Hi-scan Pro

OPERATION GUIDE

CAUTION : Any changes or modifications in construction of this device which is not expressly approved by the party Responsible for compliance could void the user's authority to operate the equipment.

NOTE : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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IV. CARB OBD-II DIAGNOSIS

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SAFETY

Safety Precautions

This equipment described in this manual is intended for use only by qualified personnel. Safe and effective use of this equipment is dependent upon the operator following normally accepted safety practices and procedures in conjunction with the special requirements detailed in this manual. Specific warning and cautionary statements will be found, where applicable, throughout this manual.
Where necessary, the WARNING statements and ICON will be described this guide.

WARNING identifies conditions or actions which may damage Hi-Scan Pro or the vehicle.

IMPORTANT WARNING MESSAGES FOR SAFETY ARE AS FOLLOWS :

DO NOT DROP OFF Hi-Scan Pro MAIN BODY. AND Hi-Scan Pro ALWAYS MUST BE COVERED BY RUBBER SHROUD

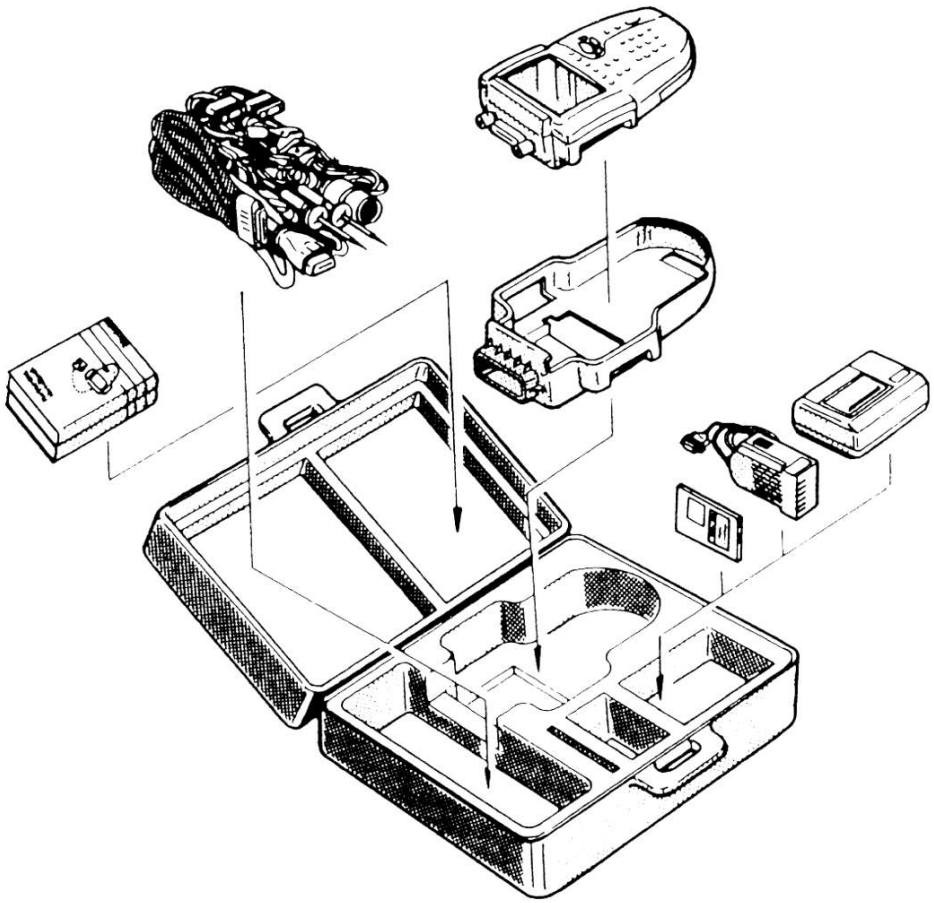
DO NOT PLACE Hi-Scan Pro ON DISTRIBUTOR.
STRONG ELECTRO-MAGNETIC INTERFERENCE CAN MAKE HARMFUL DAMAGE TO Hi-Scan Pro.

THE STRONG SURGE OR ELECTRONIC SHOCK IN POWER SUPPLY LINE CAN DAMAGE TO Hi-Scan Pro POWER SUPPLY. DO NOT USE Hi-Scan Pro UNDER THESE DAISY ENVIRONMENT.

INPUT VOLTAGE OF OSCILLOSCOPE MUST BE IN RANGE MAX 500 V DC.

UNPACKING

The Hi-Scan Pro kit comprises the following standard along with the option kit where ordered.
The kit contents should be checked upon receipt and damage or shortages reported to the supplier immediately.



[Figure 0.1 : Hi-scan Pro KIT]

1. STANDARD KIT

	PART NO.	PART NAME
1	09910-11000	Hi-scan Pro MAIN BODY
2	09900-12000	RUBBER SHROUD
3	09900-21100	DLC CABLE 16
4	09900-2XXXX	DLC CABLE ADAPTER
5	09900-23100	OSCILLOSCOPE PROBE SET
6	09900-27200	CIGAR LIGHTER CABLE
7	09900-27210	POWER EXTENSION CABLE
8	09910-6XXXX	SOFTWARE CARD(16M)
9	09910-83000	OPERATION GUIDE
10	09900-27100	RS-232C CABLE
11	09900-81000	CARRYING CASE

2. OPTION KIT

	PART NO.	PART NAME
1	09900-18000	RECHARGEABLE BATTERY SET
2	09900-27300	LINK WIRE For AUTOCHECK-4000 PRINTER
3	09900-42000	MEMORY EXPANSION CARD 1MB(for flight recording)
4	09910-41000	SERIAL PRINTER
5	09900-25200	SECONDARY IGNITION PICK UP (Additional option item)
6	09910-25300	CURRENT PICK UP(1A-600A) (Additional option item)
7	09910-25400	CURRENT PICK UP(50mA-100A (Additional option item)
8	09910-41001	PRINTER CARTIDGE(2PCS)
9	09910-40002	PAPER ROLL FOR PRINTER(3EA)
10	09910-25500	THERMOCOUPLE PICK UP (Additional option item)
11	09910-25600	PRESSURE PICK UP (Additional option item)

ICON

OPERATION LEVEL ICON

: LEVEL 1 OPERATION(INIT LEVEL)

: LEVEL 1 OPERATION(MENU LEVEL)

: LEVEL 1 OPERATION(MODE LEVEL)

MESSAGE RELATED ICON

: PROCESS / RESULT MESSAGE

: ERROR MESSAGE

: WARNING MESSAGE

APPLICATION HELP ICON

: SCREEN EXPLANATION

: OPERATION GUIDE

: HELP / TIPS

: NOTE

I. GENERAL INFORMATION

1. General Features

Hi-scan Pro offers the following functionality:

On board diagnostic communication
Auto set up oscilloscope emulation
Multi-meter emulation
Special vehicle test emulation

This combination provides for easy and comprehensive diagnosis of the electronically controlled systems used most of all vehicle range.

메모 [STKIM1]: 수정

Hi-scan Pro feature include :

Diagnostic communication with all domestic electronic control systems
OBD-II communication protocol support
Two channel digital oscilloscope test
Vehicle sensor signal simulation
Actuator driving function with predefined frequency and duty cycle

High resolution LCD display
Soft touch key

Secondary PCMCIA slot for additional module
Large Memory expansion card data storage area for flight recorded data

Shock protecting rubber shroud
Rechargeable battery for mobile operation

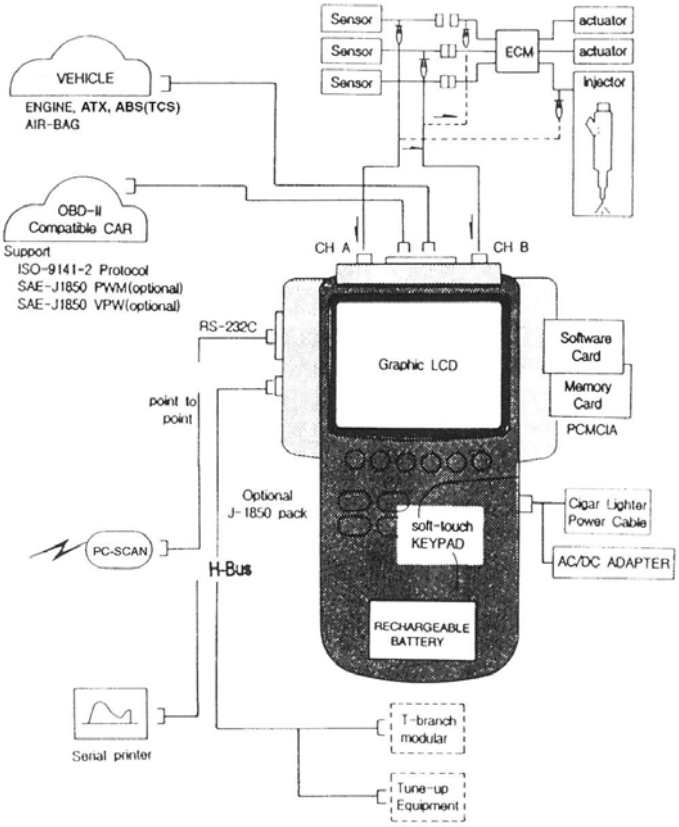
PC communication facility
H-Bus for external module
Serial printer support
PC software download function

2. SPECIFICATION

CASING	Dark gray color High strength ABS material
LCD SPEC.	320 by 240 resolution CCFL Backlight type Standard character output :40 columns 12 Lines
KEYPAD	Power ON /OFF Key, Backlight ON /OFF, Soft Function 6 Keys, Arrow 4 Keys, Fixed Functional 17 Keys Type : Soft Touch Keypad
MEMORY CAPACITY	Application Software Card : 16 Mbytes Standard Memory Expansion Card : 1 Mbytes
RECHARGEABLE BATTERY	7 EA/Set (1100 Ma) Operating time : 2 Hours Without Backlighting
OPERATION VOLTAGE	8 – 16 VDC INPUT
OPERATING TEMPERATURE	0°C -50°C

DLC COMMUNI-CATION PART	All Domestic Vehicle OBD-ll (ISO 9141-2) OBD-ll (SAE-J1850) KWP-2000
OSCILLOSCOPE	2 Channel 1M Sample / Sec Measuring Voltage : Max 500V Maximum Error Rate : ± 1.5% Input Impedance : 1MOhm
SIMULATOR	8 Bit D/A Converter Output Voltage Range : 0-5V
ACTUATOR DRIVER	Maximum 1A short to Ground
ANTI-SHOCK	Rubber Shroud
DIMENSION	Width : 120mm(With upper wings :164mm) Length : 250mm Depth : 50mm (neck part) Weight : 1200g (Main body only)
POWER CONSUMPTION	6 Watts (Backlight ON), 3 Watts (Backlight OFF)

3. Function configuration



[Figure I.1 : Hi-scan Pro Function Configuration]

4. Hi-Scan Pro Parts Description

(1) Hi-scan Pro MAIN BODY
(Part No : 09910-11000)

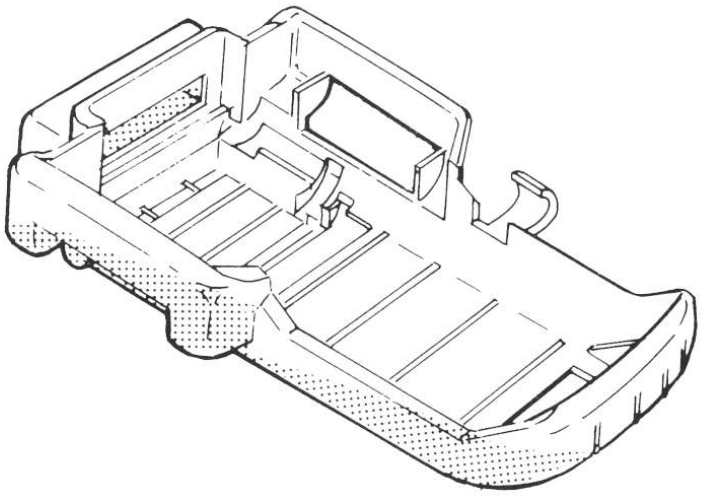
The Hi-scan Pro main body is illustrated in figure I.2.

[Figure I.2 : Hi-scan Pro MAIN BODY]

(2) RUBBER SHROUD

(Part NO : 09900-12000)

The rubber shroud is used to protect the main body from damage when in use.

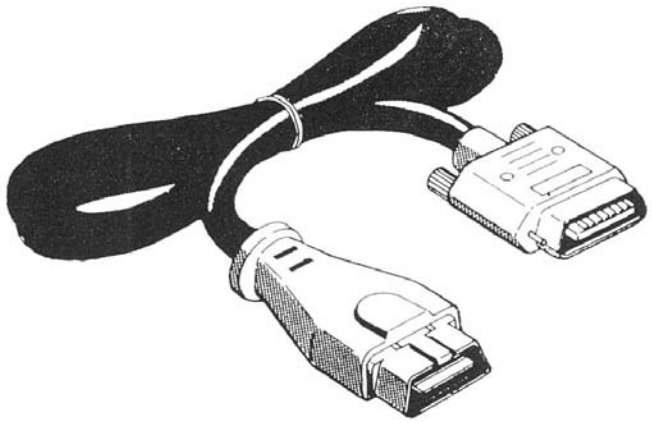


[Figure I.3 : RUBBER SHROUD]

(3) DLC CABLE 16

(Part no :09900-21100)

The cable is illustrated in figure I.4 and is used to connect the main body to the diagnosis terminal of vehicles with 16 pin connector vehicles.

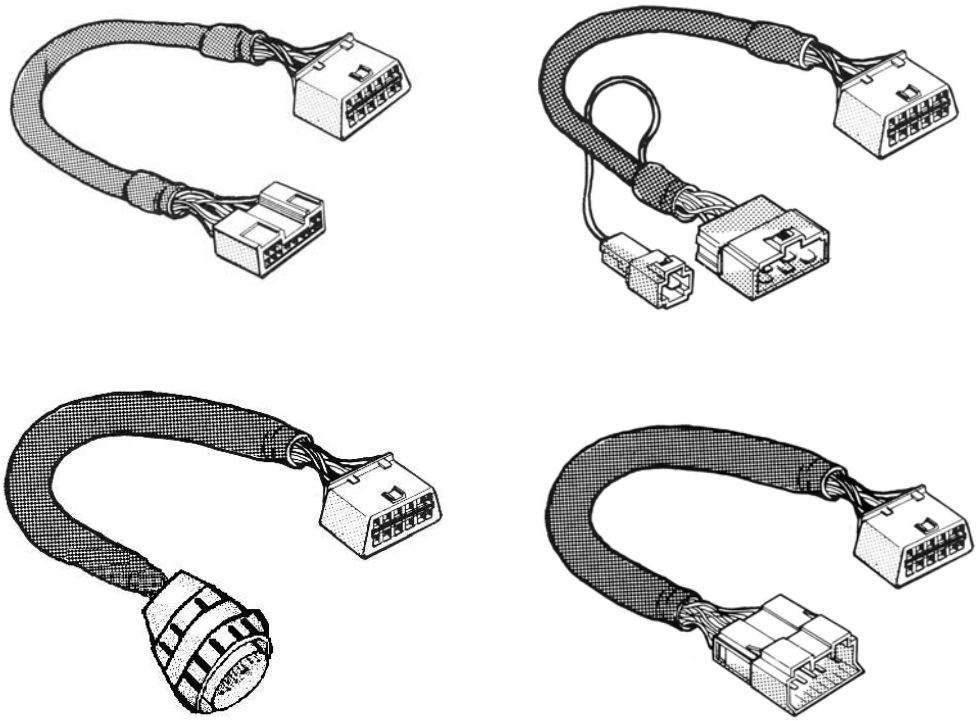


[Figure I.4 : DLC CABLE 16]

(4) DLC CABLE ADAPTER

(Part no : 09900-2XXXX)

The cable is illustrated in figure 1.5 and interfaces between the Hi-scan Pro main body and DLC CABLE 16 when testing 12 pin connector vehicles.(그림 교환요)

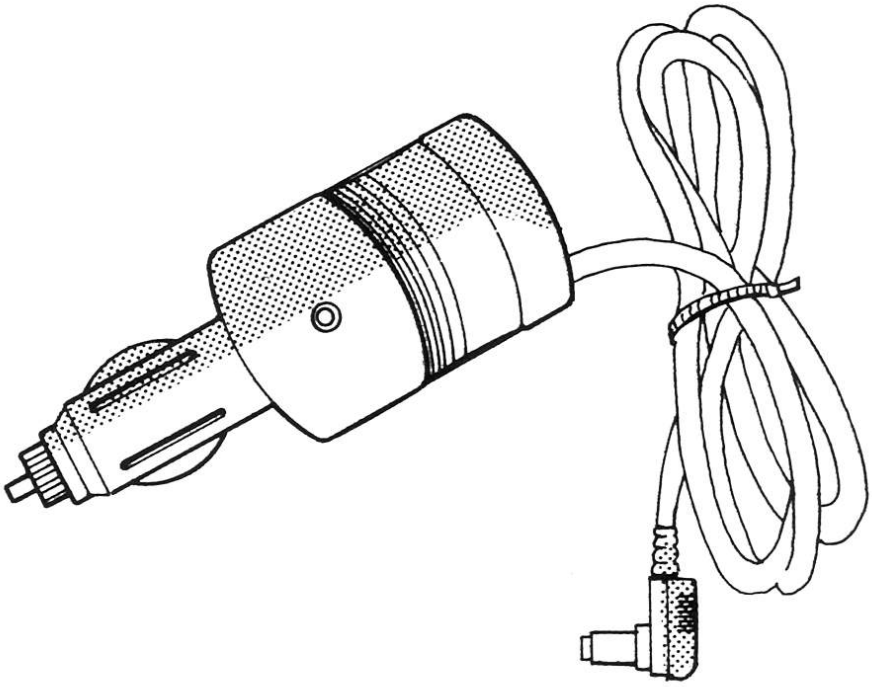


[Figure I.5 : DLC CABLE ADAPTERS]

(5) CIGAR LIGHTER POWER CABLE

(Part no : 09900-27200)

The cable is illustrated in figure 1.6 and is used to provide the Hi-scan Pro main body with power from the vehicle cigar lighter socket.

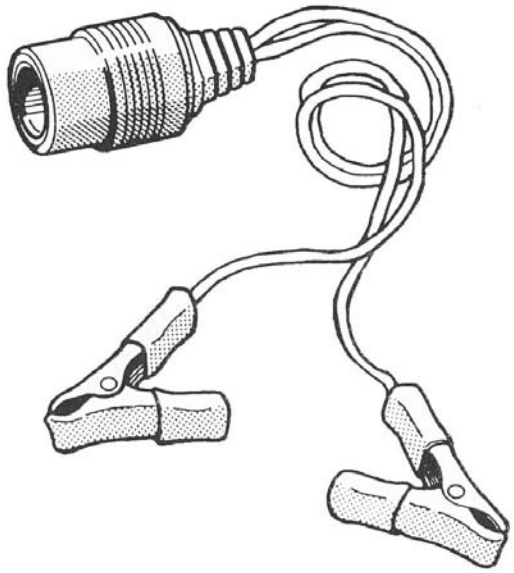


[Figure 1.6 : POWER EXTENSION CABLE]

(6) POWER EXTENSION CABLE

(Part no : 09900-27210)

The cable is illustrated in figure 1.7 and is used to provide the Hi-scan Pro main body with power directly from the vehicle battery.

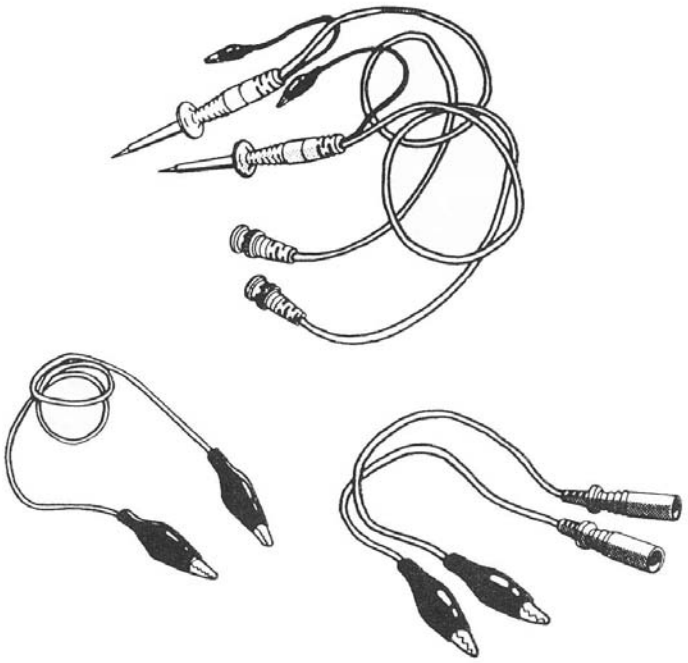


[Figure 1.7 : POWER EXTENSION CABLE]

(7) OSCILLOSCOPE PROBE SET

(Part no : 09900-23100)

The probe illustrated in figure 1.8 serves to measure signals for the oscilloscope function or multi-meter function, or to supply an output for actuator driving amongst other functions. Following parts are supplied as a set.

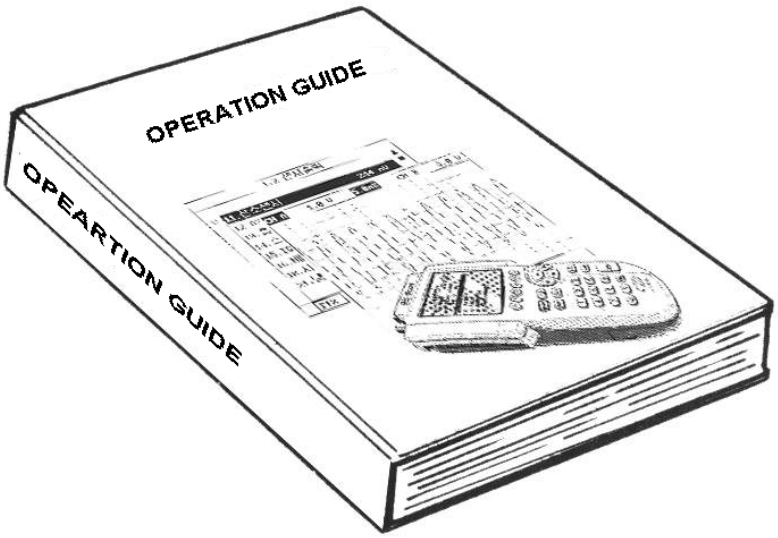


[Figure I.8 : OSCILLOSCOPE PROBE SET]

(8) OPERATION GUIDE

(Part no : 09900-83000)

The guide, illustrated in figure 1.9 provides Hi-scan Pro user Instruction.

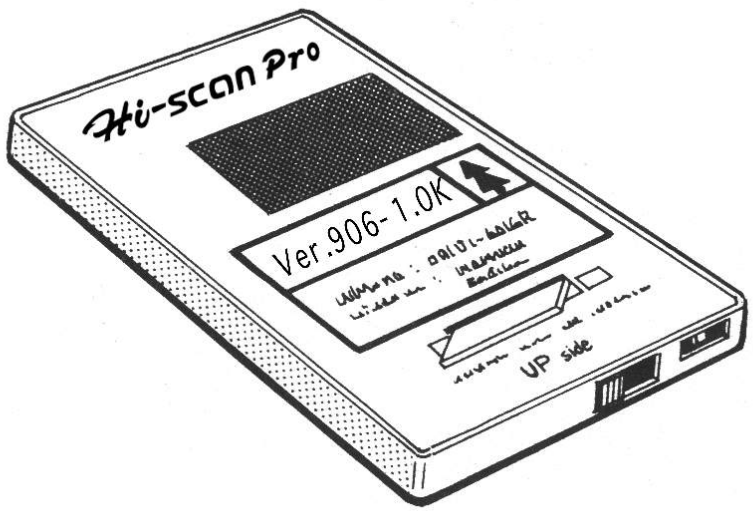


[Figure I.9 : OPERATION GUIDE]

(9) SOFTWARE CARD

(Part no : 09910-6XXXX)

The card stores the main program required to operate Hi-scan Pro and is illustrated in figure I.10.

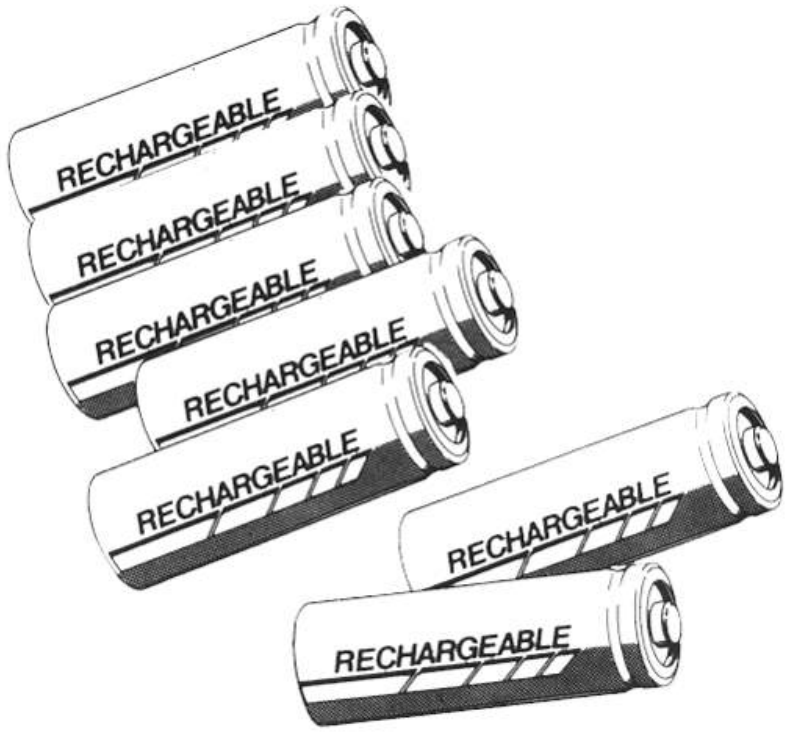


[Figure I.10 : SOFTWARE CARD]

(10) RECHARGEABLE BATTERY SET

(Part no : 09900-18000)

Illustrated in Figure I.11, the optional rechargeable AA size batteries (7ea./set, 1100mah capacity recommended) provides mobile power supply for Hi-scan Pro. AC/DC adapter for battery charging should be sourced locally.

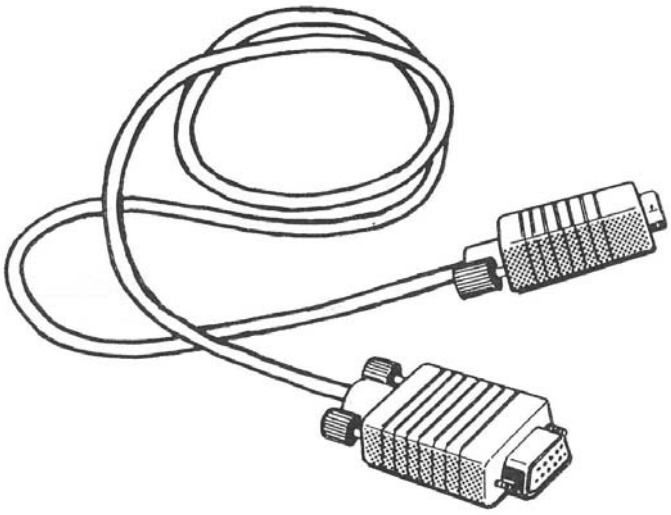


[Figure I.11 : RECHARGEABLE BATTERY]

(11) RS-232C CABLE

(Part no : 09900-27100)

This cable provides means of connecting Hi-scan Pro to a serial printer or computer and is illustrated in figure I.12.

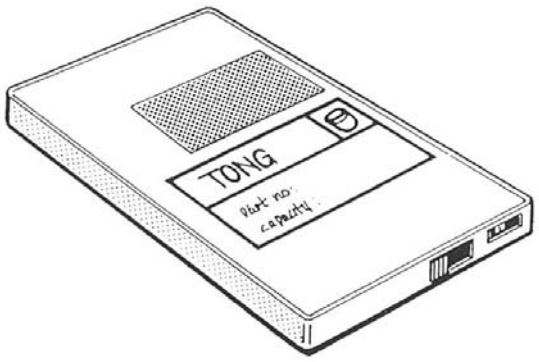


[Figure I.12 : RS-232C CABLE]

(12) MEMORY EXPANSION CARD –1MB

(Part no : 09910-42000)

Illustrated in figure I.13, the optional expansion card increases the flight recorder data storage capacity of Hi-scan Pro.

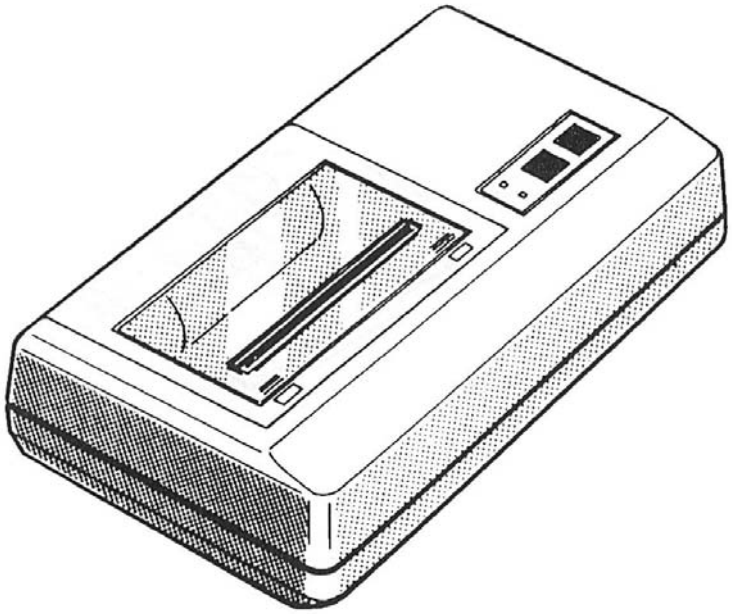


[Figure I.13 : MEMORY EXPANSION CARD]

(13) SERIAL PRINTER

(Part no : 09900-41000)

The optional serial printer (figure I.14) provides a means of obtaining hard copy output from Hi-scan Pro.(내수용 프린터로 그림 교환요)

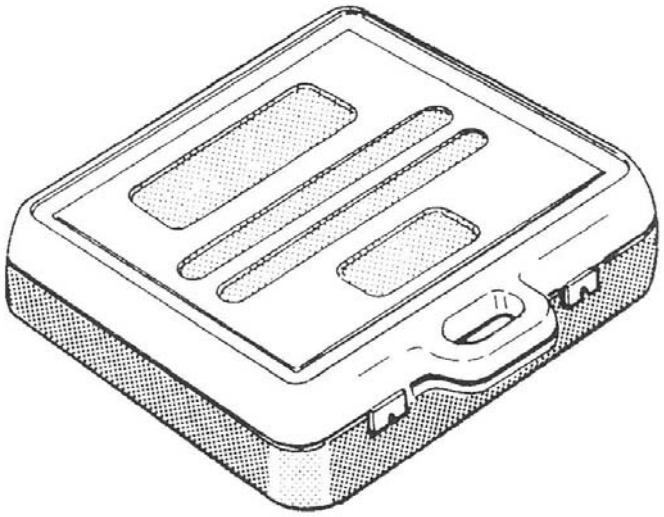


[Figure I.14 : SERIAL PRINTER]

(14) CARRYING CASE

(Part no : 09900-81000)

The carrying case illustrated in figure I.15 provides for easy transportation of Hi-scan Pro and protection for the unit when not in use.



[Figure I.15 : CARRYING CASE]

II. INTRODUCING HI-scan Pro

1. PROGRAM LEVEL Configuration

LEVEL 0 (POST LEVEL)

↑ LEVEL 1 (TOP LEVEL)

↑ LEVEL 2 (INIT LEVEL)

↑ LEVEL 3 (MENU LEVEL)

↑ LEVEL 4 (MODE LEVEL)

↑

- 0.0 LOGO SCREEN
  - 0.1 TOP MENU
    - 1.0 HYUNDAI EXPORTED VEHICLE
    - 2.0 KIA EXPORTED VEHICLE
    - 3.0 KOREA DOMESTIC VEHICLE
    - 4.0 NON KOREAN VEHICLE
    - 5.0 DATA DOWN LOAD
      - 1.0 INITIAL SCREEN
        - 1.0 VEHICLE DIAGNOSIS
          - 1.X DIAGNOSTIC TROUBLE CODES
            - 1.X.1 PART ANALYSIS
            - 1.X.2 ERASE FAULT CODE
            - 1.X.3 DTC HELP
          - 1.X CURRENT DATA
            - 1.X 1 FIX ITEM
            - 1.X 2 ENABLE COMMUNICATION
            - 1.X 3 DISPLAY ALL ITEMS
            - 1.X 4 PART ANALYSIS
            - 1.X 5 GRAPHICAL DISPLAY
            - 1.X 6 DATA HELP
          - 1.X DUAL DISPLAY(KOREAN VEHICLE ONLY)
            - 1.X.1 FIX ITEM
            - 1.X.2 ACTIVATE CURRENT DATA
            - 1.X.3 ACTIVATE DTC

LEVEL 2 (INIT LEVEL)
↑ LEVEL 3 (MENU LEVEL)
↑ LEVEL 4 (MODE LEVEL)
↑

- 1.X FLIGHT RECORD
  - 1.X.1 FIX ITEM
  - 1.X.2 CALL MEMORIZED DATA
  - 1.X.3 START RECORD
  - 1.X.4 TRIGGER
  - 1.X.5 END RECORD
  - 1.X.6 NUMERICAL DISPLAY
  - 1.X.7 GRAPHICAL DISPLAY
  - 1.X.8 MOVE TO TRIGGER POINT
- 1.X ACTUATION TEST(KOREAN VEHICLE ONLY)
  - 1.X.1 START ACTIVATING
- 1.X SIMU-SCAN
  - 1.X.1 FIX ITEM
  - 1.X.2 MULTI-METER
  - 1.X.3 SENSOR SIMULATION

- 2.0 VEHICLE SCOPEMETER
  - 2.1 ENGINE
  - 2.2 AUTOMATIC TRANSAXXLE
  - 2.3 ABS
  - 2.4 OSCILLOSCOPE
  - 2.5 METER(V,F,R,A,T,P)
  - 2.6 GRAPH & METER
  - 2.7 ACTUATOR DRIVING
  - 2.8 SENSOR SIMULATOR

- 3.0 CARB OBD-II DIAGNOSIS
  - 3.1 READINESS TEST
    - 3.1.1 DISPLAY MODULE ID
    - 3.1.2 SELECT MODULE
  - 3.2 CURRENT DATA
    - 3.2.1 DISPLAY MODULE ID
    - 3.2.2 SELECT MODULE
    - 3.2.3 SELECT PID
  - 3.3 DIGNOSTIC TROUBLE CODES
    - 3.3.1 SELECT MODULE
    - 3.3.2 CLEAR/RESET DATA

LEVEL 2 (INIT LEVEL)
↑ LEVEL 3 (MENU LEVEL)
↑ LEVEL 4 (MODE LEVEL)
↑

- 3.4 FREEZE FRAME DATA
  - 3.4.1 DISPLAY MODULE ID
  - 3.4.2 SELECT MODULE
  - 3.4.3 SELECT PID
- 3.5 EXPANDED DIAG. PROTOCOL
  - 3.5.1 EDIT EDP
  - 3.5.2 INSERT NEW EDP
  - 3.5.3 DELETE EDP
  - 3.5.4 RUN EDP
- 3.6 O2 TEST RESULTS
  - 3.6.1 DISPLAY MODULE ID
  - 3.6.2 SELECT MODULE
  - 3.6.3 SELECT TEST ID
- 3.7 MONITORING TEST RESULTS
  - 3.7.1 DISPLAY COMPONENT ID
  - 3.7.2 SELECT TEST ID
- 3.8 COMBINATION DISPLAY
  - 3.8.1 DISPLAY MODULE ID
  - 3.8.2 CURRENT DATA
  - 3.8.3 DIAGNOSTIC TROUBLE CODES
  - 3.8.4 FREEZE FRAME DATA
  - 3.8.5 O2 TEST RESULTS
  - 3.8.6 MONITORING TEST RESULTS
- 3,9 ECU INFORMATION
- 3.10 PENDING DTC

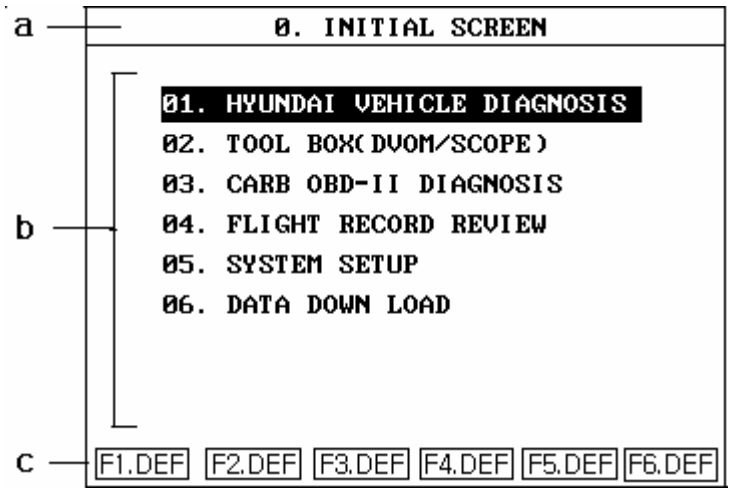
- 4.0 FLIGHT RECORD REVIEW
- 5.0 SYSTEM SETUP
  - 5.1 SYSTEM CONFIGURATION
  - 5.2 DATA SETUP
  - 5.3 PRINTER SETUP
  - 5.4 SYSTEM TEST
    - 5.4.1 KEYPAD TEST
    - 5.4.2 LCD TEST
    - 5.4.3 MEMORY TEST
  - 5.5 METER ZERO SET

2. OPERATION PRINCIPLE

HI-scan Pro operates with an LCD screen to convey information to the user and a keypad to allow for input.

The basic elements of the screen and keypad are indicated in figure II.1 and figure II.2, with more detailed descriptions are contained within the following pages.

(1) LCD PART



[Figure II.1 : LCD SCREEN]

Easy to read , LCD screen is separated into 3 major data areas.

Hi-scan LCD screen presents you easy and comfortable operation environment. The screen is divided into three major parts as followings.

a : CURRENT SCREEN TITLE

The current screen title indicates the current level or function related information to the operator. The example in figure II.1 indicates:

[0.0 INITIAL SCREEN] – this is the current screen description.

b : MAIN CONTENTS

The main contents of the screen indicate to the operator which options are currently available for selection. The example in figure II.1 indicates:

[01. HYUNDAI VEHICLE DIAGNOSIS]
[02. TOOL BOX]
[03. CARB OBD –II DIAGNOSIS]
[04. FLIGHT RECORD REVIEW]
[05. SYSTEM SETUP]

c : SOFT FUNCTION KEY DEFINITION

A " Soft function Key" is one which has a function dictated by the Hi-scan Pro software and which will change according to the particular section of the program being used. The action which will result from the use of a particular soft function key at any given moment is defined by the description given on the screen immediately above the particular soft function key. The example in figure II.1 indicates:

F1.DEF — This segment describes the action resulting from the use of the F1 key.

F2.DEF — This segment describes the action resulting From the used of the F2 key.

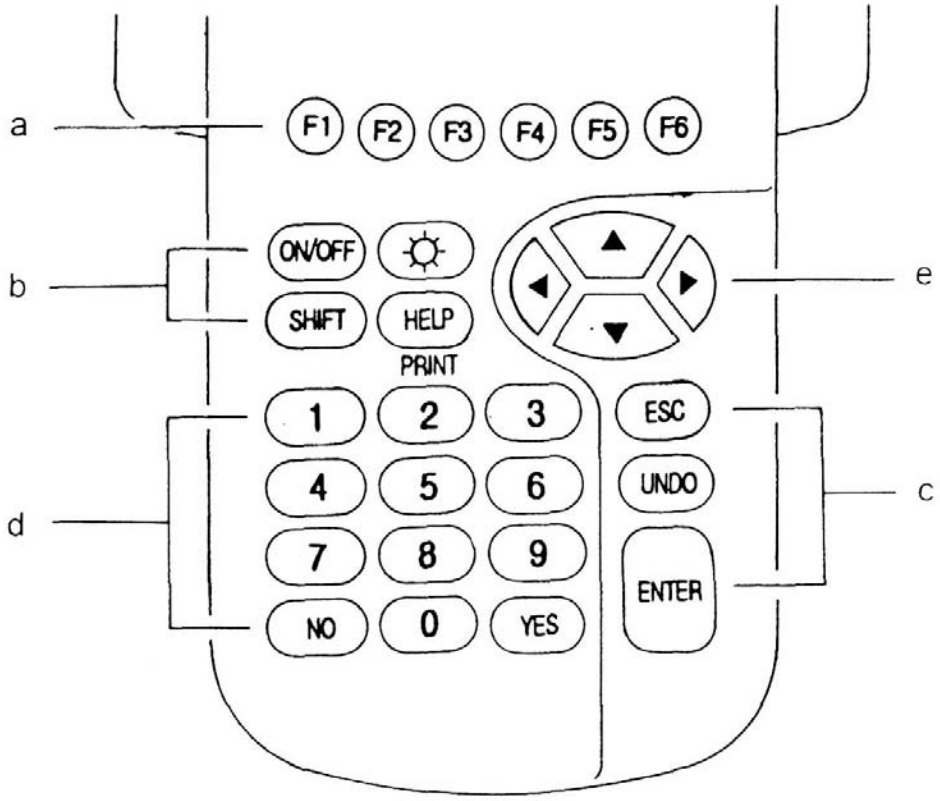
F3.DEF — The segment describes the action resulting from the use of the F3 key.

F4.DEF — This segment describes the action resulting from the use of the F4 key.

F5.DEF — This segment describes the action resulting from the use of the F5 key.

F6.DEF — This segment describes the action resulting from the use of the F6 key.

(2) KEY PAD



[Figure II.2 : Hi-scan Pro KEYPAD]

a : SOFT FUNCTION KEY

Pressing a soft function key will cause the action described on the screen immediately above that key to occur.

b,c : FIXED FUNCTION

The fixed function keys cause the action described to occur whenever that key is depressed, regardless of which section of the program is being used. The fixed function key action are described below :

ON/OFF Turns on or off power to Hi-scan Pro

B.LIGHT Turns on or off LCD display backlight

SHIFT Provides additional function when used in conjunction with another fixed conjunction key.

HELP Provides user help information relating to current screen

SHIFT + HELP or 1 Activates print function

ESC Return to preceding screen

UNDO Cancel Print operation.

ENTER Execute selected option/data input etc.

YES Input 'yes' response

N O Input 'no' response

d : NUMERIC KEY

The numeric keys allow for the input of the numeric values indicated upon the key legend.

e : DIRECTION CONTROL KEY

Movement of the cursor is controlled by the of the:

 **key for upward cursor movement**

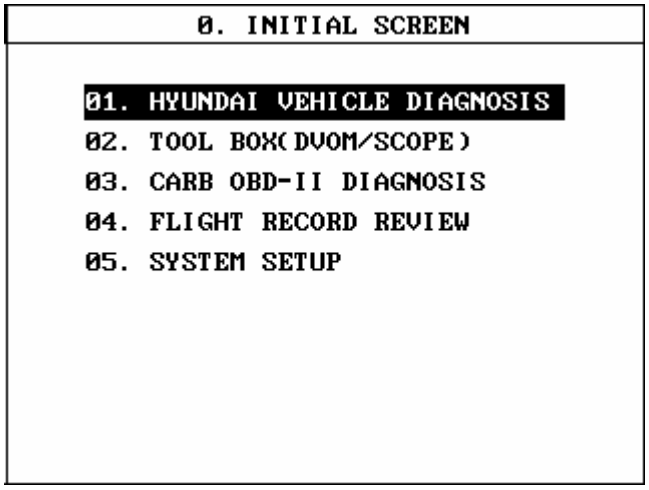
 **key for downward cursor movement**

 **key to move cursor towards the left of the display**

 **key to move the cursor towards the right of the display**

3. COMPOSITION of MENU SCREEN

An example of menu screen is illustrated in figure II.3.



[Figure II.3 : INTIAL SCREEN]

A maximum of eight lines will be display on screen, subsequent lines may be viewed by using the DOWN key.

The UP and DOWN keys permit the displayed lines to be paged up or down as required.

To select an item, the cursor should be positioned over the required item which will be displayed in inverted text (white letters on a dark background) and the ENTER key pressed.

Alternatively, the numeric key corresponding to the menu item number should be depressed followed by the ENTER key to perform the selection.

If two or more numeric keys are depressed in succession, only the last two keys depression made before the ENTER key is depressed will be selected.

4. MESSAGE DISPLAY

1) ERROR MESSAGE

If an invalid selection is made or an occurs, a message will be displayed within the existing screen and an audible warning will be given.

2) PROCESS MESSAGE

The operation may be informed of the status of a current process by means of a message displayed within the existing screen.

3) TIPS / HELP MESSAGE

Where the TIPS or HELP key is used and support is available, a message will be displayed the existing screen.

5. POWER SUPPLY

Hi-Scan Pro may be power from one of five sources :

(1) CIGAR LIGHTER POWER CABLE

Power is obtained from the vehicle cigar lighter socket by means of the above cable. However, power is not available from the cigar lighter socket when the ignition key is at the “OFF” position or when the engine is being cranked.

(2) POWER EXTENSION CABLE

Power is obtain from the vehicle battery and is available irrespective of the ignition switch position or engine-cranking mode.

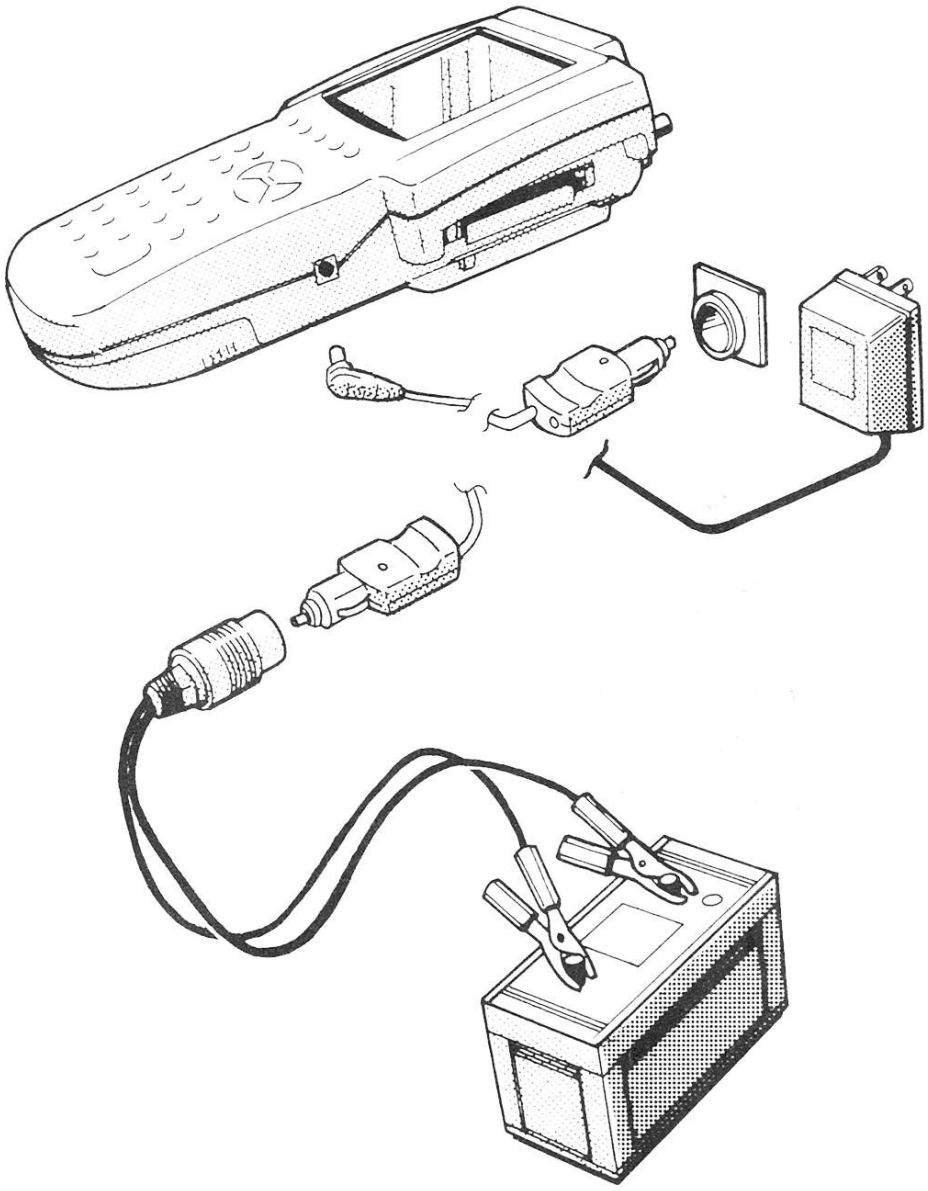
(3) DLC CABLE

Vehicles, which have OBD-II communication, protocol supply power to Hi-scan Pro through the DLC Cable without the need of an additional power supply.

※Note : When you use DLC cable for power supply, please do not use cigar light power cable.

(4) INTERNAL RECHARGEABLE BATTERY

Where the optional rechargeable batteries are installed, Hi-scan Pro may be operated independently of any external power source.



[Figure II .4 : Hi-scan Pro POWER SUPPLY]

(5) AC/DC ADAPTER

The locally sourced AC/DC adapter used for recharging the internal batteries (where specified) may be used to power Hi-scan Pro whilst battery charging is in progress.

6. INTERNAL BATTERY CHARGING

Where this option is specified, battery charging can be undertaken independently of Hi-scan Pro operation by means of an AC/DC adapter, the DLC cable (vehicles with OBD-II communication protocol only) or the cigar lighter power cable.

When the voltage of the internal batteries falls below the specified minimum, Hi –scan Pro will conclude the current processing option (including any necessary data storage) before displaying the following message and turning off the Hi-scan Pro.

BATTERY VOLTAGE LOW !
RECHARGE BATTERY

7. POWER ON/OFF OPERATION

(1) OPERATION OF ON/OFF KEY

To turn on Hi-scan Pro, press the (ON/OFF) key. After 0.5 seconds or so. Hi-scan Pro will respond by displaying the opening screen illustrated in figures II.5.

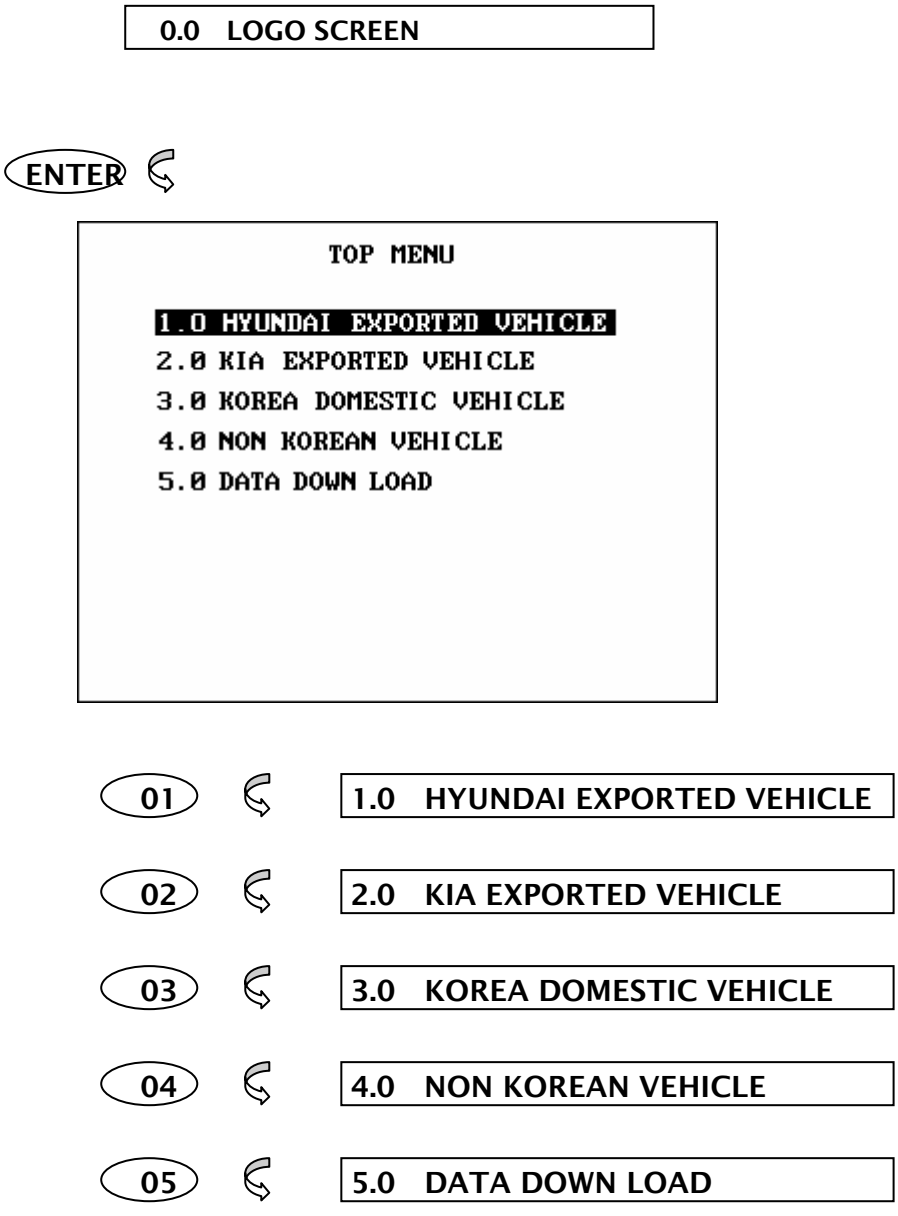
To turn off Hi-scan Pro, it is necessary to depress and hold the (ON/OFF) key for approximately 2second. This prolonged key depression ensures that Hi-scan Pro is not accidentally turned off by accidentally depressing the (ON/OFF.)

[Figure II.5 : SOFTWARE CARD LOGO]

8. TOP MENU LEVEL OPERATION

(LEVEL 1)

8-1. OPERATION FLOW



[Flow II.2 : TOP MENU SCREEN]

8-2. Application of TOP MENU LEVEL

From this screen, one of the five following options can be Selected by either:

Scrolling until the required option appears in inverted text using the [UP] or [DOWN] keys and pressing [ENTER] or, entering the required option number using the numeric key corresponding to the option number and pressing [ENTER] .

Select either of one from the list accordingly, then the INITIAL SCREEN will appear. The further detail of INITIAL SCREEN can be found at next section. There are four vehicle types you can choose from and SYSTEM SETUP mode as follows:

01	1.0 KIA EXPORTED VEHICLE
02	2.0 HYUNDAI EXPORTED VEHICLE
03	3.0 DOMESTIC VEHICLE
04	4.0 VEHICLE EXCEPT KOREA

Japanese, European, and American can be found in [04] VEHICLE EXCEPT KOREA.

Operation guide for each menu list can be found in the manual. Operating method for each of Hyundai and Kia's exported and domestic vehicle are same. Refer to HYUNDAI or KIA VEHICLE DIAGNOSIS for all domestic and exported Korean vehicles.

In this menu NO. 4, 4 menu items will be listed on the screen.

01	JAPANESE VEHICLE DIAGNOSIS
02	AMERICAN VEHICLE DIAGNOSIS
03	EUROPEAN VEHICLE DIAGNOSIS
04	SYSTEM SETUP

Choose the origin of vehicle and the vehicle manufacturer will be listed. Select the vehicle manufacturer, and then the car name will be listed according to vehicle manufacturer.

05 ENTER selects option [5.0 DATA DOWN LOAD] menu screen.

From this menu, Hi-Scan Pro software can be upgraded.

Inquire to dealer for Software upgrade and the price.

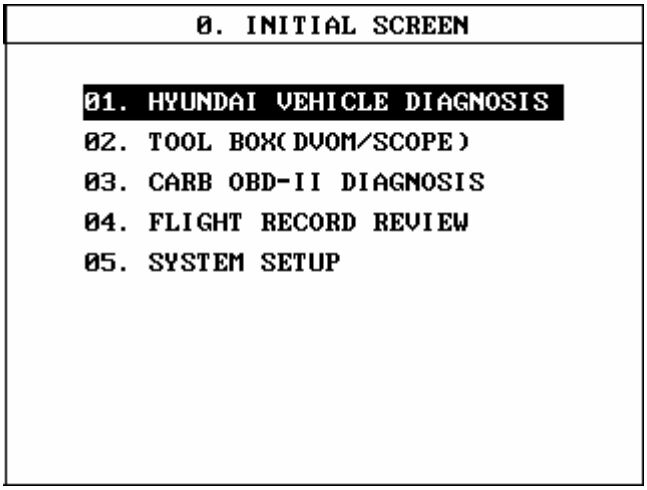
9. INITIAL LEVEL OPERATION

(LEVEL 2)

9-1. OPERATION FLOW

0.1 TOP MENU SCREEN

ENTER



01 → 1.0 VEHICLE DAIGNOSIS

02 → 2.0 TOOL BOX

03 → 3.0 CARB OBD-II DIAGNOSIS

04 → 4.0 FLIGHT RECORD REVIEW

05 → 5.0 SYSTEM SETUP

[Flow II.3 : INITIAL SCREEN]

9-2. Application of INITIAL LEVEL

From this screen, one of the five following options can be Selected by either:

Scrolling until the required option appears in inverted text using the [UP] or [DOWN] keys and pressing [ENTER] or, entering the required option number using the numeric key corresponding to the option number and pressing [ENTER] .

The functions, which correspond to each of the options, are detailed below:

[01] [ENTER] selects option [1.0 VEHICLE DIAGNOSIS] menu screen. From this menu, the following options are available:

1.1 DIAGNOSTIC TROUBLE CODES mode
1.2 CURRENT DATA mode
1.3 FLIGHT RECORD mode
1.4 ACTUATION TEST mode
1.5 SIMU-SCAN mode
1.6 IDENTIFICATION CHECK mode
1.7 RESETTING ADAPTIVE VALUES mode

Some of functions listed above may not be found depends on the vehicle type. These are based on Korean vehicles

02 ENTER selects option [2.0 VEHICLE SCOPEMETER] menu screen. From this menu, the following options are available:

2.1 ENGINE
2.2 AUTOMATIC TRANSAXLE
2.3 ABS
2.4 MANUAL SCOPE
2.5 METER(V,F,R,A,T,P)
2.6 GRAPH & METER
2.7 ACTURATOR DRIVING
2.8 SENSOR SIMULATOR

03 ENTER selects options [3.0 CARB OBD-II DIAGNOSIS] menu screen. From this menu, the following options are available:

3.1 READINESS TEST mode
3.2 CURRENT DATA mode
3.3 DIAGNOSTIC TROUBLE CODES mode
3.4 FREEZE FRAME DATA mode
3.5 EXPANDED DIAG. PROTOCOL mode
3.6 O2 TEST RESULTS mode
3.7 MONITORING TEST RESULTS mode
3.8 COMBINATION DISPLAY mode

04 ENTER selects option [4.0 FLIGHT RECORD REVIEW] menu screen. This menu allows for the display of the recorded data.

05 ENTER Cursor movement, data entry etc. may be performed from these and other screens using the FIXED FUNCTION KEYS as indicated in Figure II-2.

On this screen, operation by FIXED keys are available, too.

FIXED key operation is commonly available for the whole screen, of which explanation will be omitted for further screen operation accordingly.

10. MENU LEVEL OPERATION

(LEVEL 3)

10-1. OPERATION FLOW

0.1 INITIAL SCREEN

01

```
1. HYUNDAI VEHICLE DIAGNOSIS
MODEL  : SONATA     99-2002MY  ALL
SYSTEM : ENGINE V6-DOHC
         UNLEAD                ALL
  01. DIAGNOSTIC TROUBLE CODES
  02. CURRENT DATA
  03. FLIGHT RECORD
  04. ACTUATION TEST
  05. SIMU-SCAN
  06. SYMPTOM ANALYSIS
  07. RESETTING ADAPTIVE VALUES
```

01	1.1 DAIGNOSTIC TROUBLE CODES
02	1.2 CURRENT DATA
03	1.3 FLIGHT RECORD
04	1.4 ACTUATION TEST
05	1.5 SIMU-SCAN
06	1.6 SYMPTOM ANAYLSIS
07	1.7 RESETTING ADAPTIVE VALUE

[Flow II.3 : VEHICLE DIAGNOSIS MENU IN/OUT FLOW]

10-2 APPLICATION OF MENU LEVEL

(VEHICLE DIAGNOSIS MENU example)

01 **Selects [1.1 DIAGNOSTIC TROUBLE CODES] mode, which will display any diagnosis codes, are being stored within the selected ECM.**

02 **Selects [1.2 CURRENT DATA] mode where sensor values from the selected ECM are displayed.**

03 **Selects [1.3 FLIGHT RECORD] mode, a function that allows Hi-Scan Pro to continuously collect and analyze vehicle data.**

04 **Selects [1.4 ACTUATION TEST] mode to allow various actuators to be driven by Hi-Scan Pro.**

05 **Selects [1.5 SIMU-SCAN] mode to allow multi meter and sensor simulation functions to be performed while observing current data.**

06 **Selects [1.6 SYMPTOM ANALYSIS] mode provides step-by-step repair procedure according to symptom.**

07 **Selects [1.7 RESETTING ADAPTIVE VALUE] mode to allow resetting adaptive value in ECU.**

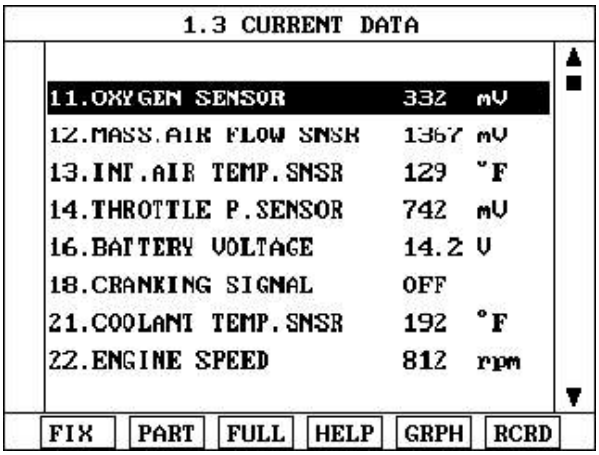
11. MODE LEVEL OPERATION

(LEVEL 3)

11-1. OPERATION FLOW

1.0 VEHICLE DIAGNOSIS

02



FIX → 1.1.1 FIX ITEM

PART → NOT SUPPORTED

FULL → 1.1.3 DISPLAY ALL ITEMS

HELP → 1.1.6 DATA TIPS

GRPH → 1.1.5 GRAPHICAL DISPLAY

RCRD → 1.1.6 DATA RECORD

[Flow II.4 : CURRENT DATA MODE IN/OUT FLOW]

11-2.APPLICATION OF MODE LEVEL (CURRENT DATA Mode example)

At the Mode level screen, the following soft function key options offer access to advanced applications:

FIX executes the [1.1.1 FIX ITEM] function, which moves the item in reverse text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another. The fixed item is identified by an asterisk.

PART function is no supported.

FULL executes the [1.1.3 DISPLAY ALL ITEMS] function which displays a maximum of 22 data items in an abbreviated format on the screen.

HELP executes the [1.1.6 DATA TIPS] which displays shooting trouble information for the selected item.

GRPH executes the [1.1.5 GRAPHICAL DISPLAY] function causing the selected data to be displayed as a graph. The data selection is made by using the FIX key.

RCRD executes the [1.1.6 DATA RECORD] which records current data to memory card and can be reviewed.

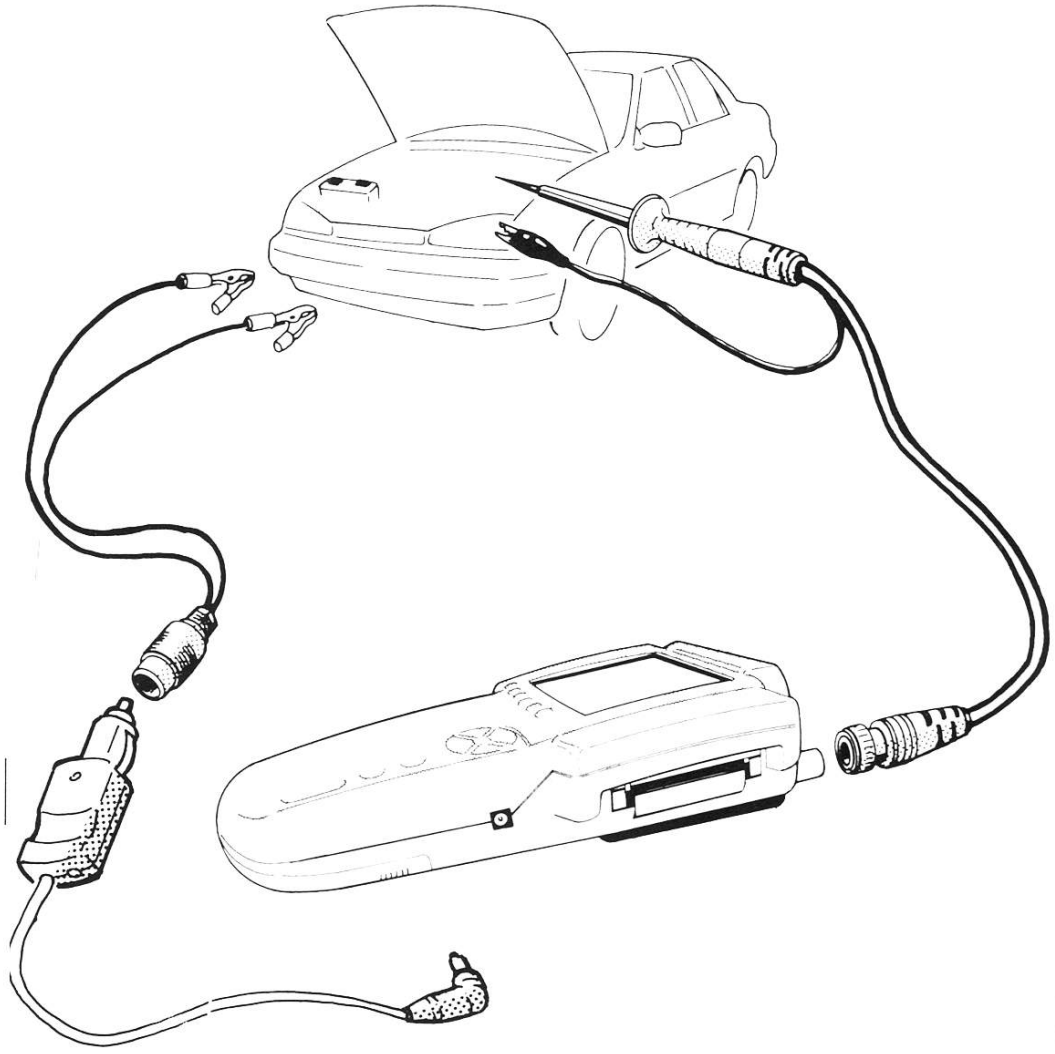
III. KIA VEHICLE SCOPEMETER for KIA or TOOL BOX(DVOM/SCOPE) for HYUNDAI

1. CONNECTION METHOD

The power supply for Hi-scan Pro when using the VEHICLE SCOPEEMETER features should be as described in section III-1. The DLC cable is not required in this mode.

Once the power supply has been connected, the SCOPE PROBE should be connected to channel A and/or B of the HI-Scan Pro.

MAXIMUM INPUT VOLTAGE IS 500V DC. VOLTAGE IN EXCESS OF 500V DC MAY CAUSE DAMAGE TO HI-Scan Pro.



[FIGURE III.1 : VEHICLE SCOPEMETER MODE CONNECTION]

2. ENGINE

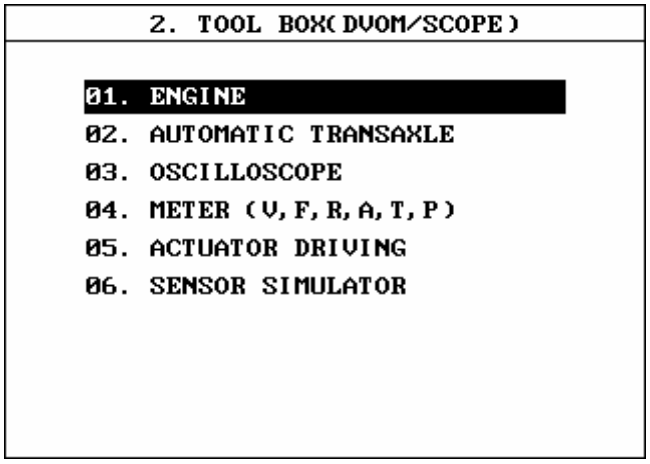
2-1. OPERATION FLOW

Choose either Kia or Hyundai vehicle to operate SCOPEMETER/TOOL BOX function

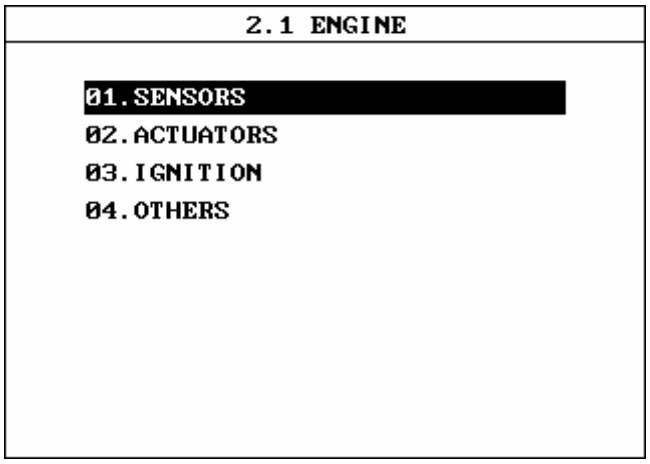
01. INITIAL SCREEN

02 ENTER

02. TOOL BOX/SCOPEMETER

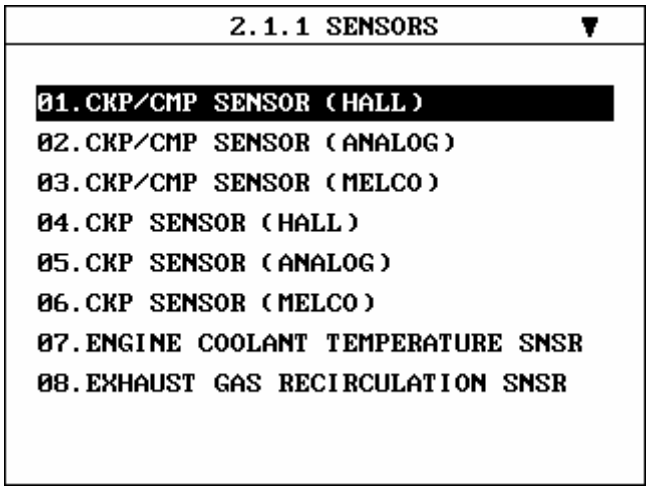


01 ENTER

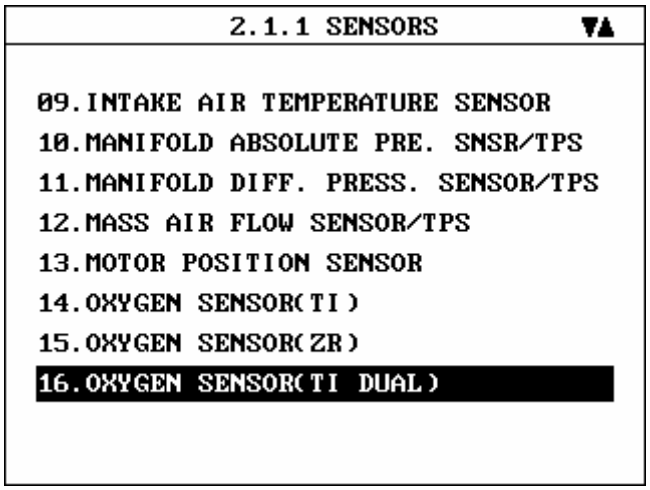


[FLOW III.1 : Engine Diagnosis Test]

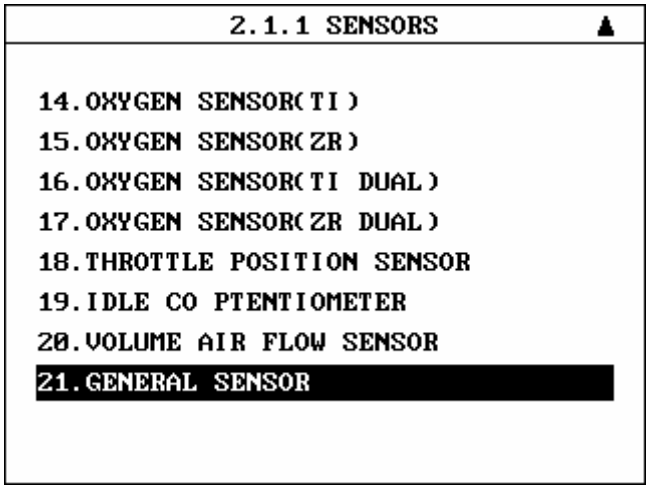
01 ENTER



[FIGURE III.2 : SENSOR DIAGNOSIS TEST]



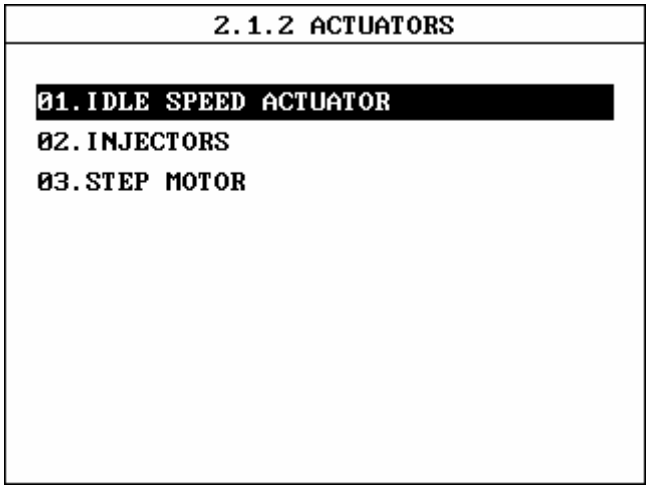
[FIGURE III.3 : SENSOR DIAGNOSIS TEST]



[FIGURE III.4 : SENSOR DIAGNOSIS TEST]

Sensor diagnosis test supports 21 of different data items as Illustrated in figure [III.2] through [III.4]

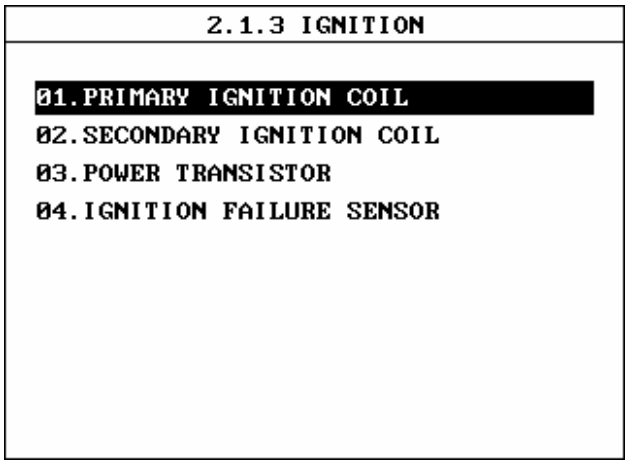
02 ENTER



[FIGURE III.5 : ACTUATOR TEST]

Actuators Test support 3 of data items as illustrated in figure [III.5]

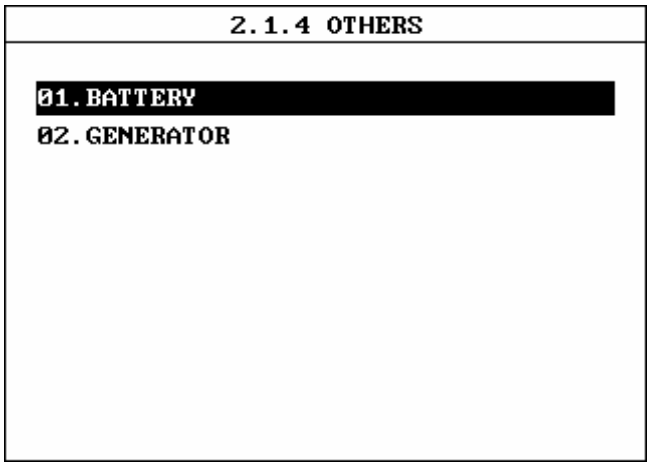
03 ENTER



[FIGURE III.6 : IGNITION TEST]

Ignition test supports 4 of data items as illustrated in figure [III.6]

04 ENTER



[FIGURE III.7 : OTHERS TEST]

Others test supports 2 of data items as illustrated in figure [III.7]

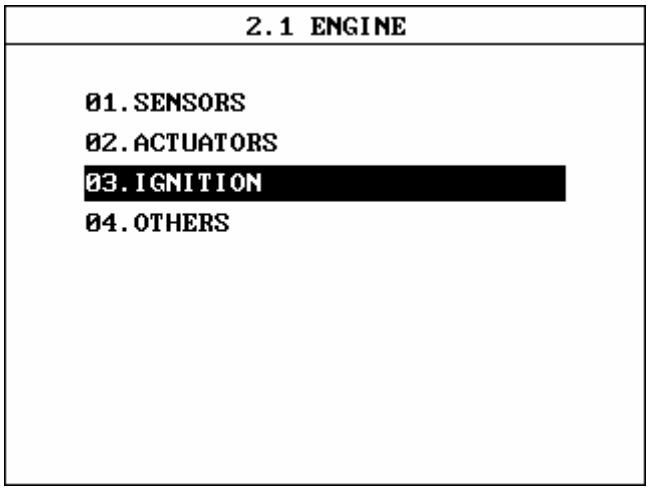
2-2. SECONDARY IGNITION WAVEFORM DIAGNOSIS MODE

01. INITIAL SCREEN

02 ENTER

02. TOOL BOX/SCOPEMETER

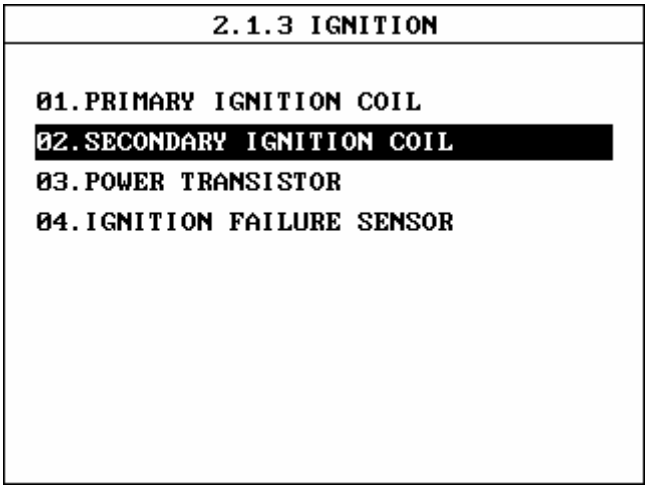
01 ENTER 01. ENGINE



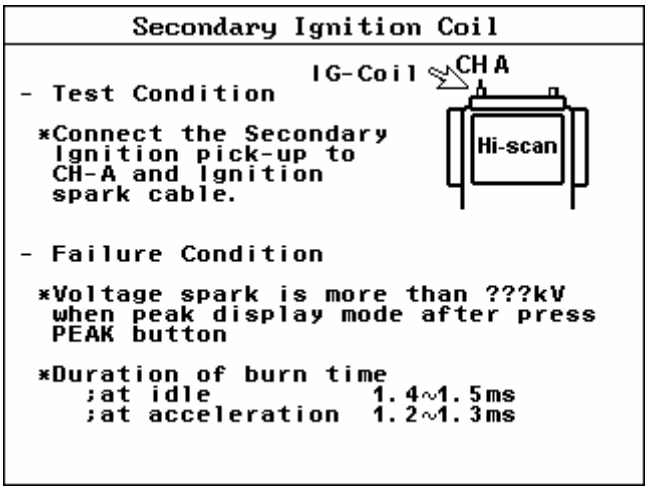
[FIGURE III.8 : ENGINE TEST]

Since the ignition system operates at high voltage, it is Dangerous to touch high-tension circuit components such as the ignition coil, spark plug caps and distributor cap.

O3 ENTER

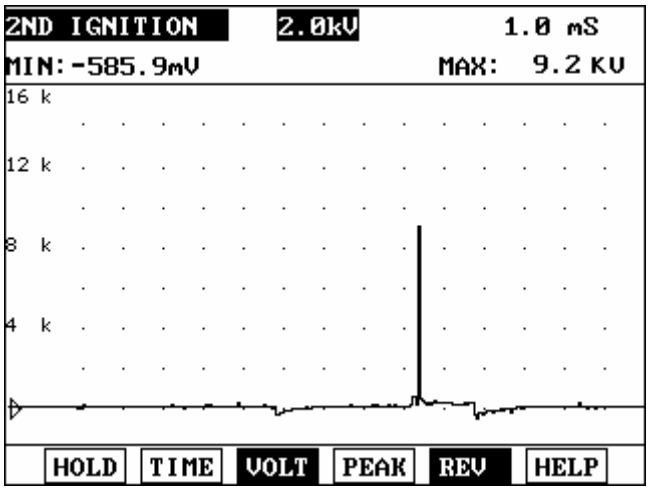


[FIGURE III.9 : IGNITION TEST]



[FIGURE III.10 : INSTALL INSTRUCTION]

ENTER



[FIGURE III.11 : SECONDARY IGNITION WAVEFORM DIAGNOSIS]

Test secondary waveform diagnosis according to the Procedures from [figure III.9] to [figureIII.11].
Dwell time is displayed with at value in this mode,
To get a detailed surge voltage, press F4(PEAK) key.

HOLD You can stop recoding of voltage signal by pressing HOLD Key. In the hold mode, voltage displayed on screen is frozen to allow analysis of voltage.

TIME Press TIME key and use of the UP or RIGHT Key increase the time division value. While DOWN or LEFT key being used to decrease the time base value. A range of preset values from 50μs to 50 second is available.

VOLT The voltage scale may be selected by depressing this key press **VOLT** key and use of the **UP** or **RIGHT** key increases the voltage division, while **DOWN** or **LEFT** being used to decrease the voltage division a range of preset values from 200V to 50KV is available.

PEAK Press **PEAK** key, you can measure surge value of secondary waveform both of measured voltage values max and min are displayed on top screen.

REV To change polarity of waveform on screen. Press this **REV** Key.
Actual waveform in vehicle is in a reverse direction, so by using **REV** key, waveform can be shown in right direction.

HELP function is not supported. If the **HELP** button is pressed, then the following message will be displayed.

NO TIPS. FOR MORE INFORMATION, REFER TO THE SHOP MANUAL

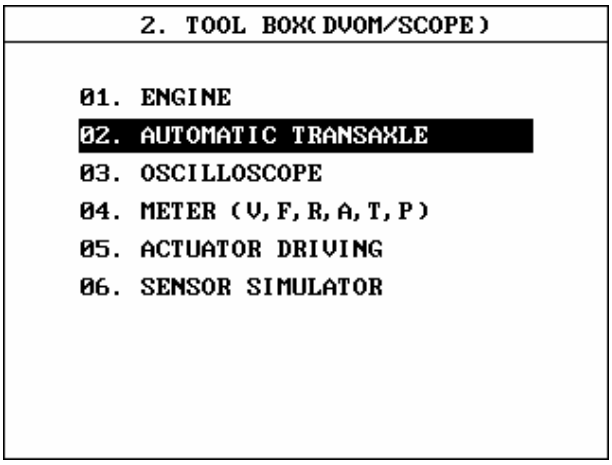
3. AUTOMATIC TRANSAXLE MODE

3-1. OPERATION FLOW

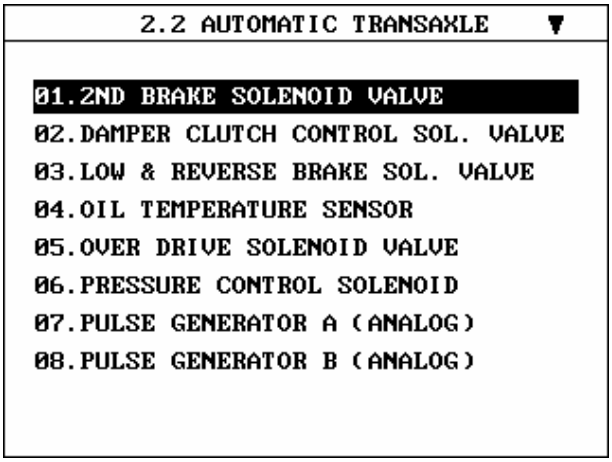
01. INITIAL SCREEN

02 ENTER

02. TOOL BOX/SCOPEMETER



02 ENTER



[FLOW III.2 : AUTOMATIC TRANSAXLE DIAGNOSIS]

There are 8 of data items in this mode. Diagnostic procedures in this mode are same as engine diagnosis.

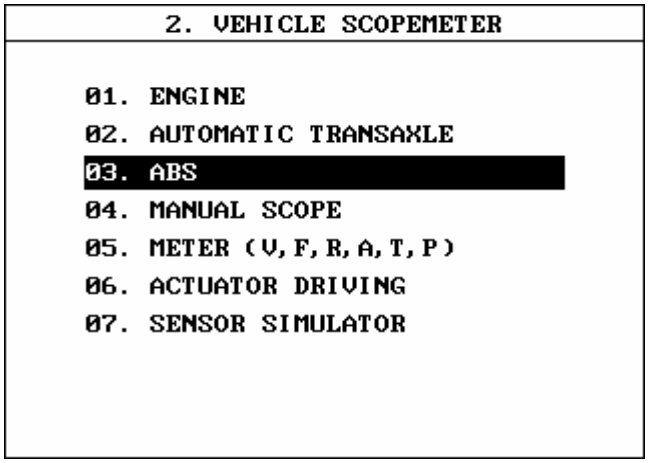
4. ABS

4-1. OPERATION FLOW

01. INITIAL SCREEN

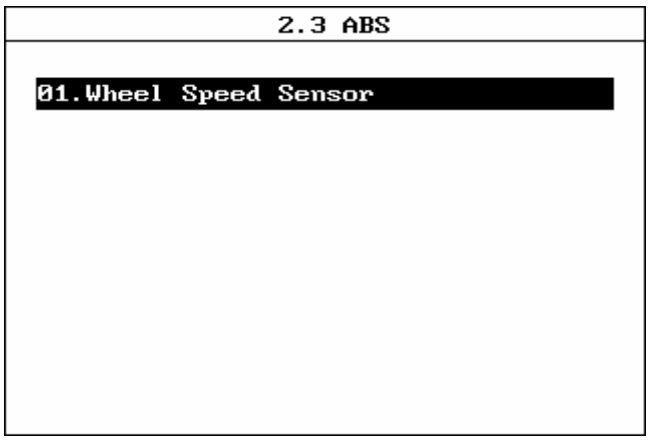
02 **ENTER**

02. TOOL BOX/SCOPEMETER



[FLOW III.3 : ABS DIAGNOSIS]

03 **ENTER**



[FIGURE III.12 : ABS TEST]

There is 1 data item in this mode. Diagnostic procedures in this mode are same as engine diagnosis.

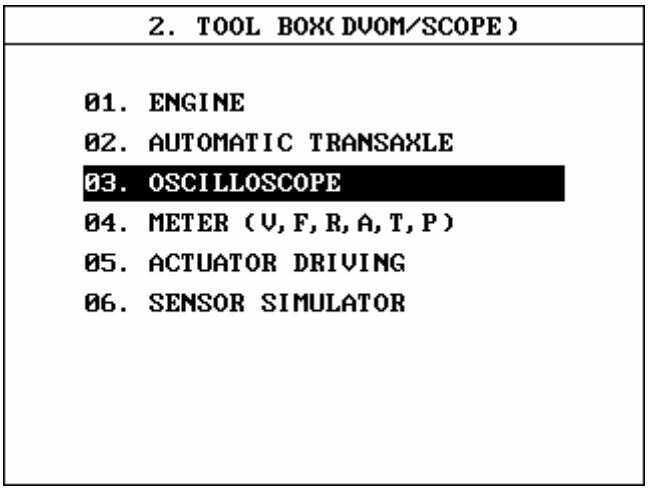
5. OSCILLOSCOPE(MANUAL SCOPE)

5-1. OPERATION FLOW

01. INITIAL SCREEN

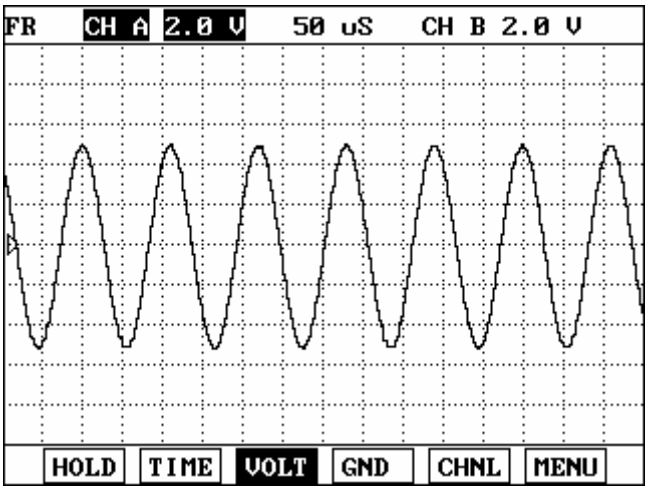
02. ENTER

02. TOOL BOX

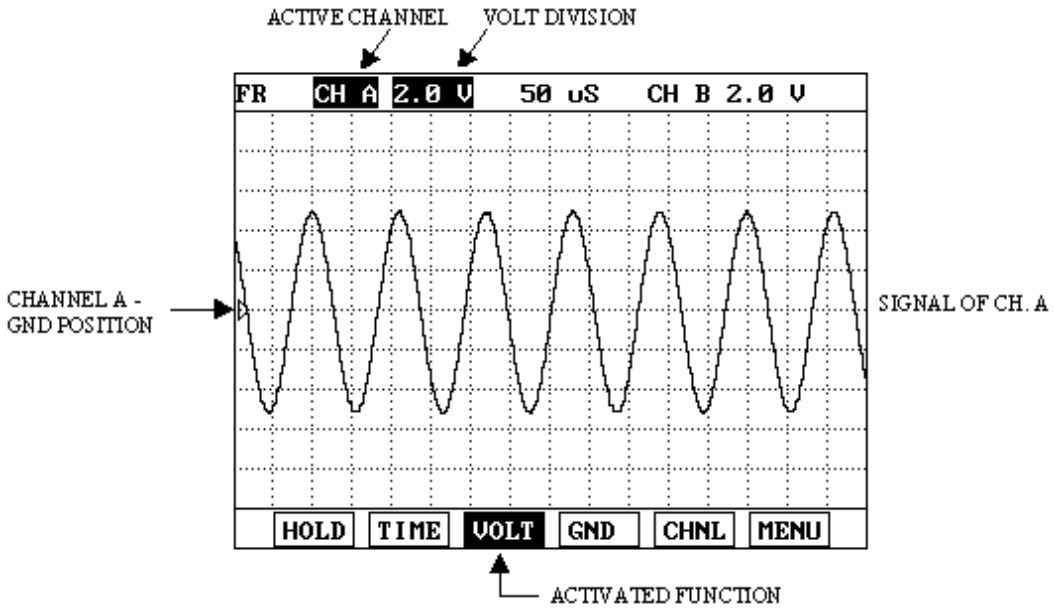


[FLOW III.4 : TOOL BOX MODE FLOW]

03 ENTER



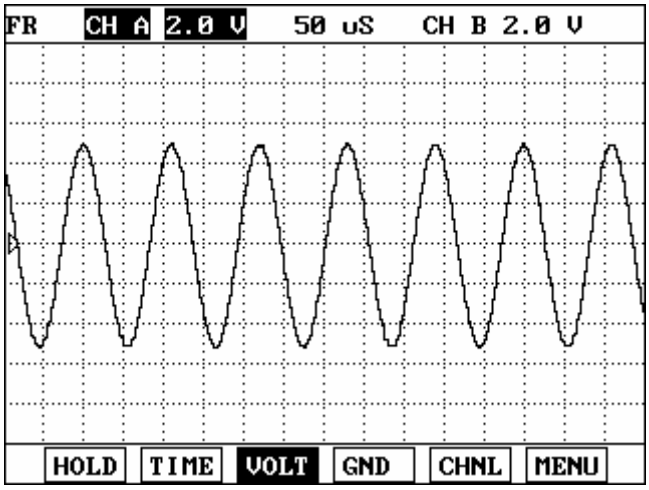
[FIGURE III.13 : VEHICLE SCOPE]



[FIGURE III.14 : OSCILLOSCOPE DISPLAY]

HOLD	Run/Hold Display
TIME	Setup Time Base
VOLT	Setup Voltage Scale
GND	Setup Ground level
CHNL	Switch Channel
MENU	Added Function Display
ZOOM	Zoom Function
CURS	Analysis Voltage, Time, Frequency
RECD	Record Function

5-2. RUN MODE APPLICATION



[FIGURE III.15 : OSCILLOSCOPE MODE DISPLAY]

The oscilloscope mode allows signal waveforms to be displayed on the screen. Hi-scan Pro offers 2-channel (1MHZ) storage oscilloscope function offering both run and hold modes.

This mode is set so that you can see signal serene changes.

HOLD Depressing this key changes the mode from run to hold. In the hold mode, the waveform displayed on screen is frozen to allow analysis of the waveform when the hold feature is used, the HOLD key appearance on the screen change to inverted text.

TIME The oscilloscope time division may be changed by depressing this key which will move the cursor to the time base sector of the display. Use of the UP or RIGHT key increases the time division value, DOWN or LEFT being used to decrease the time division value.

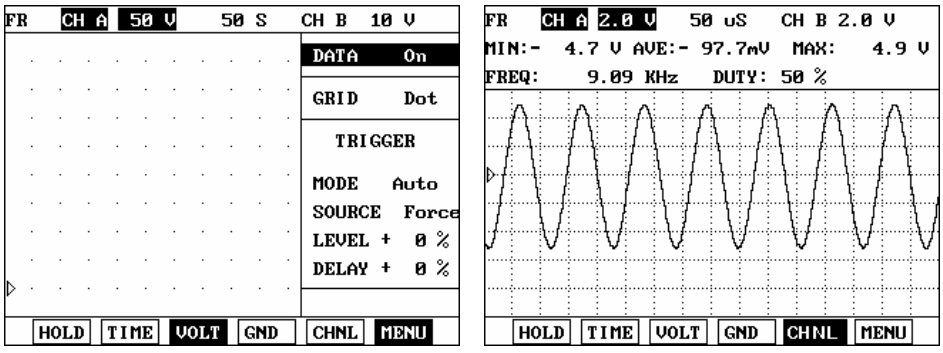
A range of preset from 50 μs to 50 second is available.

VOLT The voltage division may be selected by depressing this key which moves the cursor to the current channel voltage scale sector of the display. Use of the UP or RIGHT key increases the voltage division, DOWN or LEFT being used to decrease the voltage division.

A range of preset values from 0.2 to 50 volts is available.

GND You can move ground level with using arrow key UP and DOWN the selected ground A and B can be reversed and only reversed ground can be moved.

CHNL This key toggles the selected channel between A, B, both A and B.
The selected channel is displayed in reverse text.



[FIGURE III.16]

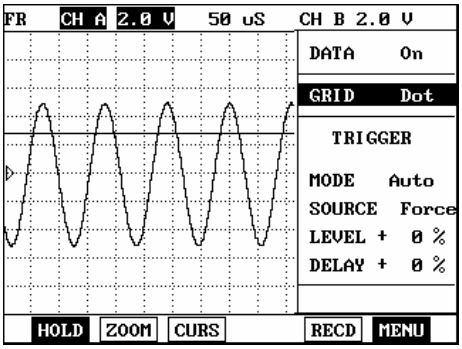
MENU This key can help you select of data ON/OFF, Grid DOT/LINE and trigger. Press MENU KEY (F6), screen is displayed as illustrated figure III.14. If you press MENU key one more, screen is disappeared.

Figure III.16 shows "DATA ON" screen, values of Max and Min, average of voltage, frequency and duty are displayed.
Use of LEFT or RIGHT of key can be selected data ON or data OFF.

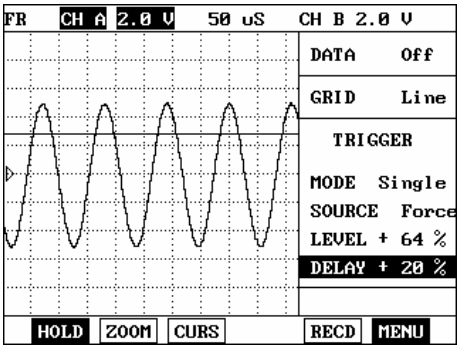
Figure III.17 shows grid patterns, you can select Line or dot with pressing arrow key LEFT or RIGHT.

The example for trigger setting up is illustrated figure III.18.
The line parallel with voltage line shows trigger level(64%) and it's level can be changed with using arrow key LEFT or RIGHT.

MODE – Depressing arrow key LEFT or RIGHT changes mode of Auto,



[FIGURE IIII.17]

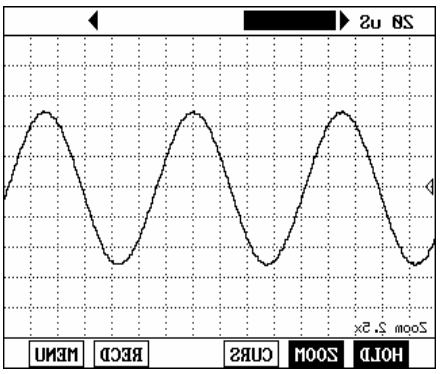


[FIGURE IIII.18]

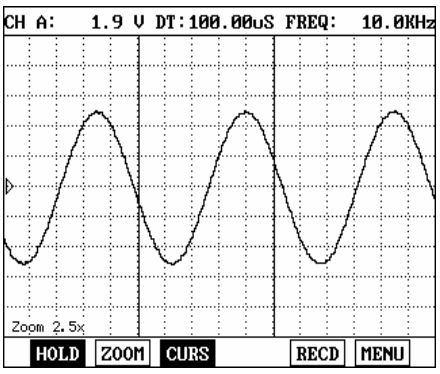
Repeat and single
***Auto mode : do not trigger function.**
***Repeat : Input selected and repeated waveform by set trigger function.**
***Single : Input one waveform with setting up trigger by set trigger**

Source – source change is by means of LEFT or RIGHT keys. If the source selected A↓, the waveform display only when the input waveform is below trigger level.

DELAY – Key offers control the start point of waveform on the Screen when the single trigger mode operated. Consider lateral axis 100% left delay selection value is 20%, the waveform start 20% left from the lateral axis.



[FIGURE III.19]

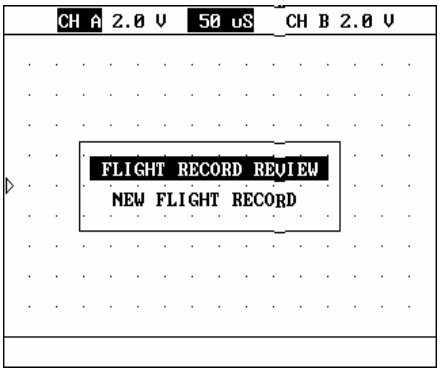


[FIGURE III.20]

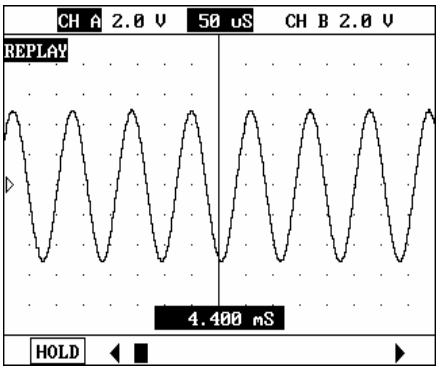
ZOOM Key can be used in the condition of **HOLD** key selected maximum 5 times enlargement of waveform as illustrated in [figure III.19] The magnification of Zoom function can be changed according to waveform time on **HOLD** condition.

CURS Depressing this key can help you check voltage, time and frequency of waveform easily with two vertical line on the screen as illustrated [figure III.20] use of arrow key **LEFT** or **RIGHT** moves two of vertical lines.

RCRD This key for recording waveform. Maximum 400 screen which record before **HOLD** in Flight Record Review as illustrated in [figure III.21]
New Flight Record is the function for recording new waveform which inputted in present.[Figure III.22] shows regeneration function of recorded data.



[FIGURE III.21]



[FIGURE III.22]

6. MULTI METER

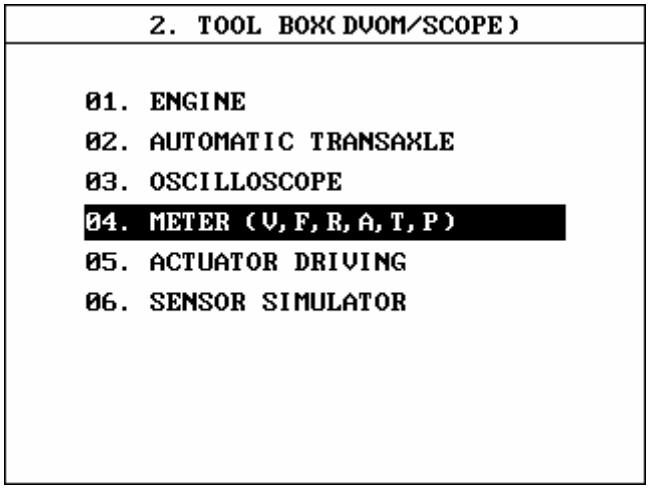
6-1. OPERATION FLOW

01. INITIAL SCREEN

02. ↵ ENTER

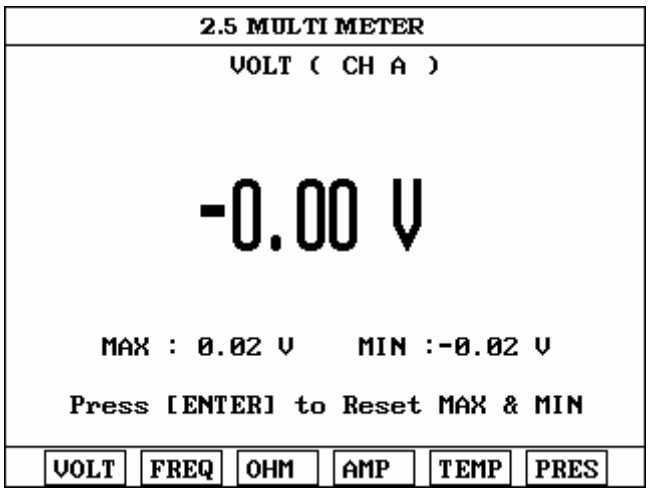
02. TOOL BOX/SCOPEMETER

05 ↵



[FLOW III.5: MULTI METER FUNCTION]

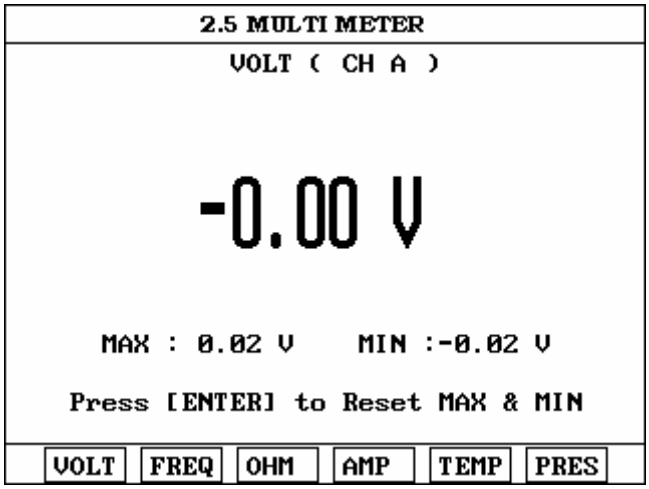
You can measure voltage, frequency, resistance, current, temperature and pressure in this mode.



[FIGURE III.23 : VOLTAGE MEASURE]

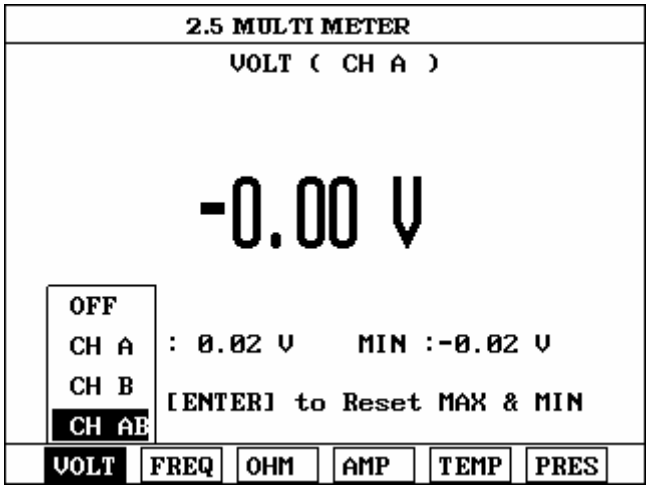
F1 VOLT	VOLTAGE MEASUREMENT KEY
F2 FREQ	FREQUENCY MEASUREMENT KEY
F3 OHM	RESISTANCE MEASUREMENT KEY
F4 AMP	CURRENT MEASUREMENT KEY
F5 TEMP	TEMPERATURE MEASUREMENT KEY
F6 PRES	PRESSURE MEASUREMENT KEY

6-2. MULTI METER MODE OPERATION



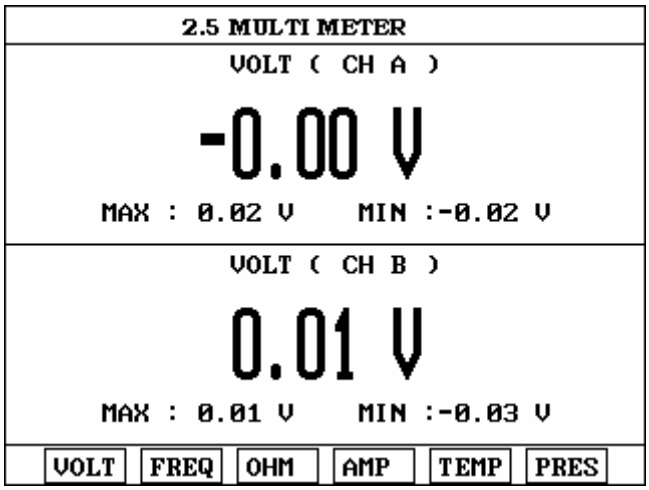
[FIGURE III.24 : VOLTAGE MEASURE]

The meter measures voltage across the range –500V ~ 500V. This multi meter enable to measure automatically current voltage and to show the maximum and minimum voltage recorded during the voltage-measuring mode. If you press F1 (VOLT) in this mode, channel A,B and AB are displayed as illustrated [figure III.25] You can select a channel by fixing the arrow key (UP) or (DOWN) and then pressing [ENTER] key. You wanted channel in other modes like frequency, current, temperature measure can selected with same procedures in the voltage measuring mode.



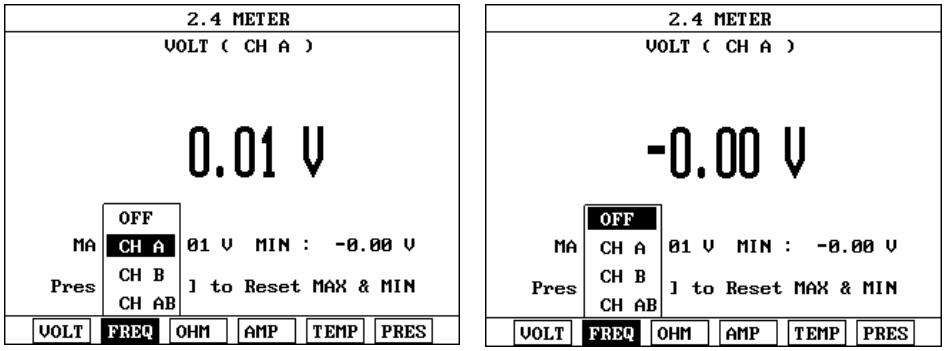
[FIGURE III.25 : SELECTING CHANNEL]

Voltage measuring mode can display with one of input channel in other modes except resistance measure at the same time as illustrated in figure [III.26]



[FIGURE III.26 : VOLTAGE MEASUREMENT]

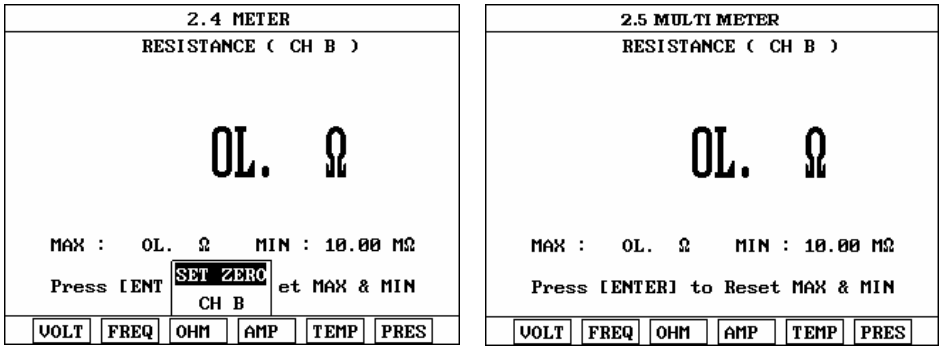
FREQ The multi meter indicates frequencies across the range O-100KHZ. Pressing F2(FREQ) key displays channel and you can change channel at the time. You can measure rpm, frequency, duty, and pulse width like [figure III.27].



[FIGURE III.27 : FREQUENCE MEASUREMENT]

OHM Resistance Measurement can be used by pressing OHM key of measuring resistance across the range O-100MΩ
This function cannot accompany with other measurement modes.

Do not attempt to measure the resistance function to any circuit to which voltage is applied, because doing so may damage the Hi-scan Pro.



[FIGURE III.28 : RESISTANCE MEASUREMENT]

Like [figure III.28] after selecting SET ZERO, with connection of oscilloscope probe, it adjust zero point.

AMP Current measurement is same as voltage measurement. A proper current probe should be needed in this mode.

TEMP Depressing **TEMP** key to measure temperature and it's procedures are same as voltage measurement mode.
A proper temperature probe should be needed in this mode.

PRES Depressing **PRES** key to measure pressure and it's procedures are same as voltage measurement mode.
A proper pressure probe is required in this mode.

7. ACTUATOR DRIVING

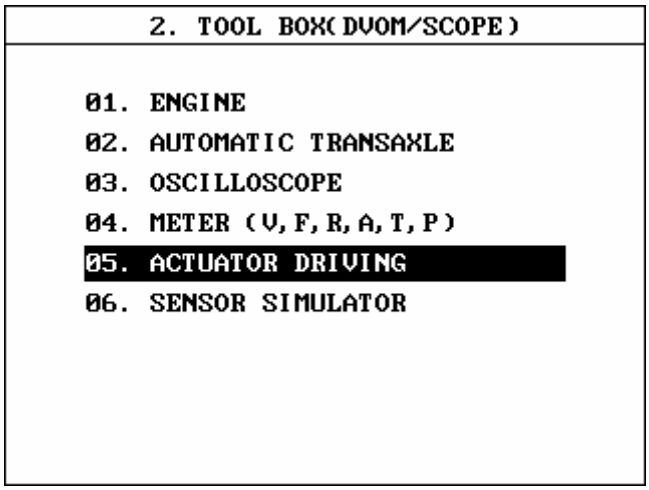
7-1. OPERATION FLOW

01. INITIAL SCREEN

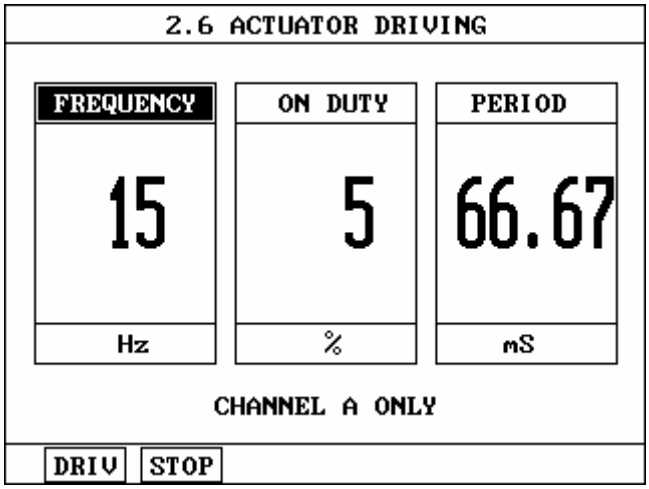
02

02 TOOL BOX/SCOPEMETER

05



[FLOW III.6 : ACTUATOR DRIVING]



[FIGURE III.29 : ACTUATOR DRIVING]

DRIV → 2.2.1 DRIVE ACTUATOR

STOP → 2.2.2 STOP ACTUATOR

7-2. MODE APPLICATION

Actuator can be forcibly driven by directly from Hi-Scan Pro ON/OFF control without the need for ECM communication.

The setting Parameters may be changed by using LEFT / RIGHT keys to select [FREQUENCY] / [ON DUTY] and the UP / DOWN keys to select the setting value. Adjusting the [FREQUENCY]results in am automatic calculation of the [PERIOD] which will be displayed on screen.

DRIV Starts the actuator driving function using the selected parameters. During the driving function, the message “NOW DRIVING” is displayed.

Circuit protection for the sensor output will detect if the output signal is inhibited. In this case, the following message will be displayed. At this time, pressing the YES key activates actuator again. And the NO key terminates actuator driving

OUTPUT SIGNAL IS INHIBITED CHECK CONNECTION, PRESS[Y/N]

STOP Halts the driving function. Changes to the driving control parameters can only be made once the driving function has been stopped.

8. SENSOR SIMULATOR

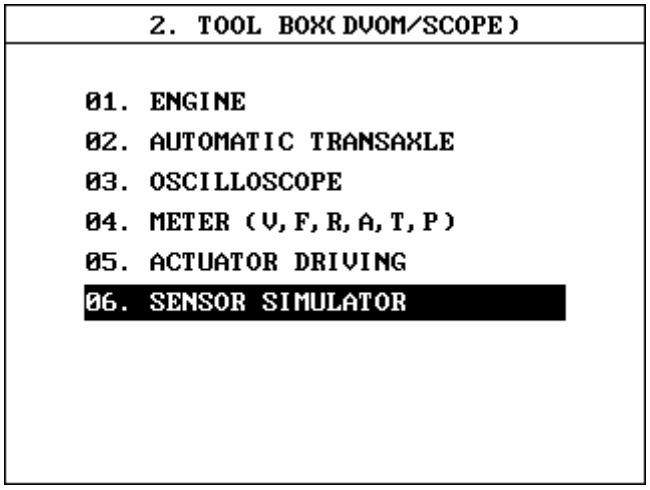
8-1. OPERATION FLOW

01. INITIAL SCREEN

02 ↩ ENTER

02. TOOL BOX/SCOPEMETER

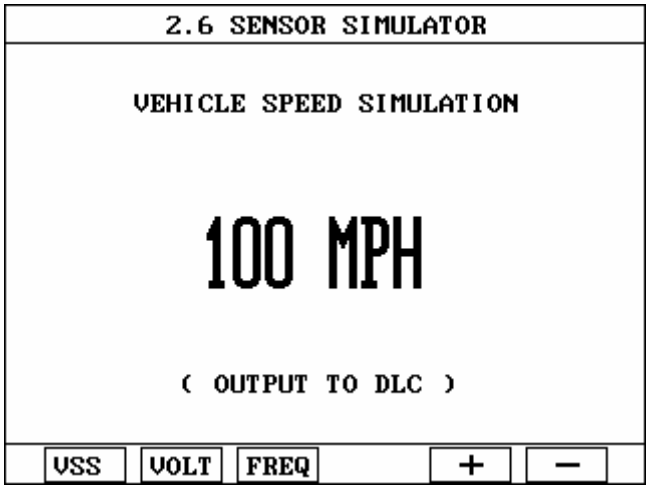
06 ↩



[FLOW III.7 : SENSOR SIMULATOR DIAGNOSIS MODE]

Vehicle speed sensor simulation, simulation of voltage and simulation of frequency are available in this mode.

8-2. OPERATION FLOW



[FIGURE III.30 : VEHICLE SPEED SIMULATION]

VSS Activating the vehicle speed simulation that generates a simulated speed sensor voltage through the DLC

The simulated speed may be changed by pressing the + and - keys. A value between 0 and 255km/h in 1km/h steps can be selected. The unit of measure may be changed from km/h, to MPH through DATA SETUP option

※Note) only available for electronic type(please refer to shop manual)

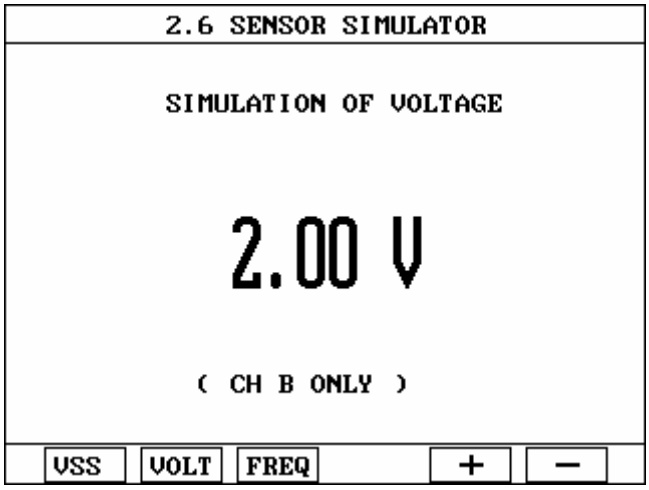
VOLT Pressing this key activates sensor output voltage simulation.

The voltage generated through channel B and can be increase or decrease by using the + or - keys.

If that set voltage and the applied voltage differ by less than 10%, voltage feedback control is maintained by Hi-scan Pro.

If the difference exceeds 10%, the following message is displayed and no voltage output occurs.

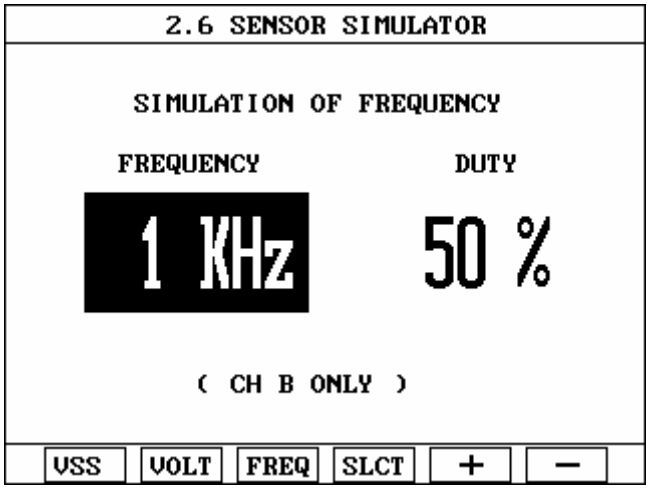
Simulation Signal is distorted. Check connect, press [ENTER]



[FIGURE III.31 : SIMULATION OF VOLTAGE]

FREQ Pressing this key activates sensor frequency/duty output simulation. The frequency generated through channel B can be set using the + or - key in steps of 5 Hz or 1% frequency and/or duty can be generated by using SLCT key to select either frequency or duty as required. The output range of this simulation is 100 KHz for frequency and 0-100% for duty.

A typical example of the frequency output simulation screen is shown in figure [III.32].



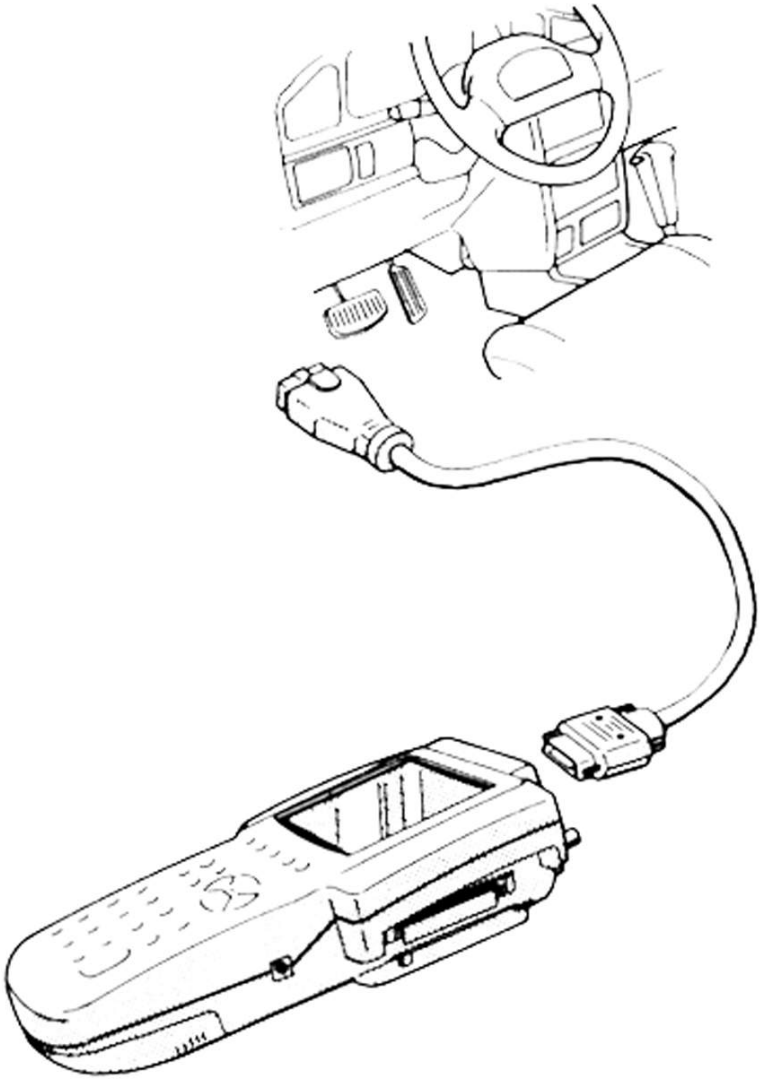
[FIGURE III.32 : SIMULATION OF FREQUENCY]

IV. CARB OBD-II DIAGNOSIS

1. CONNECTION METHOD

For vehicles with OBD-II communications protocol, power is supplied from the DLC terminal through the DLC cable without the need for an additional power supply.

For these vehicles connection of the DLC CABLE 16 to the Hi-scan Pro and the vehicle data link terminals is all that is required.



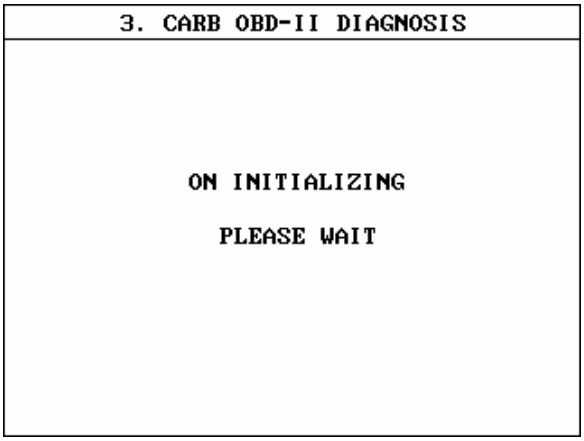
[Figure IV.1 : CARB OBD-II MODE CONNECTION]

2. COMMUNICATION INTERFACE

2-1. OPERATION FLOW

0.1 INITIAL SCREEN

03



Success in First initializing

3.0 CARB OBD-II DIAGNOSIS

Failure in First initializing

REPETITION OF INITIALZING PROCEDURE

[FLOW IV.1 : COMM. INITIAL SUB-MSR IN/OUT FLOW]

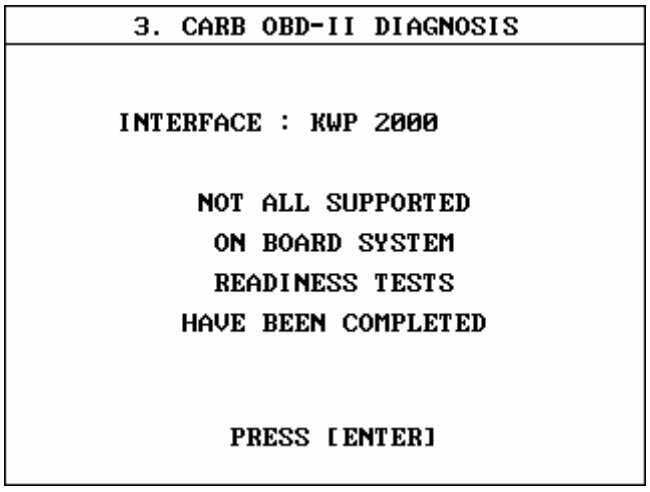
2-2. MODE APPLICATION

When CARB OBD-II DIAGNOSIS is selected, Hi-scan automatically searches for vehicle interfaces that apply to OBD-II functions.

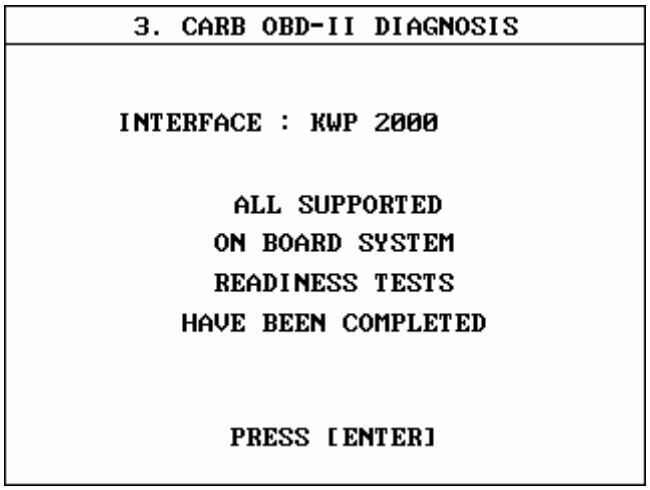
During initialization, a process message is displayed. If the initialization fails because no interfaces have been found, Hi-scan Pro repeats the initialization process and displays the following message. The user may terminate this process by pressing ESC

RETRY 1 TIMES

When a communication interface is located, Hi-scan Pro displays the figure IV.2 or IV.3 according to the result of the on board- system-readiness-tests.



[Figure IV.2 : INITIALIZATION (NOT COMPLETED)]



[Figure IV.3 : INITIALIZATION (COMPLETED)]

3. READINESS TEST

3-1 OPERATION FLOW

0.1 NITIAL SCREEN

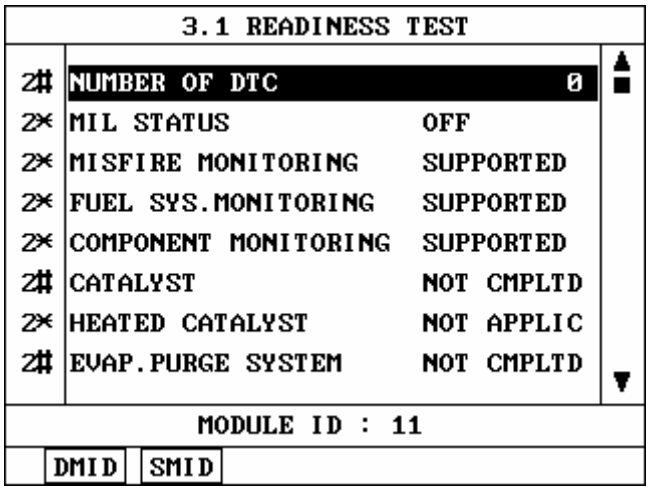
03

Automatic Search for communication Interface

Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

01



DMID → 3.1.1 DISPLAY MODULE ID

SMID → 3.1.2 SELECT MODULE

[FLOW IV.2 : READINESS TEST MODE IN/OUT FLOW]

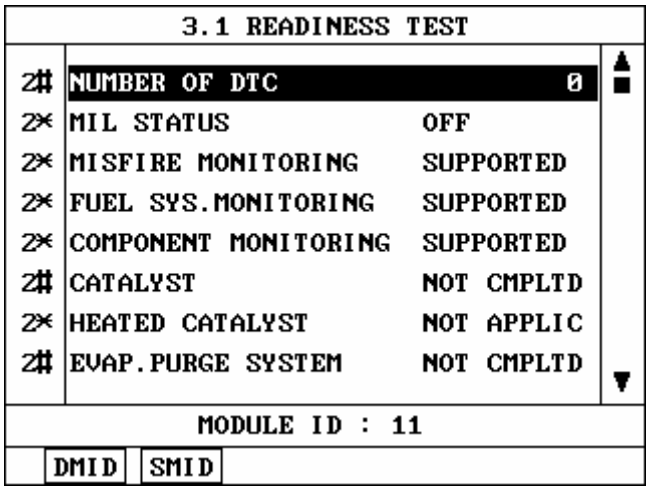
3-2. MODE APPLICATION

The type and result of the READINESS TESTS supported by more than one MODULE within the vehicle will be displayed.
And the number of DTC and the state of MIL(Malfunction Indicator Lamp) are displayed.

Where several modules respond to each TEST, the number of responding modules along with an indicator will be displayed. The indicator takes the form of an '*' or '#' symbol.

'*' indicates that two or more modules have responded with the same value.
'#' indicates that two or more modules have responded with different values.

A typical illustration of the readiness TEST appears at figure IV.4

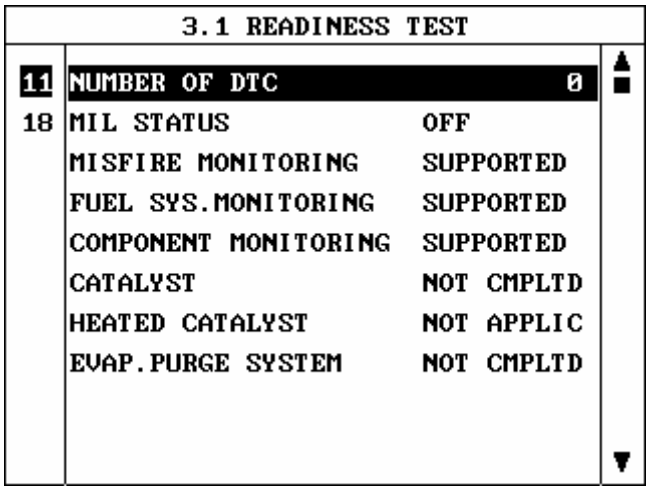


[Figure IV.4 : READINESS TEST]

Using the UP / DOWN key permits scrolling of the displayed data.

DMID Displaying the Module ID of the test item selected by UP / DOWN key.

SMID Displaying the supporting items, sorted according to the module ID. A typical screen display is illustrated at figure IV.5.



[Figure IV.5:READINESS TEST(SMID)]

If you want to know items corresponding to another Module ID, move cursor to display area of Module ID with LEFT key, and then use UP / DOWN key to select Module ID and press ENTER key.

ESC Causing the display to return.

4. CURRENT DATA

4-1. OPERATION FLOW

0.1 INITIAL SCREEN

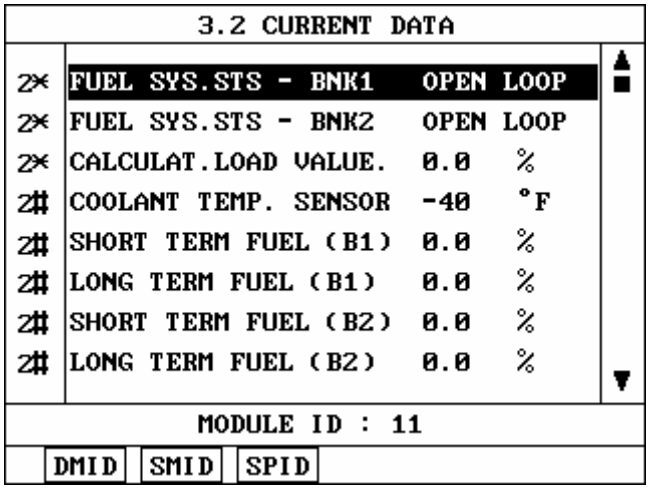
03

Automatic Search for communication Interface

Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

02



DMID → 3.2.1 DISPLAY MODULE ID

SMID → 3.2.2 SELECT MODULE

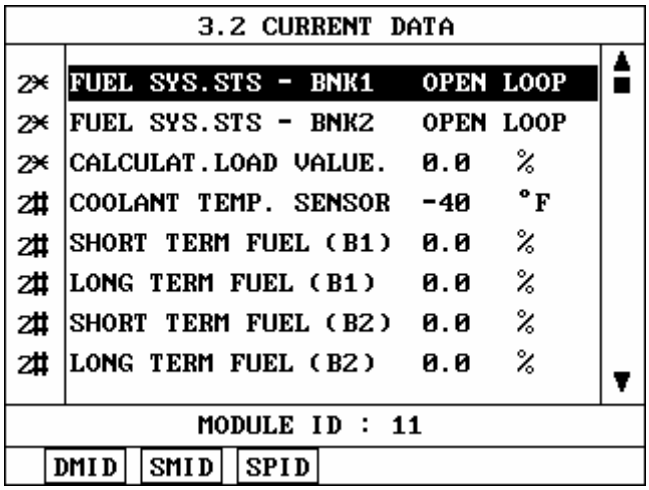
SPID → 3.2.3 SELECT PID

[FLOW IV.3 : CURRENT DATA MODE IN/OUT FLOW]

4.2 MODE APPLICATION

The CURRENT DATA MODE allows for sensor values and switch states to be displayed, based upon the concept that one item may be supported by several modules. Supporting module information is displayed in this mode.

A typical CURRENT DATA screen display appears at figure IV.6.



[Figure IV.6 : CURRENT DATA]

Hi-scan Pro display all of the PID names supported by several modules and the status in the center column of the display. In the left hand column, an indicator is displayed. The indicator takes the form of an '*' , '#' or '-' symbol.

'*' indicates that two or more modules have responded with the same value.

'#' indicates that two or more modules have responded with different values.

'-' indicates no response from two or more modules.

The UP / DOWN key can be used to scroll through the data to highlight items to be activated by soft function keys.

DMID Displaying the Module IDs for the selected item. The UP/ DOWN key may be used to scroll through the data.

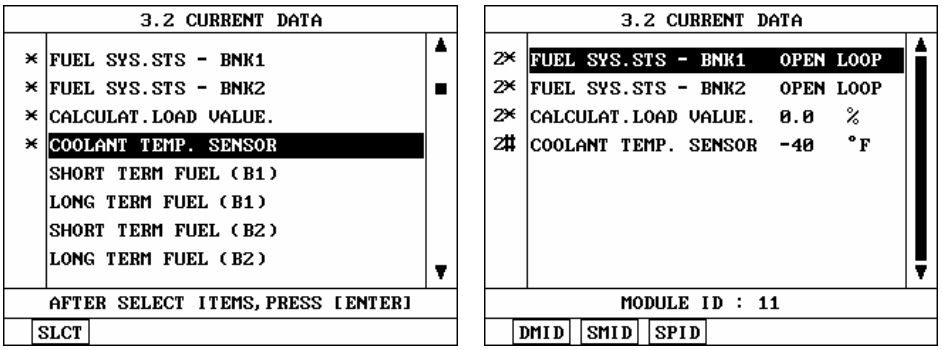
SMID Displaying the supported items sorted according to Module ID. Using this function it is possible to view the module ID supporting an item group.

If you want to know items corresponding to another Module ID, move cursor to display area of Module ID with LEFT Key, and then use UP / DOWN key to select Module ID and press ENTER key.

SPID This function allows for selective data display based upon user selection of the required data. Moving the cursor to the required line(s) and pressing the soft function key. SLCT .

Once all of the required items have been selected, pressing ENTER will cause them to be displayed. Selected items are marked with an asterisk. Items can be deselected by depressing SLCT key again.

Pressing ENTER without item selection will display all items.



[Figure IV.6 : CURRENT DATA(SPID)]

5. DIAGNOSTIC TROUBLE CODES

5-1. OPERATION FLOW

0.1 INITIAL SCREEN

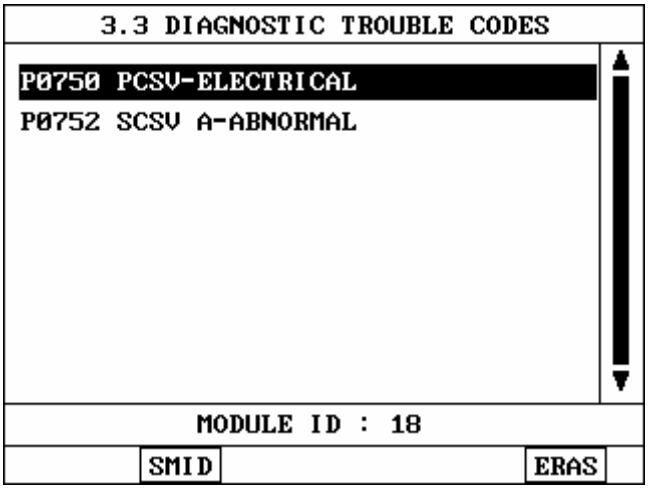
03

Automatic Search for communication Interface

Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

03



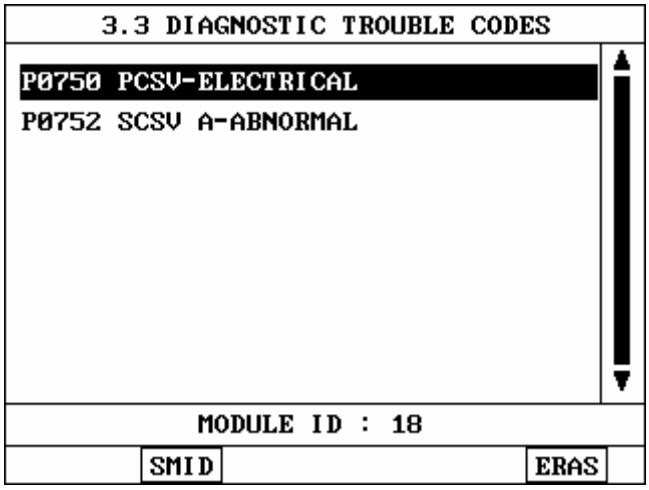
SMID → 3.3.1 SELECT MODULE

ERAS → 3.3.2 CLEAR FAULT CODES

[FLOW IV.4 : DIAGNOSTIC TROUBLE CODES MODE IN/OUT FLOW]

5-2. MODE APPLICATION

At this level, DIAGNOSTIC TROUBLE CODES (DTC) are displayed based upon the concept that one DTC may be supported by several modules. Supporting module information is displayed in this mode.



[Figure IV.8: DTC SCREEN]

By using the UP / DOWN key, the display may be Hi-scan Pro displays all of the DTCs supported by several modules and the status.

SMID **Displaying the DTCs sorted according to module ID. Using this function it is possible to view the Module ID supporting an DTC group.**

If you want to know DTCs corresponding to another Module ID, move cursor to display area of Module ID with LEFT key, and then use UP / DOWN key to select Module ID and press ENTER key.

ERAS — This soft function key will clear the DTC currently held in the memory of ECM. If this option is selected, al message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.

NOTE THAT ALL MODULES MUST BE IN THE "IGNITION ON, ENGINE OFF" MODE FOR Hi-scan Pro TO BE ABLE TO ERASE DTCs. IF ANY OTHER CONDITION EXISTS. Hi-scan Pro WILL NOT ERASE CODES.

6. FREEZE FRAME DATA

6-1. OPERATION FLOW

0.1 INITIAL SCREEN

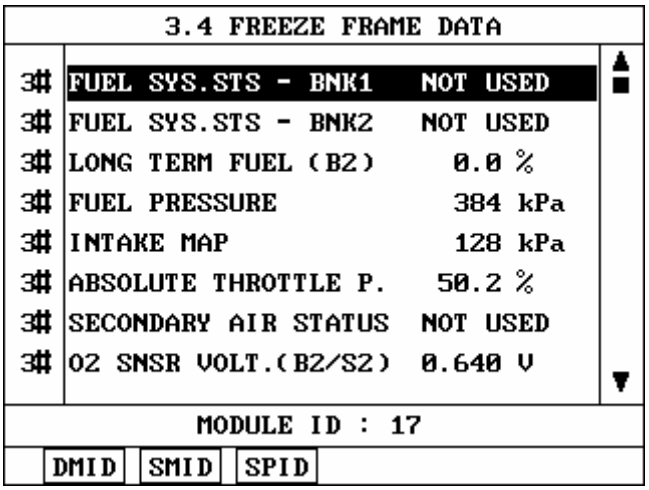
03

Automatic Search for communication Interface

Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

04



DMID → 3.4.1 DISPLAY MODULE ID

SMID → 3.4.2 SELECT MODULE

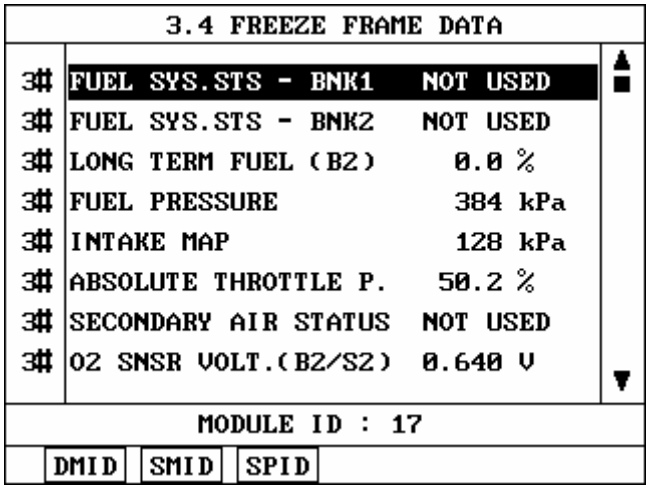
SPID → 3.4.3 SELECT PID

[FLOW IV.5 : FREEZE FRAME DATA MODE IN/OUT FLOW]

6-2. MODE APPLICATION

The FREEZE FRAME DATA displays the data values stored in the ECM at the point when the first DTC is detected.

A typical screen display is illustrated at figure IV.9.



[Figure IV.9:FREEZE FRAME DATA]

Hi-scan Pro displays all of the Freeze Frame Data for those items supported by several modules and the status in the center column of the display. In the left hand column, an indicator is displayed. The indicator takes the form of a '*', '#' or '-' symbol.

'*' indicate that two or more modules have responded with the same value.

'#' indicate that two or more modules have responded with different values.

'-' indicate no response from two or more modules.

The UP / DOWN key can be used to scroll through the data to highlight items to be activated by soft function keys.

DMID is used to display the Module Ids for the selected item. The UP / DOWN key may be used to scroll through the data.

SMID is used to display the supported items sorted according to module ID. Using this function it is possible to view the module ID supporting an item group.

If you want to know items corresponding to another Module ID, move cursor to display area of Module ID with LEFT key, and then use UP / DOWN key to select Module ID and press ENTER key.

SPID This function allows for selective data display based upon required line(s) and press the soft function key. Once all of the required items have been selected, pressing ENTER will cause them to be displayed. Selected items art marked with an asterisk. Items can be deselected by depressing SLCT key again.

7. EXPANDED DIAG. PROTOCOL

7-1. OPERATION FLOW

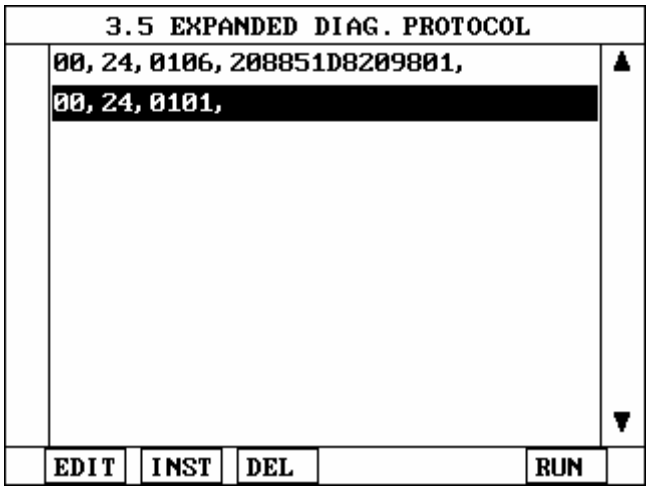
0.1 INITIAL SCREEN

03 → Automatic Search for communication Interface

Refer to "Searching for Communication Interface"

3.0 CARB OBD II DIAGNOSIS

05 →



EDIT	3-5.1 EDIT EDP
INST	3-5.2 INSERT NEW EDP
DEL	3-5.3 DELETE EDP
RUN	3-5.4 RUN EDP

[FLOW IV.6 : EXPANDED DIAG. PROTOCOL MODE IN/OUT FLOW]

7-2. MODE APPLICATION

The purpose of EXPANDED DIAG. PROTOCOL(here-in-after "EDP") is to define encoding techniques which can perform the following functions.

1) **Function that describes the messages to be transmitted to the vehicle and the transmitting method to SAE J1978 OBD II Scan Tool.**

2) **Function that describes the message that scan tool will receive and process to SAE J1978 OBD II Scan Toll.**

3) **Function that describes the way to process the data included in the received messages to SAE J1978 OBD II Scan Tool.**

In EDP definition, there are generally 4 groups: control type, transmit type, receive only type and miscellaneous type.

General format of each is as followings.

CONTROL TYPE definition
<id>,<type>,<DSV>

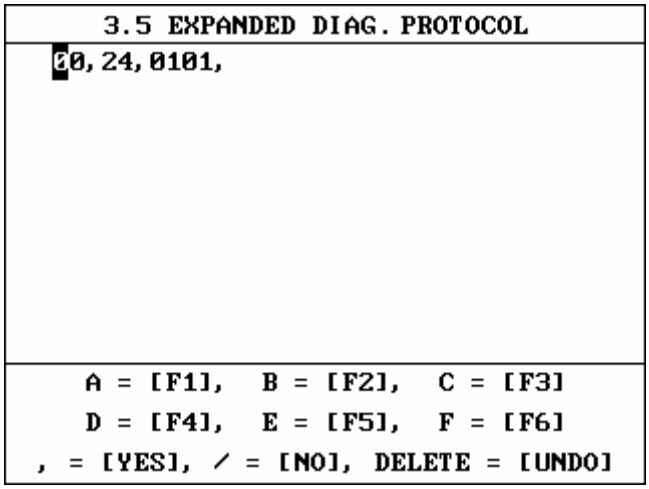
TRANSMIT TYPE definitions
<id>,<type>,<tx msg>, <rx filter>
<rx data processing info>,<DSV>

RECEIVE ONLY TYPE definitions
<id>,<type>,<rx filter>,<rx data processing info>,<DSV>

MISCELLANEOUS TYPE definitions
<id>,<type and additional info>,<DSV>

For more detailed information of these EDP definitions and meanings of each field, please refer to related documents such as AE J1978. In this operation guide, EDP edit and execution method are described only.

A screen example of the EDP is as follows:

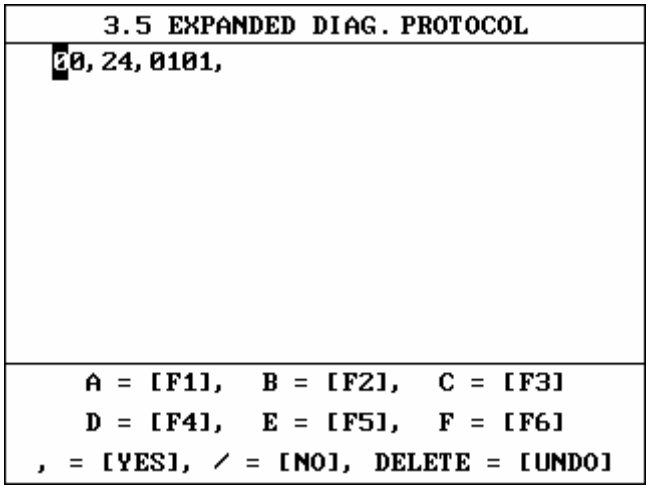


[Figure IV.9 : EDP SCREEN]

Stored EDP DEFINITIONS are displayed in default screen.
Each DEFINITION can include 256 characters and 15 definitions can be stored. For more than 34 words (maximum display line length for EDP), horizontal scroll can be performed by LEFT / RIGHT key.

You can scroll display by UP / DOWN key. And to edit and execute EDP, you can apply advanced application by using soft function keys of which usages are as follows :

EDIT This key is used to access edit mode of EDP. When EDIT key is pressed, following edit mode screen will be displayed.



[Figure IV.10 : EDP SCREEN (EDIT)]

In this edit mode screen, you can edit EDP with following key operation.

- F1 : input character 'A'
- F2 : input character 'B'
- F3 : input character 'C'
- F4 : input character 'D'
- F5 : input character 'E'
- F6 : input character 'F'
- YES : input character ','
- NO : input character '/'
- UNDO : input character

You must finish all definition by ';' at the end. To escape from EDIT mode, press ESC key

INST key is used to insert new EDP. When INST key is pressed, edit mode screen will be displayed.

EDIT / INST If al given definition id is already associated with an EDP definition when another message definition using the same ID is successfully entered then the new definition shall be added.

When the number of stored definition exceeds 15, the following message will be displayed.

```
EDP DEFINITION IS FULL
PRESS [ENTER]
```

The cursor can be moved to the left or right by LEFT / RIGHT keys and moved to the up or down by UP / DOWN keys.

After editing, if ENTER key is depressed, Hi-scan Pro checks whether the definition is entered successfully or not.
If the definition includes errors, the following message will be displayed. For the message, if ENTER key depressed, the definition will be saved though that is wrong definition. If ESC entered, the definition will not saved.

```
THIS EDP IS NOT SUPPORTED
TO SAVE ANYWAY, PRESS [ENTER]
```

DEL key is used to delete EDP which is selected by cursor.

RUN key is used to run EDP. If RUN key is pressed, selected EDP is transmitted to the vehicle and the response will be displayed.

If the definition selected by cursor includes errors the following massage will be displayed.

THIS EDP IS NOT SUPPORTED PRESS [ENTER]

Hi-scan supports the following definitions. 12, 13, 14, 19, 1A are Control Definition Types and 20, 21, 24 are transmit Definition Types.

[12] terminates the current ISO 9141-2 communication connection and begin the ISO 9141-2 addressing and initialization sequence with the given address

12 xx xx = ISO 9141-2 address

[13] define the idle message to be used for ISO 9141-2 communication

13 aa bb … zz

[14] define the shop 9141 communication message to be used to terminate ISO 9141-2 communication.

14 aa bb … zz

[19] delete all current definitions

19

[1A] delete a given definition id

1A xx

If several messages with the same definition id are in the memory, Hi-scan Pro deletes the oldest definition.

[20] transmit this message once per selection.

User should enter '20' and ',' and then message

[21] transmit message repeatedly at standard rate once selected, until selected again, at which time stop the repeated retransmissions.

User should enter '21' and ',' and then message.

Hi-scan Pro transmit the message included this definition and display the results in hexadecimal form.

The scroll of display can be hold by ENTER key, and can be restarted by depressing ENTER key again.

[24] process message as a SAE J1979 request.

Hi-scan Pro transmit the message included this definition and display the results in hexadecimal form.

The scroll of display can be hold by ENTER key, and can be restarted by depressing ENTER key again.

For more detailed information such as DEFINITION ID, TYPE etc., please refer to 'SAE J2205' separately.

8. 02 TEST RESULTS

8-1. OPERATION FLOW

0.1 INITIAL SCREEN

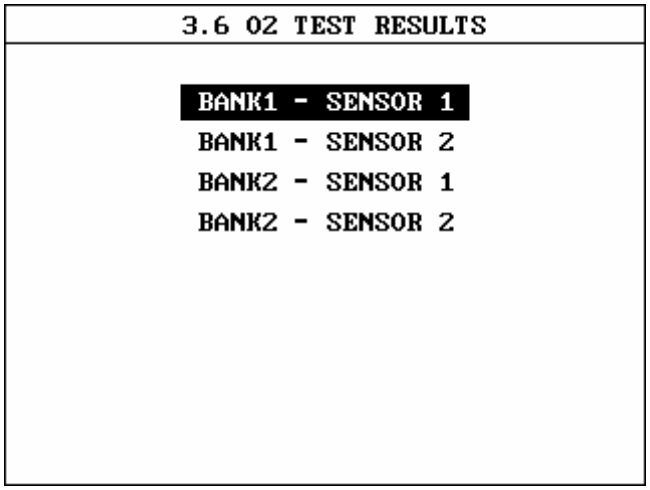
03

Automatic Search for communication Interface

Refer to 'Searching for Communication Interface"

3.0 CARB OBD II DIAGNOSIS

06



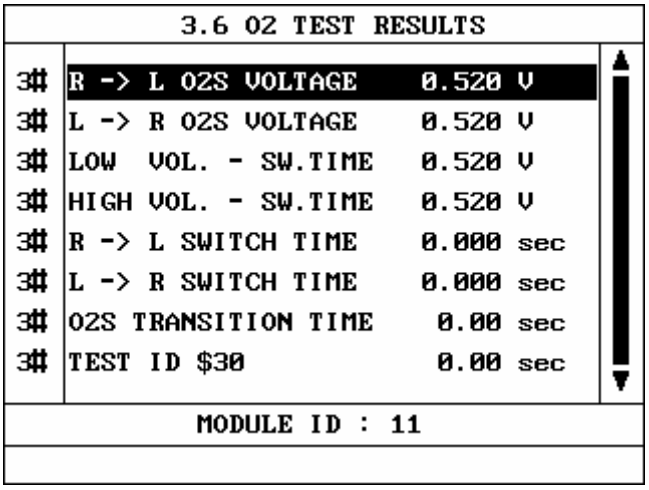
ENTER DISPLAY TEST RESULTS

[FLOW IV.7 : 02 TEST RESULT MODE IN/OUT FLOW]

8-2 MODE APPLICATION

The results of on board oxygen sensor monitoring test can be displayed in this mode. Note that only items related to the oxygen sensor will be displayed.

A typical screen display is illustrated t figure IV.12.



[Figure IV.12 : 02 TEST RESULTS]

Hi-scan Pro display all of the test names for those items supported by several modules and the status in the center column of the display. In the left hand column, an indicator is displayed. The indicator takes the form of an '*' '#' or '-' symbol.

'*' Indicates that two or more modules have responded with the same value.

'#' indicates that two or more modules have responded with different values.

'-' indicates no response from two or more modules.

The UP / DOWN key can be used to scroll through the data to highlight items to be activated by soft function keys.

DMID Displaying the Module Ids for the selected test item. The UP / DOWN key may be used to scroll through the data.

SMID Displaying the supported items sorted according to module ID. Using this function it is possible to view the module ID supporting an item group.

If you want to know items corresponding to another Module ID, move cursor to display area of Module ID with LEFT key, and then use UP / DOWN key to select Module ID and press ENTER key

STID This function allows for selective data display based upon user selection of the required data. Move the cursor to the required line(s) and press the soft function key. Once all of the required items have been selected, pressing ENTER will cause them to be displayed. Selected items are marked with an asterisk. Items can be deselected by the same process.

9. MONITORING TEST RESULTS

9-1. OPERATION FLOW

0.1 INITIAL SCREEN

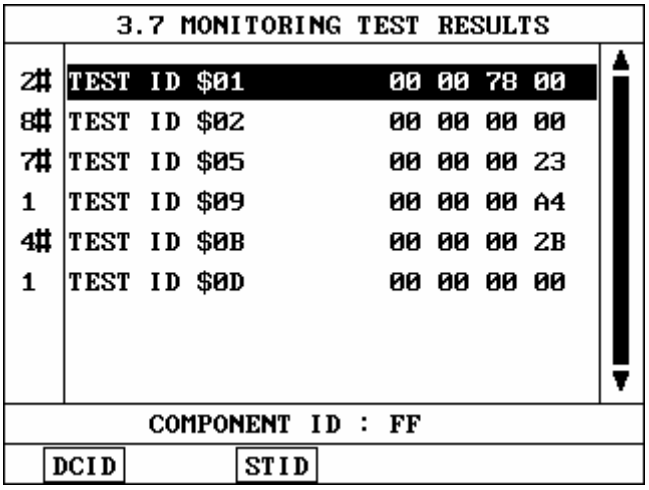
03

Automatic Search for communication Interface

Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

07



DCID → 3.7.1 DISPLAY COMPONENT ID

STID → 3.7.2 SELECT TEST ID

[FLOW IV.8 : MONITORING TEST MODE IN/OUT FLOW]

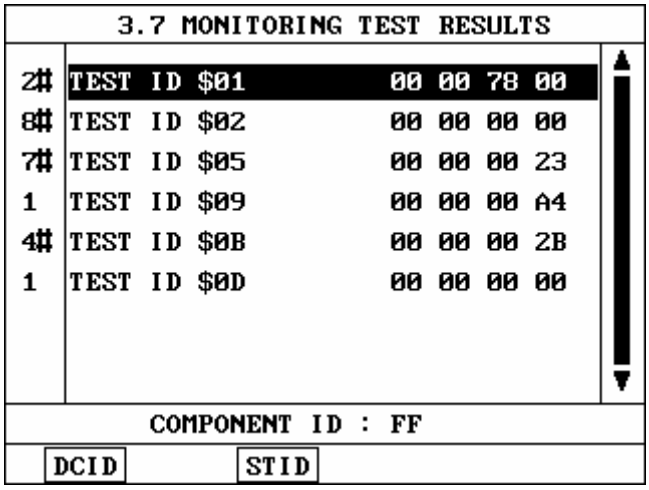
9-2. MODE APPLICATION

The results of on board monitoring tests conducted during normal driving is displayed this mode.

If vehicle manufacturer is responsible to assign test IDs and component IDs for tests of different system and components. If no TEST which vehicle manufacturer supports, Hi-scan displays following message in the screen:

THIS TEST MODES IS NOT SUPPORTED PRESS [ESC]

A typical screen display is illustrated at figure IV.13.



[Figure IV.13 : MONITORING TEST RESULTS]

Hi-scan displays all of the Component ID for those items supported by several components and the status in the center column of the display. In the left hand column, an indicator is displayed. The indicator takes the form of an '*' '#' or '-' symbol.

'*' indicates that two or more components have responded with the same value.

'#' indicates that two or more components have responded with different values.

'-' indicates no response from two or more components.

The (UP) / (DOWN) key can be used to scroll through the data to highlight items to be activated by soft function keys.

DCID is used to display the Component Ids for the elected test item. The (UP) / (DOWN) key may be used to scroll through the data.

STID This function allows for selective data display based upon user selection of the required data. Moving the cursor to the required line(s) and pressing the soft function key. Once all of the required items have been selected, pressing (ENTER) will cause them to be displayed. Selected items are marked with an asterisk. Items can be deselected by the same process.

10. COMBINATION DISPLAY

10-1. OPERATION FLOW

0.1 INITIAL SCREEN

03 → Automatic Search for communication Interface

→ Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

08 →

3.8 COMBINATION DISPLAY			
CURRENT DATA			
3#	FUEL SYS.STS - BNK1	NOT USED	▲
3#	FUEL SYS.STS - BNK2	NOT USED	
3#	LONG TERM FUEL (B2)	0.0 %	
3#	FUEL PRESSURE	384 kPa	▼
B2-S2	O2 TEST RESULTS		17
3#	R -> L O2S VOLTAGE	0.640 V	▲
3#	L -> R O2S VOLTAGE	0.640 V	
3#	LOW VOL. - SW.TIME	0.640 V	
3#	O2S TRANSITION TIME	5.12 sec	▼
DMID	CURR	DTC	FRZE	O2TS	MONI

DMID	3.8. 1 DISPLAY MODULE ID
CURR	3.8. 2 CURRENT DATA
DTC	3.8. 3 DIAG. TROUBLE CODES
FRZE	3.8. 4 FREEZE FRAME DATA
O2TS	3.8. 5 O2 TEST RESULTS
MONI	3.8. 6 MONITORING TEST RESULTS

[FLOW IV.9 : COMBINATION DISPLAY MODE IN/OUT FOLW]

10.2 MODE APPLICATION

This facility allows for the display of the following simultaneously:

- **Current data items**
- **Available DTC**
- **Available freeze frame data items**
- **Test parameters and results for oxygen sensor tests and monitoring tests**

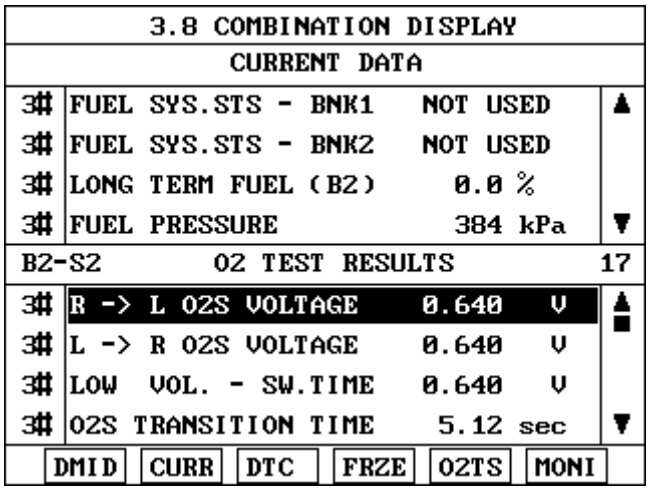
The default screen is CURRENT DATA and DIAGNOSTIC TROUBLE CODES (DTC).

The UP / DOWN key may be used to scroll the data contained in the same window as the cursor.

Where a soft function key related to the current window is used, the cursor will move to the selected area.

Where a soft function key related to the current window is used, the window, which does not contain the cursor, will be replaced with the soft function key related information.

A typical COMBINATION DISPLAY screen is illustrated at figure IV.14.



[Figure IV.14 : COMBINATION DISPLAY]

The (UP) / (DOWN) key is used to scroll through the display.

DMID This soft function key is used to display the module ID for the selected item. Item selection is made by means of the (UP) / (DOWN) key. Pressing the DMID key at the highlighted line will display all of the module ID for that item.

CURR Taking the cursor to the CURRENT DATA AREA. If the CURRENT DATA is being displayed, the CURR key will move the cursor to that window. If the CURRENT DATA is not being displayed, the window not containing the cursor will be replaced with the CURRENT DATA display.

DTC	DIAGNOSTIC TROUBLE CODES
FRZE	FREEZE FRAME DATA-
O2TS	OXYGEN SENSOR TEST RESULTS
MONI	MONITORING TEST RESULTS

Work in a similar manner to CURR except that the screen replaced is that selected by the soft function key description.

11. ECU INFORMATION

11-1. OPERATION FLOW

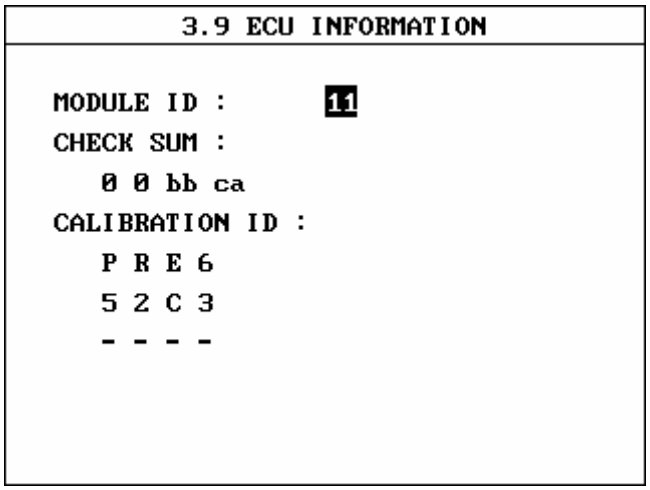
0.2 INITIAL SCREEN

04 → Automatic Search for communication Interface

→ Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

09 →



[FLOW IV.11 : ECU INFORMATION MODE]

12. PENDING DTC

12-1. OPERATION FLOW

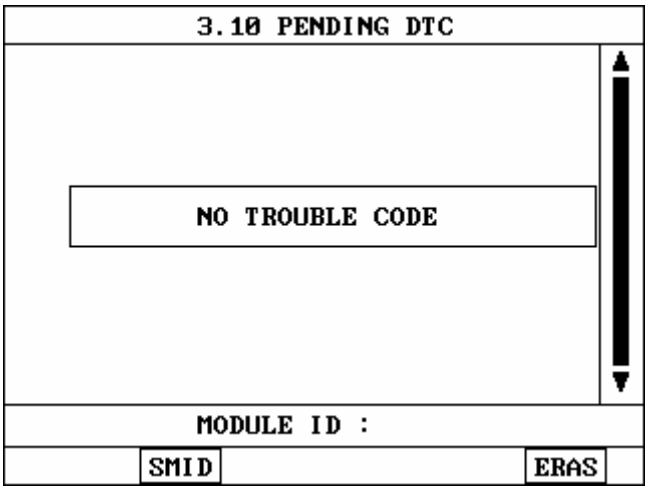
0.3 INITIAL SCREEN

05 → Automatic Search for communication Interface

→ Refer to “Searching for Communication Interface”

3.0 CARB OBD II DIAGNOSIS

10 →



[FLOW IV.12 : PENDING DTC MODE]

12-2. MODE APPLICATION

ECU is monitoring each sensor. When monitoring output is abnormal, it shows you DTC and when monitoring output is normal, it automatically removes records. But this [03. DIAGNOSTIC TROUBLE CODES] can be shown even for temporary problem.

SMID is used to display the supported items sorted according to module ID. Using this function it is possible to view the Module ID supporting an item group.

If you want to know items corresponding to another Module ID, move cursor to display area of Module ID with LEFT key, and then use UP / DOWN key to select Module ID and press ENTER key.

V. FLIGHT RECORD REVIEW

1. OPERATION FLOW
2. MODE APPLICATION

1. OPERATION FLOW

1. OPERATION FLOW

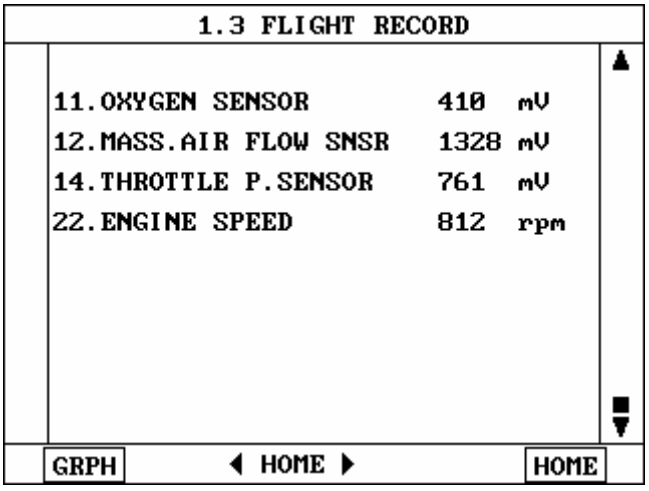
Choose either HYUNDAI or KIA VEHICLE DIAGNOSIS to operate the FLIGHT RECORED REVIEW function.

0.1 INITIAL SCREEN

04

FLIGHT RECORD REVIEW

ENTER

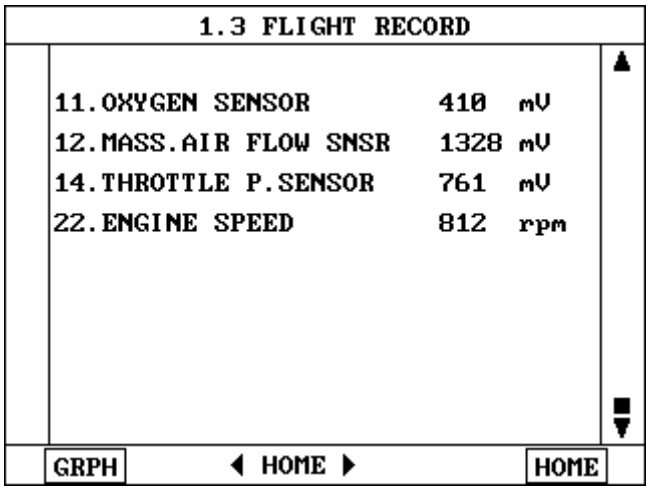


In this mode, you can review recorded Flight Record data. The screen will be displayed by frame unit that is determined by data update.

[FLOW V.1 : FLIGHT RECORD REVIEW MODE IN/OUT FLOW]

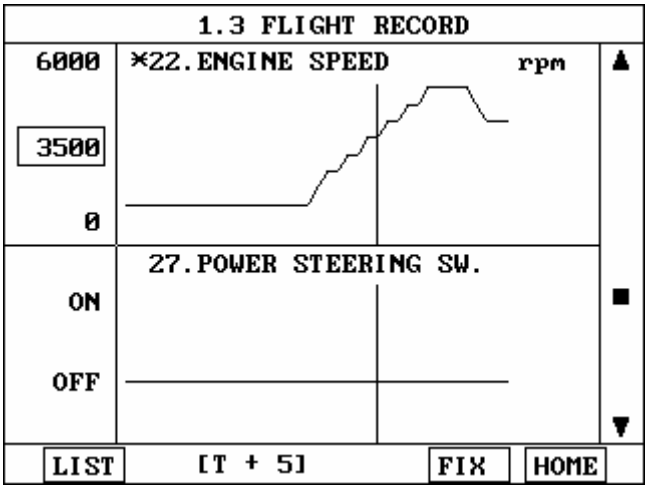
2. MODE APPLICATION

TRIG After finishing the recordings, screen will display stored data values in a numeric data form. The example screen is as follows:



[Figure V.1 : FIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see graphic views for the items recorded by FIX key operation.
When two items are selected, a graphical view is as follows.



[Figure V.2 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCREEN DISPLAY THE DATA AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

You can change sampled time index by UP or DOWN key. In graphic display, current sampled time index position is displayed as vertical line cursor. When this cursor reached at the end of screen, screen will be moved as half page.

VI. SYSTEM SETUP

1. CONNECTION METHOD

Following five kinds of power supply methods can be used.

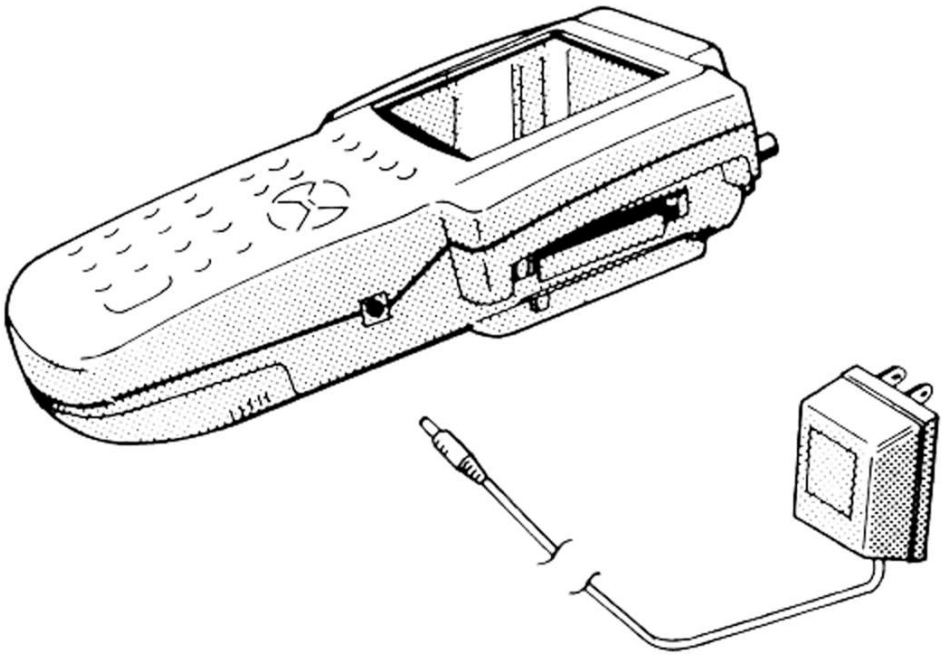
(1) Cigar lighter power cable

(2) Power extension cable

(3) DLC cable

(4) Internal rechargeable battery

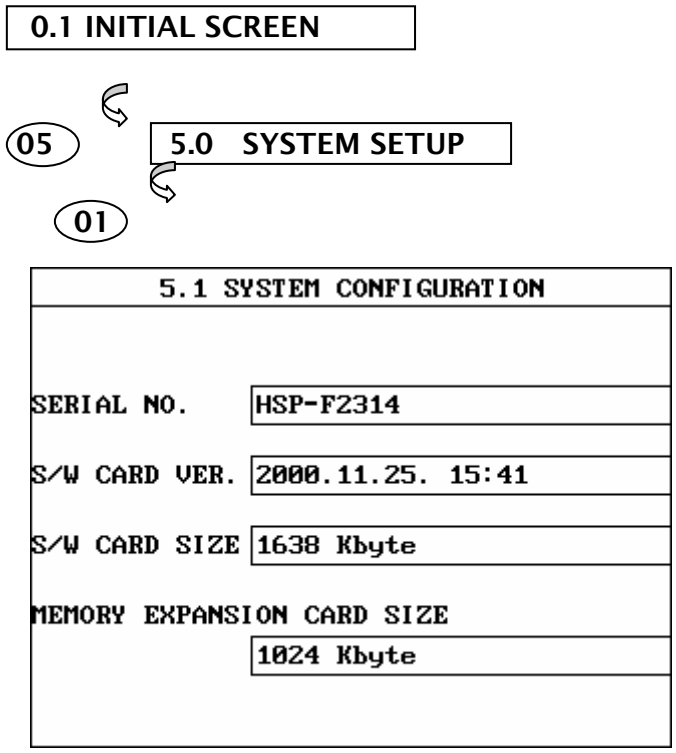
(5) AC/DC adapter



[figure VI.1 : SYSTEM SETUP MODE CONNECTION]

2. SYSTEM CONFIGURATION

2-1. OPERATION FLOW



[FLOW VI.1 : SYSTEM CONFIGURATION MODE IN/OUT FLOW]

2-2. MODE APPLICATION

This mode displays data for the following items.

1) SERIAL NUMBER

: display production serial number of your Hi-scan Pro

2) SOFTWARE CARD VERSION

: display software version of Hi-scan

3) SOFTWARE CARD SIZE

: display Software card size

4) MEMORY EXPANSION CARD SIZE

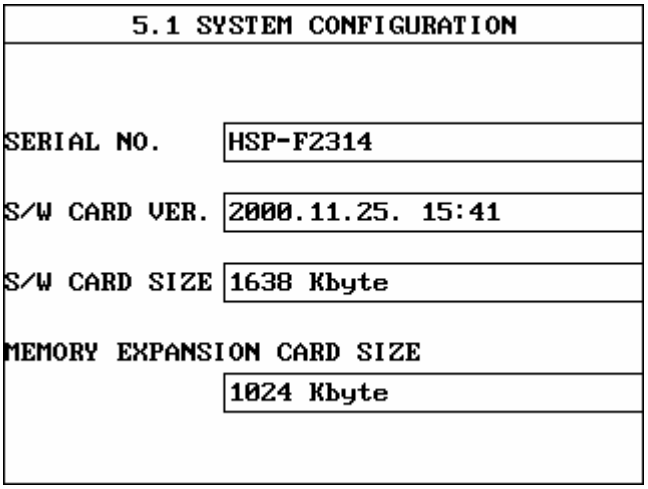
: display memory expansion card size

2-3. INSTALLATION OF MEMORY EXPANSION CARD

If the customers purchased MEMORY EXPANSION CARD -in the local area, the card should be formatted at first. Once the card is formatted, it is not necessary to be formatted again.

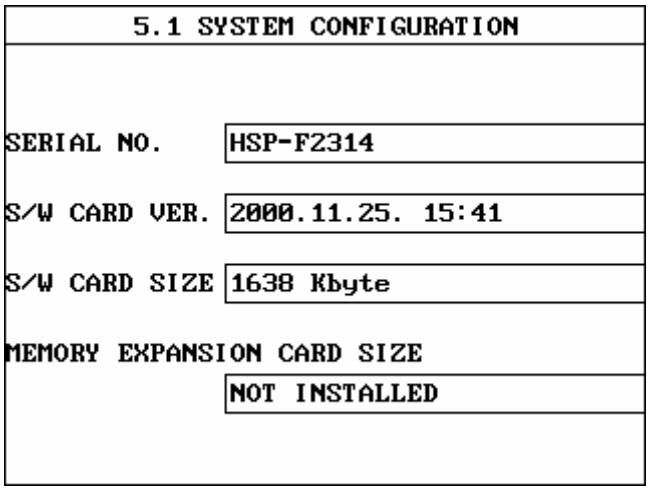
The procedure of formatting is as follows;

1. Display the screen of SYSTEM CONFIGURATION function as showed in figure VI.2.



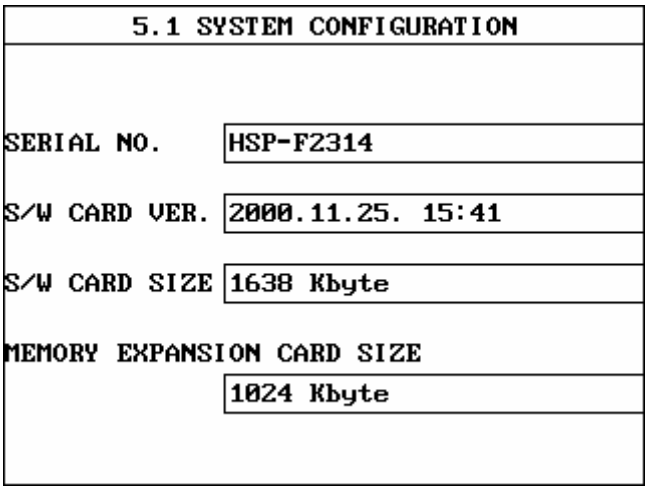
[Figure VI.2 : SYSTTEM CONFIGURATION]

2. Insert the MEMORY EXPANSION CARD to lower slot. When the card is inserted, the message “NOW FORMATTING” will be displayed as showed in figure VI.3.



[Figure VI.3 : SYSTEM CONFIGURATION]

After formatting, Hi-scan displays the size of MEMORY EXPANSION CARD as showed in figure VI.4.



[Figure VI.4 : SYSTEM CONFIGURATION (CARD SIZE)]

3. DATA SETUP

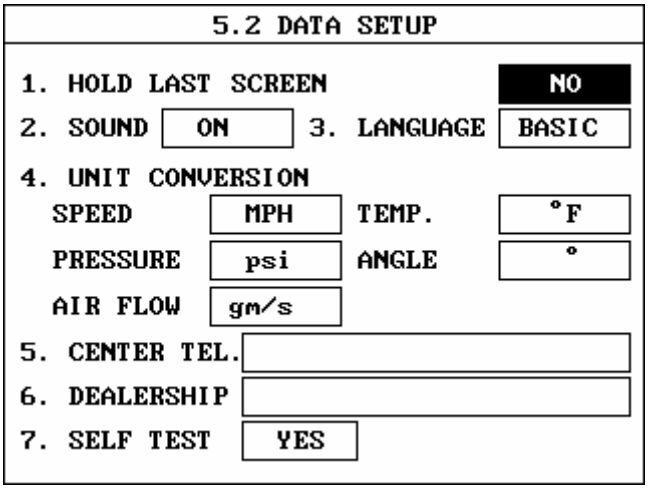
3-1. OPERATION FLOW

0.1 INITIAL SCREEN

05

5.0 SYSTEM SETUP

02



LEFT	LEFT ITEM SELECTION
RIGHT	RIGHT ITEM SELECTION
UP	ITEM VALUE CHANGE +
DOWN	ITEM VALUE CHANGE-
ENTER	CONFIRM ITEM SELECTION

[FLOW VI.2 : DATA SETUP MODE IN/OUT FOLW]

3.2 MODE APPLICATION

The operating parameters of Hi-scan Pro may be set prior to vehicle testing. The following list details items which are user configurable.

1) HOLD LAST TOOL BOX SCREEN : Determines whether or not the last screen in VEHICLE DIAGNOSIS AND SCOPEMETER mode is saved before power down.

2) SOUND : Determines whether or not the internal beep sounds at each key depression.

3) LANGUAGE : Determines whether or not a local language is used.

4) UNIT CONVERSION : The units of measure used by Hi-scan Pro may be selected from either of the following :

Speed	Km/h, MPH
Temperature	Fahrenheit, Centigrade
Pressure	kPa, mmHg, inHg, psi, mbar
Angle	degree, percent
Airflow Volume	gm/s , lb/m

5) CENTER TEL. : The telephone number to which data transmissions can be made.

6) DEALERSHIP : The name of dealer.

7) SELF TEST : Determines whether or not a Self Test is performed at each power up.

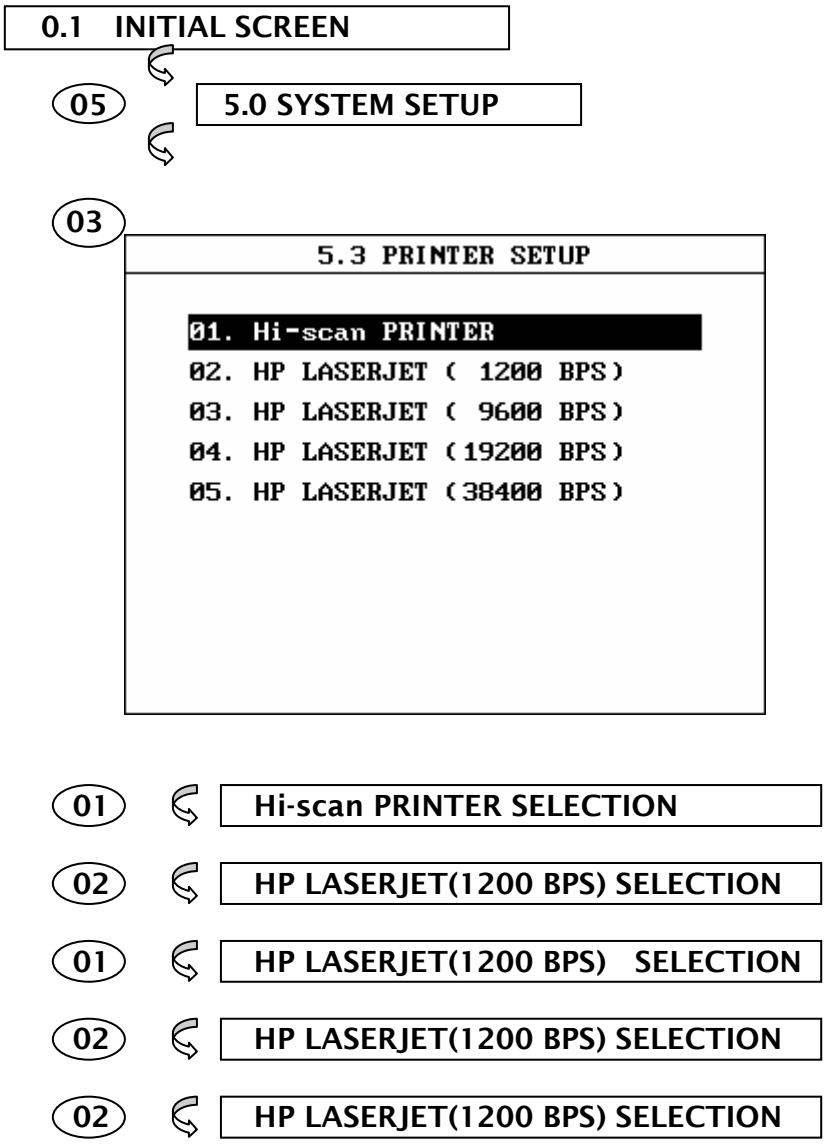
Items are selected by using the LEFT / RIGHT key, and values may be changed using the UP / DOWN key.

When editing the Dealership, the cursor is moved by using the LEFT / RIGHT key, and the selected value is changed using the UP / DOWN key to move to the next or previous character in the character set (1, 2, 3 …, 9, 0, -, blank).

When editing the Telephone Number information, the characters are selected by using UP / DOWN to move to the next or previous character in the character set (1,2,3,…9,0,A,B,C,…Z. -,/,.,blank).

4. PRINTER SETUP

4-1. OPERATION FLOW



[FLOW VI.3 : PRINTER SETUP MODE IN/OUT FLOW]

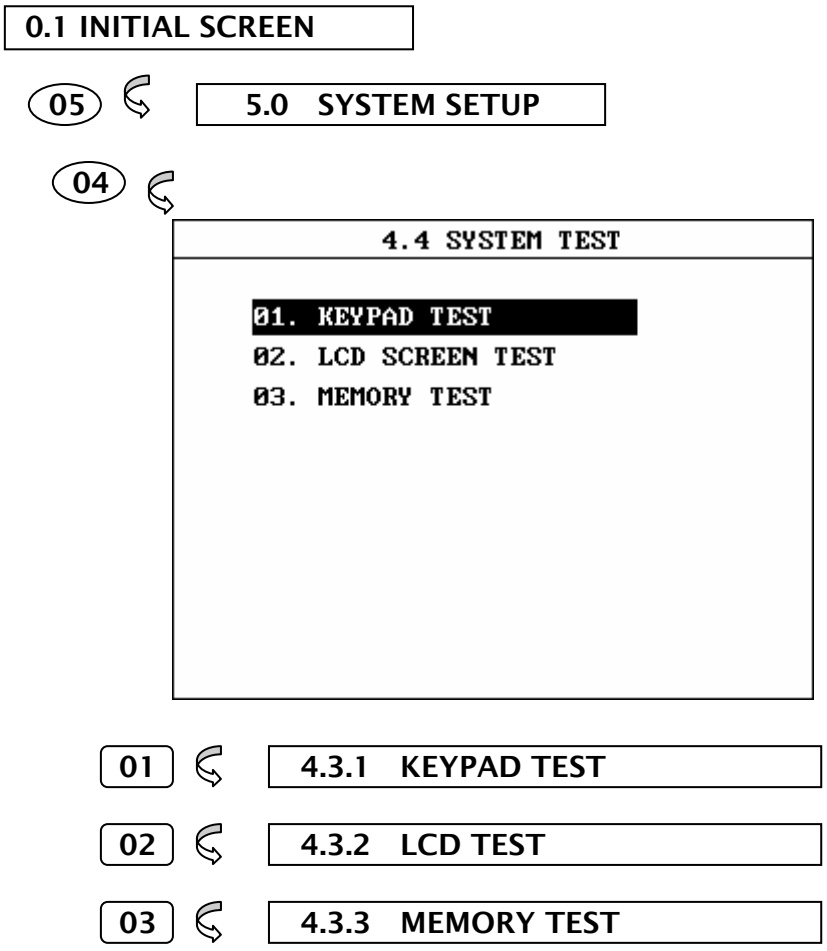
4-2. MODE APPLICATION

In this screen, user can select printer by using (UP) / (DOWN) key.

After selecting, with (ESC) key, user can confirm the type of printer to Hi-scan.

5. SYSTEM TEST

5-1. OPERATION FLOW



[FLOW VI.4 : SYSTEM TEST MODE IN/OUT FLOW]

5-2. MODE APPLICATION

User can perform Hi-scan self-test for the maintenance.

Move cursor by UP / DOWN key or key-in item number by NUMERIC key, and press ENTER to confirm.

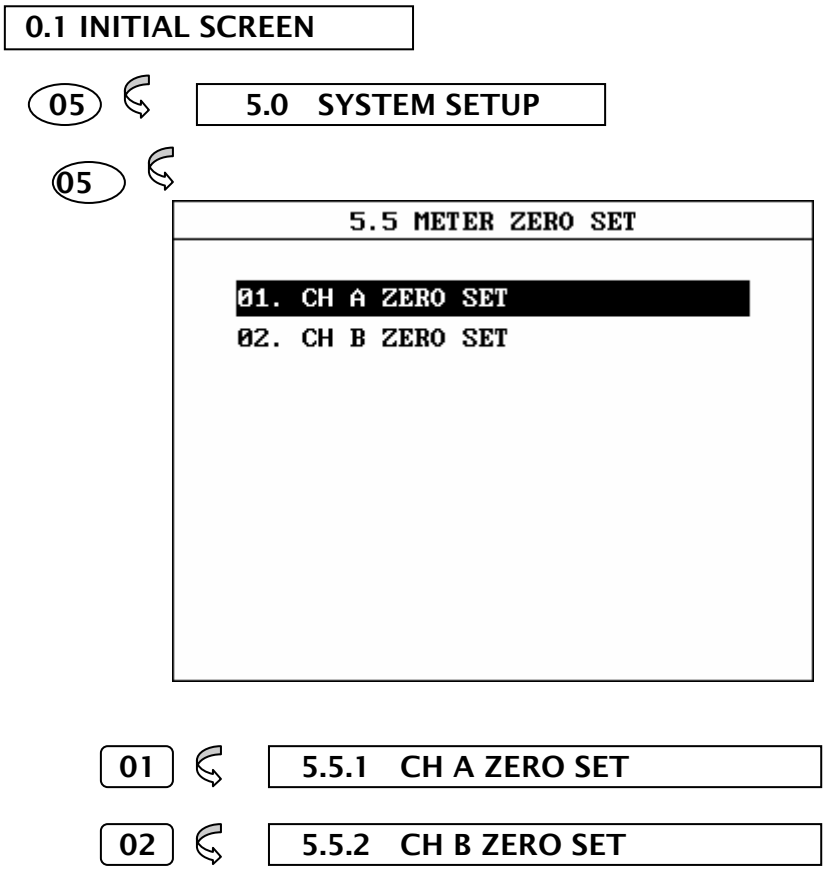
01 **key is used to perform keypad test function.**

02 **key is used to perform LCD test function.**

03 **key is used to perform memory test function.**

6. METER ZERO SET

6-1. OPERATION FLOW

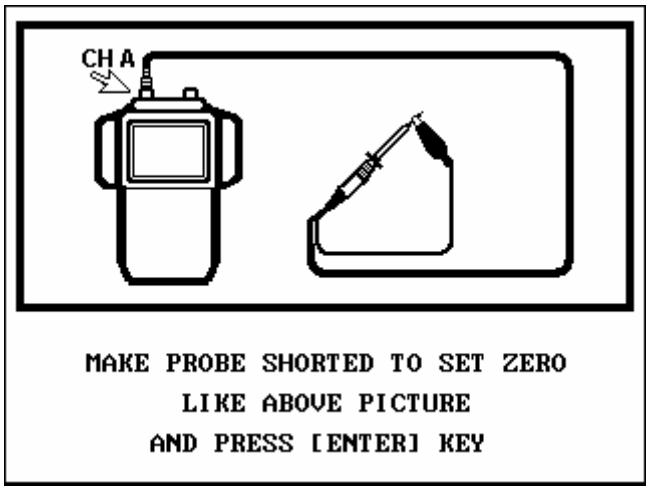


[FLOW VI.6 : METER ZERO SET FLOW]

6-2. MODE APPLICATION

This mode is for controlling zero point for accurate measurement in Multi meter function.

After selecting channel A or channel B, like [figure VI.5] it controls zero point with connection of Oscilloscope probe.



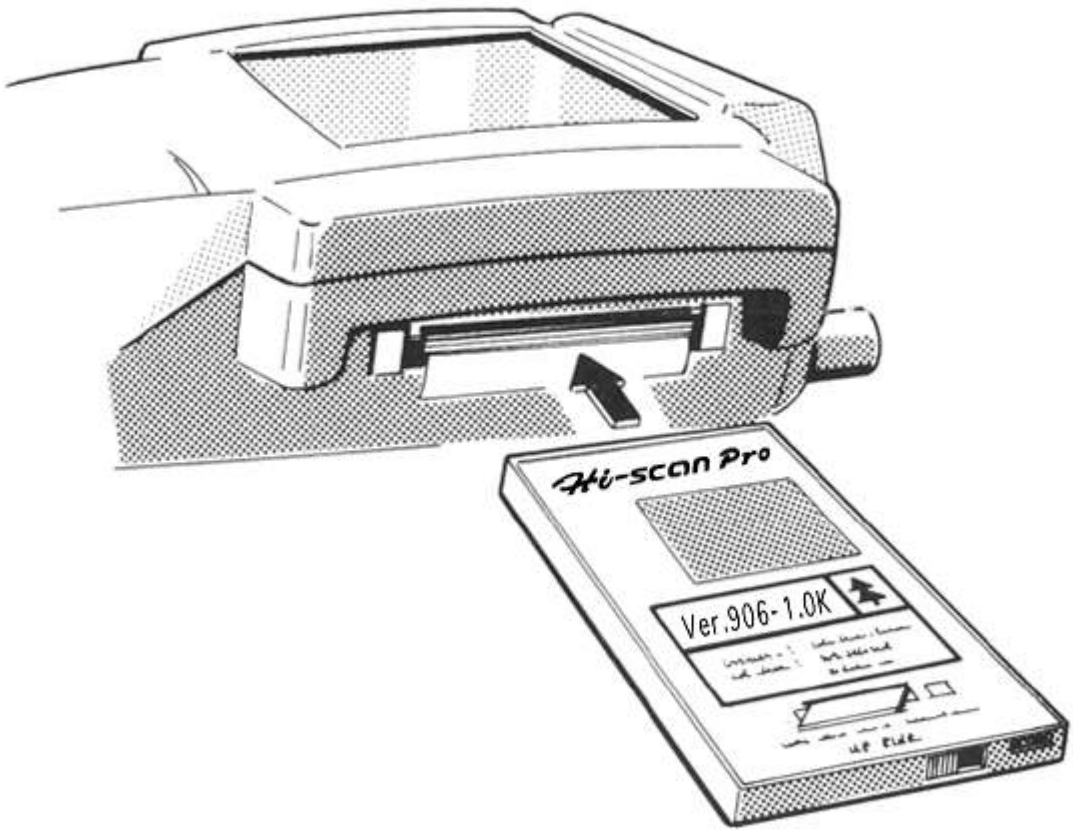
[Figure VI.5 : ZERO SET]

VII. USER MAINTENANCE

1. SOFTWARE CARD INSTALL

(1) Make sure Hi-scan Pro is turned off.

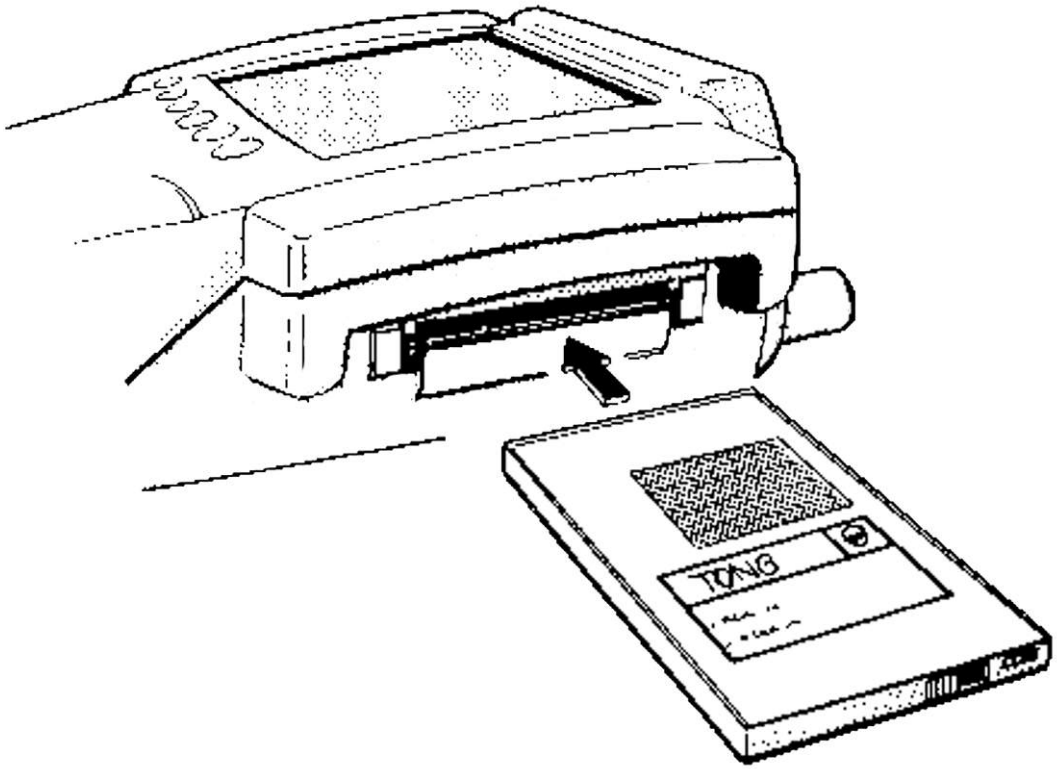
(2) Insert the software card PCMCIA in the upper slot (right part).



[Figure VII.1:SOFTWARE CARD INSTALL]

2. MEMORY CARD INSTALL

(1) Turn ON the Hi-Scan Pro.
(2) Go to 'SYSTEM CONFIGURATION FUNCTION'
(3) Format MEMORY CARD by inserting lower slot
(For details, please refer to VI-2-3)
(4) Turn OFF the Hi-scan Pro.



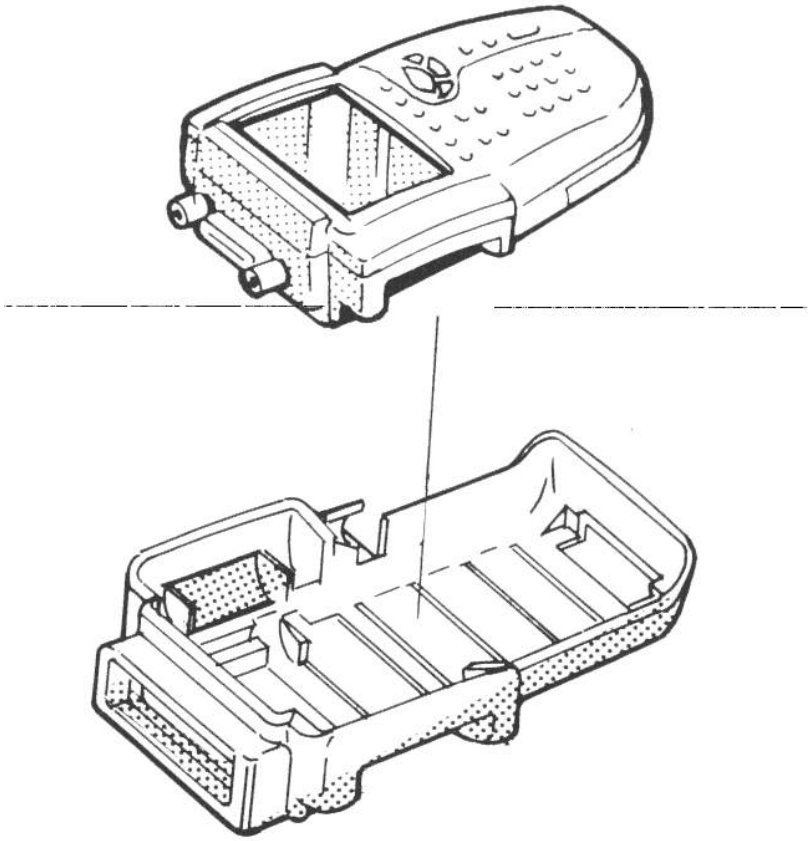
[Figure VII.2: MEMORY CARD INSTALL]

3. RUBBER SHROUD COVERING

(1) Remove all cable connections.

(2) Press top and bottom part of rubber shroud.

(3) Insert the Hi-Scan Pro main body into the rubber shroud.



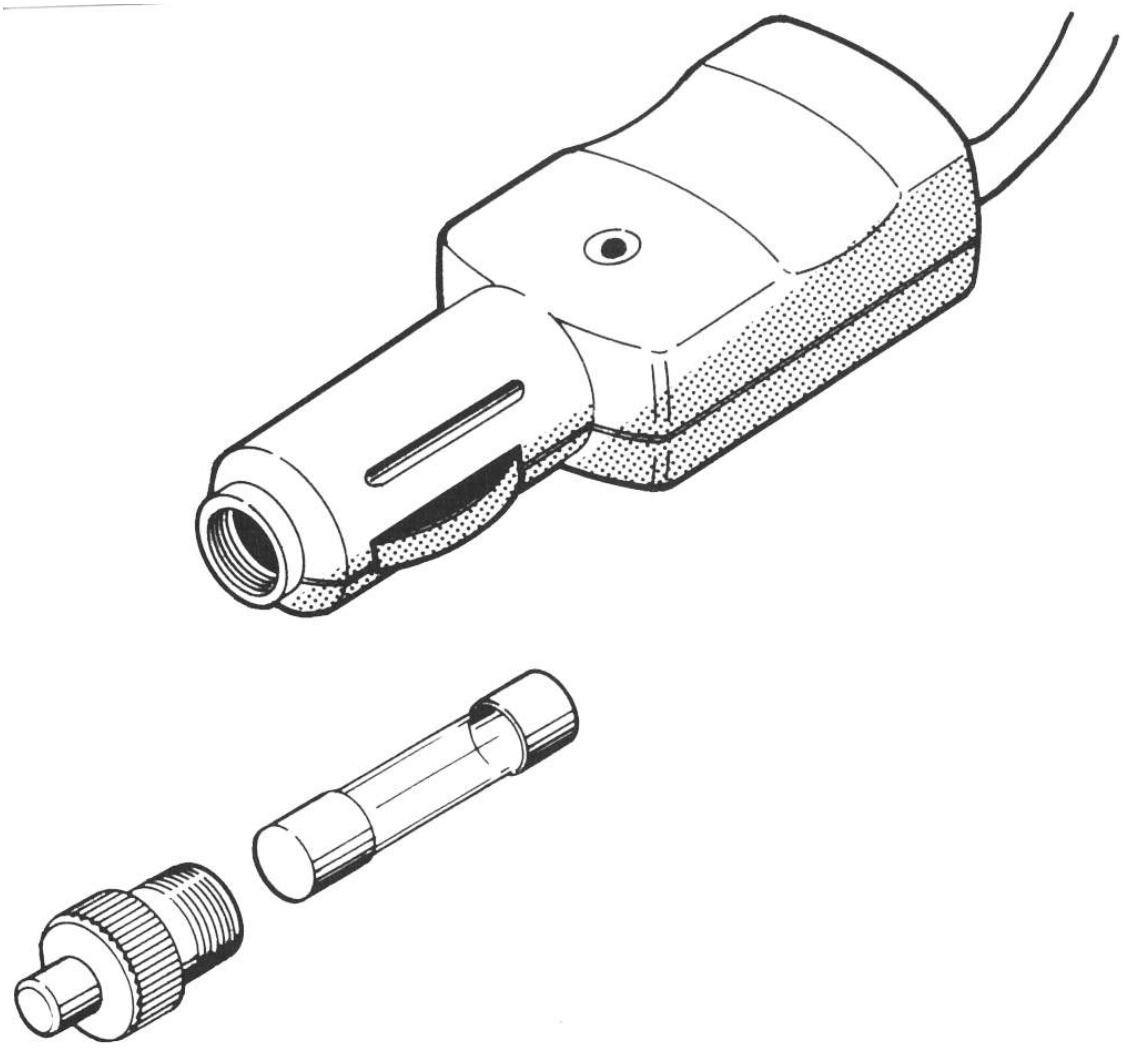
[Figure VII.3: RUBBER SHROUD COVERING]

4. FUSE REPLACEMENT

(1) Open the tip of the cigar light jack.

(2) Replace the fuse (3A fuse is recommended).

(3) Close the tip of the cigar light jack.



[Figure VII.4: FUSE REPLACEMENT]

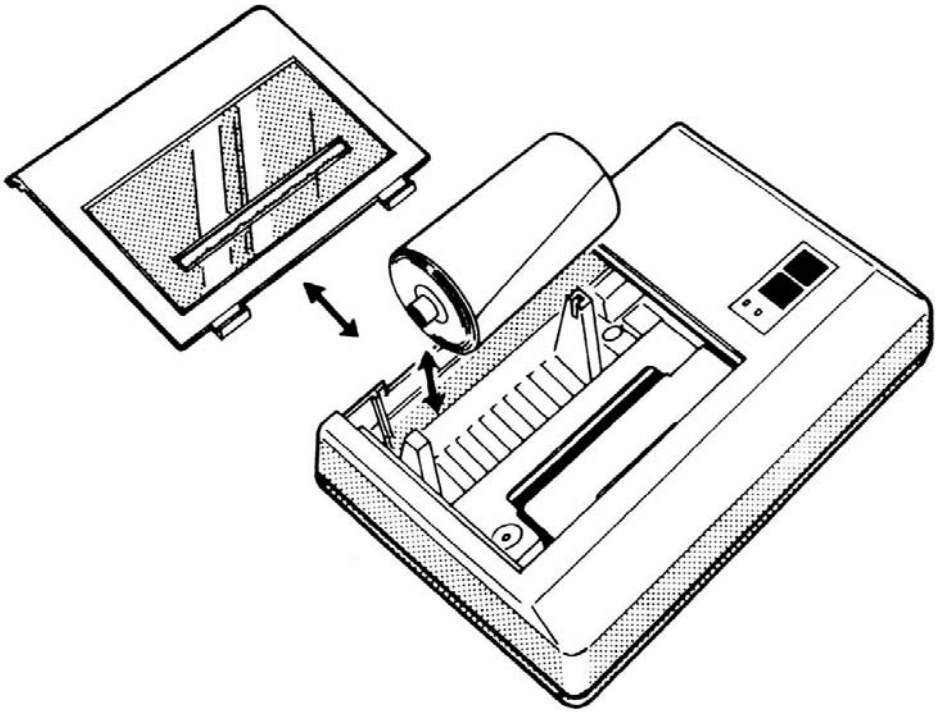
5. PRINTER PAPER CHANGE

(1) Open the cover of the printer.

(2) Insert bar into paper roll.

(3) Place the paper roll.

(4) Close the cover of the printer.

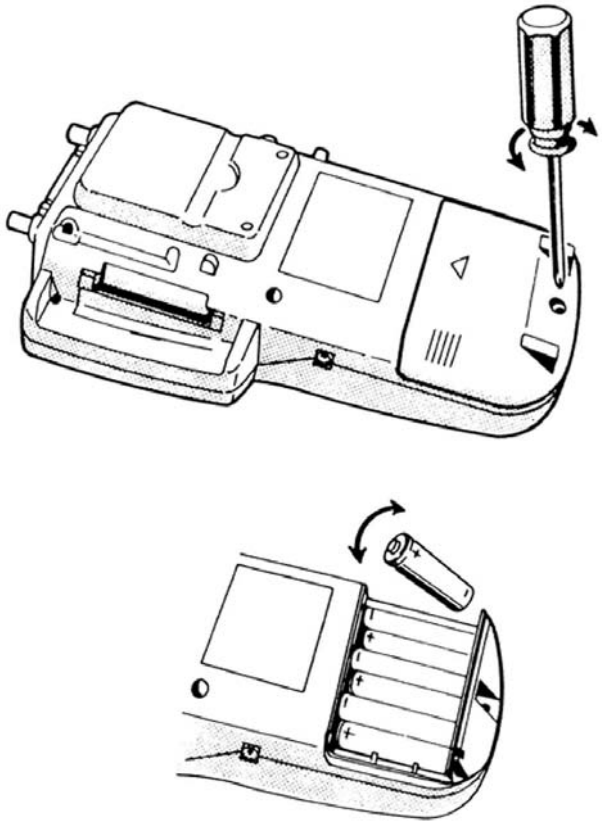


[Figure VII.5:PRINTER PAPER CHANGE]

6. REPLACING BATTERY

(1) Prepare 7 rechargeable batteries
100mAh capacity is recommended).

(2) Remove the rubber shroud.
(3) Open battery cover with a screwdriver.
(4) Insert battery as indicated on the figure.
(5) Use only rechargeable batteries.
(6) Close the battery cover.
(7) Cover with the rubber shroud.

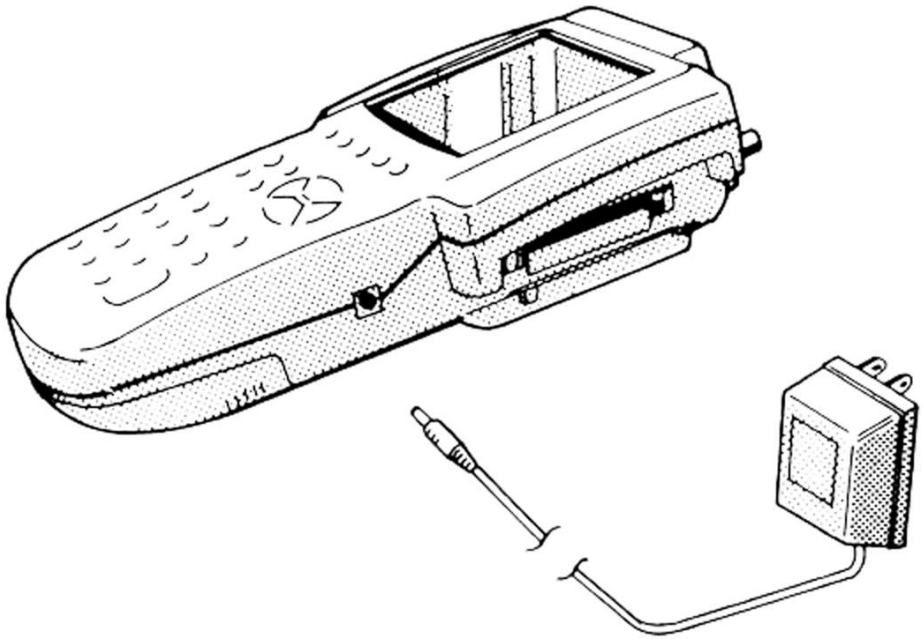


[Figure VII.6:REPLACING BATTERY]

7, CHARGING BATTERY

(1) To use rechargeable battery, you must install rechargeable batteries (see Optional parts)
(2) All external power supply methods can be used to charge internal batteries.

(3) AC/DC adapter (sourced in local) is recommended for battery charging.

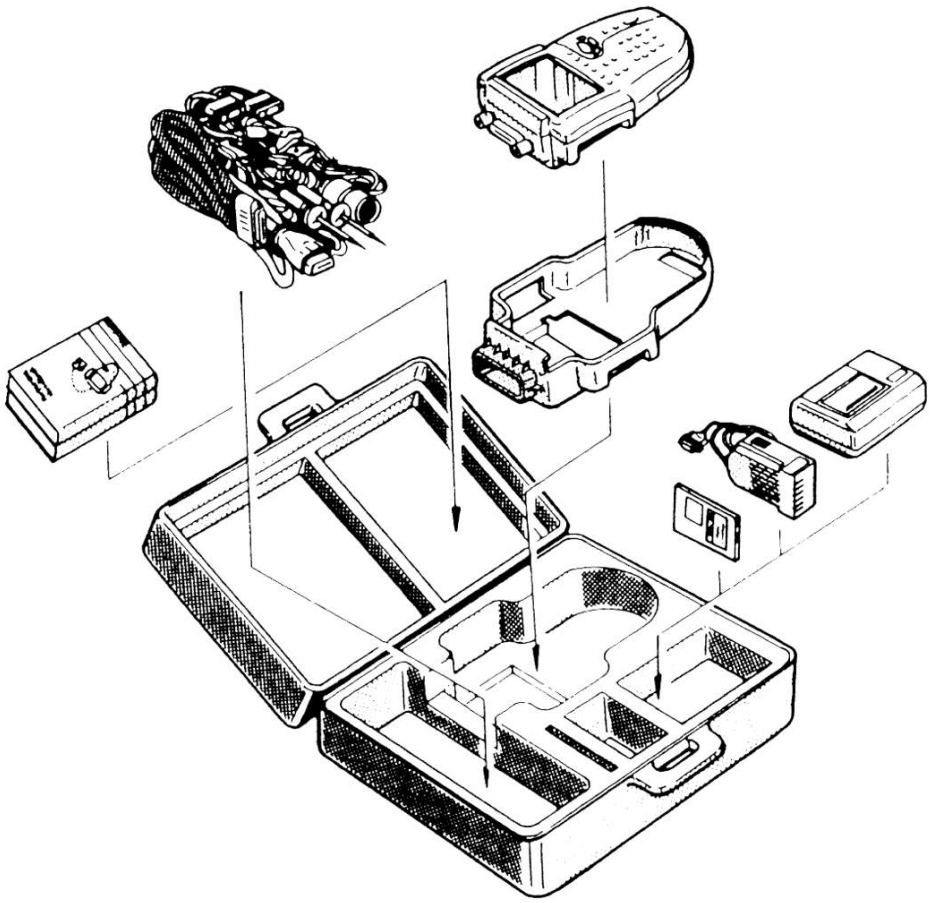


[Figure VII.7:CHARGING BATTERY]

8. FINISHING UP

(1) Clean all equipment and cables.
(Do not use thinner to clean LCD window; UV coating film on the LCD window may be destroyed.)
(2) Insert equipment in carrying case

(3) The Hi-scan Pro main body can be inserted with the DLC cable attached.



[Figure VII.8: FINISHING UP]

APPENDIX

A. IMPORTANT MESSAGE DESCRIPTION

B. TROUBLESHOOTING

C. PIN ASSIGNMENT OF DLC CABLE

App. A IMPORTANT MESSAGE DESCRIPTION

ABNORMAL VEHICLE POWER
CHECK AND PRESS [ENTER]

This message occurs when the external power supply is not connected or is lower than 9.0V. The user must supply sufficient external power.

AUTO POWER OFF

The Hi-scan Pro system will be powered off automatically because there is no SOFTWARE CARD found or a Hi-Scan Pro system error has occurred.

BATTERY VOLTAGE LOW!
RECHARGE BATTERY

The voltage of the Hi-Scan Pro rechargeable BATTERY is lower than the normal voltage. The user must recharge the battery with an external power supply or change the battery.

CAN'T COMMUNICATION
PLEASE CHECK THE SYSTEM

The Hi-scan Pro cannot perform the communication because the system status is abnormal. The user must inspect the system.

COMMUNICATION ERROR
CHECK THE SYSTEM, PRESS [ENTER]

A communication error occurs when the Hi-Scan Pro displays data which is received via communication. After checking the system, press the ENTER key.

COMMUNICATION STOPPED
NOW COMMUNICATION TRY

A communication error occurs in SIMU-SCAN function. This message will disappear when the communication is enabled.

CONNECT DLC CABLE
AND PRESS [ENTER]

This message occurs when a diagnostic test using DLC is performed without the DLC cable connected. The user must correct the CABLE connection, and press the ENTER key.

DIFFERENT SYSTEM
PLEASE CHECK THE SYSTEM

This message occurs after opening the communication, when the system is different from the system selected by the user. After checking the system, the user should select the correct system again.

MEMORY EXPANSION CARD ERROR!

This message occurs when an error has occurred in the MEMORY EXPANSION CARD while testing. The user must change the MEMORY EXPANSION CARD.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA

This message occurs when there is no recorded data or there is a different system data in the FLIGHT RECORD mode.

NO TIPS. FOR MORE INFORMATION SEE THE SHOP MANUAL

This message occurs when the user selects an item that has no TIPS.

NO TROUBLE CODE FOR TIPS

This message occurs when the user presses the TIPS key, but there is no DTC in the DIAGNOSTIC TROUBLE CODES mode.

NO TROUBLE CODE TO ERASE

This message occurs when the user press the ERAS key with no DTC to erase in DIAGNOSTIC TROUBLE CODE mode.

OUTPUT SIGNAL IS INHIBITED
CHECK CONNECTION, PRESS [Y/N]

This message occurs when the Hi-Scan Pro can be damaged because of a mis-connection when further processing is done in ACTUATOR DRIVING mode. To send the output signal to the actuator the user should correct the connection and then press the YES key. The user can stop, the signal output with the NO key.

SELECT ITEM WITH [FIX]

This message occurs when the GRPH key is pressed without any item selected in the CURRENT DATA mode, or RCRD key is pressed without any item selected in the FLIGHT RECORD mode. In these cases, you must select an item with the FIX key.

SIMULATOR SIGNAL IS DISTORTED
CHECK PROBE, PRESS [ENTER]

This message occurs when the error between setting and actual implied voltage is greater than 10% in the Voltage Output function in the SIMU-SCAN mode. The user must check the probe connection, and press the ENTER key.

SOFTWARE CARD ERROR!

This message occurs when an error has occurred in the SOFTWARE CARD while testing. The user must change the SOFTWARE CARD.

SYSTEM ROM ERROR!

This message occurs when an error occurs in the ROM(Read Only Memory) of the Hi-Scan Pro. If you are having a problem with the Hi-Scan Pro, please try the procedures in appendix B.

App.B TROUBLESHOOTING

1. START-UP TROUBLE

(1) Symptom

1) No BEEP sound after power ON key is pressed
2) Blank screen is displayed

(2) Causes Assumption and Recommended Trial

Causes Assume. 1: No power is supplied to the Hi-Scan Pro

Trial 1-1 : If power is supplied by DLC cable, check that the DLC cable is connected. If there is no problem with the DLC cable, change the power supply method.

Trial 1-2 : If power is supplied by Cigar lighter power cable, check fuse in the cigar lighter power cable. If there is no problem in the cigar lighter power cable, change the power supply method.

Trial 1-3 : If power is supplied by Battery, check that the Battery charging voltage is over 12.0 volt. If there is no problem in the battery, change the power supply method.

Trial 1-4 : If power is supplied by Local sourced AC/DC adapter, check that the AC/DC adapter voltage is over 12.0 volt. If there is no problem in the AC/DC adapter voltage, change the power supply method.

2, POWER SUPPLY TRIP MODE

To protect the Hi-Scan Pro and power supply from harmful electrical shock-such as a surge in the power supply line-, there is a trip function in the Hi-Scan Pro power supply.

When the power supply has been tripped, the power supply status is still ON but the power supply has been halted. So this status can be mis-understood to be OFF status by the user, but the power supply is still alive. To release the trip mode, you must reset the power supply by pressing the ON/OFF key for more than 2 seconds (power OFF) and pressing the ON/OFF key for about 0.5 second (power ON).

A description of this trip function's symptom and recommended trial is described below.

(1) Symptom

1) **LCD suddenly OFF, and no key operation can be performed in the power ON mode.**

(2) Causes Assumption and Recommended Trial

Cause Assume. 1: The Hi-Scan Pro power supply has entered the trip mode for surge protection.

Trial 1-1 :

a. **Press the ON/OFF key for more than 2 seconds to turn the power supply OFF.**
b. **Press the ON/OFF key for more than 0.5 second to turn the power supply ON.**

c. In normal mode, the power supply can be restarted by the reset trip.
d. If a severe or continuous surge is sent to the Hi-Scan Pro power supply, physical recovery may be needed for the power supply of Hi-Scan Pro. This recovery may take a full day.

3. BLANK SCREEN DISPLAYED

(1) Symptom

1) BEEP sound after power ON key is pressed and a blank screen is displayed.

(2) Causes Assumption and Recommended Trial

Causes Assume. 1: LCD Contrast misadjusted
Trial 2-1 : Spin the Contrast dial to check if this problem is caused by maladjustment of the screen.

Causes Assume. 3 : Program card or Memory expansion card mis-installed.
Trial 3-1: Check Card installation status.

6. USER SCOPE MODE

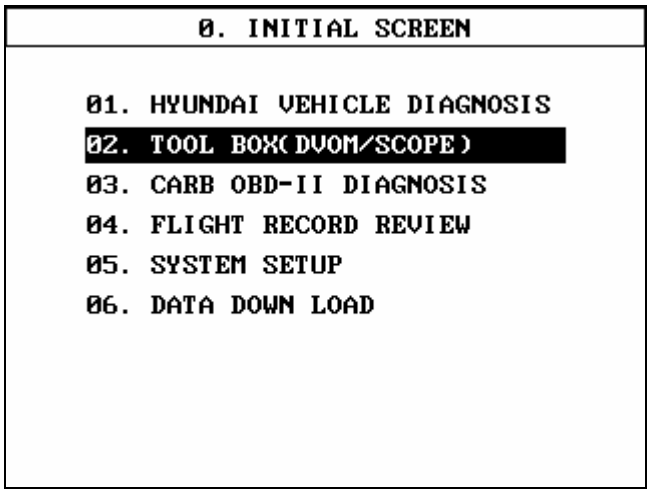
0 FUNCTION SELECTION
02 + 2. VEHICLE SCOPE METER FUNCTION →ENTER
07 + USER COPE MODE→ENTER

6-1. SUMMARY

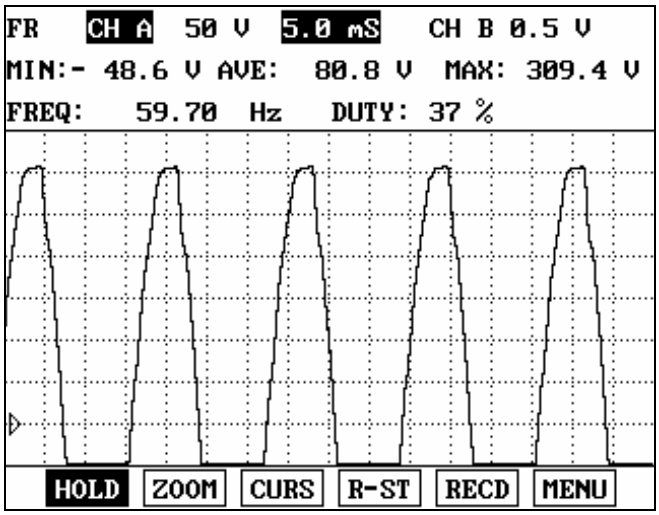
When users set up optionally voltage,time,trigger and measuring mode etc or user scope mode and then use the setting later,this is a function loading them from MEMORY after saving the setup environments. It has 20 memory spaces. So you can load 20 settings whenever you need. It is a sort of macro functions.

6-2. The way of using

1) Saving procedure

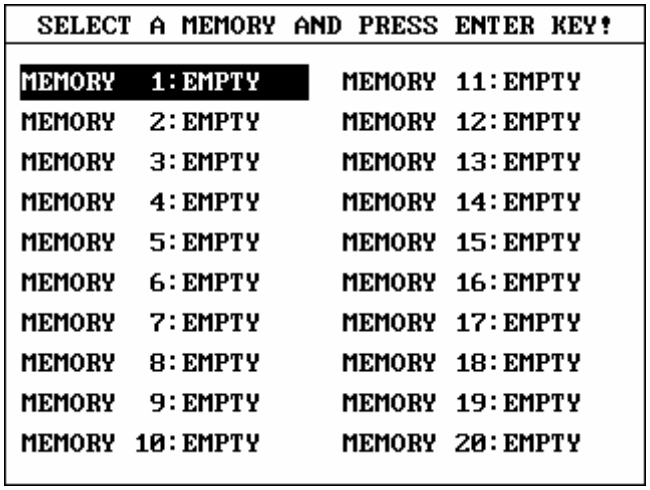


[FIGURE 6-1 : USER SCOPE SELECTION]
FIGURE [6-1] 07. SELECT USER SCOPE MODE



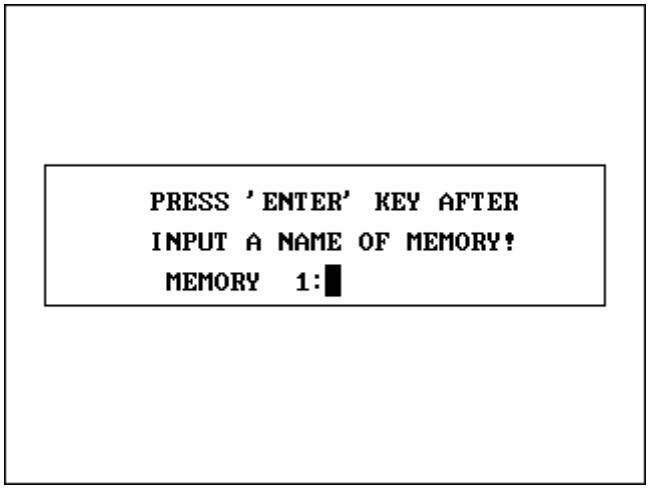
[FIGURE 6-2 ; MEASUREMENT SCREEN]

When you measure later again after saving setup environment or want to load the stored environment without setup, save it selecting F4, R-ST button.



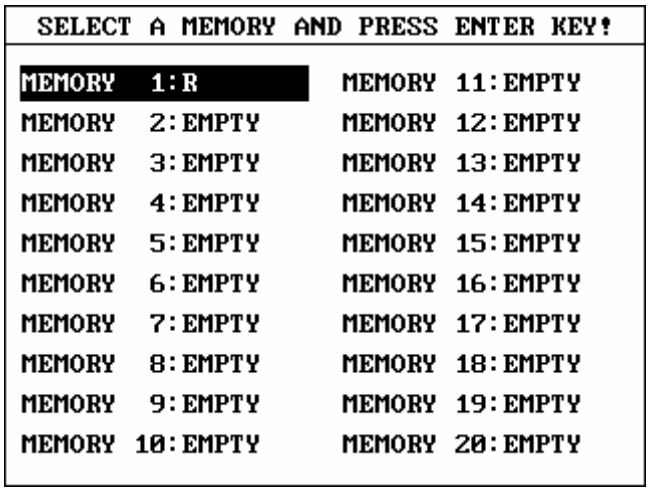
[figure 6-3 : MEMORY SELECTION FOR SAVING]

If F4 R-ST is selected, twenty memories will be displayed on the screen like figure [8-3]. If EMPTY is selected , you can save the setup environments inputting a name of memory like figure [6-4].



[FIGURE 6-4 : ENTER A NAME FOR STORE]

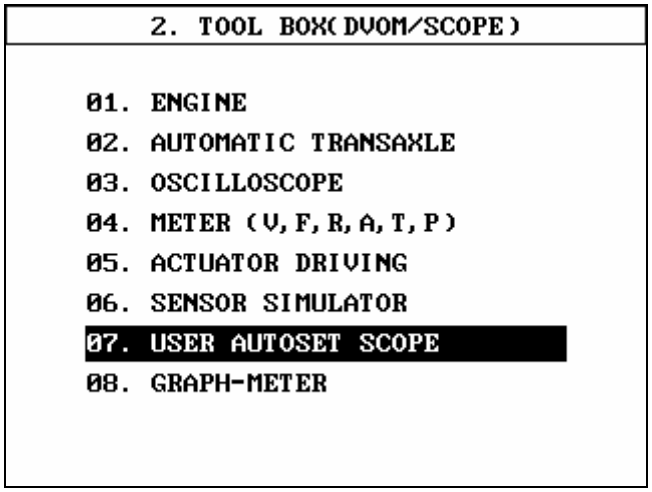
When you want to save a name which will be saved or select a appropriated letter using cursor button(▲ / ▼) in the menu of Hi-Scan Pro button and when you want to move to next one , input to next one using (◀ / ▶) and then finish saving after selecting ENTER.



[FIGURE 6-5 : SAVED A NAME CONFIRMATION]

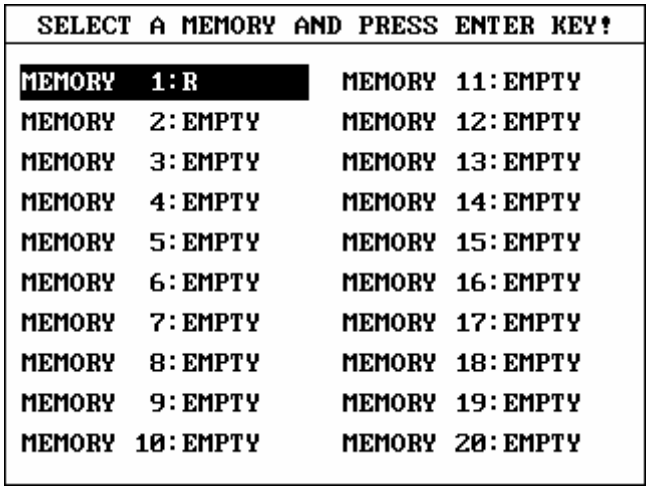
When users finish saving with slected name, a saved name is displayed like [FIGURE 6-5]

2) Loading Procedure



[FIGURE 6-6 : USER SCOPE SELECTION]

After going to user scope mode,select a saved name in the figure [6-7] and then select ENTER. After that, you can use restoring used scope setting.



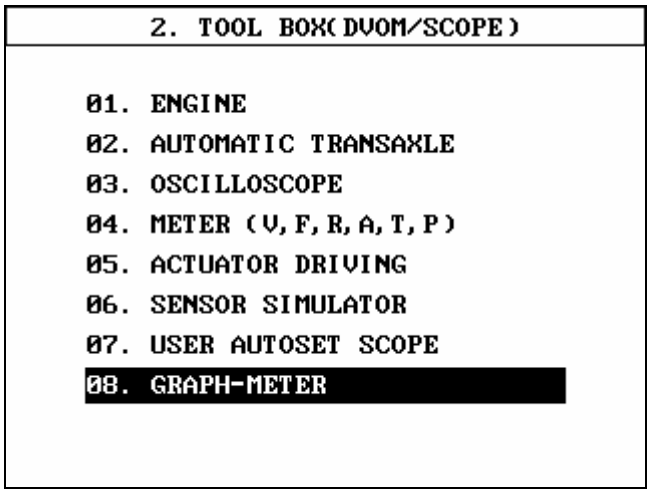
[FIGURE 6-7 : STORED MEMORY SELECTION]

8. GRAPH METER

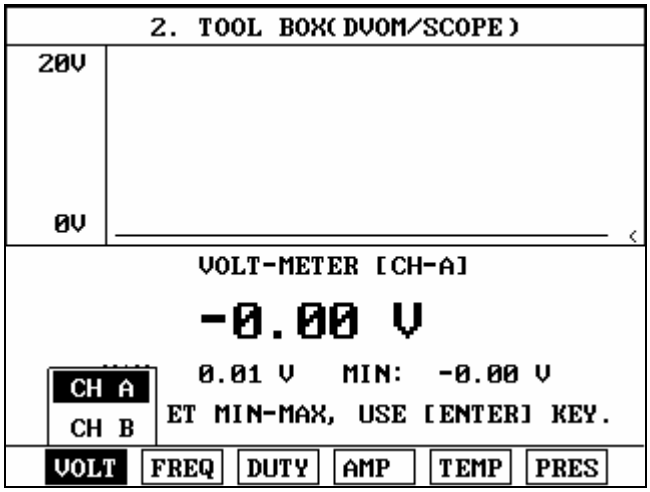
8-1. MODE MANAGEMENT FLOWING

0 FUNCTION SELECTION
↘ 02 + 4. VEHICLE SCOPE METER FUNCTION →ENTER
↘ 08 + GRAPH METER →ENTER

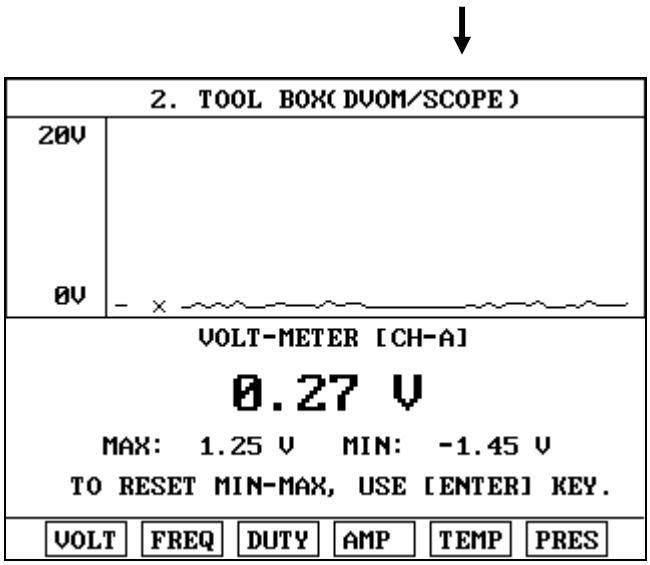
8-1. VOLTAGE MESUREMENT(VOLT)



[FIGURE 8-1:GRAPH METER SELECTION]

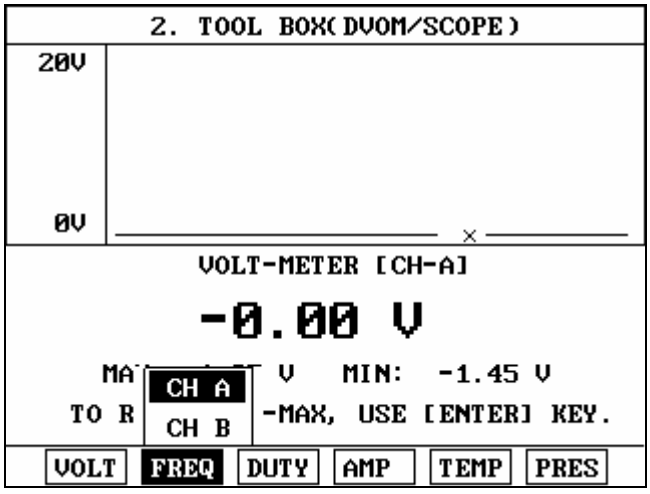


[FIGURE 8-2:VOLTAGE MESUREMENT CHANNEL SELECTION]

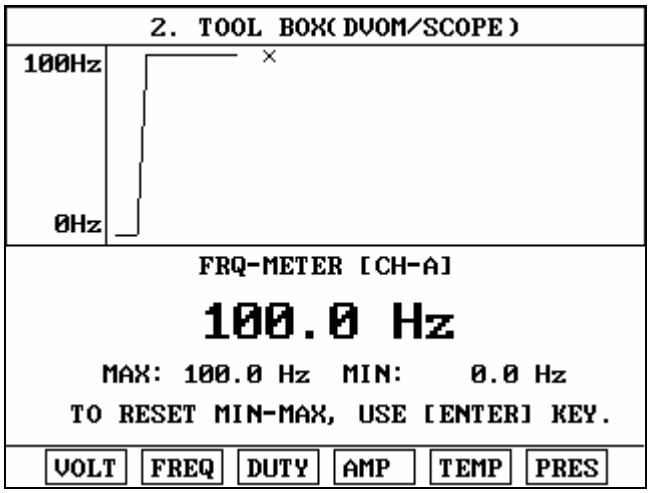


[FIGURE 8-3:VOLTAGE MESUREMENT SCREEN]

8-2. FREQUENCY MESUREMENT(FREQ)

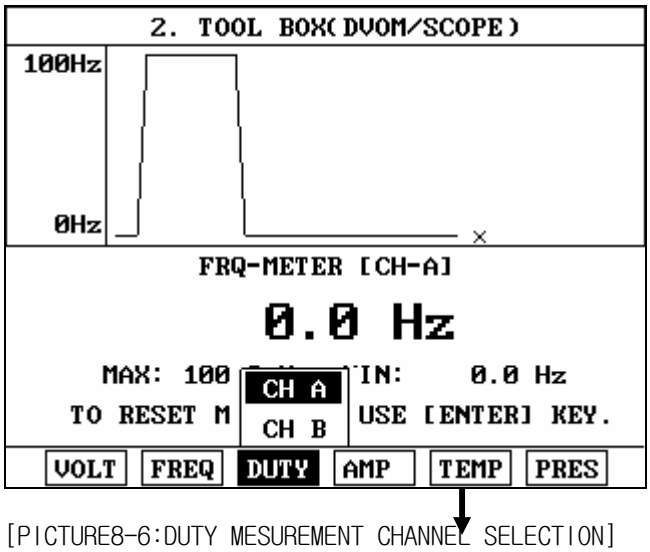


[FIGURE 8-4 FREQUENCY MESUREMENT CHANNEL SELECTION]

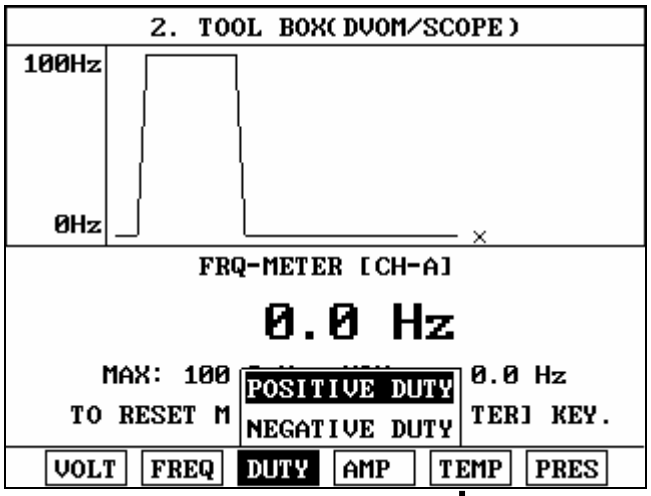


[FIGURE 8-5:FREQUENCY MESUREMENT CHANNEL]

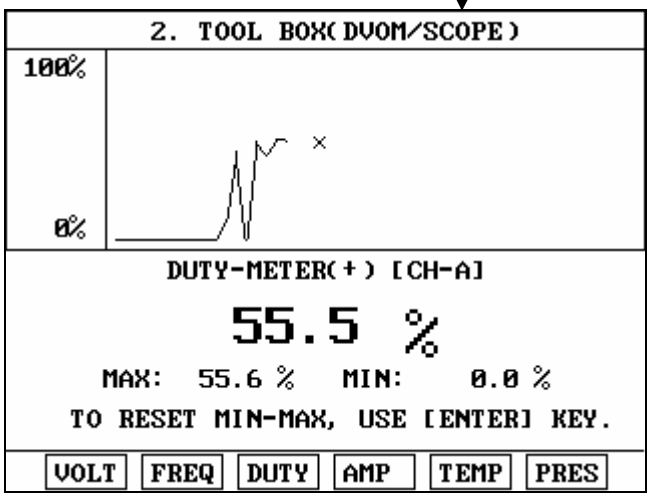
8-3. DUTY MESUREMENT(DUTY)



[PICTURE8-6:DUTY MESUREMENT CHANNEL SELECTION]

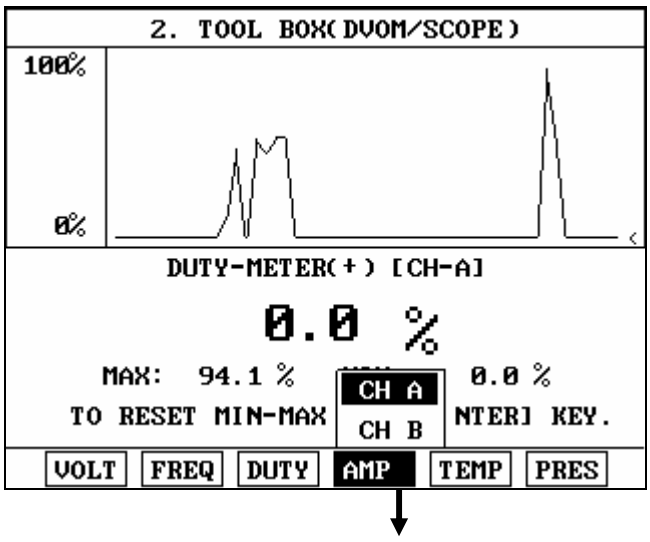


[FIGURE 8-7 DUTY +,- SELECTION]



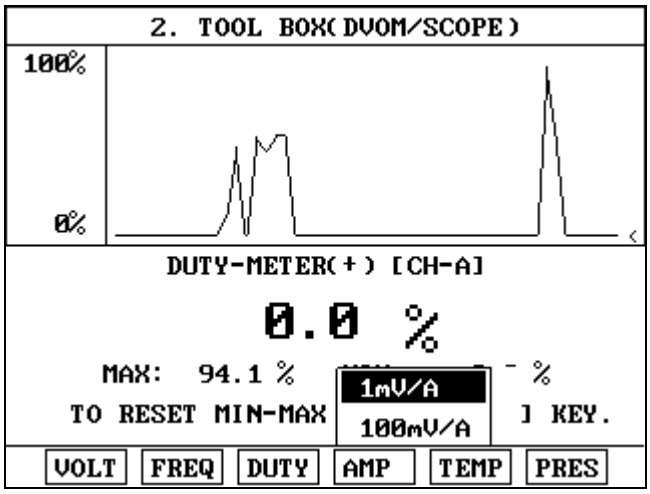
[FIGURE 8-8:DUTY MESUREMENT CHANNEL]

8-4. AN ELECTRIC CURRENT(AMP)

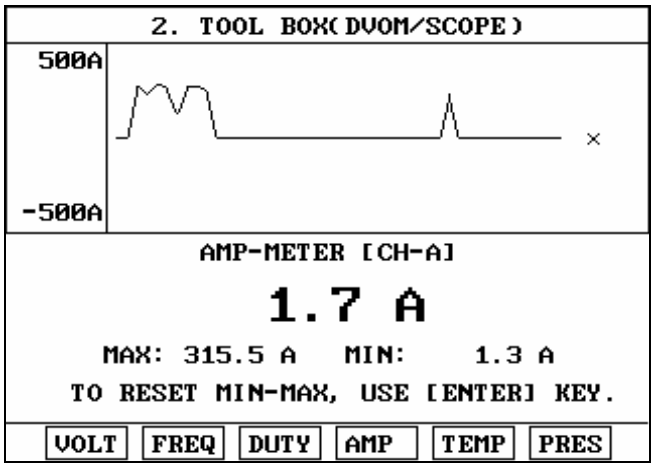


[PICTURE 8-9:AN ELECTRIC CURRENT MEASUREMENT CHANNEL SELECTION]

This is the figure of current measurement waveform and has 2 selection option(1Mv/a,100Mv/a). 1mv/a is for using PROBE measuring 1000A.
100mv/a is for using PROBE measuring 10A.
Measuring range is ㅁ500A~500A.

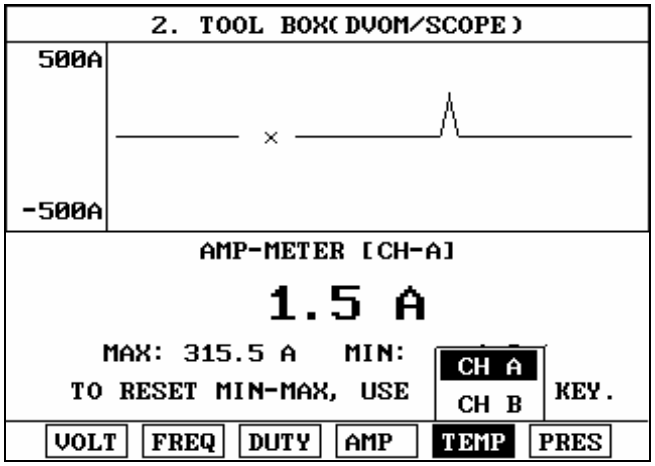


[FIGURE 8-10 : CURRENT MESUREMENT DIV SELECTION]



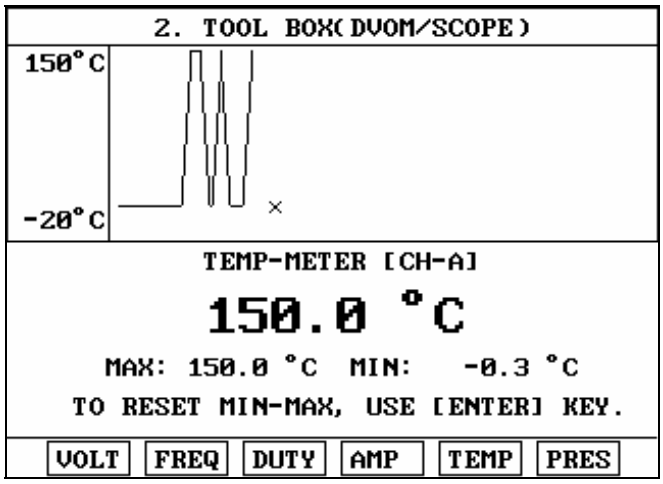
[FIGURE 8-11:AN CURRENT MEASUREMENT SCREEN]

8-5. TEMPERATURE MESUREMENT(TEMP)



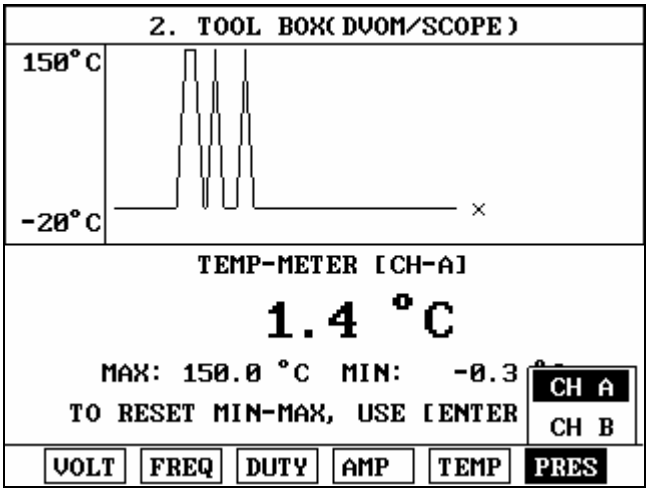
[FIGURE 8-12:TEMPERATURE MEASUREMENT CHANNEL SELECTION]

*Connect PROBE for temperature measurement to a part which will be measured and measure selecting one between channel 1and 2.

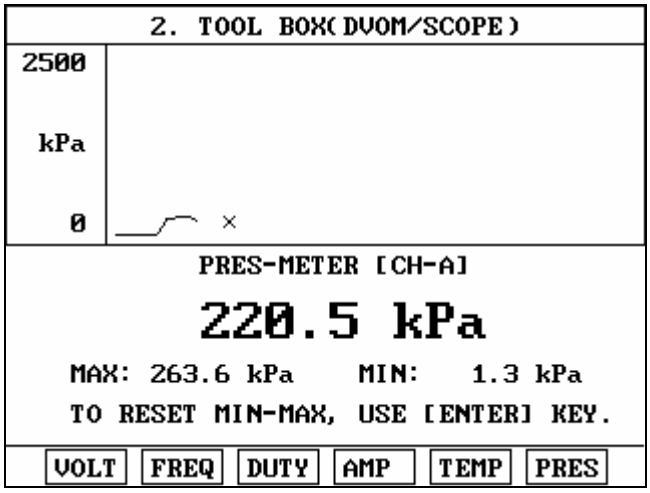


[FIGURE 8-13:TEMPERATURE MEASUREMENT SCREEN]

8-6. PRESSURE MEASUREMENT(PRES)



[FIGURE 8-14:PRESSURE MEASUREMENT CHANNEL SELECTION]



[FIGURE 8-15:PRESSURE MEASUREMENT SCREEN]

1. ATTENTION

[important]To measure exactly, you have to do 'zero adjustment' in advance

Hi-scan Pro

KOREAN VEHICLE DIAGNOSIS

CAUTION : Any changes or modifications in construction of this device which is not expressly approved by the party Responsible for compliance could void the user's authority to operate the equipment.

NOTE : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SAFETY

Safety Precautions

This equipment described in this manual is intended for use only by qualified personnel. Safe and effective use of this equipment is dependent upon the operator following normally accepted safety practices and procedures in conjunction with the special requirements detailed in this manual. Specific warning and cautionary statements will be found, where applicable, throughout this manual.

Where necessary, the WARNING statements and ICON will be described this guide.

WARNING identifies conditions or actions which may damage Hi-Scan Pro or the vehicle.

TABLE OF CONTENTS

I. HYUNDAI VEHICLE DIAGNOSIS

II. KIA VEHICLE DIAGNOSIS

III. PART NUMBER

Hi-scan Pro

I. HYUNDAI VEHICLE DIAGNOSIS

1. CONNECTION METHOD

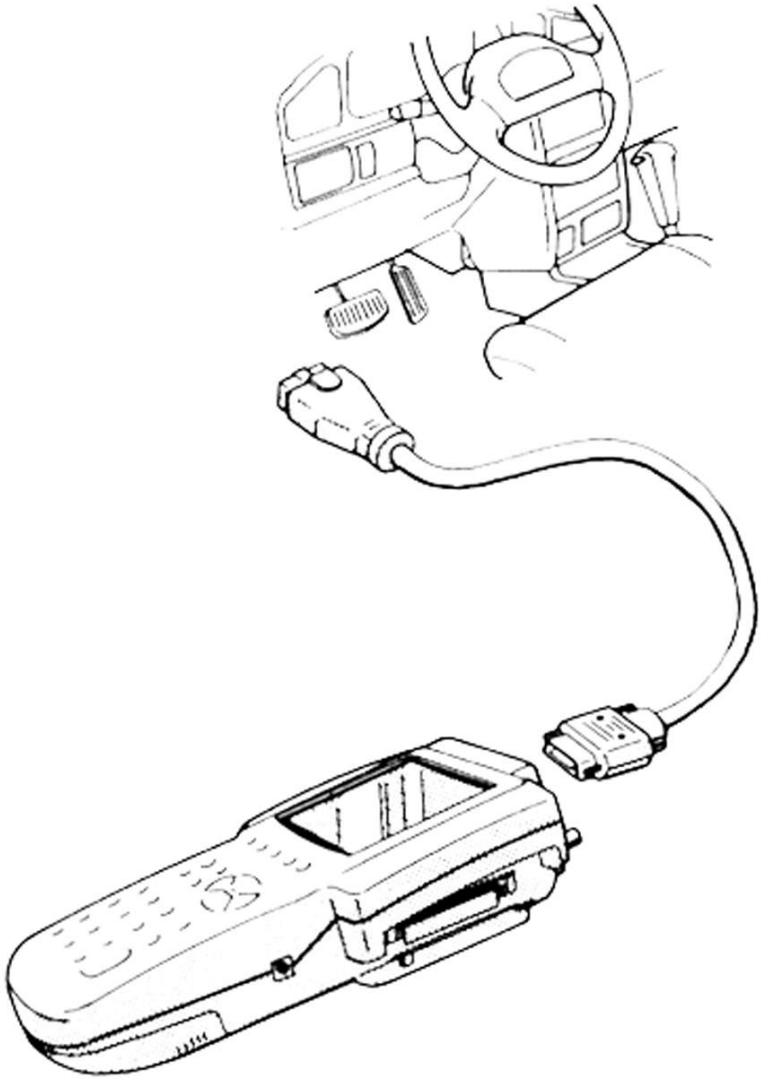
For vehicles with 16 pin Data Link Connector power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC CABLE 16 to the Hi-scan Pro and the vehicle data link terminals is all that required.

However, only the latest generation of vehicles (97 and on) uses the 16-pin Data Link Connector. For earlier models, a separate power supply by means of the cigar lighter cable, or battery extension cable will be required.

For earlier vehicles (pre 97), diagnostic connector can be found at the relay box which is located at knee bolster or fuse box located at the outer side of driver's cabin.

For current vehicles (97 and on), Diagnostic connector can be found underneath the driver's side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Hi-scan Pro data link terminal and the DLC CABLE ADAPTER 16-12 connected to the vehicle data link terminal and the DLC CABLE 16.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

2. VEHICLE AND SYSTEM SELECTION

2-1. OPERATION FLOW

TOP MENU

HYUNDAI EXPORTED VEHICLE

HYUNDAI VEHICLE DIAGNOSIS

OR

DOMESTIC VEHICLE

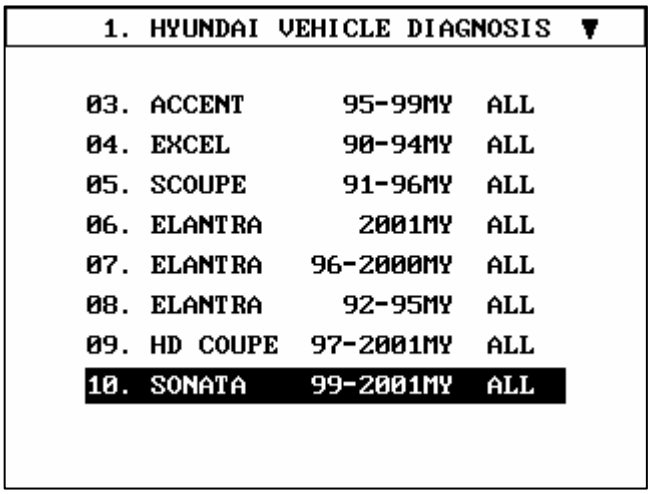
VEHICLE DIAGNOSIS

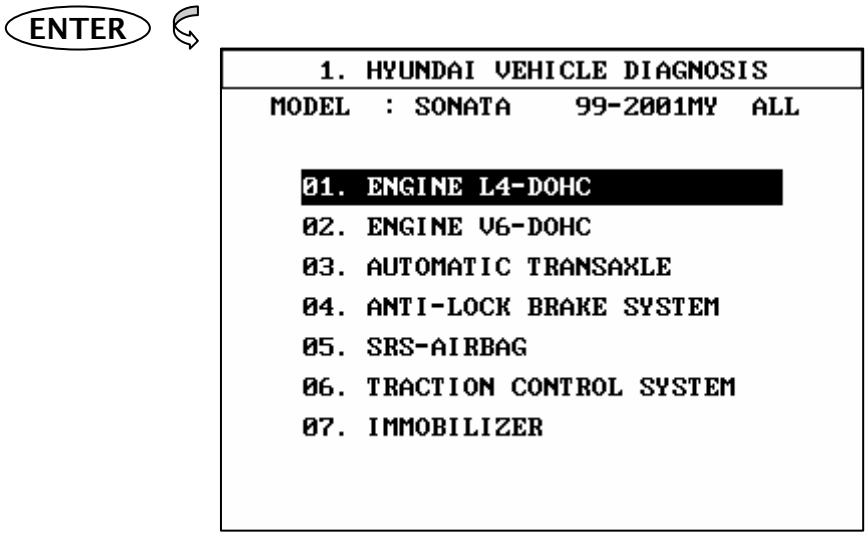
HYUNDAI VEHICLE

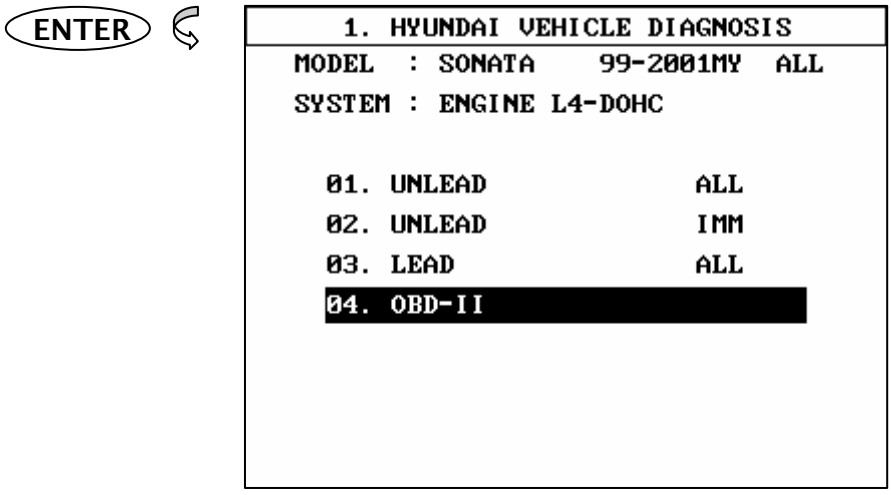
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

ENTER







[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

2-2. BASIC APPLICATION

Having connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection may be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, SYSTEM 2.

NOTICE: The MENU LIST of VEHICLE DIAGNOSIS screen may vary depends on the vehicle.

3. DIAGNOSTIC TROUBLE CODES

3-1. OPERATION FLOW

01. INITIAL SCREEN

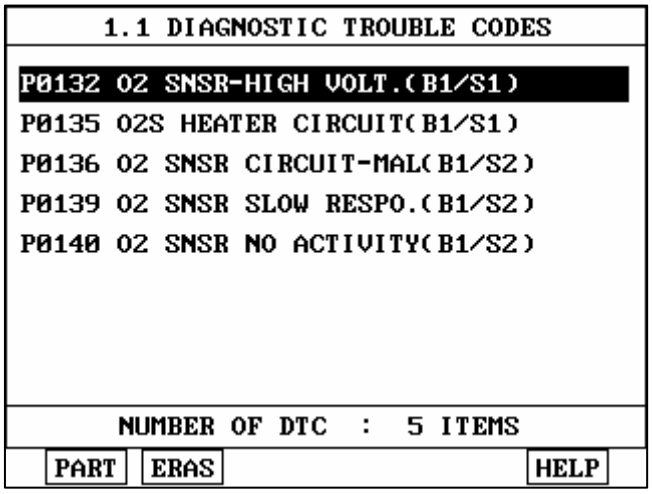
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



PART → 1.1.1 PART ANALISIS

ERAS → 1.1.2 ERASE FAULT CODE

HELP → 1.2.3 DTC TIPS

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

3-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

PART This soft function key is used in diagnosis troubles sensor precisely. Part mode provides more effective ways to diagnosis vehicle's problem comparing reference waveform with various bad signals,

NOTICE: This function is not applied to Korean domestic vehicles.

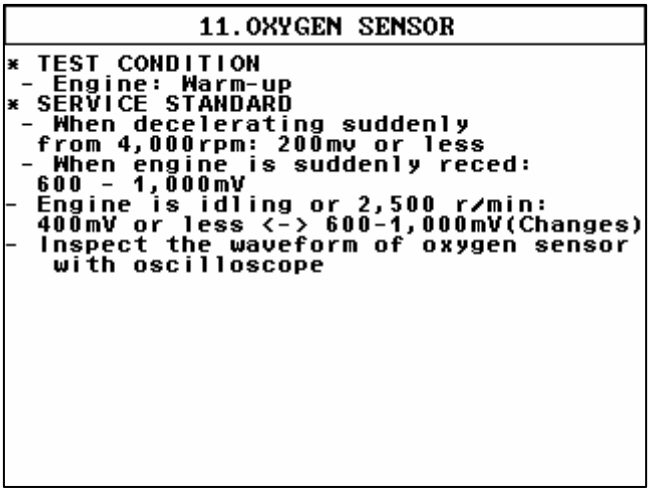
EARS This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.

HELP With selecting HELP key, brief explanation will be displayed. If there is no these function for certain item, you will see below message.

NO TIPS. FOR MORE INFORMATION, REFER TO THE SHOP MANUAL

NOTICE: This function is not applied to Korean domestic vehicles.

HELP function provides you tips as shown in [figure 2]



[Figure 2 : DTC HELP TIPS MODE]

4. CURRENT DATA

4-1. OPERATION FLOW

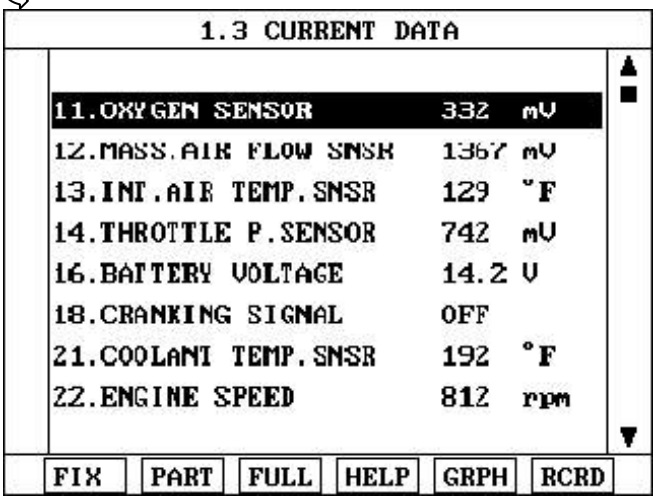
01. INTIAL SCREEN

01 → VEHICLE AND SYSTEM SELECTION

Refer to 'Selecting Vehicle Mode"

3.0 CURRENT DATA

ENTER →



FIX	1.2.1 FIX ITEM
PART	1.2.2 PART ANALYSIS
FULL	1.2.3 DISPLAY ALL ITEMS
HELP	1.2.4 DATATIPS & REFERENCE WAVEFORM
GRPH	1.2.5 GRAPHICAL DISPLAY
RCRD	1.2.6 RECORD CURRENT DATA
SCRN	1.2.2 SPLIT SCREEN

[FLOW 3 : CURRENT DATA MODE IN/OUT FLOW]

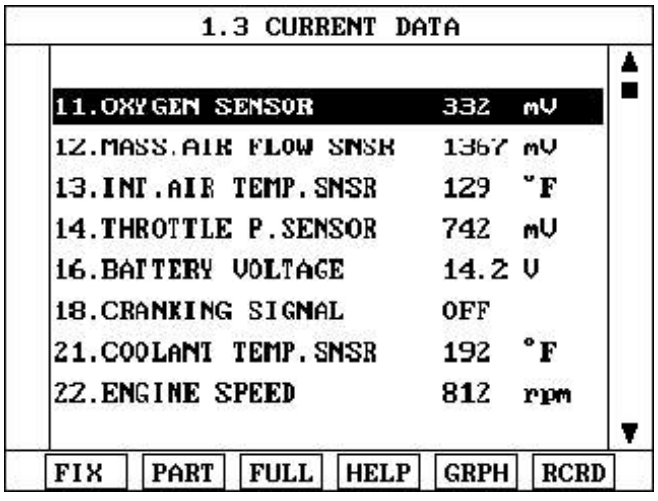
4-2. MODE APPLICATION

The sensor parameter and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the date is possible by means of the UP / DOWN keys and more detailed data is available by Using the soft function keys as follows :

NOTICE: The displayed screen may vary depends on domestic or exported vehicle, especially the function buttons.

FIX Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another. And this key will change the number of example; only 2sensors are 'active', the rate at which Hi-scan Pro updates the display data will be faster than where a higher number of 'active' items is selected. The fixed item is identified by an asterisk.



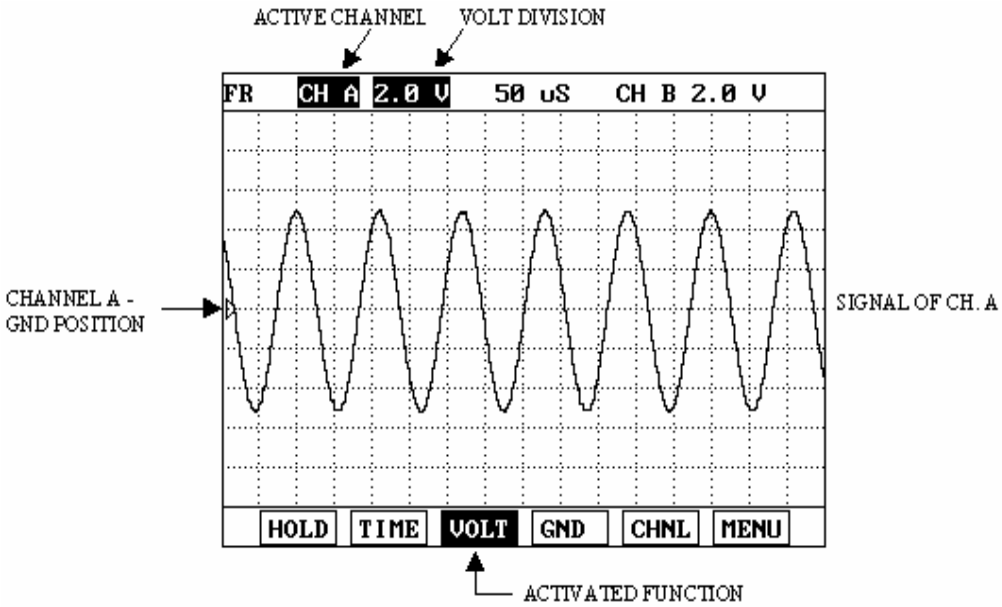
[Figure 3 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example illustrated by figure 3, (OXYGEN SENSOR) is fixed as denoted by the asterisk to the left of the item number.

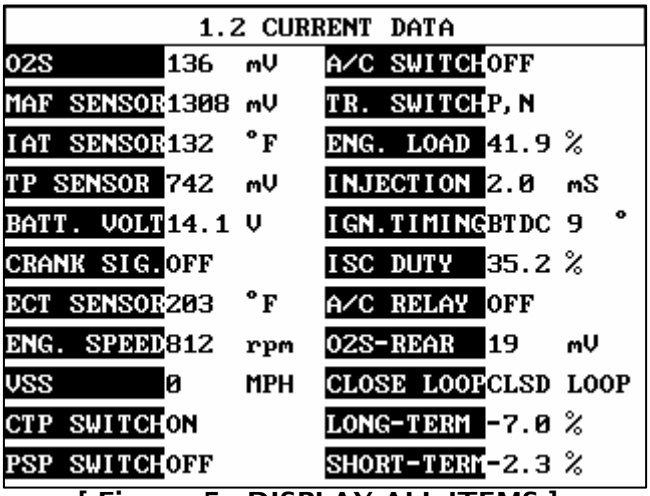
PART This soft function key is used in diagnosis troubles sensor precisely. Supplying TIPS and reference waveforms enable precise trouble diagnosis.

NOTICE: This function may not be applied to Korean domestic vehicles



[Figure 4 : PART ANALYSIS]

FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 10.The component description displayed will be abbreviated when this mode is used. The date may be scrolled by use of the UP / DOWN key.



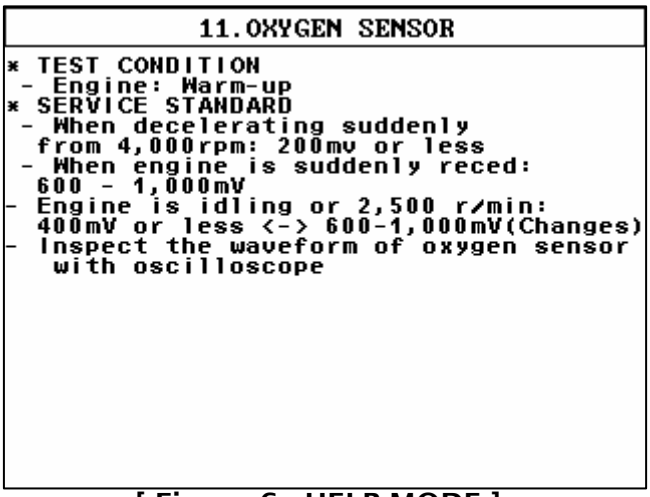
1.2 CURRENT DATA					
O2S	136	mV	A/C SWITCH	OFF	
MAF SENSOR	1308	mV	TR. SWITCH	P,N	
IAT SENSOR	132	°F	ENG. LOAD	41.9	%
TP SENSOR	742	mV	INJECTION	2.0	mS
BATT. VOLT	14.1	V	IGN.TIMING	BTDC 9	°
CRANK SIG.	OFF		ISC DUTY	35.2	%
ECT SENSOR	203	°F	A/C RELAY	OFF	
ENG. SPEED	812	rpm	O2S-REAR	19	mV
VSS	0	MPH	CLOSE LOOP	CLSD LOOP	
CTP SWITCH	ON		LONG-TERM	-7.0	%
PSP SWITCH	OFF		SHORT-TERM	-2.3	%

[Figure 5 : DISPLAY ALL ITEMS]

HELP With selecting HELP key, you can see brief explanation of sensors or switchs. If there is no these function for certain item, you will see below message.

NO TIPS. FOR MORE INFORMATION,
REFER TO THE SHOP MANUAL

HELP function provides you repair guide like [figure 6]



11.OXYGEN SENSOR

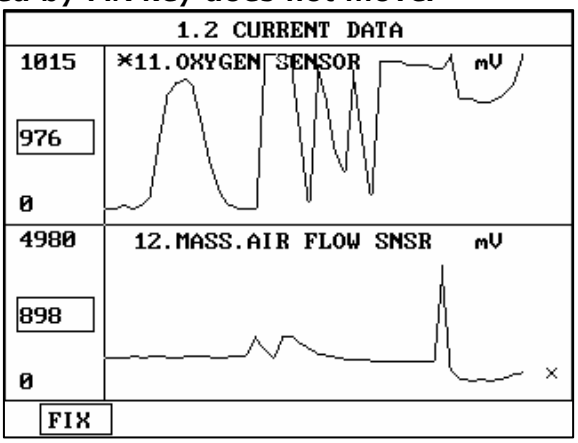
```
* TEST CONDITION
 - Engine: Warm-up
* SERVICE STANDARD
 - When decelerating suddenly
   from 4,000rpm: 200mv or less
 - When engine is suddenly reced:
   600 - 1,000mV
- Engine is idling or 2,500 r/min:
  400mV or less <-> 600-1,000mV(Changes)
- Inspect the waveform of oxygen sensor
   with oscilloscope
```

[Figure 6 : HELP MODE]

NOTICE: This function is not applied to Korean domestic vehicles.

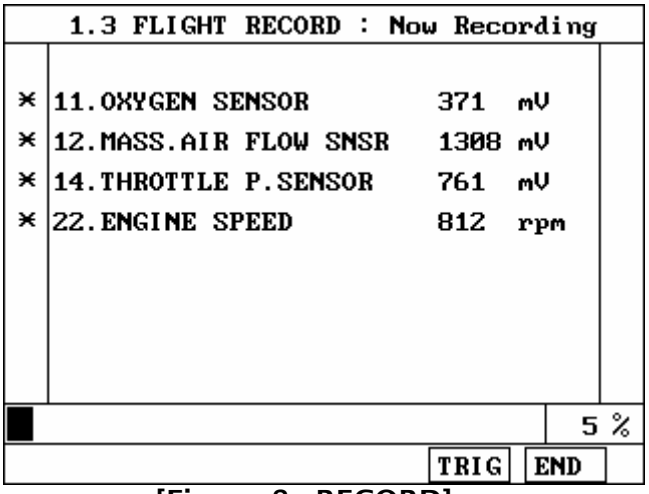
GRPH Where more 2 'active' data items have been selected using the FIX key, pressing the GRPH key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 7.

FIX Holding one item of two. When the UP / DOWN keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 7 : CURRENT DATA (GRPH)]

RCRD Records all or selected current data, that are selected by pressing fix key where the cursor is on item to fix, to memory card.

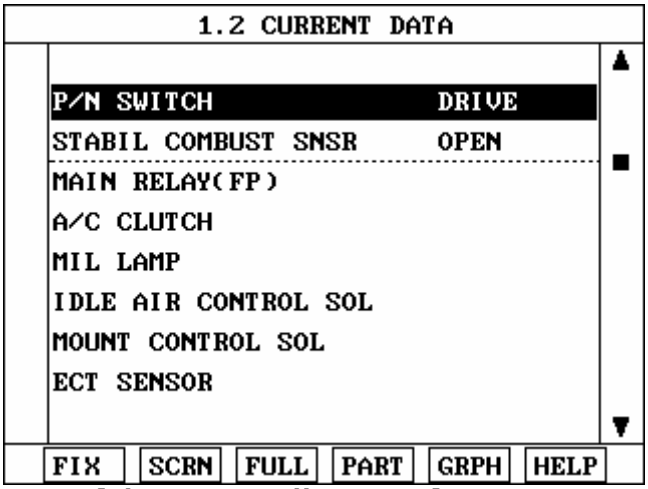


[Figure 8 : RECORD]

SCRN

Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Hi-Scan Pro update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 9, only 2 'active' data items are selected



[Figure 9 : Split screen]

NOTICE: This function is not applied to Korean Domestic vehicles

5. DUAL DISPLAY

5-1 . OPERATION FLOW

0.1 INITIAL SCREEN

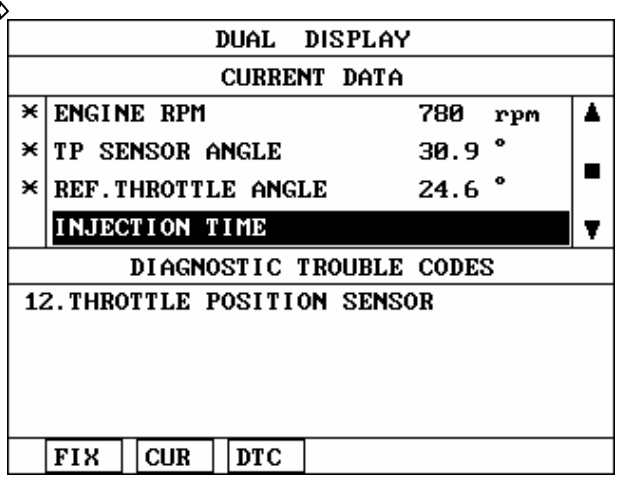
0 1

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DUAL DISPLAY

ENTER



FIX — 1.4 1 FIX ITEM

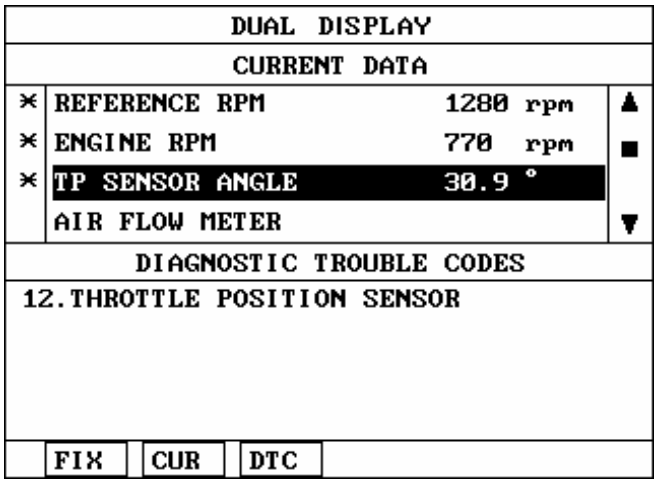
CUR — 1.4.2 ACTIVE CURRENT MODE

DTC — 1.4.3 ACTIVE DTC MODE

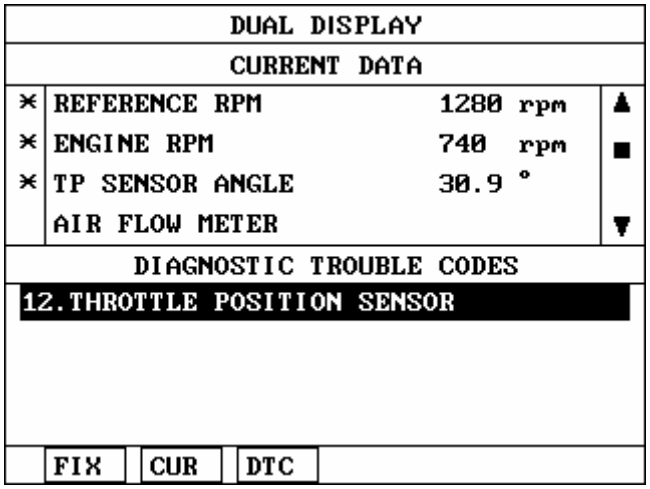
[FLOW 4 : DUAL DISPLAY IN / OUT FLOW]

5-2 MODE APPLICATION

DUAL DISPLAY mode indicates Current Date & DTC simultaneously. You can select Current Data Mode or DTC Mode by [CUR] or [DTC] key.



[Figure 10 : CURRENT DATA MODE]



[Figure 11 : DTC MODE]

6. FLIGHT RECORD

6- 1 OPERATION FLOW

0.1 INITIAL SCREEN

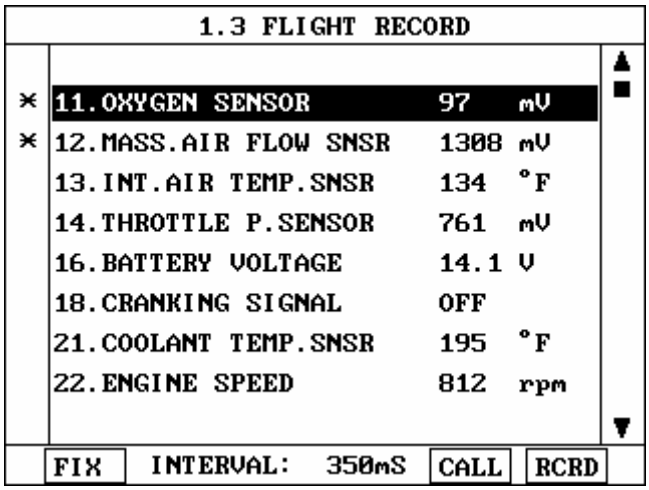
↩ 0 1

VEHICLE AND SYSTEM SELECTION

↩ Refer to " Selecting Vehicle Mode"

FLGHT RECORD

ENTER ↩



FIX ↩ 1.3.1 FIX ITEM

CALL ↩ 1.3.2 CALL MEMORIZED DATA

RCRD ↩ 1.3.3 START RECORD

[FLOW 5 : FLIGHT RECORD MODE IN/OUT FLOW]

6-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Hs-can Pro.

By using the (UP) / (DOWN) key, the display may be scrolled.

The function of the FLIGT RECORD facility is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Hi-scan Pro screen. The maximum number of items that may be selected for FLIGHT RECORD functions is 8.

The data sampling time interval is displayed at the center of the bottom line of the screen.

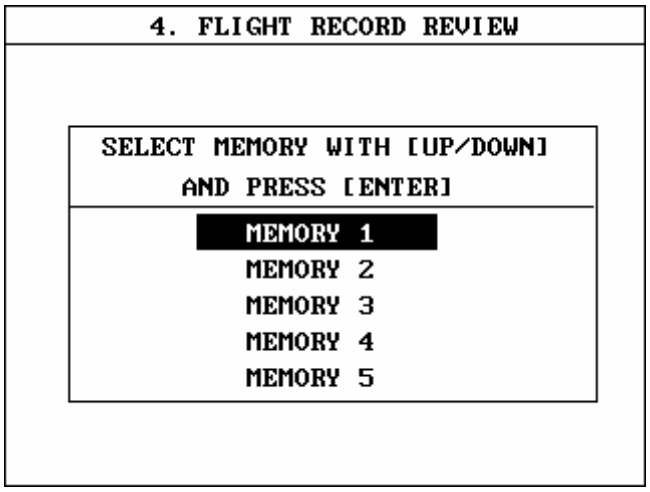
CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system, which differs from the current vehicle and system selection, or if no recording data, the following message will be displayed.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA.

If the MOMORY EXPANSION CARD is installed and this key

is pressed, then the message is displayed on the screen as shown in Figure 12. The user can select one of the items to read.



[Figure 12 : FLIGHT RECORD (CALL)]

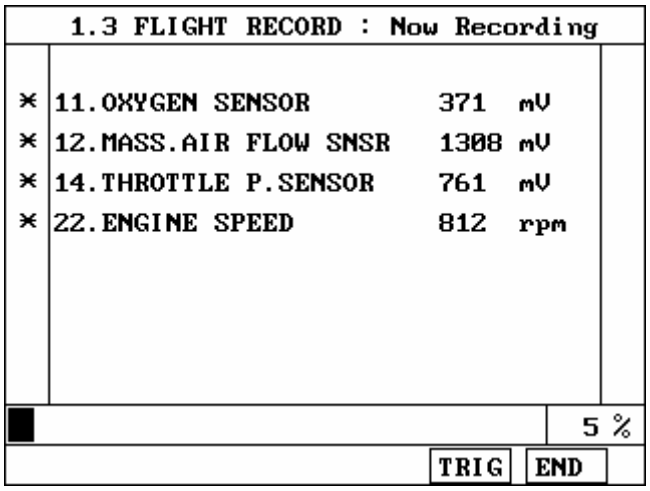
MEMORY 1 indicates internal memory of Hi-scan Pro. In MEMORY 2 and MOMORY 3, each memory indicates of the MEMORY EXPANSION CARD.

If data is in the selected memory, stored data will be displayed, but the following message will be displayed if the ID of the stored record is differing from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA

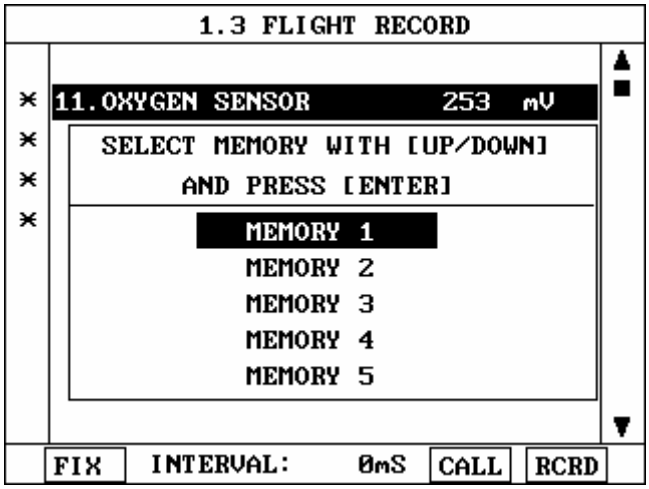
RCRD end when either the END or ESC key is depressed. During the recording function, the screen takes the appearance of that illustrated in [figure 13]

If the quantity of data being recorded exceeds the capacity of the Hi-scan Pro memory, the first recorded data of the current session will be progressively overwritten as recording continues. If an increased amount of memory is required, the option MEMORY EXPANSION CARD should be installed.



[Figure 13 FLIGHT RECORD (RECORDING)]

If the MEMORY EXPANSION CARD has been installed and this key is pressed, than the message is displayed on the screen as in the following figure.



[Figure 14 : FLIGHT RECORD (RCRD)]

MEMORY 1 indicates internal memory of Hi-scan Pro. MOMORY 2 and MEMORY 3, each memory indicates of the MEMORY EXPANSION CARD.

If user selects memory, [Figure 14] is display. If this key is pressed without selected items, the following message is displayed.

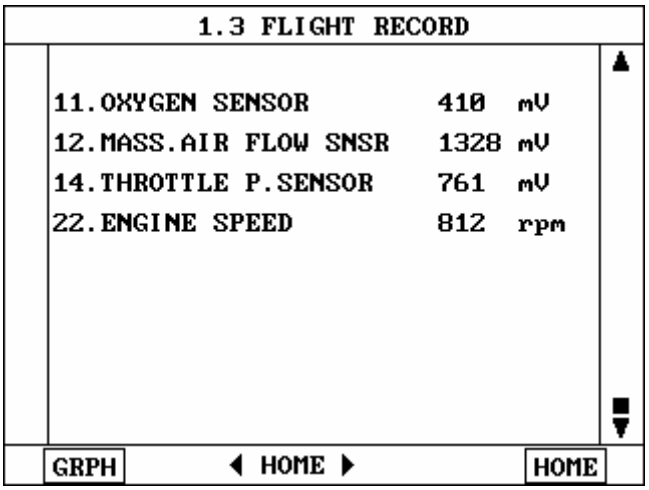
SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.

When TRIG key is depressed more than twice , only the latest TRIG key handled as trigger at trigger point.

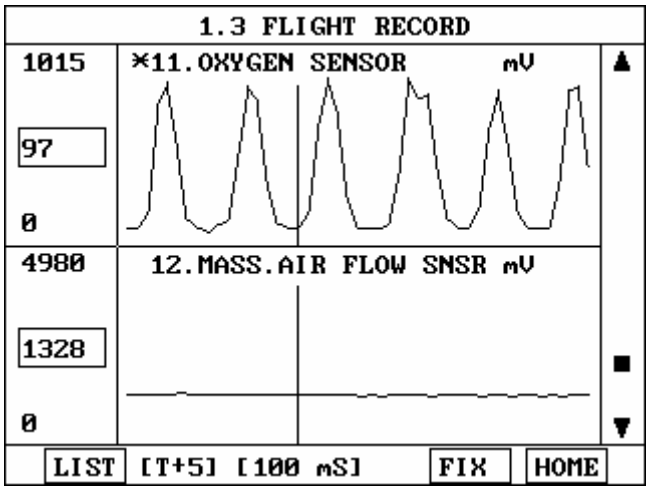
If END key or ESC key is depressed before TRIG key , that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 15 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
When two items are selection, a graphical view is as follows.



[Figure 16 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRREN DISPLAY THE DATE AFTER 5TH SAMPLING INDEX THAN TRIGGER POINT.

You can change sampled time index by ◄ or ► key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor reached the end of screen, screen will be moved as half page.

7. ACTUATION TEST

7-1 OPERATION FLOW

0.1 INTIAL SCREEN

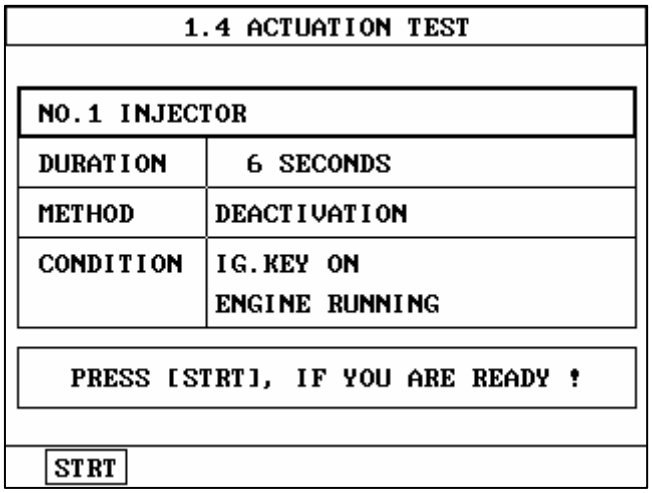
↳ (01)

VEHICLE AND SYSTEM SELECTION

↳ Refer to " Selecting Vehicle Mode "

ACTUATION TEST

(ENTER) ↳



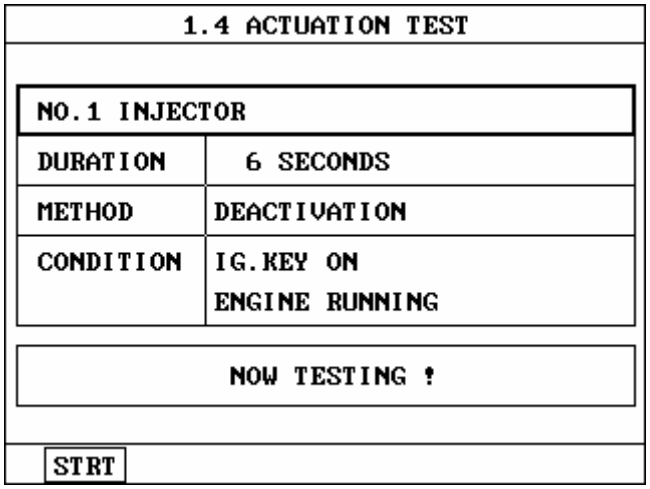
(START) ↳ 1.4.1 START ACTIVATING

[FLOW 6 : ACTUATION TEST MODE IN/OUT FLOW]

7-2 MODE APPLICATION

The ACTUATION TEST mode allows certain actuators to be forcibly driven by Hi-scan Pro. The illustration of a typical screen is shown in [figure 17] .

The actuator to be driven can be changed by using the (UP) / (DOWN) key to scroll through the list.



[Figure 17 : ACTUATOR DRIVING]

The test must be performed with the vehicle in the state indicated by the CONDITION statement on the screen .in this illustration given, for example, the ignition key must be turned “on”, and the engine be stopped.

The duration of the test will either be fixed by Hi-scan Pro and indicated on the screen or the duration dialogue will indicate

UNTIL STOP KEY

To begin an actuator test, the STRT key should be pressed. For fixed duration test, the message

COMPLETED!

will be display after an acknowledged code has been received from the vehicle. For tests of no fixed duration, the message

NOW ACTIVATING

Will be displayed once an acknowledged code has been received from the vehicle and until the STOP key is pressed. In both types of test, the message

TEST FAILURE!

Will be displayed if no acknowledge code is received from the Vehicle. The messages will be displayed for 0.5 seconds and Then disappeared.

8. SIMU-SCAN

8-1. OPERATION FLOW

0.1 INTIAL SCREEN

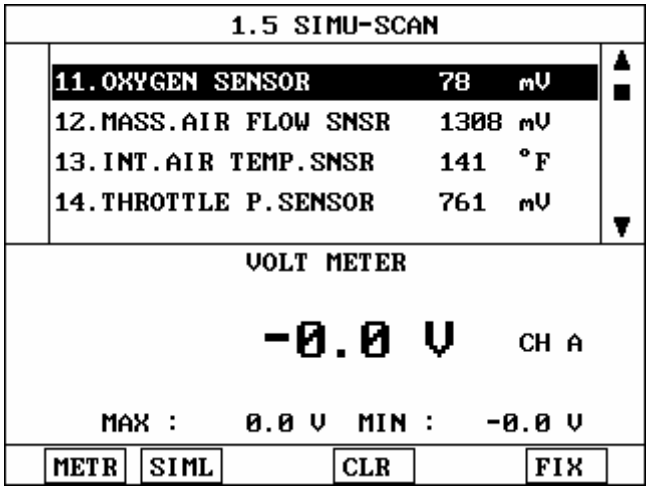
↳ 01

SELECTION OF VEHICLE MODE AND SYSTEM

↳ Refer to “Selecting Vehicle Mode”

SIMU-SCAN

ENTER ↳



FIX ↳ 1.5.1 FIX ITEM

METR ↳ 1.5.2 MULTI-METER

SIML ↳ 1.5.3 SENSOR SIMULATION

[FLOW 7 : SIMU-SCAN MODE IN/OUT FLOW]

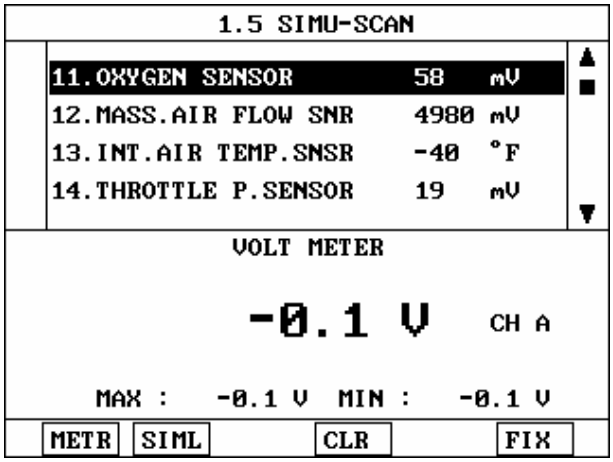
8-2. MODE APPLICATION

Hi-scan Pro offers several methods of performing data analysis.
Using the multi-meter function, voltage, frequency, duty, resistance and current ratios may be measured. The vehicle sensor simulation function permits simulated voltages, frequencies or duty ratios to be generated.

However, one of the most powerful features of Hi-scan Pro is SIMU-SCAN which allows sensor output generation and current data analysis to be performed simultaneously.

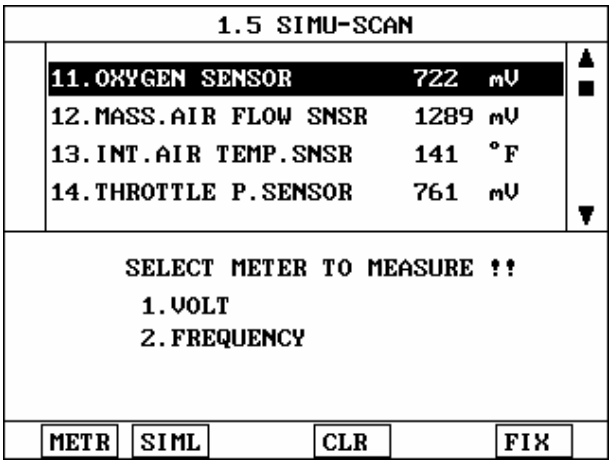
The soft function keys are arranged so that the METR SIML and FIX keys are available in all 8 screens. In addition, further soft function keys are available at the levels illustrated below.

The last used SIMU-SCAN screen is saved by Hi-scan Pro or is used as the default. Where no previous screen has been saved in the Hi-scan Pro back up memory, the default is as Shown in [figure 18]



[Figure 18 : SIMU-SCAN]

The (UP) / (DOWN) key provides the means to scroll through the data display. Other functions are available by means of the soft function keys.



[Figure 19 : SIMU-SCAN(METR)]

METR The multi-meter function is activated by this key permitting measurement of voltages, frequency as illustrated in [figure 19]

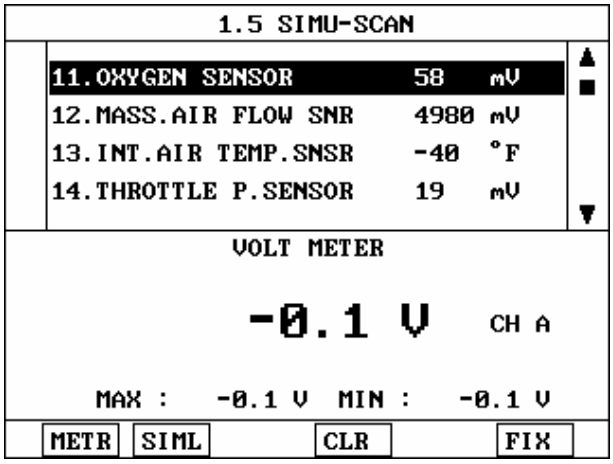
METER function is SIMU-SCAN mode display sensor output generation below screen and current data analysis upper screen simultaneously.

Especially, these data simultaneously displayed in Hi-Scan Pro screen allow easy analysis of wire and ECU problems.

01 Voltage The meter measures voltages across the range Max 500V.

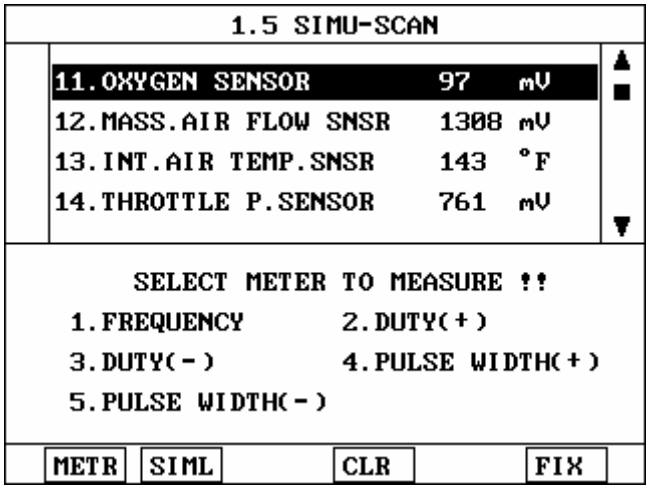
The display indicates the current voltage, the input channel and the maximum and minimum voltages recorded during the voltage measuring mode.

The multi-meter input channel is A. And the maximum and minimum voltage can be reset by using the CLR key. So user can measure the maximum and minimum voltage again from when CLR key is pressed. [Figure 20] illustrates a typical voltage measurement screen.



[Figure 20 : SIMU-SCAN (VOLT)]

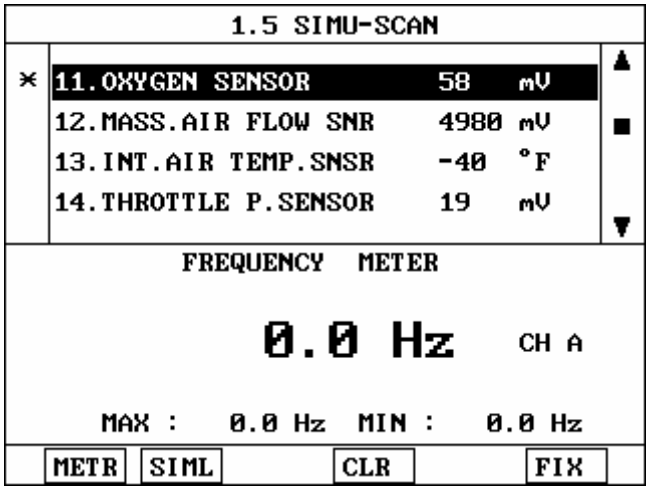
02. Frequency



[Figure 21 : SIMU-SCAN (FREQ)]

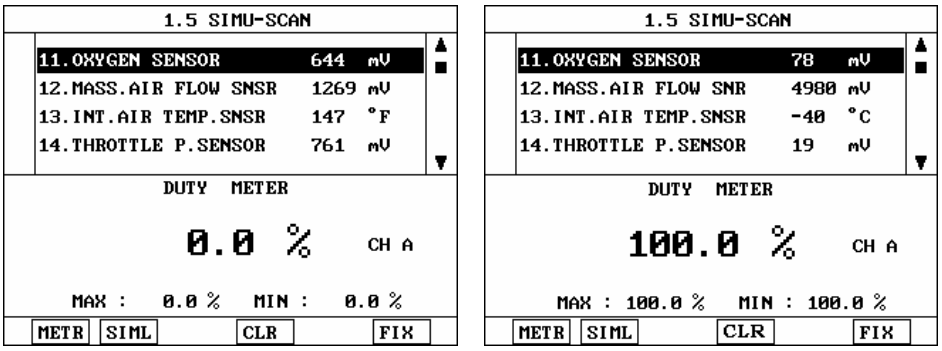
This function can measure frequency, RPM, duty(+,-), purse width like [figure 22]

01 The meter indicates frequencies across the range 0-100 KHz.



[Figure 22 : SIMU-SCAN(FREQ)]

02 The meter measures duty ratio across the range 1-100%.
\+ The display indicates the current measurement.
03 The DUTY(+) and DUTY(-) keys are used to change the duty cycle measurement polarity as required.

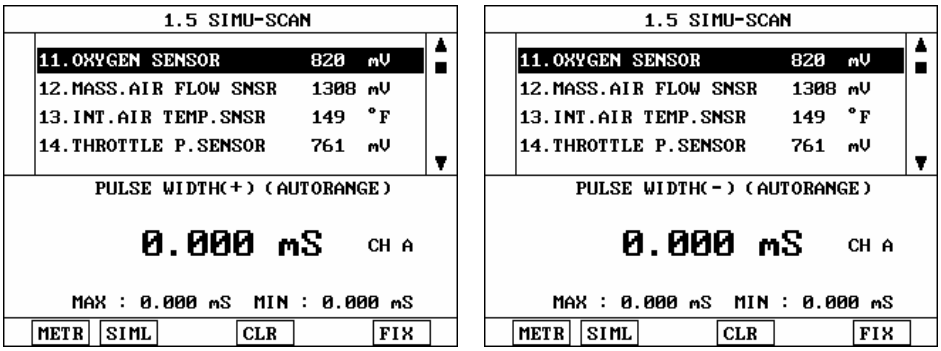


(DUTY +) (DUTY -)

[Figure 23 : SIMU-SCAN (DUTY)]

04 This function can measure purse width.

05 you can select purse width(+) or (-) like [figure 24]



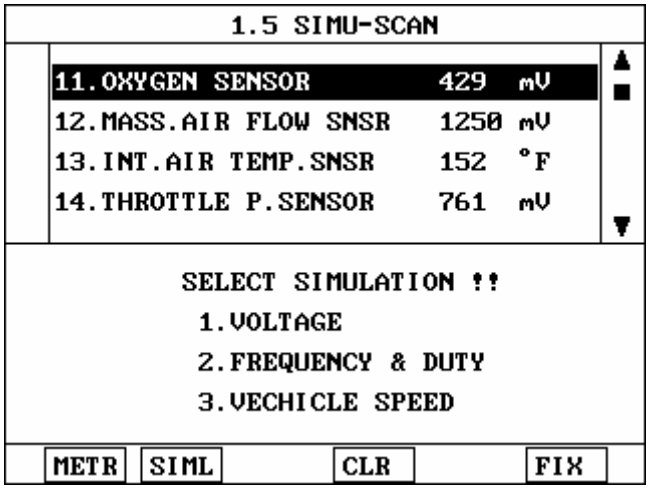
(PULSE WIDTH +) (PULSE WIDTH -)

[Figure 24 : SIMU-SCAN (DUTY)]

SIML Simulator functions are executed by depressing this key.
3 different kinds of simulation are available.

1. VOLTAGE
2. FREQUENCY & DUTY
3. VECHICLE SPEED

A typical sensor simulating screen is shown in
[figure 25]



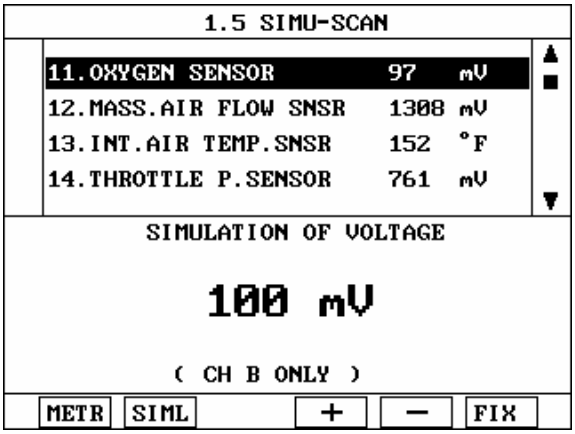
[Figure 25 : SIMU-SCAN(SIML)]

01 pressing this key activates sensor output voltage simulation. The voltage generated through channel B can be set using the + and - keys in 20mV increment. If the set voltage and the applied voltage differ by less than 10%, voltage feedback control is maintained by Hi-scan Pro.

IF THE DIFFERENCE EXCEEDS 10%, THE FOLLOWING MESSAGE IS DISPLAYED AND NO VOLTAGE OUTPUT OCCURS.

SIMULATOR SIGNAL IS DISTORTED CHECK PROBE, PRESS [ENTER]

A typical voltage output simulation screen is shown in [figure 26]

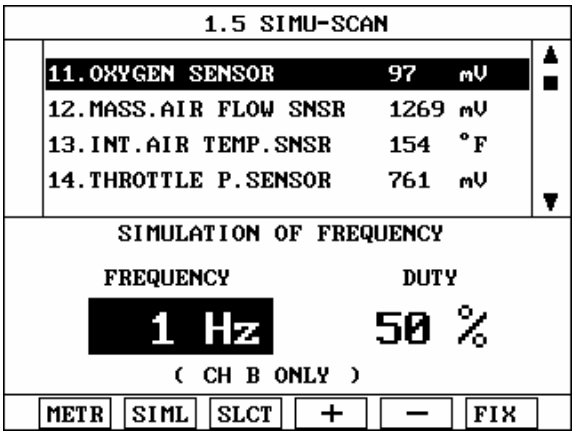


[Figure 26 :SIMU-SCAN(SIMV)]

02 Pressing this key activates sensor frequency/duty output simulation. The frequency generated though channel B can be set using the + / - key in steps of 1HZ or 1% Frequency and/or duty can be generated by using SLCT to select either frequency or duty as required.

The output range of this simulation is 0-1 KHZ for frequency and 0-100% for duty.

A typical frequency output simulation screen is shown in [figure 27]

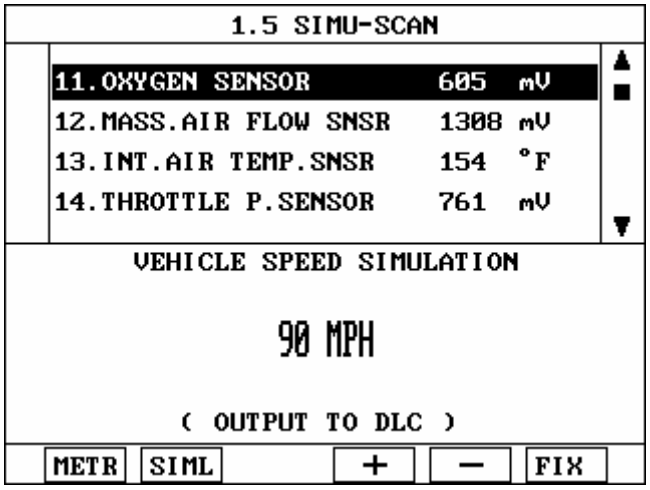


[Figure 27 : SIMU-SCAN (SIMF)]

03 Pressing this key activates the vehicle speed simulation function that generates a simulated speed sensor voltage through DLC.

The simulated speed may be changed by use of the + and - keys between 0 and 255Km/h in 1 Km/h steps. The unit of measure may be changed from Km/h to MPH and vice versa through the DATA SETUP option.

An example of the vehicle speed sensor simulation screen is illustrated in figure 28.



[Figure 28 : SIMU-SCAN (VSS)]

※Note) available only for electronic type (please refer to shop manual)

FIX This function moves the line in inverted text to the top of the display. This line is held and does not move when the cursor keys are used to page through the display and therefore allows specific lines to be compared directly to one another.
The fixed line is identified by an asterisk and may be released by selecting the fixed line and depressing the FIX key.

9. IDENTIFICATION CHECK

9-1. OPERATION FLOW

0.2 INTIAL SCREEN

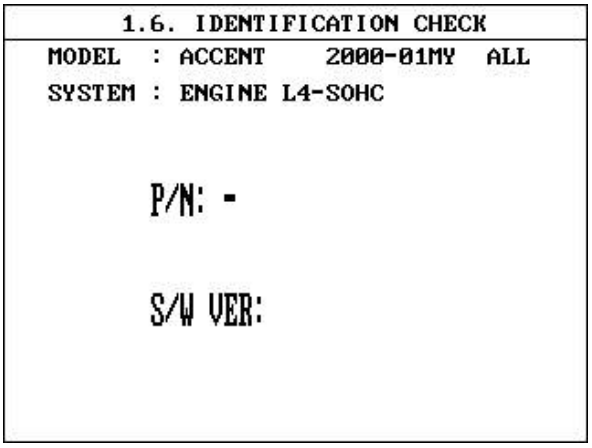
01 ENTER

VEHICLE AND SYSTEM SELECTION

01 ENTER

IDENTIFICATION CHECK

06 ENTER



[FLOW 8 : IDENTIFICATION CHECK]

Right after IDENTIFICATION CHECK mode is accessed, Part number and Software Version number will be displayed automatically.

10. RESETTING ADAPTIVE VALUE

10-1. OPERATION FLOW

0.3 INTIAL SCREEN

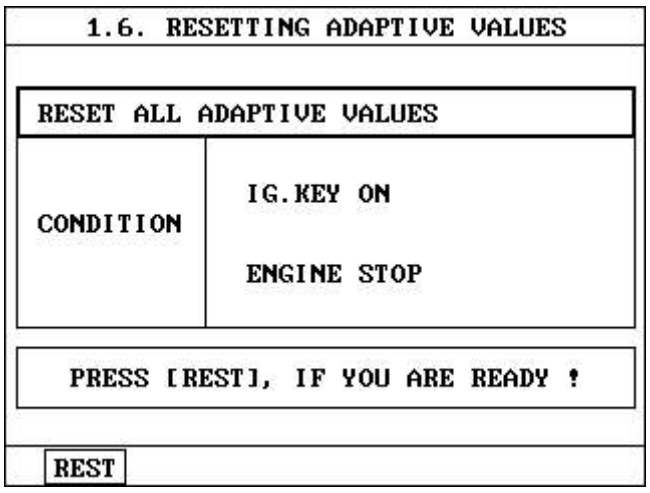
01 ENTER

VEHICLE AND SYSTEM SELECTION

01 ENTER

RESETTING ADAPTIVE VALUE

07 ENTER



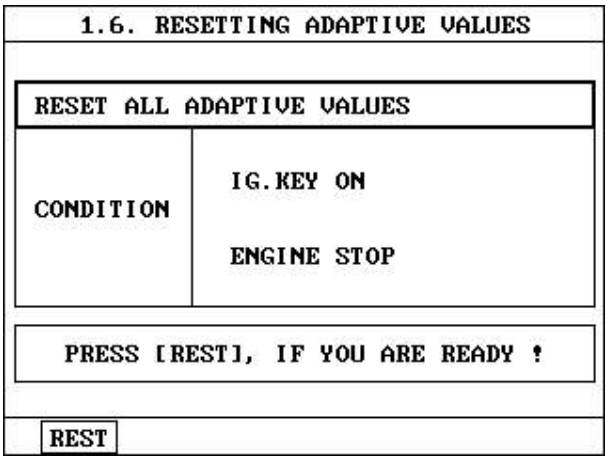
[FLOW 9 : RESETTING ADAPTIVE VALUE]

F1 REST

RESET ADAPTIVE VALUE

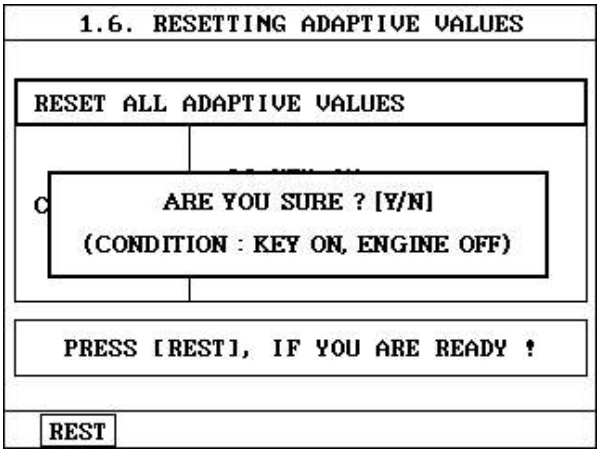
10-2. RESETTING ADAPTIVE VALUE

RESETTING ADAPTIVE VALUE is to reset the adaptive Value stored in ECU. Please follow the HI-SCAN PRO RESETTING ADAPTIVE VALUE process like picture.



[Figure 29 : RESETTING ADAPTIVE VALUE]

REST — To execute resetting the adaptive value stored in ECU.



[Figure 30 : RESETTING ADAPTIVE VALUE (REST)]

YES — Press 'YES' to confirm resetting or 'NO' to abort resetting.

Hi-scan Pro

II. KIA VEHICLE DIAGNOSIS

1. CONNECTION METHOD

For vehicles with 20 pin Data Link Connector, power is supplied from the DLC terminal through the DLC CABLE without the need for an additional power supply.

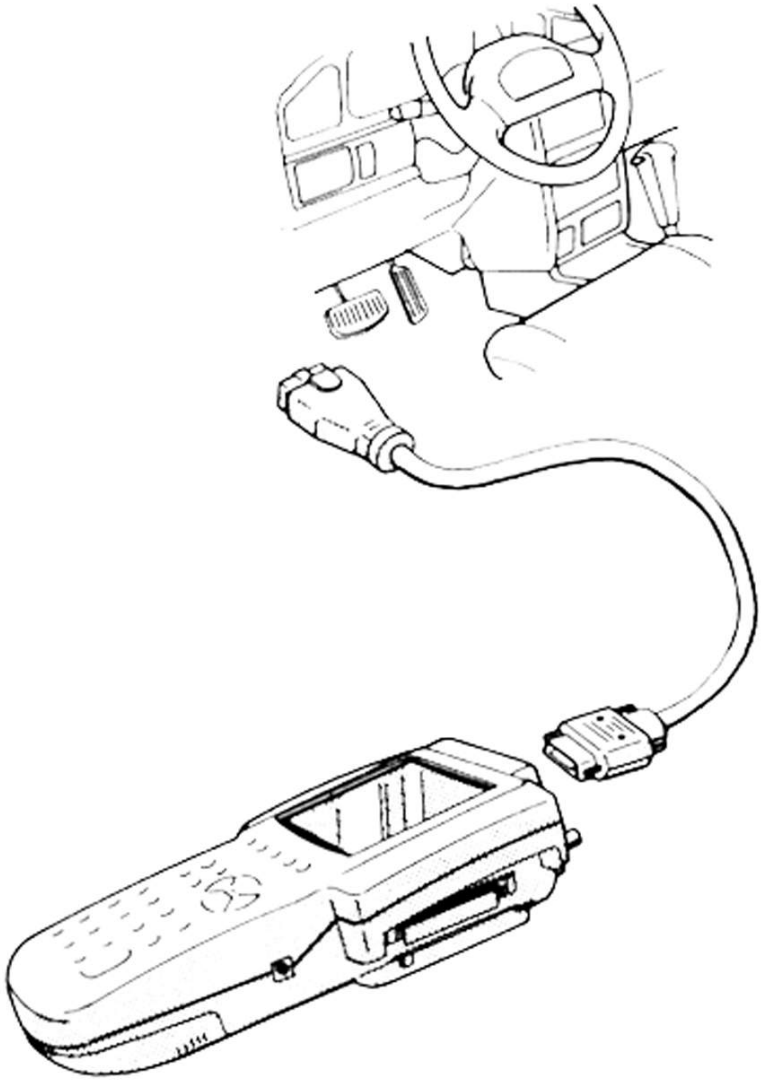
For these vehicles connection of the DLC CABLE 20 to the Hi-scan and the vehicle data link terminals is all that is required.

However in case of 6 pin data link connector needed a separate power supply by means of the cigar lighter cable or battery extension cable will be required for earlier models.

Diagnostic connector for vehicle with 20 pin or 6 pin can be found in the engine bay. Some are found near engine bulkhead and some are near battery.

For current vehicles (after 2000 and on), OBD-II DLC 16 pin connector is used and can be found underneath the driver side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Hi-scan data link terminal and the DLC CABLE ADAPTER connected to the vehicle data link terminal and the DLC CABLE 16.



[Figure 1 : KIA VEHICLE DIAGNOSIS MODE CONNECTION]

2. VEHICLE AND SYSTEM SELECTION

2-1. OPERATION FLOW

TOP MENU

KIA EXPORTED VEHICLE

KIA VEHICLE DIAGNOSIS

OR

DOMESTIC VEHICLE

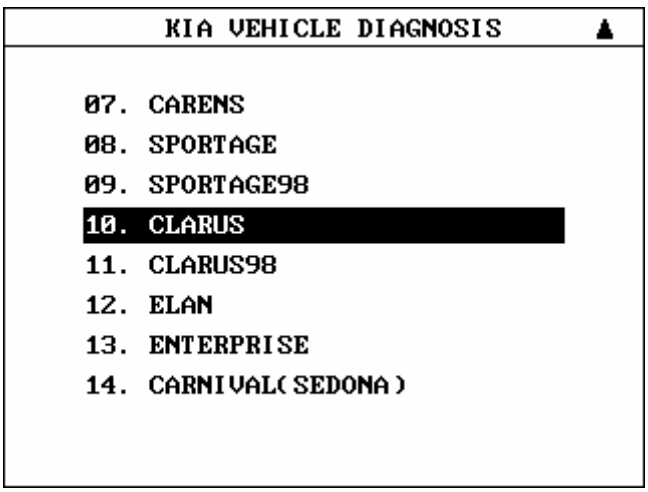
VEHICLE DIAGNOSIS

KIA VEHICLE

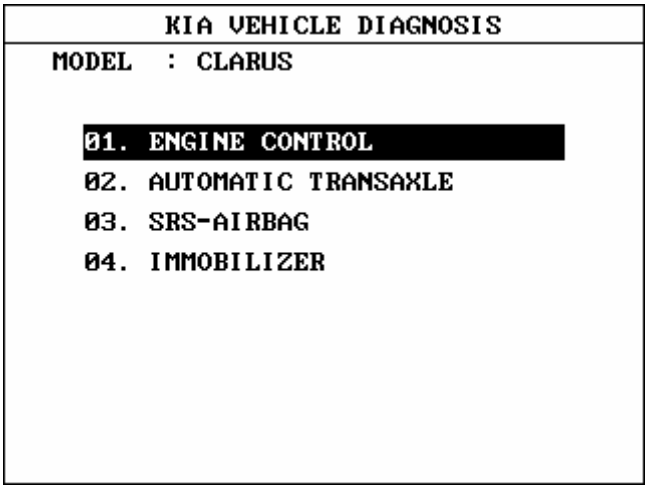
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

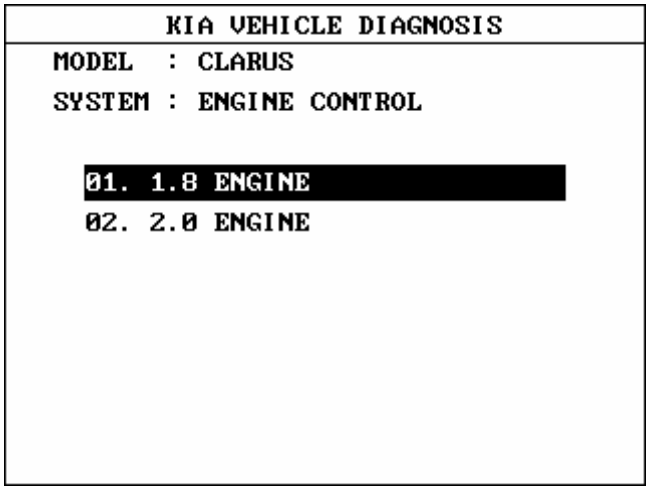
ENTER



ENTER



ENTER



[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

2-2. BASIC APPLICATION

Hiving connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 KIA VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection may be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

NOTICE: The MENU LIST of VEHICLE DIAGNOSIS screen may vary depends on the vehicle.

3. DIAGNOSTIC TROUBLE CODES

3-1. OPERATION FLOW

01. INITIAL SCREEN

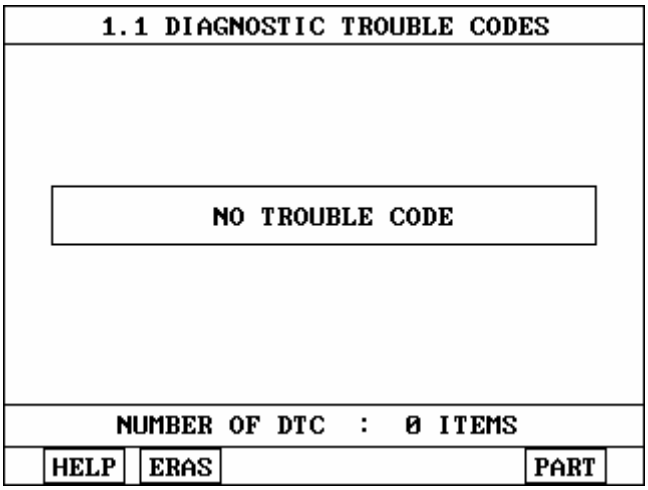
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



HELP → 1.2.1 DTC TIPS

ERAS → 1.2.2 ERASE FAULT CODE

PARTS → 1.2.3 PART ANALISIS

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

3-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the (UP) / (DOWN) key, the display may be scrolled.

[HELP] Where DTC TIPS are available, these will be displayed when the [HELP] key is depressed. Where DTC Tips are not available, the following message will be displayed.

NO TIPS. FOR MORE INFORMATION, REFER TO THE SHOP MANUAL

[EARS] This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the [ERAS] request will be displayed. The (YES) or (NO) key should be used to confirm or cancel the request to clear the current DTC.

[PART] This soft function key is used in diagnosis troubles sensor precisely.

4. FREEZE FRAME DATA

4-1. OPERATION FLOW

01. INTIAL SCREEN

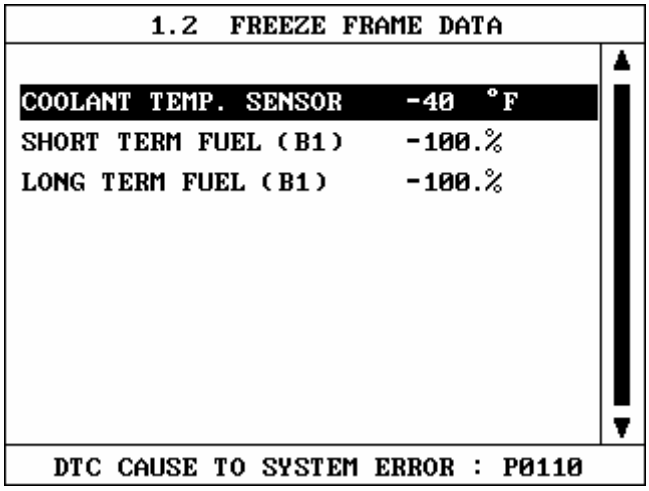
01

VEHICLE AND SYSTEM SELECTION

Refer to 'Selecting Vehicle Mode"

FREEZE FRAME DATA

ENTER

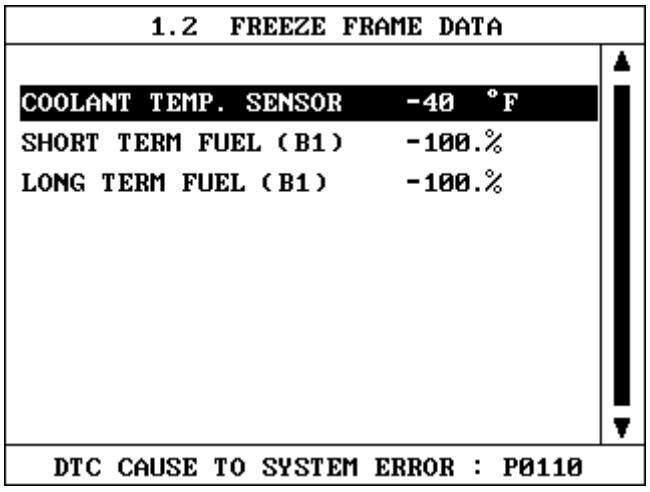


[FLOW 3 : FREEZE FRAME DATA MODE IN/OUT FLOW]

4-2. MODE APPLICATION

The FREEZE FRAME DATA displays the data values stored in the ECM at the point when the first DTC is figure III.3

A typical screen display is illustrated at figure 2



[Figure 2 : FREEZE FRAME DATA]

Hi-Scan Pro displays all of the Freeze Frame Data for those items supported by ECM.

5. CURRENT DATA

5-1. OPERATION FLOW

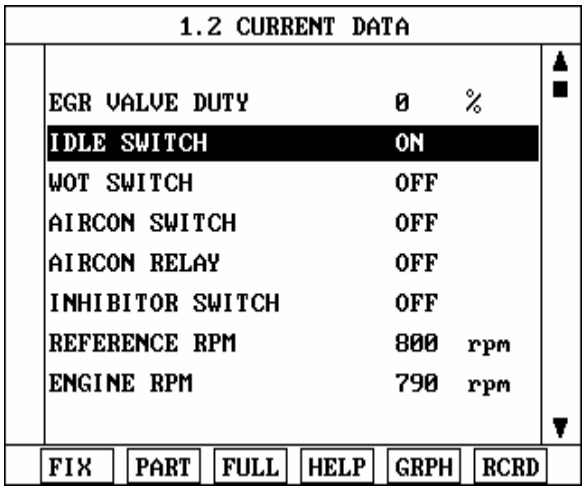
01. INTIAL SCREEN

01 → VEHICLE AND SYSTEM SELECTION

Refer to 'Selecting Vehicle Mode"

3.0 CURRENT DATA

ENTER



FIX	1.1.1 FIX ITEM
FULL	1.1.3 DISPLAY ALL ITEMS
HELP	1.1.4 DATATIPS & REFERENCE WAVEFORM
GRPH	1.1.5 GRAPHICAL DISPLAY
PCRD	1.1.6 DATA RECORD

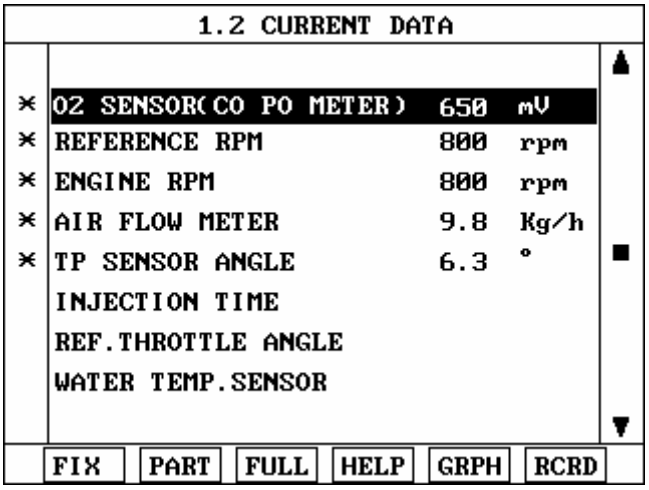
[FLOW 4 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the date is possible by means of the (UP) / (DOWN) keys and more detailed data is available by Using the soft function keys as follows :

FIX Executing the [FIGURE 3 FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another. And this key will change the number of example, only 2sensors are 'active', the rate at which Hi-scan Pro updates the display data will be faster than where a higher number of 'active' items is selected. The fixed item is identified by an asterisk.



[Figure 3 : FLX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example illustrated by figure 3, (OXYGEN SENSOR) is fixed as denoted by the asterisk to the left of the item number.

FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 4. The component description displayed will be abbreviated when this mode is used. The data will be scrolled by use of the UP / DOWN key.

1.2 CURRENT DATA					
IDLE SW	ON		BATT	13.9	V
WOT SW	OFF		INJ.TIME	3.5	mS
A/CON SW	OFF		VSS	0	MPH
A/C RELAY	OFF		O2	708	mV
INHIBITOR	OFF		IG.ADVANCE	BTDC 8	°
REF.RPM	800	rpm	ENG.LOAD	1.3	mS
ENGINE RPM	800	rpm	ISC DUTY	38	%
AIR FLOW	9.6	Kg/h	LAMBDA	99.2	%
TP ANGLE	6.3	°	ADAP.ADD	180.0	uS
REF.TP	0.0	°	ADAP.MUL	103	%
WTS	204.8°F		PURGE DUTY	0	%

[Figure 4 : DISPLAY ALL ITEMS]

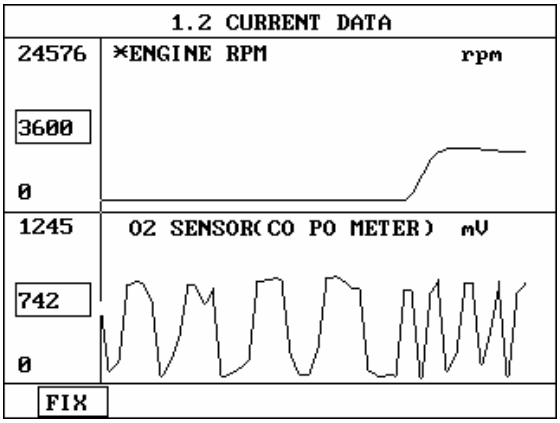
HELP Where DATA TIPS is available these will be displayed when the **HELP** key is depressed. Where DATA TIPS are not available ,the following message will be displayed.

NO TIPS. FOR MORE INFORMATION, REFER TO THE SHOP MANUAL

NOTICE: This function is not applied Korean Domestic vehicle.

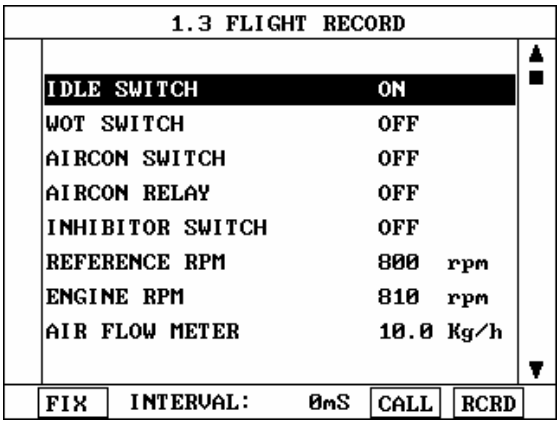
GRPH Where more 2 'active' data items have been selected using the **FIX** key, pressing the **GRPH** key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 5.

Holding one item of two. When the **UP** / **DOWN** keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 5 : CURRENT DATA (GRPH)]

RCRD **This soft function key is used to move Record mode as Illustrated in figure 6.**



[Figure 6 : FLIGHT RECORD]

6. DUAL DISPLAY

6-1 . OPERATION FLOW

0.1 INITIAL SCREEN

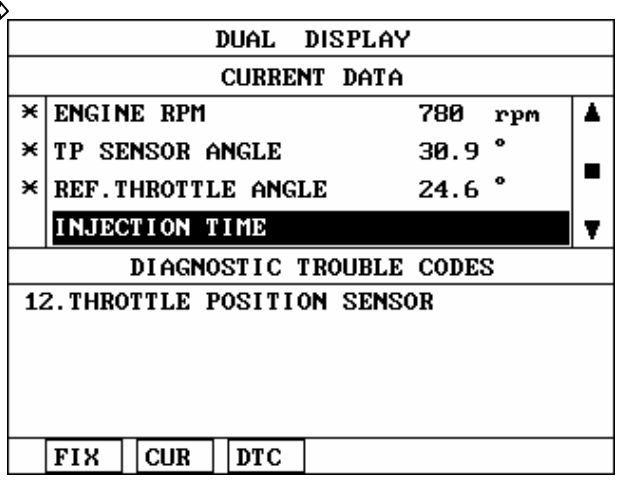
0 1

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DUAL DISPLAY

ENTER



FIX — 1.4 1 FIX ITEM

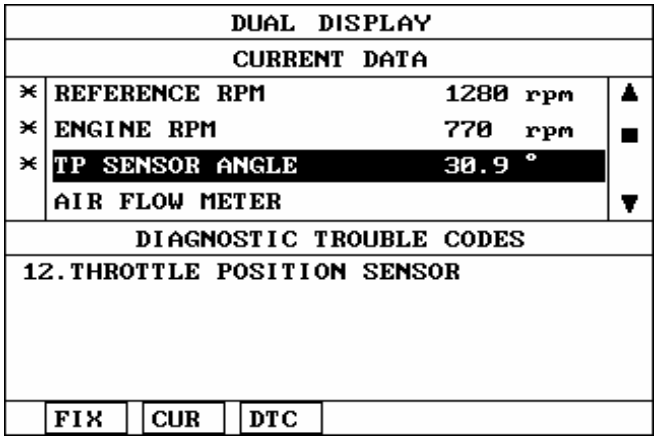
CUR — 1.4.2 ACTIVE CURRENT MODE

DTC — 1.4.3 ACTIVE DTC MODE

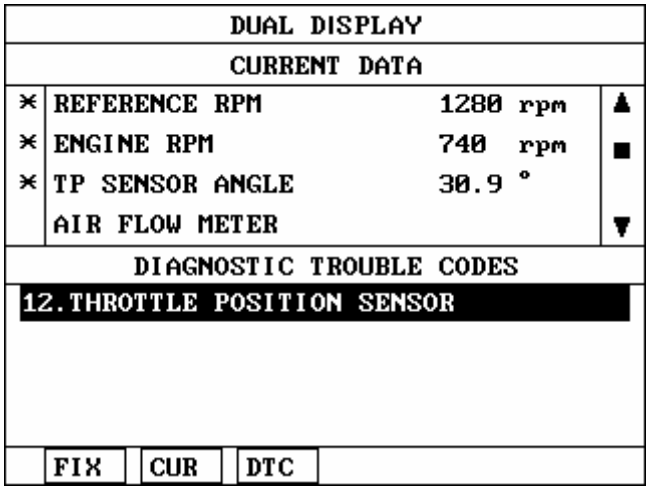
[FLOW 5 : DUAL DISPLAY IN / OUT FLOW]

6-2 MODE APPLICATION

DUAL DISPLAY mode indicates Current Date & DTC simultaneously. You can select Current Data Mode or DTC mode by [CUR] or [DTC] key.



[Figure 7 : CURRENT DATA MODE]



[Figure 8 : DTC MODE]

7. FLIGHT RECORD

7- 1 OPERATION FLOW

0.1 INITIAL SCREEN

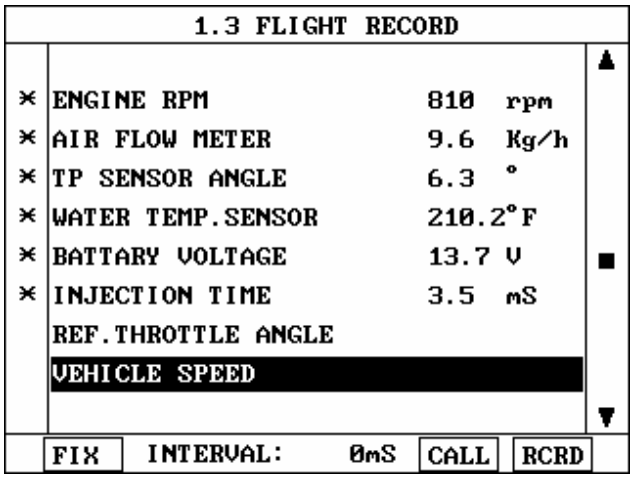
0 1

VEHICLE AND SYSTEM SELECTION

Refer to " Selecting Vehicle Mode"

FLGHT RECORD

ENTER



FLX → 1.3.1 FLX ITEM

CALL → 1.3.2 CALL MEMORIZED DATA

RCRD → 1.3.3 START RECORD

[FLOW 6 : FLIGHT RECORD MODE IN/OUT FLOW]

7-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Hs-can Pro.

By using the (UP) / (DOWN) key, the display may be scrolled.

The function of the FLIGHT RECORD facility is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Hi-scan pro screen. The maximum number of items that may be selected for FLIGHT RECORD functions is 8.

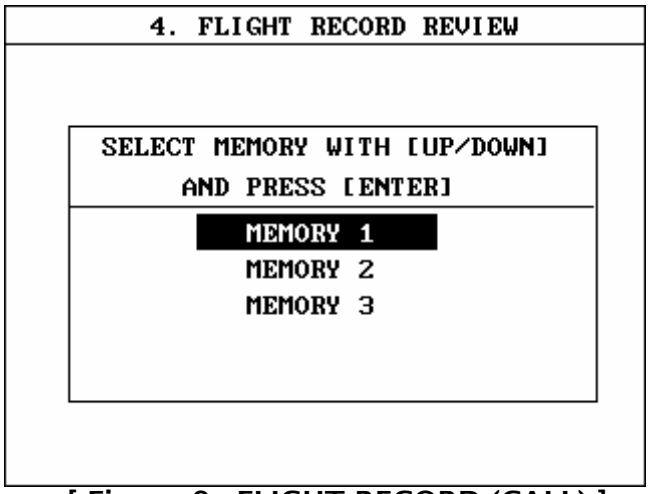
The data sampling time interval is displayed at the center of the bottom line of the screen.

CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system that differs from the current vehicle and system selection or if no recording data, the following message will be displayed.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA.

In case the MOMORY EXPANSION CARD is installed, if this key is pressed, then the message is displayed on the screen as follows to have user select memory to read.



[Figure 9 : FLIGHT RECORD (CALL)]

MEMORY 1 indicates internal memory of Hi-scan Pro. MEMORY 1 and MOMORY 3, each memory indicates half storage of the MEMORY EXPANSION CARD.

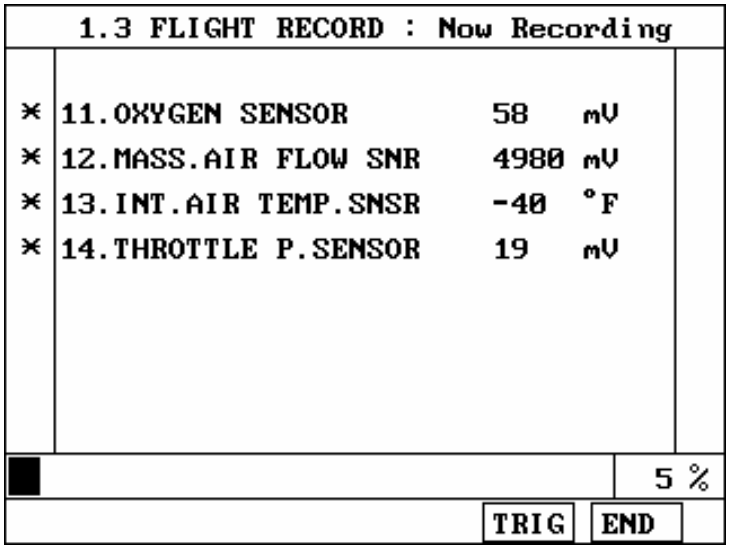
If data is in the selects memory, stored data is displayed, But the following message wiII be displayed if the ID of the stored record is differ from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA

Data recording commences when this key is depressed.

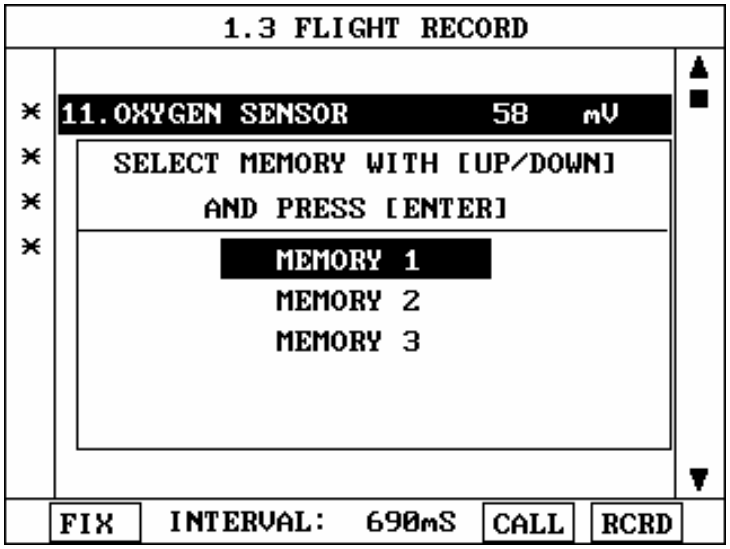
RCRD end when either the END or ESC key is depressed.
During the recording function, the screen takes the appearance of that illustrated in [figure 10]

If the quantity of data being recorded exceeds the capacity of the Hi-scan Pro memory, the first recorded data of the current session will be progressively overwritten as recording continues. If an increased amount of memory is required, the option MEMORY EXPANSION CARD should be installed.



[Figure 10 FLIGHT RECORD (RECORDING)]

In case the MEMORY EXPANSION CARD is installed, if this key is pressed , than the message is displayed on the screen as follows to have user select memory to write.



[Figure 11 : FLIGHT RECORD (RCRD)]

MEMORY 1 indicates internal memory of Hi-scan Pro. MOMORY 2 and MEMORY 3, each memory indicates half storage of the MEMORY EXPANSION CARD.

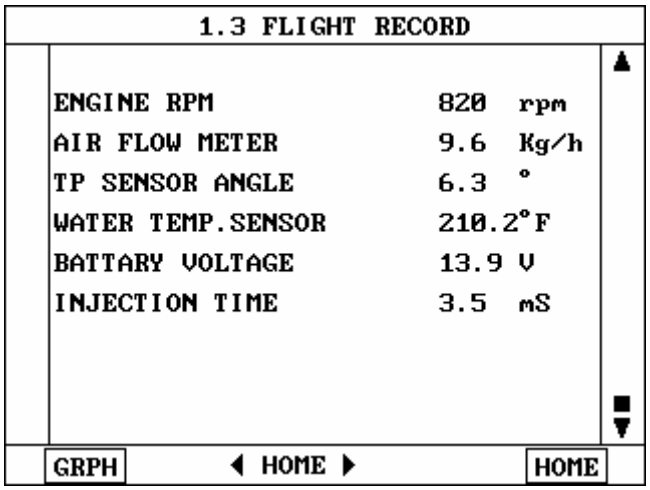
If user selects memory, [Figure 11] is display. If this key is pressed without selected items ,the following message is displayed.

SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.
When TRIG key is depressed more than twice, only the latest TRIG key handled as trigger as trigger point.

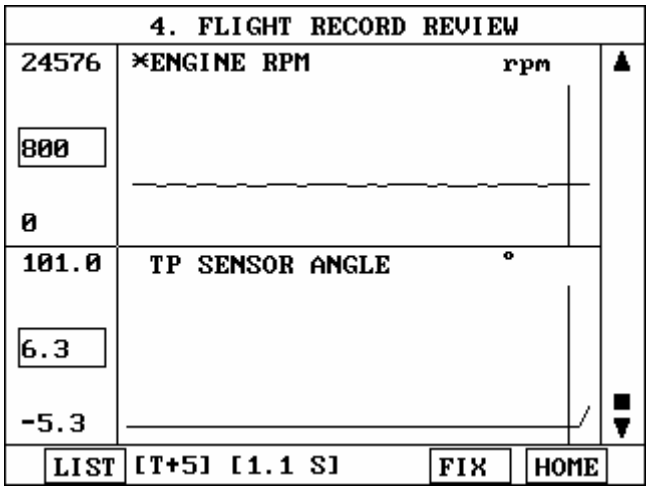
If END key or ESC key is depressed before TRIG key, that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 12 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
When two items are selection, a graphical view is as follows.



[Figure 13 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRRENT DISPLAY THE DATE AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

You can change sampled time index by < or > key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor reached the end of screen, screen will be moved as half page.

8. ACTUATION TEST

8-1 OPERATION FLOW

0.1 INTIAL SCREEN

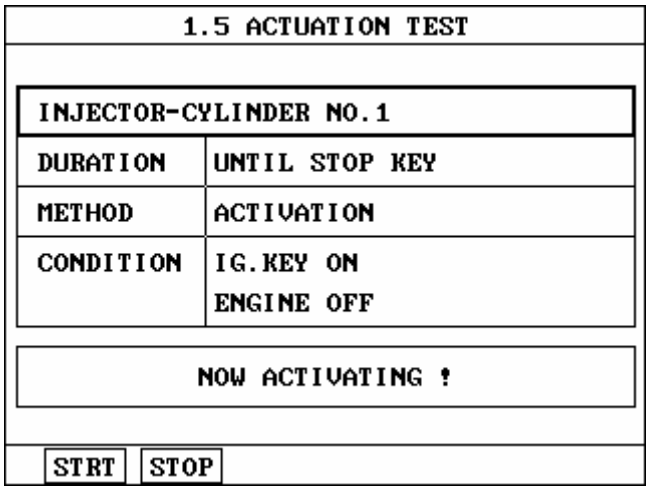
01

VEHICLE AND SYSTEM SELECTION

Refer to " Selecting Vehicle Mode "

ACTUATION TEST

ENTER



START → 1.5.1 START ACTIVATING

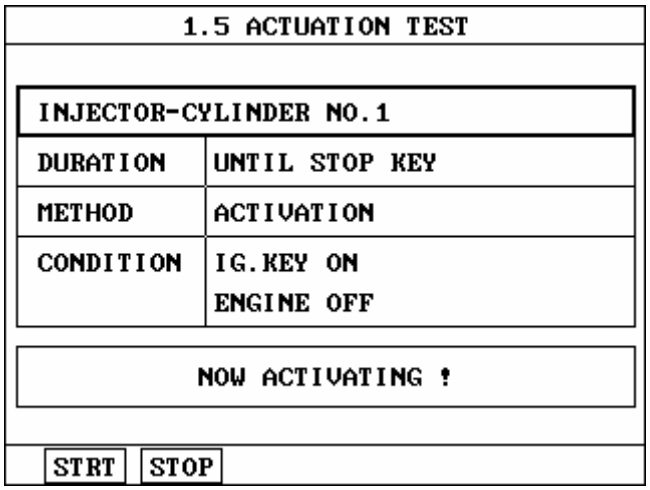
STOP → 1.5.2 STOP ACTIVATING

[FLOW 7 : ACTUATION TEST MODE IN/OUT FLOW]

8-2 MODE APPLICATION

The ACTUATION TEST mode allows certain actuators to be Forcibly driven by Hi-scan Pro. The illustration of a typical screen is shown in [figure 15] .

The actuator to be driven can be changed by using the (UP) / (DOWN) key to scroll through the list.



[Figure 15 : ACTUATOR DRIVING]

The test must be performed with the vehicle in the state indicated by the CONDITION statement on the screen .in this illustration given, for example, the ignition key must be turned “on”, and the engine be stopped.

The duration of the test will either be fixed by Hi-scan Pro and indicated on the screen or the duration dialogue will indicate

UNTIL STOP KEY

To begin an actuator test, the STRT key should be pressed. For fixed duration test, the message

COMPLETED!

will be display after an acknowledged code has been received from the vehicle. For tests of no fixed duration, the message

NOW ACTIVATING

Will be displayed once an acknowledged code has been received from the vehicle and until the STOP key is pressed. In both types of test, the message

TEST FAILURE!

Will be displayed if no acknowledge code is received from the Vehicle. The messages will be displayed for 0.5 seconds and then disappeared.

9. SIMU-SCAN

9-1. OPERATION FLOW

0.1 INTIAL SCREEN

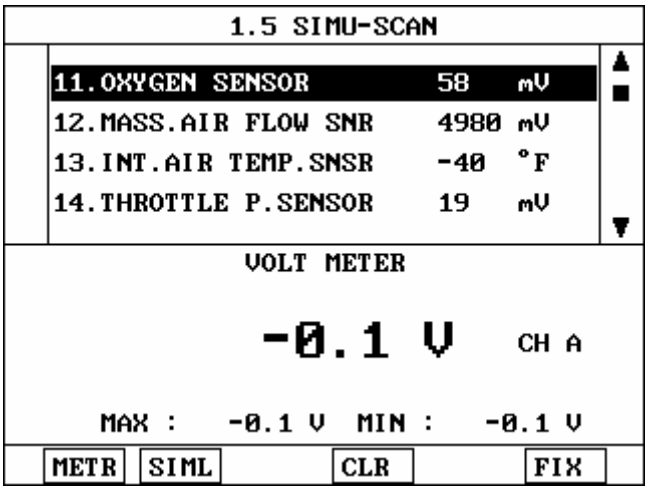
↪ 01

SELECTION OF VEHICLE MODE AND SYSTEM

↪ Refer to “Selecting Vehicle Mode”

SIMU-SCAN

ENTER ↪



FIX ↪ 1.6.1 FIX ITEM

METR ↪ 1.6.2 MULTI-METER

SIML ↪ 1.6.3 SENSOR SIMULATION

[FLOW 8 : SIMU-SCAN MODE IN/OUT FLOW]

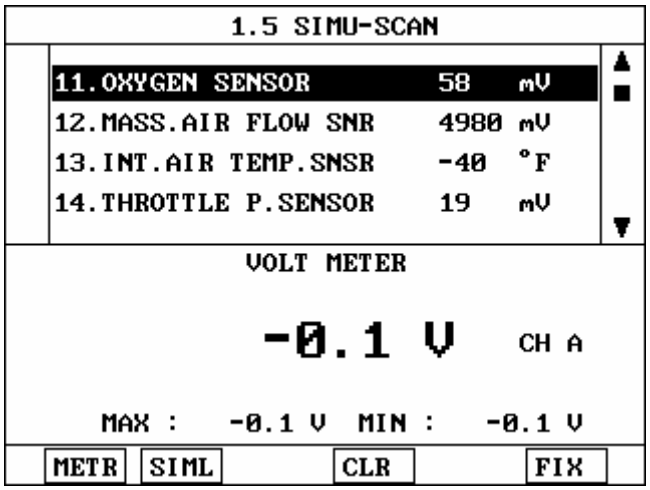
9-2. MODE APPLICATION

Hi-scan Pro offers several methods of performing data analysis.
Using the multi-meter function, voltage, frequency, duty, resistance and current ratios may be measured. The vehicle sensor simulation function permits simulated voltages, frequencies or duty ratios to be generated.

However, one of the most powerful features of Hi-scan Pro is SIMU-SCAN which allows sensor output generation and current data analysis to be performed simultaneously.

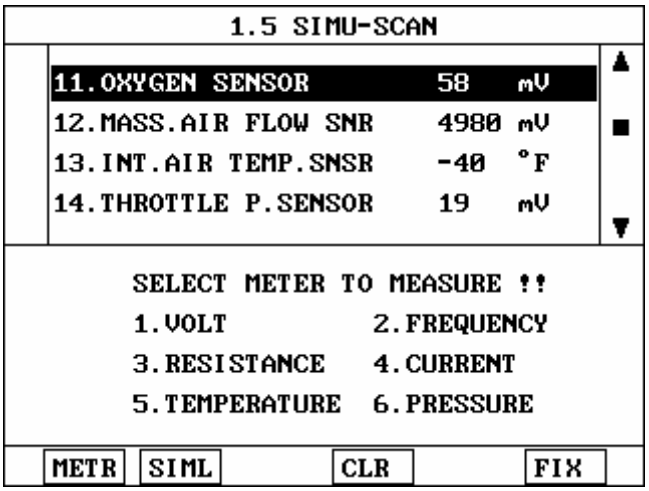
The soft function keys are arranged so that the METR SIML and FIX keys are available in all 8 screens. In addition, further soft function keys are available at the levels illustrated below.

The last used SIMU-SCAN screen is saved by Hi-scan Pro or Is used as the default. Where no previous screen has been Saved in the Hi-scan Pro back up memory, the default is as Shown in [figure 16]



[Figure 16 : SIMU-SCAN(DEFAULT)]

The (UP) / (DOWN) key provides the means to scroll through the data display. Other functions are available by means of the soft function keys.



[Figure 17 : SIMU-SCAN]

METR The multi-meter function is activated by this key permitting measurement of voltages, frequency, Resistance, Current, temperature and Pressure as illustrated in [figure 17]

METER function is SIMU-SCAN mode display sensor output generation below screen and current data analysis upper screen simultaneously.

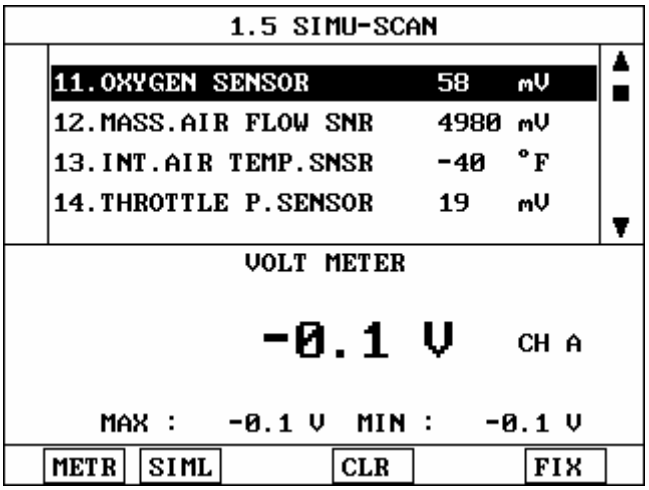
Especially, these data simultaneously displayed in Hi-Scan Pro screen allow easy analysis of wire and ECU problems.

The device that current, temperature, pressure measurements requires optional prove sets.

01 Voltage The meter measures voltages across the range Max 500V.

The display indicates the current voltage, the input channel and the maximum and minimum voltages recorded during the voltage-measuring mode.

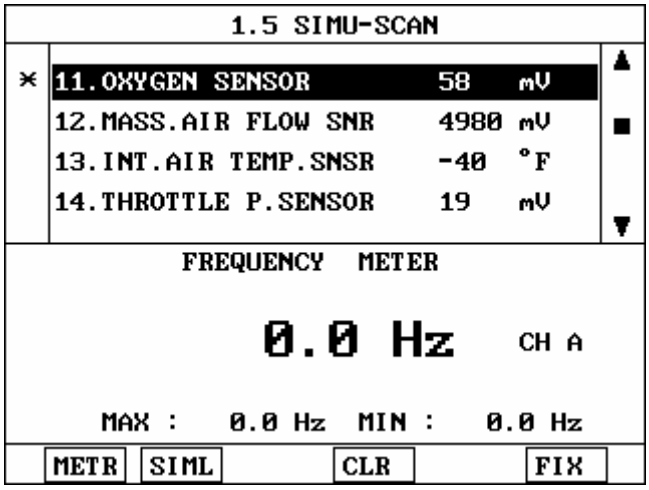
The multi-meter input channel is A. And the maximum and minimum voltage can be reset by using the CLR key. So user can measure the maximum and minimum voltage again from when CLR key is pressed. [Figure 18] illustrates a typical voltage measurement screen.



[Figure 18 : SIMU-SCAN (VOLT)]

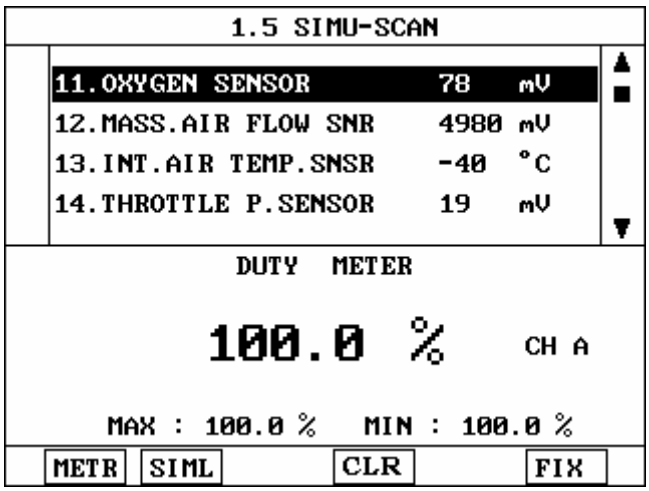
02. Frequency

The meter indicates frequencies across the range 0-100 KHz.



[Figure III.19 : SIMU-SCAN(FREQ)]

⑫ ↪ The meter measures duty ratio across the range 1-100%.
+ The display indicates the current measurement.
⑬ ⑭ The DUTY(+) and DUTY(-) keys are used to change the duty ratio measurement polarity as required.

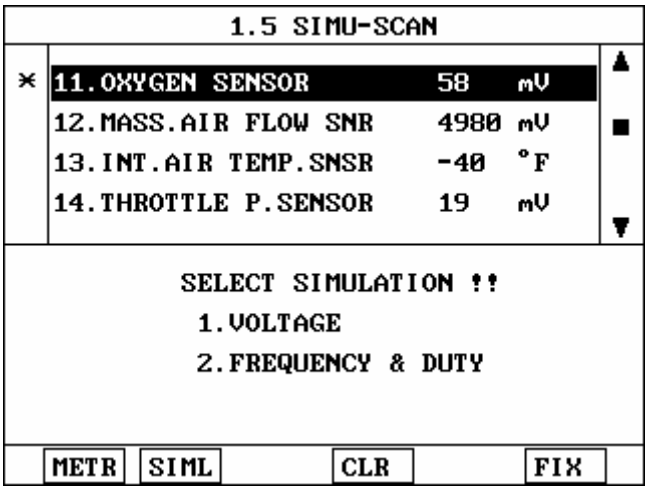


[Figure 20 : SIMU-SCAN (DUTY)]

SIML Simulator functions are executed by dressing this key. 3 different kinds of simulation are available.

1. VOLTAGE
2. FREQUENCY & DUTY

A typical sensor simulating screen is shown in [figure 21]



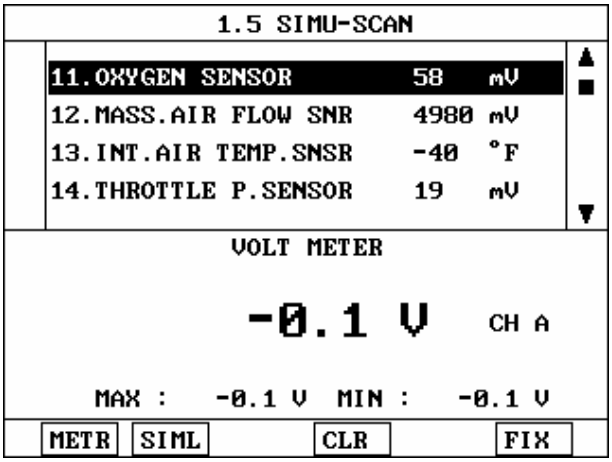
[Figure 21 : SIMU-(SCAN)]

01 pressing this key activates sensor output voltage simulation. The voltage generated through channel B can be set using the + and - keys in 20mV steps. If the set voltage and the applied voltage differ by less than 10%, voltage feedback control is maintained by Hi-scan Pro.

IF THE DIFFERENCE EXCEEDS 10%, THE FOLLOWING MESSAGE IS DISPLAYED AND NO VOLTAGE OUTPUT OCCURS.

SIMULATOR SIGNAL IS DISTORTED CHECK PROBE, PRESS [ENTER]

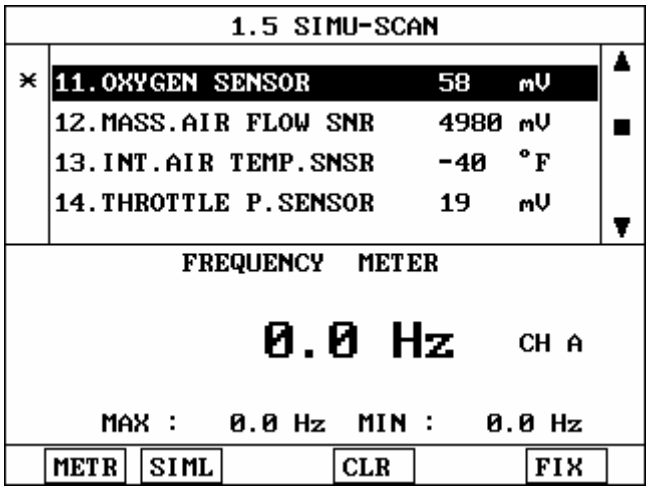
A typical voltage output simulation screen is shown in [figure III.22]



[Figure 22 :SIMU-SCAN(SIMV)]

02 Pressing this key activates sensor frequency/duty output simulation. The frequency generated though channel B can be set using the + / - key in steps of 1HZ or 1% Frequency and/or duty can be generated by using SLCT to select either frequency or duty as required.
The output range of this simulation is 0-1 KHZ for frequency and 0-100% for duty.

A typical frequency output simulation screen is shown in [figure 23]



[Figure 23 : SIMU-SCAN (SIMF)]

10. ECU ROM ID

10 -1 OPERATION FLOW

0.1 INITIAL SCREEN

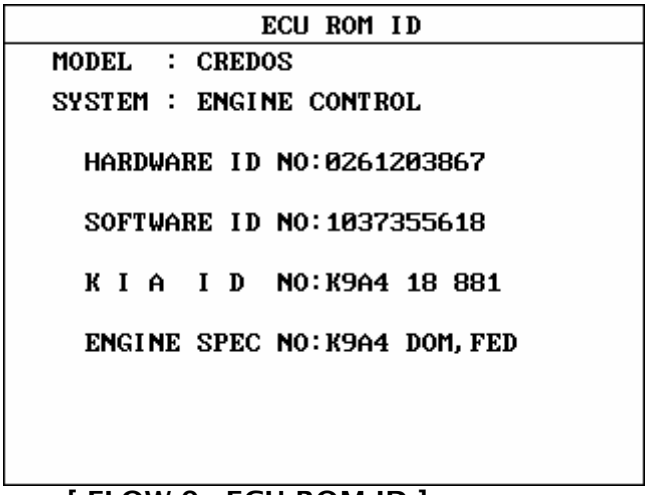
↓ 01

SELECTION OF VEHICLE MODE AND SYSTEM

↓ Refer to “Selecting Vehicle Mode”

ECU ROM ID

ENTER ↓



[FLOW 9 : ECU ROM ID]

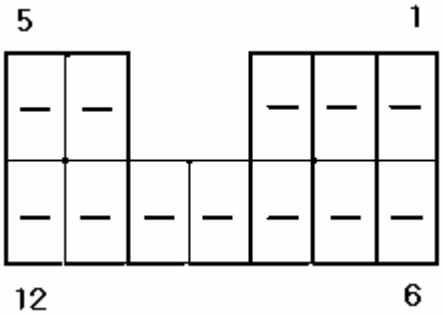
10-2 MODE APPLICATION

ECU ROMID mode offers HARDWARE ID NO, SOFTWAREID NO, KIA NO, ENGIN SPEC NO.

III. PART NUMBER

3-1. HYUNDAI DLC 12P ADAPTER(0990-21200)

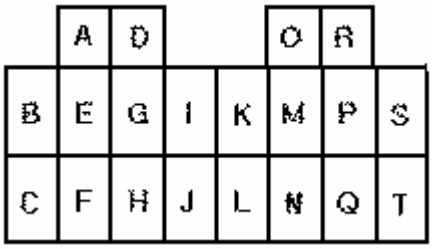
Hi-Scan Main Body	24P	16P	HYUNDAI 12 P	12P
BATTERY (+)	16/18	16		-
CHASSIS GROUND	4/20	4		-
SIGNAL GROUND	5/23	5	SIGNAL GROUND	12
BUS +LINE(SAE-J1850)	2	2		-
BUS -LINE(SAE-J1850)	10	-		-
L-LINE(ISO-9141-2)	15/24	15	L-LINE(ISO-9141-2)	10
DIAGNOSIS CONTROL			DIAGNOSIS CONTROL	
K-LINE(ISO-9141-2)	7/22	7	K-LINE(ISO-9141-2)	1
COMM. CHANNEL 0			MPI	
COMM. CHANNEL 6	6	6	TCS	1
COMM. CHANNEL 7	1	1	TCU	6
COMM. CHANNEL 8	3	3	ECS	3
COMM. CHANNEL 1	8	8	ABS	4
COMM. CHANNEL 2	9	9	ASC	5
COMM. CHANNEL 3	11	11	A/C	7
COMM. CHANNEL 4	12	12	A/BAG	8
COMM. CHANNEL 5	13	13	EPS	2
REED SIGNAL	14	14	REED SIGNAL	11



[TABLE 1: HYUNDAI DLC 12P ADAPTER AND PIN ASSIGNMENT]

3-2. KIA DLC 20P ADAPTER(09900-29020)

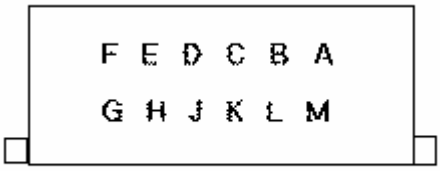
Hi-Scan Main Body	24P	16P	KIA 20P	20P
BATTERY (+)	16/18	16	BATTERY (+)	B
CHASSIS GROUND	4/20			
SIGNAL GROUND	5/23	5	GROUND	R/S
BUS +LINE(SAE-J1850)	2			
BUS -LINE(SAE-J1850)	10			
L-LINE(ISO-9141-2)	15/24	15	L-LINE	C/L/N/Q
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	ENG.MILL	P
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6	ABS	H
COMM. CHANNEL 7	1	1	TCU MILL	M
COMM. CHANNEL 8	3	3		
COMM. CHANNEL 1	8	8	SIENENS K-LINE	J
COMM. CHANNEL 2	9	9	AIR BAG	F
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13	BOSCH K-LINE	K
REED SIGNAL	14	14		



[TABLE 2: KIA DLC 20P ADAPTER AND PIN ASSIGNMENT]

3-3. DAEWOO DLC 12P ADAPTER(09900-29010)

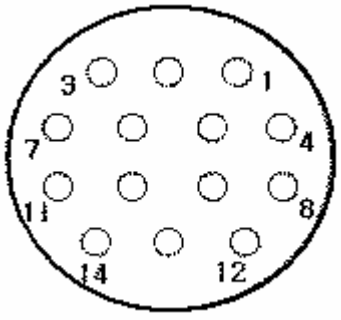
Hi-Scan Main Body	24P	16P	DAEWOO 12P	12P
BATTERY (+)	16/18	16	BATTERY (+)	G
CHASSIS GROUND	4/20			
SIGNAL GROUND	5/23	5	GROUND	A
BUS +LINE(SAE-J1850)	2			
BUS -LINE(SAE-J1850)	10			
L-LINE(ISO-9141-2)	15/24	15	L-LINE	B,C,D,E
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	K-LINE	M
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6		
COMM. CHANNEL 7	1	1	TCU	L
COMM. CHANNEL 8	3	3		
COMM. CHANNEL 1	8	8		
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12	AIR BAG	J
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 3: DAEWOO DLC 12P ADAPTER AND PIN ASSIGNMENT]

3-4. SSANGYONG DLC 14P ADAPTER(09900-29030)

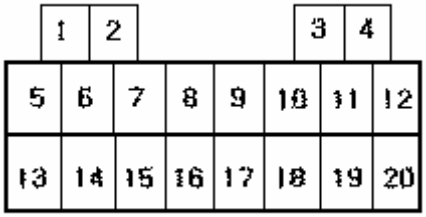
Hi-Scan Main Body	24P	16P	SSANGYONG 14P	14P
BATTERY (+)	16/18	16	BATTERY (+)	3
CHASSIS GROUND	4/20			
SIGNAL GROUND	5/23	5	GROUND	1
BUS +LINE(SAE-J1850)	2			
BUS -LINE(SAE-J1850)	10			
L-LINE(ISO-9141-2)	15/24	15		
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	ENG	14
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6		7
COMM. CHANNEL 7	1	1	TCU	10
COMM. CHANNEL 8	3	3	ECS	12
COMM. CHANNEL 1	8	8	ABS	13
COMM. CHANNEL 2	9	9	REKES	4
COMM. CHANNEL 3	11	11	TCCU	6
COMM. CHANNEL 4	12	12	A/BAG	9
COMM. CHANNEL 5	13	13	STICS	8
REED SIGNAL	14	14	ENG RPM	5



[TABLE 4: SSANGYONG DLC 14P ADAPTER AND PIN ASSIGNMENT]

3-5. SSANGYONG DLC 20P ADAPTER

Hi-Scan Main Body	24P	16P	SY-1(20P)	20P
BATTERY (+)	16/18	16	BATTERY (+)	3
CHASSIS GROUND	4/20			
SIGNAL GROUND	5/23	5	GROUND	1
BUS +LINE(SAE-J1850)	2			
BUS -LINE(SAE-J1850)	10			
L-LINE(ISO-9141-2)	15/24	15		
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	ENG	14
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6	TOD(full time)	15
COMM. CHANNEL 7	1	1	TCU	18
COMM. CHANNEL 8	3	3	ECS(GASOLINE)	20
COMM. CHANNEL 1	8	8	ABS	13
COMM. CHANNEL 2	9	9	TCCU(part time)	6
COMM. CHANNEL 3	11	11	ECS(DIESEL)	12
COMM. CHANNEL 4	12	12	A/BAG	10
COMM. CHANNEL 5	13	13	IMMOMILAZER	16
REED SIGNAL	14	14	ENG RPM	5



[TABLE 5: SSANGYONG DLC 20P ADAPTER AND PIN ASSIGNMENT]

Hi-scan Pro

JAPANESE VEHICLE DIAGNOSIS

CAUTION : Any changes or modifications in construction of this device which is not expressly approved by the party Responsible for compliance could void the user's authority to operate the equipment.

NOTE : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SAFETY

Safety Precautions

This equipment described in this manual is intended for used only by qualified personnel. Safe and effective use of this equipment is dependent upon the operator following normally accepted safety practices and procedures in conjunction with the special requirements detailed in this manual. Specific warning and cautionary statements will be found, where applicable, throughout this manual.
Where necessary, the WARNING statements and ICON will be described this guide.
WARNING identifies conditions or actions which may damage Hi-Scan Pro or the vehicle.

JAPANESE VEHICLE DIAGNOSIS

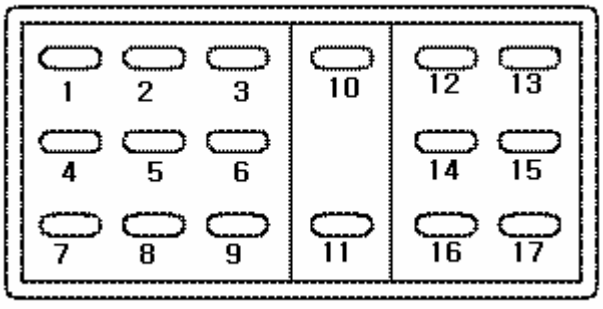
V. MAZDA VEHICLE DIAGNOSIS

I. TOYOTA VEHICLE DIAGNOSIS

1. PART NUMBER

1-1. TOYOTA 17P(09910-39030)

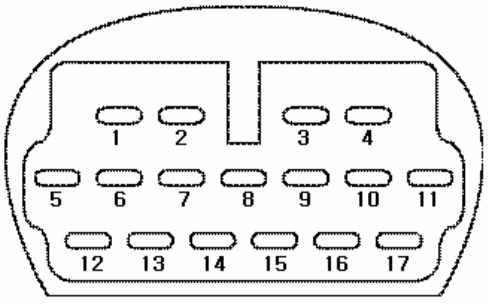
Hiscan Main Body	24P	16P	TOYOTA 17P(R type)	17P
BATTERY (+)	16/18	16	BATTERY (+)	7
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	SIGNAL GROUND	3
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15	TE1, TE2(ENG L-line)	5,6
DIAGNOSIS CONTROL			TC(air bag L-line)	15
K-LINE(ISO-9141-2)	7/22	7	VF1(ENG service data)	8
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6	TS	16
COMM. CHANNEL 7	1	1	TT	17
COMM. CHANNEL 8	3	3	AB(air bag K-line)	12
COMM. CHANNEL 1	8	8	W(ENG DTC code MIL)	2
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11	VF2(ASSISTANT O2 SENSOR RATE)	9
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1 : RECTANGULAR CONNECTOR AND PIN ASSIGNMENT]

1-2. TOTYOTA 17C(09910-39030)

Hiscan Main Body	24P	16P	TOYOTA17P(C Type)	17P
BATTERY (+)	16/18	16		
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5		
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15	17(ENG,A/T,ABS,AIR BAG,CCS,A/C)	16,17
DIAGNOSIS CONTROL			16(ENG service data L-line)	
K-LINE(ISO-9141-2)	7/22	7	ENG(DTC MIL)	10
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6	ENG(service data)	11
COMM. CHANNEL 7	1	1	AIR BAG(MIL)	6
COMM. CHANNEL 8	3	3	CCS(MIL)	8
COMM. CHANNEL 1	8	8	AUTO A/C(MIL)	7
COMM. CHANNEL 2	9	9	ABS(MIL)	4
COMM. CHANNEL 3	11	11	ECT(MIL)	9
COMM. CHANNEL 4	12	12	AIR BAG(ERASE)	14
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 2 : SEMI-CIRCULAR CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

For vehicles with 16 pin Data Link Connector power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC CABLE 16 to the Hi-scan Pro and the vehicle data link terminals is all that required.

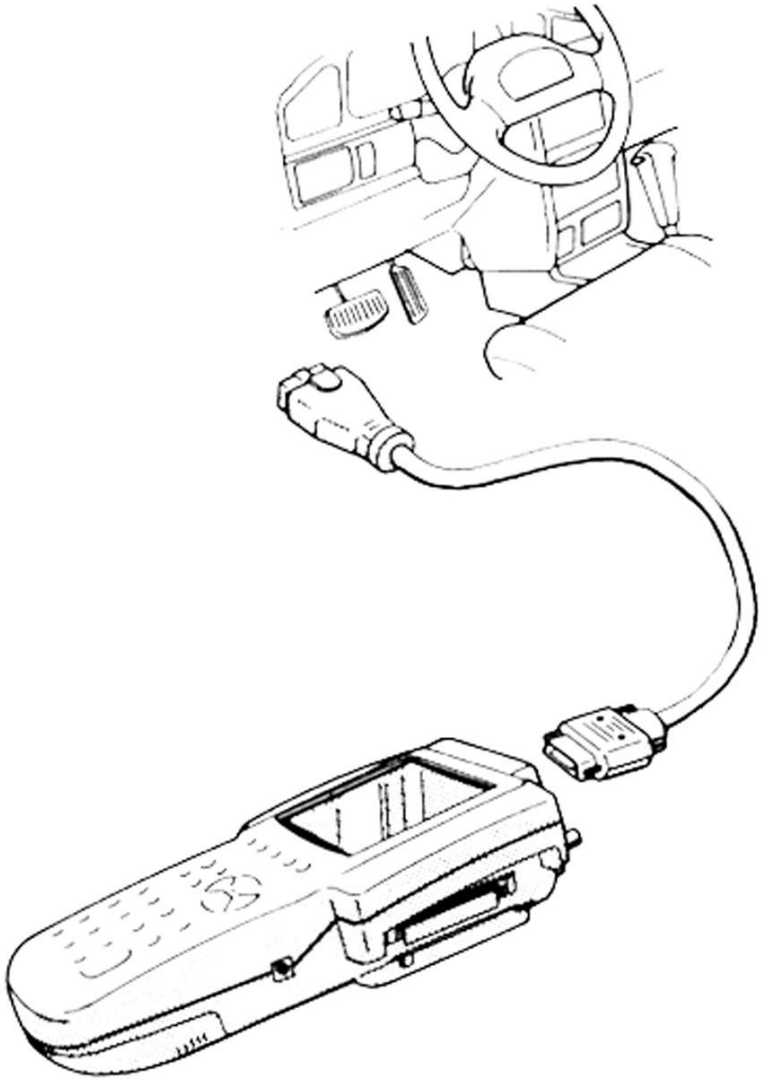
However, the latest generation of vehicles for US market(96 and on) uses the 16-pin Data Link Connector. Vehicles with Rectangular connector doesn't require additional power supply, but for semi-circular, additional power supply is required.

For earlier vehicles and Japan domestic vehicles with rectangular, diagnostic connector can be found in the engine bay, usually right side of the vehicle, seen from front of the vehicle. But some vehicles with rectangular connector, additional diagnostic connector of semi-circular connector can be found underneath the vehicle.

After 96, vehicles for outside of Japanese market are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Hi-scan Pro data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.

NOTICE: Vehicles with 16 pins ODB-II diagnostic connector, refer to 'IV. CARB OBD-II DIAGNOSIS' section in this operation guide.
Current Data and Flight Record function may not be supported depends on vehicle.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLE AND SYSTEM SELECTION

3-1. OPERATION FLOW

TOP MENU

NON KOREAN VEHICLE

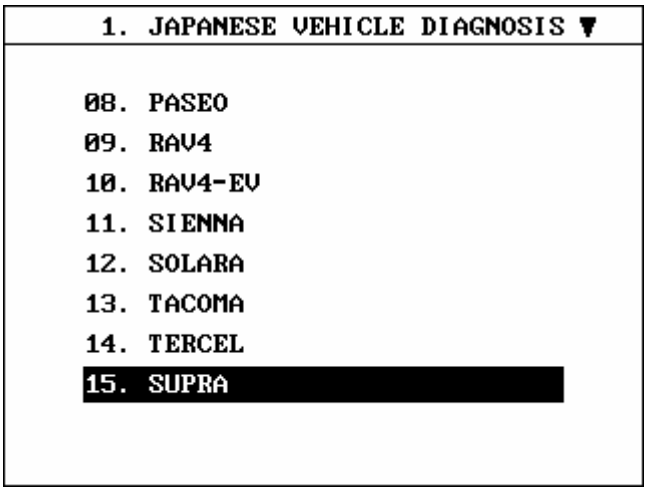
JAPANESE VEHICLE DIAGNOSIS

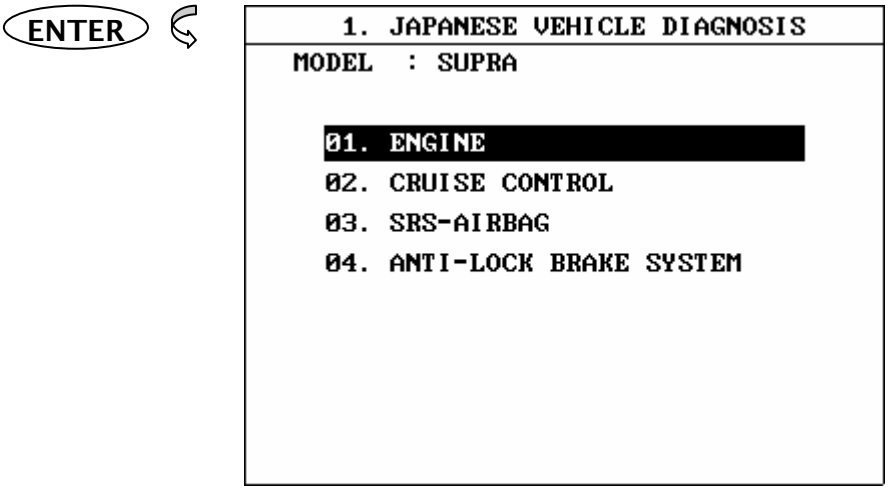
TOYOTA

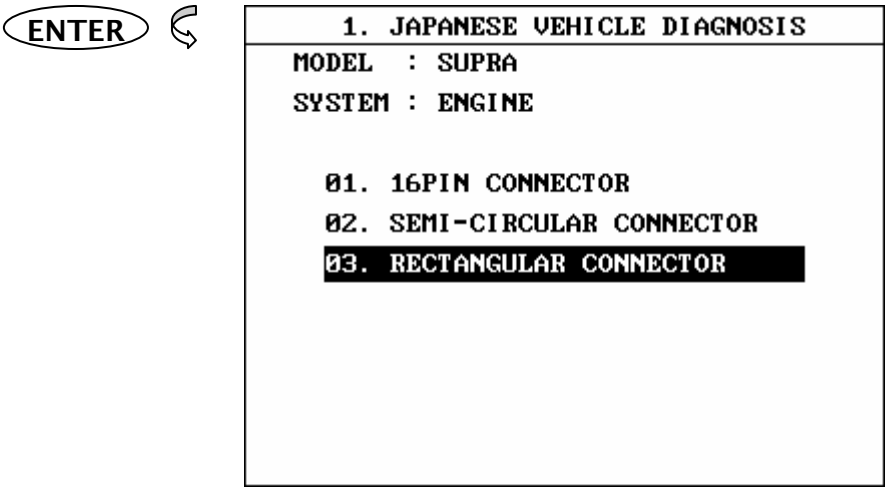
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

ENTER







[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

01. INITIAL SCREEN

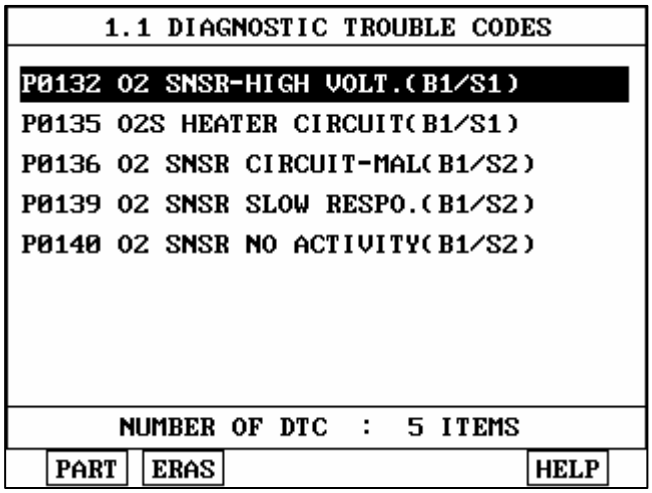
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



PART → NOT SUPPORTED

ERAS → 1.1.2 ERASE FAULT CODE

HELP → NOT SUPPORTED

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

EARS This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.

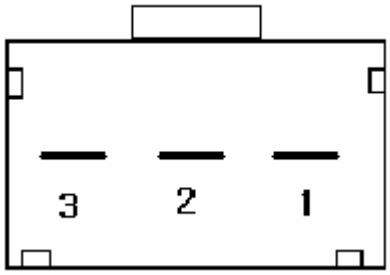
To erase the MIL type TDCs, disconnect the battery terminal for 15 second or more.

II. HONDA VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. HONDA ADAPTER 3P(09910-39010)

Hiscan Main Body	24P	16P	HONDA-3	3P
BATTERY (+)	16/18	16	BATTERY (+)	2
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	GROUND	1
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15		
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	K-LINE	3
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6		
COMM. CHANNEL 7	1	1		
COMM. CHANNEL 8	3	3		
COMM. CHANNEL 1	8	8		
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1: 3 PIN CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

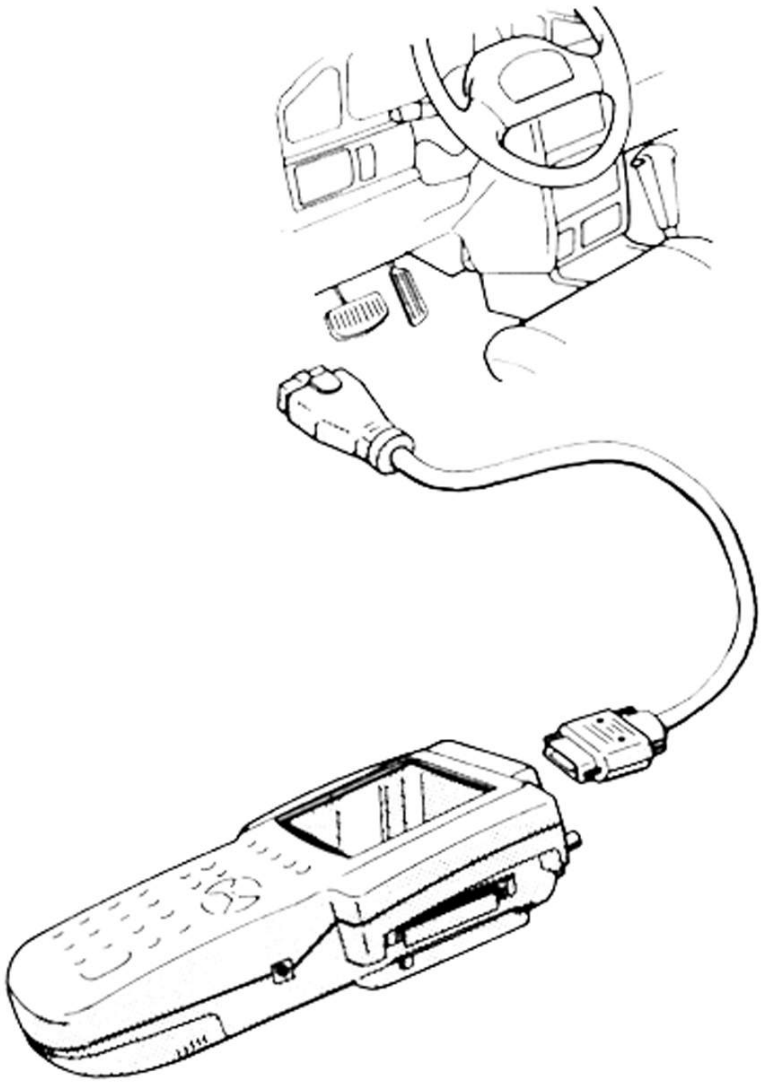
For vehicles with 16 pin and 3 pin Data Link Connector, power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC ADAPTER 16 pin to the Hi-scan Pro and the vehicle data link terminals is all that required.

For earlier vehicles and Japan domestic vehicles with 3pin connector, diagnostic connector can be found in the driver or passenger side cabin underneath the knee bolster.

After 96, vehicles for outside of Japanese market are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Hi-scan Pro data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.

NOTICE: Vehicles with 16 pins ODB-II diagnostic connector, refer to 'IV. CARB OBD-II DIAGNOSIS' section in this operation guide.
Current Data and Flight Record function may not be supported depends on vehicle.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLES AND SYSTEM SELECTION

3-1. OPERATION FLOW

TOP MENU

NON KOREAN VEHICLE

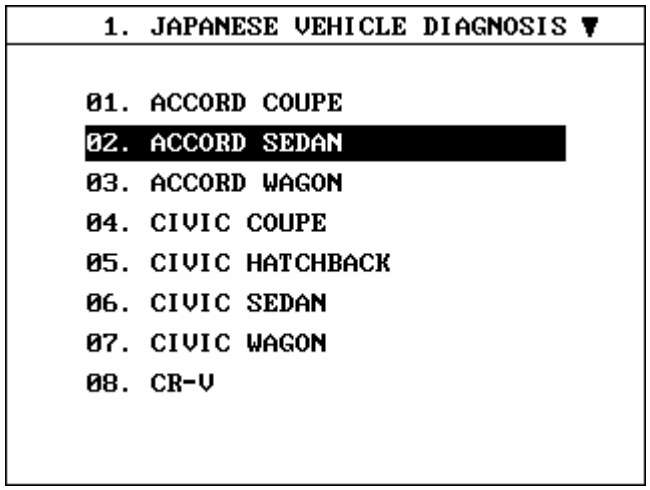
JAPANESE VEHICLE DIAGNOSIS

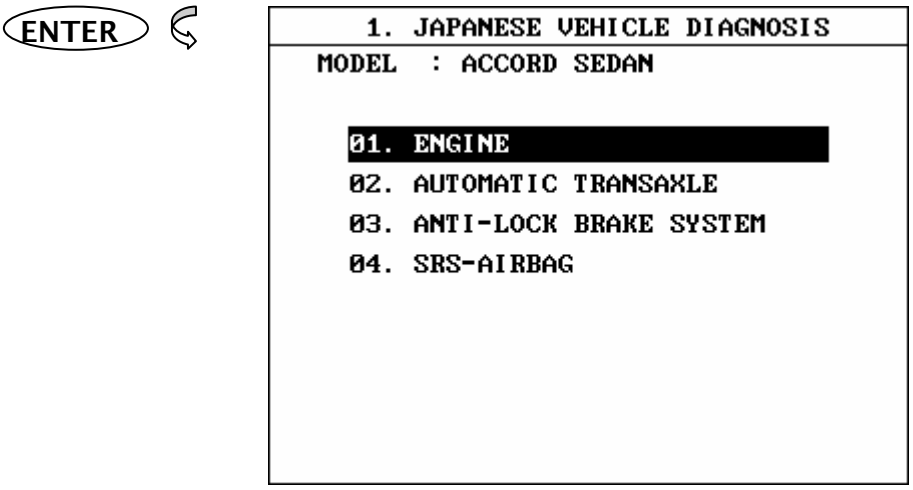
HONDA

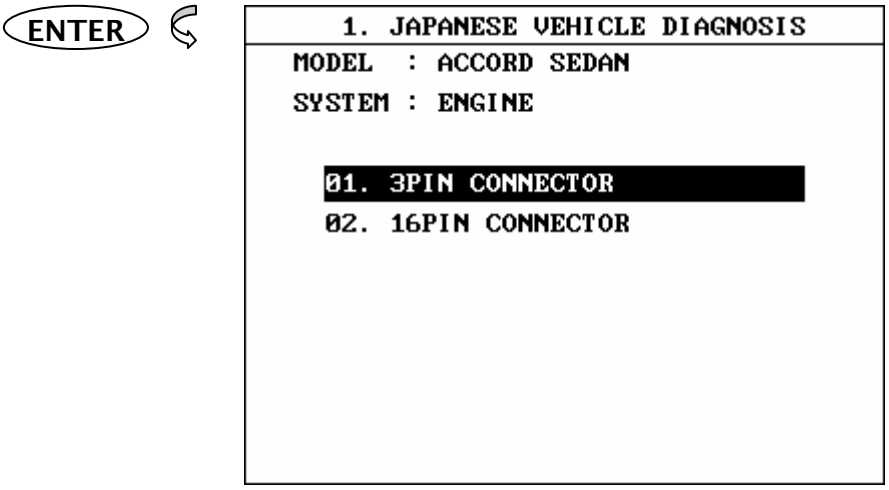
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

ENTER







[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

01. INITIAL SCREEN

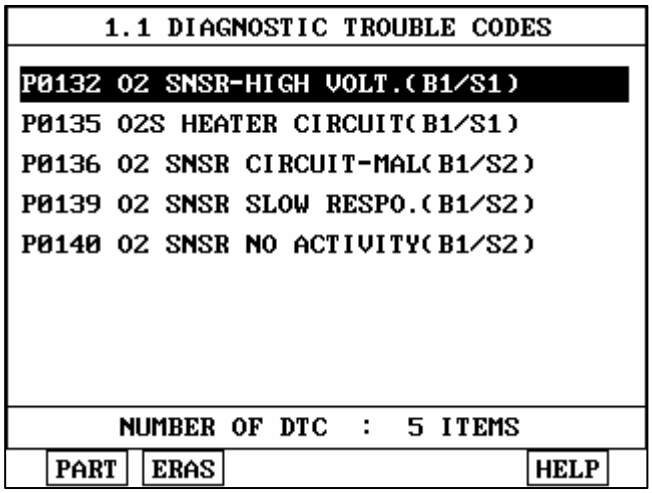
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



PART → NOT SUPPORTED

ERAS → 1.1.2 ERASE FAULT CODE

HELP → NOT SUPPORTED

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

EARS **This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.**

To erase the MIL type DTCs, disconnect the battery terminal for 15 second or more.

5. CURRENT DATA

5-1. OPERATION FLOW

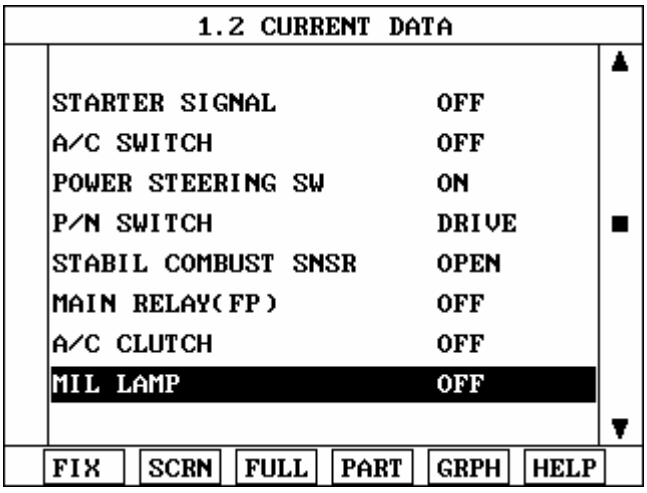
01. INTIAL SCREEN

01 → VEHICLE AND SYSTEM SELECTION

→ Refer to 'Selecting Vehicle Mode"

3.0 CURRENT DATA

ENTER →



FIX →	1.2.1 FIX ITEM
SCRN →	1.2.2 SPLIT SCREEN
FULL →	1.2.3 DISPLAY ALL ITEMS
PART →	THIS FUNCTION IS NOT SUPPORTED
GRPH →	1.2.5 GRAPHICAL DISPLAY
HELP →	THIS FUNCTION IS NOT SUPPORTED

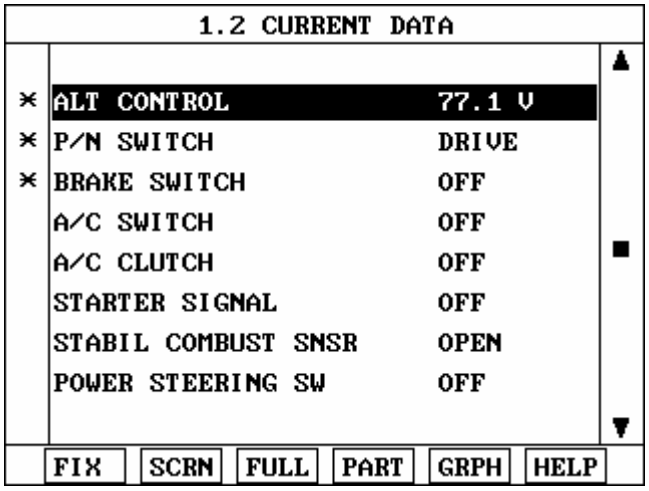
[FLOW 3 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the data is possible by means of the UP / DOWN keys and more detailed data is available by Using the soft function keys as follows :

FIX — Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another.



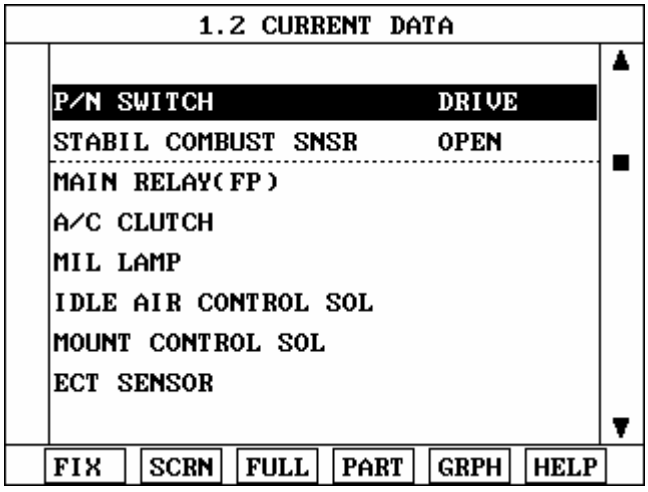
[Figure 2 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example, illustrated by figure 2, is fixed as denoted by the asterisk to the left of the item number.

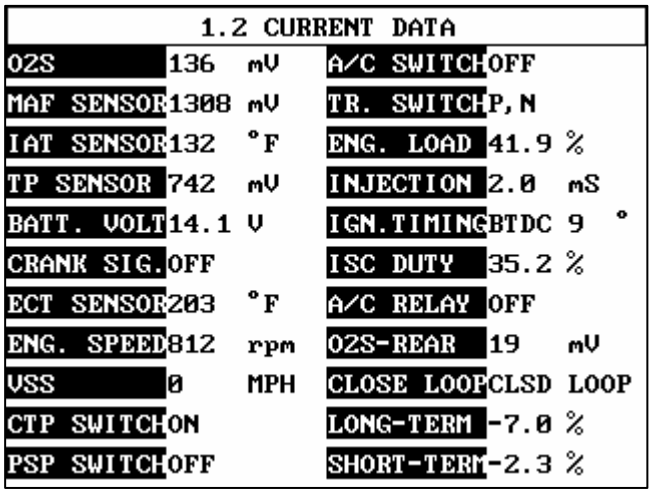
SCRN Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Hi-Scan Pro update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 3, only 2 'active' data items are selected



[Figure 3 : Split screen]

FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 4. The component description displayed will be abbreviated when this mode is used. The date may be scrolled by use of the UP / DOWN key.

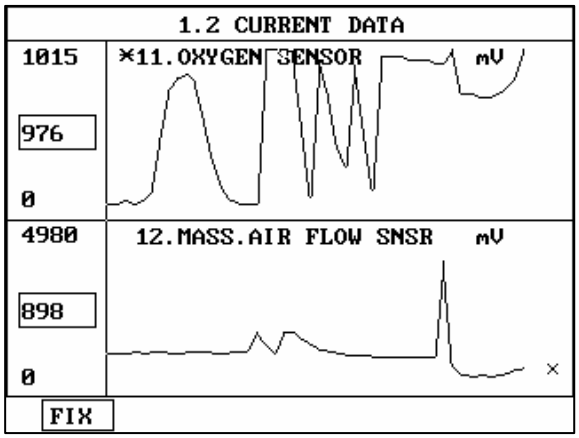


1.2 CURRENT DATA					
O2S	136	mV	A/C SWITCH	OFF	
MAF SENSOR	1308	mV	TR. SWITCH	P,N	
IAT SENSOR	132	°F	ENG. LOAD	41.9	%
TP SENSOR	742	mV	INJECTION	2.0	mS
BATT. VOLT	14.1	V	IGN.TIMING	BTDC 9	°
CRANK SIG.	OFF		ISC DUTY	35.2	%
ECT SENSOR	203	°F	A/C RELAY	OFF	
ENG. SPEED	812	rpm	O2S-REAR	19	mV
VSS	0	MPH	CLOSE LOOP	CLSD LOOP	
CTP SWITCH	ON		LONG-TERM	-7.0	%
PSP SWITCH	OFF		SHORT-TERM	-2.3	%

[Figure 4 : DISPLAY ALL ITEMS]

GRPH Where more 2 'active' data items have been selected using the FIX key, pressing the GRPH key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 5.

FIX Holding one item of two. When the UP / DOWN keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 5 : CURRENT DATA (GRPH)]

6. FLIGHT RECORD

6- 1 OPERATION FLOW

0.1 INITIAL SCREEN

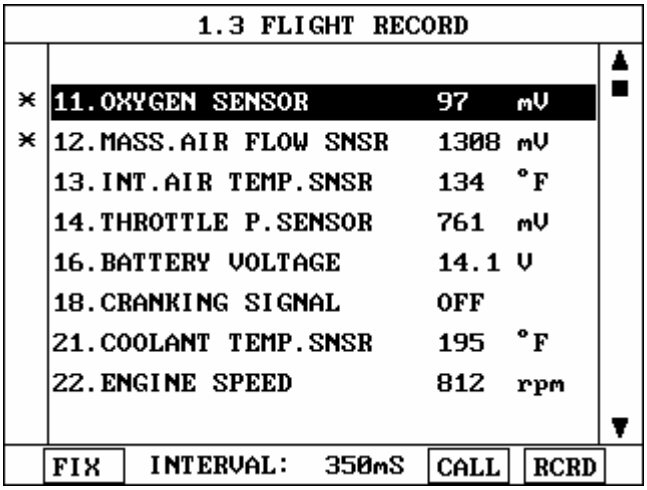
0 1

VEHICLE AND SYSTEM SELECTION

Refer to " Selecting Vehicle Mode"

FLGHT RECORD

ENTER



FIX → 1.3.1 FIX ITEM

CALL → 1.3.2 CALL MEMORIZED DATA

RCRD → 1.3.3 START RECORD

[FLOW 4 : FLIGHT RECORD MODE IN/OUT FLOW]

6-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Hi-Scan Pro.

By using the (UP) / (DOWN) key, the display may be scrolled.

The function of the FLIGT RECORD is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Hi-scan Pro screen. The maximum number of items, which may be selected for FLIGHT RECORD functions, is 8.

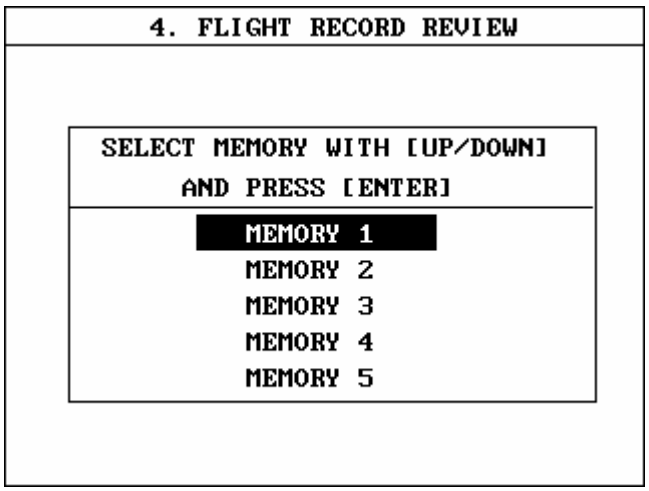
The data sampling time interval is displayed at the center of the bottom line of the screen.

CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system, which differs from the current vehicle and system selection, or if no recording data, the following message will be displayed.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA.

If the MOMORY EXPANSION CARD is installed and this key is pressed, then the message is displayed on the screen as shown in Figure 6. The user can select one of the items to read.



[Figure 6 : FLIGHT RECORD (CALL)]

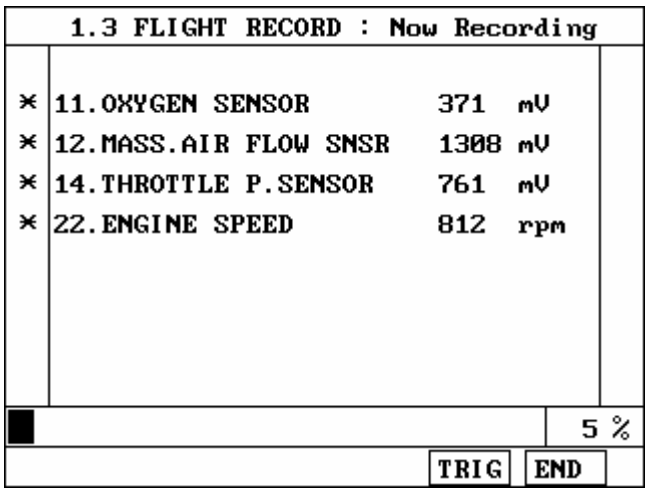
MEMORY 1 indicates internal memory of Hi-scan Pro. In MEMORY 2 and MOMORY 5, each memory indicates of the MEMORY EXPANSION CARD.

If data is in the selected memory, stored data will be displayed , But the following message will be displayed if the ID of the stored record is differ from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA

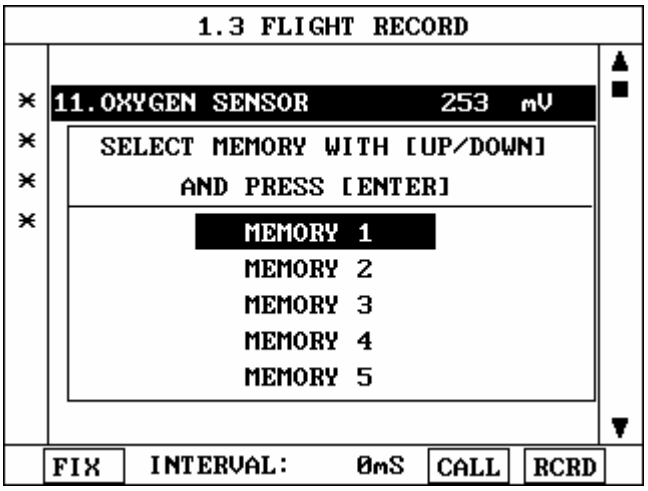
RCRD end when either the END or ESC key is depressed. During the recording function, the screen takes the appearance of that illustrated in [figure 7]

If the quantity of data being recorded exceeds the capacity of the Hi-scan Pro memory, the first recorded data of the current session will be progressively overwritten as recording continues. If an increased amount of memory is required, the option MEMORY EXPANSION CARD should be installed.



[Figure 7 FLIGHT RECORD (RECORDING)]

If the MEMORY EXPANSION CARD has been installed and this key is pressed, than the message is displayed on the screen as in the following figure.



[Figure 8 : FLIGHT RECORD (RCRD)]

MEMORY 1 indicates internal memory of Hi-scan Pro.
MOMORY 2 and MEMORY 5, each memory indicates of the MEMORY EXPANSION CARD.

If user selects memory, [Figure 8] is display. If this key is pressed without selected items, the following message is displayed.

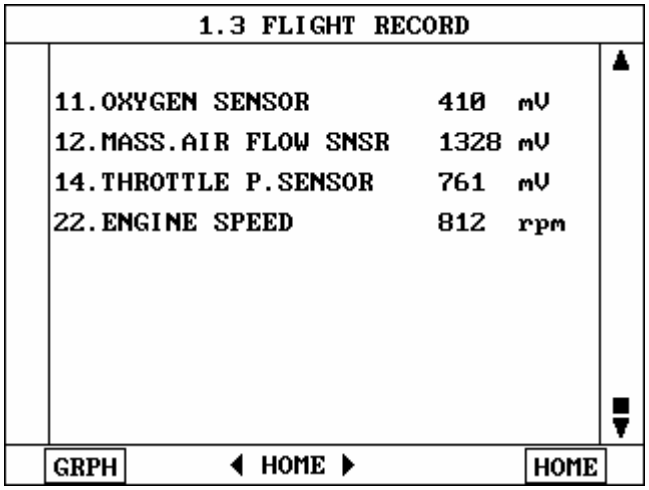
SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.

When TRIG key is depressed more than twice , only the latest TRIG key handled as trigger at trigger point.

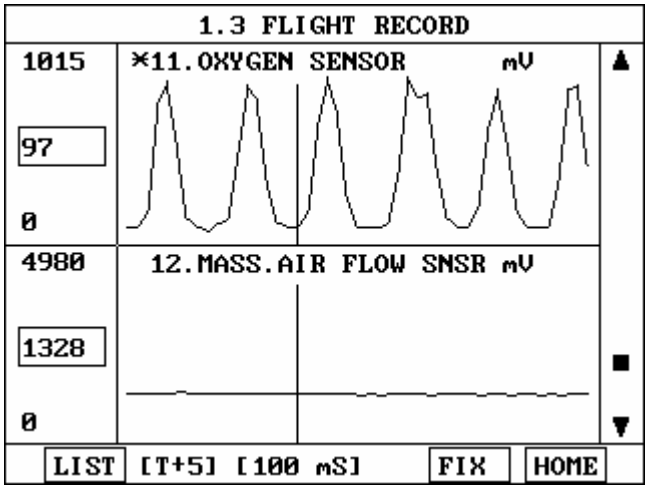
If END key or ESC key is depressed before TRIG key , that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 9 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
If the two items are selected, a graphical view is as follows.



[Figure 10 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRREN DISPLAY THE DATE AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

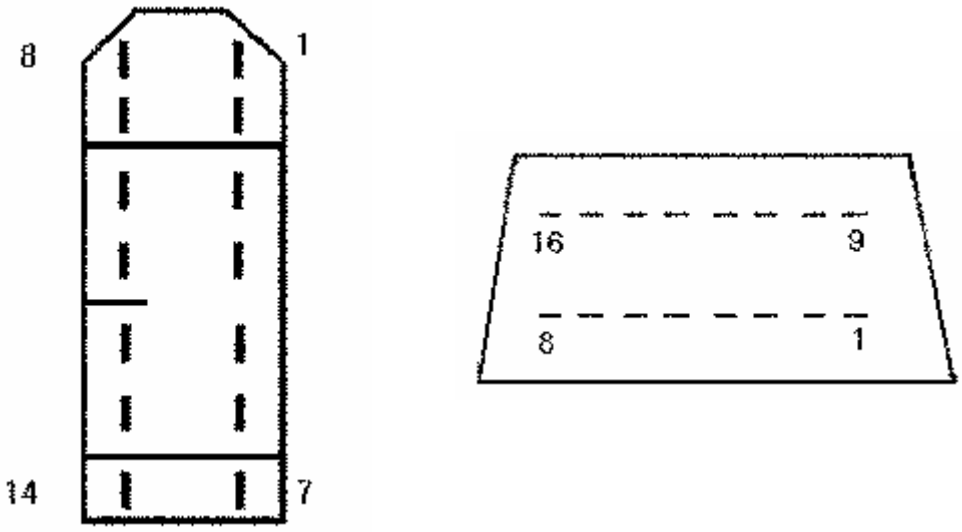
You can change sampled time index by ◄ or ► key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor is arrived end of screen, screen will be moved as half page.

III. NISSAN VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. NISSAN 14+16P ADAPTER(09910-39040)

Hi-Scan main body	24 pin	16pin	NISSAN 14 PIN	14pin	16p
BATTERY	16/18	16	BATTERY	7	16
GND	4/20	4	GND	8	4
GND	5/23	5	GND	8	5
bus L line	2	2			
bus L line	10	10			
L line	15/24	15	RX(L line)	1,13	13
comm0	7/22	7	K line	5	7
comm6	6	6	K line	3	
comm7	1	1	TX	2	12
comm8	3	3			
comm1	8	8	K line	4	
comm2	9	9	IDLE,IG ADJ	6	
comm3	11	11	K line	12	
comm4	12	12	K line	11	
comm5	13	13			
reed signal	14	14	CLK	9	



[TABLE 1 : 14 PIN AND 16 PIN CONNECTOR AND PIN ASSINGMENT]

2. CONNECTION METHOD

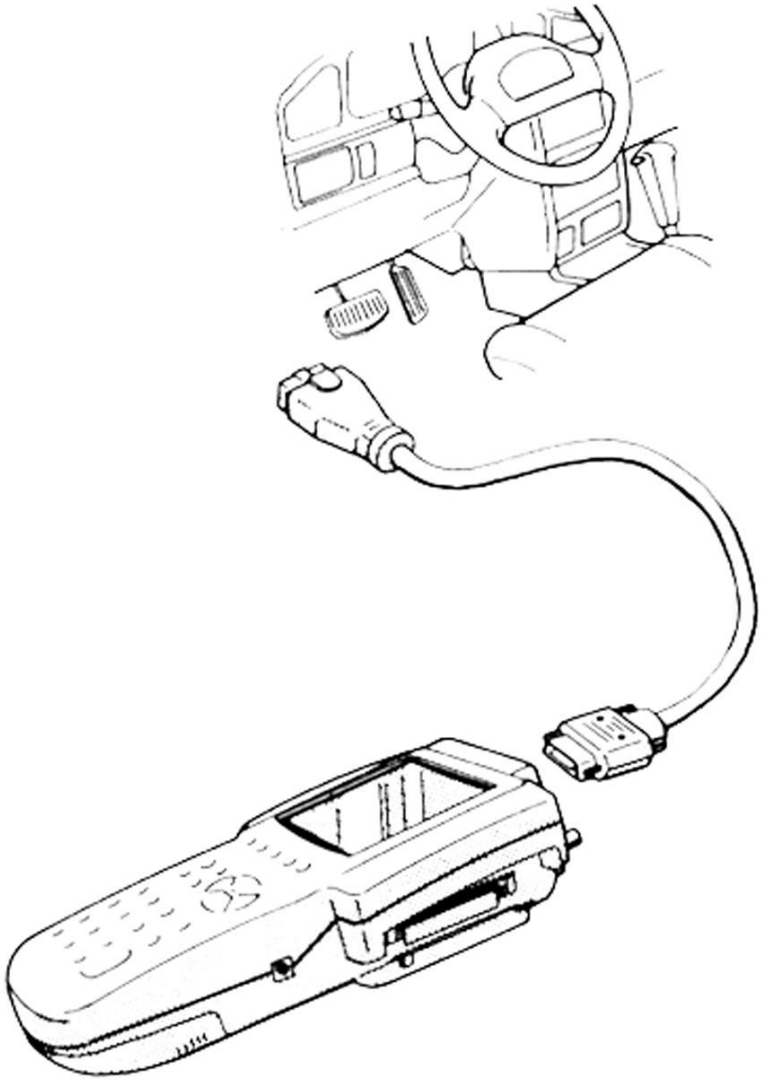
For vehicles with 16 pins and 14 pins Data Link Connector power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed.

For earlier vehicles and Japan domestic vehicles with 14pin connector, diagnostic connector can be found in the driver's door side cabin or fuse box underneath the knee bolster.

After 96, vehicles for outside of Japanese market are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

The DLC CABLE 16 should be connected to Hi-scan Pro data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal.

NOTICE: Vehicles with 16 pins ODB-II diagnostic connector, refer to 'IV. CARB OBD-II DIAGNOSIS' section in this operation guide.
Current Data and Flight Record function may not be supported depends on vehicle.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLE AND SYSTEM SELECTION

3-1. OPERATION FLOW

TOP MENU

NON KOREAN VEHICLE

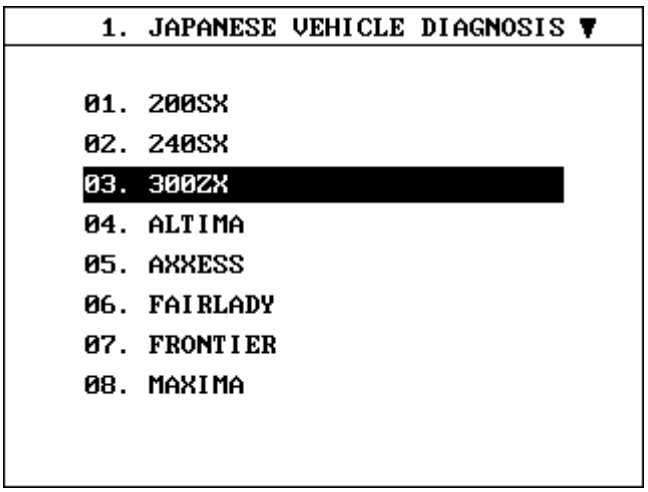
JAPANESE VEHICLE DIAGNOSIS

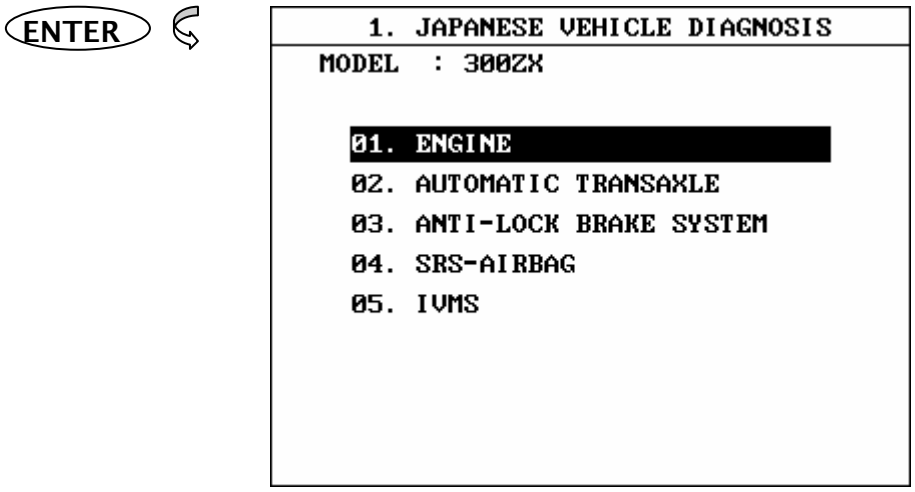
NISSAN

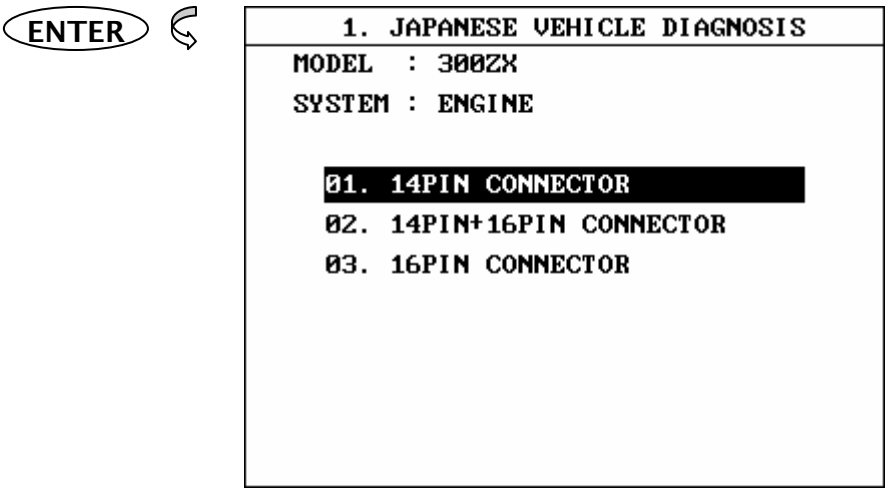
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

ENTER







[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

01. INITIAL SCREEN

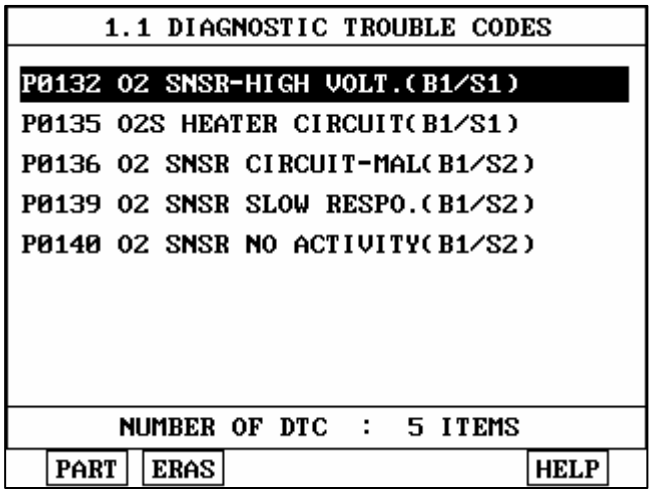
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



PART → NOT SUPPORTED

ERAS → 1.1.2 ERASE FAULT CODE

HELP → NOT SUPPORTED

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

EARS **This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.**

5. CURRENT DATA

5-1. OPERATION FLOW

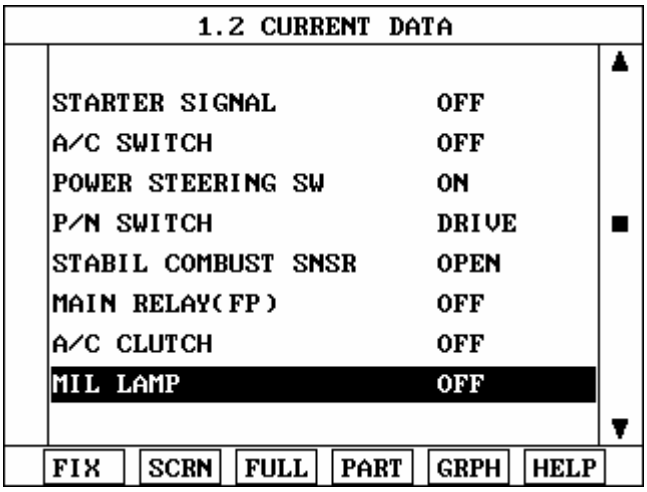
01. INTIAL SCREEN

01 → VEHICLE AND SYSTEM SELECTION

→ Refer to 'Selecting Vehicle Mode"

3.0 CURRENT DATA

ENTER →



FIX →	1.2.1 FIX ITEM
SCRN →	1.2.2 SPLIT SCREEN
FULL →	1.2.3 DISPLAY ALL ITEMS
PART →	THIS FUNCTION IS NOT SUPPORTED
GRPH →	1.2.5 GRAPHICAL DISPLAY
HELP →	THIS FUNCTION IS NOT SUPPORTED

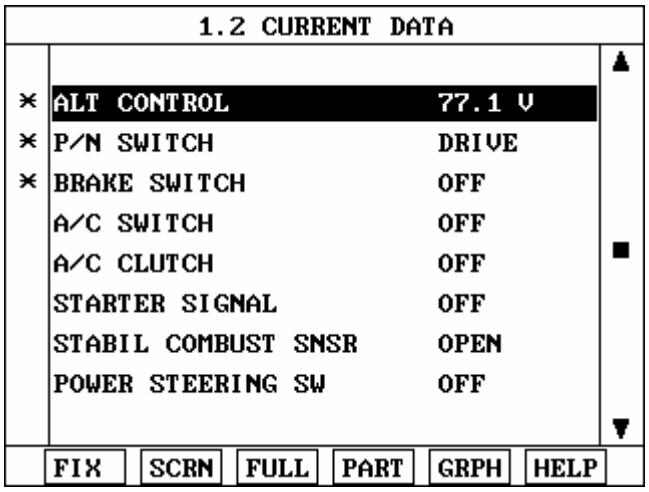
[FLOW 3 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the date is possible by means of the UP / DOWN keys and more detailed data is available by Using the soft function keys as follows :

FIX Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another.



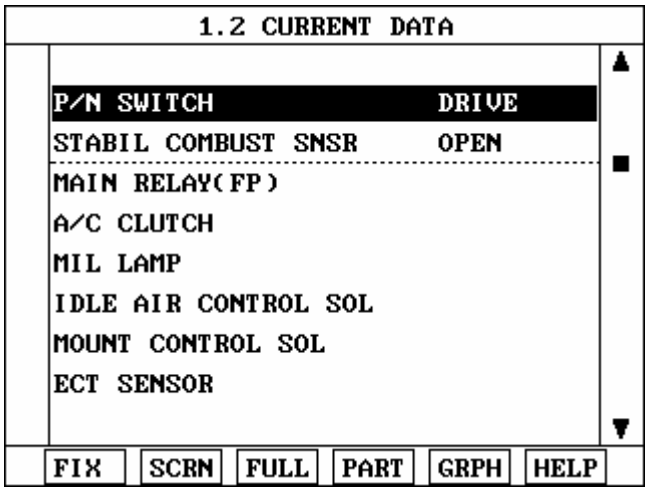
[Figure 2 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example illustrated by figure 2, is fixed as denoted by the asterisk to the left of the item number.

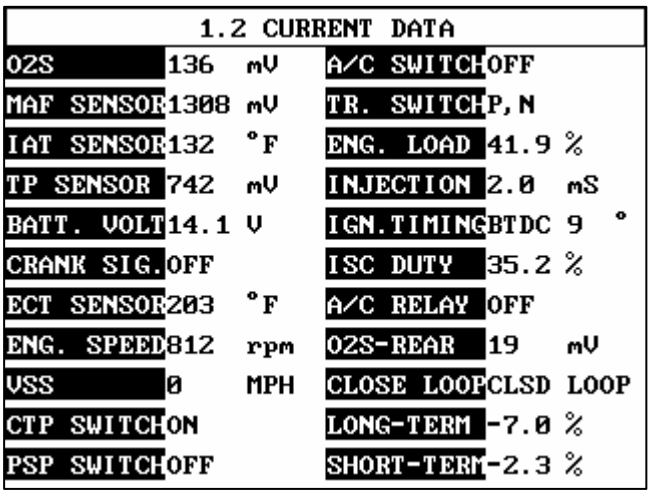
SCRN Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Hi-Scan Pro update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 3, only 2 'active' data items are selected



[Figure 3 : Split screen]

FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 4. The component description displayed will be abbreviated when this mode is used. The date may be scrolled by use of the (UP) / (DOWN) key.



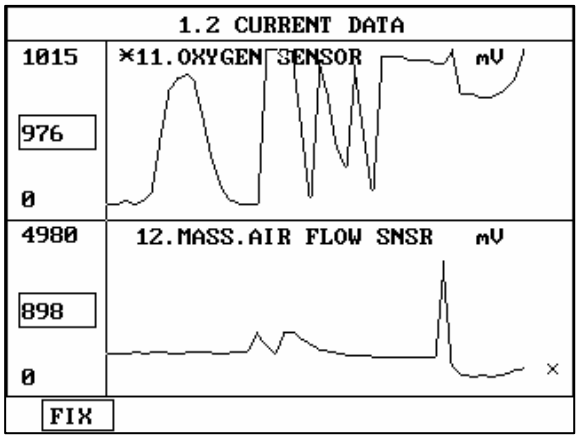
1.2 CURRENT DATA

O2S	136	mV	A/C SWITCH	OFF	
MAF SENSOR	1308	mV	TR. SWITCH	P,N	
IAT SENSOR	132	°F	ENG. LOAD	41.9	%
TP SENSOR	742	mV	INJECTION	2.0	mS
BATT. VOLT	14.1	V	IGN.TIMING	BTDC 9	°
CRANK SIG.	OFF		ISC DUTY	35.2	%
ECT SENSOR	203	°F	A/C RELAY	OFF	
ENG. SPEED	812	rpm	O2S-REAR	19	mV
VSS	0	MPH	CLOSE LOOP	CLSD LOOP	
CTP SWITCH	ON		LONG-TERM	-7.0	%
PSP SWITCH	OFF		SHORT-TERM	-2.3	%

[Figure 4 : DISPLAY ALL ITEMS]

GRPH Where more 2 'active' data items have been selected using the FIX key, pressing the GRPH key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 5.

FIX Holding one item of two. When the UP / DOWN keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 5 : CURRENT DATA (GRPH)]

6. FLIGHT RECORD

6- 1 OPERATION FLOW

0.1 INITIAL SCREEN

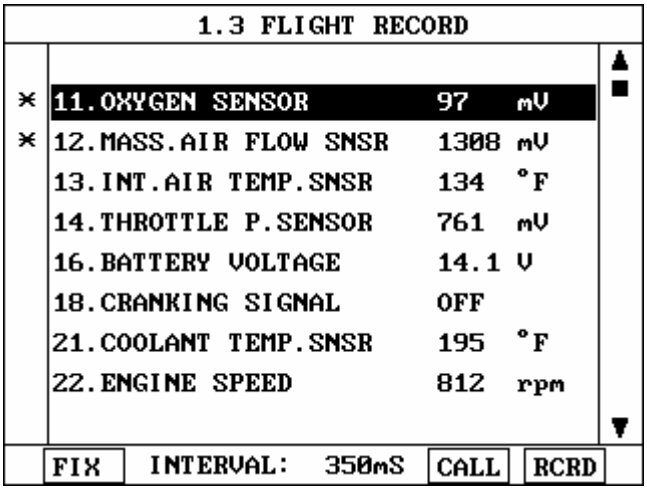
↳ 0 1

VEHICLE AND SYSTEM SELECTION

↳ Refer to " Selecting Vehicle Mode"

FLGHT RECORD

ENTER ↳



FIX ↳ 1.3.1 FIX ITEM

CALL ↳ 1.3.2 CALL MEMORIZED DATA

RCRD ↳ 1.3.3 START RECORD

[FLOW 4 : FLIGHT RECORD MODE IN/OUT FLOW]

6-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Hi-Scan Pro.

By using the (UP) / (DOWN) key, the display may be scrolled.

The function of the FLIGT RECORD is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Hi-scan Pro screen. The maximum number of items, which may be selected for FLIGHT RECORD functions, is 8.

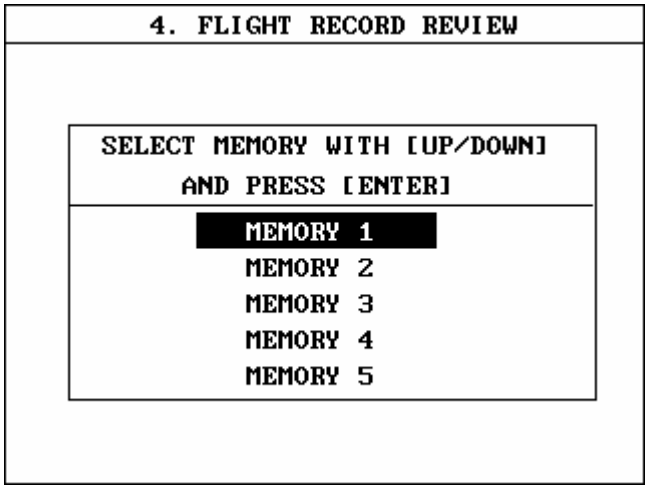
The data sampling time interval is displayed at the center of the bottom line of the screen.

CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system, which differs from the current vehicle and system selection, or if no recording data, the following message will be displayed.

NO RECORDED DATA OR
DIFFERENT SYSTEM DATA.

If the MOMORY EXPANSION CARD is installed and this key is pressed, then the message is displayed on the screen as shown in Figure 6. The user can select one of the items to read.



[Figure 6 : FLIGHT RECORD (CALL)]

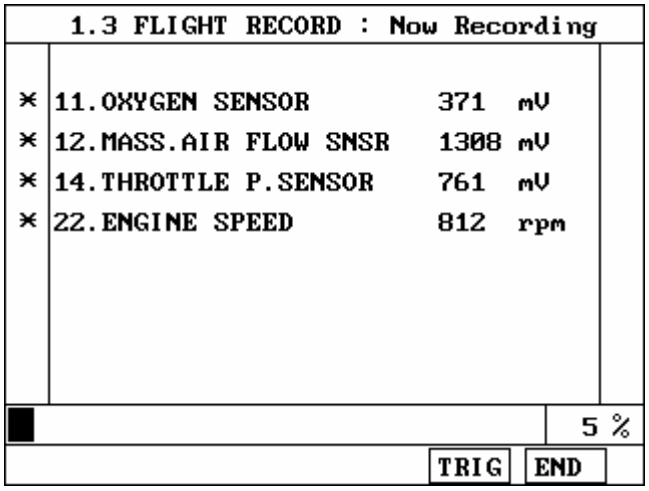
MEMORY 1 indicates internal memory of Hi-scan Pro. In MEMORY 2 and MOMORY 5, each memory indicates of the MEMORY EXPANSION CARD.

If data is in the selected memory, stored data will be displayed , But the following message will be displayed if the ID of the stored record is differ from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR
DIFFERENT SYSTEM DATA

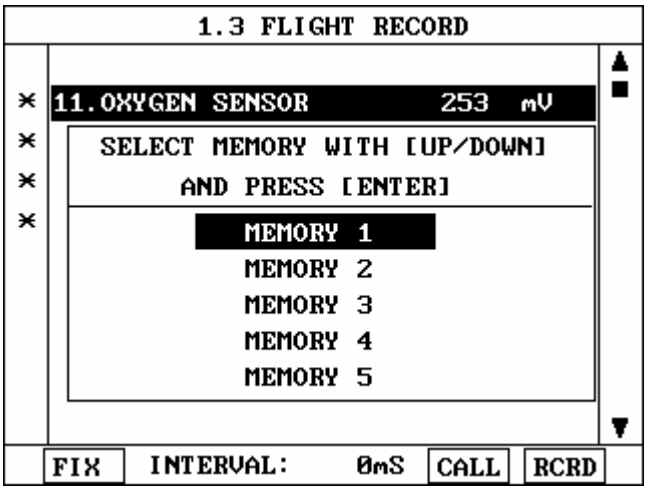
RCRD end when either the END or ESC key is depressed. During the recording function, the screen takes the appearance of that illustrated in [figure 7]

If the quantity of data being recorded exceeds the capacity of the Hi-scan Pro memory, the first recorded data of the current session will be progressively overwritten as recording continues. If an increased amount of memory is required, the option MEMORY EXPANSION CARD should be installed.



[Figure 7 FLIGHT RECORD (RECORDING)]

If the MEMORY EXPANSION CARD has been installed and this key is pressed, than the message is displayed on the screen as in the following figure.



[Figure 8 : FLIGHT RECORD (RCRD)]

MEMORY 1 indicates internal memory of Hi-scan Pro.
MOMORY 2 and MEMORY 5, each memory indicates of the MEMORY EXPANSION CARD.

If user selects memory, [Figure 8] is display. If this key is pressed without selected items, the following message is displayed.

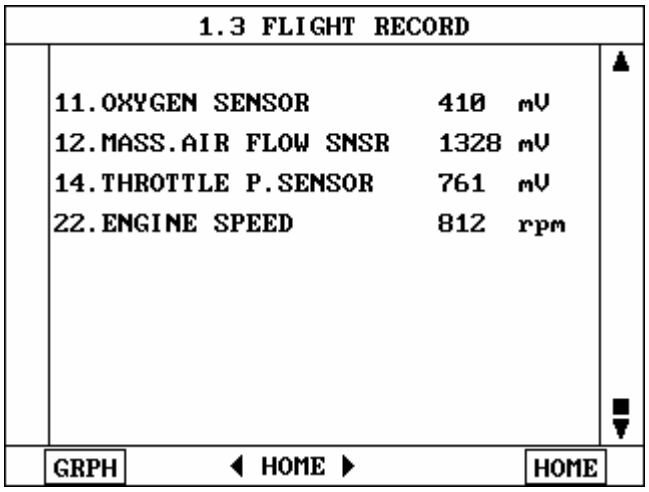
SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.

When TRIG key is depressed more than twice , only the latest TRIG key handled as trigger at trigger point.

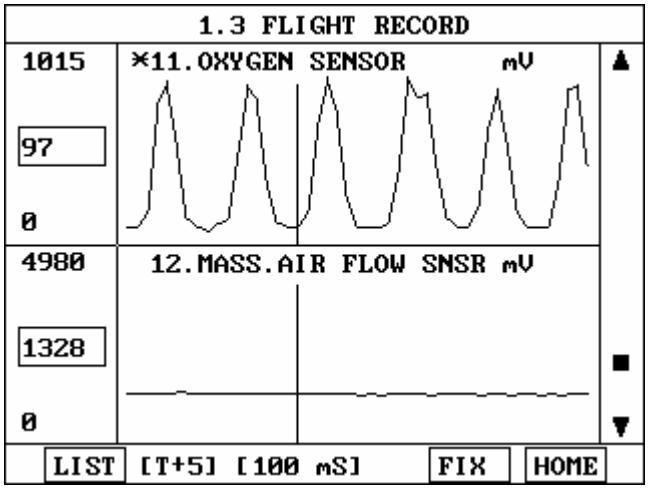
If END key or ESC key is depressed before TRIG key , that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 9 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
When two items are selection, a graphical view is as follows.



[Figure 10 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRREN DISPLAY THE DATE AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

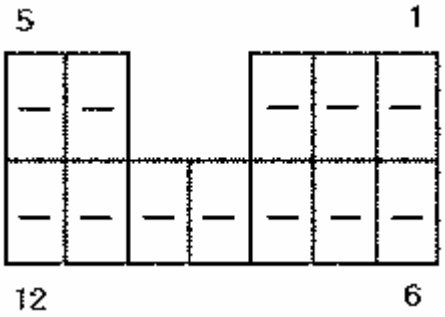
You can change sampled time index by ◄ or ► key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor reached the end of screen, screen will be moved as half page.

IV. MITSUBISHI VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. MITSUBISHI 12P ADAPTER(09910-39050)

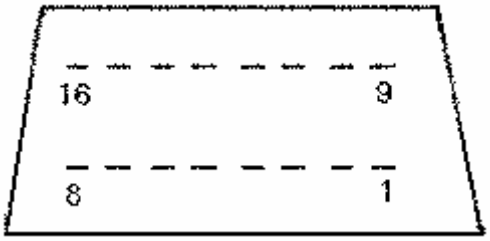
Hiscan Main Body	24P	16P	MITUSUBISHI 12 PIN	12P
BATTERY (+)	16/18	16		-
CHASSIS GROUND	4/20	4		-
SIGNAL GROUND	5/23	5	SIGNAL GROUND	12
BUS +LINE(SAE-J1850)	2	2		-
BUS -LINE(SAE-J1850)	10	-		-
L-LINE(ISO-9141-2)	15/22	15	L-LINE(ISO-9141-2)	10
DIAGNOSIS CONTROL			DIAGNOSIS CONTROL	
K-LINE(ISO-9141-2)	7/22	7	K-LINE(ISO-9141-2)	1
COMM. CHANNEL 0			MPI	
COMM. CHANNEL 6	6	6	TCS	1
COMM. CHANNEL 7	1	1	TCU	6
COMM. CHANNEL 8	3	3	ECS	3
COMM. CHANNEL 1	8	8	ABS	4
COMM. CHANNEL 2	9	9	ASC	5
COMM. CHANNEL 3	11	11	A/C	7
COMM. CHANNEL 4	12	12	A/BAG	8
COMM. CHANNEL 5	13	13	EPS	2
REED SIGNAL	14	14	REED SIGNAL	11

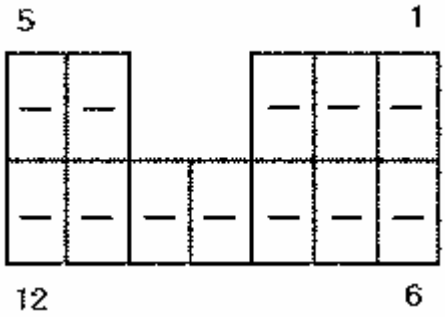


[TABLE 1 : 12 PIN CONNECTOR AND PIN ASSIGNMENT]

1-2. MITSUBISHI 12+16P ADAPTER(09910-39050)

Hi-Scan Main Body	24P	16P	FOR 16PIN	16P	12P	FOR 12PIN
BATTERY (+)	16/18	16	BATTERY (+)	16		
CHASSIS GROUND	4/20	4	CHASSIS GROUND	4		
SIGNAL GROUND	5/23	5	SIGNAL GROUND	5		
BUS +LINE(SAE-J1850)	2	2	BUS +LINE(SAE-J1850)	2		
BUS -LINE(SAE-J1850)	10	10	BUS -LINE(SAE-J1850)	10		
L-LINE(ISO-9141-2)	15/24	15	L-LINE(ISO-9141-2)	15,1		
DIAGNOSIS CONTROL			DIAGNOSIS CONTROL			
K-LINE(ISO-9141-2)	7/22	7	K-LINE(ISO-9141-2)	7	5	MPI
COMM. CHANNEL 0			MPI			
COMM. CHANNEL 6	6	6	TCU	6		
COMM. CHANNEL 7	1	1			1	TCL
COMM. CHANNEL 8	3	3	ECS	3	2	4WS
COMM. CHANNEL 1	8	8	ABS	8		
COMM. CHANNEL 2	9	9	ETACS	9	3	MICS
COMM. CHANNEL 3	11	11	A/C	11	4	ALARM
COMM. CHANNEL 4	12	12	A/BAG	12		
COMM. CHANNEL 5	13	13	ASC	13		
REED SIGNAL	14	14	REED SIGNAL	14		





[TABLE 2 : 12PIN + 16 PIN CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

For vehicles with 16 pin Data Link Connector power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC ADAPTER 12P +16P to the Hi-scan Pro and the vehicle data link terminals is all that required.

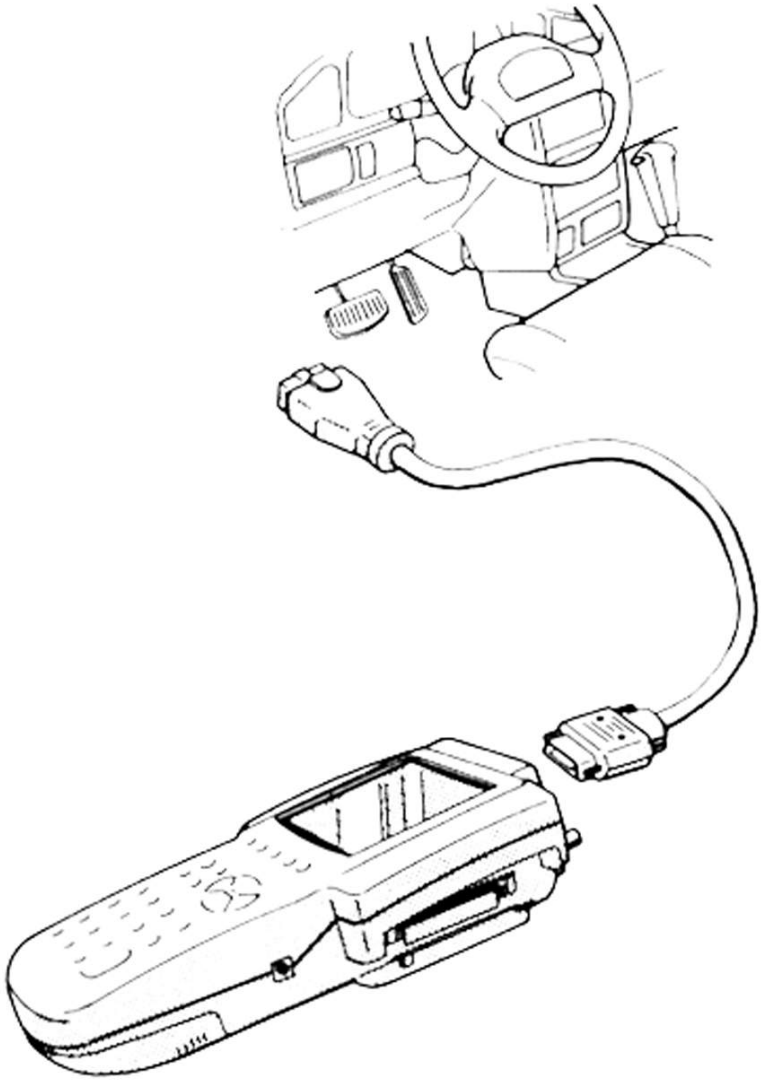
However, only the latest generation of vehicles for US market(96 and on) uses the 16-pin Data Link Connector. For earlier models, a separate power supply by means of the cigar lighter cable, or battery extension cable will be required.

For earlier vehicles and Japan domestic vehicles with 12pins connector, diagnostic connector can be found in the fuse box located at the driver's door side panel.

After 96, vehicles for outside of Japanese market are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Hi-scan Pro data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.

NOTICE: Vehicles with 16 pins ODB-II diagnostic connector, refer to 'IV. CARB OBD-II DIAGNOSIS' section in this operation guide.
Current Data and Flight Record function may not be supported depends on vehicle.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLE AND SYSTEM SELECTION

3-1. OPERATION FLOW

TOP MENU

NON KOREAN VEHICLE

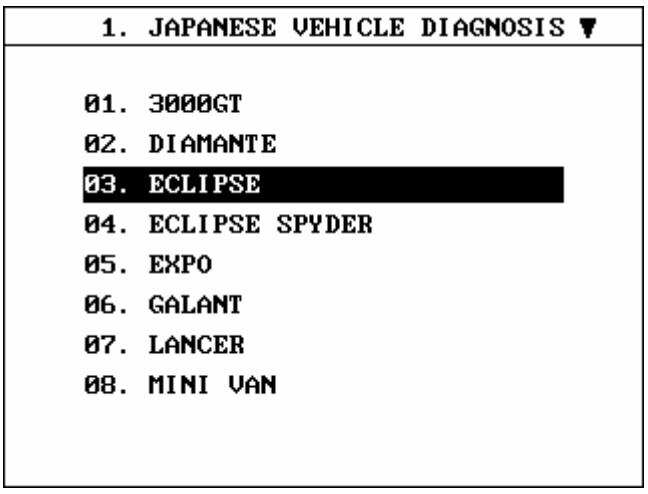
JAPANESE VEHICLE DIAGNOSIS

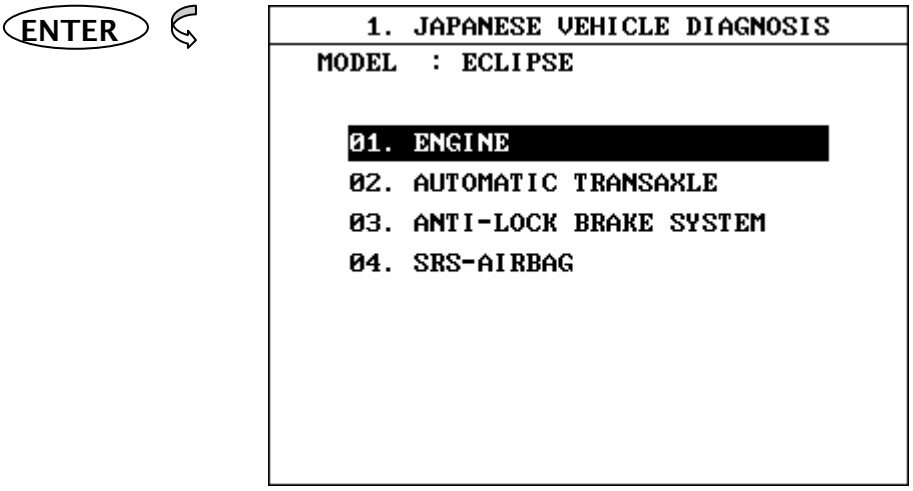
MITSUBISHI

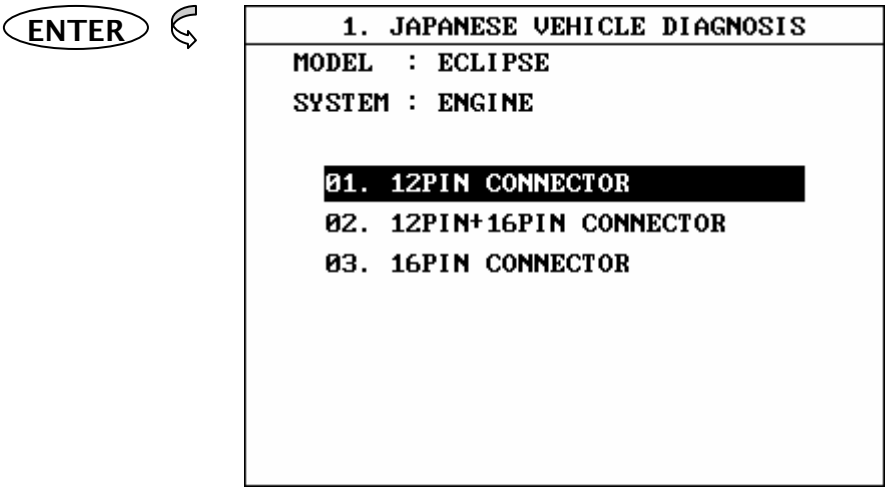
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

ENTER







[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

01. INITIAL SCREEN

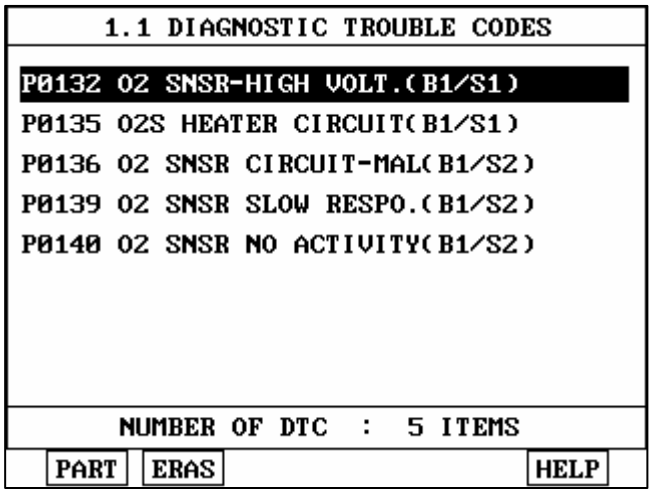
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



PART — NOT SUPPORTED

ERAS — 1.1.2 ERASE FAULT CODE

HELP — NOT SUPPORTED

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

EARS **This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.**

To erase the MIL type DTCs, disconnect the battery terminal for 15 second or more.

5. CURRENT DATA

5-1. OPERATION FLOW

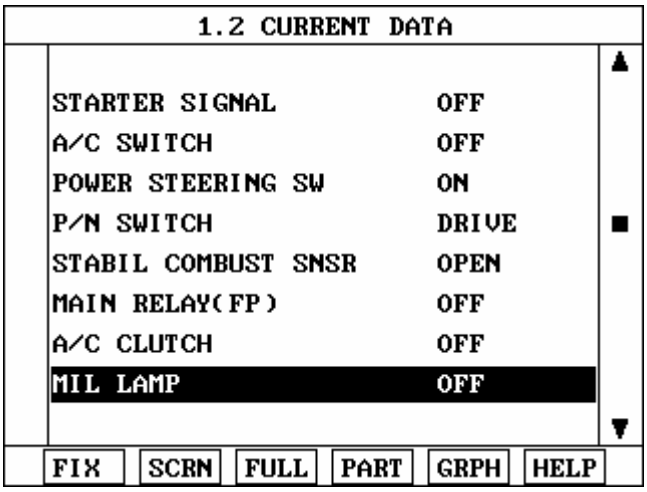
01. INTIAL SCREEN

01 → VEHICLE AND SYSTEM SELECTION

→ Refer to 'Selecting Vehicle Mode"

3.0 CURRENT DATA

ENTER →



FIX →	1.2.1 FIX ITEM
SCRN →	1.2.2 SPLIT SCREEN
FULL →	1.2.3 DISPLAY ALL ITEMS
PART →	THIS FUNCTION IS NOT SUPPORTED
GRPH →	1.2.5 GRAPHICAL DISPLAY
HELP →	THIS FUNCTION IS NOT SUPPORTED

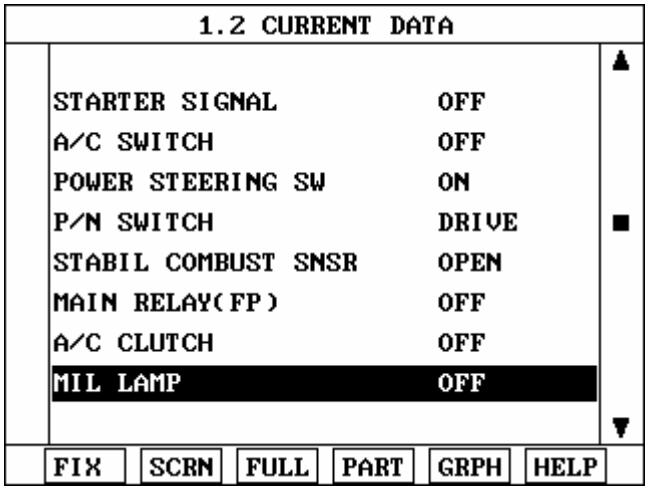
[FLOW 3 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the data is possible by means of the UP / DOWN keys and more detailed data is available by Using the soft function keys as follows :

FIX — Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another.



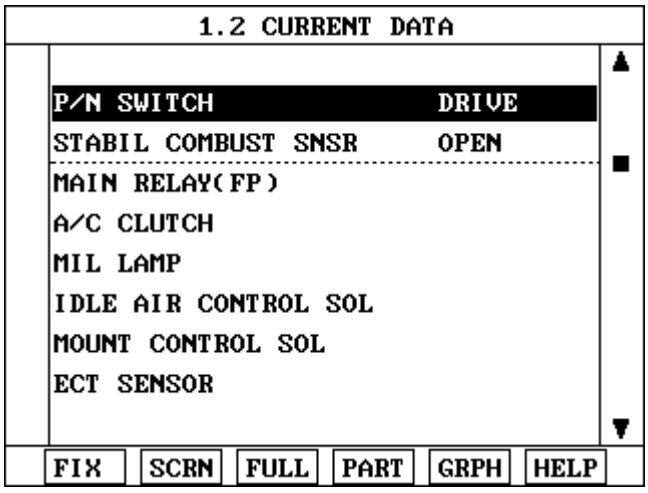
[Figure 2 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example illustrated by figure 2, is fixed as denoted by the asterisk to the left of the item number.

SCRN Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Hi-Scan Pro update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 3, only 2 'active' data items are selected



[Figure 3 : Split screen]

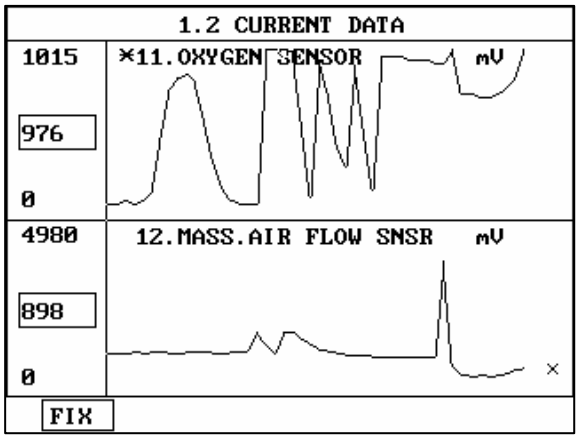
FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 4. The component description displayed will be abbreviated when this mode is used. The date may be scrolled by use of the UP / DOWN key.

1.2 CURRENT DATA					
O2S	136	mV	A/C SWITCH	OFF	
MAF SENSOR	1308	mV	TR. SWITCH	P,N	
IAT SENSOR	132	°F	ENG. LOAD	41.9	%
TP SENSOR	742	mV	INJECTION	2.0	mS
BATT. VOLT	14.1	V	IGN.TIMING	BTDC 9	°
CRANK SIG.	OFF		ISC DUTY	35.2	%
ECT SENSOR	203	°F	A/C RELAY	OFF	
ENG. SPEED	812	rpm	O2S-REAR	19	mV
VSS	0	MPH	CLOSE LOOP	CLSD LOOP	
CTP SWITCH	ON		LONG-TERM	-7.0	%
PSP SWITCH	OFF		SHORT-TERM	-2.3	%

[Figure 4 : DISPLAY ALL ITEMS]

GRPH Where more 2 'active' data items have been selected using the FIX key, pressing the GRPH key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 5.

FIX Holding one item of two. When the UP / DOWN keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 5 : CURRENT DATA (GRPH)]

6. FLIGHT RECORD

6- 1 OPERATION FLOW

0.1 INITIAL SCREEN

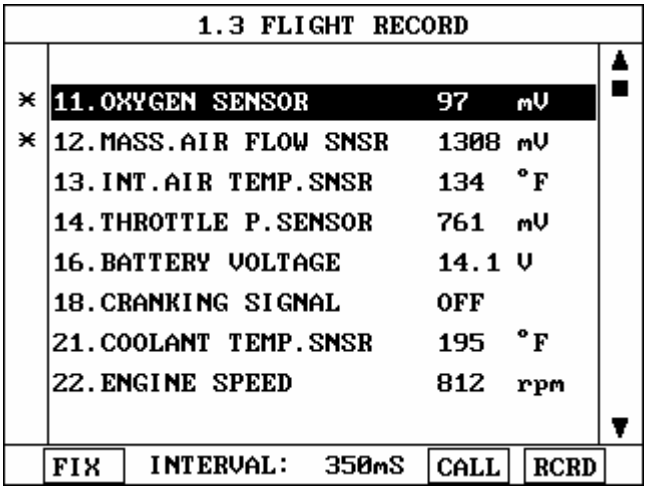
↪ 0 1

VEHICLE AND SYSTEM SELECTION

↪ Refer to " Selecting Vehicle Mode"

FLGHT RECORD

ENTER ↪



FIX ↪ 1.3.1 FIX ITEM

CALL ↪ 1.3.2 CALL MEMORIZED DATA

RCRD ↪ 1.3.3 START RECORD

[FLOW 4 : FLIGHT RECORD MODE IN/OUT FLOW]

5-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Hi-Scan Pro.

By using the UP / DOWN key, the display may be scrolled.

The function of the FLIGT RECORD is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Hi-scan Pro screen. The maximum number of items, which may be selected for FLIGHT RECORD functions, is 8.

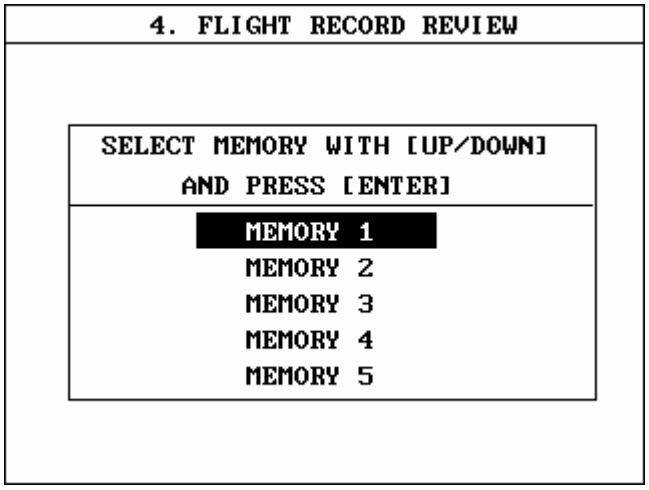
The data sampling time interval is displayed at the center of the bottom line of the screen.

CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system, which differs from the current vehicle and system selection, or if no recording data, the following message will be displayed.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA.

If the MOMORY EXPANSION CARD is installed and this key is pressed, then the message is displayed on the screen as shown in Figure 6. The user can select one of the items to read.



[Figure 6 : FLIGHT RECORD (CALL)]

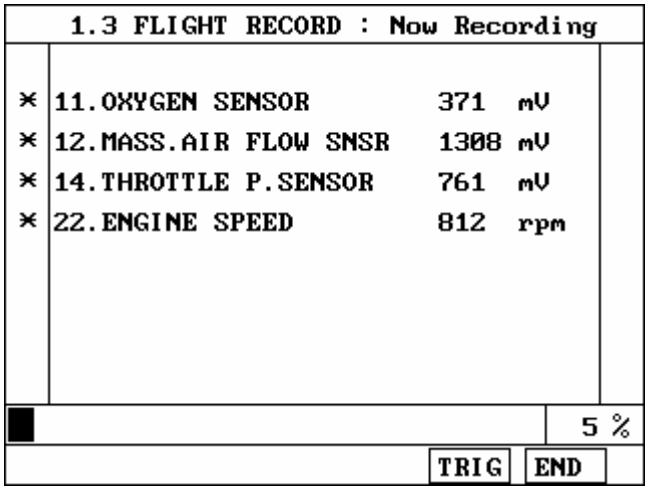
MEMORY 1 indicates internal memory of Hi-scan Pro. In MEMORY 2 and MOMORY 5, each memory indicates of the MEMORY EXPANSION CARD.

If data is in the selected memory, stored data will be displayed , But the following message will be displayed if the ID of the stored record is differ from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA

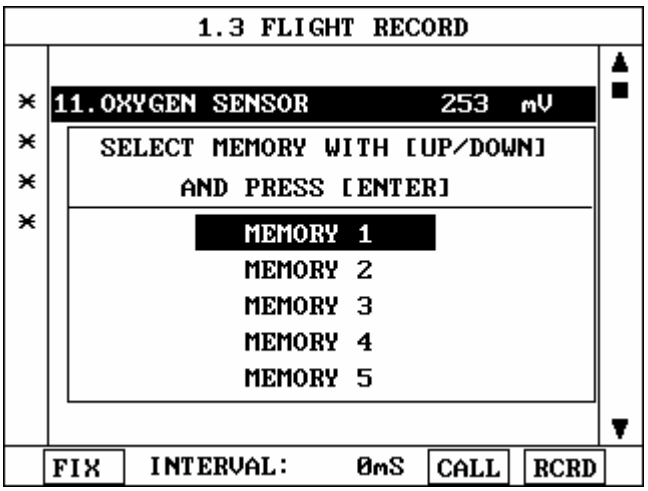
RCRD end when either the END or ESC key is depressed. During the recording function, the screen takes the appearance of that illustrated in [figure 8]

If the quantity of data being recorded exceeds the capacity of the Hi-scan Pro memory, the first recorded data of the current session will be progressively overwritten as recording continues. If an increased amount of memory is required, the option MEMORY EXPANSION CARD should be installed.



[Figure 7 FLIGHT RECORD (RECORDING)]

If the MEMORY EXPANSION CARD has been installed and this key is pressed, than the message is displayed on the screen as in the following figure.



[Figure 8 : FLIGHT RECORD (RCRD)]

MEMORY 1 indicates internal memory of Hi-scan Pro.
MOMORY 2 and MEMORY 5, each memory indicates of the MEMORY EXPANSION CARD.

If user selects memory, [Figure 8] is display. If this key is pressed without selected items, the following message is displayed.

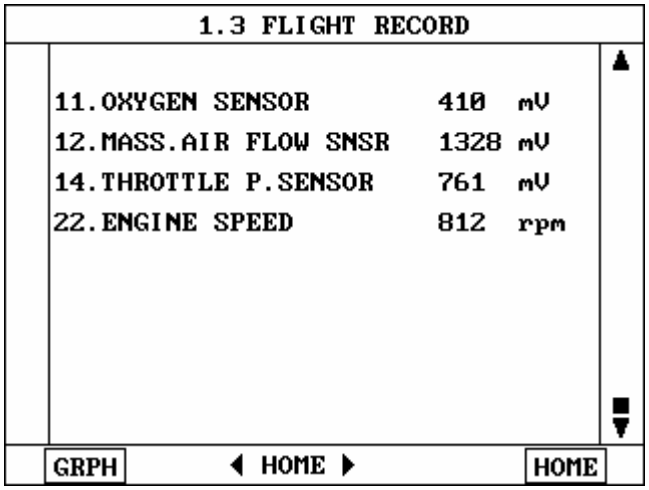
SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.

When TRIG key is depressed more than twice , only the latest TRIG key handled as trigger at trigger point.

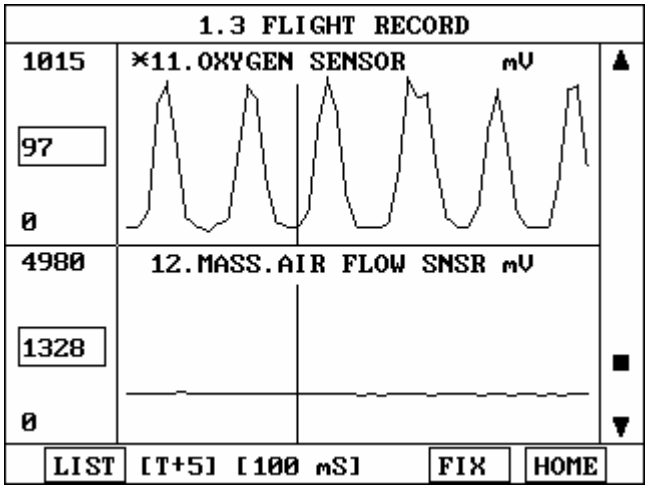
If END key or ESC key is depressed before TRIG key , that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 9 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
When two items are selection, a graphical view is as follows.



[Figure 10 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRREN DISPLAY THE DATE AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

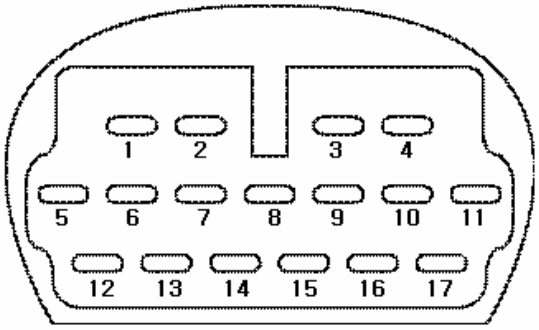
You can change sampled time index by ◄ or ► key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor reached the end of screen, screen will be moved as half page.

V. MAZDA VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. MAZDA 17P ADATPER(09910-39020)

Hiscan Main Body	24P	16P	MAZDA17P	17P
BATTERY (+)	16/18	16	BATTERY (+)	4
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	SIGNAL GROUND	5
BUS +LINE(SAE-J1850)	2	2	BUS +LINE(SAE-J1850)	11
BUS -LINE(SAE-J1850)	10	10	BUS -LINE(SAE-J1850)	17
L-LINE(ISO-9141-2)	15/24	15	L-LINE(ISO-9141-2)	3,16,12,13,14
DIAGNOSIS CONTROL			DIAGNOSIS CONTROL	
K-LINE(ISO-9141-2)	7/22	7	K-LINE(ISO-9141-2)	1
COMM. CHANNEL 0			MPI	
COMM. CHANNEL 6	6	6	9	
COMM. CHANNEL 7	1	1	TCU	2
COMM. CHANNEL 8	3	3	ECS	6
COMM. CHANNEL 1	8	8	ABS	7
COMM. CHANNEL 2	9	9	ASC	10
COMM. CHANNEL 3	11	11	A/C	8
COMM. CHANNEL 4	12	12	A/BAG	9
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1 : 17 PIN CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

For vehicles with 16 pin Data Link Connector power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC CABLE 16 to the Hi-scan Pro and the vehicle data link terminals is all that required.

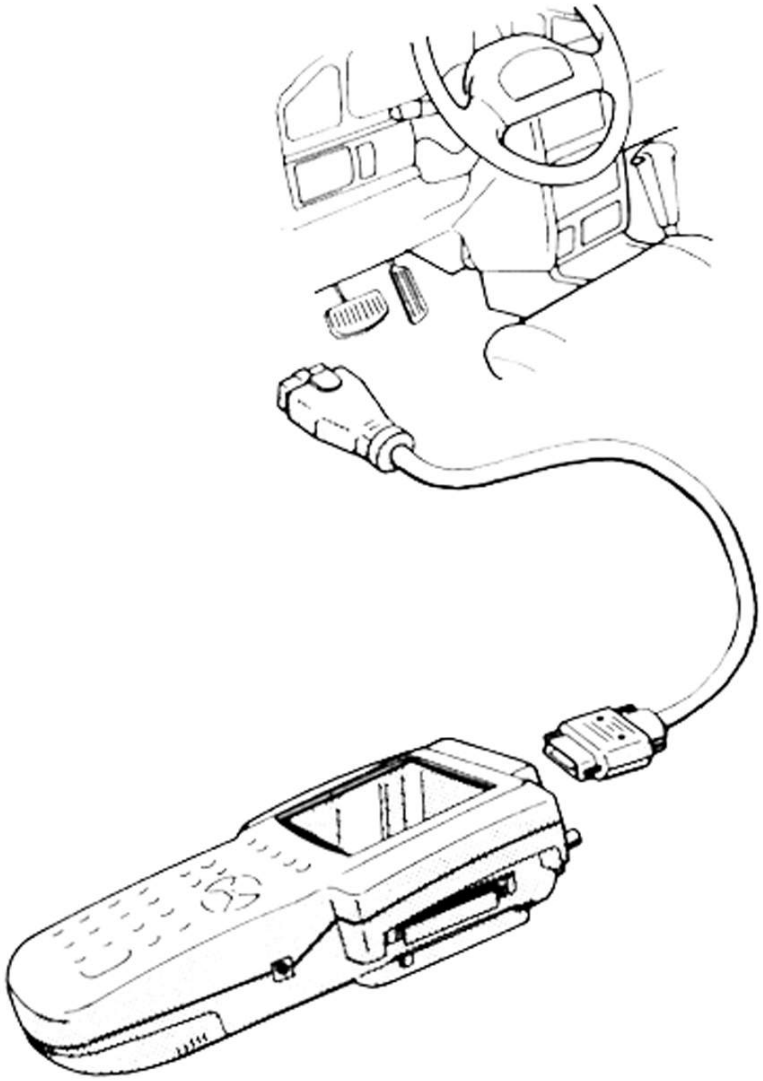
However, only the latest generation of vehicles for US market(96 and on) uses the 16-pin Data Link Connector.

For earlier vehicles and Japan domestic vehicles with 3pin connector, diagnostic connector can be found in the driver or passenger side cabin underneath the knee bolster.

After 96, vehicles for outside of Japanese market are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Hi-scan Pro data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.

NOTICE: Vehicles with 16 pins ODB-II diagnostic connector, refer to 'IV. CARB OBD-II DIAGNOSIS' section in this operation guide.
Current Data and Flight Record function may not be supported depends on vehicle.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLE AND SYSTEM SELECTION

3-1. OPERATION FLOW

TOP MENU

NON KOREAN VEHICLE

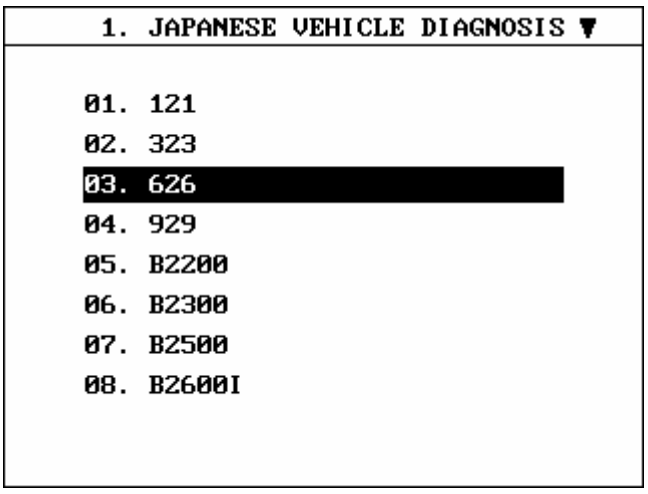
JAPANESE VEHICLE DIAGNOSIS

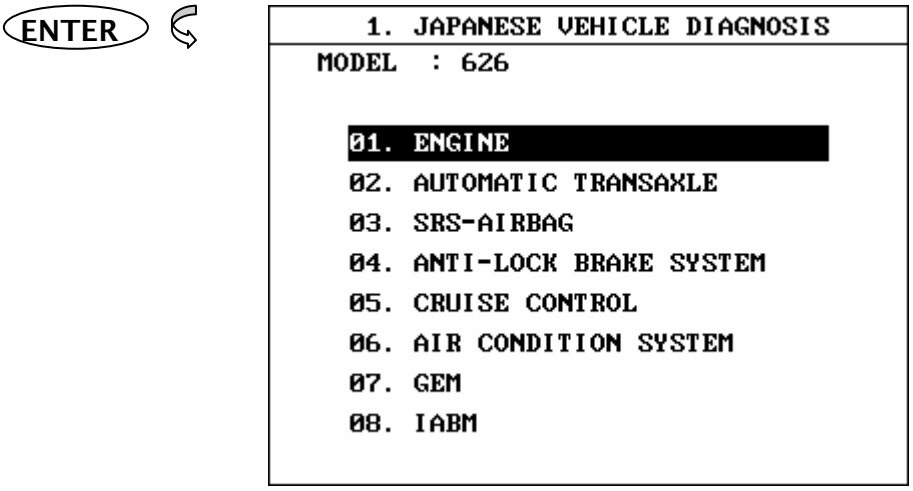
MAZDA

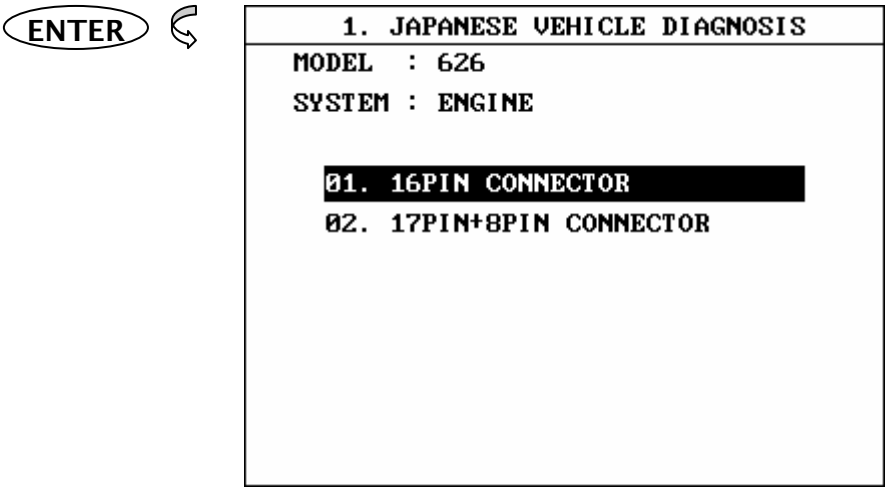
0.1 INITIAL SCREEN

01. VEHICLE DIAGNOSIS

ENTER







[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Hi-scan Pro, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER , or by using the numeric keypad to select the appropriate option number and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

01. INITIAL SCREEN

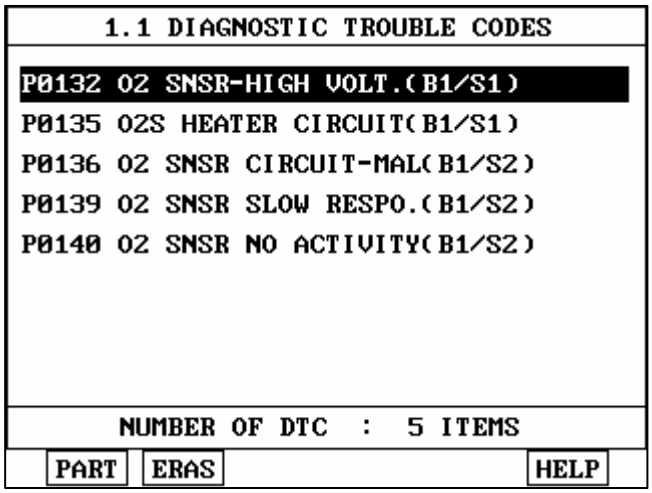
01

VEHICLE AND SYSTEM SELECTION

Refer to “Selecting Vehicle Mode”

DIAGNOSTIC TROUBLE CODES

ENTER



PART → NOT SUPPORTED

ERAS → 1.1.2 ERASE FAULT CODE

HELP → NOT SUPPORTED

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

EARS This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The YES or NO key should be used to confirm or cancel the request to clear the current DTC.

To erase the MIL type DTCs, disconnect the battery terminal for 15 second or more.

CAUTION : Any changes or modifications in construction of
This device which is not expressly approved the party
Responsible for compliance could void the user`s authority
To operate the equipment.

NOTE : This equipment has been tested and found to
Comply with the limits for a class A digital device, pursuant
To part 15 of the FCC Rules. The limits are designed to
Provide reasonable protection against harmful interference
When the equipment is operated in commercial
Environment. This equipment generates, uses, and can
Radiate radio frequency energy and, if not installed and
Used in accordance with instruction manual, may cause
Harmful interference to radio area is likely to cause harmful
Interference in which case the user will be required to
Correct the interference at his own expense.

Safety Precautions

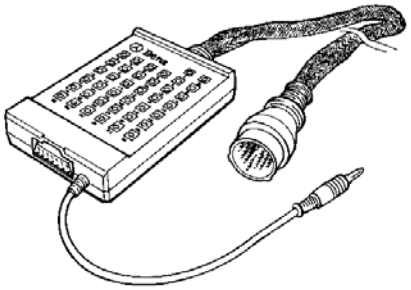
This equipment described in this manual is intended for Used only by qualified personnel. Safe and effective use Of this equipment is dependent upon the operator Following normally accepted safety practices and Procedures in conjunction with the special requirements Detailed in this manual. Specific warning and cautionary Statements will be found, where applicable, throughout This manual.

Where necessary, the WARNING statements and ICON Will be described this guide.

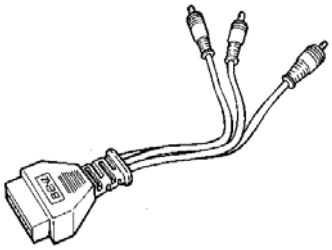
WARNING identifies conditions or actions which may Damage Scan Tool or the vehicle.

DLC Adapters

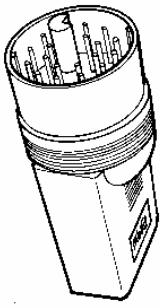
The DLC adapters are for vehicles that do not have an OBD-Ⅱ 16-pin data link connector (DLC). The adapters connect to the standard DLC cable`s 16-pin connector and then to the vehicle`s DLC or other data link terminal. The adapter used depends on the vehicle being tested. The following adapters are included with the scan tool:



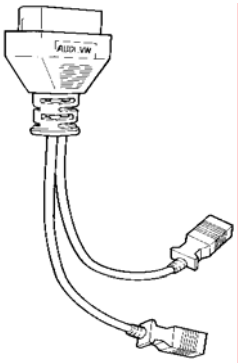
(BENZ 38 PIN ADAPTOR)



(BENZ 3 PIN ADAPTOR)



(BMW 20 PIN ADAPTOR)



(AUDI/VW 2+ 2 PIN ADAPTOR)

EUROPEAN VEHICLE DIAGNOSIS

Ⅰ. MERCEDES-BENZ VEHICLE DIAGNOSIS

Ⅱ. BMW VEHICLE DIAGNOSIS

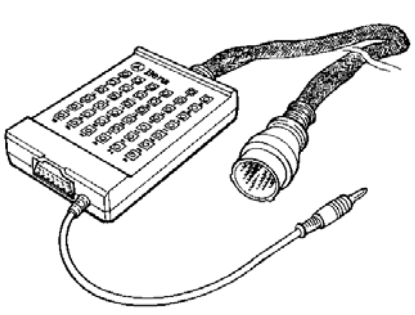
Ⅲ. AUDI-WV VEHICLE DIAGNOSIS

Ⅰ. MERCEDES-BENZ VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. BENZ ADAPTER 38P(10100-30301)

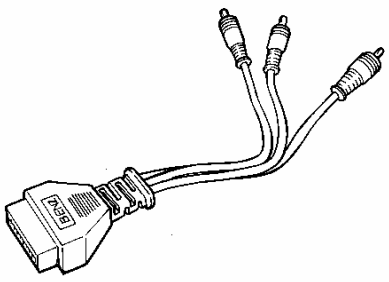
Scan Tool Main Body	DLC cable		BENZ-38	PIN
	24P	16P		
BATTERY (+)	16/18	16	BATTERY (+)	16
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	GROUND	5
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15		
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	K-LINE	7
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6		
COMM. CHANNEL 7	1	1		
COMM. CHANNEL 8	3	3		
COMM. CHANNEL 1	8	8		
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1: 38 PIN CONNECTOR AND PIN ASSIGNMENT]

1-2 BENZ ADAPTER 3P(10100-30302)

Scan tool Main Body	DLC cable		BENZ-3	3P
	24P	16P		
BATTERY (+)	16/18	16	BATTERY (+)	RED
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	GROUND	BLACK
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15		
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	K-LINE	YELLOW
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6		
COMM. CHANNEL 7	1	1		
COMM. CHANNEL 8	3	3		
COMM. CHANNEL 1	8	8		
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1: 3 PIN CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

It supports 4 type diagnosis connectors in Mercedes vehicle.

BENZ 3 PIN ADAPTOR can diagnose Benz's 8 pole, 16 pole type connectors. BENZ 38 PIN ADAPTOR can diagnose Benz's 38 pin type connectors. And then if the vehicle is equipped with 16 pin OBD-II DLC, connect the DCL CABLE 16 directly to the vehicle.

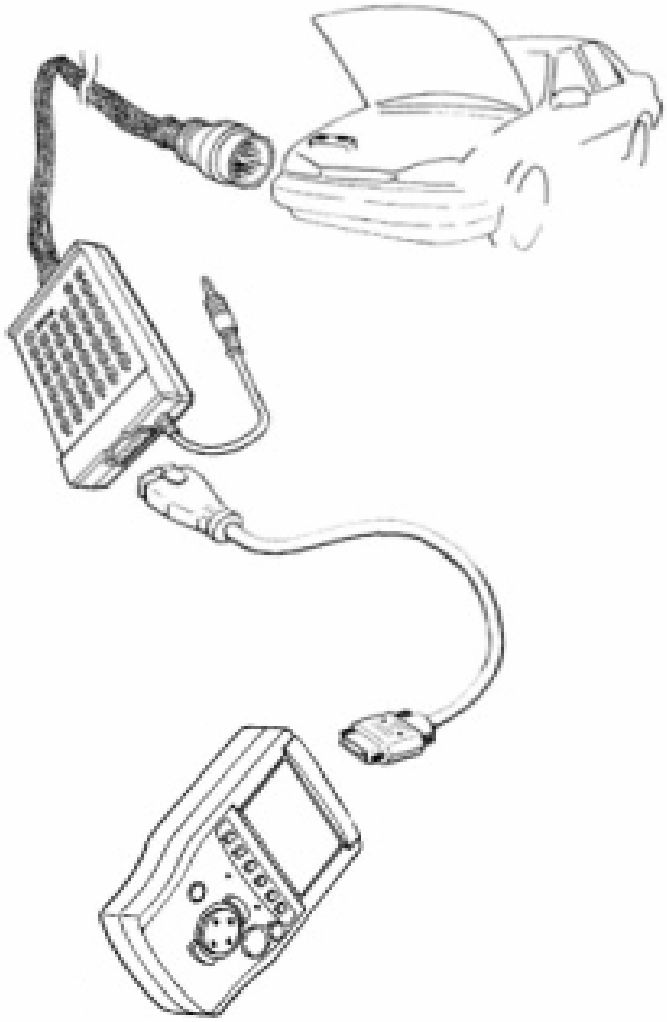
You can check the methods of connecting with vehicle on the Scan Tool screen.

The vehicle with 16 pole, 38 pin, 16 pin type diagnosis connector doesn't require additional power supply, but for 8 pole type, additional power supply is required.

The vehicles with 8 pole, 16 pole, 38 pin diagnostic connector can be found in the engine bay.

The vehicles are usually equipped with ODB-II connector and can be found underneath the driver's side or passenger side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Scan Tool data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLES AND SYSTEM SELECTION

3-1. OPERATION FLOW

INITIAL SCREEN

↳ VEHICLE DIAGNOSIS

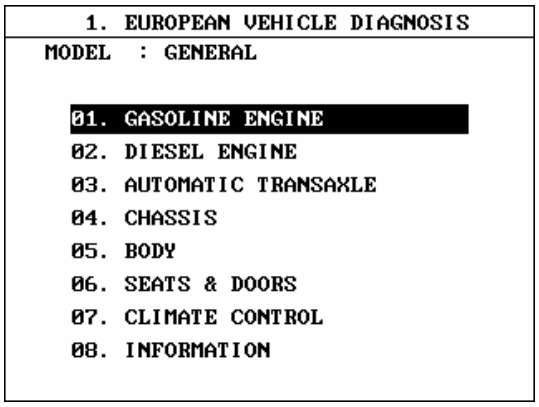
↳ EUROPEAN

↳ INITIAL SCREEN

↳ 0.1 EUROPEAN VEHICLE DIAGNOSIS

↳ 0.1 BENZ

ENTER ↳



ENTER

```
    1. EUROPEAN VEHICLE DIAGNOSIS ▼
  MODEL  : BENZ
  SYSTEM : GASOLINE ENGINE

    01. 4 CYL ME, PMS, HFM
    02. 6 CYL ME, PMS, HFM, LH
    03. V6 CYL ME, HFM, LH
    04. V8 CYL ME, LH
    05. V12 CYL ME1RE, LH1, ME
    06. V12 CYL ME1LI, LH2
    07. BM/GM(BASE MODULE)
    08. EA(ELEC. ACCELERATOR)
```

ENTER

```
    1. EUROPEAN VEHICLE DIAGNOSIS ▼
-------------------------------------
  38 PIN   ->   (YELLOW)       4
-------------------------------------
 16 POLE        (RED)       B+ or 16
   or      ->   (BLACK)        1
 8 POLE         (YELLOW)       8
-------------------------------------
If the vehicle is equipped with 16 pin
OBD-II type DLC, connect the DLC CABLE
16 directly to the vehicle.
And then press enter key.
```

[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Scan Tool, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER.

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

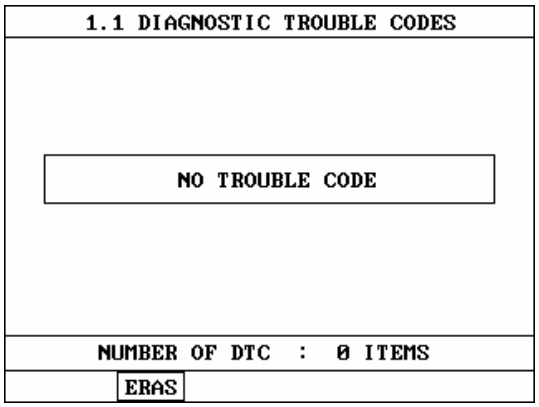
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

0.1 DIAGNOSTIC TROUBLE CODES

ENTER



ERAS 1.1.2 ERASE FAULT CODE

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

ERAS This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The ENTER or ESC key should be used to confirm or cancel the request to clear the current DTC.

To erase the MIL type DTCs, disconnect the battery terminal for 15 second or more.

5. CURRENT DATA

5-1. OPERATION FLOW

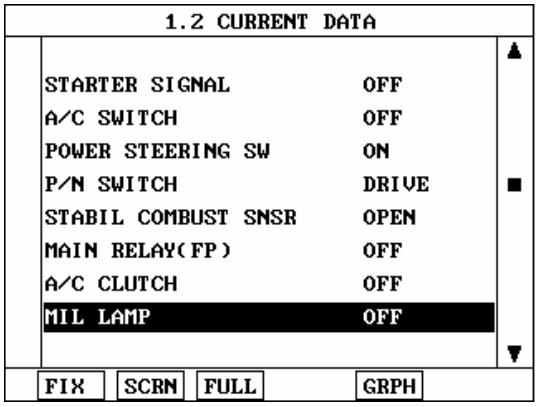
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

0.2 CURRENT DATA

ENTER



FIX → 1.2.1 FIX ITEM

SCRN → 1.2.2 SPLIT SCREEN

FULL → 1.2.3 DISPLAY ALL ITEMS

GRPH → 1.2.5 GRAPHICAL DISPLAY

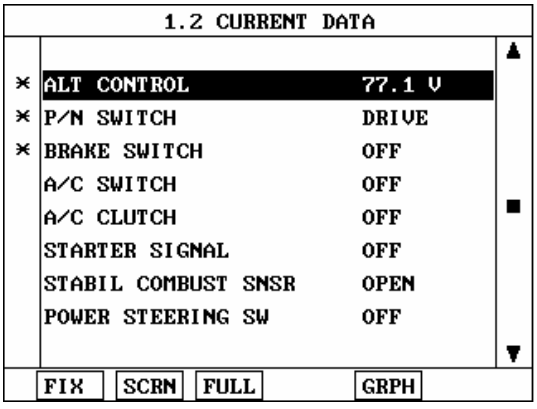
[FLOW 3 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the data is possible by means of the (UP) / (DOWN) keys and more detailed data is available by Using the soft function keys as follows :

FIX — Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another.



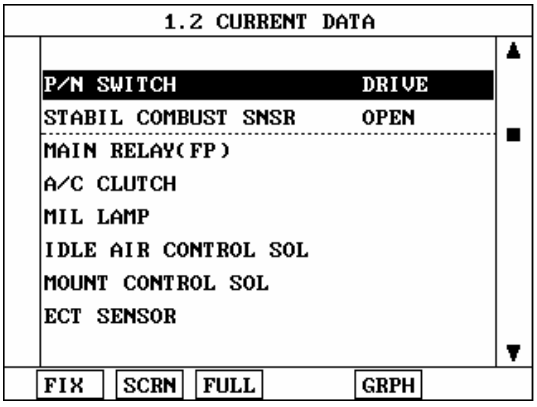
[Figure 2 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example, illustrated by figure 2, is fixed as denoted by the asterisk to the left of the item number.

SCRN Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Scan Tool update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 3, only 2 'active' data items are selected



[Figure 3 : Split screen]

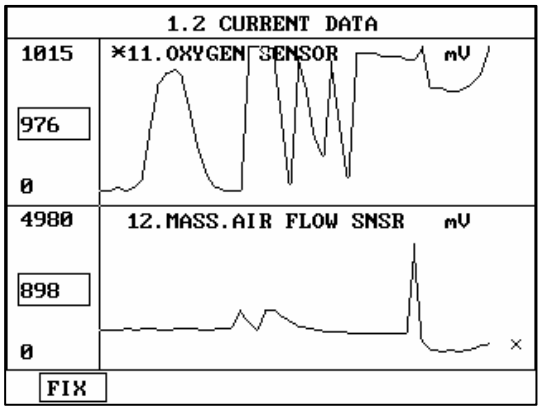
FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 4. The component description displayed will be abbreviated when this mode is used. The date may be scrolled by use of the UP / DOWN key.

1.2 CURRENT DATA					
O2S	136	mV	A/C SWITCH	OFF	
MAF SENSOR	1308	mV	TR. SWITCH	P,N	
IAT SENSOR	132	°F	ENG. LOAD	41.9	%
TP SENSOR	742	mV	INJECTION	2.0	mS
BATT. VOLT	14.1	V	IGN.TIMING	BTDC 9	°
CRANK SIG.	OFF		ISC DUTY	35.2	%
ECT SENSOR	203	°F	A/C RELAY	OFF	
ENG. SPEED	812	rpm	O2S-REAR	19	mV
VSS	0	MPH	CLOSE LOOP	CLSD LOOP	
CTP SWITCH	ON		LONG-TERM	-7.0	%
PSP SWITCH	OFF		SHORT-TERM	-2.3	%

[Figure 4 : DISPLAY ALL ITEMS]

GRPH Where more 2 'active' data items have been selected using the FIX key, pressing the GRPH key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 5.

FIX Holding one item of two. When the UP / DOWN keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 5 : CURRENT DATA (GRPH)]

6. FLIGHT RECORD

6- 1 OPERATION FLOW

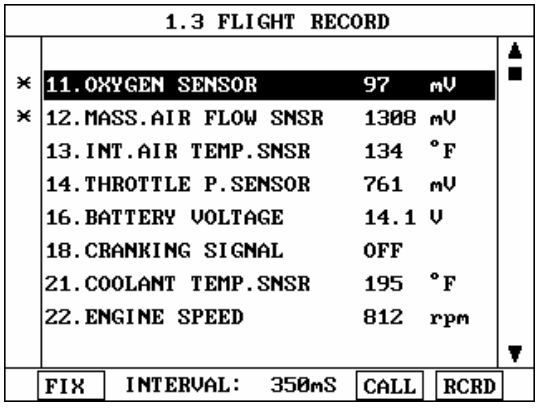
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

0.3 FLIGHT RECORD

ENTER



FIX → 1.3.1 FIX ITEM

CALL → 1.3.2 CALL MEMORIZED DATA

RCRD → 1.3.3 START RECORD

[FLOW 4 : FLIGHT RECORD MODE IN/OUT FLOW]

6-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Scan Tool.

By using the UP / DOWN key, the display may be scrolled.

The function of the FLIGT RECORD is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Scan Tool screen. The maximum number of items, which may be selected for FLIGHT RECORD functions, is 8.

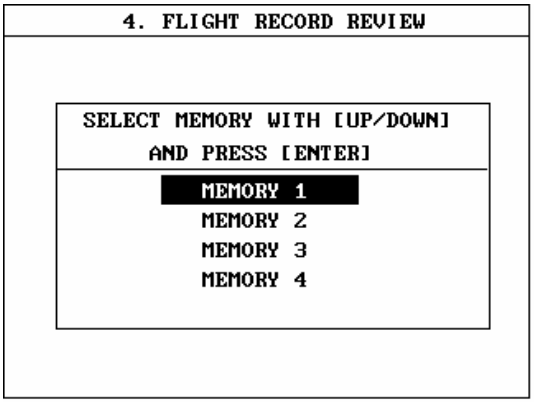
The data sampling time interval is displayed at the center of the bottom line of the screen.

CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system, which differs from the current vehicle and system selection, or if no recording data, the following message will be displayed.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA.

The message is displayed on the screen as shown in Figure 6. The user can select one of the items to read.



[Figure 6 : FLIGHT RECORD (CALL)]

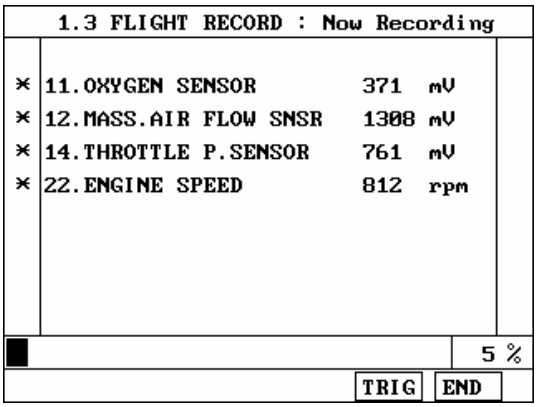
MEMORY 1 and MOMORY 4, each memory indicates internal memory of Scan Tool.

If data is in the selected memory, stored data will be displayed , But the following message will be displayed if the ID of the stored record is differ from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR
DIFFERENT SYSTEM DATA

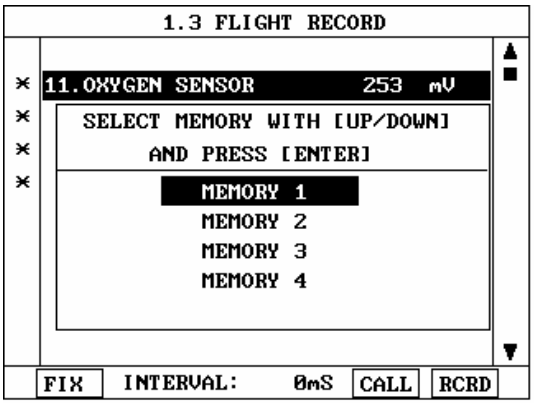
RCRD end when either the END or ESC key is depressed. During the recording function, the screen takes the appearance of that illustrated in [figure 7]

If the quantity of data being recorded exceeds the capacity of the Scan Tool memory, the first recorded data of the current session will be progressively overwritten as recording continues



[Figure 7 FLIGHT RECORD (RECORDING)]

The message is displayed on the screen as in the following figure.



[Figure 8 : FLIGHT RECORD (RCRD)]

MEMORY 1 and MEMORY 4, each memory indicates internal memory of Scan Tool.

If user selects memory, [Figure 8] is display. If this key is pressed without selected items, the following message is displayed.

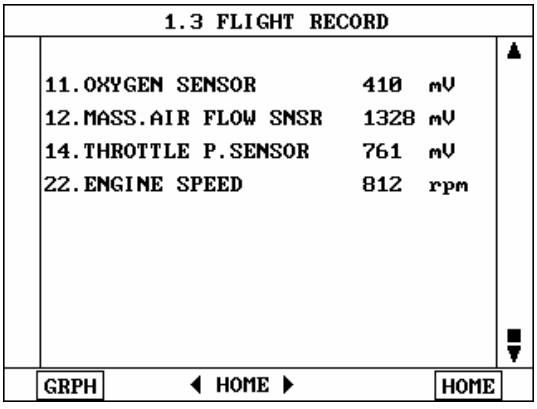
SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.

When TRIG key is depressed more than twice , only the latest TRIG key handled as trigger at trigger point.

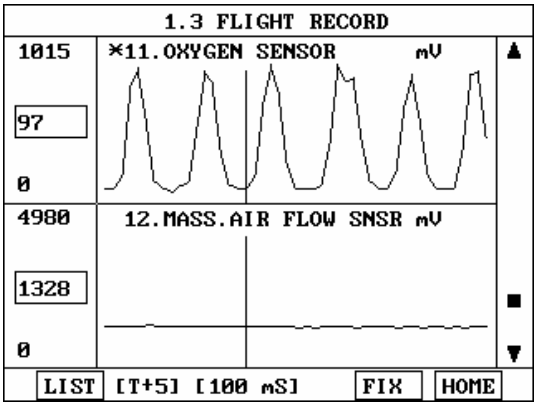
If END key or ESC key is depressed before TRIG key , that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 9 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
If the two items are selected, a graphical view is as follows.



[Figure 10 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRREN DISPLAY THE DATE AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

You can change sampled time index by ◄ or ► key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor is arrived end of screen, screen will be moved as half page.

7. ACTUATION TEST

7-1 OPERATION FLOW

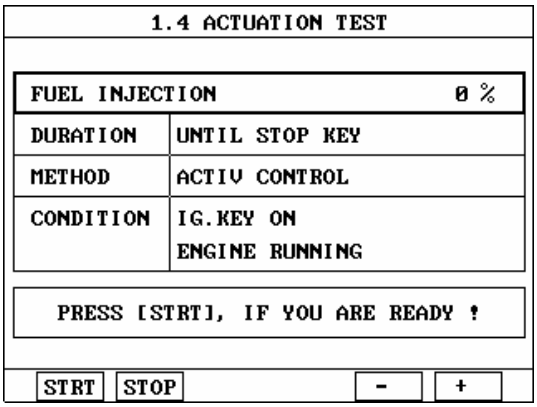
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

04. ACTUATION TEST

ENTER



START

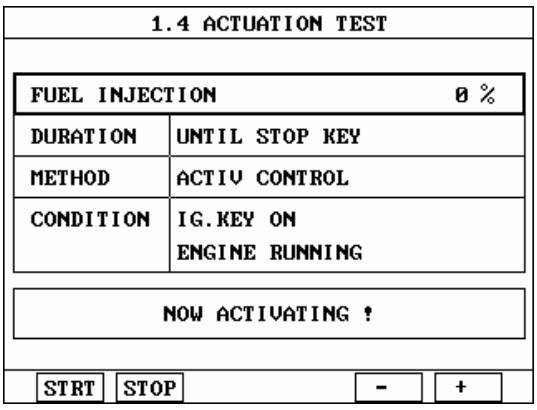
START ACTIVATING

[FLOW 5 : ACTUATION TEST MODE IN/OUT FLOW]

7-2 MODE APPLICATION

The ACTUATION TEST mode allows certain actuators to be forcibly driven by SCAN TOOL but this mode can be supported according to the selected vehicle. The illustration of a typical screen is shown in [figure 11] .

The actuator to be driven can be changed by using the UP / DOWN key to scroll through the list.



[Figure 11 : ACTUATOR DRIVING]

The test must be performed with the vehicle in the state indicated by the CONDITION statement on the screen .in this illustration given, for example, the ignition key must be turned “on”, and the engine be running.

The duration of the test will either be fixed by CARMAN SCAN I and indicated on the screen or the duration dialogue will indicate

UNTIL STOP KEY

To begin an actuator test, the STRT key should be pressed. For fixed duration test, the message

COMPLETED!

will be display after an acknowledged code has been received from the vehicle. For tests of no fixed duration, the message

NOW ACTIVATING

Will be displayed once an acknowledged code has been received from the vehicle and until the STOP key is pressed. In both types of test, the message

TEST FAILURE!

Will be displayed if no acknowledge code is received from the Vehicle. The messages will be displayed for 0.5 seconds and Then disappeared.

8. ENGINE MANAGEMENT SYSTEM (USA MODELS ONLY)

124 Chassis – E – Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
1993-1994	300 E 2.8	EA28	124.028	HFM
1993-1995	300 E/E 320	EA32	124.032	HFM
1992-1995	400 E/E 420	EA34	124.034	LH***
1993-1995	500 E/E 500	EA36	124.036	LH***
1993-1994	300CE	EA52	124.052	HFM
1993-1994	300CE/E 320(cabrio)	EA66	124.066	HFM
1993-1995	300TE/E 20(wagon)	EA92	124.092	HFM

129 Chassis – SL – Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
1994-1996	SL 320	FA63	129.063	HFM
1997	SL 320	FA63	129.063	ME 2.1
1993-1995	500 SL/SL 500	FA67	129.067	LH***
1996-1997	SL 500	FA67	129.067	ME 1.0
1998	SL 500	FA68	129.068	ME 2.0
1993-1995	600 SL/SL 600	FA76	129.076	LH***
1996-2001	SL 600	FA76	129.076	ME 1.0

140 Chassis – S –Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
1992-1993	300 SE/S 320	GA32	140.032	LH***
1994-1996	S 320	GA32	140.032	HFM

* VIN letter designations are the 4th through 7th digits of the Vehicle Identification Number

** Vehicles without a “Check Engine” light do not have a DM control module

*** Vehicles that use LH fuel injection also have BM, DI, and EA control units that will store engine related codes.

Notes;

ME1.0, ME2.0, ME2.1, ME SIM4, ME 201(?) of fuel injection system can access

with ME menu on the scan tool.

140 Chassis – S-Class (Continued)

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection system
1997	S 320	GA32	140.032	ME 201
1994-1996	S 320 (long version)	GA33	140.033	HFM
1997	S 320 (long version)	GA33	140.033	ME 2.1
1992	400 SE	GA42	140.042	LH***
1993-1995	400 SEL / S 420	GA43	140.043	LH***
1996-1997	S 420	GA43	140.043	ME 1.0
1992-1995	500 SEL / S 500	GA51	140.051	LH***
1996-1999	S 500	GA51	140.051	ME 1.0
1992-1995	600 SEL / S 600	GA57	140.057	LH***
1996-1999	S 600	GA57	140.057	ME 1.0
1993-1995	500SEC/S500 coupe	GA70	140.070	LH***
1996-1999	S 500 / CL 500	GA70	140.070	ME 1.0
1993-1995	600SEC/S 600 coupe	GA76	140.076	LH***
1996-1999	S600coupe / CL 600	GA76	140.076	ME 1.0

163 Chassis – M-Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
1998-2000	ML 320	AB54	163.154	ME 2.0
2001-2002	ML 320	AB54	163.154	ME 2.8
1999-2000	ML 430	AB72	163.172	ME 2.0
2001-2002	ML 430	AB72	163.172	ME 2.8

* VIN letter designations are the 4th through 7th digits of the Vehicle Identification Number

** Vehicles without a “Check Engine” light do not have a DM control module

*** Vehicles that use LH fuel injection also have BM, DI, and EA control units that will store engine related codes.

Notes;

ME1.0, ME2.0, ME2.1, ME SIM4, ME 201(?) of fuel injection system can access with ME menu on the scan tool.

170 Chassis – CLK

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection system
1998-2000	SLK 230	KK47	170.447	ME 2.1
2001-2002	SLK 230	KK47	170.447	ME SIM 4
2001-2002	SLK 230			ME 2.8

202 Chassis – C-Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
1994-1996	C 220	HA22	202.022	HFM
1997-1998	C 230	HA23	202.023	ME 2.1
1999	C 230 Compressor	HA24	202.024	ME 2.1
1994-1996	C 280	HA28	202.028	HFM
1997-2000	C 280	HA29	202.029	ME 2.0

203 Chassis – C-class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
2001	C 240		203.061	ME 2.8
2001	C 320		203.064	ME 2.8
2002	C 230			Me SIM4

208 Chassis – CLK

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
1998-1999	SLK 320	LJ65	208.365	ME 2.0
1999	SLK 430	LJ70	208.370	ME 2.0
1999	SLK 320 Cabriolet	LK65	208.465	ME 2.0

* VIN letter designations are the 4th through 7th digits of the Vehicle Identification Number

** Vehicles without a “Check Engine” light do not have a DM control module

*** Vehicles that use LH fuel injection also have BM, DI, and EA control units that will store engine related codes.

Notes;

ME1.0, ME2.0, ME2.1, ME SIM4, ME 201(?) of fuel injection system can access

with ME menu on the scan tool.

210 Chassis – E-Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection system
1996-1997	E 300 Diesel	JF20	210.020	IFI
1998-1999	E 300 Turbo Diesel	JF25	210.025	IFI
1996	E 320	JF55	210.055	HFM
1997	E 320	JF55	210.055	ME 2.1
1998-1999	E 320	JF65	210.065	ME 2.0
1998-1999	E 430	JF70	210.070	ME 2.0
1996-1997	E 420	JF81	210.072	ME 1.0
1998-1999	E 320 4MATIC	JF82	210.082	ME 2.0
1998-1999	E 320 Wagon	JH65	210.265	ME 2.0
1998-1999	E 320 4MATIC Wagon	JH82	210.282	ME 2.0

215 Chassis – CL-Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection System
2001	CL 500		215.375	ME 2.8

220 Chassis – S-Class

Year	Sales Designation	VIN*	Chassis Number	Fuel Injection system
2000	S 430	NG70	220.170	ME 2.0
2001	S 430	NG70	220.170	ME 2.8
2000	S 500	NG75	220.175	ME 2.0
2001	S 500	NG75	220.175	ME 2.8
2000	S 600		220.175	ME 1.0
2001-2002	S 600		220.175	ME 2.7

* VIN letter designations are the 4th through 7th digits of the Vehicle Identification Number

** Vehicles without a “Check Engine” light do not have a DM control module

*** Vehicles that use LH fuel injection also have BM, DI, and EA control units that will store engine related codes.

Notes;

ME1.0, ME2.0, ME2.1, ME SIM4, ME 201(?) of fuel injection system can access

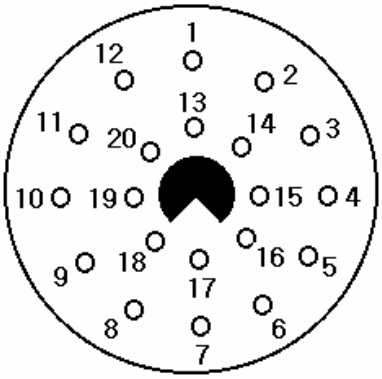
with ME menu on the scan tool.

Ⅱ. BMW VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. BMW ADAPTER (10100-30200)

Scan Tool Main Body	DCL cable		BMW 20PIN	PIN
	24P	16P		
BATTERY (+)	16/18	16	BATTERY (+)	14
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	GROUND	19
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15	RX	15
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	TX	17,20
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6	RESET	7
COMM. CHANNEL 7	1	1		
COMM. CHANNEL 8	3	3		16
COMM. CHANNEL 1	8	8		18
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1: 3 PIN CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

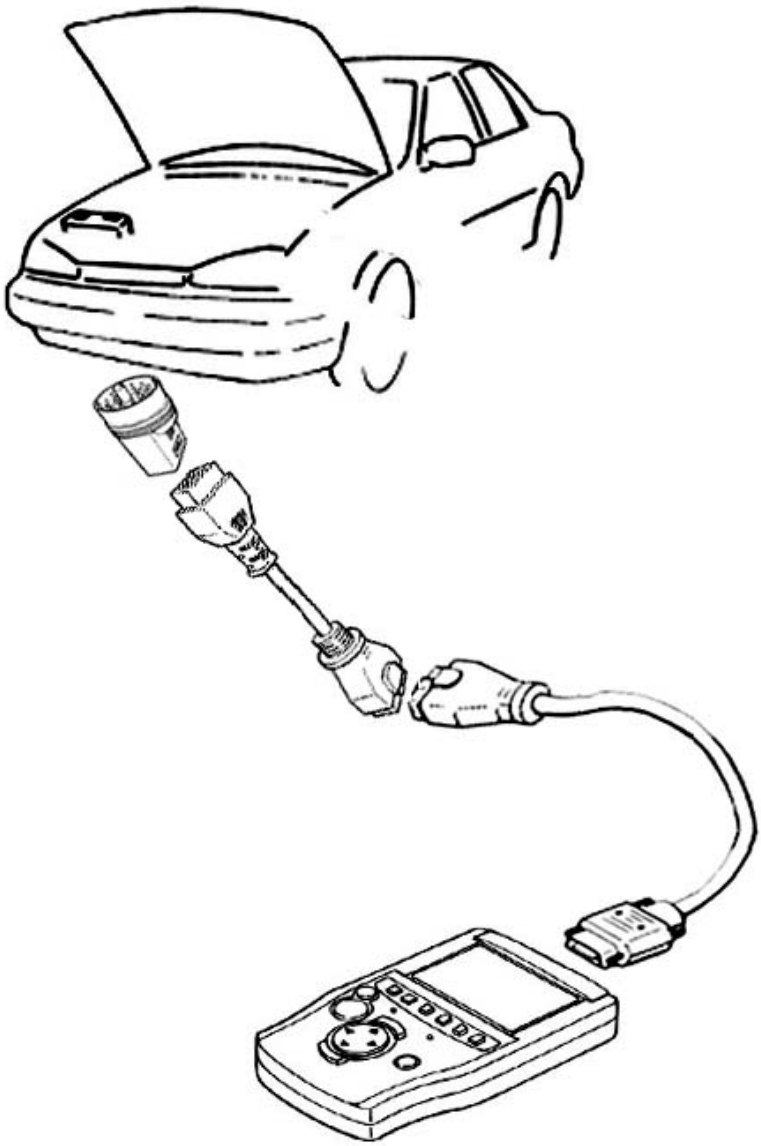
For vehicles with 16 pin and 20 pin Data Link Connector, power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC ADAPTER 16 pin to the Scan Tool and the vehicle data link terminals is all that required.

For earlier vehicles with 20pin connector, diagnostic connector can be found in the engine bay.

After 2000, vehicles are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

Once the power supply has been connected, the DLC CABLE 16 should be connected to Scan Tool data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.

NOTE;
If you can't communication with A/T system of earlier vehicles with 20pin connector, Please use the Interface adaptor II as like a [figure 1].



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLES AND SYSTEM SELECTION

3-1. OPERATION FLOW

INITIAL SCREEN

↳ VEHICLE DIAGNOSIS

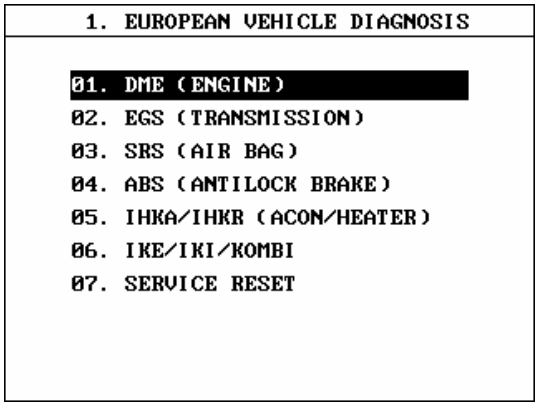
↳ EUROPEAN

↳ INITIAL SCREEN

↳ 0.1 EUROPEAN VEHICLE DIAGNOSIS

↳ 0.2 BMW

ENTER ↳



[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Scan Tool, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER.

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

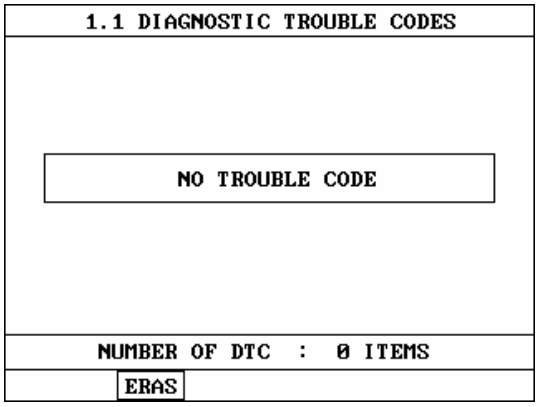
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

0.1 DIAGNOSTIC TROUBLE CODES

ENTER



ERAS 1.1.2 ERASE FAULT CODE

[FLOW 2 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

ERAS This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The ENTER or ESC key should be used to confirm or cancel the request to clear the current DTC.

5. CURRENT DATA

5-1. OPERATION FLOW

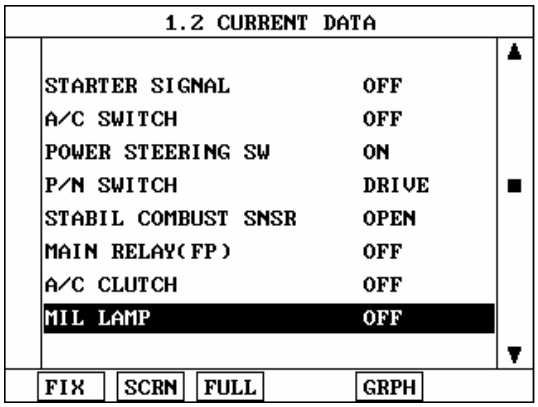
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

0.2 CURRENT DATA

ENTER



FIX → 1.2.1 FIX ITEM

SCRN → 1.2.2 SPLIT SCREEN

FULL → 1.2.3 DISPLAY ALL ITEMS

GRPH → 1.2.5 GRAPHICAL DISPLAY

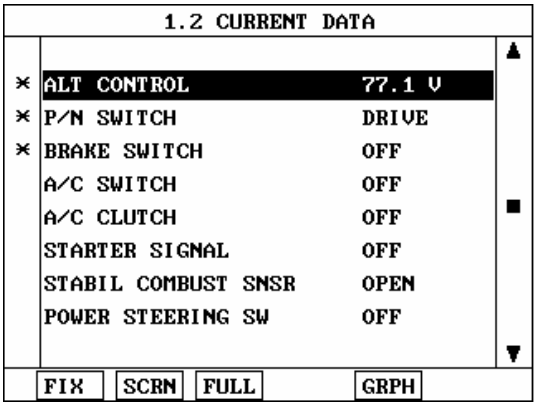
[FLOW 3 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the data is possible by means of the UP / DOWN keys and more detailed data is available by Using the soft function keys as follows :

FIX Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another.



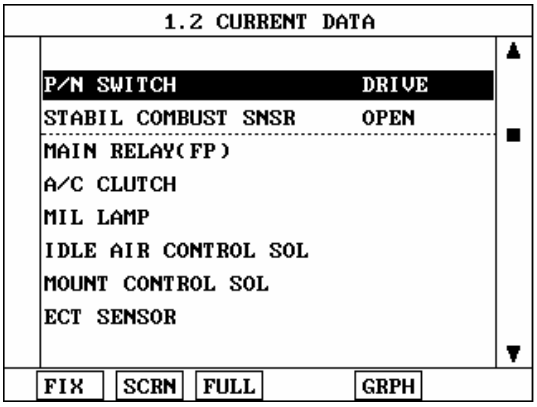
[Figure 2 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example, illustrated by figure 2, is fixed as denoted by the asterisk to the left of the item number.

SCRN Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Scan Tool update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 3, only 2 'active' data items are selected



[Figure 3 : Split screen]

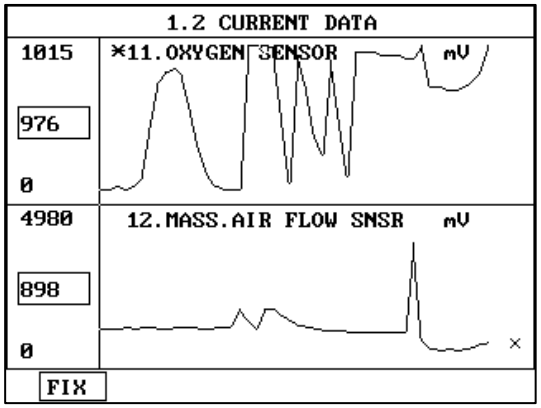
FULL Use of this key will cause maximum 22 data value to be displayed on the screen as illustrated in figure 4. The component description displayed will be abbreviated when this mode is used. The date may be scrolled by use of the UP / DOWN key.

1.2 CURRENT DATA					
O2S	136	mV	A/C SWITCH	OFF	
MAF SENSOR	1308	mV	TR. SWITCH	P,N	
IAT SENSOR	132	°F	ENG. LOAD	41.9	%
TP SENSOR	742	mV	INJECTION	2.0	mS
BATT. VOLT	14.1	V	IGN.TIMING	BTDC 9	°
CRANK SIG.	OFF		ISC DUTY	35.2	%
ECT SENSOR	203	°F	A/C RELAY	OFF	
ENG. SPEED	812	rpm	O2S-REAR	19	mV
VSS	0	MPH	CLOSE LOOP	CLSD LOOP	
CTP SWITCH	ON		LONG-TERM	-7.0	%
PSP SWITCH	OFF		SHORT-TERM	-2.3	%

[Figure 4 : DISPLAY ALL ITEMS]

GRPH Where more 2 'active' data items have been selected using the FIX key, pressing the GRPH key will cause the data for those items to be displayed in the form of a graph as illustrated in figure 5.

FIX Holding one item of two. When the UP / DOWN keys are used to scroll up and down the display, the item selected by FIX key does not move.



[Figure 5 : CURRENT DATA (GRPH)]

6. FLIGHT RECORD

6- 1 OPERATION FLOW

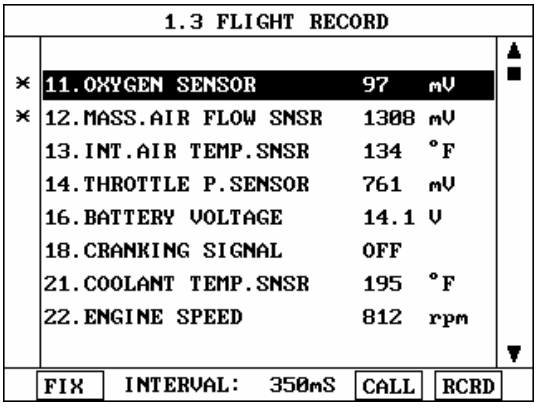
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

0.3 FLIGHT RECORD

ENTER



FIX → 1.3.1 FIX ITEM

CALL → 1.3.2 CALL MEMORIZED DATA

RCRD → 1.3.3 START RECORD

[FLOW 4 : FLIGHT RECORD MODE IN/OUT FLOW]

6-2 . MODE APPLICATION

The FLIGHT RECORD mode allows for the display and recording of data generated by the ECM as determined by the user of Scan Tool .

By using the UP / DOWN key, the display may be scrolled.

The function of the FLIGT RECORD is determined by the following soft function keys :

FIX This soft function key selects or releases the items for which data is to be recorded. The fixed are identified by means of an asterisk to the left of the item number on the Scan Tool screen. The maximum number of items, which may be selected for FLIGHT RECORD functions, is 8.

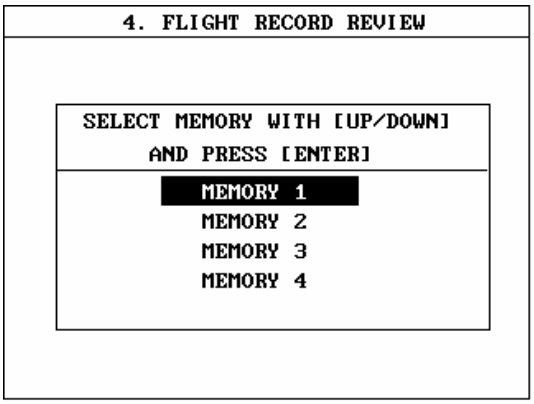
The data sampling time interval is displayed at the center of the bottom line of the screen.

CALL This function is used to replay the recorded data. Stored data is only overwritten when recording and therefore the same data can be viewed more than once/without being over written provided that no recording takes place.

If the stored file to be viewed relates to vehicle or system, which differs from the current vehicle and system selection, or if no recording data, the following message will be displayed.

NO RECORDED DATA OR DIFFERENT SYSTEM DATA.

The message is displayed on the screen as shown in Figure 6. The user can select one of the items to read.



[Figure 6 : FLIGHT RECORD (CALL)]

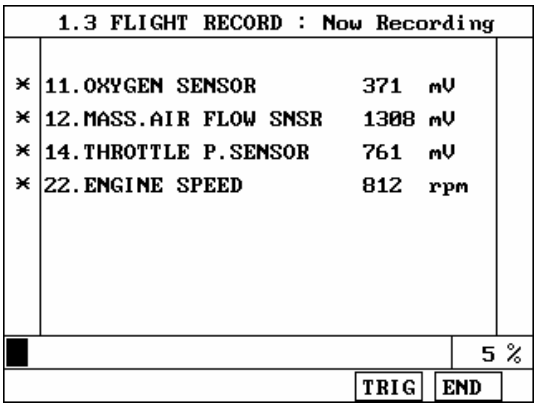
MEMORY 1 and MOMORY 4, each memory indicates internal memory of Scan Tool.

If data is in the selected memory, stored data will be displayed , But the following message will be displayed if the ID of the stored record is differ from that of current vehicle and system selection or if no recorded data.

NO RECORDED DATA OR
DIFFERENT SYSTEM DATA

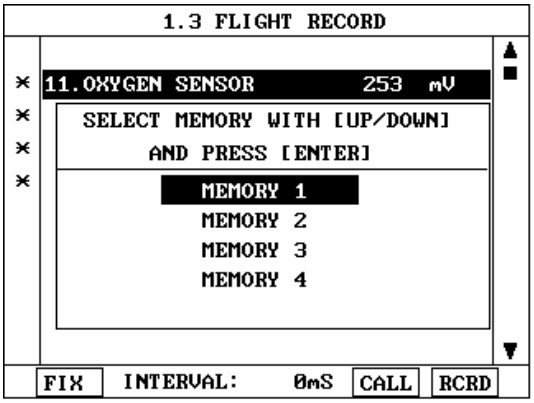
RCRD end when either the END or ESC key is depressed. During the recording function, the screen takes the appearance of that illustrated in [figure 7]

If the quantity of data being recorded exceeds the capacity of the Scan Tool memory, the first recorded data of the current session will be progressively overwritten as recording continues



[Figure 7 FLIGHT RECORD (RECORDING)]

The message is displayed on the screen as in the following figure.



[Figure 8 : FLIGHT RECORD (RCRD)]

MEMORY 1 and MEMORY 4, each memory indicates internal memory of Scan Tool.

If user selects memory, [Figure 8] is display. If this key is pressed without selected items, the following message is displayed.

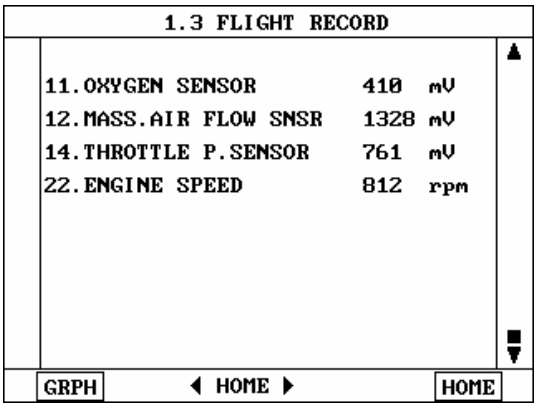
SELECT ITEM WITH[FIX]

TRIG This key is used to set trigger point in this recording process.

When TRIG key is depressed more than twice , only the latest TRIG key handled as trigger at trigger point.

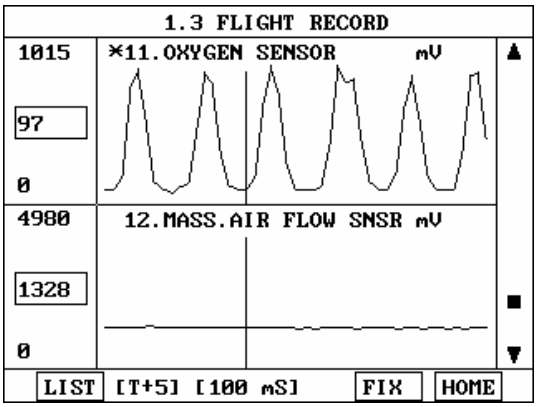
If END key or ESC key is depressed before TRIG key , that time becomes the trigger point and recording will be ended.

After finishing the recording, screen will display stored data values in a numeric data form. The screen example is as follows:



[Figure 9 : FLIGHT RECORD (NUMERIC)]

In this numerical data display, GRPH key is used to see Graphic views for the items recorded by FIX key operation.
If the two items are selected, a graphical view is as follows.



[Figure 10 : FLIGHT RECORD (GRAPH)]

[T+5] MEANS SAMPLED TIME INDEX, AND CURRENT SCRREN DISPLAY THE DATE AFTER 5TH SAMPLING INDEX FROM TRIGGER POINT.

You can change sampled time index by ◄ or ► key. In graphic display, current sampled time index position is displayed as vertical line cursor. If this cursor is arrived end of screen, screen will be moved as half page.

7. ACTUATION TEST

7-1 OPERATION FLOW

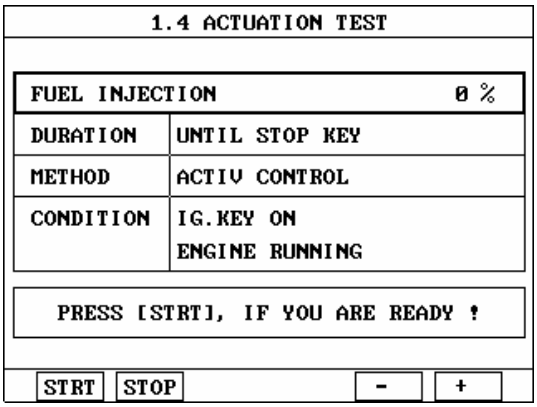
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1”

Select the Vehicle and system

04. ACTUATION TEST

ENTER



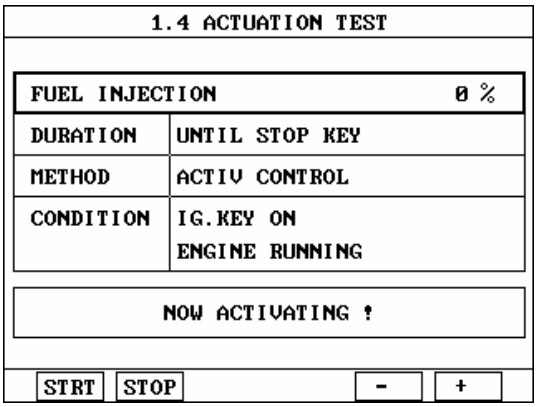
START START ACTIVATING

[FLOW 5 : ACTUATION TEST MODE IN/OUT FLOW]

7-2 MODE APPLICATION

The ACTUATION TEST mode allows certain actuators to be forcibly driven by SCAN TOOL but this mode can be supported according to the selected vehicle. The illustration of a typical screen is shown in [figure 11] .

The actuator to be driven can be changed by using the UP / DOWN key to scroll through the list.



[Figure 11 : ACTUATOR DRIVING]

The test must be performed with the vehicle in the state indicated by the CONDITION statement on the screen .in this illustration given, for example, the ignition key must be turned “on”, and the engine be running.

The duration of the test will either be fixed by CARMAN SCAN I and indicated on the screen or the duration dialogue will indicate

UNTIL STOP KEY

To begin an actuator test, the STRT key should be pressed. For fixed duration test, the message

COMPLETED!

will be display after an acknowledged code has been received from the vehicle. For tests of no fixed duration, the message

NOW ACTIVATING

Will be displayed once an acknowledged code has been received from the vehicle and until the STOP key is pressed. In both types of test, the message

TEST FAILURE!

Will be displayed if no acknowledge code is received from the Vehicle. The messages will be displayed for 0.5 seconds and Then disappeared.

8. ENGINE IDENTIFICATION

3Series

Chassis	Year	Model	Engine
E30	1990-1992	318i, is, ic	M42, 1.8 liter
	1987	325	M20, 2.7 liter
	1987-1992	325i, ix, ic	M20, 2.5 liter
E36	1992-1995	318i, is, ic, ti	M42, 1.8 liter
	1996-1999	318i, is, ic, ti	M44, 1.9 liter
	1991-1995	325i, is, ic	M50, 2.5 liter
	1996-1998	328i, is, ic	M52, 2.8 liter
	1995-1998	M3	S50, 3.0 liter
	1996-1998	Z3 Roadster	M44, 1.9 liter
	2001-2002	Z3	M54
E46	1999-2000	323i	M52TU, 2.5 liter
	1999-2000	328i	M52TU, 2.8 liter
	2001-2003	330i	M54 MS43, 3.0 liter
	2001-2003	325i	M54

5Series

Chassis	Year	Model	Engine
E28	1988	528e	M20, 2.7 liter
	1988	535i, is	M30, 3.4 liter
	1988	M5	S38, 3.5 liter
E34	1989-1990	525i	M20, 2.5 liter
	1991-1995	525i	M50, 2.5 liter
	1992-1995	525it	M50, 2.5 liter
	1989-1993	535i	M30, 3.5 liter
	1993-1995	530i, it	M60, 3.0 liter
	1994-1995	540i	M60, 4.0 liter
	1991-1993	M5	S38, 3.6 liter
E39	1997-1998	528i	M52, 2.8 liter
	1999-2000	528i	M52TU, 2.8 liter
	1999-2000	530i	M54 MS43, 3.0 liter
	2001-2003	540i	M62, 4.4 liter
	2001-2003	540i	M62TU, 4.4 liter

7Series

Chassis	Year	Model	Engine
E32	1988-1993	735i/iL	M30, 3.5 liter
	1988-1994	750 iL	M70, 5.0 liter
	1993-1994	740i/iL	M60, 4.0 liter
E38	1995-1996	740i/iL	M60, 4.0 liter
	1995-1998	750iL	M73, 5.4 liter
	1999-2001	750iL	M73TU, 5.4 liter
	1996-1998	740iL	M62, 4.4 liter
	1999-2001	740iL	M62TU, 4.4 liter

8Series

Chassis	Year	Model	Engine
E31	1991-1993	850i	M70, 5.0 liter
	1994	850Ci	M70, 5.0 liter
	1995-1997	850Ci	M73, 5.4 liter
	1994-1997	840Ci	M60, 4.0 liter
	1994-1995	850Csi	S70, 5.6 liter

X 5

Chassis	Year	Model	Engine
E53	2001-2003	X5 3.0i	M54 MS43,3.0 liter
	2000-2003	X5 4.4i	M62TU, 4.4 liter

9. TRANSMISSION IDENTIFICATION(THROUGH 2000)

Chassis	Year	Model/Engine	Transmission
3 Series			
(E36)	9/89 & newer	Diesel model	A4S 270R (THM-R1)
	2/91 & newer	E36 models, Japan only	A5S 300J (Jatco RLA)
	9/93-1996	318(non-U.S.) w/ M43 eng	A4S 310R (THM-R1)
	2/91-1995	318 with M42 engine	A4S 310R (THM-R1)
	5/94-1995	318ti with M42 engine	A4S 310R (THM-R1)
	1996-1998	318 with M44 engine	A4S 270R (THM-R1)
	10/90-1995	325 with M50 engine	A4S 310R (THM-R1)
	1996-1998	328 with M52 engine	A4S 270R (THM-R1)
	1996-1998	Z3 with M52 engine	A4S 270R (THM-R1)
(E46)	1999-2000	323 with M52TU engine	A5S 360R (sedan)
	1999-2000	328 with M52TU engine	A5S 360R (sedan)
5 series			
(E34)	9/89 & newer	Diesel models	A4S 270R (THM-R1)
	9/91 & newer	Japan only	A5S 300J (Jatco RLA)
	Until 11/89	535 With M30 engine	4HP 22/4HP 24 (early)
	11/89-1993	535 With M30 engine	4HP 22/4HP 24(late)
	9/89-1995	525 With M50 engine	AS4 310R (THM-R1)
	1993-1995	530 With M60/3.0 liter engine	A5S 310Z (5HP-18)
	11/92-1995	540 w/ M60/4.0 liter eng	A4S 560R (5HP-30)
(E39)	1997-1998	528 With M52 engine	A4S 270R (THM-R1)
	1999 & newer	528 With M52TU engine	A4S 270R (THM-R1)
	1/97-1998	540 With M62 engine	A5S 440Z
	1999 & newer	540 With M62TU engine	A5S 440Z
7 series			
(E32)	Until 11/89	735 With M30 engine	4HP 22/4HP 24 (early)
	11/89-1993	735 With M30 engine	4HP 22/4HP 24 (late)
	1992-1994	730 With M60/3.0 liter eng	A5S 310Z (5HP-18)
	6/92-1994	740 w/ M60/4.0 liter eng	A5S 560Z (5HP-30)
	11/89-1994	750 With M70 engine	4HP 22/4HP 24 (late)

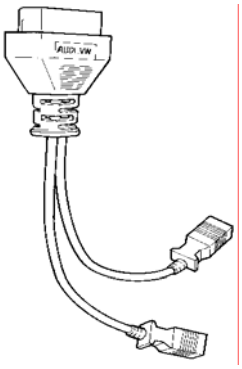
Chassis	Year	Model/Engine	Transmission
7 Series			
(E38)	1/97-1998	740 with M62 engine	A5S 440Z
	1999-2000	740 with M62TU engine	A5S 440Z
	1995-1998	750 with M73 engine	A5S 560Z
	1999-2000	750 with M73TU engine	A5S 560Z
8 Series			
(E31)	9/91-1996	840 with M60 engine	A5S 560Z (5HP-30)
	1997	840 with M62 engine	A5S 440Z
	11/89-1996	850 with M70 engine	4HP 22/4HP 24 (late)
	1990-1994	850 CSI, non-U.S.	4HP24 (EGS v.2.8 only)
	1997	850 with M73 engine	A5S 560Z (5HP-30)

Ⅲ. AUDI-VW VEHICLE DIAGNOSIS

1. DLC ADAPTER PART NUMBER

1-1. Audi/ VW ADAPTER (10100-10100)

Scan Tool Main Body	DLC Cable		AUDI/VW 4PIN	PIN
	24P	16P		
BATTERY (+)	16/18	16	BATTERY (+)	1
CHASSIS GROUND	4/20	4		
SIGNAL GROUND	5/23	5	GROUND	2
BUS +LINE(SAE-J1850)	2	2		
BUS -LINE(SAE-J1850)	10	10		
L-LINE(ISO-9141-2)	15/24	15	L-line	4
DIAGNOSIS CONTROL				
K-LINE(ISO-9141-2)	7/22	7	K-line	3
COMM. CHANNEL 0				
COMM. CHANNEL 6	6	6		
COMM. CHANNEL 7	1	1		
COMM. CHANNEL 8	3	3		
COMM. CHANNEL 1	8	8		
COMM. CHANNEL 2	9	9		
COMM. CHANNEL 3	11	11		
COMM. CHANNEL 4	12	12		
COMM. CHANNEL 5	13	13		
REED SIGNAL	14	14		



[TABLE 1: 3 PIN CONNECTOR AND PIN ASSIGNMENT]

2. CONNECTION METHOD

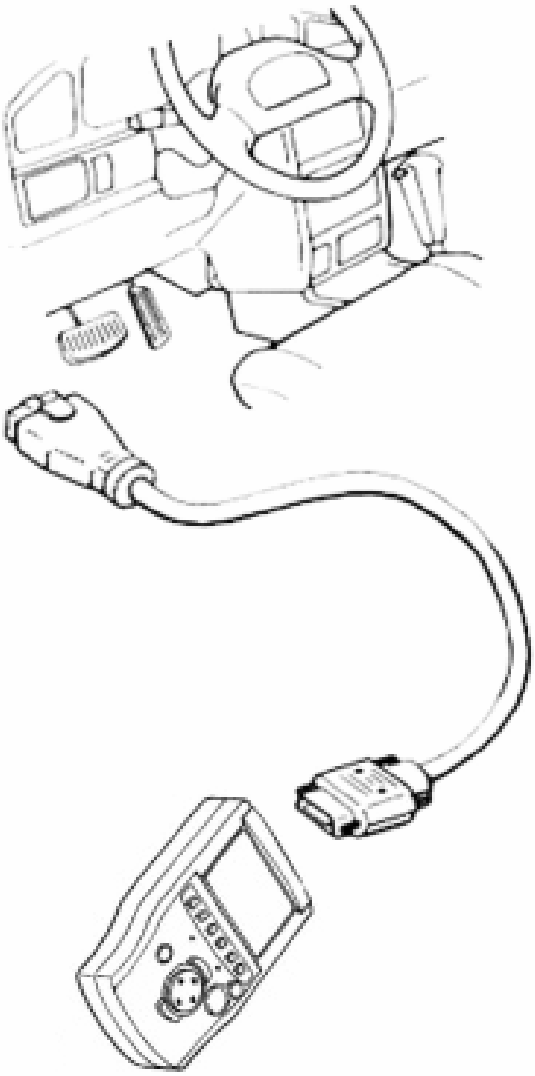
For vehicles with 16 pin and 4 pin Data Link Connector, power is supplied from the DLC terminal through the DLC CABLE. An additional power supply is not needed. For these vehicles, connection of the DLC ADAPTER 16 pin to the Scan Tool and the vehicle data link terminals is all that required.

For earlier vehicles with 4pin connector, diagnostic connector can be found in the engine bay.

After 2000, vehicles are usually equipped with ODB-II connector and can be found underneath the driver's side knee bolster.

Please refer to page "III-20,III-21" when you need the DCL location on vehicle.

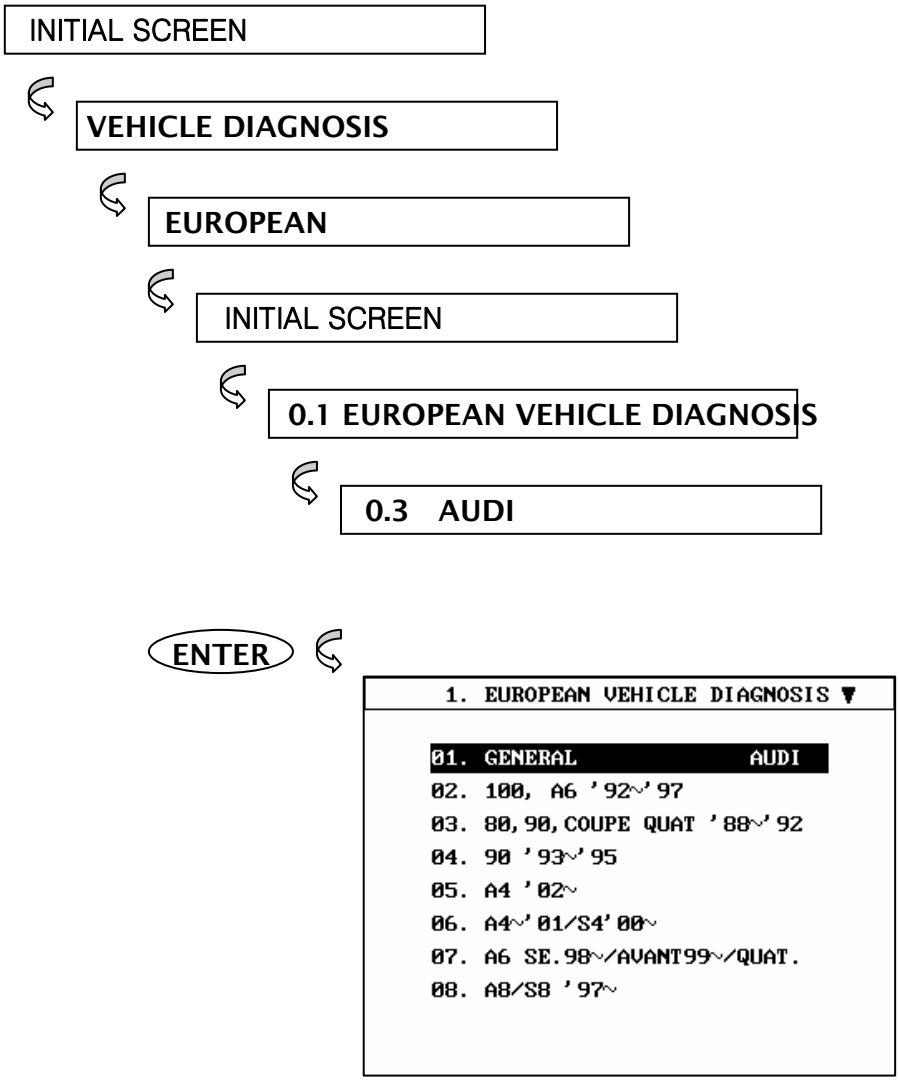
Once the power supply has been connected, the DLC CABLE 16 should be connected to Scan Tool data link terminal and the DLC CABLE ADAPTER should be connected to the vehicle data link terminal, if required, and the DLC CABLE 16.



[Figure 1 VEHICLE DIAGNOSIS MODE CONNECTION]

3. VEHICLES AND SYSTEM SELECTION

3-1. OPERATION FLOW



[FLOW 1 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

INITIAL SCREEN

↳ VEHICLE DIAGNOSIS

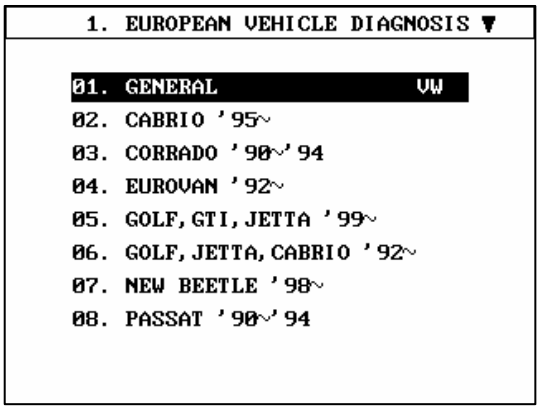
↳ EUROPEAN

↳ INITIAL SCREEN

↳ 0.1 EUROPEAN VEHICLE DIAGNOSIS

↳ 0.4 VW

ENTER ↳



[FLOW 2 : VEHICLE AND SYSTEM SELECTION SUB-MENU IN/OUT FLOW]

3-2. BASIC APPLICATION

Having connected and turned on Scan Tool, the vehicle and systems 1 and 2 selections must be made from the [1.0 VEHICLE DIAGNOSIS] screen.

The support functions differ from vehicle to vehicle and therefore the correct selection must be made. Selection can be made by scrolling up or down the screen and pressing ENTER .

Selection is made in the order of VEHICLE, SYSTEM 1, and SYSTEM 2.

4. DIAGNOSTIC TROUBLE CODES

4-1. OPERATION FLOW

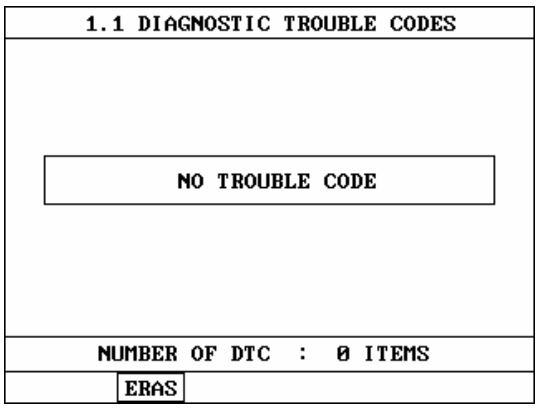
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1 or FLOW 2”

Select the Vehicle and system

0.1 DIAGNOSTIC TROUBLE CODES

ENTER



ERAS → 1.1.2 ERASE FAULT CODE

[FLOW 3 : DIAGNOSTIC TROUBLE CODES IN/OUT FLOW]

4-2. MODE APPLICATION

At this level, diagnostic trouble codes (DTC) are displayed for the selected ECM

Whenever the screen is opened or refreshed, the cursor moves to the beginning of the display and an audible warning will be given along with the number and description of the component from which the code has been generated.

By using the UP / DOWN key, the display may be scrolled.

ERAS This soft function key will clear the DTC currently held in the memory of the selected ECM. If this option is selected, a message requesting confirmation of the ERAS request will be displayed. The ENTER or ESC key should be used to confirm or cancel the request to clear the current DTC.

Notes;

Usually, vehicles of AUDI/VW's are support the DTCs without codes name. But these support DTC names are inputted base on the workshop manual. Please refer to workshop manual if not correct the DTC.

5. CURRENT DATA

5-1. OPERATION FLOW

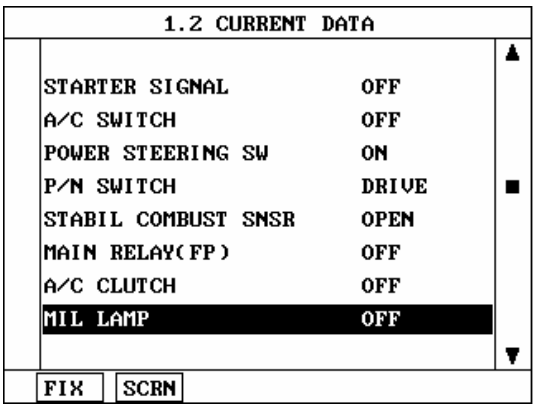
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1 or FLOW 2”

Select the Vehicle and system

0.2 CURRENT DATA

ENTER



FIX → 1.2.1 FIX ITEM

SCRN → 1.2.2 SPLIT SCREEN

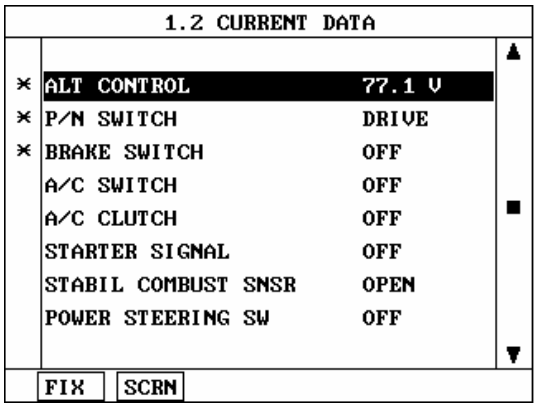
[FLOW 4 : CURRENT DATA MODE IN/OUT FLOW]

5-2. MODE APPLICATION

The sensor values and the ON/OFF state of the system switches of the selected ECM are displayed.

Scrolling up and down the data is possible by means of the UP / DOWN keys and more detailed data is available by Using the soft function keys as follows :

FIX **Executing the [I.2.I FIX ITEM] function that moves the item in inverted text to the top of the display. This item is held and does not move when the cursor keys are used to page through the display and therefore allows specific items to be compared directly to one another.**



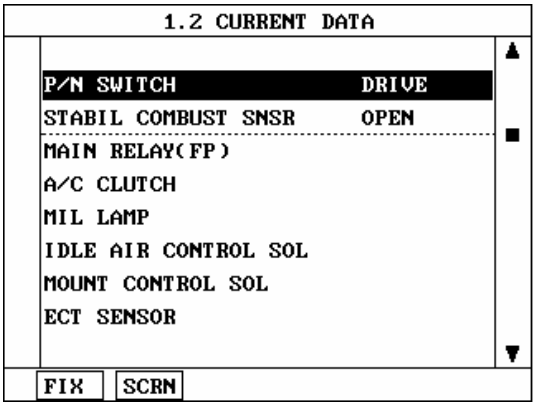
[Figure 2 : FIX ITEM]

A fixed item may be released by depressing the FIX key again.

In the example, illustrated by figure 2, is fixed as denoted by the asterisk to the left of the item number.

SCRN Pressing this key will change the number of displayed sensors or switch state which are 'active' from 8(MAX), 4, or 2(MIN). Where only 2 items are 'active', the rate at which Scan Tool update the display data will be faster than where a higher number of 'active' items are selected.

In the example illustrated by figure 3, only 2 'active' data items are selected



[Figure 3 : Split screen]

Notes;

Usually, vehicles of AUDI/VW's are support the current data values without items name. But these support current items are inputted base on the workshop manual. Please refer to workshop manual if no vehicle name on the menu or not correct the current data.

6. ECU ROM ID

6- 1 OPERATION FLOW

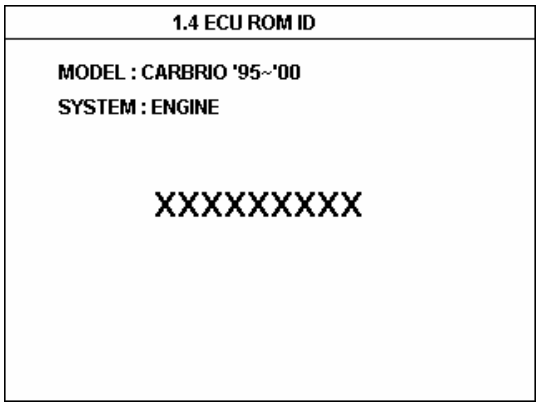
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1 or FLOW 2”

Select the Vehicle and system

0.4 ECU ROM ID

ENTER



[FLOW 5 : ECU ROM ID MODE IN/OUT FLOW]

6-2 . MODE APPLICATION

For AUDI / VW vehicles, the ECU ROM ID check option lets you view information about the engine, automatic transaxle, ABS, air bag, instrument cluster and so on.

The [FLOW 5] screen is only an example. Actual screens vary based on the vehicle and ECM being tested.

When finished viewing the screen, use the ESC key to return to previous screens.

7. BASIC SETTING

7- 1 OPERATION FLOW

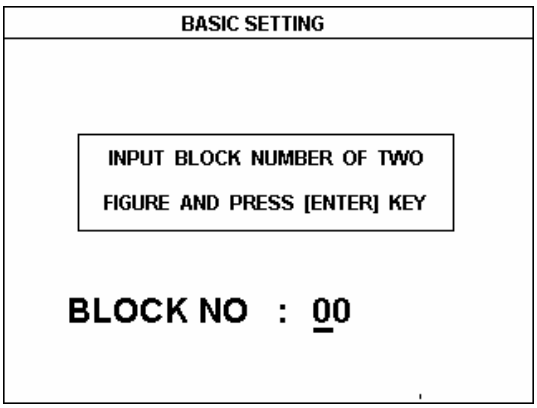
VEHICLE AND SYSTEM SELECTION

Refer to “FLOW 1 or FLOW 2”

Select the Vehicle and system

0.5 BASIC SETTING

ENTER



[FLOW 6 : BASIC SETTING MODE IN/OUT FLOW]

7-2 . MODE APPLICATION

1) Requirements

- Engine temperature at least 85° C (185° F)
- All electrical consumers switched off
- A/C system switched off
- Do not operate accelerator pedal
- No malfunctions stored in DTC memory

2) Basic setting

- **Disconnecting the battery or the Engine Control Module harness connector will erase all learned and adapted values stored in the ECM.**
- **Do not initiate basic setting when a DTC that affects oxygen sensor operation is stored in DTC memory.**
- **In the initial learning phase after establishing basic setting, engine idle and drive ability may be affected. In this case, let the engine run at idle for a few minutes until the learning process is completed.**

3) Test condition

- Check DTC memory
- There must be no malfunctions stored
- If necessary repair malfunction, erase DTC memory and test drive, stop engine and start again, test drive and, as a check, check DTC memory again Let engine run at idle
- Input display group number 00 and then press ENTER.
- Allow engine to run until reaching normal operating temperature, approx. 85° C (185° F).
- Value in display field 1 must be a minimum of 170

- Display group overview

Display fields	Items name	Specified display value	Corresponds to
1	Engine coolant temperatuer	170-208	80-108℃
2	Engine load(electrical consumers switched off)	26-48	1.3ms-2.4ms
3	Momentary engine speed	72-80	720-800rpm
4	Idle speed control learing value range	125-133	-
5	Idle Air Control valve rest point	70-100	-
6	Ignition angle(crankshaft)	70-80	±6%
7	Mixture control,Bank1	120-136	±6%
8	Mixture control,Bank2	120-136	±6%
9	Mixture learing,Bank2	120-136	±6%
10	Mixture learing,Bank2	120-136	±6%

- Please refer to display group 000 in workshop manual if displayed values are outside the specified range.

Notes ;

The Basic setting's mode application function be changed according to vehicle and viewing certain display groups on the AUDI A8 3.7L & 4.7L V8 with engine code ABZ.

8. READ MEASURING VALUE BLOCK

8-1 OPERATION FLOW

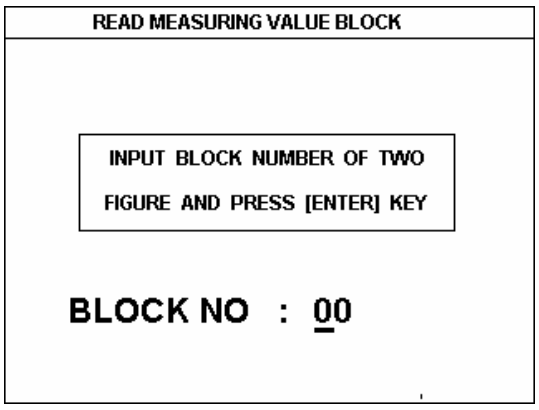
VEHICLE AND SYSTEM SELECTION

↳ Refer to “FLOW 1 or FLOW 2”

Select the Vehicle and system

↳ 0.6 READ MEARSURING VALUE BLOCK

ENTER ↳



[FLOW 7 : READ MEASURING VALUE BLOCK IN/OUT FLOW]

8-2 . MODE APPLICATION

READ MEASURING VALUE BLOCK

When viewing certain Current data display groups on the VW PASSAT with engine code AEB. The Current data explanations for these groups are shown below. Other display groups are viewed in the workshop manual.

WV PASSAT, 1.8L V4,Engine code AEB

	Display zones			
	1	2	3	4
Display group 2: Load Registration				
Display	**xxx rpm**	**xx.xx ms**	**xx.xx ms**	**xx.x g/s**
Indicated	**Engine speed (in steps of 40)**	**Engine load**	**Injection period**	**Air mass**
Working range	**0 to 6800 rpm**	**0.00..8.50 ms**	**0.00 to 25.00 ms**	**0.0 to 140 g/s**
Specification	**820 to 900 rpm**	**0.50 to 1.50 ms**	**1.00 to 3.00 ms**	**1.8 to 4.0 g/s**
Specification	**2520 rpm**	**0.80 to 2.00 ms**	**1.5 to 4.00 ms**	**7.5 to 12.0 g/s**

	Display zones			
	1	2	3	4
Display group 55: Idle Speed Control				
Display	**xxx rpm**	**x.xx g/s**	**x.xx g/s**	**xxxx**
Indicated	**Engine speed (in steps of 10)**	**Idling air mass control value (idling regulator)**	**Idling speed air mass learned value**	**Operating mode**
Working range	**0 to 2550 rpm**	**-2.8 to 4.17 g/s**	**-1.94 to 2.22 g/s**	**---**
Specific.	**820 to 900 rpm**	**-1.11 to 1.11 g/s**	**-1.1 to 1.11 g/s**	**0000**

9. VW DIAGNOSTIC CONNECTOR LOCATIONS

Model	Year	Connector	Location
Beetle	1998 & newer	16pin	Under left side of dash
Cabriolet	Though 1993	4pin	Under shift console boot*
Cabrio	Mid 1994 & newer	16pin	Remove front ashtray, slide small cover to left
Corrado	1990-1993	4pin	Under shift console boot*
Eurovan	1993-1994 1995 & newer	4pin 16pin	Fuel panel, under left side of dash Behind dummy plug, between instrument cluster and radio
Fox	1991-1993	4pin	Under shift console boot*
Golf	1990-1992 1993-early 1994 mid 1994-1998 1999 & newer	4pin 4pin 16pin 16pin	Under shift console boot* Behind dummy plugs below climate controls Remove front ashtray, slide small to left Under left side of dash
Jetta	1990-1992 1993-early1994 mid 1994-1998 1999 & newer	4pin 4pin 16pin 16pin	Under shift console boot* Behind dummy plugs below climate controls Remove front ashtray, slide small to left Under left side of dash
Passat	1990-1993 1994-1997 1998-2003	4pin 16pin 16pin	Under shift console boot* Behind dummy plug, between instrument cluster and radio. Under left side of dash, or Under cover in center console

*A/T : Remove shift lever handle and cover plate, Carefully replace shift side in guide during reassembly.

Model	Year	Connector	Location
80/90	1989-1991 1992-1995	4pin 4pin	Under left side of dash, behind storage shelf in front of relays Under hood in relay box 1, left side of plenum
100/200/ Cabrio/S4	Through 1995	4pin	Under hood in relay box 1, left side of plenum
A4	1996 1997 & newer	16pin 16pin	Remove rear ashtray from center console Under left side of dash
A6/S6 A6 A6	1995 mid 1995-1998 1999 & newer	4pin 16pin 16pin	Under hood in relay box 1, left side of plenum Under cover in center console next to handbrake Under left side of dash
A8	1997 & newer	16pin	Under left side of dash
Cabrio	1996-1998	16pin	Center console
V8	1990-1993	4pin	Under right floor panel

10. REPAIR INFORMATION

The following CD's are useful when using the Retriever on VW / Audi vehicles. The CD's are available from Dyment Distribution Services by calling 1-800-423-4595. You may visit their web page @ www.BentleyPublishers.com .

VW Repair Information on CD-ROM

Vehicle	Year	CD number
New Beetle	1998-2002	1t2w-0pw9-w0p4-p64w
Passat	1990-1994	W42 CD-ROM VW B3 96.01
	1995-1997	W42 CD-ROM VW B4 00.01
	1998-2002	W42 VEB5 V020 CD
Jetta/Golf/GTI	1993-1999	1016193731
Jetta/Golf/GTI/Cabio	1999-2002	1016136363
Eurovan	1992-2002	1016120079
Corrado	1990-1994	W42 CD-ROM VW CR 93.10

Audi Repair Information on CD-ROM

Vehicle	Year	CD number
80/90 Quattro	1998-1992	W42 CD-ROM AU 80 96.12
90	1993-1995	W42 CD-ROM AU 90 00.06
A4/S4	1996-2001	W42 AEB5 V020 CD
A4	2002	W42 AEB6 V020 CD
100/A6/S6/S4	1992-1997	W42 CD-ROM AU C4 00.10
A6 & Allroad	1998-2002	W42 AEC5 V021 CD
Cabriolet	1994-1999	W42 AEB3 V020 CD
A8/S8	1997-2002	W42 AED2 V022 CD
TT Coupe	1999-2002	W42 AETT V021 CD