

Defi-Link Series OPERATION MANUAL

— **Defi-Link Meter BF** —

— **Defi-Link Meter** —

— **Defi-Link Control Unit II** —

日本国内でご購入の場合は1ページから54ページをお読みください。

このたびは、当社製品をお買い上げいただきまして、誠にありがとうございます。ご使用前に本書を必ずお読みいただくとともに常にお手元に保管いただき、正しいお取り扱い方法でご愛用いただけますようお願い申し上げます。なお、本品の装着に関する事故や弊害につきましては、いかなる場合においても、当社は一切責任を負いかねますので、あらかじめご了承くださいませようお願い申し上げます。

※英語の部分は国内では無効です。

【Webサイト】 <http://www.nippon-seiki.co.jp/defi/>

【電話番号】 (03) 3835-3639 (Japanese only)

【受付時間】 10:00~12:00, 13:00~17:00

(土・日、祭日、当社休日を除く平日)

English section is from P.55 to P.110.

Thank you very much for purchasing our product. Before installing and using the product, please read this manual thoroughly. After installation, please keep this manual for future reference.

※Japanese section is effective only in Japan.

【Web site】 <http://www.defi-shop.com/>



【E-mail】 defishop@nippon-seiki.co.jp

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Please be sure to read this manual carefully before attempting to install or operate this product.

1. SAFETY WARNING

Please read carefully, where the "  **WARNING** " and "  **CAUTION** " symbols are displayed in this manual. Failure to do so may result in damage or injury.

WARNING

Indicates the possibility of death or serious injury in the event of incorrect installation.

CAUTION

Indicates a risk of personal injury or damage to equipment in the event of incorrect installation.

CONFIRMATION:

Indicates the need to confirm that a particular task has been correctly completed.

Please refer to our website in order to acquire the latest information.

<http://www.defi-shop.com>

(A) BEFORE INSTALLATION (for installation personnel)

WARNING

- All instructions in this manual must be followed to ensure safe installation and operation of the product.

- The components of the product should be installed in a place where they can not fall or move and damage the vehicle or hinder driving.
- NEVER dismantle or re-assemble the products. This could cause damage and make them unsafe to use. Tampering with the products renders the limited warranty ineffective.
- Before installation, please make sure that the engine is switched off and the vehicle is stationary.
- Due to possible injury from contact with a hot engine or exhaust pipe, do not begin installation until the vehicle is cool.
- Prior to installation, remove the ignition key and disconnect the negative (-) battery terminal.
- Please take care while installing this product so you do not interfere with any connections or wires relating to seat belts, air bags or other safety devices.
- Before tapping engine rev or speed signal from the ECU, please make sure that you have connected power cables inside "DC Source" harness properly. And then confirm that the Defi-Link Control Unit and the Defi-Link Meters will perform opening/ending function normally. If it is functioning normally, remove negative terminal connector from battery and go ahead with wiring procedure. NOTE: Incorrect wiring may destroy your ECU, Ignition system, and other engine management devices.
- When attaching wiring, use the solderless connectors or inner/outer connections, and insulate all connections with electrical tape. Please insulate all connections in areas where wires will be tight.
- While wiring power harness, to avoid the risk of electrical shock or fire, be sure to confirm that there is no disconnection or breakage of wire. Poor connection can result in short-circuit, electrical shock, fire, or other hazards.
- Ignition-switched +12V (IGN) line must be connected to the vehicle's Ignition-switched wire with a fuse of 30A or less. High-capacity fuse

(more than 30A) will not blowout even with an abnormal current flow and may cause fire.

⚠ CAUTION

- This product is for use ONLY on vehicles with a 12V electrical system. NEVER use the product on 24V vehicles.
- Use only the wires provided. If additional wires are required, use the same of quality and gauge wire as is provided with the kit.
- Insulate any unused wires. If any wires or connectors loosen during installation, please make sure they are correctly reattached.
- Dropping any of the components of this product will result in damage to the product.
- Excessive force on switches/terminals may result in damage to the product.
- Do not attach wires on the body of the vehicle or engine parts as this may result in damage to the product.
- Install sensors away from heat and moisture to avoid damage.
- Do not pull away the wire.
- Install sensors away from ignition and also radio signal frequency interference as this could cause the gauges to malfunction.
- Do not wire the sensor wires near the engine, exhaust pipe or turbine. It may result in damage or fusion of wires.
- Do not expose control unit to moisture, dust or direct sunlight, or place product directly in front of heat vents.
- Make sure the waterproof processing is done when diverging wires in the engine compartment.
- Wear gloves so as not to get burnt when soldering.
- If the negative battery terminal is disconnected, audio and clock memory data may be lost. The necessary data will have to be re-set after installation.

CONFIRMATION

- Gauge pointer may not be in the proper position when you purchase. Normal function will resume when power is connected.
- Please read pages for the customer as well as the pages for the installation personnel in order to have a full understanding of all the procedures.
- Please confirm with the maintenance book on the car that the manufacturer issued when installing and detaching genuine parts.
- After installation is complete, return this operations manual to the customer along with the warranty.
- Before tapping wires, check the voltage of the existing wire. After tapping the wire, check the voltage of the tapped wire again to confirm whether you have tapped into the proper place.

(B) PROPER PRODUCT HANDLING (for customer)

WARNING

- Please have this product installed by the retail store or dealer where it was purchased. Installation by the customer will void the warranty.
- Do not disassemble or modify this product. Such actions cannot only damage or destroy the product but will also void the warranty.
- In order to ensure safe driving, check the information on the meters only for short period of time. Looking at the meters for long periods of time could distract adequate attention from the road and result in an accident.
- Discontinue use of this product if meters don't operate, water gets into the unit, or smoke or a strange odor comes from the unit. If such a condition occurs, contact the sales outlet or installation personnel as soon as possible. Continued use while the condition exists could result in an accident or fire.

CONFIRMATION

● Do not set the number of cylinders when TACHOMETER is not installed.

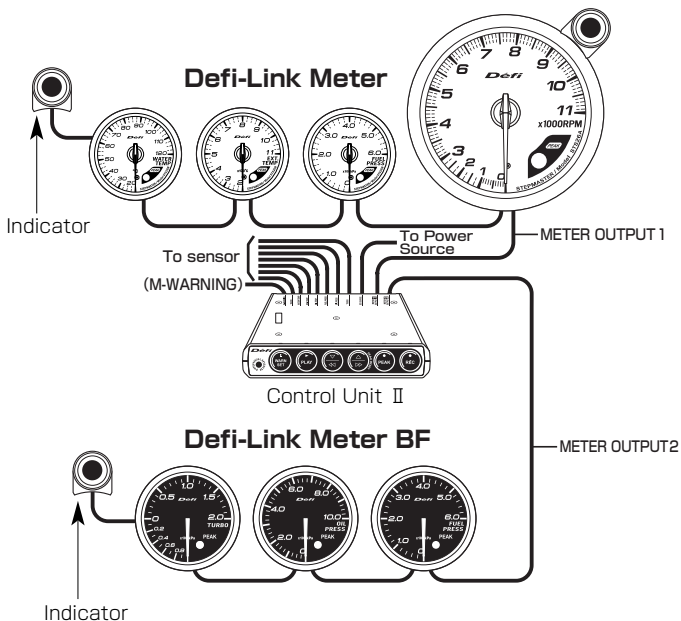
* Please pull out each connector while pressing the lock of the connector firmly.



Diameter Conversion Table

mm	inch
52	2 1/16
60	2 3/8
80	3 1/8
115	4 1/2

2. MAIN PRODUCT FEATURES (for customer)



Daisy Chain Connection

a) Multiple Interface System

Uses only one wire to send power, light, ground, and data to and from all seven gauges.

All gauges and the Control Unit II have separate microcomputer units.

b) Easy installation

Installing additional gauges involves simply connecting them to the installed gauge and wiring the sensor to the Control Unit II.

c) Easy operation

Gauges that are out of reach can be controlled by using the Control Unit II at hand.

It is possible to connect up to seven gauges to one Control Unit II.

Using only one switch, it is possible to display memory replay, peak memory and warning set values for all gauges.

d) Low cost

It is not necessary to purchase additional control units when installing additional gauges.

* Daisy Chain connection cannot be applied to connection between Defi-Link Meter BFs and Defi-Link Meters.

Common features of Defi-Link Meter BF and Defi-Link Meter

1. Stepping Motor

a) Quick response

Gauge pointers driven by stepping motor have a smooth instantaneous response to rapid acceleration of high performance vehicles.

b) High precision and light weight

Maximum angle of deflection, 270° is controlled by the microcomputer up to 2,300 times (0.12°) to provide high precision in the accuracy of information generated.

Compared to similar products from other companies, this product is 30% lighter.

c) Freedom of installation

There is no "dumping of oil". The meter can be installed at any angle.

2. Multiple functions

a) When the ignition is turned on, "opening mode" automatically begins.

When the engine is started, all LED indicators light and all gauge pointers move. The gauges perform a self-test.

b)Wiring check function

Any cut wire, short circuit, and communication errors are checked and possible areas of fault are checked.

c)Warning function

A warning value can be set. When this value is exceeded, a red warning LED comes on.

It is possible to connect a Defi-Link Indicator(sold separately).

d)Peak memory function

Peak values are stored and can be checked later.

3.Attractive design

a)A mounting bracket and instrument case is provided with the product.

Defi-Link gauge installation stand(Meter holder) is included with all products.

The back of each gauge is made of an attractive black case.

b)Bezel

The Bezel is hairline finish with an alumite processing which gives it a high gloss look.

c)LED Lamps

The lights are produced from high intensity LED lamps.

Features of Defi-Link Meter BF

a) 1.LED illumination

Gauge dials are invisible while the ignition switch is off. Once the ignition switch is turned on, a clear display appears by colored LED illumination.

2.Red emitting needle pointer

Gauge dial illumination and a red emitting needle pointer increase visibility.

b) 1."Opening mode"

Illumination of gauge dial, needle pointer, and each LED are turned on being interlocked with ignition switch on. After the illumination is turned on, it goes out once and then comes back on again.

2."Closing mode"

Illumination of gauge dial, warning LED, peak LED, and needle pointer all gradually goes out after the ignition switch is turned off.

c) 1.Brightness can be adjusted. There are 5 stages of brightness in the daytime and 5 stages in the nighttime. The brightness decreases being interlocked with the illumination switch on.

The decrease in lights can be canceled.

Features of Defi-Link Meter

- a) A bright transparent green gauge dial and a red instrument needle pointer are used in the gauges to increase visibility at night and in low-light applications.

Features of Defi-Link Control Unit II

- a) Up to 7 gauges from among Defi-Link Meter BFs and Defi-Link Meters can be operated with one Control Unit II. Microcomputers are equipped with meters and Control Unit II. A distant meter can be operated at hand. Daisy Chain Connection can not be applied to connect Defi-Link Meter BFs and Defi-Link Meters.
- b) Driving data can be stored in each meter up to 3 minutes and can be replayed. Pause, speed play, forward, and rewind function can be applied during playback.
- c) The switch panel is embossed. When the switch is pushed, the buzzer sounds and the positive feelings of desired operation are obtained.
- d) The characters and the rings on the switch panel are illuminated in white at nighttime. It makes operation in the dark easy.
- e) As a warning function, red warning LEDs of meters come on and a buzzer sounds at the same time.
- f) Defi-Link Indicator II or Defi-Link Indicator can be used as a Master Warning by connecting it to M-WARNIG connector of Control Unit II. The Indicator lights up when any of warning LEDs of connected meters go on except tachometer. (Tachometer warning is included in Master Warning of DF05001.)
- g) If both the fuel pressure meter and turbo meter are installed, the fuel pressure meter shows the differential pressure between fuel pressure and turbo.

3. The list of Defi-Link System

Defi-Link Meter BF						
Size	Product Name	Illumination Color	Part Number	Illumination Color	Part Number	Gross Weight (g)
60mm	TURBO	White	DF04301	Blue	DF04305	450
		Amber Red	DF04302			
	OIL PRESS.	White	DF04401	Blue	DF04405	460
		Amber Red	DF04402			
	FUEL PRESS.	White	DF04501	Blue	DF04505	460
		Amber Red	DF04502			
	OIL TEMP.	White	DF04601	Blue	DF04605	425
		Amber Red	DF04602			
	WATER TEMP.	White	DF04701	Blue	DF04705	425
		Amber Red	DF04702			
	EXHAUST TEMP.	White	DF04801	Blue	DF04805	495
		Amber Red	DF04802			
	INTAKE MANIFOLD PRESS.	White	DF04901	Blue	DF04905	450
		Amber Red	DF04902			

Defi-Link Meter				
Size	Product Name	Dial Face Color	Part Number	Gross Weight (g)
60mm	Defi-Link Meter TURBO	White	DF00605	470
		Black	DF00606	
	Defi-Link Meter OIL PRESS.	White	DF00705	480
		Black	DF00706	
	Defi-Link Meter FUEL PRESS.	White	DF00805	480
		Black	DF00806	
	Defi-Link Meter OIL TEMP.	White	DF00905	440
		Black	DF00906	
	Defi-Link Meter WATER TEMP.	White	DF01005	440
		Black	DF01006	
	Defi-Link Meter EXHAUST TEMP.	White	DF01105	480
		Black	DF01106	
	Defi-Link Meter TACHOMETER	White	DF01205	435
		Black	DF01206	
	Defi-Link Meter INTAKE MANIFOLD PRESS.	White	DF05401	470
		Black	DF05402	

◆Diameter Conversion Table (Refer to P.60.)

100g=0.2lb

Defi-Link Meter					
Size	Product Name		Dial Face Color	Part Number	Gross Weight (g)
52mm	Defi-Link Meter TURBO		White	DF01905	455
			Black	DF01906	
	Defi-Link Meter OIL PRESS.		White	DF02005	465
			Black	DF02006	
	Defi-Link Meter FUEL PRESS.		White	DF02105	465
			Black	DF02106	
	Defi-Link Meter OIL TEMP.		White	DF02205	425
			Black	DF02206	
	Defi-Link Meter WATER TEMP.		White	DF02305	425
			Black	DF02306	
	Defi-Link Meter EXHAUST TEMP.		White	DF02405	465
			Black	DF02406	
	Defi-Link Meter INTAKE MANIFOLD PRESS.		White	DF05501	455
			Black	DF05502	
80mm	Defi-Link Meter TURBO		White	DF06101	520
			Black	DF06102	
	Defi-Link Meter TACHOMETER	9,000RPM	White	DF03405	480
			Black	DF03406	
		11,000RPM	White	DF03407	
			Black	DF03408	
115mm	Defi-Link Meter TURBO		White	DF02803	845
			Black	DF02804	
	Defi-Link Meter TACHOMETER	11,000RPM	White	DF02905	780
			Black	DF02906	

Defi-Link				
Size	Product Name		Part Number	Gross Weight (g)
	Defi-Link Control Unit II		DF05002	390
	Defi-Link Indicator		DF01801	40
	Defi-Link Indicator II		DF05801	150
60mm	Defi-Link Single Meter Visor		DF05201	70
52, 60, 80mm	Defi-Link Fitting Kit		DF05301	40

4. Specification

Power Supply Voltage		
DC10V~15V(For 12V vehicles)		
Current Consumption (Maximum value in case 7 gauges are connected to the Defi-Link Control Unit II)		
+B line MAX 2A (Dark current MAX 2.5mA)		
IGN line MAX 0.1A		
ILM line MAX 0.2A		
Operational Temperature Range		
-20 ~ +60°C, -4 ~ +140°F (under 80% relative humidity)		
Storage Temperature Range		
-40 ~ +80°C, -40 ~ +176°F (under 80% relative humidity)		
Display Range		
Turbo	-100kPa ~ +200kPa	
Intake Manifold Press.	-100kPa ~ +20kPa	
Oil Press.	0 ~ 1,000kPa	
Fuel Press.	0 ~ 600kPa	
Oil Temp.	50 ~ 150°C	
Water Temp.	20 ~ 120°C	
Exhaust Temp.	200 ~ 1,100°C	
Tachometer	φ60, φ80	0 ~ 9,000 RPM
	φ80, φ115	0 ~ 11,000 RPM
Applicable Number of Cylinders		
1·2·3·4·5·6·8 *Applicable numbers of cylindes of DF05001 are 3, 4, 5, 6 and 8.		

Installation of φ60 Bezel, hood, and visor

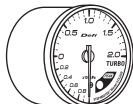
● Triple Meter Hood and Bezel

DF033A0	DF033DC	DF03301	DF03302	DF03303
×	Attachable	×	×	Attachable

● DF05201 Single Meter Visor cannot be attached with the bezel.

5. PRODUCT PARTS

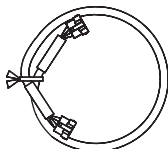
TURBO (52mm & 60mm & 80mm)



Gauge 1pc



Boost sensor
2.5m (8 1/5ft.) 1pc



Meter wire 0.25m
(10") 1pc



Meter cup 1pc

*Each part can be purchased separately. Please contact us.

INTAKE MANIFOLD PRESS. (52mm & 60mm)



Three way joint 1pc



Rubber hose 0.5m
(1 3/5ft.) 1pc



Operation manual 1pc

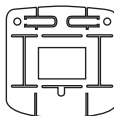
Meter cup holder



Double sided
tape 1pc



Buffer 1pc



Mounting
bracket 1pc



M4 bolt, nut
washer 1pc

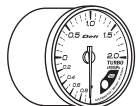


*A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

*Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

*Each part can be purchased separately. Please contact us.

TURBO (115mm)



Gauge 1pc



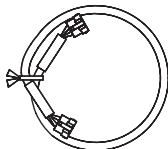
Boost sensor 2.5m
(8 1/5ft.) 1pc



Three way joint 1pc



Rubber hose 0.5m
(1 3/5ft.) 1pc



Meter wire 0.25m (10') 1pc



Meter cup 1pc

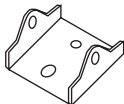


Bolt for Meter cup 1pc



Operation manual 1pc

Accessories for 115mm gauge



Mounting bracket 1pc



Double sided tape 2pcs



Buffer 4pcs



Tapping screw 2pcs



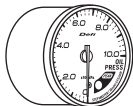
M6 bolt, nut 1pc,
washer 2pcs



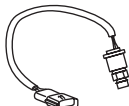
Solderless connector 1pc

*Each part can be purchased separately. Please contact us.

OIL PRESS. (52mm & 60mm)

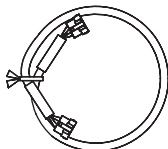


Gauge 1pc



* Pressure sensor 1pc

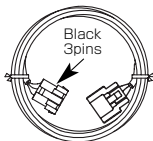
* After the oil pressure sensor is connected, a buzzer sounds when the ignition switch is turned on but the engine is not started.



Meter wire 0.25m (10") 1pc



Meter cup 1pc



Sensor wire 2.5m (8 1/5ft.) 1pc



Operation manual 1pc

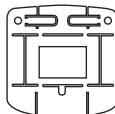
Meter cup holder



Double sided tape 1pc



Buffer 1pc



Mounting bracket 1pc



M4 bolt, nut washer 1pc

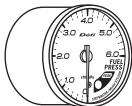


* A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

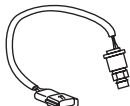
* Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

*Each part can be purchased separately. Please contact us.

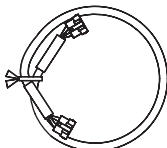
FUEL PRESS. (52mm & 60mm)



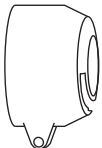
Gauge 1pc



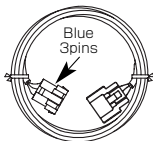
Pressure sensor 1pc



Meter wire 0.25m (10") 1pc



Meter cup 1pc



Sensor wire 2.5m (8 1/5ft.) 1pc



Operation manual 1pc

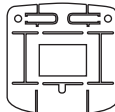
Meter cup holder



Double sided
tape 1pc



Buffer 1pc



Mounting
bracket 1pc



M4 bolt, nut
washer 1pc

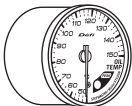


*A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

*Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

*Each part can be purchased separately. Please contact us.

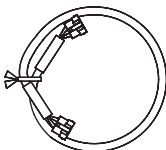
OIL TEMP. (52mm & 60mm)



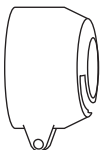
Gauge 1pc



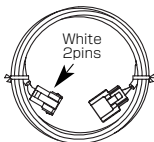
Temperature sensor 1pc



Meter wire 0.25m (10") 1pc



Meter cup 1pc



Sensor wire 2.5m (8 1/5ft.) 1pc



Operation manual 1pc

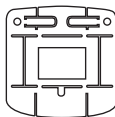
Meter cup holder



Double sided
tape 1pc



Buffer 1pc



Mounting
bracket 1pc



M4 bolt, nut
washer 1pc

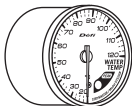


* A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

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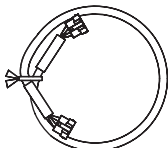
WATER TEMP. (52mm & 60mm)



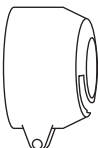
Gauge 1pc



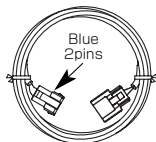
Temperature sensor 1pc



Meter wire 0.25m (10") 1pc



Meter cup 1pc



Sensor wire 2.5m (8 1/5ft.) 1pc



Operation manual 1pc

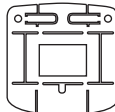
Meter cup holder



Double sided
tape 1pc



Buffer 1pc



Mounting
bracket 1pc



M4 bolt, nut
washer 1pc

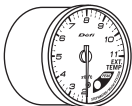


*A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

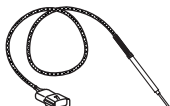
*Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

*Each part can be purchased separately. Please contact us.

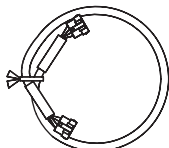
EXHAUST TEMP. (52mm & 60mm)



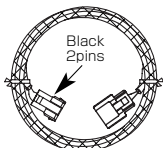
Gauge 1pc



Exhaust temperature sensor 1pc



Meter wire 0.25m (10") 1pc



Sensor wire 2.5m (8 1/5ft.) 1pc



Meter cup 1pc



Fitting (1/8PT) 1pc



Operation manual 1pc

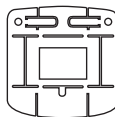
Meter cup holder



Double sided tape 1pc



Buffer 1pc



Mounting bracket 1pc



M4 bolt, nut washer 1pc

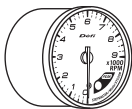


* A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

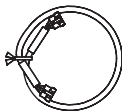
* Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

*Each part can be purchased separately. Please contact us.

TACHOMETER (60mm)



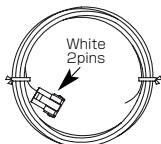
Gauge 1pc



Meter wire 0.25m (10") 1pc



Meter cup 1pc



Signal wire 2m (6 3/5ft.) 1pc



Operation manual 1pc



Solderless connector 1pc

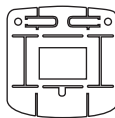
Meter cup holder



Double sided tape 1pc



Buffer 1pc



Mounting bracket 1pc



M4 bolt, nut washer 1pc

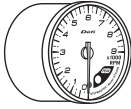


*A bezel is a standard equipment for $\phi 52$ and $\phi 60$ Defi-Link Meter.

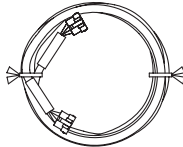
*Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

*Each part can be purchased separately. Please contact us.

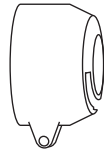
TACHOMETER (80mm)



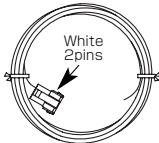
Gauge 1 pc



Meter wire 0.25m (10") 1 pc



Meter cup 1 pc



Signal wire 2m (6 3/5ft.) 1 pc



Operation manual 1 pc



Solderless connector 1 pc

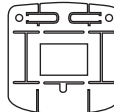
Meter cup holder



Double sided tape 1 pc



Buffer 1 pc



Mounting bracket 1 pc



M4 bolt, nut washer 1 pc

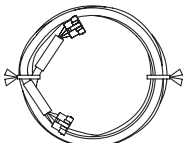
* 4 types of 80mm tachometers are available. 9,000RPM(White) 11,000RPM(White) 9,000RPM(Black) 11,000RPM(Black)

*Each part can be purchased separately. Please contact us.

TACHOMETER (115mm)



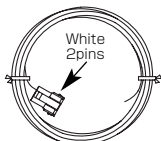
Gauge 1pc



Meter wire 0.25m (10") 1pc



Meter cup 1pc



Signal wire 2m (6 3/5ft.) 1pc

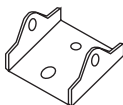


Bolt for Meter cup 1pc



Operation manual 1pc

Accessories for 115mm gauge



Mounting bracket 1pc



Double sided tape 2pcs



Buffer 4pcs



Tapping screw 2pcs



M6 bolt, nut 1pc,
washer 2pcs



Solderless connector 1pc

*Each part can be purchased separately. Please contact us.

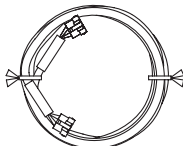
Defi-Link Control Unit II (52, 60, 80, 115mm)



Control Unit II 1pc



Power wire 0.75m
(2 1/2ft.) 1pc



Meter wire 2m(6 3/5ft.) 1pc



Operation manual
1pc

Parts for the control unit



Double sided tape 1pc



Tie wrap 2pcs



Solderless
connector 4pcs



Clip 1pc

OPTIONAL PARTS LIST

PART NAME	PART NUMBER
OIL/WATER TEMP. sensor (1/8NPT)	PDF03905S
OIL/FUEL PRESS. sensor extension wire 1m (3 1/3ft.)	PDF06013H
OIL/FUEL PRESS. sensor extension wire 2m (6 3/5ft.)	PDF00707H
OIL/WATER TEMP. sensor extension wire 1m (3 1/3ft.)	PDF06014H
OIL/WATER TEMP. sensor extension wire 2m (6 3/5ft.)	PDF00906H
EXHAUST TEMP. sensor extension wire 2m (6 3/5ft.)	PDF01107H
Meter wire 0.5m (1 3/5ft.)	PDF00614H
Meter wire 1m (3 1/3ft.)	PDF00615H
Meter wire 2m (6 3/5ft.)	PDF01303H
Rubber boot	PDF01908G
1/8 NPT fitting for EXHAUST TEMP. sensor	PDF01109G
1/8NPT/PT Conversion Socket (for PRESS. sensor)	PDF00708G
Huse (4A) 2pcs	PDF05005G



Rubber boot



Conversion Socket

LIST OF TOOLS TO USE

TOOL	1	2	3	4	5	6	7
10mm spanner or wrench	○	○		○	○		
12mm spanner or wrench	○	○	○				
14mm spanner or wrench	○	○	○				
17mm spanner or wrench	○		○				
20mm spanner or wrench							○
52, 60, 80mm hexagonal wrench	○	○	○	○	○	○	○
115mm hexagonal wrench	○			○			
Tester	○	○	○	○	○	○	
Extension wire	○	○		○	○	○	
Pliers	○	○	○	○	○	○	○
Wiring cutters/ Side cutters	○	○	○	○	○	○	○
Phillips & Flat Blade Screw Driver	○	○	○	○	○	○	○
1/8 drill NPT tap							○
Solder and solder iron	○	○	○	○	○	○	○
Clipped end wiring	○	○	○	○	○	○	○
Vinyl tape	○	○	○	○	○	○	○
T-Bolt clamps	○	○	○	○	○		
Teflon tape	○	○	○				
8.3mm drill							○
Cloth, cleaning liquid, water	○	○	○	○	○	○	○

1 TURBO/INTAKE MANIFOLD PRESS.

2 OIL TEMP.

3 WATER TEMP.

4 TACHOMETER

5 OIL PRESS.

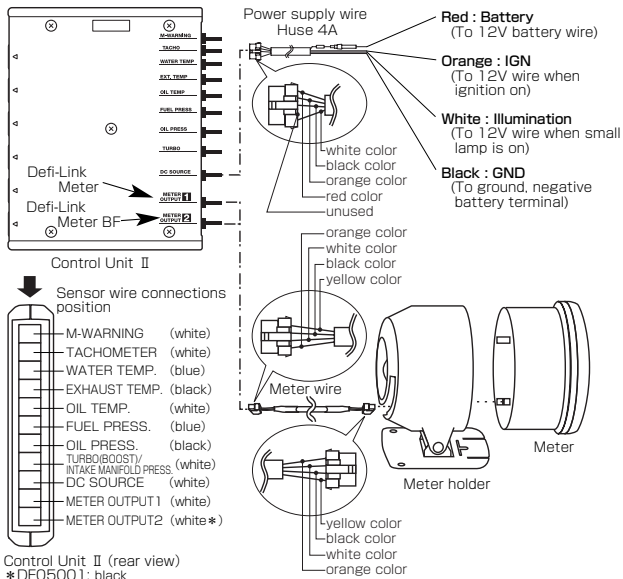
6 FUEL PRESS.

7 EXHAUST TEMP.

6. HOW TO INSTALL(for installation personnel)

● INSTALLATION DIAGRAM(for installation personnel)

Installation diagram



⚠ WARNING

- Please read the safety warnings thoroughly for the installation and handling. Improper installation or operation could cause the product to fall and damage the vehicle.

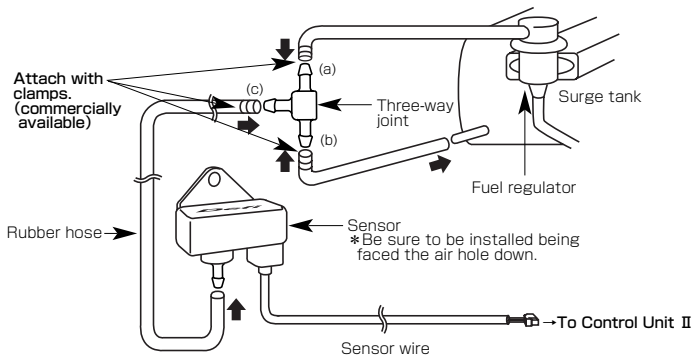
⚠ CAUTION

- Insert the wire that matches the wire connections position indicated on the side of the control unit.
The unit will not function with incorrect connections.
- Pull out each connector with pressing the lock of the connector firmly.
- Put the connector of INTAKE MANIFOLD PRESS' s sensor wire in TURBO connector(white) of Control Unit II.

● HOW TO ATTACH SENSORS (for installation personnel)

TURBO

INTAKE MANIFOLD PRESS.



1. The rubber hose attached to the sensor should be as short as possible. Attach it with bolts (M6) in the engine compartment in an area where it will not be subject to excess heat or vibration.
2. Access to the air pressure intake may be obtained between the surge tank and the fuel regulator
 - (A) Detach the vacuum hose from the surge tank side that has loss pressure oscillations, and connect it to the three way connector at point (b) or (a).
 - (B) In order to connect the surge tank with three way connector, cut the required length of hose from the included rubber hose.
 - (C) Use the remaining rubber hose to connect the sensor to the three way connector.

⚠ WARNING

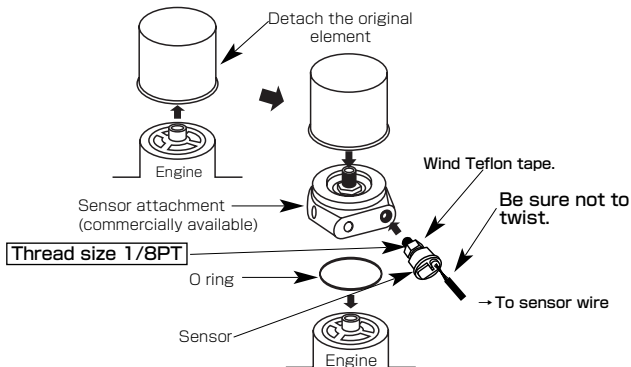
- To avoid disconnection of rubber hoses during pipe installation, use tie-wraps to secure to adjacent hoses in the engine compartment.

CONFIRMATION

- The length of the included rubber hose is 0.5m (1 3/5ft.) Please adjust appropriately.
- The sensor must be installed being faced to the connector to the rubber hose down.
- For vehicles which have a solenoid valve between the surge tank and the fuel pressure regulator, place a three-way joint before the solenoid.

OIL PRESS.

Use a commercial sensor attachment



⚠ WARNING

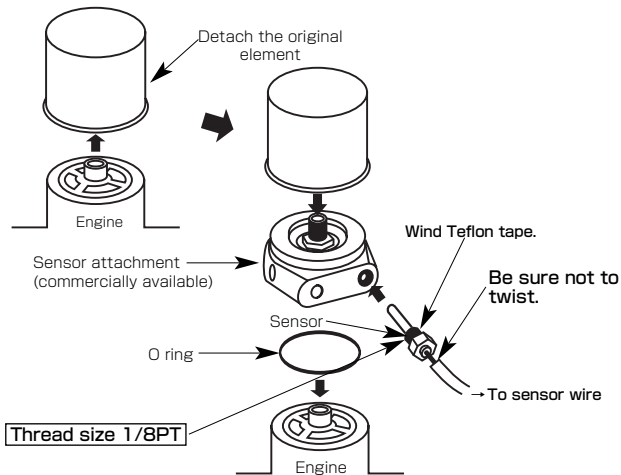
- To avoid oil leaks during installation of the sensors, use Teflon tape. Before driving, inspect tubing and oil blocks for leaks. Leaks could cause a fire or damage the engine.
- Oil spills by the installation work. Please replenish the engine with oil. The engine might overheat when oil is too little.
- To avoid the damage of sensor wire, please fix the waterproof connector on the vehicle body.
- Do not attach the pressure sensor to the place where the genuine pressure switch is attached in the case it is attached to the oil pump body of the vehicle. The pressure sensor might be broken and the engine oil might leak.

CONFIRMATION

- Be sure the sensor wire is not twisted when installing the sensor. The sensor wire will be cut.
- The thread size of the pressure sensor is 1/8PT. If the thread size of the sensor attachment for the pressure sensor is 1/8NPT, you will need the 1/8NPT / PT conversion socket (optional part). If it is neither 1/8PT nor 1/8NPT, you will need to purchase a conversion adapter available from hardware stores.
- Tighten the sensor into the sensor attachment and then connect it to the sensor wire.

OIL TEMP.

Use a commercial sensor attachment



⚠ WARNING

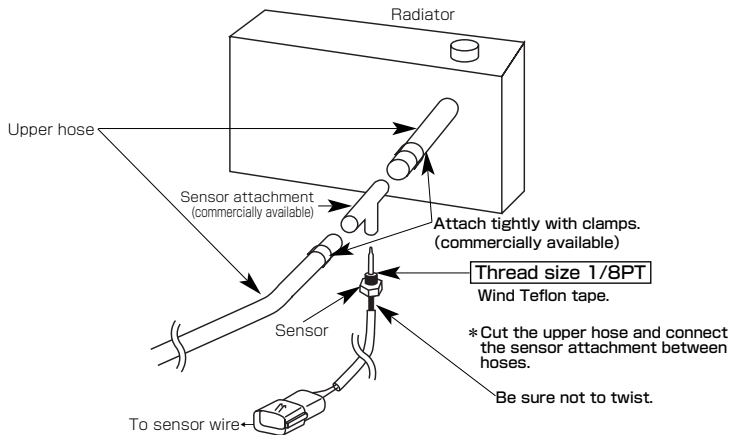
- To avoid oil leaks during installation of the sensors, use Teflon tape. Before driving, inspect tubing and oil blocks for leaks. Leaks could cause a fire or damage the engine.
- Oil spills by the installation work. Please replenish the engine with oil. The engine might overheat when oil is too little.
- To avoid the damage of sensor wire, please fix the waterproof connector on the vehicle body.

CONFIRMATION

- Be sure the sensor wire is not twisted when installing the sensor. The sensor wire will be cut.
- The thread size of the temperature sensor is 1/8PT. If the thread size of the sensor attachment for the temperature sensor is 1/8NPT, you will need the 1/8NPT temperature sensor (optional part).
- Tighten the sensor into the sensor attachment and then connect it to the sensor wire.

WATER TEMP.

Use a commercial sensor attachment



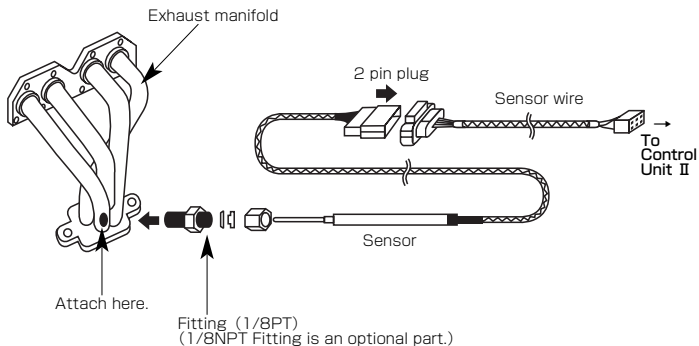
⚠ WARNING

- To avoid water leaks during installation of the sensors, use teflon tape. Attach the T-joint and upper hose with a T-Bolt clamp. Inspect hose connections for leaks before driving.
- Coolant spills by the installation work. Please replenish the engine with coolant and bleed the air from the system, or the engine might overheat.
- To avoid the damage of sensor wire, please fix the waterproof connector on the vehicle body.

CONFIRMATION

- Be sure the sensor wire is not twisted when installing the sensor. The sensor wire will be cut.
- The thread size of the temperature sensor is 1/8NPT. If the thread size of the sensor attachment for the temperature sensor is 1/8NPT, you will need the 1/8NPT temperature sensor (optional part).
- Tighten the sensor into the sensor attachment and then connect it to the sensor wire.

EXHAUST TEMP.



1. Dismantle the sensor fitting (making sure not to crush the bushing inside the fitting). Attach the sensor fitting at the point where the screw thread is hashed using the 1/8PT tap.
2. Pass the sensor through the bushing and fitting nut and attach the sensor fitting to the exhaust manifold. Adjust the end of the sensor fitting (5 to 20mm, 1/5 to 4/5") so that it will be positioned in the center of the exhaust pipe to which it is attached.

WARNING

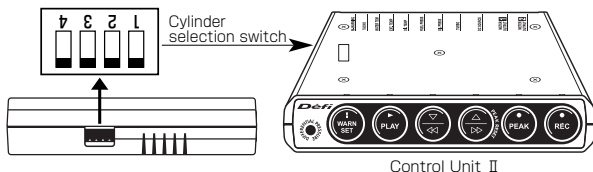
- When making holes to install the sensor, be careful that metal chips do not get inside of the exhaust pipe or turbine. It may result in damage to the engine, exhaust pipe or turbine.

TACHOMETER (Only for Defi-Link Meter)

1. HOW TO SET THE NUMBER OF CYLINDERS

Use the cylinder switch at the back of the Control Unit II to set up the number of cylinders according to your vehicle.

When the number of cylinders is set other than 1, 2, 3, 4, 5, 6, or 8, the tachometer carries out the same operation as the short circuit check function.



Cylinders	Switch position
1	
2	
3	
4	
5	
6	
8	



Cylinder selection switch

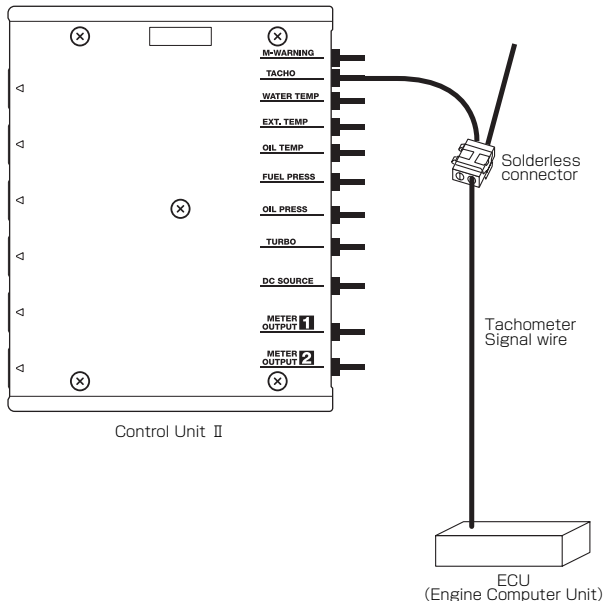
Set up the number of cylinders according to your vehicle with a ballpoint pen.

- * When setting the number of cylinders for a rotary engine, set the cylinders number selection switch to 4 cylinders for 2 rotors, and to 6 cylinders for 3 rotors.
- * Applicable numbers of cylinders of DF05001 are 3, 4, 5, 6 and 8.

TACHOMETER

2. HOW TO ATTACH THE SIGNAL WIRE

*Please consult your local car dealer for the place of Engine Computer Unit(ECU) and the place of the engine revolution signal.



⚠ CAUTION

- Before tapping engine rev signal cable, please make sure that you have disconnected the negative (-) cable from the negative terminal of the battery. If any battery line is live, there is a risk of destroying the ignition coils or ECU.

● WIRING THE CONTROL UNIT II (for installation personnel)

HOW TO SOLDER

- (1) Strip off the outer wire insulating



- (3) Solder this part, making sure it is spread properly



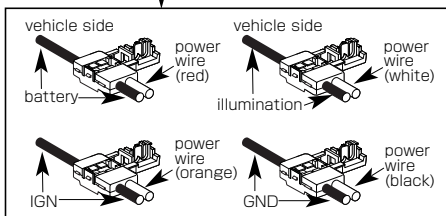
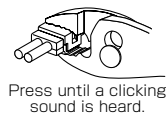
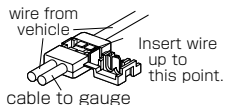
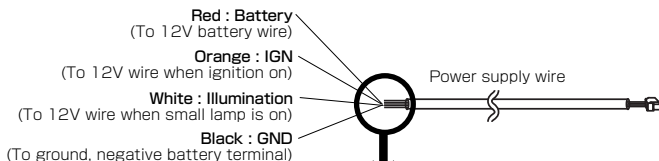
- (2) Wind to fasten the peeled wire



- (4) Wrap tightly with vinyl tape



HOW TO USE THE SOLDERLESS CONNECTOR

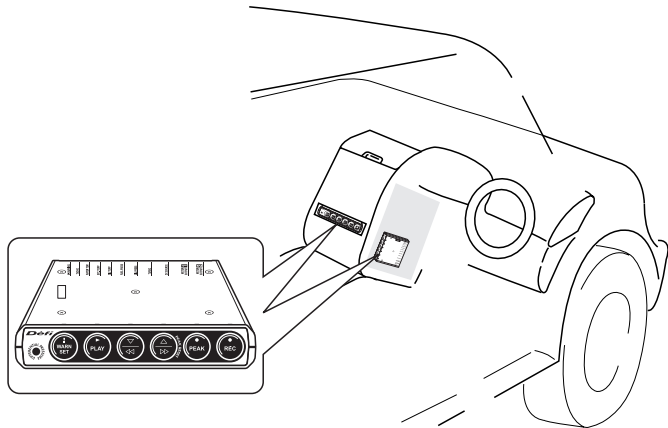


CONFIRMATION

- Wear gloves so as not to get burnt when soldering.
- When connecting wires by soldering, wire thoroughly not to cause poor contact.

● HOW TO ATTACH THE CONTROL UNIT II (for installation personnel)

- Control Unit II is a half DIN sized. It can be put in a DIN space of center console neatly.



- Attach double sided tapes on the Control Unit II surface.
Place the Control Unit II on a flat surface of the center console.

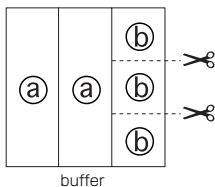
CONFIRMATION

- Use appropriate dashboard cleaning liquids (commercially available) to clean the area in which the double sided tape will be attached.

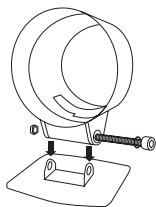
●HOW TO INSTALL METERS (for installation personnel)

(A) 52mm, 60mm, 80mm meters, meter cup and meter cup holder

【figure 1】



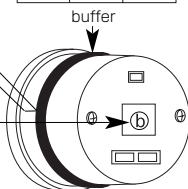
【figure 2】



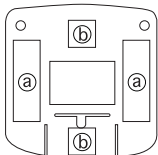
【figure 3】

Leave a space from 2 to 5 mm

Double sided tape ①



【figure 4】



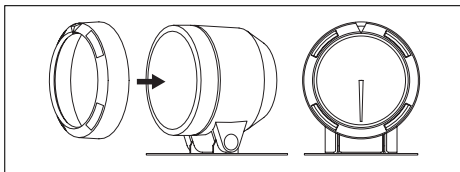
Mounting bracket (rear side)

1. Cut the double sided tape as shown in figure 1.
2. Insert convex part of the mounting bracket over the legs of the meter cup. Attach the mounting bracket to the meter cup with the nut and bolt included in the kit as shown in figure 2.
3. Attach one piece of double sided tape and the buffer on the meter as shown in figure 3.
4. Pass the meter wire through the hole of the meter cup and connect it to the meter.
5. Place the meter in the meter cup making sure that the wire is not sandwiched.
6. Attach double sided tape on the back of the mounting bracket, bend the mounting bracket to conform to the structure of the location where you intend to attach it. To avoid it falling off, use tapping screws (commercially available) to permanently attach the mounting bracket.

CONFIRMATION

- Use appropriate dashboard cleaning liquids (commercially available) to clean the area where the double sided tape will be attached.

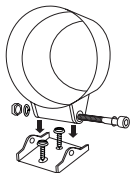
(B) Bezel (52mm and 60mm meter)



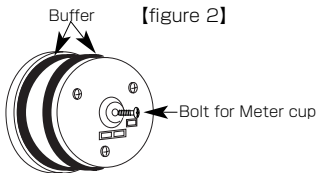
- The red triangle can be used as a warning indicator.
- To move the position of the red triangle, remove the bezel once and then attach it again.
- Some kinds of meter hoods and visor cannot be installed in combination with the bezel. (Refer to P.67)

(C) 115mm meter

【figure 1】



【figure 2】

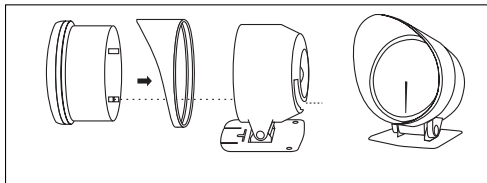


- 1.Insert the convex part of the mounting bracket over the legs of the meter cup. Attach the mounting bracket to the meter cup with the nuts and bolts included with the kit as shown in figure 1. (Do not fasten tightly.)
- 2.Fasten the tapping screws where you intend to attach the meter.
- 3.Fasten the meter cup in the proper direction and fasten the M6 bolt.
- 4.Attach the buffers all around the meter(front and rear) as shown in figure 2.
- 5.Pass the meter wire through the hole of the meter cup and connect it to the meter.
- 6.Place the meter in the meter cup making sure that the wire is not sandwiched.
- 7.Fasten the bolt for the meter cup from the back side of the meter cup.

- How to attach optional parts (for installation personnel and customer)
(The meter cup and the meter cup holder are not supplied with the following parts)

(A) Single Meter Visor (for 60mm meters)

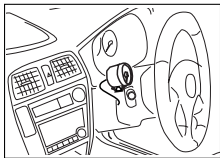
This item is for removing a virtual image of a meter reflected on a windshield. It is easy to attach: put the Single Meter Visor between a meter and a meter cup.



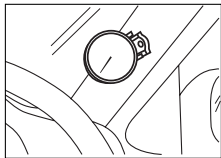
- Single Meter Visor cannot be attached with the bezel.

(B) Fitting kit (for 52mm, 60mm, 80mm meters)

It is possible to mount a meter on an A-pillar or a steering column by using this fitting kit and the meter cup. This helps increase its visibility.



On the steering column

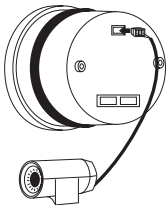
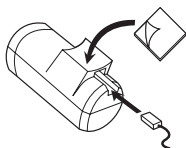


On the A-pillar

(C) Defi-Link Indicator

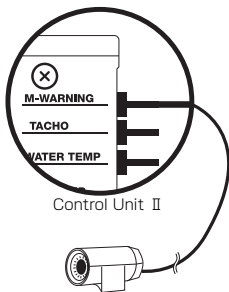
* When installing and using the Defi-Link Indicator II, please refer to its operation manual.

• In the case of the use as an indicator for each meter



1. Attach double-sided tape on the bottom of the indicator. (Use two sheets of double-sided tape for a 80mm or 115mm meter.)
2. Connect the indicator wire to the body of the indicator. (Use one of two wires that matches your desirable installation.)
3. Attach the indicator to a meter or the instrument panel.

• In the case of the use as a master warning indicator.



1. Connect the indicator to M-WARNING connector by using an attached wire.
2. Attach the indicator to a meter or the instrument panel.

"Master Warning" is an indicator which lights up as a warning signal for all the connected meters except tachometer.

(Tachometer warning is included in Master Warning of DF05001.)

● FINAL CONFIRMATION AFTER INSTALLATION (for installation personnel)

WARNING

- Please be sure to check the following items. Otherwise, there is a possibility that a serious accident may occur.

- Ensure that all hoses and tubing are permanently attached.
Also ensure that there is no leakage of oil, fuel, water and exhaust.
- Check that the sensor and wires are not interfering with the engine.
- Ensure that devices associated with the ignition (ie. ignition coil, distributor, plug cord, etc.) were not damaged or disconnected during the installation of the sensor and wires.
- Ensure that the gauge and wires are tightly attached, so they don't come loose and hinder driving.
- Check that all wires disconnected from the vehicle during installation have been properly reattached.

WARNING

- After installation, check that no materials or tools remain in the driver's seat or the engine compartment. If there are tools at the feet of the driver's seat, this may cause brake operation failure because of tools or materials caught under the brake pedal. If there are tools in the engine compartment, the engine may break

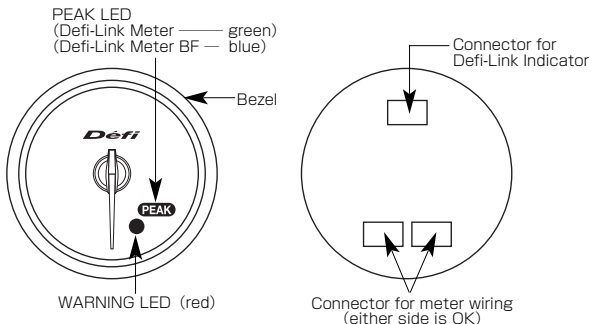
- Ensure that the negative battery terminal is tightly attached. Close the hood properly.
This concludes the installation process.

7. OPERATION(for customer)

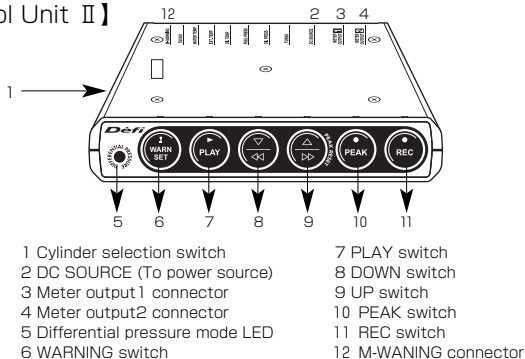
Please read and understand the following before operating this instrument.

(A)Names of Parts

【Meter】



【Control Unit II】



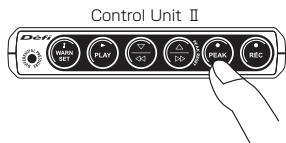
Meter output1 is for Defi-Link Meters
Meter output2 is for Defi-Link Meter BFs

(B) Mode

[REAL MODE]

The pointer displays the actual vehicle condition in real time.

At the same time, the PEAK value is stored in memory inside the Control Unit II.



[PEAK MODE]

If the Control Unit II PEAK switch is pressed for less than 2 seconds, the PEAK LED is illuminated.

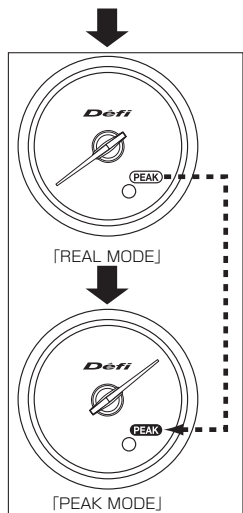
This indicates PEAK MODE.

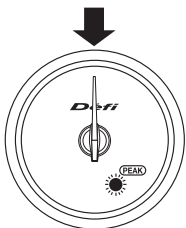
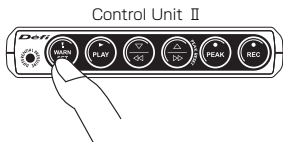
In PEAK MODE (PEAK LED is illuminated), all meter pointers will display PEAK values simultaneously.

The Control Unit II records any new PEAK values as they occur. (The memory function is active even if the vehicle key is switched OFF. Values stored in memory are not lost.)

If the PEAK switch is pressed again for less than 2 seconds, the system will return to REAL MODE.

If the UP switch is pressed in PEAK MODE, all the PEAK LEDs flash and the peak values of all meters are reset. Then all the meters return to REAL MODE.





[WARNING SET MODE]

[WARNING SET MODE]

If the Control Unit II WARN SET switch is pressed, WARNING LEDs of all gauges will blink all at once. This is the warning set mode. The LED of gauge to be set will flash quickly.

- * WARNING values of each gauge can be set by pressing UP/DOWN switches.
- * The pointer will move faster by pressing the UP/DOWN switches for a long period. Every time the WARN SET switch is pressed, the gauge to be set up changes.

If the switch is not pressed for more than 5 seconds after the warning value is set up, WARNING LED(red) goes off. After the LED goes off, setup is completed and gauges return to REAL MODE.

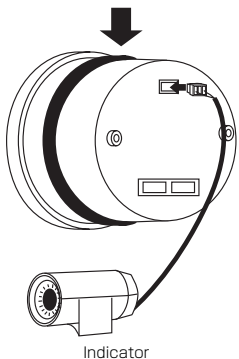
- * Regarding the oil pressure and fuel pressure gauges, the warning LED goes on at a lower value than the set value and a buzzer sounds.
- * When the ignition switch is turned on but the engine is not started, the oil pressure sensor reads 0kPa and a buzzer sounds due to the warning condition.
- * **Setting the warning value for Intake manifold pressure:**
The gauge pointer indicates the maximum on the scale to point the initial warning value. Press the DOWN switch for more than 1.3 seconds until the pointer starts to move.

WARNING

- It is very dangerous to set gauges during driving.
Please set while the vehicle is stopped.



WARNING LED (red)



Indicator

[WARNING MODE]

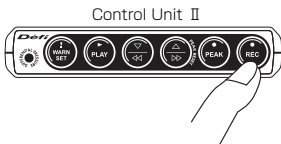
If the meter exceeds the value set for warning, the WARNING LED (red) goes on and a buzzer sounds. If the pointer turns back lower than the set value, the LED goes off.

- * The WARNING LED (red) will go on at values lower than the set value in the cases of OIL PRESS. meter and FUEL PRESS. meter.
- * After the oil pressure sensor is connected, a buzzer sounds when the ignition switch is turned on and the engine is not started.
- * If Defi-Link Indicator (sold separately) is connected at the back of the gauge, the Indicator flashes at the same time as the WARNING LED.

Defi-Link Indicator can be used as a "Master Warning" by connecting it to M-WARNING connector of Control Unit II. The Indicator lights up when any of WARNING LEDs of connected meters go on except tachometer. (Tachometer warning is included in Master Warning of DFO5001.)

* Defi-Link Indicator II and Defi-Link Indicator are sold separately.

※Please refer to P.94 for installation of an Indicator

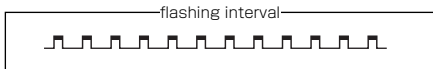
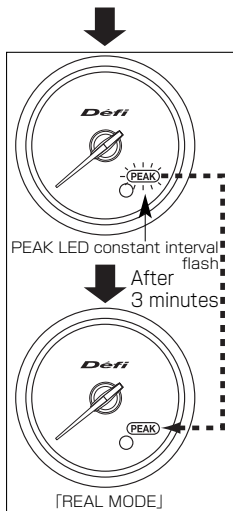


[RECORD MODE] • [PLAYBACK MODE]

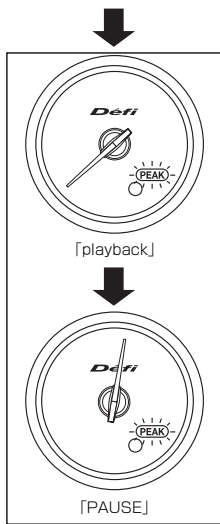
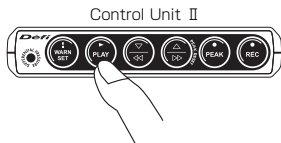
Driving data is recorded and played up to 3 minutes.

[RECORD MODE]

By pressing the Control Unit II REC switch, PEAK LEDs of all connected meters flash at the same interval and driving data is recorded up to 3 minutes.



PEAK LEDs stop flashing after 3 minutes have gone by. Then meters return to REAL MODE. To stop recording before 3 minutes have passed, press REC switch again.

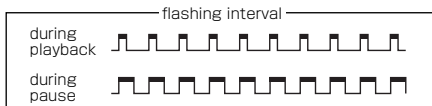


[PLAYBACK MODE]

By pressing the Control Unit II PLAY switch, PEAK LEDs of all connected meters flash at the same interval and recorded driving data is played.

Playback is paused if UP switch or DOWN switch is pressed for a short period (within 0.5 seconds) during playback.

During pause, the PEAK LED flashes at a different interval from the interval of playback.



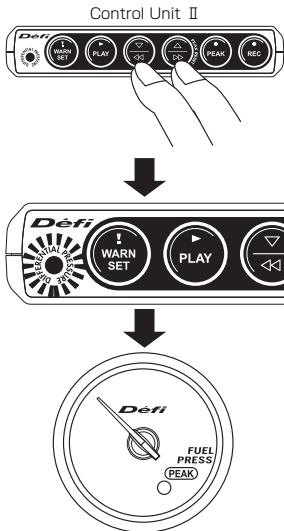
If UP switch or DOWN switch is pressed continuously during playback, the playback and rewind speed is doubled.

During this, the PEAK LED flashes at the same interval as the interval of pause. If the switch is released, it returns to pause.

Each time the UP switch or DOWN switch is pressed for a short period (less than 0.5 seconds), top sending or top return is performed.

If PLAY switch is pressed during PAUSE, playback starts again.

When playback finishes or the PLAY switch is pressed during playback, meters return to REAL MODE.

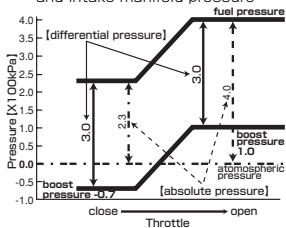


[DIFFERENTIAL PRESSURE MODE]

If both of the fuel pressure meter and turbo meter are installed, DIFFERENTIAL PRESSURE LED comes on by pressing the UP switch and the DOWN switch at the same time. This indicates DIFFERENTIAL PRESSURE MODE. In this mode, the fuel pressure meter indicates the pressure value which is the intake manifold pressure value subtracted from the fuel pressure value.

If the UP switch and the DOWN switch are pressed at the same time, meters return to REAL MODE.

The relation between fuel pressure and intake manifold pressure



About differential pressure display of fuel pressure

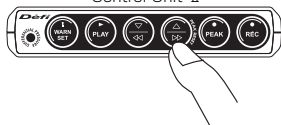
Generally, fuel pressure of electric controlled engine car is fixed in contrast to intake manifold pressure by fuel pressure regulator. As shown in the graph, fuel pressure meter displaying absolute pressure value indicates 400kPa when boost pressure is 100kPa in case that differential pressure is set at 300kPa. Fuel pressure meter displaying the differential pressure value indicates 300kPa.



[REAL MODE]



Control Unit II



[ILLUMINATION FUNCTION]

Only for Defi-Link Meter BF

In REAL MODE, the brightness of illumination can be adjusted by pressing the UP switch or DOWN switch. There are 5 stages of brightness in the daytime and 5 stages in the nighttime. The brightness decreases with being interlocked with the illumination switch on.

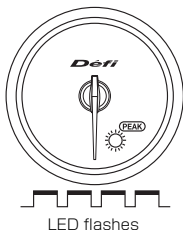
If the UP switch is pressed several times in the nighttime, the brightness will become the highest stage of the daytime brightness. This is effective for a tunnel run in the daytime and the time of twilight.

(C) CHECK FUNCTIONS (for installation personnel and customer)

WARNING

- Please check meters after starting the engine and be sure there are no abnormalities in the car. If you start to drive without checking, serious accidents may occur.

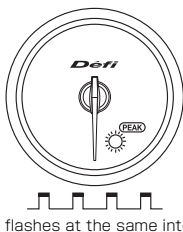
Control Unit II checks the pointer movement and the illumination of meters.



[WIRE DISCONNECTION CHECK]

This function reports the wrong wiring and/or disconnected sensors and wires. The pointer points downwards and the WARNING LED flashes.

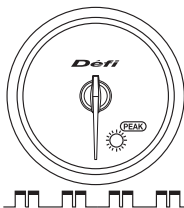
- * It is not possible to check the power wire disconnection or the tachometer signal wire disconnection.



[SHORT CIRCUIT CHECK]

This function reports short circuits of sensors and wires. The pointer points downwards and the WARNING LED flashes at the same interval.

- * It is not possible to check short circuits of the power wire and the tachometer signal wire.



LED flashes twice at same interval

[SERIAL ERROR CHECK]

This function reports that communication is impossible between meters and Control Unit II.

The pointer points downwards and the WARNING LED flashes twice at the same interval.

[OPENING MODE]

The pointers of 115mm (4 1/2") meters move faster than that of smaller meters.

8. TROUBLE SHOOTING (for customer and installation personnel)

WARNING

When abnormal conditions are found in meters, please be sure to check. Otherwise, serious accidents may occur.

Please refer to the table below and reconfirm before asking for repairs.

CONDITION	POSSIBLE CAUSE	REMEDY
<ul style="list-style-type: none"> • In general the gauges show low values. • The gauges don't perform the opening mode. 	<ul style="list-style-type: none"> • The earth wire is not properly fixed on the battery minus terminal. • A harness wire is not installed properly. 	<ul style="list-style-type: none"> • Extend the earth wire of the power harness and connect it properly to the battery minus terminal. • Check wiring.
<ul style="list-style-type: none"> • The gauges don't perform the opening and ending mode. 	<ul style="list-style-type: none"> • The fuse is blown out. 	<ul style="list-style-type: none"> • Make sure the wiring is not touched on the vehicle body and then change the fuse.
<ul style="list-style-type: none"> • The WARNING LED flashes ON at a value different from the set WARNING value. • The pointer is showing an abnormal value. 	<ul style="list-style-type: none"> • Various harnesses are picking up noise from spark signals or wireless radios etc. • Cables are picking up noise from spark plugs or communication equipment. 	<ul style="list-style-type: none"> • Reposition the sensor harness avoiding noise.
<ul style="list-style-type: none"> • The WARNING LED is flashing ON and OFF. 	<ul style="list-style-type: none"> • There is a wire short circuit somewhere. • There is a disconnected wire. • The sensor harness coupler is fixed to a different connector. 	<ul style="list-style-type: none"> • Confirm that no wires are touching the vehicle body. • Confirm that there are no wire broken or the coupler is not disconnected. • Confirm that the sensor harness coupler is located in the right position.

CONDITION	POSSIBLE CAUSE	REMEDY
<ul style="list-style-type: none"> • Illumination of Defi-Link Meters doesn't go out being interlocked with the illumination switch off. 	<ul style="list-style-type: none"> • Defi-Link Meters are connected to METER OUTPUT2. 	<ul style="list-style-type: none"> • Connect Defi-Link Meters to METER OUTPUT1.
<ul style="list-style-type: none"> • Brightness of Defi-Link Meter BF's illumination can not be adjusted. • Illumination of Defi-Link Meter BF doesn't go on. 	<ul style="list-style-type: none"> • Defi-Link Meter BFs are connected to METER OUTPUT1. 	<ul style="list-style-type: none"> • Connect Defi-Link Meters to METER OUTPUT2.
<ul style="list-style-type: none"> • The warning LED of oil pressure meter is lighted and a buzzer sounds when the engine is off. 	<ul style="list-style-type: none"> • The condition is normal. 	<ul style="list-style-type: none"> • Oil Pressure is OkPa when the engine is off and the warning LED is lighted and a buzzer sounds.
<ul style="list-style-type: none"> • Tachometer doesn't work properly. 	<ul style="list-style-type: none"> • The setup of the number of cylinders is wrong. • Tachometer is connected to METER OUTPUT2. 	<ul style="list-style-type: none"> • Set the number of cylinders referring to P.87. • Connect tachometer to METER OUTPUT1.
<ul style="list-style-type: none"> • Tachometer indicates an abnormal value as a peak value. 	<ul style="list-style-type: none"> • The orange wire (IGN) is connected to ACC. 	<ul style="list-style-type: none"> • Connect the orange wire to the 12V wire when ignition is on.

9. Terms and Conditions

1. LIMITED PRODUCT WARRANTY AND LIMITED PRODUCT LIABILITY

A Limited Warranty

- a. Our sole obligation to you after the sale of a product is to replace, without charge, the product or any component thereof discovered to be defective within a period of one (1) year from the purchasing date (the "Warranty Period").
You accept sole responsibility for the proper assembly, operation and regular maintenance of the product. This limited warranty is void if any product is damaged by accident, misuse, improper installation, or abuse, including tampering or damage in transit.
Further, this limited warranty is void if you sell or otherwise transfer a product to a third party, regardless of whether the transfer takes place within the Warranty Period.
- b. Our liability to you resulting from the sale of any product, including liability for any latent defects found within the Warranty Period, shall not exceed the total purchase price paid for the product by you.
- c. YOU UNDERSTAND AND AGREE THAT WE MAKE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED AS TO ANY MATTER WHATSOEVER, INCLUDING THE CONDITION OF THE PRODUCT OR ANY COMPONENT PARTS THEREOF, ITS MERCHANTABILITY OR ITS FITNESS FOR ANY PARTICULAR PURPOSE, AND YOU ACCEPT IT, "AS IS", "WHERE IS".
- d. You also understand that we are not granting any express warranties, other than those stated herein.
These include only those warranties enumerated in paragraph A. a. There are no other express warranties granted anywhere in these terms and conditions of sale, and you understand and agree to this fact as part of the bargained for exchange of this sale. Nowhere else, except as stated in this paragraph, in this contract is there intended, by either party, for there to be any express warranties granted to you.
- e. EXCEPT AS OTHERWISE PROVIDED HEREIN, WE SHALL NOT BE LIABLE FOR DAMAGES, INCLUDING SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHETHER IN CONTRACT OR IN TORT ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF ANY PRODUCT OR ANY COMPONENT PART THEREOF OR ITS USE BY YOU, AND WE SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL

OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH YOUR USE OF THE PRODUCT.

- f. The warranty on this product is void if the product is modified, changed, adjusted or damaged.

This product is to be used only in the ways for which it is designed and marketed for, any deviations from the intended uses will void the warranty and will excuse any possible liability of ours.

- g. You accept sole responsibility for the proper assembly, operation and regular maintenance of the product. This limited warranty is void if the product is damaged, changed, altered, or modified by accident, misuse, improper installation, or abuse, including tampering or damage in transit or while in use.

YOU HAVE MADE AN INDEPENDENT INVESTIGATION OF THE PURCHASED COMPONENTS AND HAVE RELIED SOLELY ON YOUR OWN INVESTIGATION, BARGAINING AND JUDGMENT IN REFERENCE THERETO. YOU ACKNOWLEDGE THAT YOU ARE NOT RELYING ON OUR SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS SUITABLE FOR ANY PARTICULAR PURPOSE.

IN PURCHASING OUR PRODUCTS, YOU HAVE NOT RELIED OR ACTED UPON ANY REPRESENTATIONS OR WARRANTIES ON OUR PART NOT SPECIFICALLY SET FORTH HEREIN.

- h. This limited warranty gives you specific legal rights. You may also have other rights which vary from state to state. Some states do not enforce contractual limitations on how long an implied warranty lasts, when an action may be brought, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

B Modification Strictly Prohibited

You understand and agree that any modification whatsoever, of the product, is strictly prohibited. You also agree not to modify the product in any manner regardless of whether such modification is material or immaterial. You also acknowledge that any modification of the product will void your limited warranty and bar you from any recovery or any remedy in a court of law or equity. Modification is strictly forbidden unless expressly authorized by our prior written approval. You agree not to make any modifications to the product and agree not to use any parts, components,

or accessories in connection with the installation and use of the product that are not authorized and approved by us.

C Indemnity and Release

a. You understand and agree that many factors beyond our control affect the operational safety of the product, including but not limited to the installation of the product according to the instructions provided with the product.

b. You also understand and agree that the installation of the product may involve the use of tools, equipment and construction methods which may present safety hazards which are beyond our control.

You also understand and agree that the use of some of our products may create hazards and lower your ability to control your vehicle.

c. You agree, as part of the bargained for exchange, to protect, indemnify, save harmless and release us, our authorized agents, employees, officers, directors and shareholders from and against all liabilities, obligations, claims, damages, penalties, causes of action, costs and expenses, imposed upon or incurred by or asserted against us or any assignees of ours, by you or any third party by reason of the occurrence or existence (or alleged occurrence or existence) of any use, installation, assembly, possession or operation of the product, any loss, damage or destruction of the product as of and after delivery (a "casualty occurrence"), and any other act or event relating to or caused by the product, including but not limited to, consequential or special damages of any kind, or any failure on your part to perform or comply with any of the terms and conditions hereof, or any and all liability for property loss or damage, or any and all damage resulting from death or personal injuries, including loss of services, which any person may sustain on account of, arising out of, or in connection with any use, maintenance, possession or operation of the product.

In the event that any action, suit or proceeding is brought against us or any of our authorized agents, employees, officers, directors or shareholders by reason of any such occurrence, you will, upon our request and at your expense, resist and defend such action, suit or proceeding or cause the same to be resisted and defended by counsel designated and approved by us.