

# TURBO TIMER HE 24V

## INSTRUCTION MANUAL



Pursuing the Ultimate in Engine Performance and Efficiency.  
HKS Company Limited

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### 1. NOTICE

This manual assumes that you have and know how to use the tools and equipment necessary to safely perform service operations on your vehicle. This manual assumes that you are familiar with typical automotive systems and basic service and repair procedures. Do not attempt to carry out the operations shown in this manual unless these assumptions are correct. Always have access to a factory repair manual. To avoid injury, follow the safety precautions contained in the factory repair manual.

- This manual indicates items that require careful attention in order to install this product safely, and lists precautions to avoid any possible damage and/or accidents.
- This product was designed for and tested on a factory-spec vehicle or a vehicle equipped with other HKS products. Performance and/or safety cannot be guaranteed if this product is installed onto other inapplicable vehicles.
- For any lost, defective and/or damaged parts, contact your retailer/dealer to order.
- HKS will not be held responsible for any damage caused by incorrect installation, mishandling, and/or misuse, nor for damages caused by modifications to or dismantling of this product.
- This product will only operate on a vehicle with DC24 V negative ground.
- Use this product with a relay capacity of 3 A or less.
- The specifications of this product are subject to change without notice.
- This manual is subject to be revised without notice.

PRODUCT	TURBO TIMER HE 24V
USE	Keeps the vehicle idling for a preset period of time after ignition has been turned off.
APPLICATION	Domestic heavy equipment. DC24 V Negative Ground Vehicles.
PART No.	41001-AK013

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### 3. SAFETY INSTRUCTIONS

#### Warning

- Make sure to work on the vehicle in a well-ventilated area to prevent possible explosion or fires.
- To avoid possible accidents, do not mount the unit in areas where the driver may become distracted during driving.
- Make sure to secure wires routed inside the vehicle to avoid possible accidents where the driver's feet may become caught or tangled in wiring.
- Make sure to disconnect the cable from the negative terminal of the battery to avoid possible damage to other electronics parts and/or a fire caused by a short circuit.
- Properly disconnect all connectors/harnesses by holding the connectors and not the wires. Failure to do so may damage the wires and/or connectors and can lead to shorts.

#### Warning

- Do not operate the Turbo Timer while driving. Always operate the Turbo Timer while the vehicle is parked in a safe location.
- When the Turbo Timer is operational (timer countdown idle with the ignition off), do not leave the vehicle until after the engine has completely shut off.
- Make sure the parking brake is applied, and the gear selector is in neutral (for MT) or in the Park (P) position (for AT), prior to starting the Turbo Timer to prevent serious accidents. Do not operate the Turbo Timer indoors or in poorly-ventilated areas to prevent carbon monoxide poisoning from exhaust gases.
- If any unusual noises, scents, and/or vibrations are noticed while driving, stop using this product and consult your HKS Authorized Dealer immediately.
- If for any reason the engine does not shut off after the timer countdown, turn off the Turbo Timer immediately, or disconnect the harness to prevent possible fires.
- Use this product with a relay capacity of 3 A or less. Otherwise, if other electrical equipment (such as power windows) is used while this product is operational, it may cause fire and/or damage to the electrical equipment.

#### Caution

- Do not install this product by yourself unless you have and know how to use the tools and equipment necessary to safely perform service operations on your vehicle.
- Do not modify, disassemble, and/or repair the product and supplied parts to avoid any damage to the vehicle.
- Handle the parts with extra care at all times.
- Avoid allowing oil and/or water to enter the unit to prevent malfunctions that may cause damage to the engine.
- To avoid possible malfunction and damage to the engine, install the unit away from areas of excessive heat or water/moisture.
- Make sure all connections and wiring are correct to prevent electric shocks, shorts, or damage to the vehicle.
- When using a splice, make sure to insulate the portion where a splice is installed using an insulating tape. Failure to do so may cause vehicle damage and/or burnout.
- Connect the ground wire to the screw that is used for the vehicle's chassis ground.
- If the product or the vehicle with the product does not operate properly, consult your retailer/dealer immediately.

- Daily maintenance of the vehicle is the responsibility of the owner/user.
- Refer to the factory service manual when removing factory parts.
- Do not lose and/or damage any removed factory parts.
- Make sure to use the appropriate tools when tightening all nuts and bolts.
- Make sure not to damage the factory wiring when installing this product.

### 4. PREFACE

The number one cause of turbo failure is oil "coking". Oil "coking" occurs when a turbocharger is not properly cooled down and the oil that normally lubricates the center cartridge heats up and forms solidified oil deposits. A turbo timer allows an engine to idle for a preset time after the ignition key has been turned to the off position and removed. --- By allowing a turbocharged engine to idle, oil continues to pass through the turbo until it has cooled down to the point where oil "coking" will not occur, thereby prolonging the life of the turbocharger. The HKS TURBO TIMER has the following functions.

- Turbo Timer function
  - 5 time ranges selectable between 1, 3, 5, 10, and 30 min.
- Low-voltage Protective Function
  - Timer stops when the battery voltage decreases to 18 V or lower.
- Safety Circuit Function
  - This function prevents the vehicle to be driven after the Turbo Timer countdown has started.

#### Warning

- If the vehicle is driven after the Turbo Timer countdown has started, the Turbo Timer and engine will automatically shut off. Do not attempt to drive the vehicle in this state.

#### DC24 V

- This product operates only on DC24 V negative ground vehicles. Do not install on 12 V vehicles.

### 5. PARTS LIST

1 Main Unit	1	2 Parking Brake Wire	1	3 Double-sided Tape	1	4 Splice	1
5 Tie Wrap	3	6 Instruction Manual	1	7 Instruction Manual	1	(example) Part shape	
						No.	Quantity

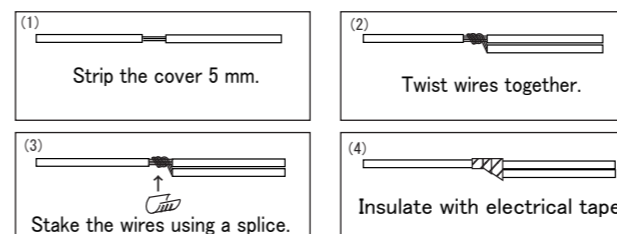
### 6. INSTALLATION

In order to install this product, the following tools are required: Wrench, Nippers, Screwdriver, Crimping Tool, Insulating Tap (vinyl tape), Tester, etc.

#### Caution

- The safety circuit wiring must be performed, as the Turbo Timer will not operate without it.
- After completing the installation, confirm the safety circuit functions properly.
- Do not connect the black ground wire to the power supply wires (such as IG, +B, and/or ACC). It may cause damage to the Turbo Timer.

#### 6-1. How to use the splice



- (1) Strip 5mm of the wire cover for wiring as shown above.
- (2) Connect another wire to the uncovered portion, and twist the wires together.
- (3) Stake the twisted wires using a splice.
- (4) Cover the spliced wires with electrical tape to insulate.

#### 6-2. Key Switch Connector Position

Use a tester to check the + B, ACC, IG1, and IG2 wiring contained in the key switch connector.

#### ADVICE

- When searching for + B, ACC, IG1, and IG2 lines, connect the negative side of the tester to the metal part of the body (where the body is securely grounded).
- When searching for + B, ACC, IG1, and IG2 lines, set the tester to the DC voltage measurement range.
- It is convenient to draw the position of the connector line in the figure.

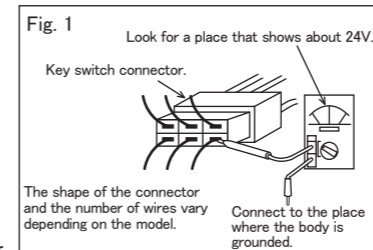


Fig. 2



- Check + B (constant power line)
  - (a) Set the engine key to the "lock" or "OFF" position.
  - (b) Place the positive side of the tester on the metal part at the base of the wire of the key switch connector as shown in Fig. 1.
    - The line where the tester's needle shook is + B.
  - (c) Some vehicles have multiple + B, so please check all of them.
- Checking ACC (accessory power line)
  - If the key does not have an ACC position, there is no need to check.
  - (a) Set the engine key to the "ACC" position.
  - (b) Except for the confirmed + B, check the ACC in the same way as for + B.
- Check IG1 and IG2 (ignition power line)
  - (a) Set the engine key to the "ON" position.
  - (b) Except for the confirmed + B / ACC, check the IG in the same way as when + B.
  - (c) Some vehicles have two IGs, so check all the remaining lines.

#### 6-3. Key Switch Connector Wiring

- (1) Remove the terminal of the negative terminal of the battery.
- (2) As shown in Fig. 3, disconnect from the 3-pin connector of the turbo timer body at a place about 5 cm (three thick lines).
- (3) Connect the red line of the turbo timer to the + B line as shown in Fig. 4.
  - If there are multiple + Bs, connect the red wire to one of them.
- (4) Connect the green wire of the turbo timer to the IG wire as shown in Fig. 4. If there are two IG wires, connect IG1 and IG2 using the green wire cut out in (2).

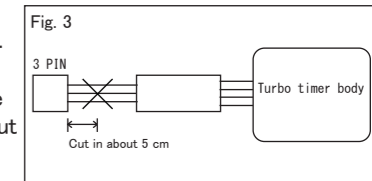
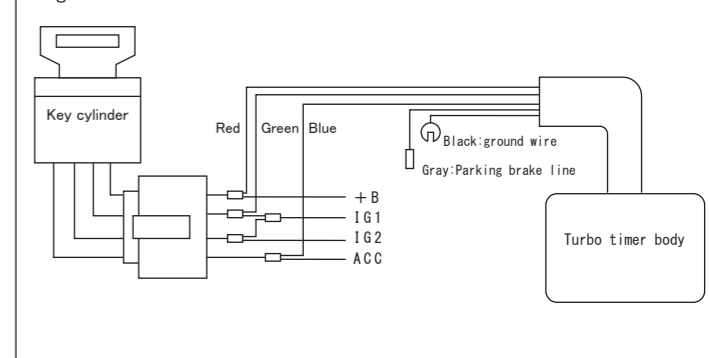


Fig. 4

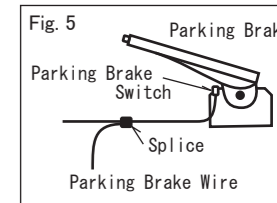


- (5) Connect the blue wire of the turbo timer to the ACC wire as shown in Fig. 4.
  - If there is no ACC, the blue wire will not be used, so be sure to insulate the blue wire with insulating tape.
- (6) Connect the body ground (black) wire to a bolt etc. that can take the vehicle body ground. (Peel off the paint and rust on the metal part that connects the body ground wire with a file before connecting.)

#### 6-4. Safety Circuit Wiring Connection

##### If there is one Parking Brake Wire

- (1) Connect the gray wire from the Turbo Timer to the supplied gray parking brake wire.
- (2) Using the supplied splice connector, connect the supplied gray parking brake wire to the vehicle's parking brake wire.



##### If there are two Parking Brake Wires

- (1) Connect the gray wire from the Turbo Timer to the supplied gray parking brake wire.
- (2) Turn the key switch on. (Do not start the engine.)
- (3) Using a multi-meter, find the wire that reads 0 V when the parking brake is engaged, and 24 V when the parking brake is disengaged.
- (4) Using the supplied splice, connect the gray parking brake wire to the vehicle's parking brake wire found in (3).

#### 6-5. Confirmation after wiring

- (1) After wiring, check that the ground wire and power supply system (+ B, ACC / IG1 / IG2) are correct.

## 6-6. Mounting the Main Unit

### Warning

- When mounting the Main unit, make sure that there is no excessive tension on the lead wires from Timer Harness, the wires are not twisted, and the wires do not come in contact with other cables and/or cords. It may cause a malfunction that can damage the vehicle or become a distraction while driving.
- Do not touch or let dust settle on the adhesive surface of the double-sided tape. Do not apply the tape onto wooden or curved surfaces, as well as on fabric. Reuse of the tape may degrade the seal so that it may hold the mounted unit. Dropping the unit may cause a malfunction of the unit and/or damage to the vehicle.

### Caution

- Install the unit away from areas of excessive heat, water/moisture, or uneven surfaces to avoid possible malfunction, damage to the engine, and/or deformity of the case.

- (1) Wipe off dust, water, or oil on the mounting surface using a mild detergent where the unit will be placed.
- (2) Use the supplied double-sided tape to mount the unit.
- (3) Secure harnesses using tie wraps in various locations.

## 6-7. After Installation

- (1) Reinstall all removed parts back to their original positions.
- (2) Reconnect the negative cable onto the battery.

## 7. AFTER INSTALLATION

### Caution

- Prior to confirming operation, make sure the foot brake is applied, and the immediate area around the vehicle is clear.

Check the following after the installation process is complete:

### 7-1. Check the following before starting engine

Check item	Check
Make sure all bolts and nuts are tightened.	
Make sure all installed components and harnesses do not come in contact with other parts.	
Make sure all harnesses are secured tightly.	
Make sure connectors and harnesses are routed and connected properly.	
Make sure the correct splice is used and tightened completely.	
Make sure this product is mounted securely on an area that will not distract the driver while driving.	
Make sure the negative cable terminal is securely attached to the battery.	

### 7-2. Start the engine and check the following

- Do not raise the engine rpm right after starting the engine. (Let it idle and warm up to standard operating temperature)

Check item	Check
Make sure the installed parts are not coming into contact with each other.	
Make sure there is no excessive stress on harnesses.	
Make sure there are no loose bolts or connections after turning off the engine. Re-tighten as necessary.	

### 7-3. Safety Circuit Function

Check the following to confirm the Turbo Timer function and the safety circuit operation:

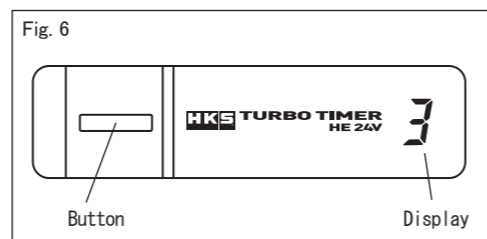
#### Step 1

- (1) Start the engine.
- (2) Set the timer setting to 1 minutes or longer.
- (3) Make sure the parking brake is applied, and step on the foot brake.
- (4) Turn off the ignition key and check that the turbo timer is working.
- (5) Release the side brake after 10 seconds. At this time, if the turbo timer turns off and the engine stops, it is installed correctly.

#### Step 2

- (1) Start the engine.
- (2) Set the timer setting to 1 minutes or longer.
- (3) Step on the foot brake, and release the parking brake.
- (4) Please turn off the ignition. At this moment, the turbo timer turns off and if the engine stops, it is installed correctly.

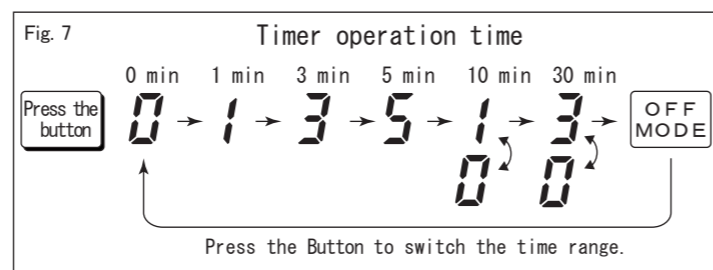
## 8. NAMES AND FUNCTIONS



Button : Select the timer operation time.  
Display : Displays the timer operation time.

## 9. OPERATION

All operations are performed with the ignition turned ON.



- ※ For the time range of 10 and 30 minutes, two digits blink alternately.
- ※ The time range blinks repeatedly after it is changed by pressing the Button.

### Countdown Timer

- When the ignition is off, countdown of the set time begins, and after-idling lasts for the set time.
- During countdown, the numerical value on the display blinks, and buzzer is rung.
- When the countdown set time is less than 10 minutes, the timer counts down the set time in minutes. When the countdown set time is 30 minutes, the timer counts down every 10 minutes, and when the remained time becomes 10 minutes, the timer counts down the set time in minutes.
- When countdown ends, the engine stops, and Turbo Timer is turned off.
- To change the countdown set time, press a button during countdown. After the set time is changed, countdown is started over.

### Timer Off Function

- If a button pressed during countdown, Turbo Timer is turned off, and the engine stops. When the ignition is turned on again, Turbo Timer is turned on automatically and goes back to the previous setup.

### OFF Mode

Under this mode, the display comes off, and Turbo Timer is turned off.

- When the ignition is turned off under this mode, the engine stops without activating Turbo Timer.
- When the ignition is turned off under this mode, the display does not come on next time when the ignition is turned on.

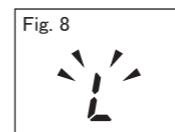
### Parking Brake

Safety circuit is activated by applying a parking brake as described below:

- Turn off the ignition without applying a parking brake; the engine stops without activating Turbo Timer. (This does not function under Off Mode and/or when the timer sets to 0 minute.)
- Release a parking brake during countdown; the engine and Turbo Timer stop working.

## Low-voltage Protective Function

- When the battery voltage decreases to 18V or lower during countdown, the engine and Turbo Timer stop working to protect a vehicle from a damage. When the battery low-voltage is detected, "L" blinks on a display right before the engine stops.



## 10. OPTIONAL PARTS LIST

The following optional part is available.

No.	Code No.	Product name
1	4103-RA001	Turbo Timer Direct Installation Harness Kit

## 11. TROUBLESHOOTING

If this product is not performing properly; check all wiring and connections, referring to the following before contacting your dealer.

Symptoms	Cause	Countermeasure
Display does not power on after the ignition is on.	OFF Mode is selected.	Press the button to deactivate OFF Mode.
	Improper wiring and/or connection of the timer harness connector.	Securely connect the timer harness connectors and wires.
Display remains on despite the ignition being on or off.	Improper ground.	Make sure grounding is done correctly. Remove any paint and/or rust from the grounding surface.
	Green wire wrongly connected to the vehicle's +B (constant power) wire.	Connect the green wire to the vehicle's IG wire.
Countdown does not start when the ignition is turned off, and the engine is turned off as well.	Countdown time is set to "0".	Set the countdown time to longer than 1 min.
	Wiring for the safety circuit is not complete.	Refer to 6-4.
	The parking brake is not applied.	Apply the parking brake.
Countdown does start when the ignition is turned off, but the engine is immediately shut off as well.	The battery is losing its charge.	Check the battery voltage.
	Improper wiring.	Connect the green wire to the vehicle's IG wire.

### Warning

- Do not use this product if unusual occurrences should occur. Consult with your HKS Authorized Dealer immediately.

### Caution

- Do not try to repair the product yourself. Consult with your HKS Authorized Dealer.
- If any unusual noises, scents, and/or vibrations are noticed while driving, please refer to a factory repair manual.

## 12. PRODUCT SPECIFICATIONS

Operating Voltage	DC 18-32 V
Maximum Control Current	IG Wire 3A / ACC Wire 3A
Operating Temperature	-20~60°C (-4 to 140°F)
Maximum Stand-by Current	Less than 10 mA
Unit Size - Main Unit	21.0 x 80.0 x 69.2 mm

## 13. ONSTRUCTION MANUAL REVISION HISTORY

Ver.	Date	Details
3-1.01	2022/8	1st Edition