM CD-ROM
T4 DIAGNOSTIC CD-ROM qty 3
T4 HANDHELD TESTER CD-ROM

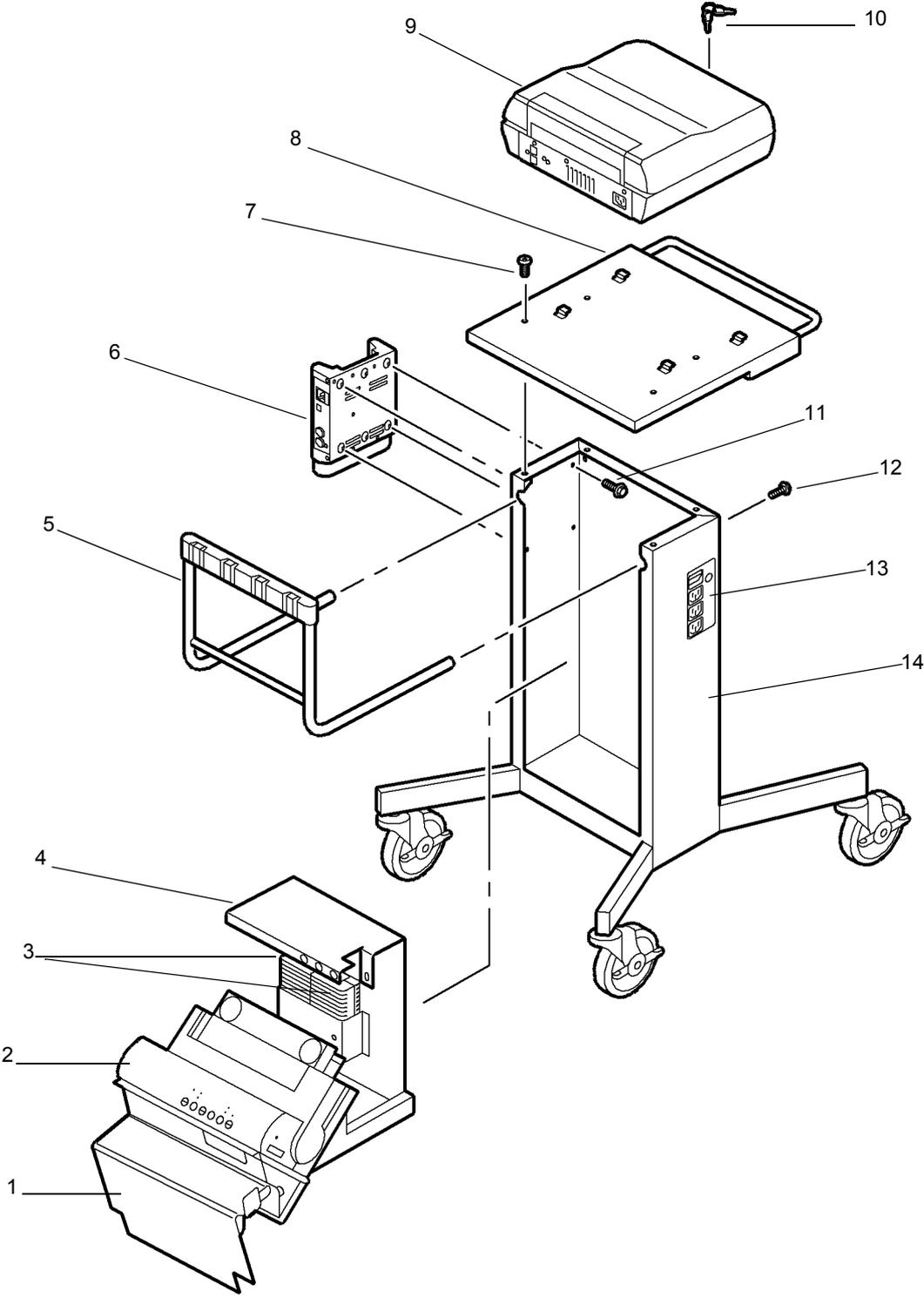
A309488

Produced in the UK by **Omitec** Instrumentation Ltd.

HARDWARE & INSTALLATION



TestBook™-1 to T4 Upgrade - exploded view (including trolley)



T4086

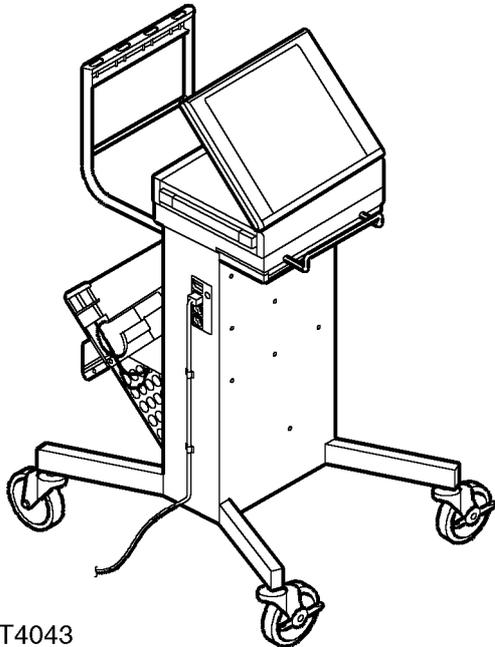
TestBook™-1 to T4 Upgrade Parts Key

1. Printer cover
2. DeskJet™ 300 Series Printer
3. TestBook™-1 Skynet Power Supplies (1 or 2 off if fitted)
4. Printer/Power Supply Support Bracket
5. Cable Management Bar
6. T4 Hand Held Tester Diagnostic Port (T4 Hand Held Tester not shown)
7. T4 Mounting Bracket to TestBook™-1 trolley Torx screws (4 off)
8. T4 Mounting Bracket
9. Laptop PC Case (containing Dell laptop PC)
10. Laptop PC case lock keys
11. T4 Hand Held Tester Diagnostic Port to TestBook™-1 trolley mounting screws (M5 x 6mm - 4 off)
12. Cable Management Bar to TestBook™-1 trolley Torx screws (2 off)
13. AC Power Supply Distribution Unit
14. TestBook™-1 trolley

HARDWARE & INSTALLATION

TestBook™-1 to T4 Upgrade Procedure

WARNING: Ensure the TestBook™-1 is switched off and disconnected from the main AC power supply before starting the replacement procedure.



T4043

Tools required

The following tools are required to perform the TestBook™-1 to T4 conversion operation; ensure all the tools are available prior to starting:

- T15 Torx screwdriver
- No. 2 Pozi screwdriver
- 7.0 mm Metal drill bit and power drill
- Engineer's Square and Rule
- Scribe and Centre Punch
- Side cutting pliers
- Safety Goggles

Mounting Bracket Fixing Accessories

The following fixings are provided with the TestBook™-1 to T4 conversion kit for attaching the laptop PC and case mounting bracket:

- M4 x 12mm pan Pozi screws - 2 off
- M4 x 6mm pan Pozi screws - 4 off
- M4 Shake proof washers - 6 off
- Cable ties - 5 off

NOTE: A paper template will also be supplied to help determine the location of the fixing points for the T4 Hand Held Tester Diagnostic Port.

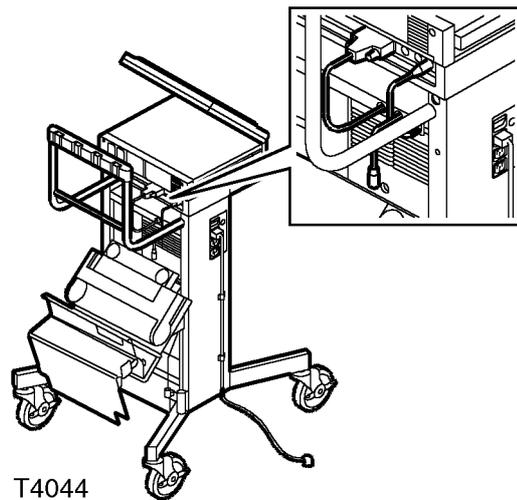
Diagnostic Port Fixing Accessories

The following fixings are provided with the TestBook™-1 to T4 conversion kit for attaching the diagnostic port:

- M5 x 6mm pan Pozi screws - 4 off
- M5 Shake proof washers - 4 off

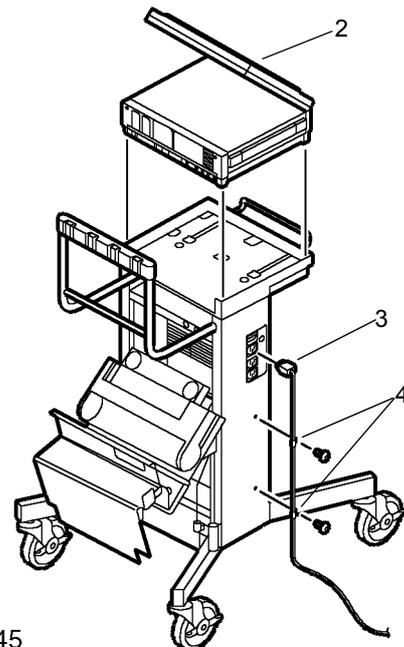
NOTE: Retain all fixing screws removed during disassembly of the TestBook™-1 trolley for re-use during T4 assembly.

TestBook™-1 Disassembly



T4044

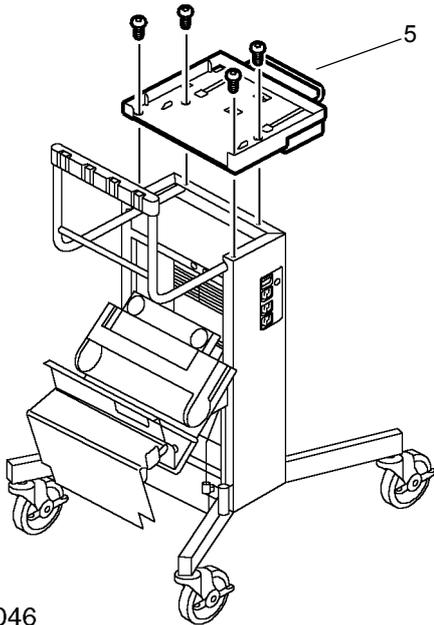
1. Disconnect all cables from the rear of the TestBook™-1 trolley.



T4045

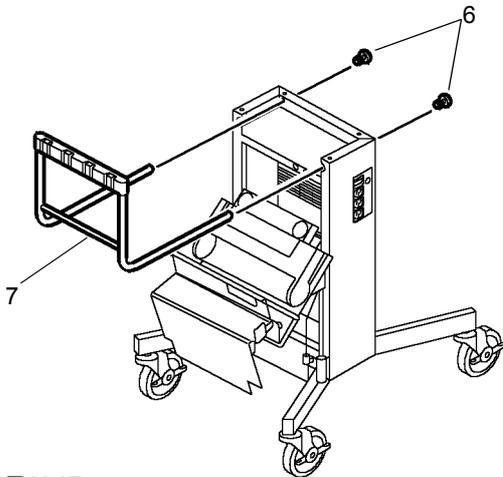
2. Remove the TestBook™-1 from the trolley.
3. Disconnect the IEC power supply cable from the socket on the left hand side of the trolley.

- Remove the two cable retaining clips (if fitted) from the left hand side of the trolley and remove the IEC power supply cable.



T4046

- Remove 4 Torx screws from the mounting plinth (part No. 27072), remove the mounting plinth from the top of the trolley and discard.

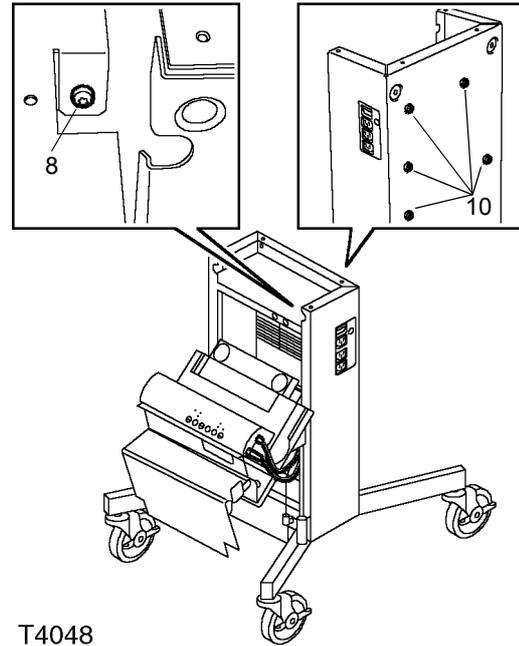


T4047

- Remove 2 Torx screws securing the Cable Management Bar from the front of the trolley.

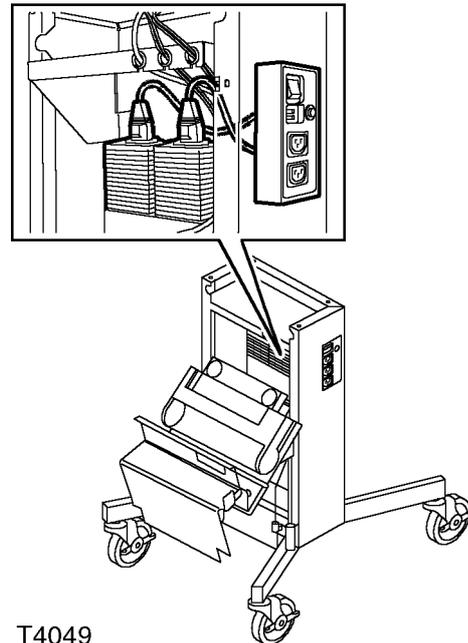
 **NOTE: The front of the trolley can be identified as the side having locking wheels.**

- Remove the Cable Management Bar from the trolley.



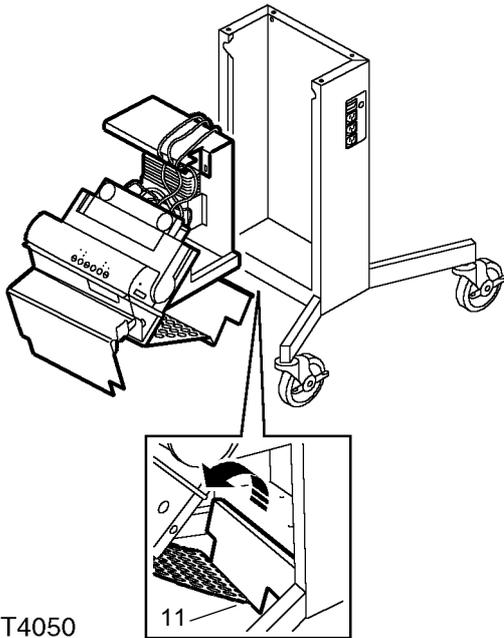
T4048

- Remove 1 Torx screw from the Printer/Power Supply support bracket at the rear of the trolley; this screw retains the trolley AC power supply distribution unit.



T4049

- Disconnect the IEC power supply leads from the rear of the AC power supply distribution unit.
- Remove 5 Torx screws from the front face of the trolley.

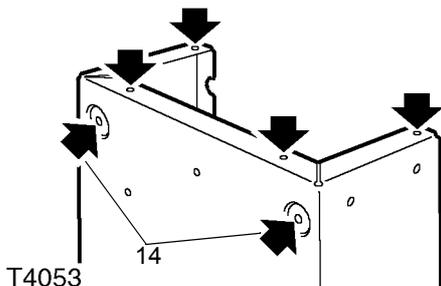


T4050

11. Unclip the Printer paper tray from the bottom rear of the trolley.
12. Slide out the Printer/ Power Supply support bracket from the rear of the trolley.

NOTE: The Printer paper tray does not use any fixings to attach it to the trolley, but it may require some leverage to free the clip.

13. The TestBook™-1 trolley should now be fully stripped to the bare chassis.



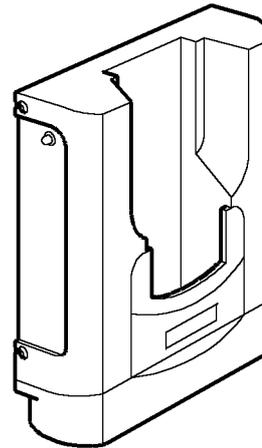
T4053

14. Drill out the two 4mm holes used for the cable management bar to 7mm diameter and de-burr the holes (**Note: only drill out the two holes on the front face of the trolley**).

WARNING: Wear Safety Goggles when drilling.

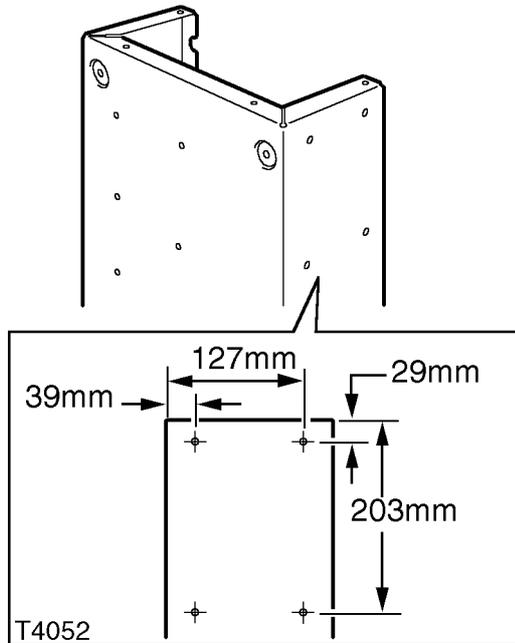
15. Clean swarf from the trolley surfaces before starting the assembly procedure.

Diagnostic Port Attachment



T4016

The Diagnostic Port (DTC 4002A) is to be fitted to the right hand side of the trolley, with the side of the diagnostic port flush with the front face and top of the trolley frame.



T4052

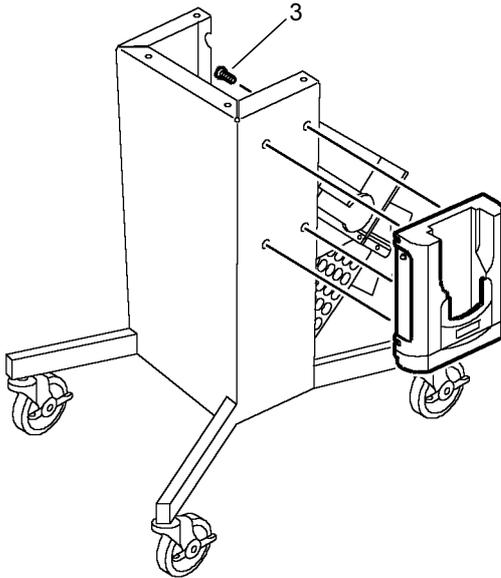
1. Using the dimensions supplied (see illustration above) mark and drill 4 x 7.0 mm holes in the side of the TestBook™-1 trolley and de-burr the holes.

NOTE: A paper template is also supplied, which can be used to help determine the location of the fixing points for the T4 Hand Held Tester Diagnostic Port.

WARNING: Wear Safety Goggles when drilling.

2. Clean swarf from the trolley surfaces before continuing with the TestBook™-1 to T4 trolley assembly procedures.

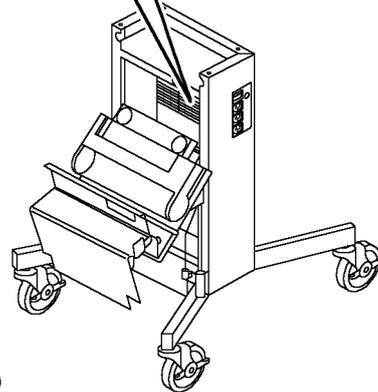
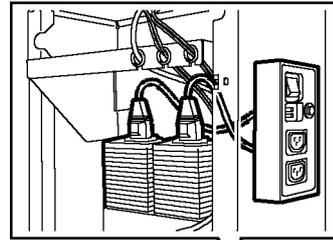
Printer/T4 Power Supply Support Bracket Refit



T4054

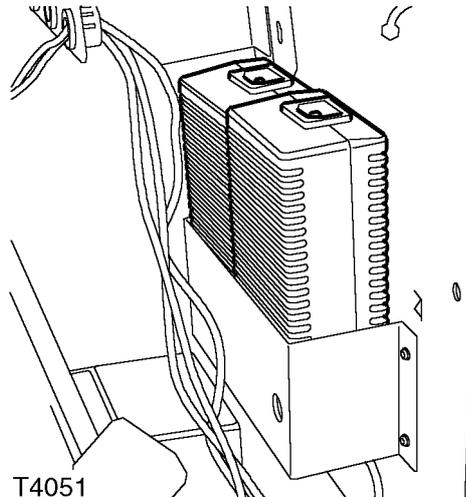
- From the inside of the trolley, secure the Diagnostic Port using four M5 x 6mm screws.

NOTE: There are six holes in the back of the diagnostic port casing, only four of these holes are used for mounting the Diagnostic Port to the TestBook™-1 trolley.



T4049

- Disconnect the Skynet power supply unit from the AC power supply distribution unit (if not already disconnected).



T4051

- Remove the TestBook™-1 Skynet power supply.

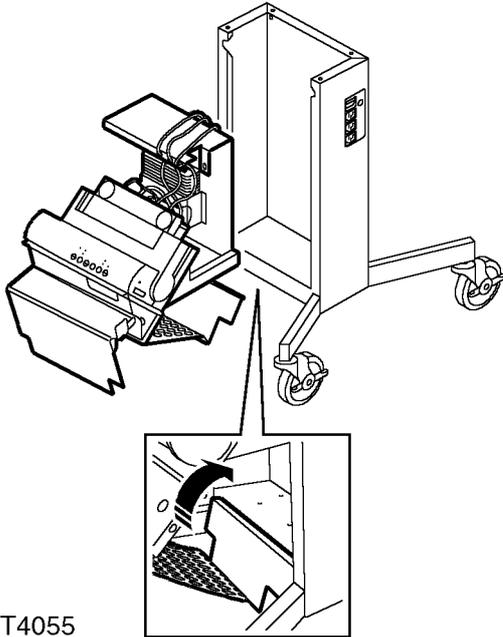
NOTE: For systems with optional extras (e.g. TIM unit) two Skynet power supply units may be fitted, in this case, only remove one of the Skynet power supply units.

- Remove the existing printer cable and replace with the new printer cable.

NOTE: The existing printer cable is not long enough to reach the T4 printer port.

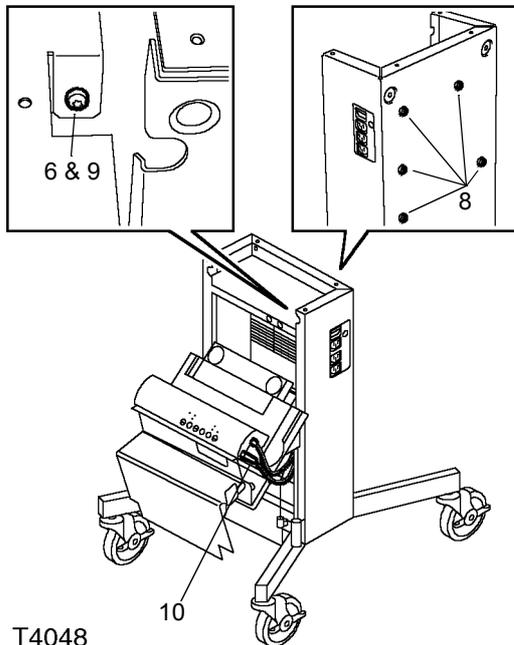
HARDWARE & INSTALLATION

- Use cable ties to secure the printer cable in position (retain 2 cable ties for use on the new mounting bracket).



T4055

- Slide the Printer/ Power Supply support bracket into the rear of the trolley and clip the printer paper tray to the bottom of the trolley; do not fit the 5 Torx screws at this stage.

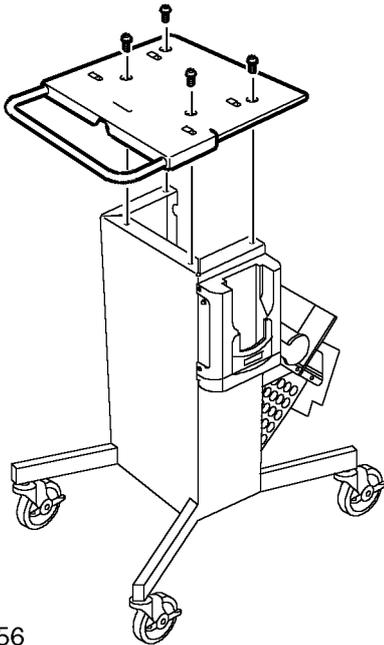


T4048

CAUTION: Ensure that none of the cables are trapped between the Printer / Power Supply Support Bracket and the trolley frame.

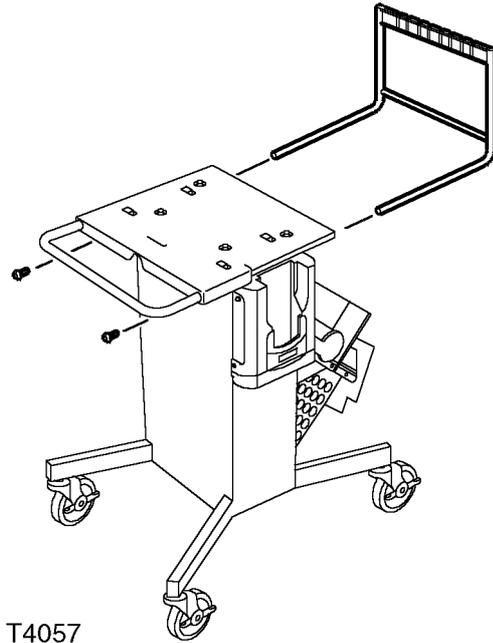
- Refit the trolley AC power supply distribution unit - loosely fit 1 Torx screw to the support bracket at the rear of the trolley.
 - Refit the Printer Power supply IEC lead to the AC power supply distribution unit.
 - Refit the 5 Torx screws through the front face of the trolley to secure the rear support bracket in position. Fit the top Torx screws first to ease alignment and fitting of the remaining fixing screws.
- NOTE:** Fit the top Torx screws first to ease alignment and fitting of the remaining fixing screws.
- Tighten the Torx screw at the support bracket at the rear of the trolley.
 - Reconnect the printer cable and printer power supply cable.

TestBook™-1 to T4 Mounting Bracket Attachment



T4056

1. Place the TestBook™-1 to T4 mounting bracket attachment (DTC 4008A) on the top of the trolley with the bracket handle located at the front of the trolley.
2. Loosely fit the new mounting bracket to the top of the trolley using 4 Torx screws.



T4057

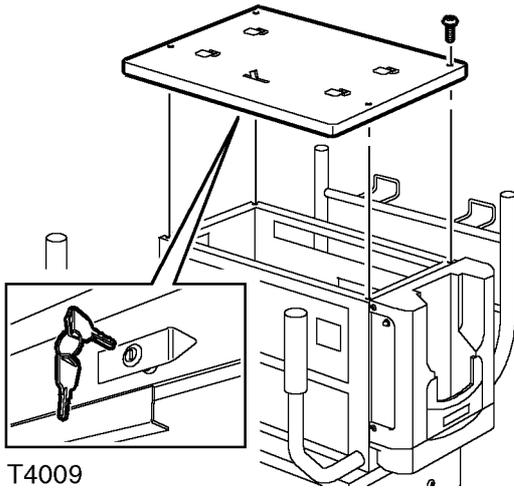
3. Refit the Cable Management Bar to the back of the trolley and secure using 2 Torx screws through the holes in the front of the new mounting bracket and trolley frame:
 - Hold the bar so that the cable notches are uppermost, behind the trolley, and slide the free ends into the grooves beneath the rear of the mounting bracket.
 - Holding the bar in position, line up the screw holes in the free ends of the bar with the holes in the trolley body.
 - Insert and tighten the 2 fixing screws.



NOTE: The Cable Management Bar may need some lateral pressure to enable the fixing screws to be aligned to the threads in the bar ends.

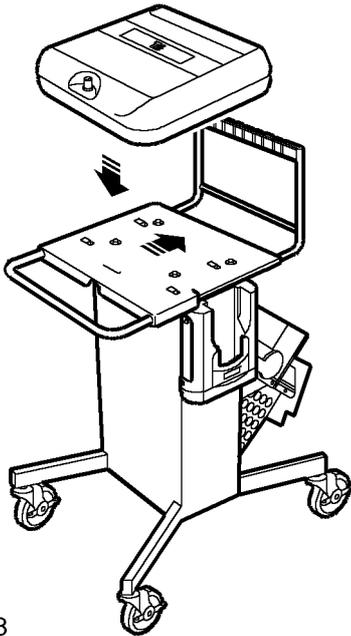
4. Tighten the mounting bracket screws on top of the trolley frame.

T4 Laptop PC Case Mounting



T4009

1. Ensure the Camlock on the trolley mounting bracket is in the unlock position (*note: the camlock on the full T4 trolley mounting plinth is shown in the above illustration, but is similar for the TestBook™-1 mounting bracket*).



T4058

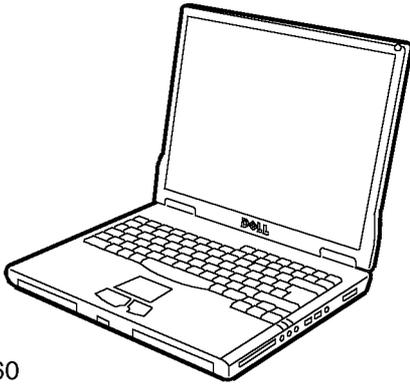
2. Position the laptop PC case to the top mounting bracket with the case lock at the front. Locate the laptop PC case onto the four raised lugs using the four slots in the base of the laptop PC case.

NOTE: If the ends of the locating lugs are pressed down, it will not be easy to locate the laptop PC case correctly. In this instance gently lever up the ends of the locating lugs using a flat bladed screwdriver to facilitate easier location and attachment of the PC laptop case to the mounting bracket; note the gap should be between 7.5 mm & 8 mm.

3. Push back the laptop PC case approximately 20mm to fully locate the case on the mounting bracket.
4. Lock the laptop PC case in position using the camlock on the front edge of the mounting bracket.

NOTE: The keys for the camlock should be removed and stored in a secure location for future use.

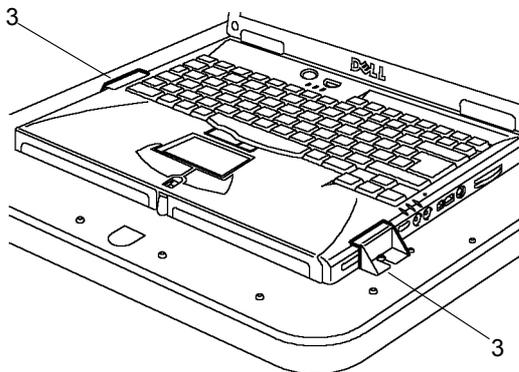
Laptop PC to Laptop PC case Installation



T4060

The laptop PC is supplied already installed in the laptop PC case. If the laptop PC is removed from the laptop PC case at any time, it should be installed as follows:

1. Use the keys to unlock the laptop PC case and twist the lock to release the latch assembly, then raise the laptop PC case lid.
2. Place the laptop on the bed of the laptop PC case, with the CD drive drawer towards the front of the trolley cabinet.



T4070

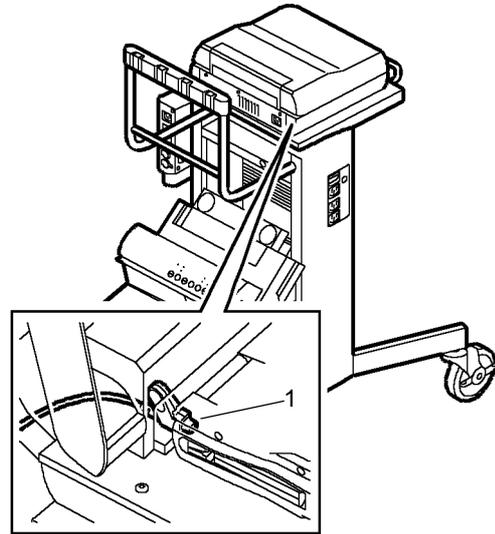
3. Secure the laptop PC to the bed of the laptop PC case using the two brackets and fixing screws provided.

NOTE: The base of the brackets are slotted to allow them to slide into place, with the top of the bracket securing each side of the laptop PC below the closed display screen.

NOTE: Ensure the laptop PC is positioned such that the power source LEDs and accessory sockets on the sides of the laptop PC are not obscured by the brackets.

Laptop PC Cable Connections

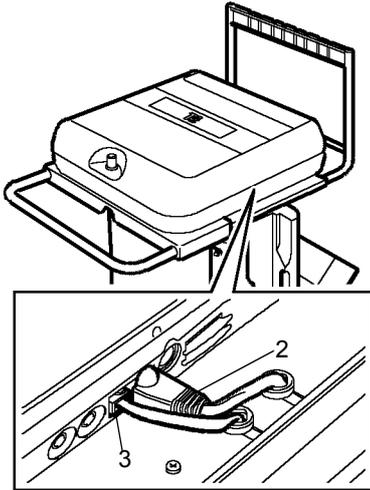
NOTE: The laptop PC case contains the laptop PC power supply adapter and connections for the LAN and modem units. If the laptop PC is removed from the case at any time, the following connections have to be made when the laptop PC is re-installed in the case.



T4071

1. Connect the DC adapter power supply connector to the socket at the rear left hand side of the laptop PC.

NOTE: Ensure the connector is fully inserted into the socket, otherwise the laptop PC's battery will not be recharged when the main AC power supply is switched on.



T4072

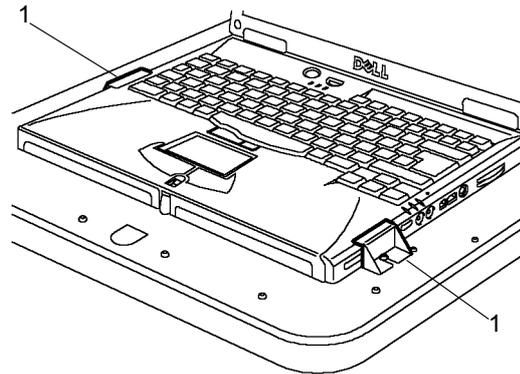
2. Insert the LAN cable connector in the LAN socket on the right hand side of the laptop PC.
3. Insert the modem connector in the modem socket on the right hand side of the laptop PC.

Kensington Lock (optional fitting)

Additional security can be provided through the use of a Kensington Lock. See the fitting instructions which come with the Kensington Lock for illustration and full fitting instructions.

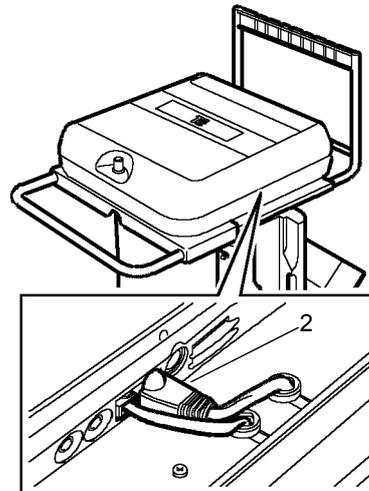
The Kensington Cable should pass behind the laptop PC and underneath the laptop PC case hinge:

Laptop PC Removal:



T4070

1. Remove the two fixing clamps securing the laptop PC to the mounting plate of the laptop PC case.

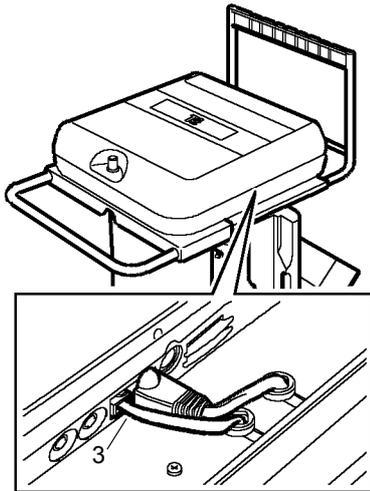


T4072

2. Disconnect the LAN cable from the right hand side of the laptop - to do this press down on the connector release lever at the top of the connector and pull the connector out of the port.

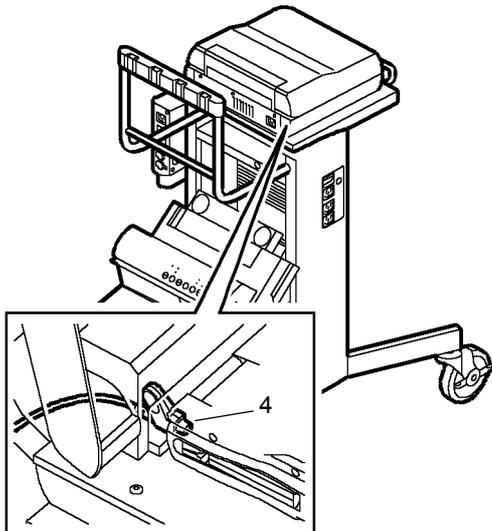
CAUTION: Do not pull on the connector wires.

Fitting the Kensington Lock:

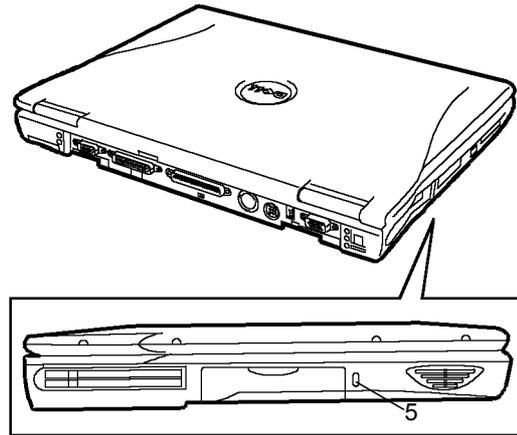


- T4072
3. Disconnect the Modem cable from the right hand side of the laptop - to do this press down on the connector release lever at the top of the connector and pull the connector out of the port.

CAUTION: Do not pull on the connector wires.



- T4071
4. Disconnect the DC power supply plug from the rear left hand side of the laptop PC.



- T4066
5. Move the laptop PC forwards and upwards to fit the Kensington lock anti-theft cable through the aperture provided on the left hand side of the laptop PC.
 6. Route the security cable to the rear of the laptop PC and underneath the LH side of the laptop PC case hinge (next to the DC adapter power supply plug).
 7. Reposition the laptop PC on the PC case mounting platform and reconnect the DC adapter power supply connector to the port at the rear left hand side of the laptop PC.

NOTE: Ensure the DC adapter plug is fully inserted into the socket (essential for the laptop PC battery to recharge when the AC power is switched on).

8. Reconnect the LAN and modem plugs to the relevant sockets on the right hand side of the laptop PC.

NOTE: Ensure the connectors are fully inserted into their sockets.

9. Refit the laptop PC to PC case clamps.

CAUTION: Ensure the laptop PC is correctly positioned on the PC case mounting platform; the clamps must not obscure or foul connection ports and LEDs at the sides of the laptop PC.

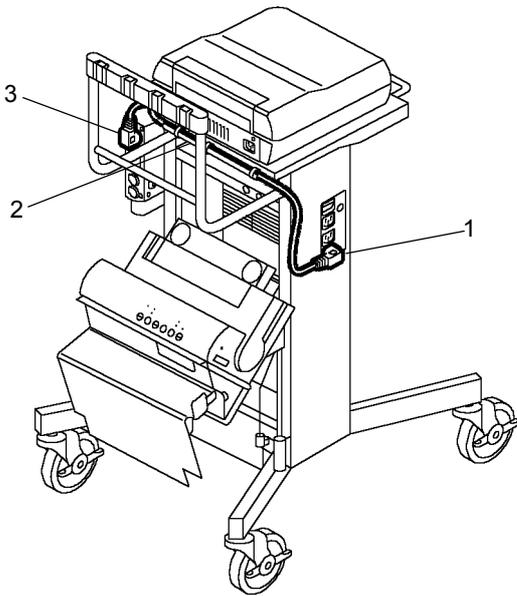
CAUTION: Do not over tighten the laptop PC fixing clamps.

CAUTION: Ensure the laptop PC lid can be closed without undue pressure from the fixing clamps.

10. Attach the Kensington Lock security cable to a suitable point on the trolley frame.

T4 System Cables (DTC4004A)

AC Power Supply - Diagnostic Port:



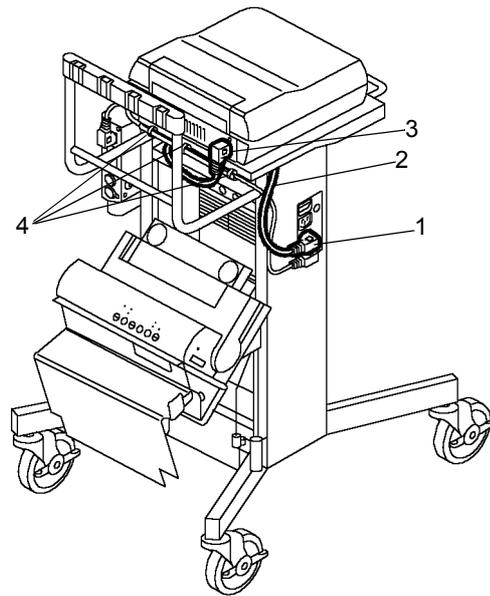
T4073



WARNING: Ensure that the main AC power supply lead is not connected to the power supply distribution unit before connecting ancillary equipment to the distribution unit.

1. Connect one of the AC power supply leads to one of the sockets of the AC power supply distribution unit on the left hand side of the trolley.
2. Route the AC power supply lead along the channel at the rear of the mounting bracket.
3. Connect the AC power supply lead to the AC power supply socket on the T4 Hand Held Tester Diagnostic Port.

AC Power Supply - Laptop PC case:



T4074



WARNING: Ensure that the main AC power supply lead is not connected to the power supply distribution unit before connecting ancillary equipment to the distribution unit.

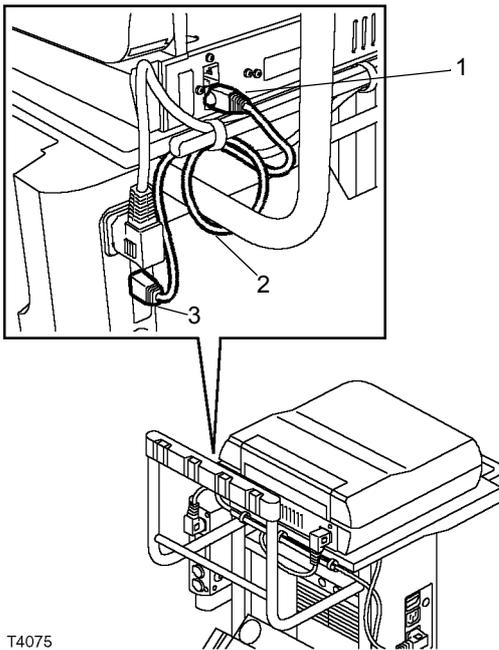
1. Connect the second AC power supply lead to the other AC socket of the AC power supply distribution unit on the left hand side of the trolley.
2. Route the AC power supply cable around the cable management bar and mounting bracket (where applicable); ensure there is sufficient access to add paper to the printer.



NOTE: Use additional cable ties to keep the cable runs tidy if necessary.

3. Connect the AC power supply lead to the AC power supply socket at the rear of the laptop PC case.
4. Secure the AC power supply cable to the rear of the trolley mounting bracket using the remaining 3 cable ties.

LAN Cable:



T4075

1. Connect the LAN lead to the LAN socket at the rear of the T4 laptop PC case.
2. Route the LAN lead around the cable management bar and mounting bracket (where applicable); ensure there is sufficient access to add paper to the printer.



NOTE: Use additional cable ties to keep the cable runs tidy if necessary.

3. Connect the LAN lead to the LAN lead socket on the Diagnostic Port.

HARDWARE & INSTALLATION

AC Power Supply

1. Plug the main AC power supply cable into the socket on the side of the trolley (**but do not plug into the wall power socket yet**).
2. Route the main AC power supply cable from the AC power supply socket on the left hand side of the TestBook™-1 trolley and down the side of the trolley. Secure the cable to the trolley frame at the two pre-threaded holes on the side of the trolley by re-using the 2 cable clips and 2 Torx screws removed from the side of the trolley during TestBook™-1 disassembly (if previously fitted).

 **NOTE: The cable clips protect the AC power supply plug and socket from strain or disengagement if the cable should be snagged or pulled.**

TestBook™-1 to T4 with TIM unit only (where fitted)

1. Locate the power lead hanging out of the power transformer unit at the back of the trolley (where fitted). Connect this power lead into the power port at the right rear of the T4.

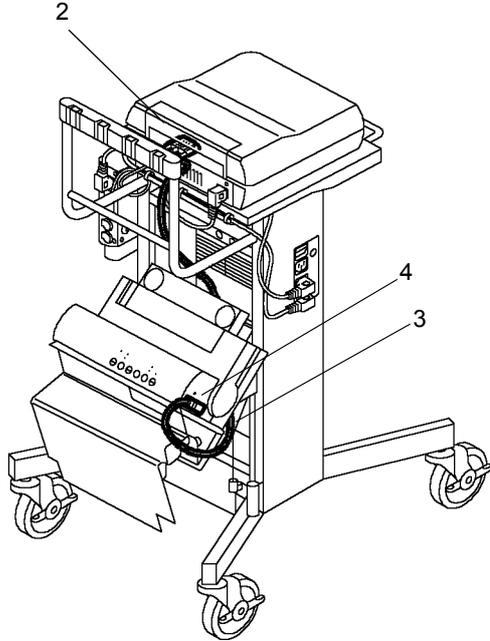
 **NOTE: The power lead from the power transformer unit is for the TIM unit. This is an optional accessory supplied for certain dealers only.**

2. Carefully slide the TIM unit (Part No: DTC0001) into the top shelf space at the rear of the TestBook™-1 trolley. Fasten the TIM unit to the trolley using the screws provided.

 **CAUTION: DO NOT use screws longer than 6mm for mounting the TIM unit.**

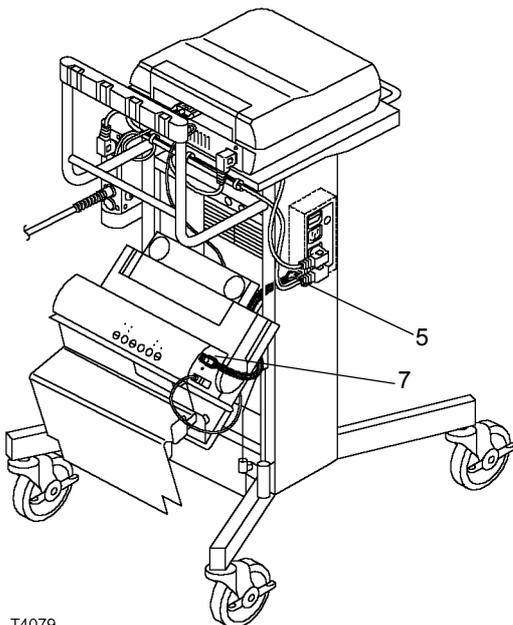
DeskJet™ 300 Series Printer (where applicable)

1. Place the printer in the support bracket at the rear of the trolley. The power and printer interface sockets are positioned on the same side of the trolley as the AC power supply cable and switch (i.e. the right when viewed from the back of trolley).



T4076

2. Connect the printer cable connector to the parallel port on the rear of the laptop PC.
3. Route the printer cable behind and under the printer support tray.
4. Connect the printer cable connector to the interface socket on the printer.



T4079

WARNING: Ensure that the 240 V AC power supply lead is not connected to the power supply distribution unit before connecting ancillary equipment to the distribution unit.

5. Connect the printer power cable to the socket on the distribution unit inside the trolley.
6. Ensure the printer power supply unit is located in the tray inside the trolley and the power supply cable does not interfere with the printer paper feeder.
7. Connect the printer power connector to the printer power supply socket on the side of the printer.

NOTE: The power supply connector should be rotated slightly on insertion to ensure it goes fully home and butts firmly against the printer case.

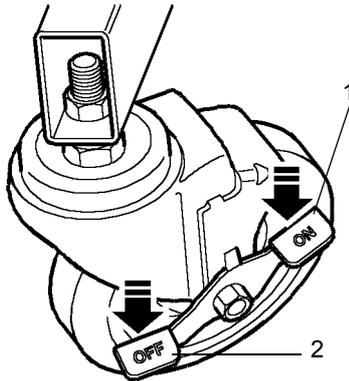
8. Load paper into the printer. The paper feeder on DeskJet™ 300 Series printers is designed to handle a stack of dry paper no more than 5mm high.

CAUTION: If too much paper is loaded or the paper is damp, the paper feeder may jam.

NOTE: Paper should be stored in a warm dry place. Paper left in the feeder tray at the end of a working shift, should be removed and put back into storage until needed. If left out overnight it may absorb moisture from the atmosphere as the ambient temperature drops.

9. The assembly of the T4 diagnostic system and trolley is now complete.
10. Plug T4 into the main AC power supply socket to begin charging T4 laptop's internal battery.

Trolley Wheels



T4080

The TestBook™-1 trolley has two locking wheels at the front to prevent movement of the trolley during diagnostic testing.

1. To lock the trolley wheels, press down the “ON” side of the wheel lock on both of the trolley’s front wheels.
2. To unlock the trolley wheels to allow the trolley to be moved, press down on the “OFF” side of the trolley lock on both of the trolley’s front wheels.

T4 VCSI Extension Lead (DTC4007B)

The VCSI extension cable to be used with the T4 diagnostic system is entirely new and is identified by a white “T4” label and a blue band indicating the part code “DTC4007B”.

NOTE: The new VCSI extension cable is **ONLY** for use with the T4 Diagnostic System and connects to the VCSI socket (1) on the T4 Hand Held Tester Diagnostic Port.

NOTE: The use of cables “DTC0007” and “DTC0006” previously used on TestBook™-1 are no longer required for T4 diagnostics and should be returned for re-cycling.

An exception to this is if a TIM unit is used with the T4 Diagnostic System, in which case the cables should be retained for exclusive use with the TIM unit.

NOTE: The design of the new VCSI extension cable “DTC4007B” for use with the T4 Hand Held Tester Diagnostic Port provides for direct connection of all existing vehicle specific cables.

PREPARING A SITE FOR T4

(If you do not have a TestBook™-1 or T4 trolley).

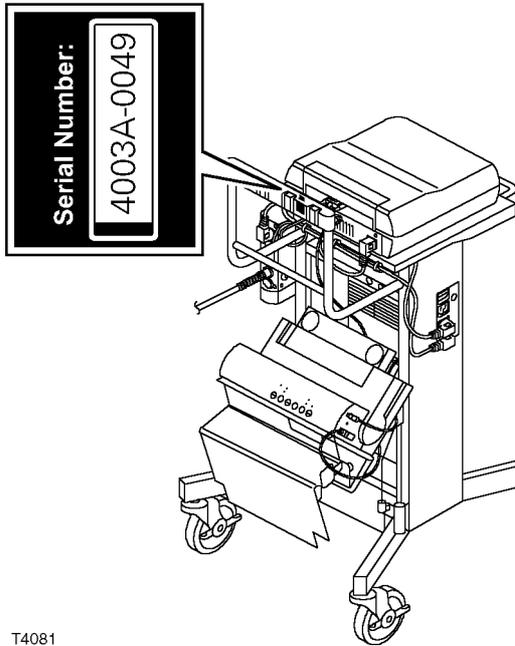
If you are not using a trolley, then you need to meet the following requirements in siting the T4 diagnostic system for use:

1. The surface must be firm, flat and reasonably level - (this is particularly important for satisfactory operation of the CD-ROM drive), and any risks of T4 falling or being knocked over should be avoided.
2. The T4 AC to DC power supply transformer unit also needs to be securely positioned near to the T4 and the power cables protected from workshop traffic to prevent accidental disconnection or damage.
3. Position T4 so that you have convenient access to cable ports (and with sufficient room to avoid sharp bends on the connecting cables). Ensure there is easy access to the touch pad and the CD-ROM drive.
4. Plug the DC adapter power lead into the power input port on the T4 laptop PC.
5. Plug the AC power supply cable for the AC to DC adapter into a local AC power supply socket to start using T4.

T4 LABELS

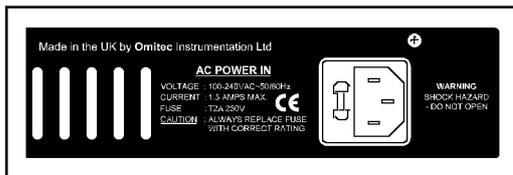
Various reference and warning labels are provided on the T4 diagnostic system components at the locations shown on the following illustrations.

Laptop PC Case



T4081

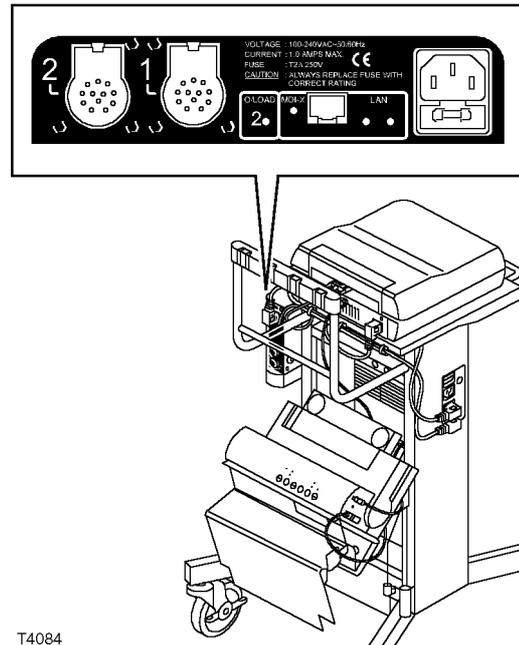
The serial number of the T4 laptop PC case is provided on a plate attached to the rear left hand side of the laptop PC case. Quote this number when calling the Helpdesk concerning problems encountered using or installing the laptop PC.



T4083

An AC power supply warning, fuse rating and information label is attached to the rear right hand side of the laptop PC case.

T4 Hand Held Tester Diagnostic Port



T4084

An identification and information label is attached to the rear side of the T4 Hand Held Diagnostic Port. This label indicates fuse ratings and provides identification details of the AC power supply, modem, VOM and VCSI sockets.

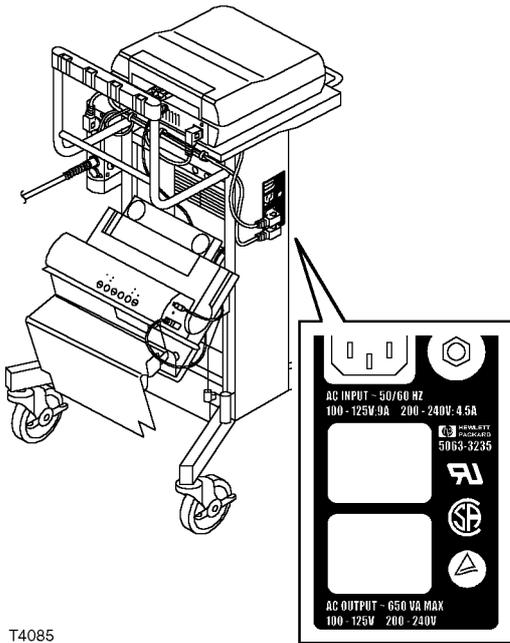
T4 Hand Held Tester



T4082

The serial number and part number of the T4 Hand Held Tester is provided on a plate attached to the back of the T4 Hand Held Tester. Quote this number when calling the Helpdesk concerning problems encountered using or installing the T4 Hand Held Tester.

TestBook™-1 to T4 upgrade trolley



T4085

A AC Power Supply rating information label is attached to the AC Power Supply Distribution Unit on the left hand side of the trolley.

Additional labels

Additional labels are attached at the following locations:

- Bottom face of T4 Hand Held Tester Diagnostic Port (Serial Number & Product No: DTC4002)
- Rear of the laptop PC case (Product No: DTC4003)
- Underside of laptop PC (Service Tag Number)
- Underside of TestBook™-1 mounting bracket (Product No: DTC4008)

PARTS CODE LIST

Use the following table to identify T4 components as they are listed on packing labels and to order additional or replacement parts:

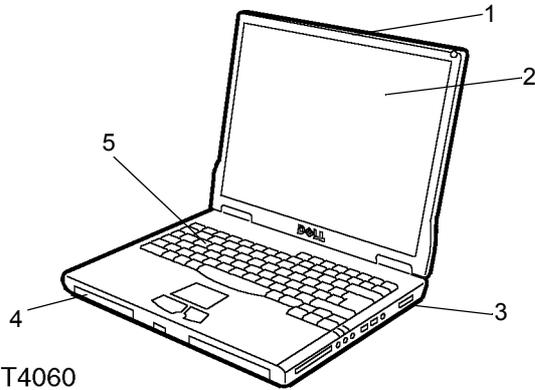
Part No:	Item
DTC4000A	T4 Trolley
	HP Printer 300 Series (TestBook-1, TestBook-2 & T4)
DTC4001A	T4 Hand Held Tester
DTC4002A	T4 Hand Held Tester Diagnostic Port
DTC4003A	Laptop PC case
DTC4004A	T4 System Cables
DTC4005A	T4 Documentation Pack
DTC4006B	T4 Software Pack accessories (Land Rover)
DTC4007B	T4 VCSI Extension
DTC4008A	T1 Fixing Bracket
DTC4009A	T4 VCSI Adapter
DTC4010A	T4 Laptop PC (Dell)
DTC4011A	T4 Laptop PC case with Dell laptop PC fitted
DTC4012A	T4 Hand Held Tester with Diagnostic Port
DTC4101A	Complete T4 Kit - Land Rover
DTC4102B	T4 Replacement Kit (TestBook-1 Exchange) - Land Rover
5063-3238	Roving Probe Kit 2
8120-6324	AC Pwer Supply Lead (UK)
8120-6427	AC Power Supply Lead Euro (optional)
DTT0001A	Pressure Kit
DTT0002A	Current Clamp
MS1590-8	Large Cases
MS1590-9	Small Cases

Part No:	Item
DTC0008A	MEMS Adapter
DTC0013A	Extension Cable (Transducer)
DTC0014A	Eric Adapter (optional)
DTC0016A	Vacuum fit kit
DTC0020A	14CUX Adapter
DTC0021A	ABS Adapter
DTC0022A	Air Suspension Adapter
DTC0023B	AIRBAG Adapter
DTC0024A	AIRBAG Load Unit (part1) - (optional)
DTC0025A	DEC2 EGR BOB
DTC0026A	Pressure Fitting Assembly
DTC0033A	Power Lead Extension
DTC0035A	AIRBAG Load Unit (part 2) - (optional)
DTC0036A	Probe kit
DTC0041A	A/B LOAD FREE
DTC0042A	A/B LOAD Cell (optional)
DTC0051A	Transfer Box BOB
DTC0057A	J1962 A/B (Dongle)
DTC0059A	Airbag Lead (Dongle) - (optional)
DTC0061A	J1962 (Blue)
DTC0062B	J1962 (Green)
DTC0063A	J1962 (Black)
DTC0064A	J1962 (Grey)
DTC0066A	Loop Back Adapter
MS1629GRY	Small Cabinet
MS1630GRY	Large Cabinet

T4 LAPTOP PC COMPONENTS

Laptop PC (Front View) - General

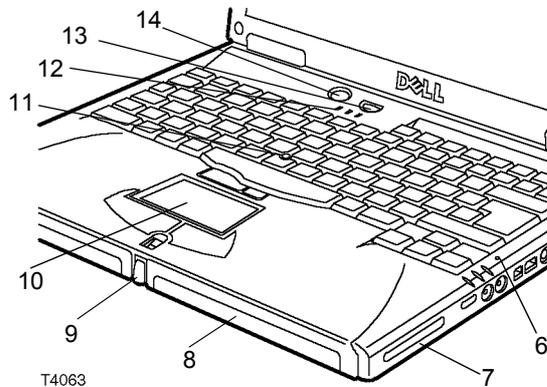
The following illustrations show the location of various components that may be used on the T4 laptop PC:



- 1. Display screen latch
- 2. TFT LCD Display Screen
- 3. Air outlet
- 4. Battery Bay
- 5. Keyboard

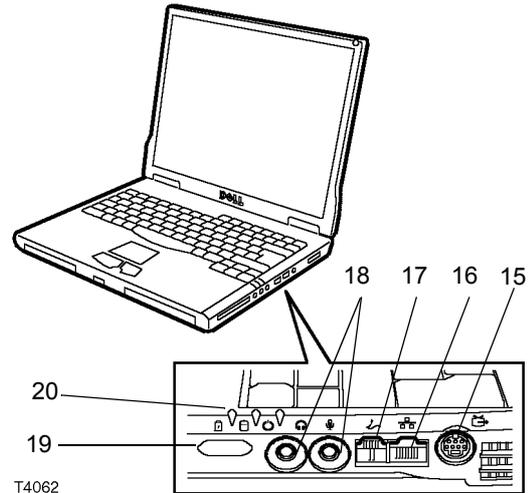


CAUTION: It is important to ensure the Air outlet is not blocked in order to prevent the laptop PC overheating.



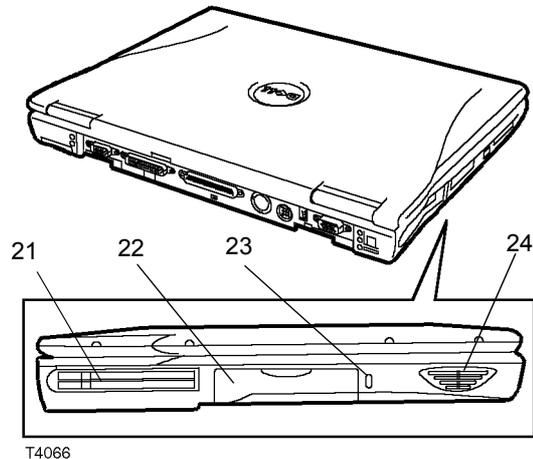
- 6. Microphone
- 7. Speaker
- 8. Modular Bay (CD-ROM drive / 1.44 MB, 3.5" floppy disk drive)
- 9. Display latch button
- 10. Touch Pad
- 11. Track stick
- 12. Keyboard status lights
- 13. Information key (NOT used with T4 diagnostic system; also known as Dell AccessDirect™ key)
- 14. ON / OFF Power button

Laptop PC (Right Hand Side)



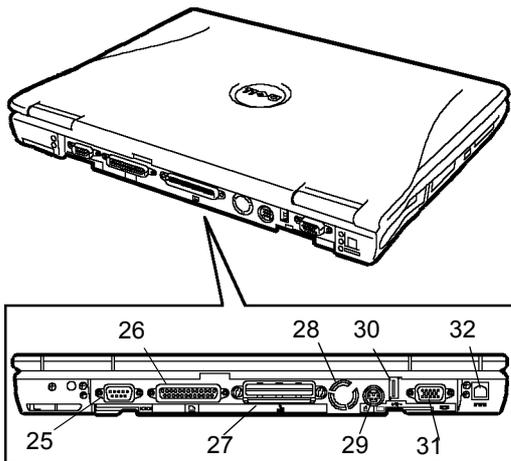
- 15. S-video connector (not used in normal T4 diagnostics set up)
- 16. LAN network connector
- 17. Modem connector
- 18. Audio jacks (2 off) - not used on T4
- 19. Infra red ports - not used on T4
- 20. System status lights

Laptop PC (Left Hand Side)



- 21. PC card slots (2 off) - not used on T4
- 22. Hard disk drive
- 23. Security cable slot for Kensington Lock
- 24. Speaker

Laptop PC (Rear View)

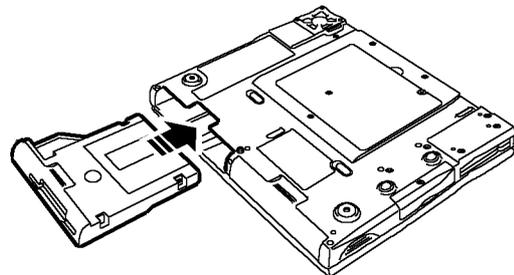
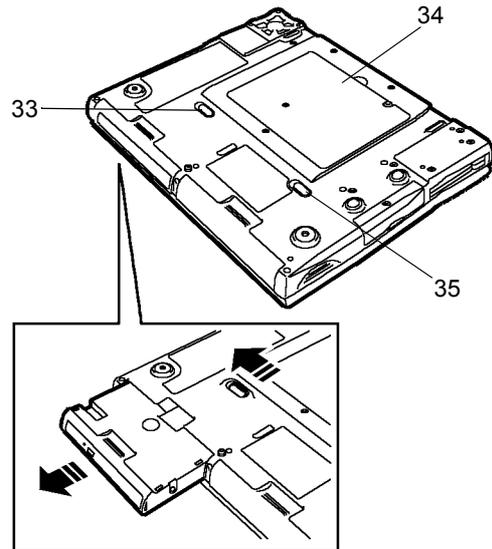


T4065

- 25. Serial port
- 26. Parallel port
- 27. Docking connector
- 28. Cooling fan
- 29. PS/2 Connector
- 30. USB Connector
- 31. Video connector
- 32. AC power supply adapter connector

CAUTION: It is important to ensure the air inlet for the cooling fan is not blocked in order to prevent the laptop PC overheating.

Laptop PC (Bottom View)



T4067

- 33. Module release latch for CD-ROM drive / 1.44 MB, 3.5" floppy disk drive
- 34. Memory module and mini-PCI cover
- 35. Module release latch for battery pack

T4 HAND HELD TESTER COMPONENTS

The T4 Hand Held Tester is a diagnostic tool that provides a quick and accurate means of displaying diagnostic information. It is programmed with the T4 laptop PC and with software provided on CD-ROMs.

It is recommended that a first time user reads through these instructions and becomes familiar with their layout and content prior to commencing any testing on a vehicle.

General Care and Cleaning

In order to maintain the condition and serviceability of this diagnostic tool it is advisable to follow the cleaning procedures below:



CAUTION: Do not use solvents such as petroleum based cleaning agents, acetone, petrol, trichlorethylene etc.

These types of harsh solvent may seriously damage the plastic casing. Do not spray or pour cleaners directly on to the unit. Always spray or pour the cleaner onto a cleaning cloth.



CAUTION: The T4 Hand Held Tester is not waterproof. Always dry the unit thoroughly after cleaning or if it has been subject to accidental spillage.

It is recommended that you periodically inspect and clean the following parts of the T4 Hand Held Tester:

- The case
- The display screen
- The key pad
- Adapter cables and connectors

General Cleaning:

This should be carried out using a mild detergent solution. Always apply it first to a clean soft cloth that has been suitably dampened, before using it on the T4 Hand Held Tester or any of its cables or connectors.

Display Screen:

During normal everyday use the display screen may become dusty or covered in grime. To clean the screen, always use a clean, soft, antistatic cloth. If any stubborn stains or marks remain, use a non abrasive glass cleaner applied to a clean soft cloth. Gently wipe the cloth across the display area until the marks have been removed.

Safety Precautions

The following guidelines are intended to ensure safety of the operator whilst preventing damage to the electrical and electronic components fitted to the vehicle.

Equipment - prior to commencing any test procedure on the vehicle, ensure that the tester, its harnesses and connectors are in good condition.

Polarity - always observe the correct polarity when connecting the tester to the vehicle battery.

Before carrying out testing on a vehicle, the following procedure should always be observed:

- Check that the handbrake is on.
- Check that neutral or park is selected.
- Keep test equipment and harnesses away from HT leads.
- Be aware of moving engine parts.
- Do not run the engine in a confined space without adequate ventilation.

T4 HAND HELD TESTER OPERATION

Display screen

The T4 Hand Held Tester display screen is a backlit LCD display with four rows of twenty characters.

Key pad

The table below details the T4 Hand Held Tester key pad and its functionality with respect to the display and program operation.

 **NOTE: Each key of the T4 Hand Held Tester may have several functions, depending on the diagnostic procedure being implemented.**

Key pad	Display	Function
✓	✓	Go forward through the program / Continue / Yes
✗	✗	Go back through the program / Escape / No
▲	↑	Scroll up through menus / Text
▼	↓	Scroll down through text menus / Text
◀▶	← →	Scroll left & right
!	!	Help
-	?	Press any key - function as above



25-way "D" Type Diagnostic Connector socket

Connection to the vehicle is made through this connector. Refer to system specific instruction to determine which vehicle harness is to be used. Use the fixing screws on the harness "D" type connector to secure the harness to the T4 Hand Held Tester to prevent accidental disconnection of the tester during operation.

8-way Mini-DIN Connector socket

This interface port is for connection to an optional printer.

Power socket

The T4 Hand Held Tester normally obtains its power from the vehicle via the diagnostic interface harness but during unit reprogramming which may be done away from the vehicle the printer power supply with connector adapter is to be used through this socket.

Network port

The large slot in the base of the unit is for connection to the T4 Hand Held Tester Diagnostic Port for down loading of applications.

EOBD J1962 (16 pin) Connector Harness

The T4 Hand Held Tester only requires the J1962 connector harness for EOBD compliant vehicles. If non-EOBD related systems are to be tested, the appropriate harness will be supplied with the application software.

T4 Hand Held Tester Reprogramming

To reprogram the T4 Hand Held Tester refer to the instructions supplied with the software updates.

HARDWARE & INSTALLATION

T4 SPECIFICATIONS

The T4 diagnostic system utilises a Laptop style computer. The main system processor for the T4 laptop PC is a Pentium III, 700 MHz microprocessor with 128 MB of system RAM. The processor also features Speedstep™ technology which enables the user the option of choosing between two processor performance modes:

- 700 MHz when the laptop is connected to the main AC power supply to provide high performance processing.
- 550 MHz when the laptop PC is operating using its internal battery. This allows a better balance between processor performance and extended battery life.

Internal memory is expandible to 512 MB using 100 MHz SDRAM and 2 memory sockets on the system board.

The internal 10 GB hard disk supports the operating system, applications and data. The 24X/10X variable CD-ROM drive allows the dealership technician to upgrade the software.

There is an external AC to DC power supply, and an internal DC to DC power converter system. T4 contains an internal rechargeable Lithium-Ion (8 cell) battery which allows it to operate away from the main AC power supply for short periods of time. The battery has an ExpressCharge™ feature which enables battery recharge in about an hour.

Interface

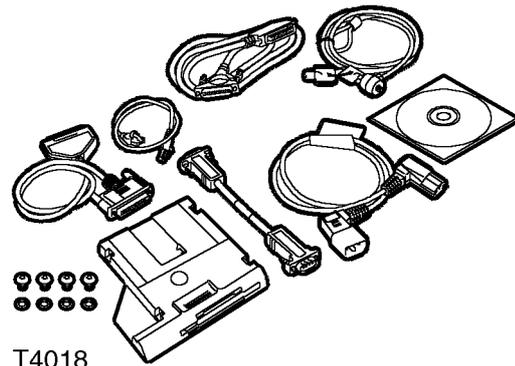
The T4 user interface includes a TFT LCD display, Touchpad, TrackStick™, audio transducer, keypad and LED indicators for power and self-test.

T4's laptop PC display is a colour TFT LCD panel with the following specifications:

- 14.1" XGA screen with a resolution of 1024 x 768 pixels, 4.2 billion colours.
- Display modes including graphic as well as text modes.
- Screen brightness and contrast control via the keypad.

The video controller is an ATI Mobility RAGE 128, with 128 bit hardware accelerated 2 x AGP and 8 MB SGRAM integrated video memory.

T4 Laptop PC Accessories



T4018

The T4 PC is supplied with a number of accessories including a 1.44 MB, 3.5" removable floppy disk drive and a range of interface cables. Refer to the packing labels and the parts code list earlier in this document to check the items included in the kit supplied.

See "Parts Code List" on page 36.

If specific accessories are required which are not included in your kit, please contact the HelpDesk for assistance with obtaining the items to meet your particular requirements.

Volts Ohm Measurement Capabilities

The roving probe connects to a socket on the T4 Diagnostic Port via a high life-cycle Burndy connector. The vehicle connection is made with two probes. All functions are measured with these probes. All mode switching takes place internally. The Roving probe contains an ID resistor to allow for hardware verification of the proper cable connection.

T4 can operate from either 50 or 60Hz, 110-240V AC power supplies. The ranges of accuracy for T4 are listed in the table below:

VOM Specification

Function	Range	Accuracy
DC volts (+ and -)	400 mV - 4V - 40 V	1% of full scale
AC volts - RMS	400 mV - 4V - 40 V	1% of full scale
Resistance	800 Ω	1% of reading or 2 Ω , whichever is greater
Resistance	80 Ω	+ or - 0.2 Ω
Current	1 amp	1% of full scale

Vehicle Communication Serial Interface (VCSI)

The vehicle communication serial interface (VCSI) allows T4 to communicate with specified electronic control units (ECUs) and other devices that follow the ISO 9141 standard. This international standard specifies the requirements for setting up the interchange of digital information between on-board ECUs of road vehicles and diagnostic testers.

The ISO 9141 support consists of three main functional blocks:

- Asynchronous serial receiver/transmitter
- Counters/timers
- ISO 9141 physical interface

The asynchronous serial / transmitter and counter / timer logic are implemented using a field programmable gate array (FPGA). The physical interface is electrically isolated from T4. T4 can achieve a baud rate synchronization from 10 to 10k baud.

Power Sources

The peripheral signals are not isolated. T4 can also be powered from an external AC to DC power supply. This mode is especially useful to recharge the T4 laptop PC internal lithium-ion battery while not in use.

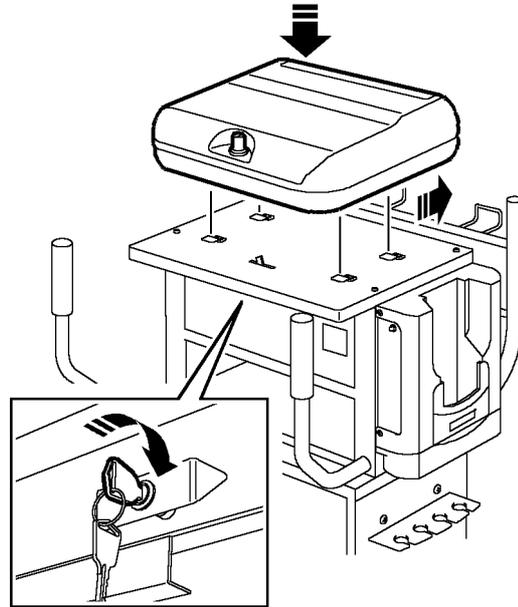
T4 is capable of operating while not connected to the vehicle for a limited time, which will vary depending on the conditions under which the computer and battery are used.

The system clock and configuration RAM on the system board in the T4 laptop PC is battery backed up with a NiCAD (nickel-cadmium) battery.

Mechanical Design

T4

T4 is composed of a laptop computer encased in a purpose-built storage case. The laptop PC comprises the display screen, keyboard, Touchpad, TrackStick™ peripheral output/input ports and speakers.



T4010

The T4 laptop PC is attached to the trolley by locating onto four fixed lugs on the trolley plinth and sliding into its fixed position; the laptop PC case is then locked into place using the integral lock on the front of the trolley cabinet.

The laptop PC is secured to the inside of the laptop PC case using two adjustable brackets. When the laptop PC case is closed, the laptop PC case can be locked for security using the camlock in the laptop PC case lid.

For additional security a Kensington lock can also be fitted which will secure the laptop PC and laptop PC case to the trolley cabinet plinth.

PHYSICAL SPECIFICATIONS

Dimensions and Weight

Laptop:	Height Width Length	1.52" (38.7 mm) 12.58" (319.5 mm) 9.98" (253.6 mm)
Laptop PC Case:	Height Width Length	4.5" (115 mm) 15.7" (400 mm) 14.6" (370 mm)

The T4 laptop PC weighs approximately 6.0 lbs (2.7 kg) with an 8-cell lithium ion battery and a CD-ROM drive installed in the modular bay.



NOTE: The actual weight of the laptop PC will be dependent on the type of modules fitted to a particular unit.

Laptop PC Display

Dimensions	Height Width Diagonal	8.4" (214.3 mm) 11.3" (285.7 mm) 14.1" (357.1 mm)
Maximum resolution / colours	XGA SXGA+	1024 x 768/32-bit 1400 x 1050/32-bit

Laptop PC Battery

Type	Standard Optional	8-cell lithium ion 4-cell lithium ion
Dimensions	Height Width Diagonal	0.83" (21.5 mm) 3.48" (88.5 mm) 5.47" (139.0 mm)
Weight	8-cell 4-cell	0.39 kg (0.87 lb) 0.22 kg (0.49 lb)
Voltage		14.8 VDC
Capacity	8-cell 4-cell	53.0 WH 28.5 WH
Charge time (approx.)	PC ON PC OFF	2.5 hours 1 hour
Battery Life	8-cell 4-cell	3 hours min. 1-2 hours min.

Laptop PC Power Supply Adapter

Input voltage	90 to 135 VAC and 164 to 254 VAC
Input current (maximum)	1.5 A
Input frequency	47 to 63 Hz
Output current	4.5 A (maximum 4-sec pulse) 3.51A (continuous)
Rated output voltage	20.0 VDC

Connectors

An Input/Output connector area is provided on the T4 laptop PC and on the T4 Hand Held Tester Diagnostic Port. All connectors follow industry standards

ENVIRONMENTAL SPECIFICATIONS

Conditions		Specifications
Temperature	Operating: Storage:	0° - 35° C (32° - 95° F) -40° - 65° C (-40° - 149° F)
Relative Humidity (maximum)	Operating: Storage:	10% to 90% (noncondensing) 5% to 95% (noncondensing)
Maximum Vibration	Operating: Storage:	0.9 GRMS 2.41 GRMS
Maximum Shock	Operating: Storage:	152.4 cm/s (60.0 in./sec) equal to half-sine pulse width of 2 ms 203.2 cm/s (80 in./sec) equal to a half-sine pulse width of 2 ms
Altitude (Maximum)	Operating: Storage:	-15.2 m to 3048 m (-50 to 10,000 ft.) -15.2 m to 10,668 m (-50 to 35,000 ft.)

PROTECTING YOUR T4

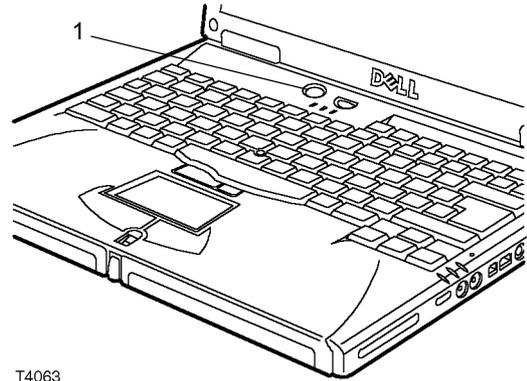
T4 needs to be protected from the following workshop hazards:

- **Avoid extremes of temperature** - the safe ambient temperature range is 0° to 35° C. When T4 is not in use, the acceptable storage temperature range is from -10° to 60° C.
- **Ensure adequate ventilation** - there should always be adequate ventilation around the T4 - do not operate it within any kind of enclosing container other than the laptop PC case with the lid raised. Do not leave T4 inside a vehicle or in a hot or humid environment (e.g. near a radiator or oven dryer).
- **T4 is not waterproof** - avoid spillages, keep the T4 laptop PC, T4 Hand Held Tester and T4 Hand Held Tester Diagnostic Port dry and clean.
- **Avoid exposing T4 to direct sunlight** - sunlight may cause fading of the laptop PC and/or T4 Hand Held Tester display screen.
- **Avoid magnetic interference** - keep T4 away from strong magnetic fields such as heavy electrical workshop equipment (e.g. large electric motors, generators, electrical welding equipment etc.)
- **Avoid particulate contamination** - don't let dust from grinding or resurfacing equipment get on or into the T4 components, especially the laptop PC, T4 Hand Held Tester and T4 Hand Held Tester Diagnostic Port.
- **Avoid chemical contamination** - keep T4 away from sources of chemical contamination such as paint booths, electroplating or degreasing plant, and avoid conditions of excessive moisture.
- **Avoid screen impacts** - The T4 laptop PC screen is a TFT liquid crystal display, sustained pressure or heavy impacts on the screen could cause permanent damage to the display.

CLEANING T4

It is important to clean T4's laptop PC touch pad and display screen periodically, to maintain proper operation. The best time for this is when the T4 laptop PC is turned off.

 **CAUTION: Never spray or pour any type of cleaning fluid directly onto any part of the T4 laptop PC. Use a soft, clean, lint-free cloth to apply a small amount of cleaning fluid. For particularly stubborn stains, use a small amount of glass cleaner.**



T4063

1. Shut off the power to T4 by pressing the power button and unplugging the power cord from its power source.
2. Inspect the T4 cables, connectors and power cord for any damage or corrosion. If damaged, replace them immediately.
3. Inspect the display window, cable assemblies and connectors for any contaminants.

 **CAUTION: Do not use chlorinated solvents to clean any parts of the T4.**

 **NOTE: Although the T4 is moisture resistant, it is not moisture proof. Ensure the T4 is completely dry before switching it on.**

HARDWARE & INSTALLATION

Cleaning the T4 laptop PC case

Wipe the laptop PC case clean using a soft cloth and mild detergent or hand soap.



CAUTION: Avoid using petroleum based solvents such as acetone, benzene or trichlorethylene, these type of solvents contain chemicals that can etch and destroy plastic surfaces.

Cleaning the T4 Laptop PC Display Window

The display window collects grime during normal use.

Wipe the screen with a soft, clean, lint-free, anti-static cloth. Use a non-abrasive plastic cleaner and a soft cloth to wipe the display area. Place a small amount of plastic cleaner on a soft cloth and wipe clean.



CAUTION: Avoid using petroleum based solvents such as acetone, benzene or trichlorethylene, these type of solvents contain chemicals that can etch and destroy plastic surfaces.

Cleaning the Touch Pad

To clean the touchpad, use a soft cloth dampened with ethyl or isopropyl alcohol. Wipe the surface gently.

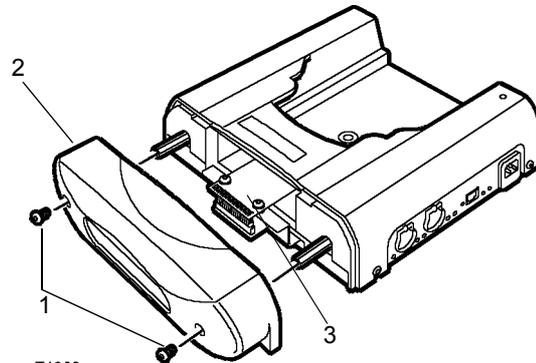
Cleaning the T4 Hand Held Tester

The display window of the T4 Hand Held Tester collects grime during normal use.

Wipe the screen with a soft, clean, lint-free, anti-static cloth. Use a non-abrasive plastic cleaner and a soft cloth to wipe the display area. Place a small amount of plastic cleaner on a soft cloth and wipe clean.

Cleaning the T4 Hand Held Tester Diagnostic Port

Debris may collect in the bottom of the T4 Hand Held Tester's Diagnostic Port over a period of time.



1. To remove the debris, remove two screws from the bottom of the T4 Hand Held Tester's Diagnostic Port.
2. Remove the base of the Diagnostic Port and wipe the insides with a damp cloth. Wipe dry with a soft dry cloth.
3. Clean the Diagnostic Port to T4 Hand Held Tester interface printed circuit board (PCB) with a soft dry cloth.



CAUTION: Treat the PCB with extreme care, it is very fragile and could break or cause later malfunction if subjected to undue stress. Only clean if absolutely necessary.



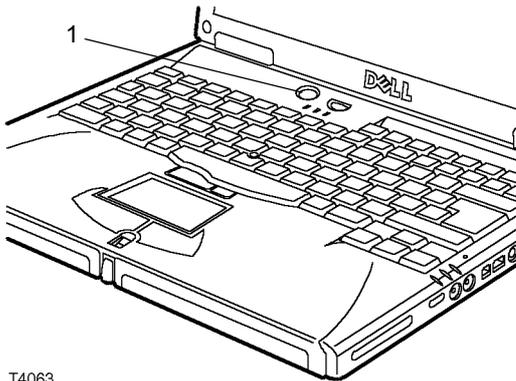
CAUTION: Avoid using petroleum based solvents such as acetone, benzene or trichlorethylene, these type of solvents contain chemicals that can etch and destroy plastic surfaces.

POWERING T4

T4 is normally powered from a main AC power supply point. T4 contains its own power supply transformer to convert the main AC power supply to the correct voltage levels.

When T4 is powered from the AC power supply, a green indicator light emitting diode (LED) is illuminated on the front panel of the laptop PC and on the front of the T4 Hand Held Tester diagnostic port to indicate that T4 is operating using “External Power”.

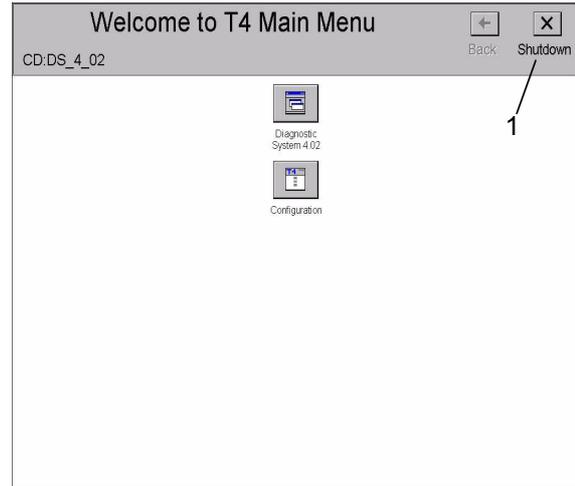
The T4 laptop PC also contains an internal lithium-ion battery that prevents the unit from shutting off for short periods of time when you need to disconnect it from the external power supply. When T4 is powered from its internal battery supply, an amber LED is illuminated on the front panel of the laptop PC and on the front edge of the T4 Hand Held Tester Diagnostic Port to indicate that the T4 is operating using “Internal Power”.



T4063

1. To switch T4 ON, press the “ON/OFF” button on the front panel, which is located beneath the display screen

To Turn T4 OFF:



1. **IMPORTANT:** To turn T4 OFF, first return to the “Welcome Screen”, then select the “Shutdown” button.

T4 will shutdown automatically after the “shutdown” button is pressed.

CAUTION: To avoid the risk of corrupting T4 data files, always follow the recommended shutdown procedure.

If the T4 laptop PC is to be moved at any time, eject the CD from the CD-ROM drive before switching off T4.

HARDWARE & INSTALLATION

INTERNAL POWER (T4 Laptop PC)

T4's laptop PC contains an internal Lithium-ion battery to maintain a power supply for brief periods when T4 is disconnected from the AC power supply. The internal battery is located in a module bay at the front left hand side of the laptop PC.

See "Laptop PC (Left Hand Side)" on page 37.

NOTE: The internal battery is only intended to provide power for relatively short periods.

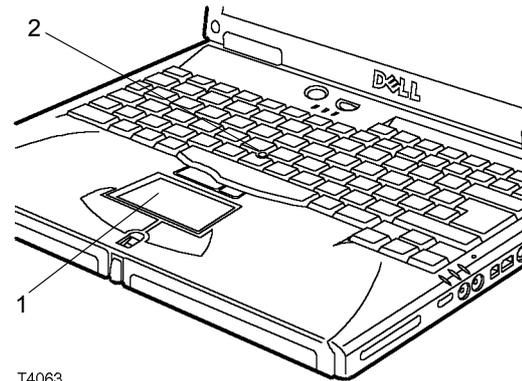
When using battery power, the power indication on the front of T4 changes from the green LED adjacent to the plug symbol, to the amber LED adjacent to the battery symbol.

The amber light will begin to flash when the battery power supply is low. In this condition, if T4 is not plugged back into an external power supply within a short period of time, it will automatically switch off.

NOTE: The internal lithium-ion battery in T4's laptop PC recharges whenever T4 is plugged into an external power supply - even when T4 is not switched on.

NOTE: When the T4 laptop PC's internal battery is discharged, it will require a period of at least two hours connection to the AC power supply for full recharging. If T4 is operating using its internal power supply and the amber LED has already started flashing, this indicates that the battery is almost completely discharged. If T4 is connected to a power supply for only a short period of time after the amber light has been allowed to flash, the battery will not have recharged sufficiently to power T4 for a significant period of time.

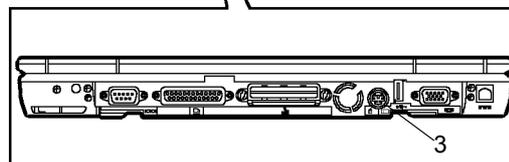
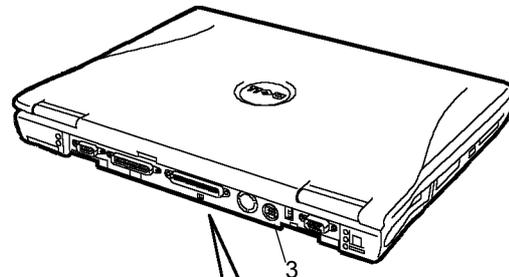
USING THE TOUCH PAD



T4063

1. T4 has been designed for ease of use. Instead of an external keyboard or mouse, T4 uses a Touch Pad built into the centre of the laptop's keyboard.
2. An alternative means for moving a cursor around the laptop PC's display screen include a TrackStick™ which is located near the centre of the laptop PC's keyboard.

NOTE: TestBook™ used a touch sensitive screen. Do not attempt to select options by pressing the screen of the T4 laptop PC. The T4 laptop PC uses a TFT liquid crystal display screen; this could be damaged or contaminated by pressing heavily on the display screen.



T4065

3. If preferred, a tracker ball or other standard PS/2 compatible pointing device such as a mouse can be used by connecting it to the mini-DIN PS/2 connector on the back of the laptop PC.

NOTE: Call your local HelpDesk for assistance with obtaining a suitable external pointing device.

COMPACT DISCS (CDs)

Using Compact Discs

T4 uses vehicle repair information, which is supplied on Compact Discs (CDs).

The T4 laptop PC must be resting on a flat stable surface when operational.

Always remove the CD from the disc drive before moving the T4 laptop PC long distances. This is achieved by pressing the “eject” button on the CD drive when the Welcome Screen is shown on the T4 laptop PC display.

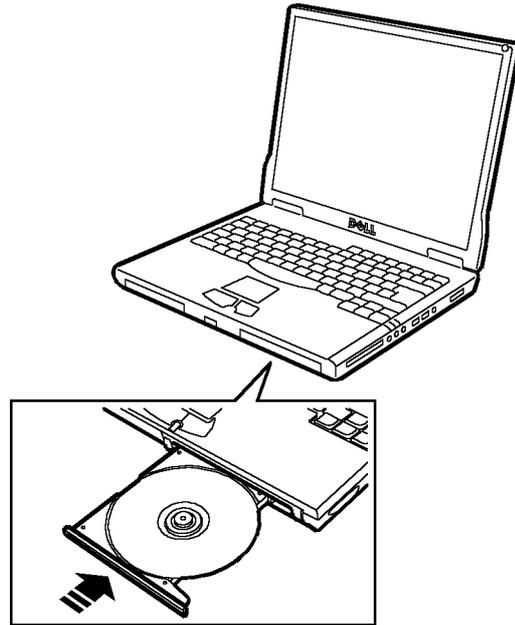
NOTE: T4 must be displaying the Welcome Screen before the eject button on the CD drive will eject the CD. The eject button will not operate at any other screen, nor will it eject with T4 switched off.

Always store CDs not in their protective case to keep them clean.

CDs must be kept away from heat. High temperatures can damage them.

NOTE: Handle Compact Discs by their edges only! If the bottom side of the disc is contaminated (e.g. with fingerprints), it will require careful cleaning before it will be able to be used. See “CD CLEANING PROCEDURE” on page 52.

Playing a Compact Disc



T4064

1. Press the eject button on the front of the CD-ROM drive, or press <Fn><F10> on the laptop keyboard.
2. When the tray of the CD-ROM is fully out, place the Compact Disc into the tray with the label side of the CD uppermost.

CAUTION: Ensure the CD is seated correctly on the spindle of the tray by pressing down on the disc until it clicks into place. If the disc is not seated correctly, the CD-ROM drive or the CD itself could be damaged.

CAUTION: Never use a warped or damaged Compact Disc.

3. Gently push in the tray. When the CD-ROM drive is active, the drive access light on the PC's front panel will blink.

HARDWARE & INSTALLATION

CD Cleaning Procedure

If the bottom side of a CD should become soiled by fingerprints, dirt or dust, the following cleaning procedure will be necessary.



CAUTION: Never use any type of solvent or cleaner on a CD.

1. If the CD is currently in the T4 CD-ROM drive, press the eject button and remove the CD, holding it by the edges. This requires T4 to be at the Welcome Screen.
2. If the CD is not in the CD-ROM drive, remove it from its case and hold it by the edges only.
3. Wipe the surface of the CD using a clean, dry, lint-free cloth. Only wipe the CD in straight lines, moving from the centre to the edge of the disc.
4. Return the cleaned CD to a protective case or back into the CD-ROM drive. Do not leave CDs exposed.



CAUTION: Store discs in their cases, keep them in a cool dry place. Extreme temperatures may damage Compact Discs.

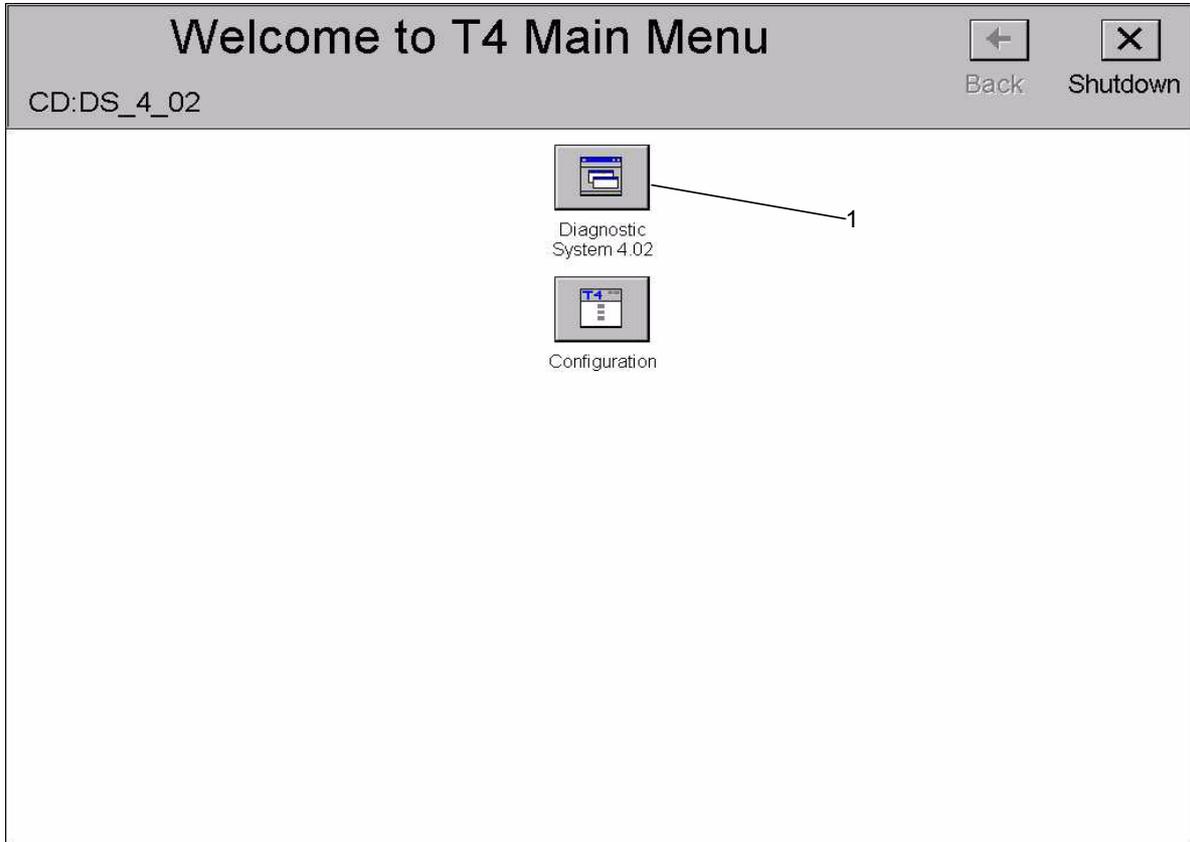


CAUTION: Do not bend or drop a disc or place objects on top of a CD.

BEGINNING WORK WITH T4

Turning ON T4

When T4 is switched ON, a number of self-test and set-up screens will be automatically displayed on the screen.



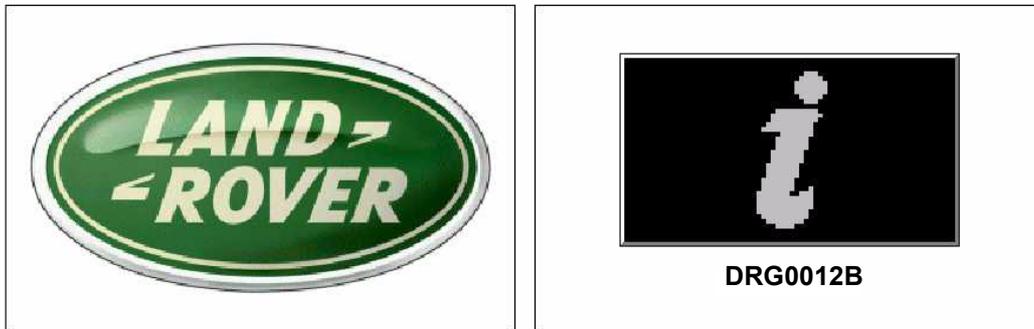
The first T4 screen you can use is the “Welcome to T4 Main Menu” screen.

1. Select the Diagnostic System key to proceed.



NOTE: DO NOT select the configuration button on the “Welcome to T4 Main Menu” screen unless specifically instructed to do so by the HelpDesk. Do not confuse this button with the configuration button on the Diagnostic System Control Panel, they have entirely different functions.

SWEL0000	Diagnostic System 24 April 2001	4.02
----------	------------------------------------	------



The next screen displays the four key T4 function buttons and the Control Panel at the bottom of the screen containing a number of smaller buttons.



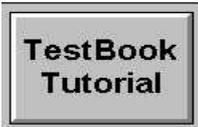
NOTE: Some function buttons may be faded out and therefore cannot be selected at this stage.

The four key **function** or **mode** buttons are:

TECHNICAL INFORMATION		Provides service repair documents. To activate this function, the relevant Technical Information “RAVE” CD for the vehicle being repaired or tested must be installed in the T4 CD-ROM drive. When a diagnostic CD is loaded in the CD-ROM drive, this button will be faded out.
DIAGNOSTIC SYSTEM		T4 provides a range of diagnostic routines to guide you to a technical solution. Vehicle diagnostics CD must be loaded into the CD drive to activate this function.
TOOLBOX		The Toolbox provides various measurement and analysis tools for measuring vehicle parameters (e.g. engine analyser and volt / ohm meters).
EXPERT TOOLBOX		Used to access the expert toolbox system for vehicle diagnostics.



The **Control Panel** buttons at the bottom of the Welcome Screen are as follows:

Exit		Used to return to the "Welcome to T4 Main Menu".
Integrity Test		If there appears to be a problem with T4, this feature performs tests on some of T4's hardware and software to make sure it is operating correctly.
TestBook Tutorial		Not currently active.
Help		Provides Help screens to support the user with information about the various display meanings and vehicle diagnostics.
Help Desk		Automatically prints a copy of the Help Desk Information sheet, with some fields already completed.
Configuration		Allows T4 to be customised with the end-user's personal preferences and dealership information. Also allows additional hardware and software to be installed and configured such as new versions of RDS software.

Configuration

SWEL0000	Diagnostic System 24 April 2001	4.02
----------	------------------------------------	------



Technical Information	Diagnostic System	Toolbox	Expert Toolbox
-----------------------	-------------------	---------	----------------

Exit	Integrity Test		TestBook Tutorial	Help		Help Desk	Configuration
------	----------------	--	-------------------	------	--	-----------	---------------

- At the "Welcome to T4 Main Menu", select the "Configuration" key to proceed.

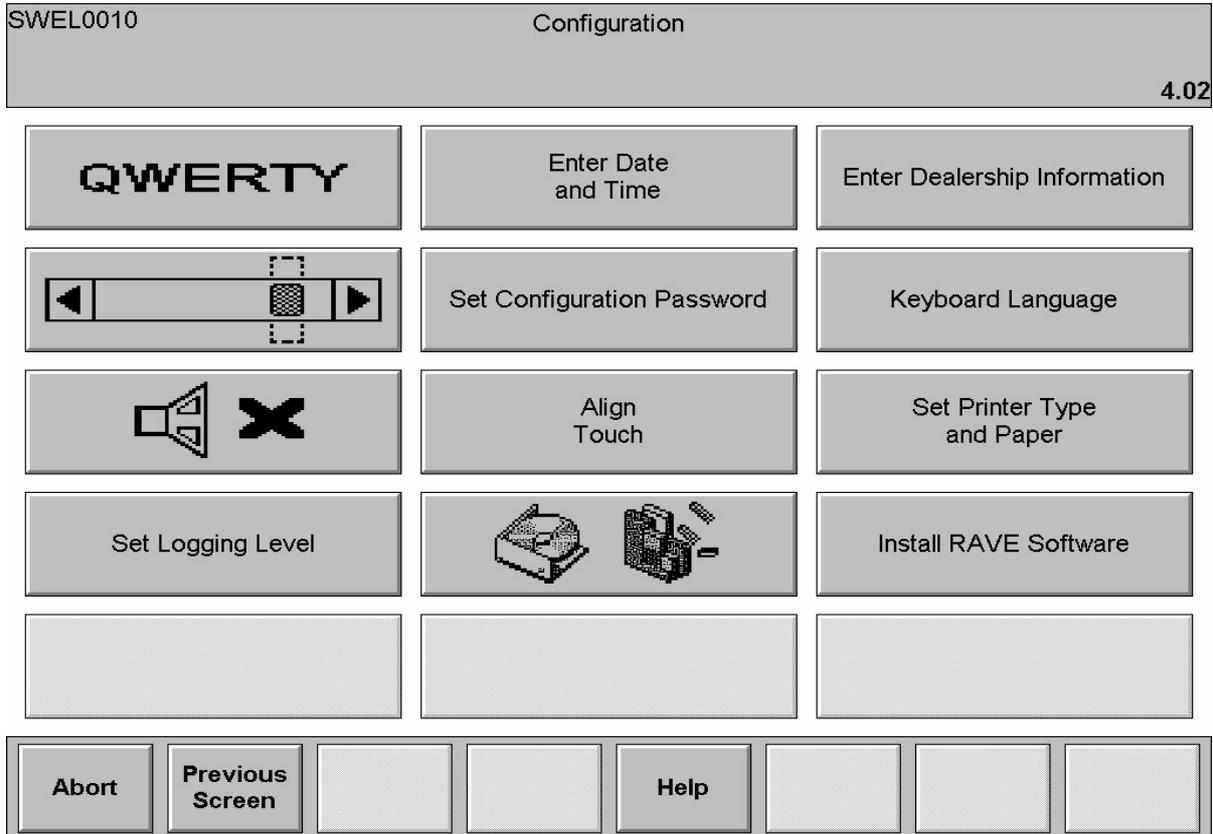
SWEL0000	Diagnostic System	4.02									
Enter Current Configuration Password											
2 <input type="text"/>											
! 1	@ 2	# 3	\$ 4	% 5	^ 6	& 7	* 8	(9) 0	←	
Q	W	E	R	T	Y	U	I	O	P	\	
A	S	D	F	G	H	J	K	L	:	" ' ;	
Z	X	C	V	B	N	M	< ,	> .	? /	+ -	
						Del	↑	↓	←	→	Shift
		Previous Screen							3 Continue		

- The "Enter Current Configuration Password" Screen will be displayed; enter the Current Configuration Password (if applicable).
- Select the "Continue" button.

4. The Configuration screen will be displayed as shown below:



NOTE: the faded buttons are in-active and have been reserved for future applications.



COLUMN 1

Column 1 buttons from the Configuration screen are described in the following table:

QWERTY		Select this option to change between a conventional (QWERTY) keyboard or a keyboard based on alphabetical order. The keyboard will be automatically displayed whenever T4 requires an input, such as a VIN code entry.
SIZE		Not applicable on T4
SOUND		Enables the sound to be switched ON or OFF; a cross appears next to the speaker icon when the sound is switched OFF and a tick appears next to the speaker icon when the sound is switched ON - Not used on T4
SET LOGGING LEVEL		Use to enable the data logging feature. T4 activities can be recorded at different levels of detail. The pre-set value for this is "minimum" to prevent T4's memory from being overloaded, and consequently slowing down the operation performance times.

COLUMN 2

Column 2 buttons from the Configuration screen are described in the following table:

Enter Date and Time		Used to set the correct date and local time.  CAUTION: Do not make adjustments without first consulting the Help Desk.
Set Configuration Password		Provides an option to install security codes to prevent unauthorised re-setting of T4 configurations.
Align Touch		Not used on T4
Hard Disk Scan		Used to Scan and/or defrag the Hard Disk.

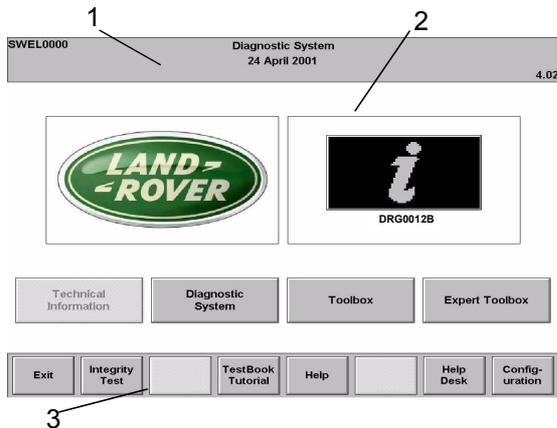
COLUMN 3

Column 3 buttons from the Configuration screen are described in the following table:

Enter Dealership Information		<p>A facility for entering the dealership information into the T4 memory. Selection of this option invokes six empty fields numbered from one to six, which relate to the following boxes on the Help Desk Information Sheet:</p> <ul style="list-style-type: none">• Dealer Name• Corporate ID• Telephone Number• Fax Number• Contact 1• T4 Serial / Model Number <p>This information is used when T4 automatically prints a HelpDesk form.</p>
Keyboard Language		<p>Used to set the language version.</p>
Set Printer Type and Paper		<p>Do not adjust these settings unless changing a printer and/or instructed to do so by HelpDesk.</p>
Install RAVE Software		<p>Not currently used on T4. Note: T4 will automatically detect when a RAVE CD is loaded in the CD-ROM drive.</p>

SCREEN FORMAT

Most screens displayed on the T4 display screen have three main sections:



1. TITLE AREA (top band)
2. VIEW AREA (middle band)
3. CONTROL PANEL (bottom band)

TITLE AREA - this is the top portion of the screen, and includes the *Screen Number* displayed in the top left-hand corner, and the *Screen Title* displayed in the top middle of the display screen. The software version number is displayed in the bottom right corner.

 **NOTE: Screen Numbers are needed to identify screens if you have to call the Help Desk.**

VIEW AREA - is the middle portion of the screen, where the technical information and other documents are displayed.

CONTROL PANEL - is the bottom part of the display screen and contains up to eight option buttons. The fifth button from the left is always the "HELP" button. Selecting HELP at any time provides an on-line description of the current screen. If there is no special information available for a particular screen, a standard RDS help message will appear on the display screen.

HOW TO VIEW PICTURES

Some documents include pictures or illustrations, sometimes on the same screen as text. If the picture is too large to fit on the screen along with the text, a "camera" icon will appear instead of the picture. In this case, if you select the camera icon, the T4 will then display a special picture viewing screen so that the picture is displayed on its own

Then select the area of the picture which you want to see close-up.

 **NOTE: You can only "zoom" once.**

Picture Options

The option buttons available when viewing a picture are explained in the following table:

PREVIOUS SCREEN	Returns to the document being viewed before the picture was selected.
PRINT	Selecting this option button prints the portion of the picture displayed on the screen, when a suitable printer is connected to T4.
DETAILS	When active, this option allows documents related to the topic currently being viewed to be referenced. If there are no related documents, the button will be shaded grey to indicate it is inactive. If the "DETAILS" button is selected when it is active, a Pop-Up Window will appear on the screen, showing a list of related documents. Use the scroll up and scroll down arrow buttons to select a related document from the Pop-Up Window, then select the " CONTINUE " button to view the highlighted document. Alternatively, select the " CANCEL " button to return to the picture being viewed previously.

Control Panel Options

The eight Control Panel Buttons displayed when viewing Technical Information documents from the Technical Information CD are as follows:

RETURN	Select this option to return to the “Select Return Destination” menu.
PREVIOUS SCREEN	Select this option to return to the previously displayed screen or document.
CAMERA	Select this button to turn pictures ON and OFF. T4 navigates through the display screens much faster when the images are switched off. To search for a particular image, it is quicker to turn the picture viewer off until the relevant display screen is found, then turn the picture viewer back on to study the image.
PRINT	Select to print the current document. It is possible either to print immediately, in which case a suitable printer must be connected to T4, or the document can be saved for printing later.
HELP	On-line help, providing information about the current screen.
DETAILS	<p>When active, documents related to the currently displayed topic can be viewed. When selected, a Pop-Up window showing a list of related documents appears. Use the scroll up and scroll down arrow buttons to select a related document from the Pop-Up Window, then select the “CONTINUE” button to view the highlighted document. Alternatively, select the “CANCEL” button to return to the picture being viewed previously. If the option button is faded grey, it is in-active and signifies that there are no related documents available.</p> <p> NOTE: Pop-up windows disable the functionality of the rest of the display screen until a selection is made from the Pop-Up list.</p>
PREVIOUS PAGE	An alternative to the up arrow on the side of the display screen. Selection of this option will cause the document to be scrolled backwards by a single page (one page is equal to the size of the View area).
NEXT PAGE	An alternative to the down arrow on the side of the display screen. Selection of this option will cause the document to be scrolled forwards by a single page (one page is equal to the size of the View area).

In addition to the above Control Panel buttons, there are a number of “**HOT LINKS**” within the document which can be selected to move to an area providing related information. Any text or graphic with a shaded box around it signifies a “**HOT LINK**”.

RETURN DESTINATION MENU

This screen is displayed when the “Return” button is selected on the Technical Information Control Panel. The “Return Destination Menu” provides a menu for quick access to further T4 functions. The buttons on this screen are described as follows:

Welcome

Returns to the “Welcome Screen”.

Model Selection

Provides a menu of models so that Technical Information for a particular model can be selected.



NOTE: The following options are only available when using a Technical Information disc.

Manual Selection

Provides a menu of available Workshop Manuals, Technical Bulletins and other documents relevant to the vehicle being worked on and available on screen.

Section Selection

Provides a choice of sections within the Manual being referenced on screen.

Category Selection

Provides a menu of available categories within the section of the Manual being referenced on screen.

Title Selection

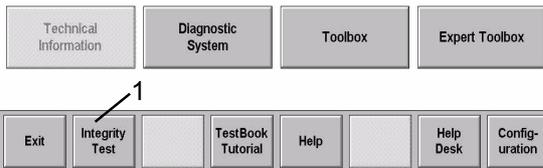
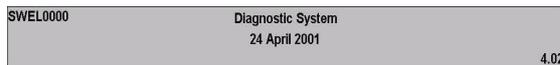
Provides a menu of titles within the category of the section of the Manual being referenced on screen.

INTEGRITY TESTS

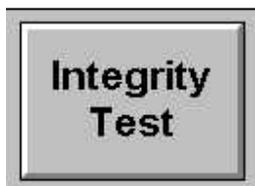
If a problem is suspected with the T4 equipment, the Integrity Tests provide a means for checking whether or not the equipment is functioning correctly.

NOTE: Always perform these tests before calling the help line, to allow T4 to determine if there is an error with the equipment.

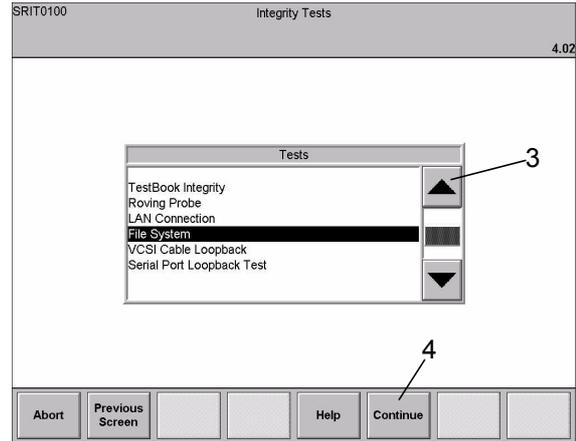
The Integrity Tests can only be selected from the Welcome screen. If there is a problem accessing the Welcome Screen from the current display, turn T4 OFF then back ON again.



1. At the Welcome Screen, the Integrity Test will appear as an option button on the Control Panel.



2. Select the Integrity Test button to view the the following Integrity Test menu:

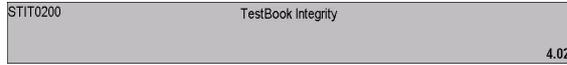


3. Use the up and down scroll arrows at the right hand side to highlight the required Test selection.
4. Select "Continue" from the Control Panel to run the selected test. A new display will be shown (dependent on specific selection) and the selected test will begin automatically.

NOTE: When performing Integrity Tests, it is important to remember that the results obtained can be affected by adverse transient conditions such as extremes of temperature or voltage spikes. Always repeat the tests several times to confirm any test failures.

How to Interpret the Results of the T4 Integrity Tests

A series of diagnostic tests can be performed to check the integrity of the T4 hardware. The test results will be displayed after each test has been completed. The different types of integrity test available are described below:



```
Testing CD Drive .....PASS
Testing LAN Card ..... Not Present
Checking for Parallel Device ..... Off-Line or Not Connected

Test Successful. Touch BLACK or WHITE to Test LCD Display.
```



Testing CD Drive

This test attempts to read from the Compact Disc that is currently loaded in the CD drive.

If the CD can be read successfully, the display screen will show a "PASSED" message.

If the test fails and the CD cannot be read, the message "Fail or No CD Found" will be displayed. A CD read failure could be caused by one of the following conditions:

- There is no CD in the CD drive (press the eject button to make sure).
- The CD has been inserted upside down in the CD drive. Ensure the label side of the CD is face up.
- The CD is dirty or scratched. (see "CD Cleaning Procedure").
- The CD is defective. Try using another CD, if it works, replace the defective CD.
- The drive may be malfunctioning. Check all the above and repeat the test for confirmation that there is a CD drive problem.

Testing LAN Card

For units containing a correctly operating LAN card, the message "Present" will be shown on the completion of the test.

If a LAN card is not included, the message "Not Present" will be shown.



NOTE: The LAN (Local Area Network) facility is intended for potential future developments in dealership systems, and is not currently in use.

Checking for Parallel Device

This test verifies the connection to a printer.

If no printer is connected, a message "Not Connected" will be displayed.

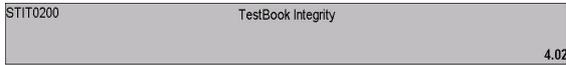
If a printer is connected to T4 which is powered OFF and On-line, the message "Connected" will be displayed.

If a printer is connected to T4 and the message "Off-Line or Not Connected" is displayed, check the following:

- Is the printer On-Line? The indication light on the printer labelled "On-Line" should be lit. If not, press the On-Line button on the printer.
- If the printer does not come on-line, try resetting the printer by turning it OFF then back ON. Select BLACK or WHITE to TEST LCD DISPLAY.
- If an error code appears on the printer, refer to the User's Manual that was supplied with the printer for an explanation of the printer error message.
- Check the cable between T4 and the printer to make sure it is plugged in securely.
- Check the Configuration Module to make sure T4 is set up to use the printer. The Configuration Screen can be accessed by selecting the "Configuration" option button on the "Welcome Screen". See "Set Printer/Paper" in the T4 Configuration section of the on-line details.

Touch **BLACK** or **WHITE** to **TEST LCD DISPLAY**

After the previous tests have been completed, two new buttons will appear on the Control Panel. The new buttons are labelled “BLACK” and “WHITE” and are used to test that the LCD screen is able to display all black or all white.:



```

Testing CD Drive .....PASS
Testing LAN Card ..... Not Present
Checking for Parallel Device ..... Off-Line or Not Connected

Test Successful. Touch BLACK or WHITE to Test LCD Display.
    
```



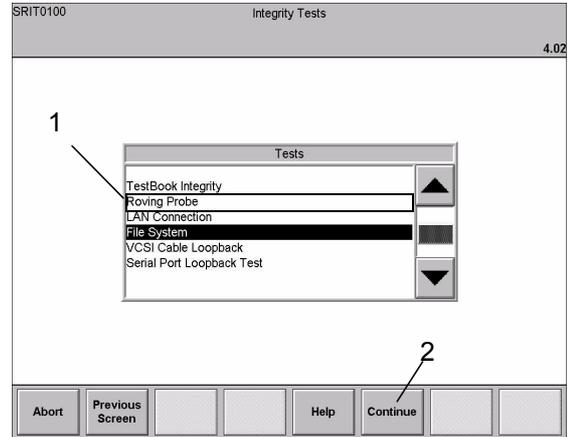
1. When “BLACK” is selected a solid black screen is displayed for a short period.
2. When “WHITE” is selected, a solid white screen is displayed for a short period.

NOTE: If it appears that T4 needs servicing after the above tests have been repeated, contact the T4 Help Desk to verify the problem.

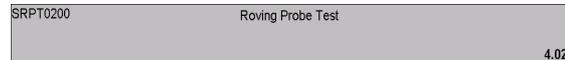
ROVING PROBE TEST

The Roving Probe Test is used to help determine problems associated with the T4 hardware. Perform this test whenever a problem with the Roving Probes is suspected.

Before beginning the Roving Probe Test, ensure the Roving Probes are plugged into the back of T4.



1. Highlight the Roving Probe option on the RDS Integrity Tests screen.
2. Select “Continue”. The Roving Probe Test screen will be displayed and the test will begin automatically.



Touch Roving Probes Together

999.0
VOLTS



How to Interpret the Results of the Roving Probe Test

Two tests will be run to test the Roving Probe hardware. The results of the tests will be shown after each test is completed, described as follows:

<p>Touch Roving Probes Together</p>	<p>This test makes sure that the Roving Probes can complete a closed circuit. Hold the probes together for at least 10 seconds. If either of the probes is open circuit, this will be indicated during the test. Touch the Roving Probes together, the message "PASSED" should be displayed. If there is no response, check the following:</p> <ul style="list-style-type: none"> • Ensure the Roving Probes are securely plugged into the back of T4. • Check the cables for cracks or cuts. • The T4 fuses. If a fuse is blown, replace it with a fuse of the same rating.
<p>Connect Roving Probes to a Battery (1.5 to 12 Volts)</p>	<p>This test verifies that T4 has voltage measurement capability. When a connection is made to a battery rated between 1.5 and 12 Volts, the voltage measurement detected by T4 will appear in a display box in the middle of the screen.</p> <p> CAUTION: Ensure the red probe is connected to the "+ve" battery terminal and the black probe is connected to the "-ve" battery terminal.</p> <p>When the voltage being measured has provided a steady reading for 10 seconds, the test will respond by displaying a "PASSED" message on the T4 screen.</p> <p>If the test battery does not have a charge between 1.5 and 12 Volts, or T4 is unable to read the voltage, a "FAILED" message will be displayed on the screen. Check the following:</p> <ul style="list-style-type: none"> • The Roving Probes are still securely plugged into T4. • The T4 fuses. If a fuse is blown, replace it with a fuse of the same rating. • Check the battery, using another tool to verify the battery charge voltage is between 1.5 and 12 volts.

If it appears that T4 requires servicing, contact the T4 Help Desk to verify the problem.

LAN CONNECTION TEST

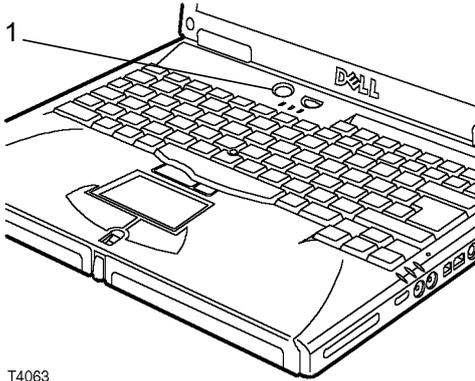
The Local Area Network (LAN) Connection Test is only available for dealerships with the appropriate LAN connection.

FILE SYSTEM

The File System Test checks for the presence of important RDS system files, and checks they are the correct size and date.

Errors can sometimes be corrected by re-installing the RDS software from the RDS CD. If the problem persists after trying the software re-installation, contact the Help Desk for assistance to correct the error.

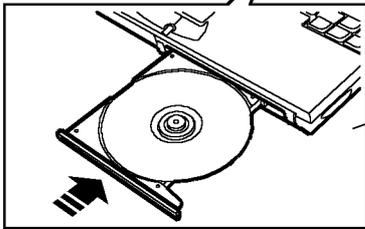
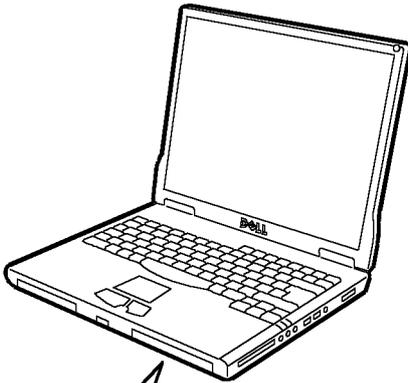
GETTING STARTED



T4063

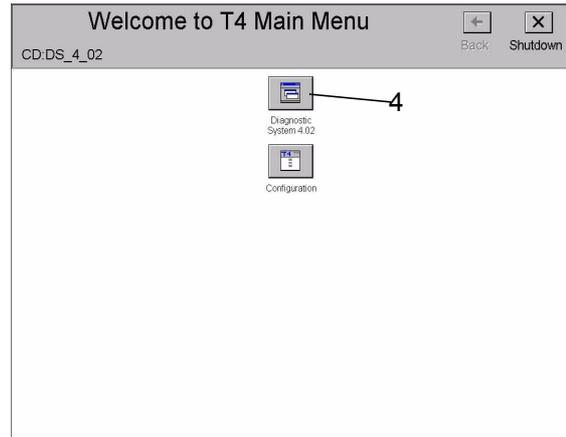
1. Turn on T4, and wait for the Welcome to T4 Main Menu Screen to be displayed after T4 has automatically run through a number of set up and self-test screens
2. Select the Diagnostic System key to proceed.

Select Disc for vehicle

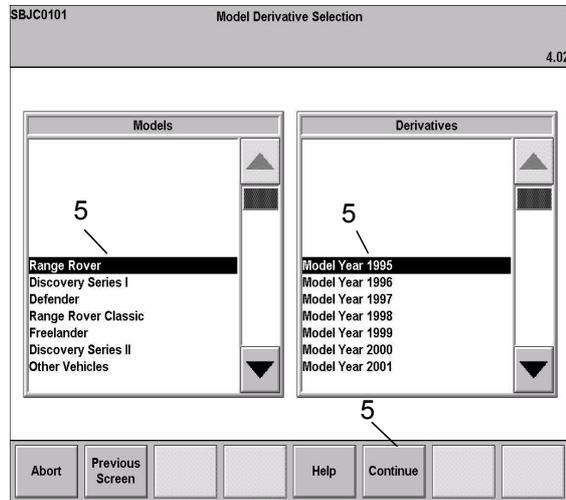


T4064

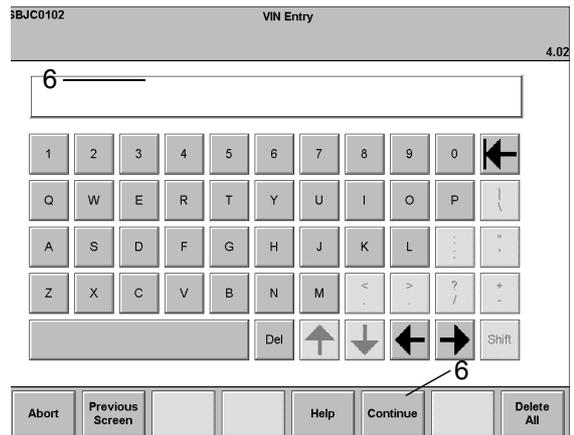
3. Locate the latest version of the Compact Disc for the vehicle currently being worked on, and insert it into the CD drive of the T4 laptop PC.



4. Select "Diagnostic System" from the Welcome Screen.



5. Select Vehicle and model year, then select "Continue".



6. Enter VIN: key in the full Vehicle Identification Number and then select "CONTINUE".

SBJC0103		Confirm Vehicle Information					
VIN: SALLPABCEX123456		4.02					
Range Rover Model Year 1995							
VIN	SALLPABCEX123456	<p>IS THIS INFORMATION CORRECT?</p> <p>If you continue with a VIN that does not match the actual VIN of the vehicle proper functionality of diagnostics is not guaranteed. Touch any button on the left to make a change.</p>					
MODEL	Range Rover						
DERIVATIVE	Model Year 1995						
Abort	Previous Screen			Help	Continue		

7. Check that all the information displayed on screen is correct for the vehicle and select **"CONTINUE"** again.

Select the Diagnostic Required

Select the icon relating to the vehicle system that is to be investigated.

Connect T4 to the vehicle - T4 will provide instructions about which connectors and cables need to be connected to the vehicle being tested. For each item, T4 provides references for the Hewlett Packard part number (e.g. 29053-60006) and the manufacturer/vehicle specific part number (e.g. DTC0007A).

Use either of the two numbers to locate the correct item from the cable parts illustration poster (supplied).

Plug the relevant connectors and cables into T4 and plug the diagnostic connector into the vehicle's diagnostic socket (for the location of the vehicle's diagnostic connector refer to the "HELP" screen facility).

When all the connectors and cables are in place, follow the diagnostic instructions displayed on the T4 screen.

DIAGNOSTIC CONTROL PANEL BUTTONS



The Diagnostic Control Panel Buttons are displayed beneath the diagnostic screens.

 **NOTE: If a button is shown faded grey, it is inactive. The two buttons at the right hand end of the panel vary according to the diagnostic routine being performed.**

The functions of the Diagnostic Control Panel Buttons are described below:

Abort

Retains the information associated with the current document; gives the options of either cancelling the operation, or temporarily suspending it and returning to the Welcome Screen.

Back Track

Should NEVER be used. The use of the Back Track button is no longer supported and may cause unpredictable results if used.

Print

Prints the screen currently displayed (providing a printer is connected on-line).

Help

Provides information to assist with current screen details or diagnosis.

Continue

Selection of this option button will increment to the next screen of the diagnostic procedure or test sequence. At the end of a diagnostic/test procedure, the Continue button will cause T4 to exit from the current procedure and move to the next logical step in the diagnostic process; this may be another diagnostic area, or return to the Welcome Screen.

 **NOTE: It is important to remember that the completion of a diagnostic test is not necessarily the end of the full diagnostic procedure. It may be possible to continue with other additional diagnostic tests, such as further T4 test procedures, Sub-System Tests, Real Time Monitor, Toolbox, Toolbox meters, Engine System Analyser or mechanical tests.**

For diagnostic routines requiring a Yes/No answer to a screen prompt, the two right hand "Yes/No" buttons are included in the Diagnostic Control Panel. In this instance, the "Continue" button will become inactive (faded grey).

When toolbox meters are being used, one of the right hand buttons becomes a "Change Range" control button.

 **NOTE: If T4 loses its communication link with the vehicle during a diagnostic test, check the voltage of the vehicle battery. T4 will not be able to reliably maintain communications if the battery voltage drops below 11.7 V. Some diagnostic routines involve leaving the ignition switched on for a relatively lengthy period of time, this may cause the vehicle battery to discharge to below the 11.7V threshold.**



VIN PREFIX

LD	Land Rover Defender
LJ	Land Rover Discovery
LH	Range Rover Classic
LP	New Range Rover
LN	Land Rover Freelander
LT	Discovery Series II

CABLING GUIDE

TOOLBOX	FUNCTION	DRAWING REFERENCE
	Engine & 4 Gas Analyser - Bear Engine & 4 Gas Analyser - Crypton Diesel & Smoke Meter - Crypton Volt Meter AC Volt Meter Ohm Meter Pressure Vacuum Current	Drawing J Drawing J Drawing J Drawing H Drawing G Drawing K

DEFENDER	SYSTEM	MODEL YEAR	DRAWING REFERENCE
	Diagnostic System		
	MEMS		Drawing C
	GEMS		Drawing X
	Security	96	Drawing R
	Exhaust Gas Recirculation	95	Drawing N
	ABS	99	Drawing Q
	Td5	99	Drawing Q

FREELANDER	SYSTEM	MODEL YEAR	DRAWING REFERENCE
	Technical Information		
	RAVE	98	
	Diagnostic System		
	ABS	98	Drawing Q
	EDC	98	Drawing Q
	Front Wash Wipe	98	Drawing Q
	Heated Rear Window	98	Drawing Q
	Lighting	98	Drawing Q
	MEMS 1.9	98	Drawing Q
	PDI	98	Drawing Q
	Power Distribution	98	Drawing Q
	Rear Wash Wipe	98	Drawing Q
	Security	98	Drawing Q
	SRS	98	Drawing Q
	Tail Door	98	Drawing Q
	Vehicle Configuration	98	Drawing Q
	Warning Sounders	98	Drawing Q

DISCOVERY	SYSTEM	MODEL YEAR	DRAWING REFERENCE
	Technical Information		
	Repair Manual	95	
	Technical Bulletins		
	Electrical Trouble Shooting Manual	95	
	Connector Library	96	
	Diagnostic System		
Multi Point Sensing	Airbag SRS		
	Test	95	Drawing M
	Load Box Simulation	95	Drawing V
Single Point Sensing	Airbag SRS		
	Test	97	Drawing M
	Load Box Simulation	97	Drawing Z (Phone Helpdesk)
	Test	97	Drawing T
	Load Box Simulation	97	Drawing Z (Phone Helpdesk)
	Anti-lock Braking System	95	Drawing D
		96	Drawing Q
	Security	96	Drawing R
2.0	MEMS MPi		Drawing C
V8	Engine Management 14CUX	95 96	Drawing F
V8	GEMS	96	Drawing Q
	Break out box	96	Drawing U
300 Tdi	Exhaust Gas Recirculation	95	Drawing N
	Electronic EDC	95 96	Drawing Y
		96	Drawing Q
	Expert Toolbox		
	Market Programming	96	Drawing R
	Transmitter Programming	96	Drawing R

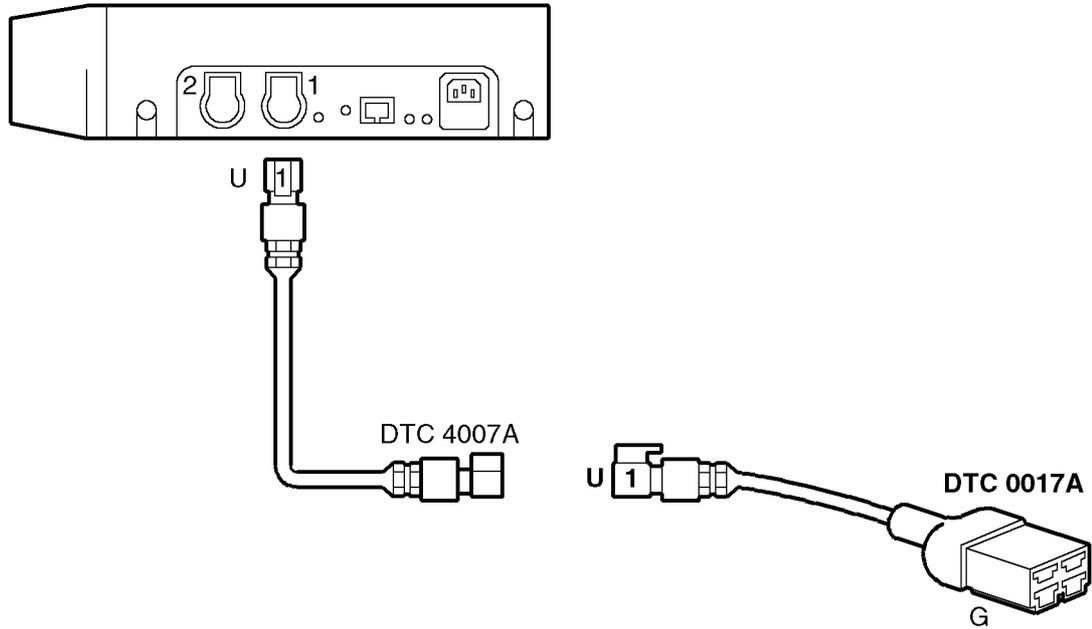
DISCOVERY SERIES II	SYSTEM	MODEL YEAR	DRAWING REFERENCE
	Technical Information		
	Rave	98	
	Diagnostic System		
	ACE	98	Drawing Q
	ATC	98	No Cables Required
	Auto GearBox	98	Drawing Q
	BCU & Transmission	98	Drawing Q
	Cruise Control	98	Drawing Q
	Diesel Engine	98	Drawing Q
	Gauges	98	Drawing Q
	Heated Screens	98	Drawing Q
	Lighting	98	Drawing Q
	PDI	98	Drawing Q
	Petrol Engine	98	Drawing Q
	Power Distribution	98	Drawing Q
	Security	98	Drawing Q
	SLS & ABS	98	Drawing Q
	SRS	98	Drawing Q
	Vehicle Configuration	98	Drawing Q
	Warnings & Sounders	98	Drawing Q
	Washers & Wipers	98	Drawing Q
	Windows & Sunroof	98	Drawing Q

RANGE ROVER CLASSIC	SYSTEM	MODEL YEAR	DRAWING REFERENCE
	Technical Information Repair Manual Technical Bulletins Electrical Trouble Shooting Manual	93 93 96 (UK only)	
3.9 & 4.2 Diesel Turbo	Diagnostic System Anti-lock Braking System Air Suspension Airbag SRS Test Load BOx Simulation Engine Management 14CUX Exhaust Gas Recirculation	95 95 95	Drawing D Drawing E Drawing M Drawing V Drawing F Drawing N

NEW RANGE ROVER	SYSTEM	MODEL YEAR	DRAWING REFERENCE
	Technical Information		
	Repair Manual	95	
	Technical Bulletins	95	
	Electrical Trouble Shooting Manual	96	
	Connector Library		
	Diagnostic System		
	Air Suspension	95	Drawing S
	Airbag SRS	95 99	Drawing AB
	Load Box Simulation	95 99	Drawing Z (Phone HelpDesk)
	Airbag SRS	99	Drawing AB
	ABS	95 99	Drawing Q
	ABS	99	Drawing Q
	Auto Gearbox	95	Drawing Q
		99	Drawing Q
	BeCM	95	Drawing C
	Cruise Control	99	Drawing Q
	GEMS	95 99	Drawing Q
	Breakout Box	95 99	Drawing U
	Electronic Diesel Control	95	Drawing Q
	EMS 5.2.1	99	Drawing Q
	Heating, Ventilation & Air Conditioning	95	Drawing Q
	Horn	95	Drawing Q
	Instrument Pack	95	Drawing Q
	Lighting	95	Drawing Q
	Mirrors	95	Drawing Q
	Seats	95	Drawing Q
	Security	95	Drawing Q
	Transfer Gearbox	95	Drawing Q
	Wash / Wipe	95	Drawing Q
	Windows	95	Drawing Q

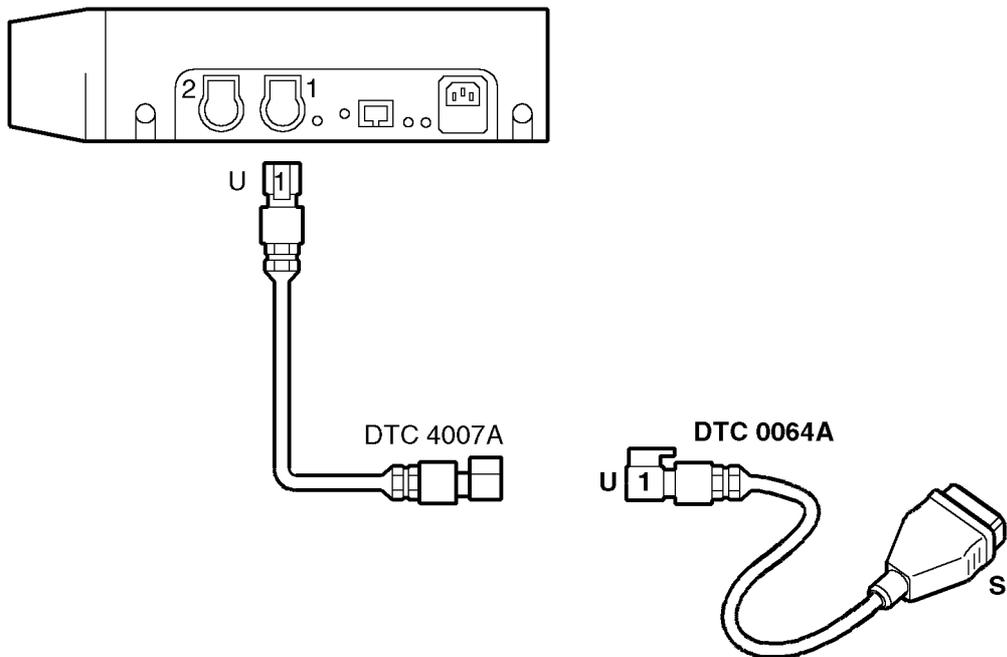
T4 CABLES

A



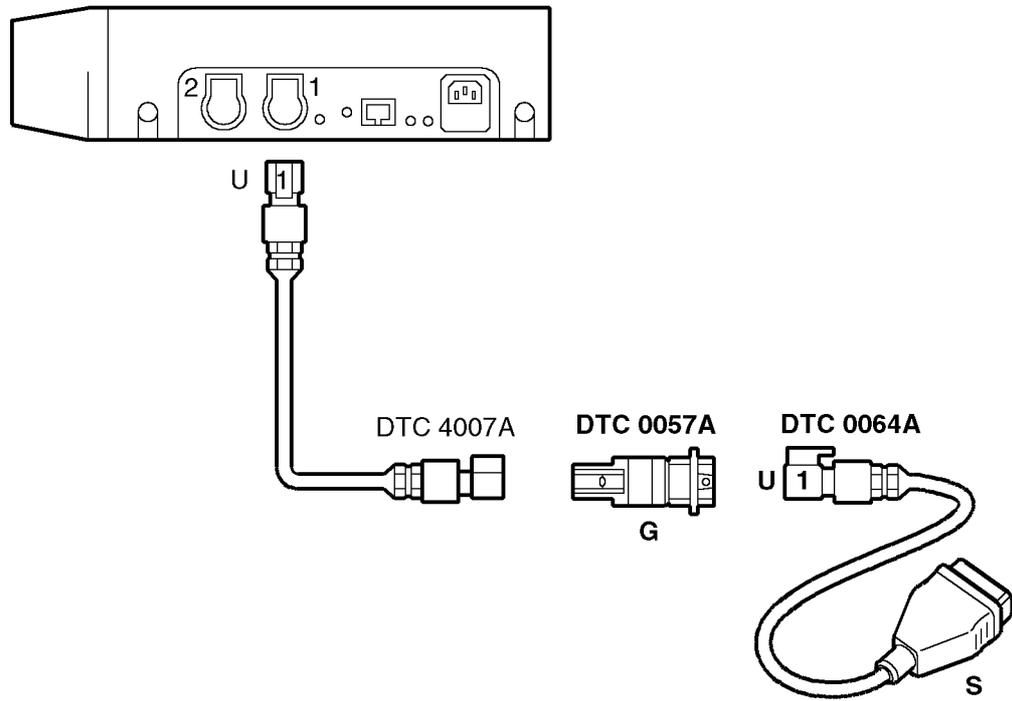
T4019

AA



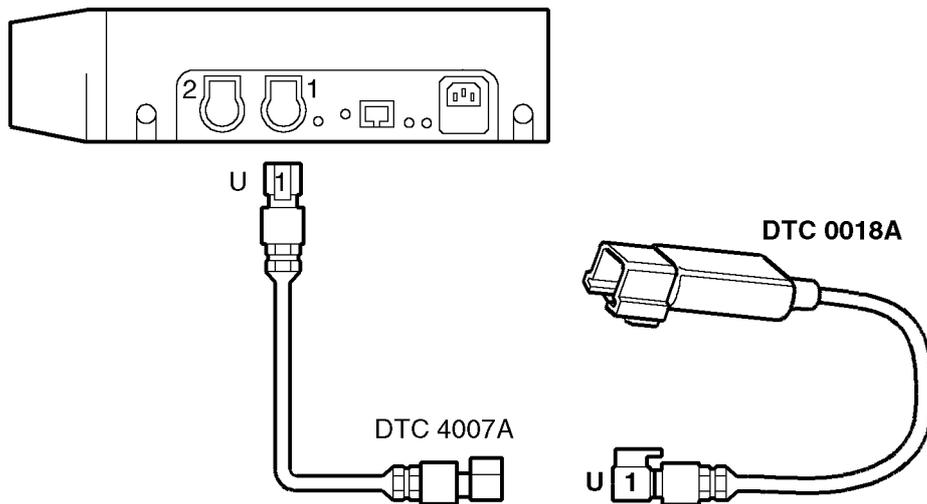
T4020

AB



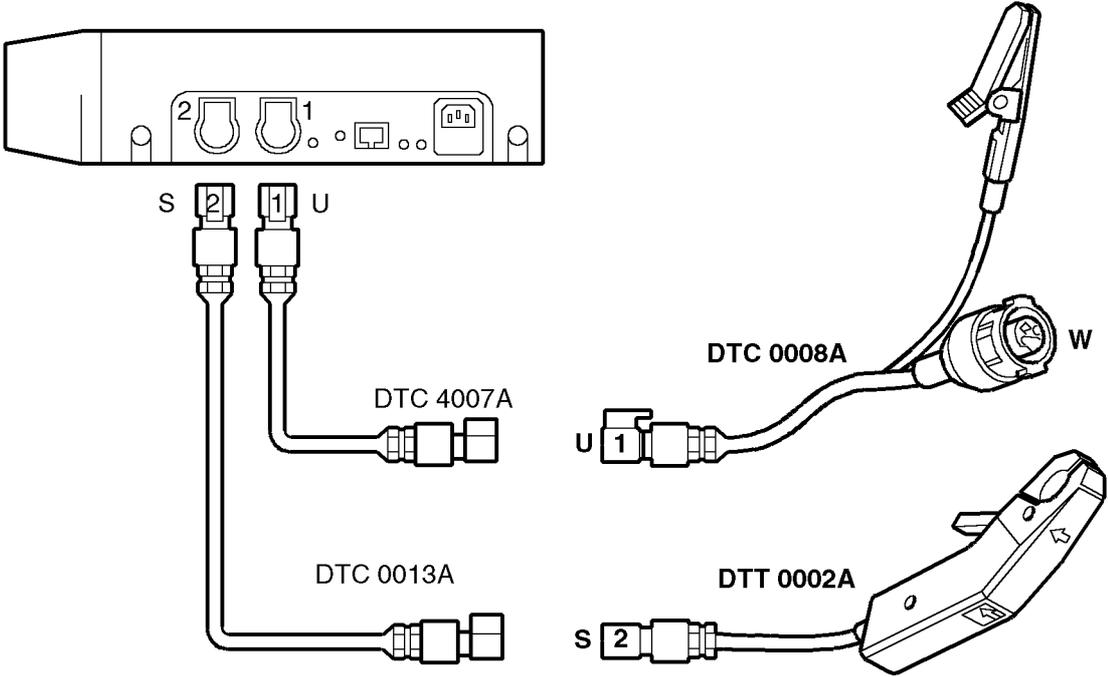
T4021

B



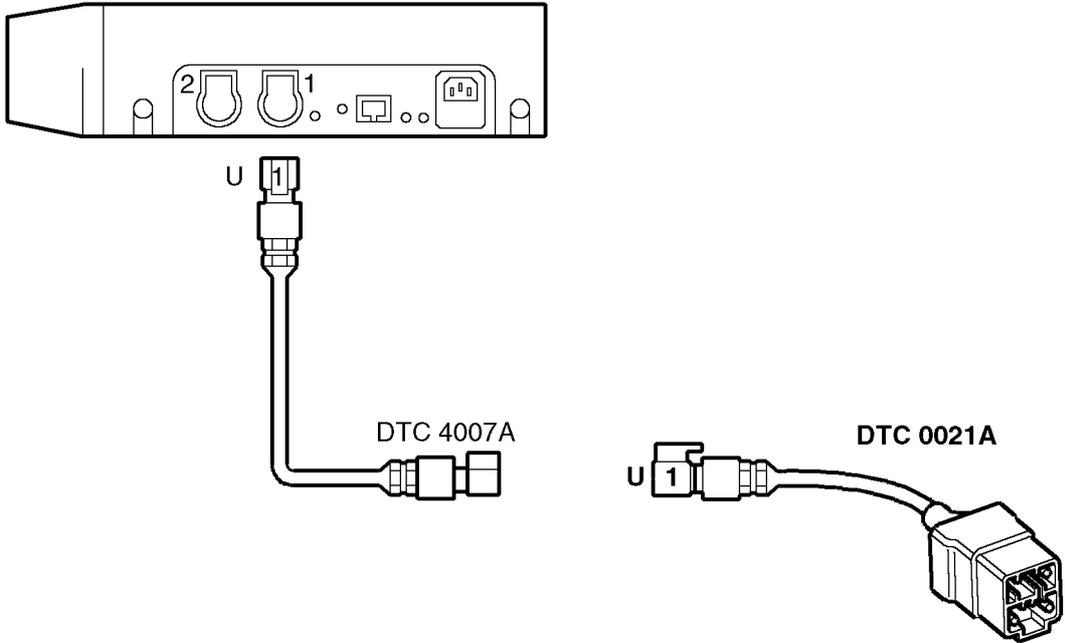
T4022

C



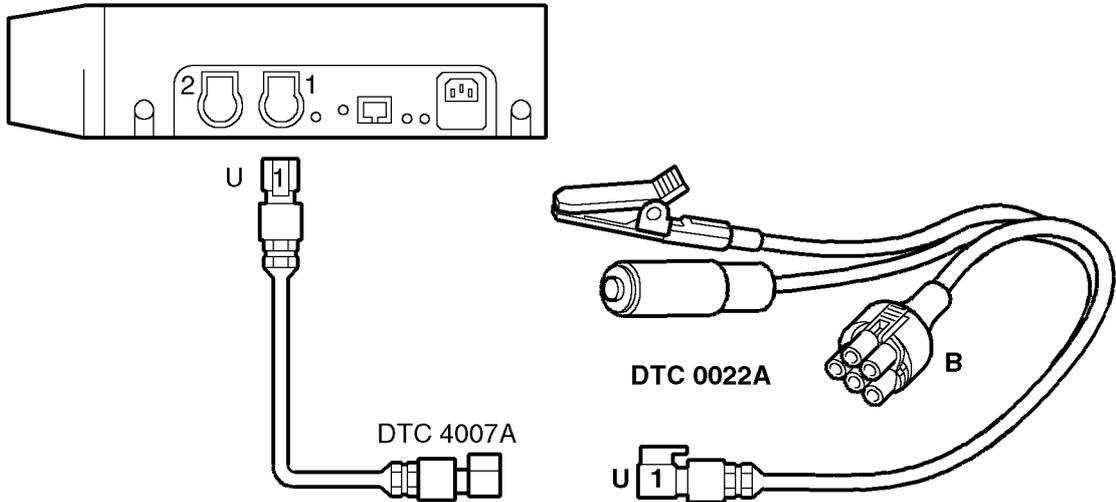
T4023

D



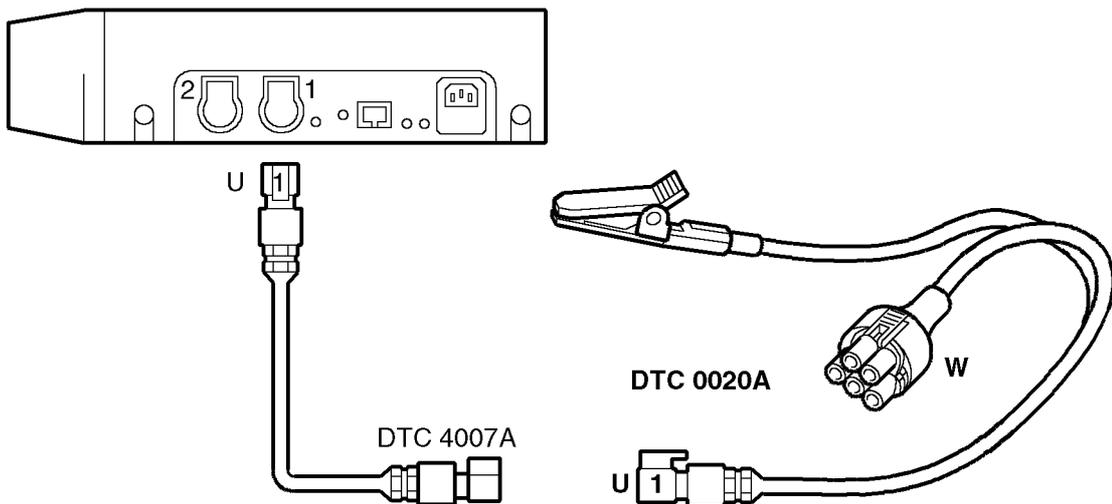
T4024

E

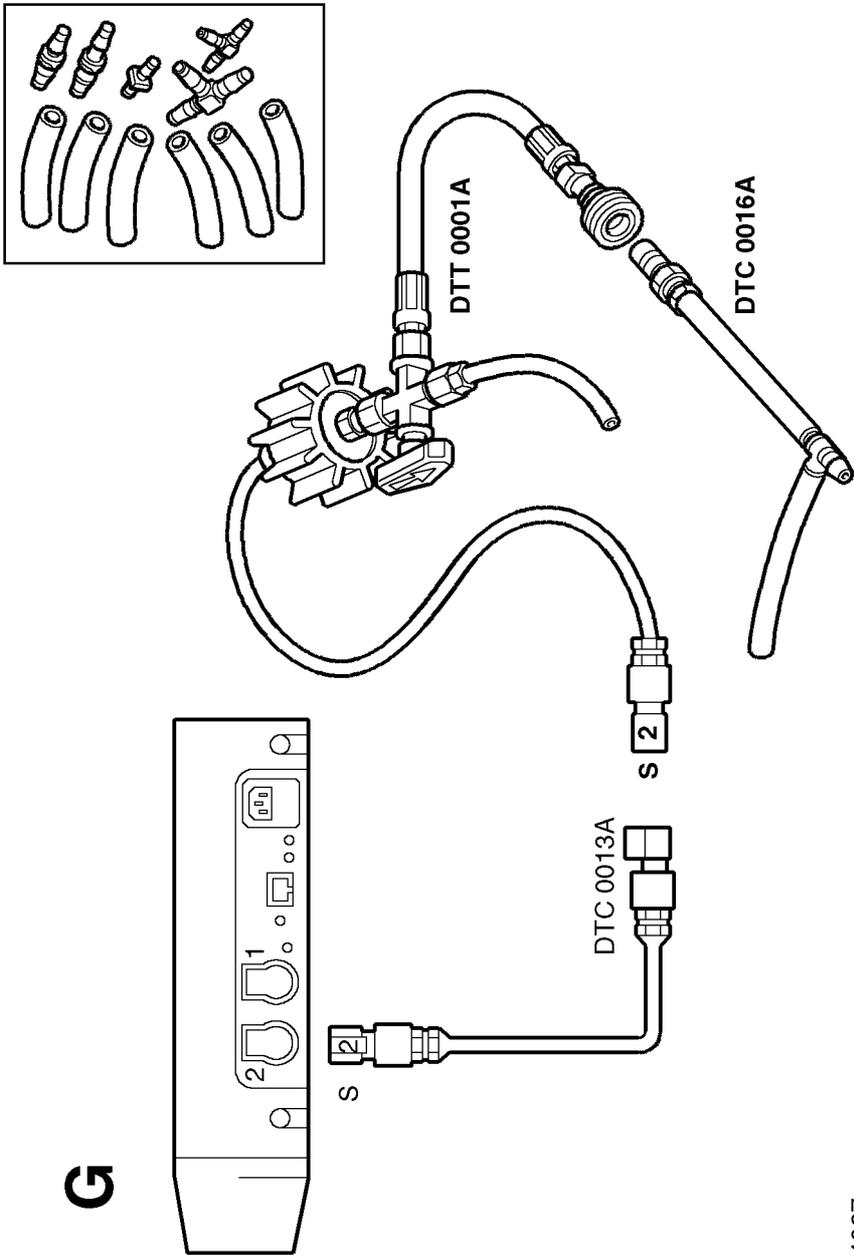


T4025

F

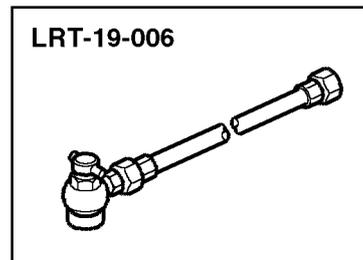
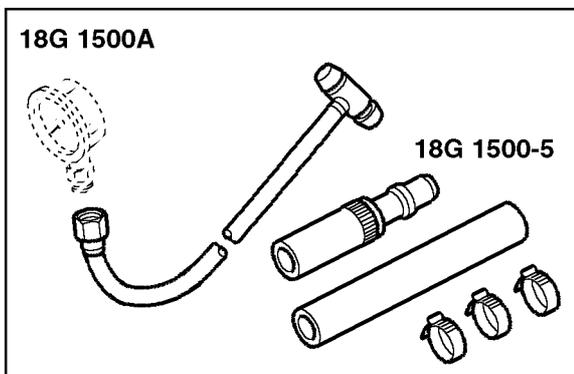
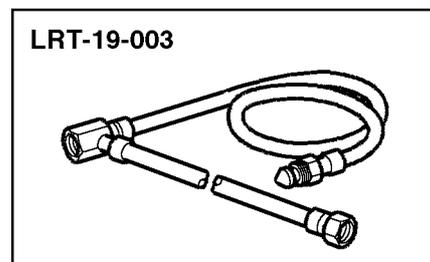
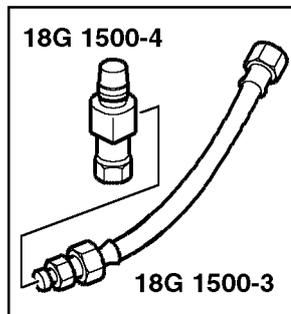
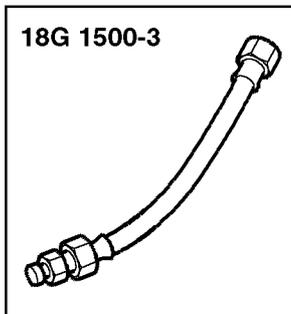
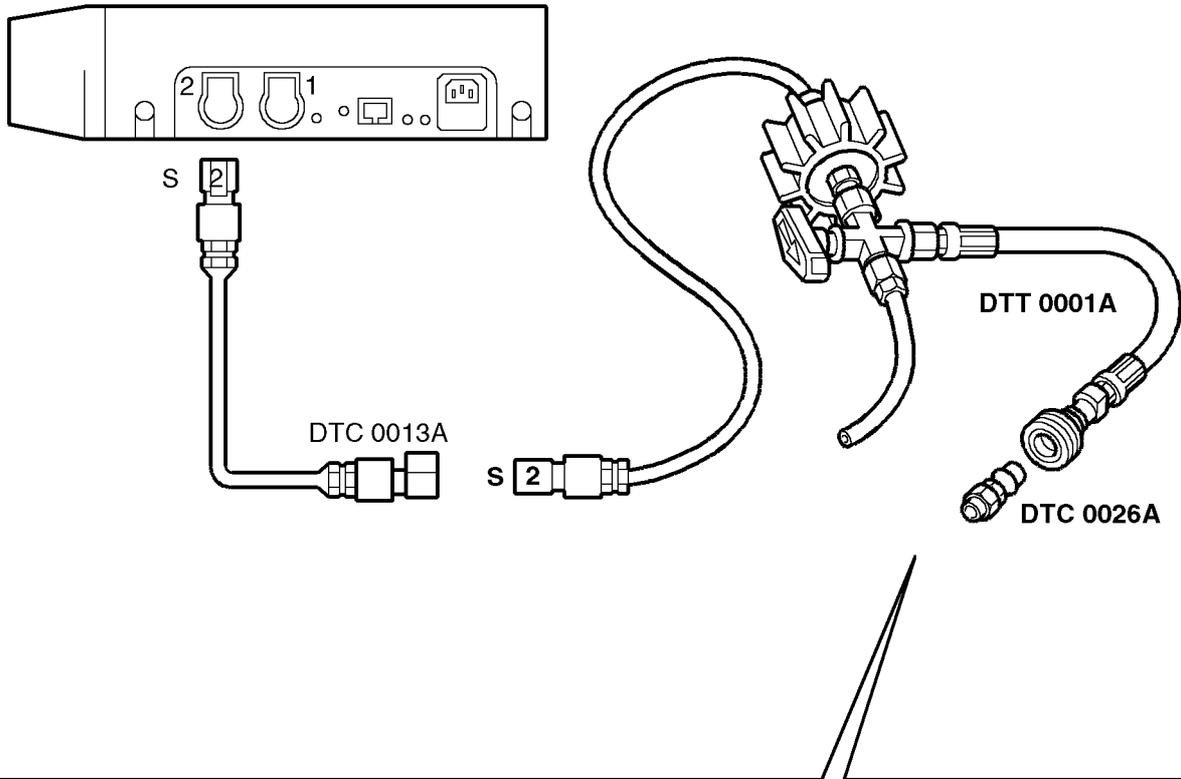


T4026

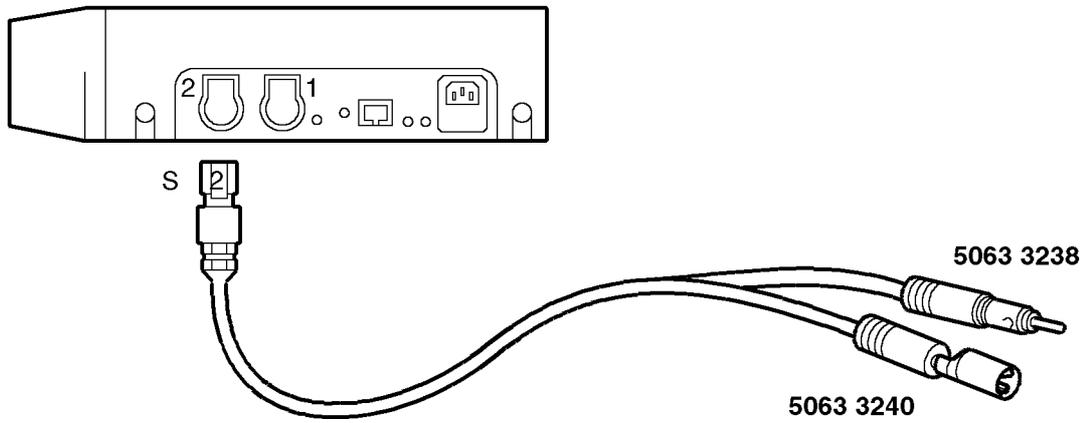


T4027

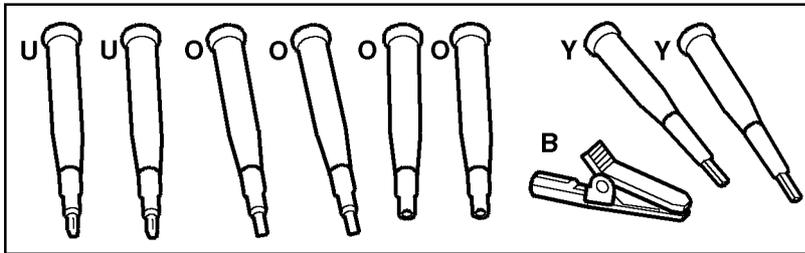
H



J

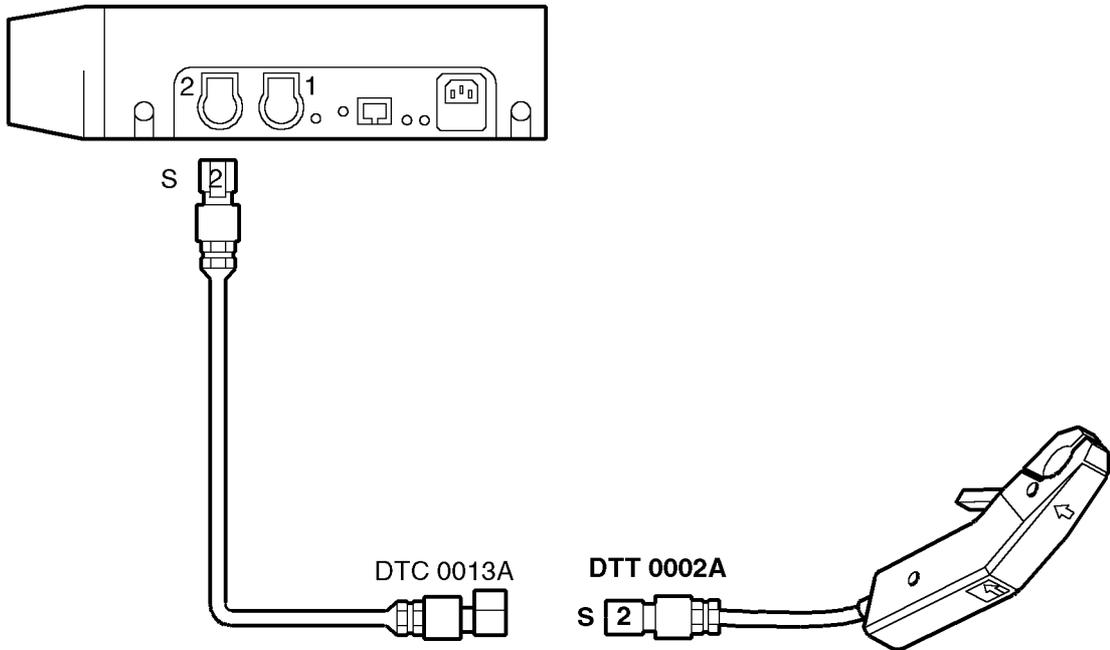


DTC 0036A



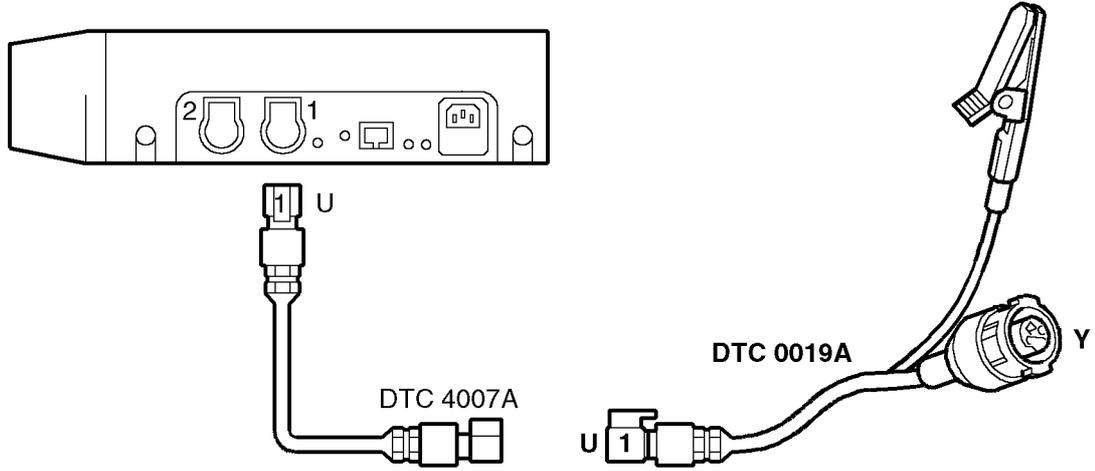
T4029

K



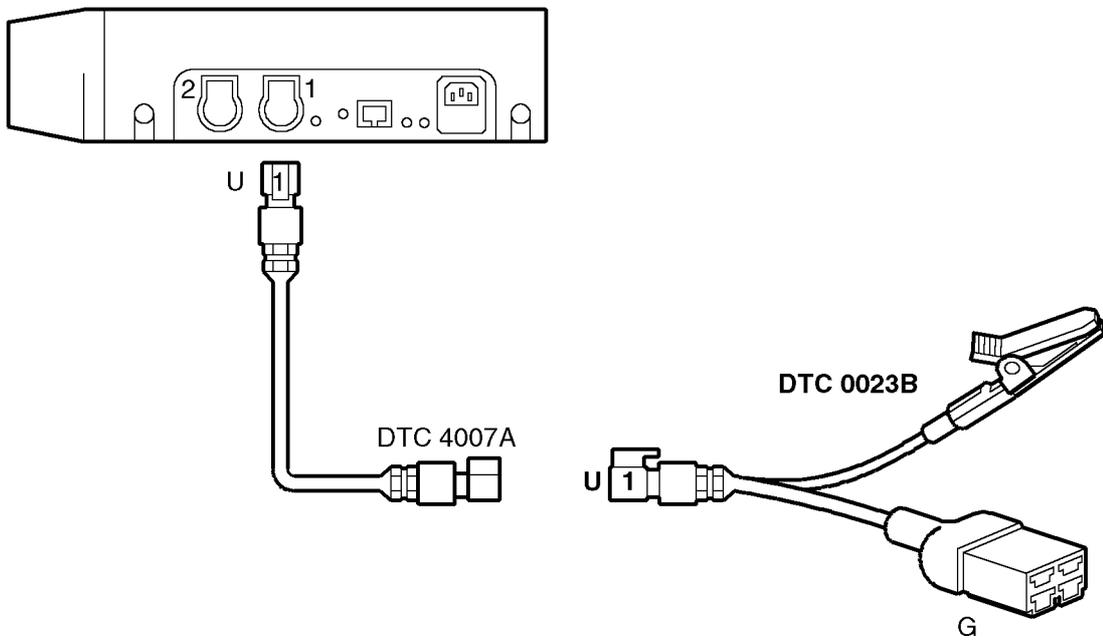
T4030

L

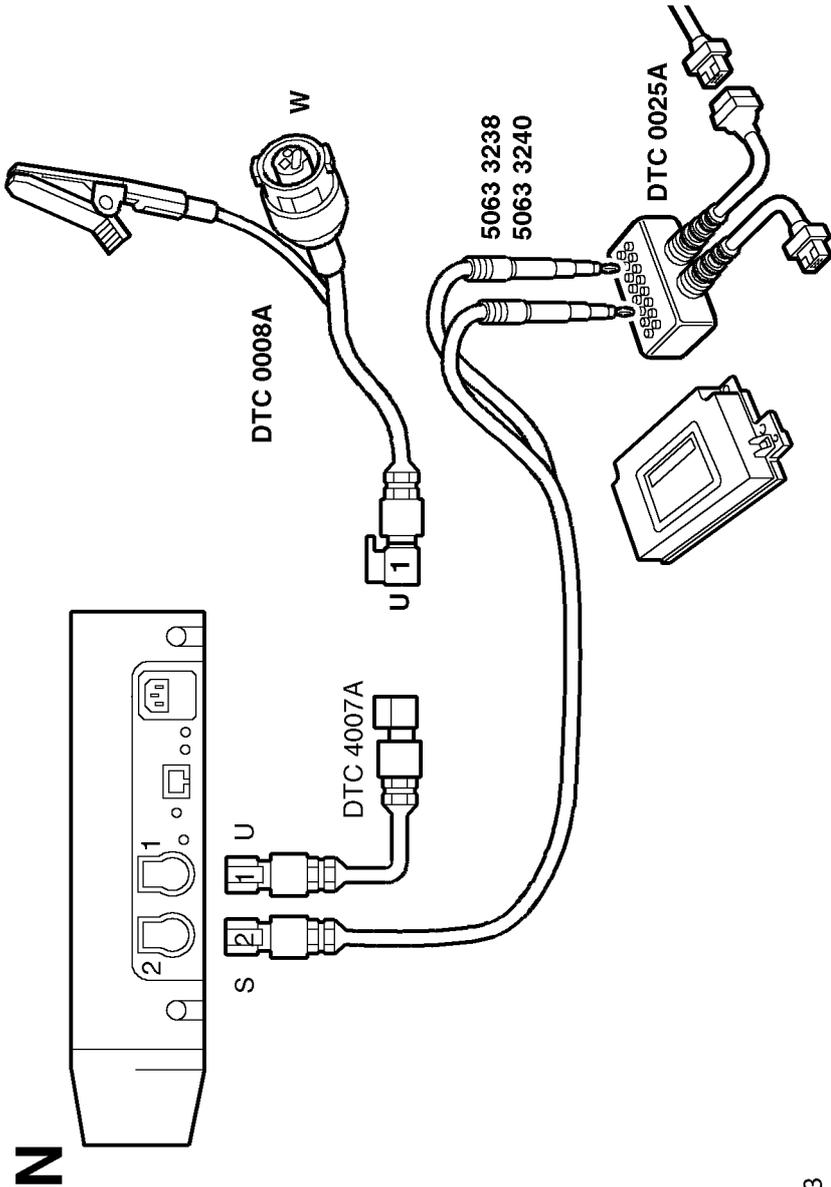


T4031

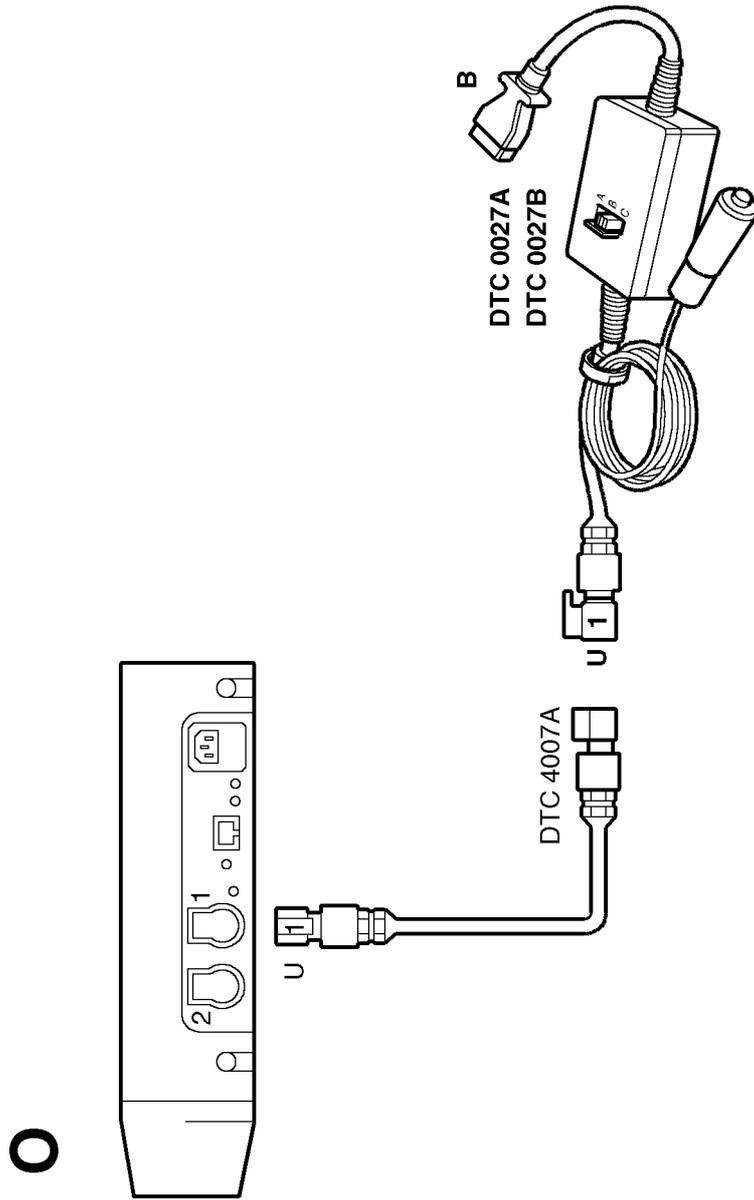
M



T4032

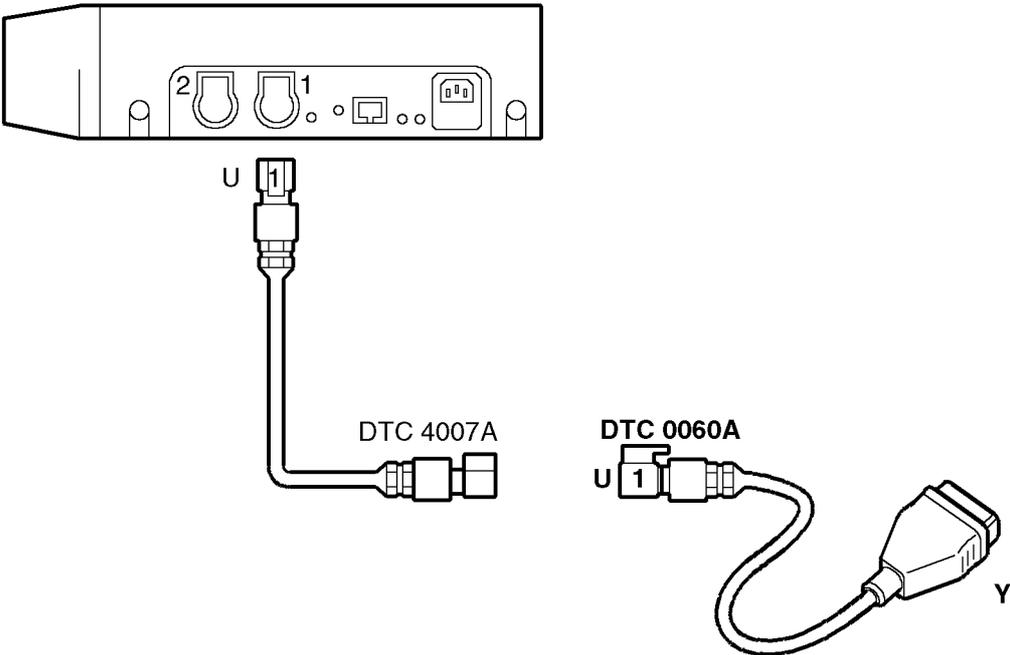


T4033



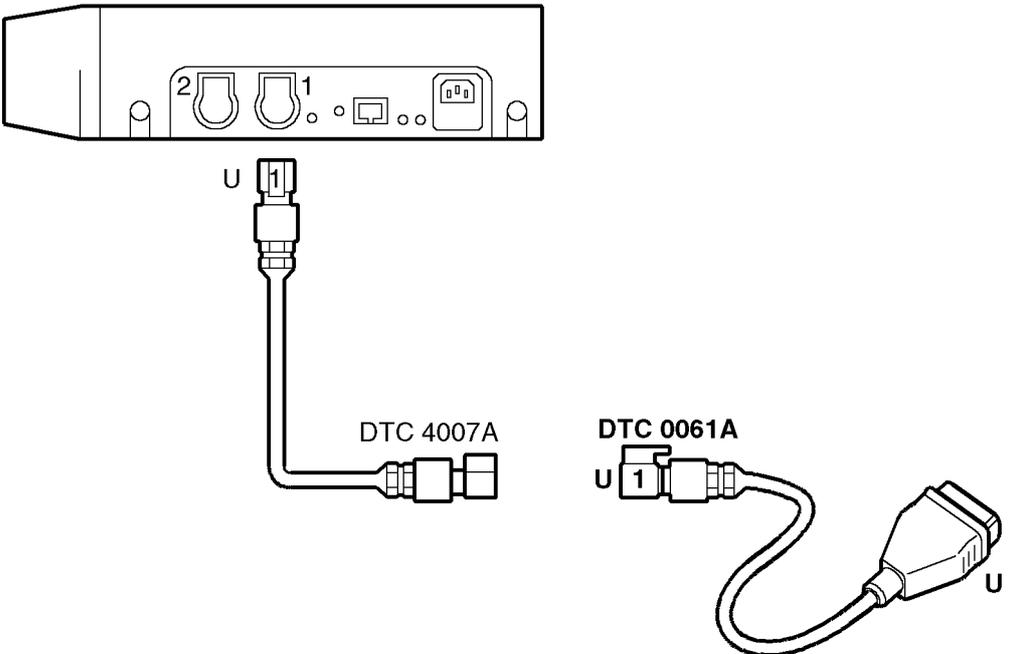
T4034

P



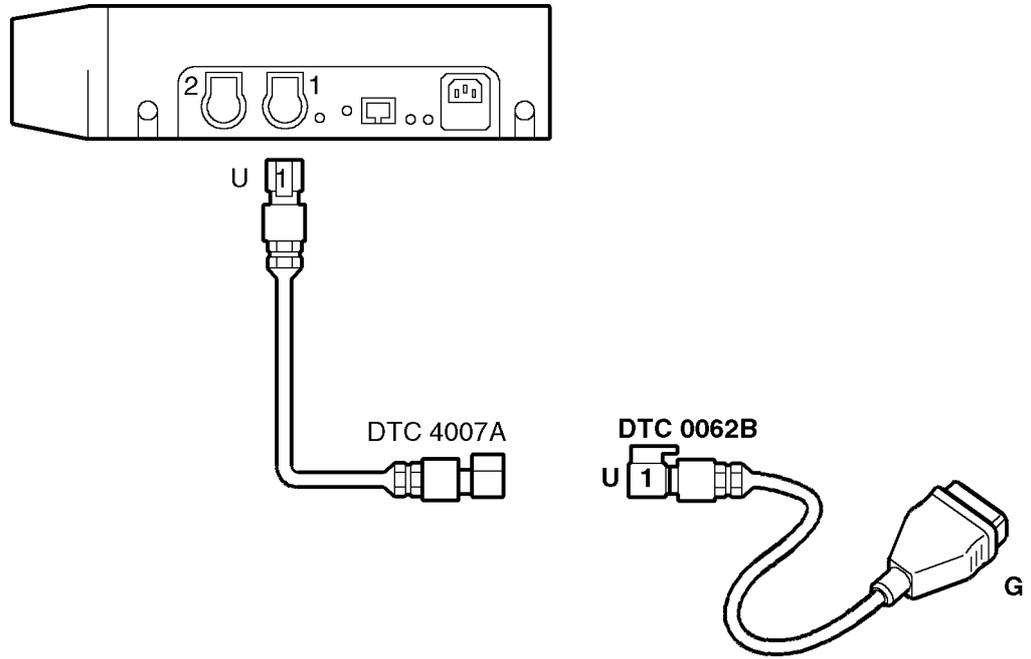
T4035

Q

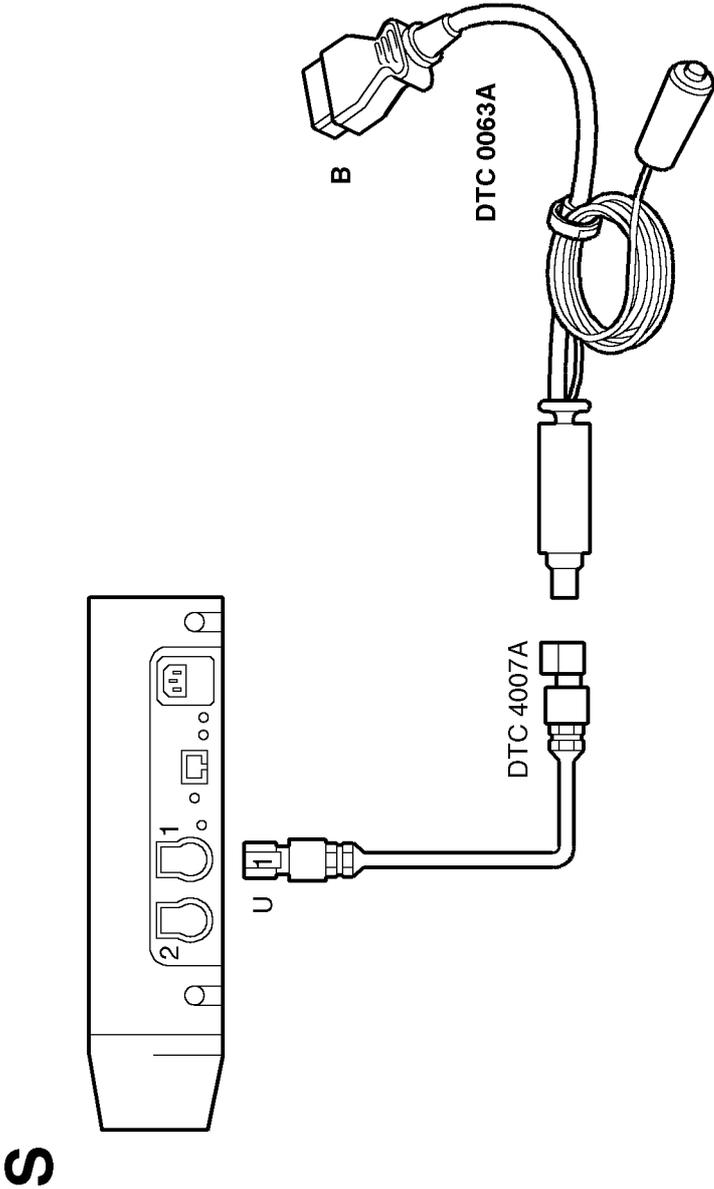


T4036

R

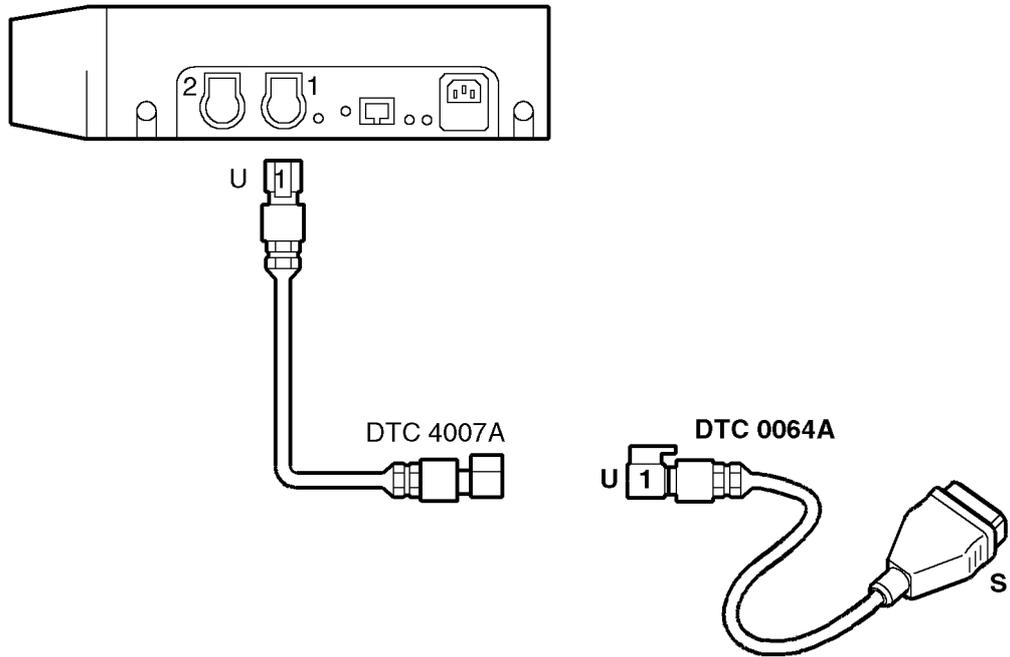


T4037

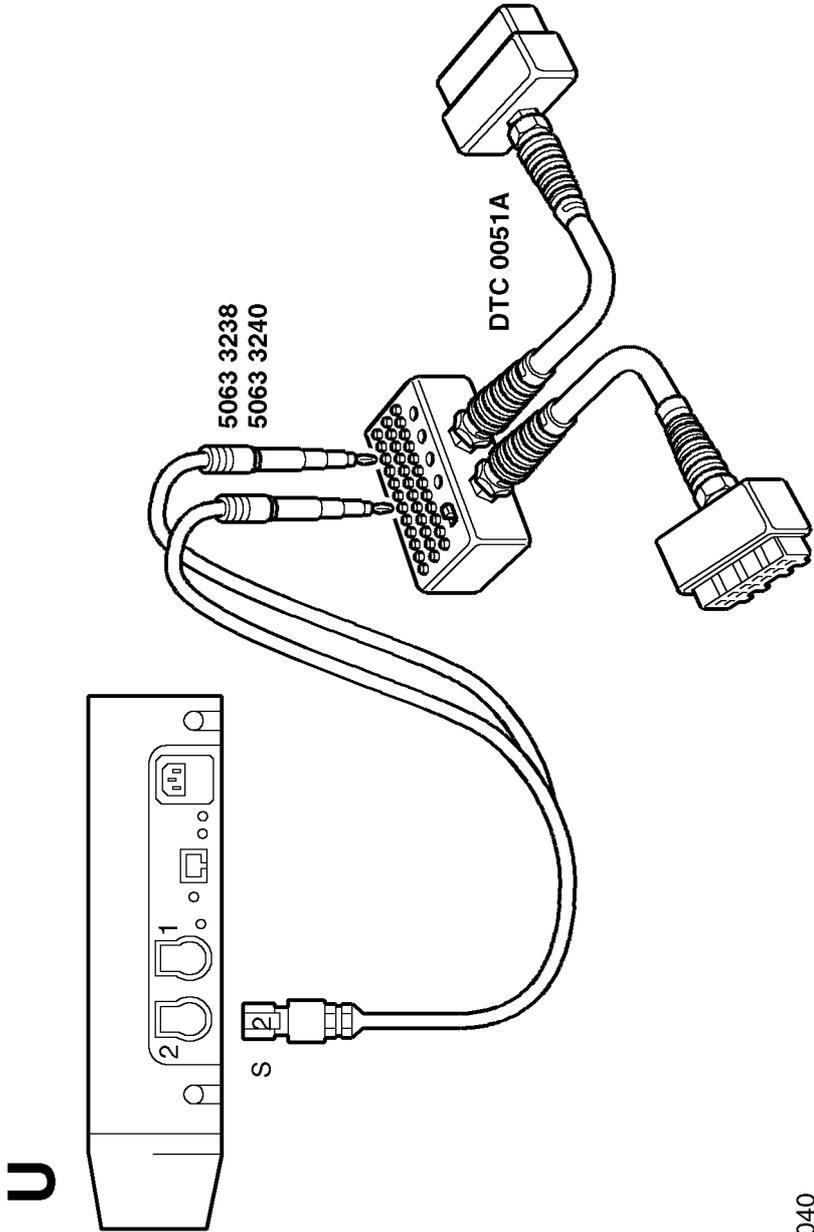


T4038

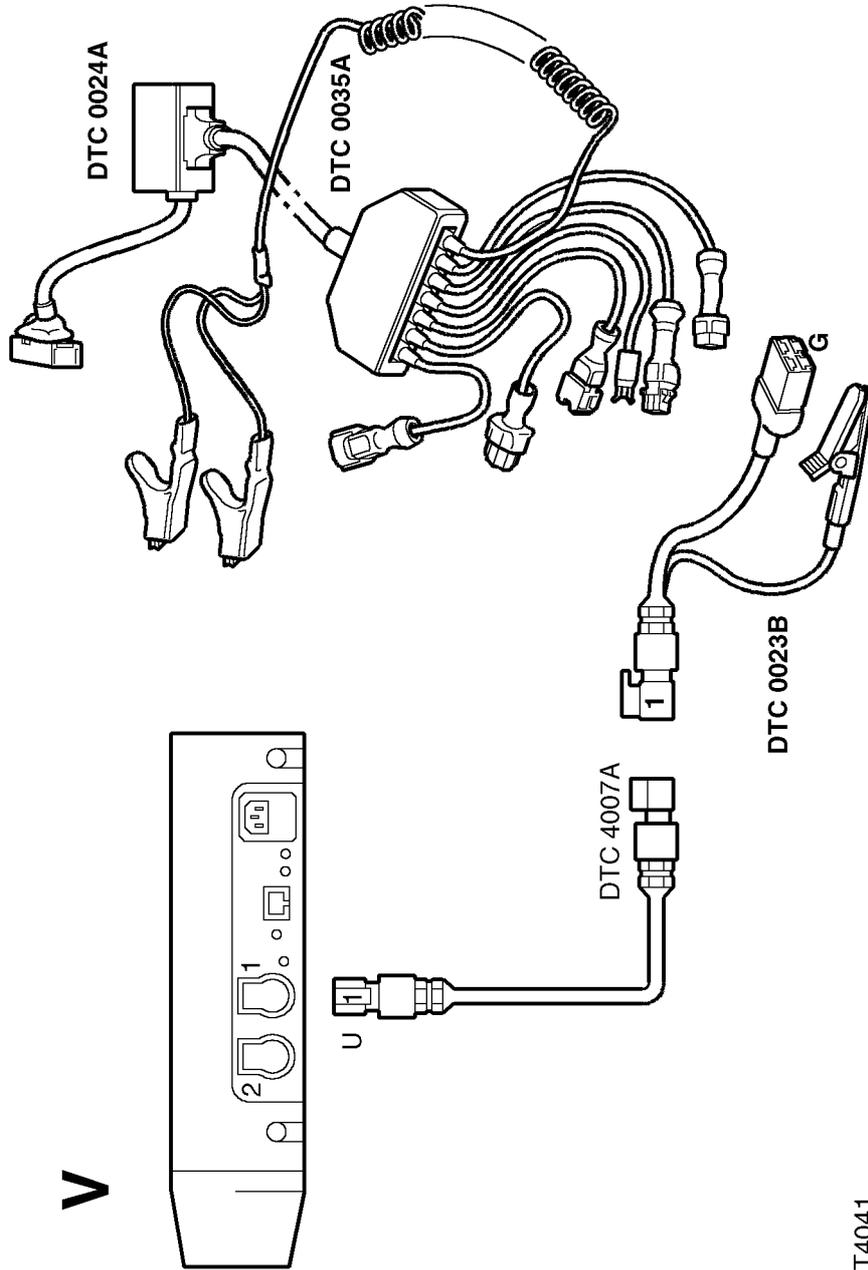
T



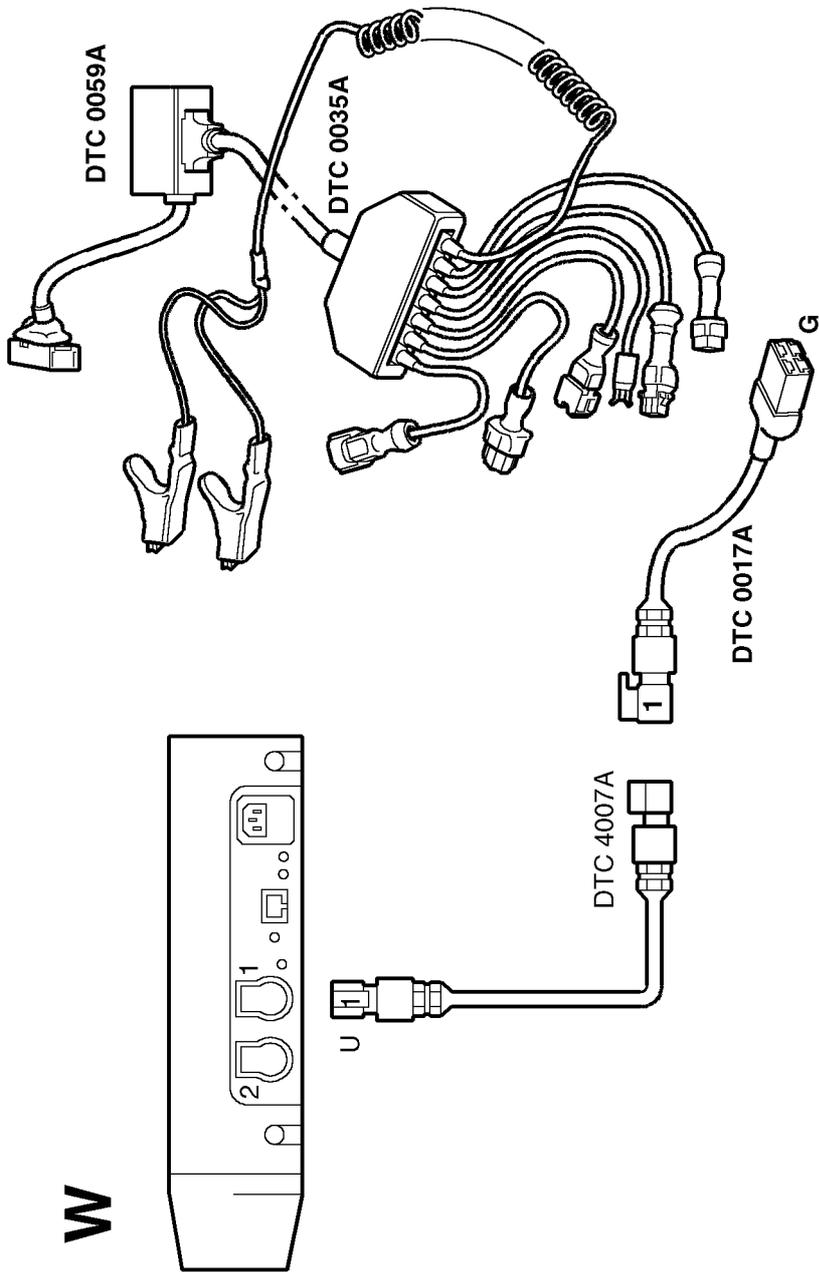
T4039



T4040



T4041



T4042

T4 ERROR CODES

Occasionally when using T4, you may encounter a fault situation, if this happens an "Error Code" will be displayed on the T4 screen.

The following tables recommend the actions to be taken in the event of T4 generating an Error Code; against each error code reference number, there is an associated Action/ Instruction key number.

T4 RDS Error Codes

The Error code will appear in the format: DTOOxxMX, where "xx" represents the number of the code from 1 to 41; for example DTOO15MX shown on the table as error code 15. Against each error code number there is a matching Action instruction or instruction key number - refer to the key opposite for details of the action to take.

Action Key

1. Restart T4 and repeat the operation. If the operation fails again, try the operation on another vehicle. If the operation still fails, repeat the operation using a different T4.
2. Try operation again without rebooting T4. If this fails, reboot T4 and try again. If the operation fails again, try another CD. If the new CD also fails, there is a problem with T4 - continue with Action 3.
3. Complete the details of the error including the relevant error code on a Help Desk Information Sheet and contact the Help Desk.

RDS Error Code No:	Action
1	3
2	3
3	3
4	1
5	1
6	1
7	2
8	2
9	2
10	2
11	3
12	3
13	1
14	3
15	1
16	1
17	3
18	3
19	2
20	2
21	3
22	3
23	3
24	Printer, check paper, cables etc.
25	3
26	3
27	3
28	3
29	3
30	3
31	3
32	3
33	3
34	3
35	3
36	3
37	3
38	3
39	3
40	3
41	3



DEALER CHECK LIST (BEFORE YOU RING)**Help us to Help You**

If you have experienced problems when using T4 and you are unable to resolve the problem by repeating the procedure or by consulting the T4 User Guide and/or T4 Help screens.

The next stage is to complete a Help Desk Information Sheet (an example of which is shown on the following page).

Telephone the Helpdesk using the information sheet for reference.

The Helpdesk may request that you fax the information sheet, so it is essential that you accurately complete every section before transmission.

T4 has the capability to print a Help Desk information sheet with some sections automatically completed. Pressing the Help Desk button on the 'Welcome Screen' automatically enters data into six sections of the Data Sheet to make your task easier. These six sections automatically input details taken from the Dealer information entered during the T4 configuration process. Specifically these are:

1. Dealer Name
2. Corporate ID
3. Telephone Number
4. Fax Number
5. Contact 1
6. T4 Serial \ Model Number

If an RDS error occurs, the Fault Notification box has a Help Desk button on it. Pressing this completes the six sections mentioned previously as well as:

- Data CD Reference Number
- RDS Release Number
- Screen Reference \ Node ID
- Error Message Displayed

The following sections **MUST** also be completed:

Vehicle Details and Reported Fault

This should include the exact vehicle model, derivative, model year and Vehicle Identification Number (VIN code). In addition, include any component numbers or codes relevant to the system or area of the vehicle being tested.

When combined with details of the reported fault condition, any additional details you can provide will assist the T4 engineers to quickly find a solution to your problem based on previous experience.

Full details of Test type

This information is vital to a T4 engineer to try to reproduce and resolve the problem.

Some diagnostics procedures can be produced via several different routines. It is vital that the T4 engineers follow exactly the same diagnostic procedure that you are using. It is of great benefit if you make a note of each T4 screen where you make a decision when there are several possible options, so that the T4 engineer can follow exactly the same diagnostic route.

For example:

Select "Diagnostic System"
Select "Security"
Select "Locking \ Unlocking"

Continue the diagnostic path until you reach the screen with the fault.

Full details of any difficulties you've had using T4

It may be useful to the T4 engineers to learn of any difficulties you may have experienced whilst using T4.

Cabling Drawing Reference used

It is essential to use the right cables for a given test procedure. By giving the details of the Cabling Drawing Reference (e.g. A, AA etc. to Z, or 1 to 19) that you used to assemble the T4 connecting cables, you will enable the T4 engineers to check that these are correct before looking for other problems.



NOTE: If the T4 screen on which your problem occurred is one of those that can be printed, please print off a copy and fax it through to the Help Desk with your Information Sheet. The more information you can give the Help Desk, the faster they will be able to solve your problem.



HELP DESK

Tel: +44 (0) 1993 886199

Fax: +44 (0) 1993 886101

HELP US TO HELP YOU

Please ensure you have the following information to hand BEFORE you contact the Help Desk.

Dealer Name and Address: (1)		Date:	
Corporate ID: (2)	Telephone No: (including area code) (3)	Fax No: (including area code) (4)	
Contact 1:(5)		Contact 2:	
T4 Serial No: (located on rear of laptop PC case) (6)		Screen Reference/Node ID: (alpha-numeric data displayed top left hand corner of the screen).	
Data CD Ref No: (printed on CD/displayed on welcome screen under "I" button).		RDS Release No: (displayed top right of screen)	
Vehicle details: (including model/engine/transmission/derivative)		Model Year:	VIN:
Reported fault with the vehicle:			
Full details of test being used:		Error message displayed:	
Full details of problems encountered using T4:			Cabling diagram used:
Other Comments:			

LOCAL TELEPHONE NUMBERS

COUNTRY	HELPDESK	TRAINING	AFTER SALES TECHNICAL SUPPORT
U.K. Fax	01993-886199 01993-886101	01993-886199 01993-886101	01993-886199 01993-886101

Local contact numbers are liable to change. Use your normal local HelpDesk number or call the UK HelpDesk number for further information.

HELP DESK

In the event that you experience a problem with the performance of your T4, you should report the details to the T4 Help Desk. The Help Desk will carry out a call qualification check, as per the T4 pro-forma, before recommending any exchange. Replacement items that are covered by this support agreement are:

- T4 Diagnostic System
- T4 Hand Held Tester
- Printer
- Cables
- TestBook™ Interface Module (where applicable)
- Trolley
- Compact Discs (Diagnostics and RDS)

No items will be accepted for exchange without the prior authorisation of the appropriate T4 Help Desk.

EXCHANGE TIMES

T4 Laptop PC's, Hand Held Testers, Diagnostic Ports, Printers, TIM Units, Cables and Power supplies

For callers received by the relevant Help Desk by 14.30 (local time), dealerships in the countries of the European Union, Austria, Switzerland, Norway, USA and Australia will receive a replacement unit within 48 hours.

For calls received by the relevant Help Desk by 14:30 (local time), dealerships in the countries of Eastern Europe will receive a replacement unit within 48 hours of the following working day.

For other countries, we will endeavour to provide replacement units as soon as possible from the date of the original request. The expected exchange time will be given at the time of authorising the exchange.

The only exception to the times quoted above are when delays are caused by circumstances beyond our control.



NOTE: These exchange items are subject to clearance through local custom control.

Compact Discs (CDs)

CDs will be despatched by first class post on the next working day following receipt of request.

Returns

When an exchange T4 has been delivered, you will find the appropriate documentation attached to the T4. Within the documentation there is a contact number that you must call to arrange for a courier to collect the faulty unit.

Cables and power supplies need to be returned by post within the following 14 days.

DEALER RESPONSIBILITIES

To ensure the smooth operation of this process and the effective management of T4 stocks, there are a number of responsibilities that have to be adhered to by the dealer:

1. The instrument should be removed from the trolley and be made ready for the exchange.
2. Ensure that any CDs are removed from the T4 prior to the receipt of the exchange unit.
3. The instrument should be in a safe and clean condition for the engineers to work on.
4. When a fault is reported to the Help Desk, please report the fault as accurately as possible and provide all the data required by the pro-forma T4 fault report form.
5. Contact the courier to retrieve the faulty unit - must be actioned immediately.

Failure to adhere to the above conditions could result in a compensation charge to the dealer.



NOTE: Observation and adherence of the above responsibilities will ensure that we maintain an efficient exchange rate, reduce stock shortages and avoid unnecessary costs.

SERVICE LEVEL**T4 and TIM units**

T4s and TIM units that become in-operable due to hardware or software failure will be exchanged under the support agreement.

Hardware will be exchanged when the unit fails to meet any area of the operating specification as determined by the T4 Help Desk.

Software will be exchanged in the case of failures in the following circumstances:

1. The T4 fails to reach the "Welcome" screen.
2. The T4 persistently fails to load and execute data from the Compact Disc.
3. Failures caused by the RDS operating system.

T4 exchanges will not be covered by this agreement where the software error is found to have been caused by unauthorised attempts to modify T4 software, or loading of unauthorised software.

Exclusions

Repair work resulting from the causes detailed below are not covered by this exchange contract:

1. Repairs or modifications, including the removal or damaging of integrity seals, that has not been undertaken by Omitec Instrumentation Ltd.
2. Damage caused by the improper use of T4, including unreasonable cosmetic damage.
3. Usage of the unit outside the agreed environmental conditions (a copy of which can be made available on request).

In such cases Omitec Instrumentation Ltd. will provide advice on the likely cost of repairs, and the repair will only be undertaken following the customer's written approval.

Compact Discs

CDs damaged through normal wear and tear can be replaced through a request to the Help Desk.

Printer

The printer is covered under the terms of the support agreement. In the event of printer failure, the fault should be reported through your relevant T4 Help Desk so that a replacement can be arranged.

The support agreement does not cover replacement of consumables such as the inkjet printer cartridge. The customer is advised to remove any inkjet cartridge prior to equipment exchange, because the replacement printer is not supplied with a fresh inkjet cartridge. New cartridges should be sourced locally.

Printer damage caused by the use of a “refilled” inkjet cartridge, or a cartridge of manufacture other than those that are specifically recommended (e.g. Hewlett Packard) will result in nullification of the standard terms of the exchange service. Replacement units provided under these circumstances will be chargeable.

Cables

All T4 cables are covered under this agreement. Faulty cables should be reported immediately via your normal T4 Help Desk channels to initiate the replacement process.

Where new cables are being supplied, due to the original cables being reported as missing, lost or damaged through misuse, then these will become a chargeable item. In this event you must contact Omitec directly.

Trolley and Power Supplies

The electrical and electronic parts of the trolley are covered under the terms of this agreement i.e.:

- 2 x power supplies
- 1 x printer power supply
- 1 x AC power supply distribution point

Replacement parts will be shipped directly to the dealer and the faulty parts should be returned by the dealer within 14 days of the receipt of the new part.

Mechanical parts are not covered and will only be repaired subject to an additional charge.

T4 EXCHANGE MATRIX

Item	Contact	Delivery Method	Return Method	Notes
T4 Laptop PC and Case	Help Desk	Courier	Courier	Courier will collect once contacted.
T4 Hand Held Tester	Help Desk	Courier	Courier	
T4 Diagnostic Port	Help Desk	Courier	Courier	
Printer	Help Desk	Courier	Courier	Courier will deliver and collect at the same time.
TIM unit	Help Desk	Courier	Post	Dealer must return the faulty part within 14 days of the receipt of the new one.
LAN Hub	Help Desk	Courier	Post	
Cables	Help Desk	Courier	Post	Dealer must return the faulty cable within 14 days of the receipt of the new cable.
Adapters	Help Desk	Courier	Post	Dealer must return the faulty adapter within 14 days of the receipt of the new adapter.
Trolley Power Supplies	Help Desk	Courier	Post	Dealer must return the faulty part within 14 days of the receipt of the new one.
Compact Discs	Help Desk	Post	Post	Dispose of safely, locally or return to the T4 Help Desk.

Contact the HelpDesk for details when requesting spare parts (e.g. T4 Hand Held Tester Diagnostic Port PC and TrackPoint mouse nipple etc.).

T4 CABLES

Part No.	Supplier Part No.
DTC0008A	29053-60004
DTC0010A	
DTC0011A	
DTC0012A	
DTC0013A	27091-60006 or 29053-60012
DTC0016A	29053-64003
DTC0017A	29054-60004
DTC0018A	29054-60003
DTC0019A	29054-60006
DTC0026A	29053-60020
DTC0033A	29053-60019
DTC0036A	29053-64006
DTC0053A	
DTC0054A	
DTC0055A	
DTC0056A	
DTC0058A	
DTC0060A	29054-60009
DTC0061A	29053-60024
DTC0062B	29053-60025
DTC0064A	29053-60026
DTC4013A	
DTC4014A	
DTT0001A	29053-60005
DTT0002A	29053-60007



NOTE: FOR DEALERS WITH A TIM UNIT PROBLEM: Any item with an SMD reference requiring repair should be forwarded directly to:

Omitec Instrumentation Ltd.
Hopton Industrial Estate
London Road
Devizes
WILTS
SN10 2EU

TEL: +44 (0) 1380 729256
FAX: +44 (0) 1380 729277