

Dill®

1500 -
BAND

Retrofit TPMS Kit



Key Features:

- Visual and audible warnings
- Set desired PSI level
- Mounts to windshield or dashboard
- Alerts when tire pressure is too low
- Alerts when tire pressure is too high
- Alerts when tire temperature is too high



Thank you for purchasing a Dill Retrofit TPMS Kit. Properly inflated tires increase fuel economy, reduce tire wear and improve handling. A warning system that notifies you of an underinflated tire will provide you time to respond prior to potentially damaging your tire, vehicle, or trailer.

For more information visit our website at <http://www.trailertpms.com> or <http://www.dillvalves.com>

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1.0 Setting Up the System

1.1 Transmitter Installation

Have a professional tire retailer install the bands with transmitters in the wheels. See section 2 for details. Each transmitter has a unique ID and needs to be installed in the same corresponding position as noted in Figure on page 11.

1.2 Install the Display

- 1.2.1 Install the supplied antenna to your display unit located at the back of the unit.
- 1.2.2 Use the display mount to affix the display unit on the windshield or dashboard. Do not block the driver's view. If necessary, adjust the viewing angle of the display.
- 1.2.3 Plug the power cord into the display unit and plug the adapter into auxiliary power supply or hardwire to vehicle electrical system.



FIGURE 1



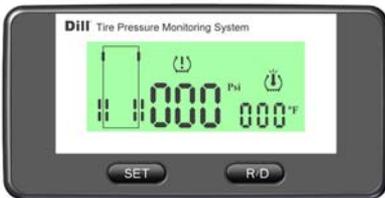
NOTE:

For hardwired connection, black wire is ground and red is positive.

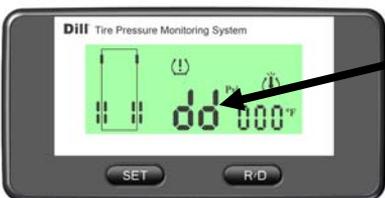
- 1.2.4 If your tire cold inflation pressure is 35 psi, you are done. If it is something besides 35 psi, complete section 1.3.

1.3 Setting the Baseline (Cold Inflation) Pressure

- 1.3.1 Set the pressure in all tires to the recommended cold inflation pressure.
- 1.3.2 Plug in the display using either provided power cord.



- 1.3.3 Hold down the “R/D” button until you hear a beep then release.



- 1.3.4 Press and release the “SET” button. The display will show “dd” in place of the pressure readings.

FIGURE 2

The display is now in LEARN MODE and will store the cold inflation pressure of each tire once it receives a signal from the transmitter. The process may take up to 8 minutes. If all pressures are not received in 8 minutes, the display will shift back to the monitoring mode. The tire positions that did not register will display 00. You will need to repeat section 1.3.2 until a signal is received from all tire positions. Driving the vehicle will speed up the process. When rotating, the transmitters send a signal more frequently than when the vehicle is stationary.

If any or all tires positions do not register after performing the Baseline Pressure setting process at least twice, or if transmitter signals are intermittent, experimentation with an external antenna and/or signal booster will be necessary to get the unit to function.

1.4 Using the External Antenna - RF Interference

The system has been tested to work 40 feet, along line-of-sight path ways. However, tire construction, vehicle construction, electronic interference and low temperatures all reduce this distance. RF signals are subject to interference from many types of signals and products, which can cause errors in the operation of the product. As with cell phones and other types of electronics using RF signals, signal interruption can occur and cause lost signal transmission.

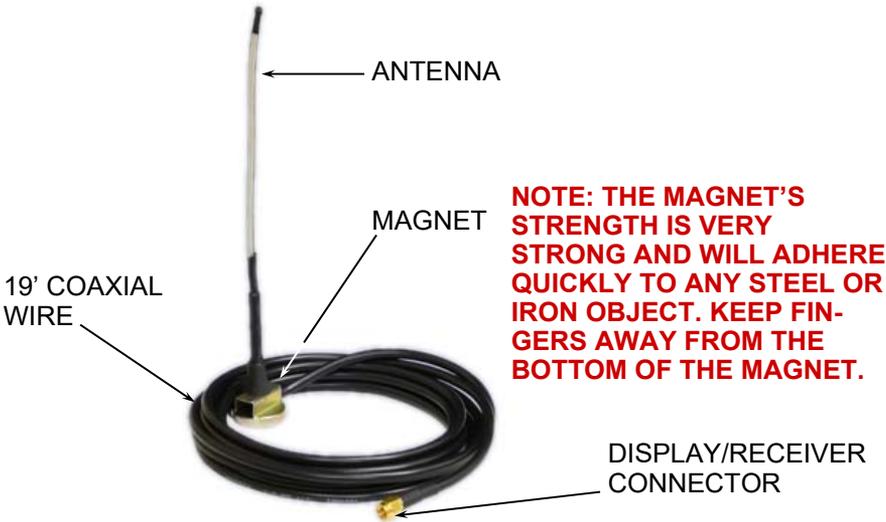


FIGURE 3

External Antenna Installation

Remove the original antenna from the back of the display unit and replace it with the coaxial wire antenna via display connector.

Install the magnet/antenna underneath the rear of the vehicle, which will give it the nearest proximity to the transmitters. Thus, increasing signal reception between the display/receiver and transmitters.

Do not install the magnet/antenna directly on the trailer.

It is the installer/end user's discretion how to install the antenna and coaxial wire from the exterior and interior of the vehicle cabin.

Installing the external antenna involves a small degree of experimentation for maximum signal reception. Temporarily connect the antenna cable to the display, passing the cable through the vehicle's door or window. This temporary connection allows you to test the antenna's location. If the location you have selected for the antenna has difficulty in picking up signals from all tire locations, change the antenna's location slightly and continue to test. When signals from all tire locations report, install the antenna permanently in the vehicle.

Caution: Stay away from transmission, oil and exhaust lines avoiding the inherent heat from those locations which can melt the coaxial cable.

If proper reception is not achieved with the external antenna, a signal boost will be required.

A signal booster (part number = 1905) is an optional part for RV's, fifth wheels and tow-vehicles and trailers. It enhances the signal from the transmitters. A signal booster is recommended to effectively receive the signals from each transmitter, when there may be interference from electronics, RV construction, length, etc.

2.0 Transmitter Installation

- The transmitter comes pre-installed in the mounting cradle. No adjustments need to be made to the transmitter or its mounting nut.
- It is recommended to install the transmitter/cradle at the location of the wheel's valve hole so its location is always known during tire mounting, tire dismounting, and if the need arises, to scan the transmitter.

2.1 Peel off the adhesive paper from the bottom of the transmitter's cradle. The adhesive on the cradle prevents the assembly from rotating around the wheel barrel.

2.2 Adhere the transmitter's cradle to the left or right of the wheel's valve stem. The transmitter can point inward or outward.

FIGURE 4



FIGURE 5



2.3 Insert the band through the lowest slot of the cradle.

2.4 Cut off excess band with tin-snips before tightening the worm-drive clamp.

2.5 Tighten the band's screw to 40 inch pounds using a 7mm ratchet or Phillips-head driver.

2.6 Lock the wheel on the tire changer. Apply lubricant on both tire beads. Mount the lower tire bead on the rim. Ensure that the tire bead does not touch the electronic module during mounting.

2.7 Mount the upper tire bead the same way and inflate the tire to standard cold inflation pressure. Avoid damaging the transmitter's antenna.

2.8 Apply soap suds or commercial leak detection solution around the wheel's valve to check for leaks.

2.9 Dynamically balance the wheel before it is put back on the vehicle.

3.0 System Overview

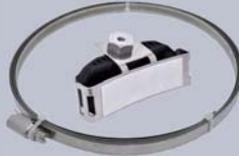
The Retrofit TPMS kit monitors tire pressure and temperature. It will provide warnings about abnormal conditions such as low pressure, high pressure, and high temperature.

3.1 System Components

FIGURE 6



DISPLAY UNIT



TRANSMITTER WITH BAND



12V DC POWER CORD & HARD-WIRE CONNECTION



EXTERNAL ANTENNA (IF NEEDED)



DISPLAY MOUNT

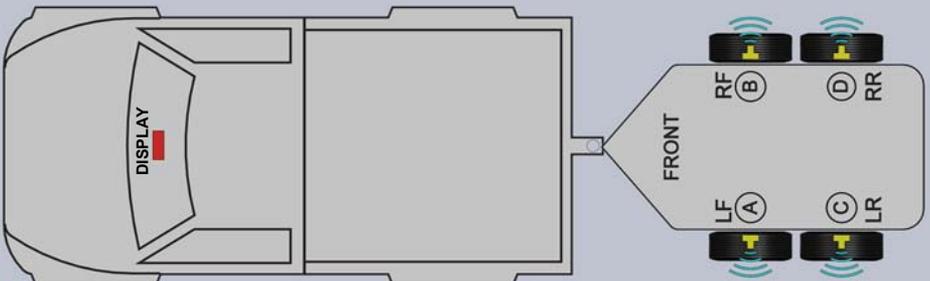


ANTENNA

3.2 How the System Works

A banded transmitter assembly is installed in each wheel, which monitors pressure and temperature conditions inside each tire of the vehicle. This data is wirelessly sent to the receiver that is installed on the vehicle. The receiver displays the pressure and temperature for each tire position. When an abnormal condition is detected, the display will alert the driver.

FIGURE 7



The display is preprogrammed to provide a warning if the pressure drops 20% below or 30% above the cold inflation pressure. It will also give a high temperature warning if the temperature exceeds 176°F. The high temperature warning point is not adjustable.

The system is shipped with the baseline (cold inflation) pressure set at 35 psi. At this setting, the display will provide a low pressure warning at 28 psi and a high pressure warning at 46 psi. You can set the baseline pressure (see Setting the Baseline (Cold Inflation) pressure in Setting up the System on page 2) up to 144 psi and the display will automatically provide a low pressure warning at 20% below and 30% above the baseline setting.

Examples:

Cold Inflation Pressure	Low Pressure Alarm	High Pressure Alarm
45 psi	36 psi	59 psi
65 psi	52 psi	85 psi
90 psi	72 psi	117 psi

3.3 Normal Monitoring

3.3.1 Stationary State:

The transmitter will transmit tire pressure and temperature data to the display at 2-minute intervals. As the data is received, the display will refresh.

3.3.2 Moving State:

The inertial switch in the transmitter turns on when the speed exceeds 16mph.

The transmitter will transmit tire pressure and temperature data to the display at 30-second intervals. As the data is received, the display will refresh.

3.4 Warnings

3.4.1 Low Pressure Warning

If the pressure in a tire is 20% lower than the cold inflation pressure setting, then the following will occur:

1. The display will show the pressure of the abnormal tire and the digits will flash.
2. An audible alert warning sound will be heard.
3. The abnormal icon will show up.
4. The system will only display the abnormal tire. By pressing "SET" or "R/D", you can temporarily view other tires.

The system will not return to normal monitoring until the problem(s) is corrected.

3.4.2 High Pressure Warning

If the pressure in a tire is 30% higher than the cold inflation pressure setting, then the following will occur:

1. The display will show the pressure of the abnormal tire and the digits will flash.
2. An audible alert warning sound will be heard.
3. The abnormal icon will show up.
4. The system will only display the abnormal tire. By pressing "SET" or "R/D" you can temporarily view other tires.

The system will not return to normal monitoring until the problem(s) is corrected.

3.4.3 High Temperature Warning

When the temperature in a tire exceeds 176°F, the following will occur:

1. The display will show the temperature of the abnormal tire and the digits will flash.
2. An audible alert warning sound will be heard.
3. The abnormal icon will show up.
4. The system will only display the abnormal tire. By pressing "SET" or "R/D" you can temporarily view other tires.

The system will not return to normal monitoring until the problem(s) is corrected.

- 3.4.4 Monitor System Malfunction will occur if the display does not receive a signal from a transmitter(s) in the tire(s) for more than 30 minutes*, the display screen will display as dashed lines “- - -” .

NOTE:

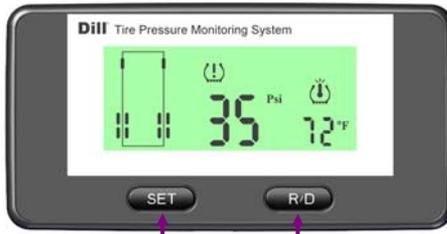
When the dash lines ”- - -” appears, it will not be dismissed from the display even if you restart the unit. When the receiver (display unit) receives an updated signal from the transmitter(s), the dashed lines will disappear.

If you are not receiving a signal from the transmitter(s), verify the following conditions.

1. Power off the display unit and restart the system. The system will return to normal monitoring after properly receiving signals from the transmitter(s).
2. Check your antenna connection. Verify the center coax pin has not become dislocated from the antenna.
If the display unit is working properly and it still does not receive a signal from the transmitter(s), then the transmitter(s) and ID chip(s) must be replaced simultaneously.
3. “Er” indicates there is no chip in the position, the chip is not correctly inserted into the display or the chip is not functioning.

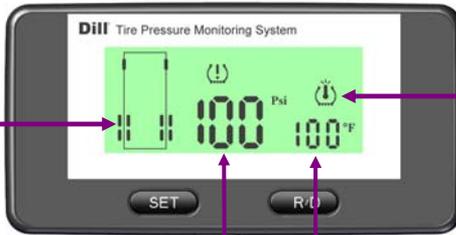
3.5 Display Indicator and Controls

FIGURE 8



SET BUTTON
Used to set number of wheel positions

R/D BUTTON
Used to learn tire cold inflation pressure



Wheel Positions

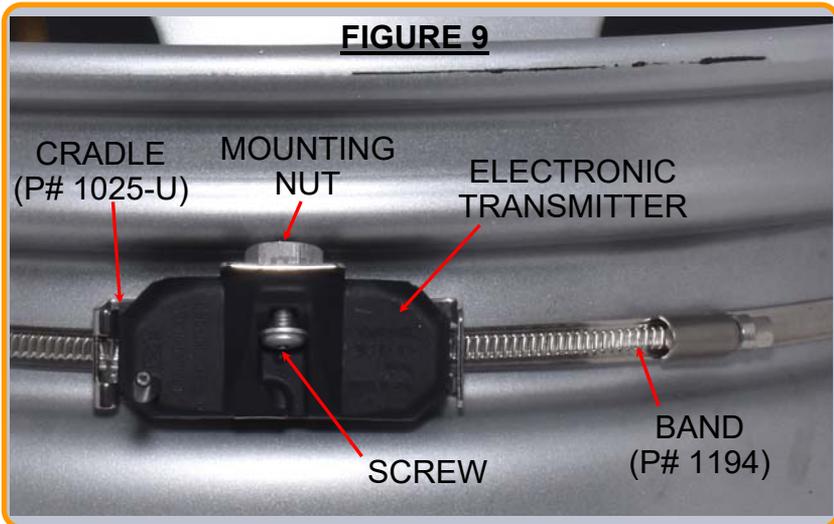
High Temp Icon
>176°#

Pressure

Temperature

3.6 Transmitter Components

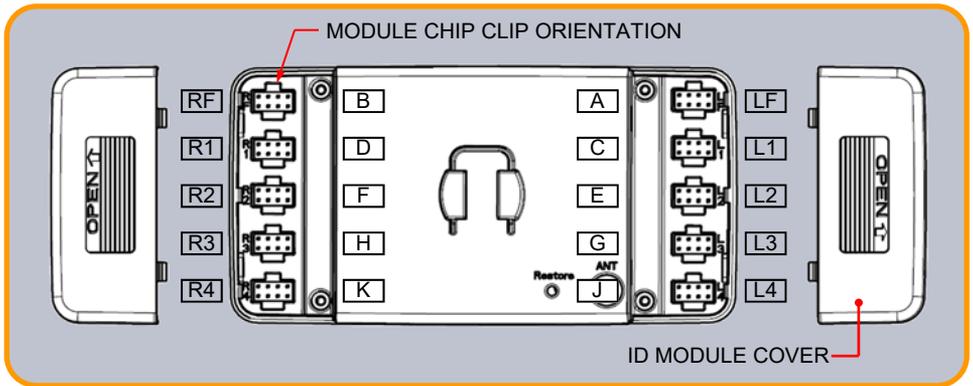
FIGURE 9



3.7 Tire Rotation

Every transmitter has a unique 8 character ID that is associated with a chip in the display. An alpha label is also added to each transmitter and chip as an additional identifier. As tires are rotated, the chips are moved to the corresponding position in the display. No reprogramming is necessary. For example if you move the right front tire (RF) to the rear (R1) you would move the chip in the back of the display from RF to R1 and move R1 to RF.

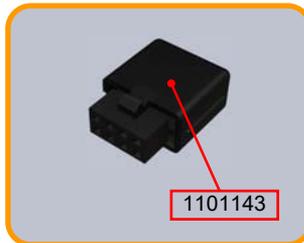
FIGURE 12



Pressing the restore key, resets the baseline to 35 PSI



Transmitter I.D.
Location



Chip I.D.
Location

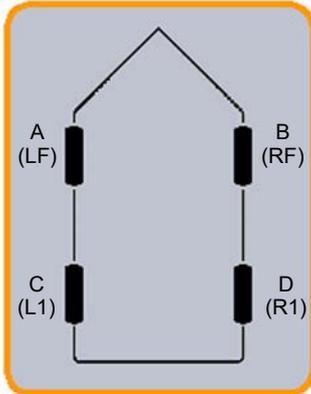
3.8 Changing Number Of Wheel Positions

The number of wheels in the vehicle can be set as 4, 6a, 6b, 8 or 10 as noted in Figure 13. Use the 4 position if monitoring a 2-wheel trailer (“Err” or “NA” will display in the unused locations). The number of wheel position is pre-set. However, if you add positions use the following procedure to change it. To change the number of wheels, perform the following:

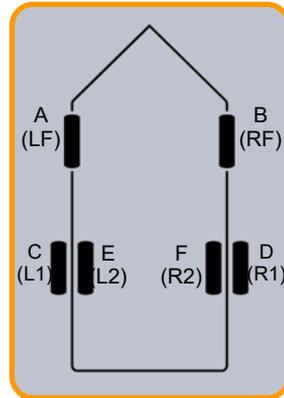
- 3.9.1 Press and hold the “SET” button for 5 seconds to enter the wheel number configuration setting, a ‘beep’ will sound and the current wheel configuration will appear on the screen.
- 3.9.2 Press the “R/D” button to select among 4, 6a-wheel, 6b-wheel, 8-wheel or 10-wheel configuration. The position and the number of the wheels will appear on the screen.
- 3.9.3 Press and hold the “SET” button for 5 seconds to complete the selection. A ‘beep’ will sound when it’s complete.

FIGURE 13

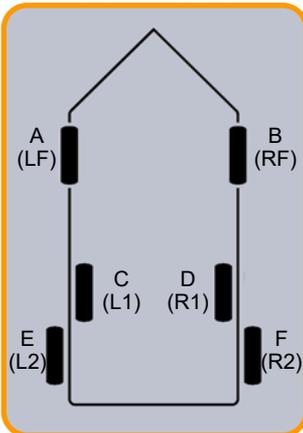
2 or 4 Wheels



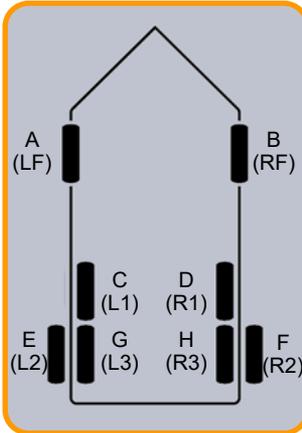
6a Wheels



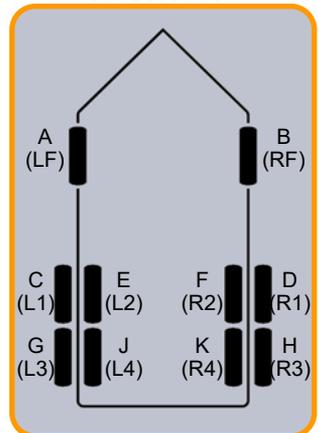
6b Wheels



8 Wheels



10 Wheels



4.0 Frequently asked questions.

Can this system be used on a passenger car?

Yes

Can this system be used on a 6-wheel pickup?

Yes

Can this system be used on an RV?

Yes

Can this system be used on a 2-wheel motorcycle?

No

Can this system be used on an ATV or UTV?

The answer is dependent on the application's recommended tire pressure. We do not recommend installing this system on any application that requires a cold inflation tire pressure of less than 25 psi.

Can I install the Dill Retrofit TPMS kit myself with a basic set of hand tools?

It is not recommended. While the Dill Retrofit TPMS tire pressure display unit can be installed in a vehicle with no tools, the process required to install the internally-mounted tire pressure sensors should be performed by a trained tire technician using tire servicing equipment.

Can my trusted tire shop install your system?

Most likely, yes. If your tire shop is familiar with factory Tire Pressure Monitoring Systems on 2008+ model year vehicles, then installing the Dill tire pressure sensors will not be a challenge.

Can the Dill Trailer TPMS monitor the original factory sensors on my tow vehicle?

No, the tire pressure display unit can only be used to monitor the Dill Retrofit TPMS tire pressure sensors included in the kit. However, Dill Retrofit TPMS tire pressure sensors can be mounted in your tow vehicle's wheel using a band if tire pressure monitoring is desired. Please call for more info.

Will the Dill Trailer TPMS kit cause problems with my vehicle's factory TPMS?

No

Can my vehicle's factory TPMS read the Dill Trailer TPMS tire pressure sensors?

No

Can the Dill tire pressure display monitor multiple tires that require different recommended cold inflation pressures?

Yes. During the initial setup of the system, each Dill Retrofit TPMS tire pressure sensor-equipped position can be programmed to monitor a different baseline cold inflation pressure. For example, the Dill system can accurately monitor the front and rear tires of a tow vehicle (60 psi front, 75 psi rear) and the tires on a trailer (50 psi).

Are the pressure warning levels adjustable?

No. The Low Tire Pressure Warning is preset to 20% below the user-set baseline tire pressure. The High Tire Pressure Warning is preset to 30% above the user-set baseline tire pressure.

Are the tire pressures monitored while the vehicle/trailer is parked?

Yes, but visual and audible warnings to the user can only happen when the display receiver is powered on.

Can I monitor a spare tire?

Yes, but keep in mind the tire pressure display unit only shows an even number of tire positions (2, 4, 6, 8, or 10). If you add a single spare, there will be one position that will not be used and when the display unit cycles to that position "Err" will display, but there will not be an audible warning.

Can the Dill Trailer TPMS detect a tire blowout?

No. Tire pressure sensors can only transmit freely when they are under pressure.

Will I need the long magnetic antenna?

The Dill Retrofit TPMS has a radio frequency range of 40ft line-of-sight. With various materials in between the monitored tire and dash-mounted display unit, interference is possible. If reception is intermittent when using the short antenna, we recommend installing the long magnetic antenna or purchasing the Dill Retrofit TPMS Signal Booster.

Where should the long magnetic antenna be installed if my application requires it?

We recommend attaching the magnetic antenna to the bottom of the rear bumper hitch which would keep it in line with the sensors/tires.

Can I use the system with two different trailers?

Yes, but the process of setting up the display unit to work on multiple trailers will depend on several factors. Please call us if this is a requirement.

5. Specifications

5.1 Transmitter (Part Number = 9300)

- Weight: 1.25 oz. (35g)
- Dimensions: 0.59" x 2.50" x 1.11" (1.5 x 2.8 x 6.4 cm)
- Operating Temperature Range: -40°F to 257°F (-40°C to 125°C)
- Pressure Accuracy: ± 2 PSI ($\pm .14$ Bar)
- Temperature Accuracy: ± 5.4 °F (± 3 °C)
- Battery life: 5 to 7 years
- Maximum Sensing Pressure: 188PSI (12.96Bar / 1296Kpa)
- Maximum Cold Inflation Pressure: 144PSI (9.93Bar / 993Kpa)
- Frequency: 433.92MHz

5.2 Display (Part Number = 1900)

- Power Consumption: 130mW (regular) / 230mW(Max)
- Power Supply: DC12 Volt
- Weight: 1.06oz. (30g)
- Dimensions: 3.35" x 1.97" x 0.79" (8.5 x 5 x 2 cm)
- Pressure resolution: 1PSI (.07Bar / 7Kpa)
- Temperature resolution: 2°F (1°C)

5.3 Alternate Valve Part Numbers

- None are compatible with OEM Sprinter van wheels



TP 501
WHEEL RIM
HOLE SIZE: .625"



TP 416
WHEEL RIM
HOLE SIZE: .453"



TP 555
WHEEL RIM
HOLE SIZE: .390"



TP 572
WHEEL RIM
HOLE SIZE: .625"

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