NITTO KOHKI

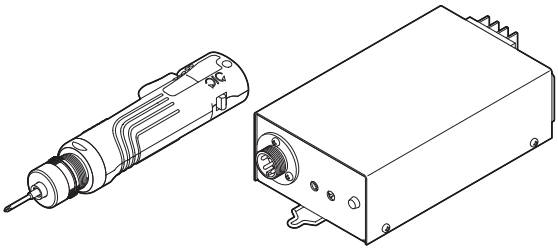
# INSTRUCTION MANUAL

Professional tool **ELECTRIC SCREWDRIVER**

delvo

**Model: DLV5800U Series/DLC0350**

# Product Operational Information



- Indoor Use Only
- Grounded bit function
- ESD Protection

EN This instruction manual is written in English.
Instruction manuals in other languages can be downloaded from the URL below.

FR Ce manuel d'instructions est rédigé en anglais.
Les manuels d'instructions dans d'autres langues peuvent être téléchargés à partir de l'URL ci-dessous.

DE Diese Bedienungsanleitung ist auf Englisch verfasst.
Bedienungsanleitungen in anderen Sprachen können von der unten genannten URL heruntergeladen werden.

IT Il presente manuale di istruzioni è redatto in lingua inglese.
I manuali di istruzioni in altre lingue possono essere scaricati dal seguente URL.

ES Este manual de instrucciones está escrito en inglés.
En la dirección URL indicada abajo se pueden descargar los manuales de instrucciones en otros idiomas.

PT Este manual de instruções está escrito em inglês.
Pode descarregar os manuais de instruções nos outros idiomas a partir do URL indicado abaixo.

http://www.nitto-kohki.co.jp/e/

**[Specifications]**

Electric screwdriver

| Model | DLV5820U | DLV5820HU | DLV5840U |
|---|---|---|---|
| Torque [Nm (Lb-in)] | 0.02 to 0.2 (0.18 to 1.8) | | 0.15 to 0.4 (1.3 to 3.5) |
| Free Speed [min$^{-1}$] | 500 to 750 | 700 to 1000 | 450 to 600 |
| Model Type | | | |

Controller

| Model | DLC0350GG | DLC0350LU |
|---|---|---|
| Input Voltage | 230 V AC 50/60Hz | 115 V AC 50/60Hz |
| Plug Shape | Europe | USA |
| Model Type | | |

Please refer to p. 5 for details.

- Please read manual carefully before you attempt to use your tool so that you may use it properly and safely.
- Keep the manual handy - so you can use it whenever necessary.

• Due to continuous product development/improvement the specifications and configurations in this document are subject to change without prior notice.

Manufactured by.
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(Original Instructions)
TV06941-2 08/2019

Thank you very much for your purchase of this **NITTO KOHKI product**.
Before using your tool, please read this manual carefully so that you may use it properly to get the most out of it.
**Please keep the manual handy - so you can use it whenever necessary.**

## Contents

# Product Specific Safety Rules

## ⚠ WARNING

- **Always use the electric screwdriver and controller as a set.**
  Using other power supplies could result in a fire or accident.

## ⚠ CAUTION

- **This tool is not an impact type electric screwdriver. Do not tighten twice (extra tightening). Also, it cannot be used for screw tightening of such things as wood or drywall.**
  Depending on fastening conditions, screws may become loose.
  Improper impacts could decrease product life or cause product failure.
- **Do not use the tool for anything other than screw tightening.**
  It should not be used for tasks such as drilling or threading (such as a tapper).

### About Unit Notation

This instruction manual is written using both SI units and the imperial measurement method (yards, pounds). Numeric values outside the ( ) are the value in SI units, while those inside the ( ) are the imperial measurement value.

Notation Example: Length 25.4 (1") → in / mm

Weight: 0.45 (1) → lbs / kg

Torque: 1.13 (10) → Lb·in / Nm

# 1 Application

This is a hand-held electric screwdriver used to tighten screws.

# 2 Checking Inside the Package

When you open the package box, check the content of the package and also check for any damage caused by incidents during transportation.
If a problem is found, consult with the store where you purchased the product.

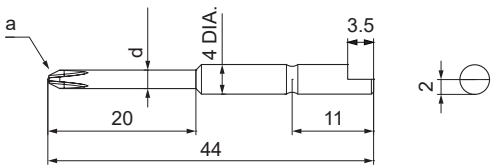
## Package content and list of accessories

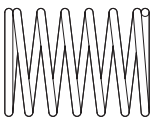
| Electric screwdriver | DLV5820U/DLV5820HU | DLV5840 |
|---|---|---|
| Package content and accessories | Quantity | Quantity |
| Electric screwdriver (main unit) | 1 | 1 |
| Bit NK4D (No.0×1.8×44) | 1 | — |
| Bit NK4D (No.0×2.5×44) | 1 | 1 |
| Bit NK4D (No.1×4×44) | — | 1 |
| Suspension Bail | 1 | 1 |
| Connection Cord (60" (1.5 m)) DLW9081 | 1 | 1 |
| Low Torque Spring (silver) | 1 | — |
| Instruction Manual | 2 | 2 |

| Controller | DLC0350GG | DLC0350LU |
|---|---|---|
| Package content and accessories | Quantity | Quantity |
| Controller (main unit) | 1 | 1 |
| Power Cord (plug shape: Europe) | 1 | — |
| Power Cord (plug shape: USA) | — | 1 |

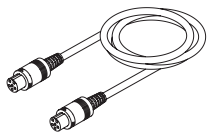
Bit NK4D

| Phillips (a) | DIA. (d) | Total length |
|---|---|---|
| No. 0 | ×1.8 (0.07") | ×44 (1.73") |
| No. 0 | ×2.5 (0.1") | ×44 (1.73") |
| No. 1 | ×4 (0.16") | ×44 (1.73") |

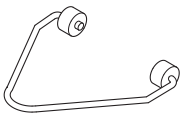


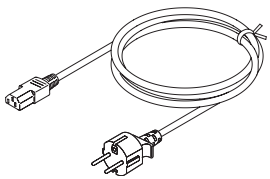
Low Torque Spring (silver)



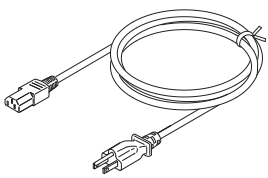
Connection Cord



Suspension Bail



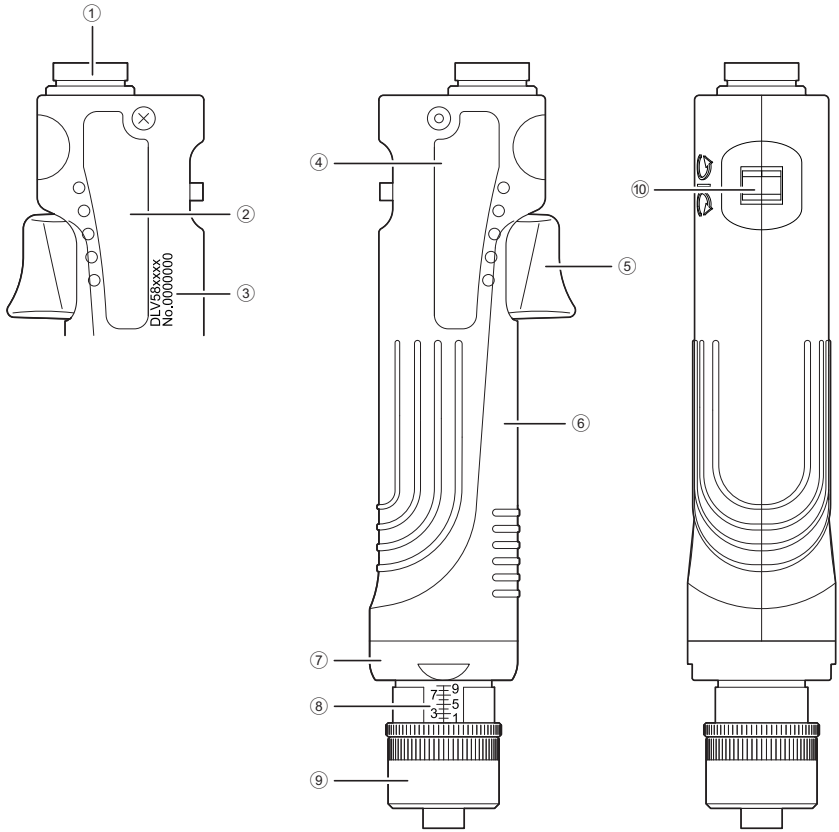
Power Cord
(plug shape: Europe)



Power Cord
(plug shape: USA)

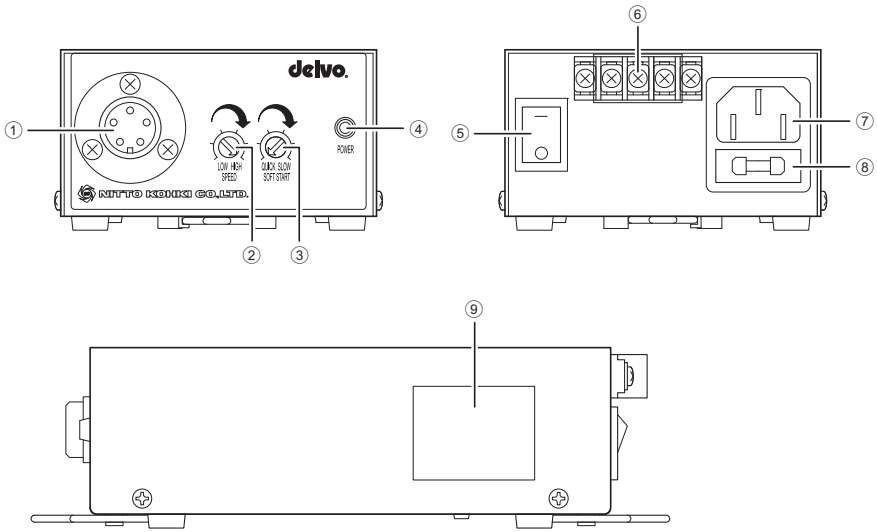
# 3 Part Names

## Electric screwdriver




① Receptacle (the connection cord is used to connect the controller.)
② Warning Plate
③ Serial No
④ Rating Plate
⑤ Lever Switch
⑥ Frame Handle (exterior resin part of main unit)
⑦ Coupling
⑧ Torque Scale (standard)
⑨ Torque Adjustment Ring
⑩ Changeover Switch

## Controller




① Receptacle
② Speed Adjustment Volume
③ Soft Start Adjustment Volume
④ Power Lamp
⑤ Power Switch
⑥ Signal Output Terminal
⑦ Inlet
⑧ Fuse Holder
⑨ Rating Plate

# 4 Specifications

### ⚠ CAUTION

- **The output torque is the value measured in combination with the output torque measurement device.**
  When the output torque is measured by some other measuring device or combination, the value may be different.
- **The output torque and torque that occurs in screws do not match.**
  Use a torque wrench to check the torque generated on screws.

## Electric screwdriver

| Model | Lever Start | DLV5820U | DLV5820HU | DLV5840U |
|---|---|---|---|---|
| Torque | Lb-in | 0.18 to 1.8 | | 1.3 to 3.5 |
| | Nm | 0.02 to 0.2 | | 0.15 to 0.4 |
| Free speed | $min^{-1}$ | 500 to 750 | 700 to 1000 | 450 to 600 |
| Screw Size (for reference) | Inch thread | #2 or less | | #1 to #3 |
| | Metric coarse thread | 1.0 to 2.3 mm | | 1.6 to 2.6 mm |
| Suitable Bit Shape | | NK4D (dia. 4 mm (0.16")) | | |
| Input Voltage | | 40 V DC | | |
| Power Consumption | W | Approx.10 | | |
| Rated Operation | | ON 0.5 seconds/OFF 3.5 seconds | | |
| ESD Protection (antistatic performance) *1 | | Yes (Conformance with International Electrostatics Standards IEC 61340-5-1) | | |
| Bit Grounding Function | | Yes (safe resistor 1 MΩ bond within controller) | | |
| Main Unit Weight | g (lbs) | Approx. 230 (0.51) | | |
| Temperature Range [°F] | Operating | 23 to 122 (-5 to +50 °C) | | |
| | Storage | -4 to 158 (-20 to +70 °C) | | |
| Noise Emission [dB] | $L_{PA}$ *2 | 53 (uncertainty: K=3dB) | | |
| | $L_{WA}$ *3 | 64 | | |
| Relative Humidity | | Free of dew (include time of the storage) | | |
| Operating Environment | | Less than 6557 ft (2000 m) above sea level | | |
| Pollution Degree | | Degree 3 according to IEC 60664-1 | | |
| Over Voltage Category | | Category II according to IEC 60664-1 | | |

*1 ESD is the abbreviation of Electro-Static Discharge. It means the discharge of static electricity
*2 $L_{PA}$; A-weighted surface sound pressure level
*3 $L_{WA}$; A-weighted sound power level

## Controller

Use the screwdrivers in combination with the following special controllers.

| Model | | DLC0350GG | DLC0350LU |
|---|---|---|---|
| Input Voltage | | 230 V AC 50/60 Hz | 115 V AC 50/60 Hz |
| Main Unit Weight | g (lbs) | 900 (1.98) | 900 (1.98) |
| Function | | Grounding, Soft start, Speed control | |

## Torque measurement device

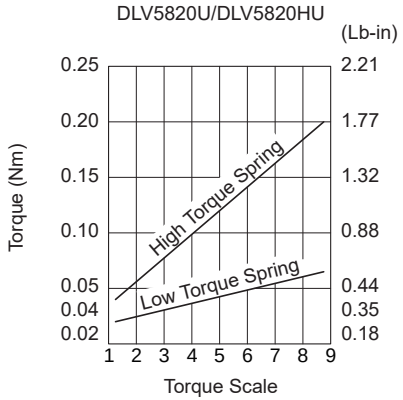
| Electric Screwdriver | DLV5820U | DLV5820HU | DLV5840U |
|---|---|---|---|
| Torque Checker | DLT1173A | | |

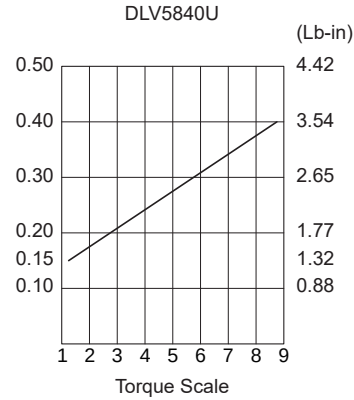
## Torque and speed graph

Torque scale and output torque (for reference)

**⚠ CAUTION**

- **The torque scale is for reference. The output torque range is not guaranteed.**
  Make sure to measure torque.
- **Use the tool within the specified range.**
- **When the torque decreases, increase the torque based on the measured value.**



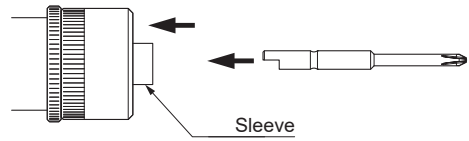
# 5 Preparation

## Attaching a bit

**⚠ WARNING**

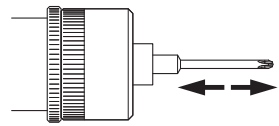
- **Before attaching or detaching a bit, always turn OFF the power.**

***1*** **Insert a bit while the sleeve is in pressed status**




***2*** **Release the sleeve and make sure the bit does not come off**

When removing the bit, pull the bit while the sleeve is in pressed status.

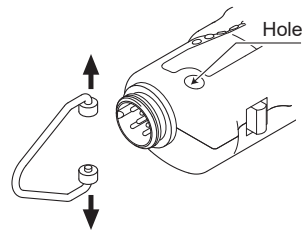


## Attaching the suspension bail

**⚠ CAUTION**

- **If the suspension bail is pulled forcefully, it may not return to original status. Use an appropriate strength necessary for attachment or removal.**

***1*** **Lightly pull both sides of the suspension bail and fit it into the hole**



## Replacing a torque spring

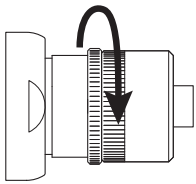
### ⚠ WARNING

- **Before attaching or detaching the torque spring, always turn OFF the power.**

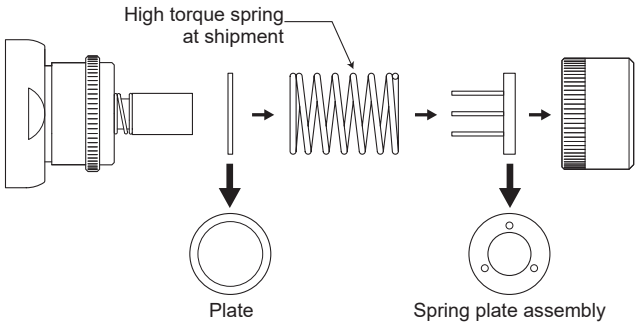
### ⚠ CAUTION

- **The spring plate assembly must be oriented correctly.**
  The ball goes into the recess of the torque adjustment ring. When it is attached in the opposite orientation, the torque adjustment ring easily gets loose.
  Also, when the torque adjustment ring is turned, there will be no clicking sound.
- **Recommended grease (separately sold)**
  Idemitsu Kosan Co., Ltd.: Daphne Eponex SR No. 2
  Showa Shell Sekiyu K.K.: Alvania Grease S2
  Cosmo Oil Co., Ltd.: DYNAMAX No. 2

***1*** **Turn the torque adjustment ring counterclockwise to remove**



***2*** **Remove the spring plate assembly → torque spring → plate, in that order**




***3*** **Apply grease to the torque spring**

***4*** **Replace the torque spring**

To reattach, perform the order in reverse.

# 6 Basic Operation

## Start

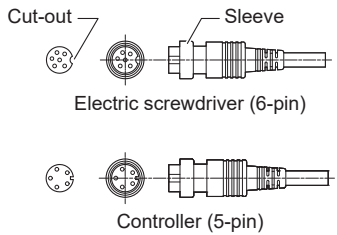
### ⚠ WARNING

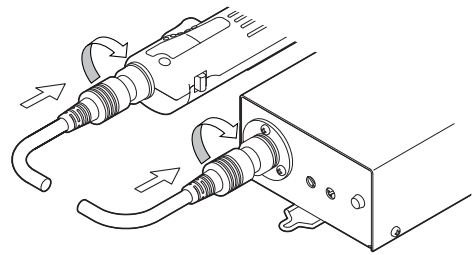
- **Make sure to properly connect the connection plug of the power cord and power plug.**
- **Always make sure the tool is grounded.**
  No grounding the tool could cause failure or electric shock at the time of electrical leakage.
  If you are not sure about the grounding of the outlet, request an electrical contractor to check if it is grounded.
  When an extension cord is used, use a 3-core cord that includes a ground wire.
- **Make sure the connection cord is firmly connected.**
  Other than supplying power, the connection cord is connected to the ground to eliminate static electricity.
  The end metal section of the electric screwdriver is connected to the ground via a 1 MΩ safety resistor inside the controller.
  Also, when the tool is used for a long time, the rotation part of the electric screwdriver becomes worn and the ability to remove static electricity decreases. Periodically request our company or your sales agent to perform an overhaul on the tool.

***1*** **Check that the power is turned OFF, and use the connection cord to connect the electric screwdriver and controller**

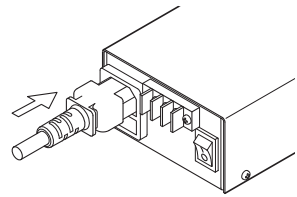
Align and insert the connection cord and receptacle notches, and tighten the sleeve.

Connection cord (female pin)



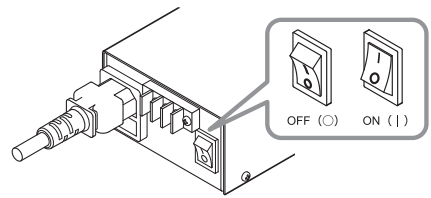
***2*** **Insert the power cord into the controller inlet**



***3*** **Insert the power plug into a grounded outlet (100 V AC - 240 V AC) to supply electricity**

***4*** **Turn ON ( I ) the power switch**

LED lights up.

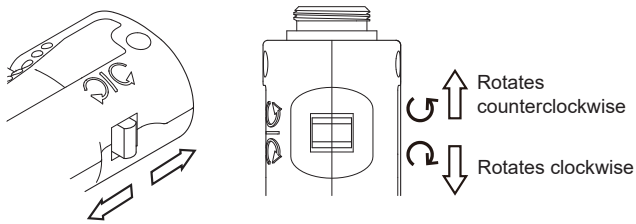


## Changeover switch

### ⚠ CAUTION

- **Do not operate the changeover switch while the tool is rotating. Doing so could cause a failure.**
- **When the tool is not used, set the switch to neutral position.**
- **Do not apply a shock (such as dropping) or excessive load to the changeover switch. Doing so could cause a failure.**

By sliding the changeover switch, you can change the rotation direction of the electric screwdriver.
" - " means neutral. The electric screwdriver does not rotate.




## Start and stop

### ⚠ WARNING

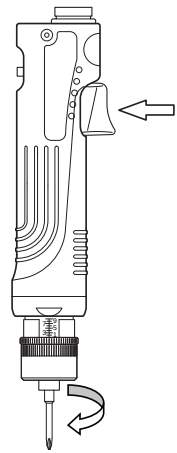
- **Never touch the bit while it is rotating.**
- **Do not direct the bit toward people or animals.**

### ⚠ CAUTION

- **Make sure to properly press the start switch.**

Slide the changeover switch to the direction in which you want the tool to rotate and press the start switch to start.
Releasing the start switch stops rotation.

When you press the lever switch, the bit rotates.
Releasing the lever switch stops rotation.



## Screw tightening

### ⚠ WARNING

- **Firmly hold the main body to avoid losing your grip.**

### ⚠ CAUTION

- **Properly apply the bit end to the screw head.**
- **Check that the bit is not worn.**

***1*** **Slide the changeover switch to the ↻ side**

***2*** **Apply the bit end to the screw head and press the lever switch**

***3*** **When the electric driver stops, release the lever switch**

## Adjusting the output torque

### ⚠ WARNING

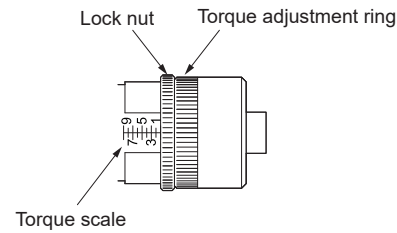
- **Before adjusting the output torque, always turn OFF the power.**

### ⚠ CAUTION

- **The torque scale is a standard. The output torque range is not guaranteed.**

***1*** **Turn the lock nut and adjust it according to the torque scale**

To increase the output torque, turn the torque adjustment ring clockwise. To decrease the output torque, turn the torque adjustment ring counterclockwise.

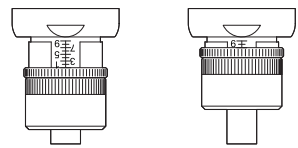



***2*** **Tighten the torque adjustment ring**

Tighten the torque adjustment ring securely up to the position of the lock nut.

***3*** **Tighten the lock nut**

Tighten the lock nut strongly to prevent the torque adjustment ring from getting displaced.



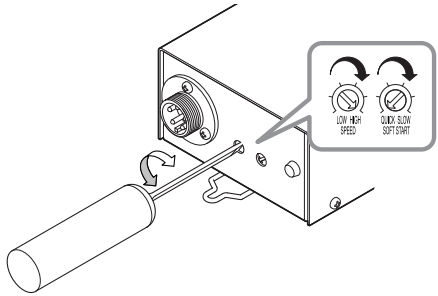
## Adjusting the motor speed

**⚠ CAUTION**

- **Always turn the controls slowly with (-) screwdriver. Do not press hard.**

***1*** **Adjust the speed adjustment volume of the controller**

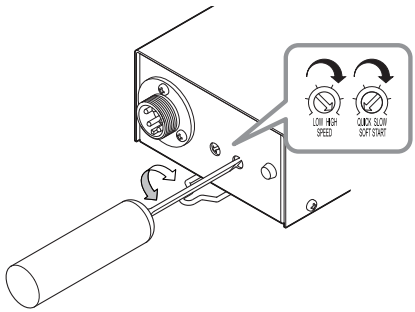
The motor speed changes steplessly from LOW to HIGH. Select a speed that matches your particular work.




## Adjusting the soft start

***1*** **Select QUICK or SLOW for the soft start adjustment volume of the controller**

Setting it to QUICK will cause the bit speed from startup to a specified speed in a short time.
Setting it to SLOW will cause the bit to start spinning gradually and become faster gradually. In the case of small screws, therefore, you can match the screws to the grooves of the bits securely and you do not have to worry about damaging the screw heads.



## DLC0350 Start/Torque-up signal outputs

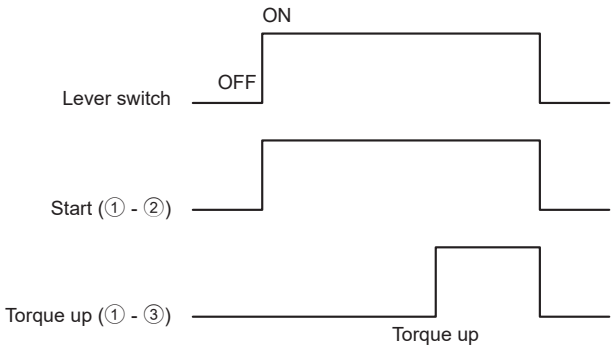
This controller has a function of outputting start/torque-up signals, which can be used for measures to verify the number of screws to be tightened and prevent the screws from remaining loose.
As the output signals are photo coupler outputs which do not require an external power supply or an auxiliary circuit, signal processing is easy since direct connections can be made to a sequencer and so on.

### ⚠ CAUTION

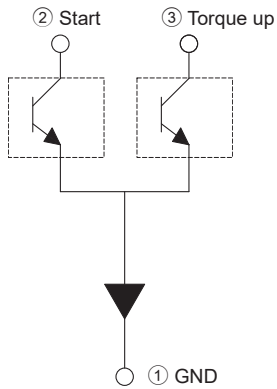
- **Before energizing, make sure that the signal cables are wired correctly in accordance with the instruction manual.**
  If the power cable or other signal wires are energized while they are wired incorrectly, it could cause the tool to fail.
- **Always use the signal output within the output rating.**
  Use of the tool at a voltage or current value above the rating could cause the tool to fail.
- **Do not directly connect the relay, motor, lamp, etc. to control.**
  It could cause the tool to fail due to surge, etc. generated from inductive load.
- **The start signal will be outputted.**

| | |
|---|---|
| Signal output | Open collector |
| Rated voltage | 80 V DC or less |
| Rated current | Maximum 50 mA or less |

Output signal timing chart




Terminal number - Internal circuit



# 7 Appendix

## Troubleshooting

| Symptoms | Location to investigate | Solution |
|---|---|---|
| Controller power won't turn on. | Is the power plug inserted into an outlet?<br>Is the power cord slipped out of the inlet?<br>Has the rated voltage been input?<br>Is the power switch set to OFF (O side)? | Check the power supply.<br>Firmly insert the power cord, and set the power switch to ON ( I side). |
| | Has the fuse blown? | If the power lamp does not light up, check the fuse in the power cord inlet.<br>If it is blown out, replace it with a fuse provided with your electric tool. |
| The electric screwdriver does not operate. | Is the power plug inserted into an outlet?<br>Is power supplied to the outlet? | Properly insert the power plug into the outlet.<br>Check the power supply. |
| | Is the changeover switch set to neutral? | Slide the changeover switch to the  or  side. |
| The output torque is low<br>Screws cannot be tightened. | Are you using a combination of NITTO KOHKI measuring devices for measurement? | Use a combination of NITTO KOHKI's measuring devices for measurement. (p. 5) |
| | Are you turning the torque adjustment ring clockwise?<br>Has the output torque dropped? | The output torque decreases as the tool is used.<br>Turn the torque adjustment ring clockwise. (p. 11) |
| | Did you check the correlation between the output torque occurred on screws and the output torque measured using a measurement device? | The output torque occurred on screws and the output torque measured by the measurement device are different.<br>Adjust the output torque according to the screw fastening conditions. (p. 5) |
| | Is the bit worn out? | When the bit is worn out, it becomes difficult to transmit torque to screws.<br>Replace the bit. (p. 7) |
| | Are you tightening while crushing a part between the screws.<br>Has regression loosening occurred? | Torque may not be transmitted. Crush the part once and then tighten the screw. |
| | Has axial force occurred to the screw? | Without axial force, even though the output torque is increased, screws are not tightened. Review the screw fastening conditions.<br>Also, by tightening at low speed, it becomes easier to transmit torque. |
| | Has initial loosening occurred? | Initial loosening occurs as a result of permanent set in fatigue when fine irregularities such as surface roughness are lost over time after the screw is tightened or outside force is applied. Tighten the screw again. |
| | Has the permanent set in fatigue occurred due to permanent deformation of sealing material such as the gasket? | Carefully check the screw fastening conditions and set the output torque.<br>Depending on the material, torque may not be transmitted. |
| | Is the area surrounding the screw at a high temperature? | Screws could be extended or loosened by temperature changes.<br>Review the screw fastening conditions and process. |
| | Have you considered the occurrence of vibration or outside force? | Loosening of screw occurs if no measures are taken for vibration or outside force.<br>Take appropriate loosening prevention measures. |

| Symptoms | Location to investigate | Solution |
|---|---|---|
| The output torque is high.<br>Screws are tightened too much. | Did you check the correlation between the output torque occurred on screws and the output torque measured using a measurement device? | The output torque occurred on screws and the output torque measured by the measurement device are different.<br>Adjust the output torque according to the screw fastening conditions. (p. 5) |
| | Have you attached a heavy jig or a jig having a large radius at the end? | After the torque reaches the set torque, the inertial force of the jig might have been transmitted to screws.<br>Review the jig and reduce the weight or size of the jig. |
| The torque scale and output torque do not match. | The torque scale is a standard. The output torque range is not guaranteed.<br>The output torque range sometimes differs from the scale but this is not a product error. (p. 6) | |
| The electric screwdriver gets hot. | Is the ON time of the electric screwdriver too long? Alternatively, is the OFF time too short? | Review the operation time.<br>The rated operating time is 0.5 sec. ON and 3.5 sec. OFF.<br>Aim at 15 screws per minute. (p. 5) |
| | Even though the output torque is set to the specification lower limit value, does the screwdriver get hot to a level where you cannot touch it? | When the output torque becomes higher, the electric screwdriver becomes hot.<br>If it gets hot to a level where you cannot touch even with the specification lower limit value, a failure is suspected. |
| The rotation speed is not stabilized. | Is the electric screwdriver heating up? Is it the same electric screwdriver? | The specification value of the rotation speed is a standard.<br>The rotation speed could change due to temperature or mechanical loss of the main unit or grease conditions. Also, it differs by the unit. (p. 5) |

## Maintenance and inspection

### ⚠ WARNING

- **Before performing maintenance and inspection, always turn off the power.**
- **Do not disassemble or alter the tool.**
- **Use genuine parts.**

### ⚠ CAUTION

- **For repair or part replacement, ask your dealer.**
  Repair requires special knowledge and skills. If repair is performed at a place other than a specialty store, the tool may not demonstrate its full performance or it could lead to an accident or injury.
- **Request repair with the failed status kept intact.**
  When requesting a repair, do not throw away damaged parts. It could be important information for investigating the failure cause so do not change the status.

For the purpose of making proper use, request the following check and maintenance by an authorized service facility.

| Routine inspections and parts to be replaced | Number of tightening (million) | | | |
|---|---|---|---|---|
| | 0.25 | 0.5 | 0.75 | 1.0 |
| Routine inspection | | | | |
| (1) Operation check | ○ | ○ | ○ | ○ |
| (2) Grease-up | | ○ | | ○ |
| Parts to be replaced | | | | |
| (1) Motor assembly | | | | ○ |
| (2) Gear | | | | ○ |
| (3) Rollers and Balls | | | | ○ |
| (4) Bearing | | | | ○ |

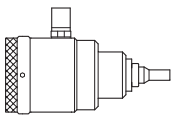
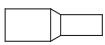
| Inspection locations | Caution |
|---|---|
| Cable | Failure to perform inspection could result in fire or electric shock.<br>● Check if cables are damaged and if found, stop using the tool.<br>● Do not store the cord by wrapping it around the main unit. If it is stored with the cable wrapped around the main unit, immediately change the storage method. |
| Power plug | Failure to perform inspection could result in fire or electric shock.<br>● Check for damage on the power plug. If damaged, stop using it.<br>● Check if the power plug has dust or metallic material adhering to it. If attached, disconnect the power plug and use a dry cloth to remove it.<br>● Check that the power plug is property inserted into the outlet all the way to the base.<br>● Check for play in the power plug and outlet. |
| Bit | ● Check for wear or damage on the bit end. Using the tool as is, the screw head could be damaged or torque may not be transmitted. Replace with a new bit. |
| Main unit | ● Check for damage, cracks or breaks on the main unit.<br>● Check the screws on the main unit (including accessory Pistol Grip). If screws are loose, tighten them. |
| Output torque | ● Use a combination of NITTO KOHKI's measuring devices to measure the output torque.<br>● If the output torque value has decreased, turn the torque adjustment ring to adjust the torque. |
| Care | ● If the main unit is stained, use a cloth soaked in soapy water and wrung out well to wipe off the stain. The tool does not have a waterproof structure and if water enters inside, it could fail.<br>● Because the main unit uses plastic, the following chemicals cannot be used.<br>Acetone, benzine, thinner, ketone, ether, trichlorethylene and other similar chemicals |

## Disposal

- Separate power tools, accessories, and packing materials for environmentally-friendly recycling.
- Do not dispose of the power tool as household garbage.
- When disposing of electric tools, give them to NITTO KOHKI or your dealer.
- Within the EU region, Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC is rolled out in domestic laws and it is prescribed to separately collect power tools, which are recycled and reused.

## Separately-sold products

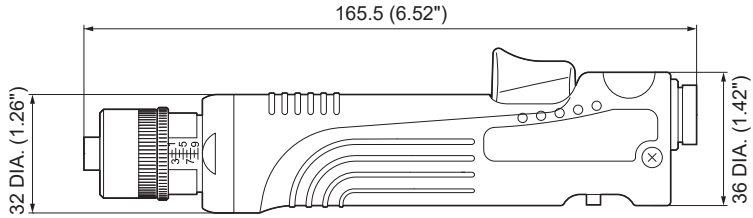
The following products are sold separately. To purchase these items, please contact your dealer where you purchased your electric screwdriver.

| Product name (model) | Appearance | Specification, etc. |
|---|---|---|
| Torque Adjustment Ring Cover<br>DLW5700 |  | Cover that prevents inadvertent change in torque setting |
| Vacuum Pickup<br>DLP5300 |  | Attachment for adsorption of screw in electric screw driver |
| Sleeve<br>DLS2000 |  | Sleeve for screw adsorption<br>● Mount at the vacuum pickup tip<br>● Selection matching the screw or bit shape |

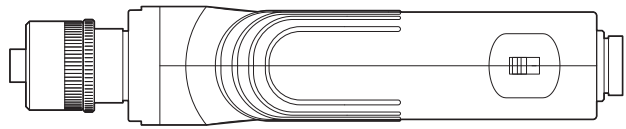
## External dimensions

DLV5820U/DLV5820HU/DLV5840U

Front view

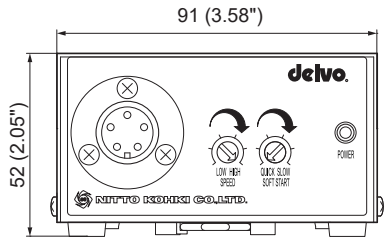



Side view



DLC0350GG/DLC0350LU

Front view




Side view