

# delvo



## INSTRUCTION MANUAL

Electric Screwdriver

### Models

Screwdriver

DLV7321-BKU

DLV7331-BKU

Controller

DLC1213-LUB

Manufactured by:

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


**SAVE THESE INSTRUCTIONS**

Thank you very much for your purchase of this Nitto Kohki products.  
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.







The following Safety notations are used throughout the manual to highlight safety precautions for the user and for the tool.

 <b>WARNING:</b>	Indicates a potentially hazardous situation which, if not avoided by following the instructions given, could result in death or serious injury.
 <b>CAUTION:</b>	Indicates a potentially hazardous situation which, if not avoided by following the instructions given, could result in injury or material damage.

Please note, however, that failure to observe safety precautions under the “ Caution” category could result in a serious occurrence depending on the situation: please observe all safety precautions in the manual.

**Caution:** Important precautions for tool setup, operation and maintenance.

### Safety Symbol Identification

-  Warning: It might be dangerous to operate the tool if the instructions supplied are not followed.
-  Using this tool improperly could result in serious injury. Read the instruction manual before using.
-  Always wear hearing protection.
-  Always wear eye protection.
-  Always use only indoor.
-  Do not allow the main body or the power source to get wet as it will cause electric shock and leakage.

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## 1. SAFETY PRECAUTIONS

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When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury, including the following

**▲ WARNING**

### 1. Keep work area clean.

- Cluttered work areas and benches invite accidents and injuries.

### 2. Consider work area environment

- Do not expose the tools or components to water and rain. Do not use the tools in damp locations.
- Use a safety device such as Earth-Leakage Circuit Breaker if it inevitable to power-supply in the wet condition.
- Keep work area well lit.
- Do not operate near flammable liquids or in gaseous or explosive atmospheres.

### 3. Check the power source.

- Operate under the power source the voltage fluctuating rate of which is within  $\pm 10\%$  of the rated voltage, and the frequency of which is 50/60Hz of sinusoidal wave.

### 4. Be cautious about electric shock.

- When using electric tools, do not touch any which is earthed. (Ex. Pipe, heating apparatus, microwave oven, outside frame of refrigerator)

### 5. Keep children away.

- Also all visitors should be kept away from work area.
- Do not let visitors contact the tool, or connecting cords.

### 6. Store idle tools

- Keep the electric tool away from children when you do not use, and do not permit unauthorized personnel, who are unfamiliar to the electric tool or the manual, to operate the tool.

### 7. Do not force tool

- It will do the job better and safer at the rate for which it was intended.
- Do not use this tool for other purposes than fastening screws.

### 8. Use the right tool

- Do not use a small tool or attachment to do the job of a heavy-duty tool.
- Do not use tool for a purpose not intended.

### 9. Dress properly

- Do not wear loose clothing or accessories. They can be caught in moving parts.
- Non-skid footwear are recommended.
- Wear protective hair covering to contain long hair.

### 10. Always wear eye protection

- Everyday eyeglasses only have impact resistant lenses. They do NOT protect eyes. Also use face or dust mask, if operations create dust.

### 11. Do not abuse cable

- Never carry tool by connecting cable or yank it to disconnect from receptacle.
- Do not place a cable near a place with high heat, oil, and sharp edges.

### 12. Secure Work

- Use clamps or a vice to hold the work when practical.

- It is safer than using your hand and it frees both hands to operate tool.

### 13. Do not overreach

- Keep proper footing and balance at all times.

### 14. Cautious maintenance is necessary for electric tools

- For safe and efficient work, use the proper bit and check it regularly.

- Check the cable regularly. Contact sales agents to repair it when it is defective.

- When an extension cable is used, check regularly and change it when it is damaged.

- Keep handles dry, clean, and free from oil and grease.

### 15. Switch off and take off the plug for the following

- When not in use, when repairing, when changing accessories and bits, etc.

### 16. Do not use a tool violently

- Do not swing the tool around and hold the body firmly when using. If not, it may cause injury. Do not drop or abuse the body. If there is breakage, cracks, or transformation, it may cause injury.

### 17. Always avoid unexpected start

- Do not carry the tool with a finger on the switch when the power supply is on.

- Make sure that the switch is off before plugging in.

### 18. Use appropriate power cable or an extension cable when it is used outside.

### 19. Start alert

- Watch what you are doing.

- Bear in mind the way of handling/operation and the circumstances of the surrounding area.

- Use common sense.

- Do not use when you are tired or under the influence of drugs, alcohol or medication.

- Do not bring hand or face close to moving parts such as bit etc. when in use. Otherwise, it may cause injury.

### 20. Check damaged parts

- Before further use of the tool, an accessory or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended functions.

- Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation.

- An accessory or other part that is damaged or inoperable should be properly repaired or replaced. When a switch becomes out of order, repairs should be performed only by the sales agent from whom you purchased the tool or an authorized dealer.

- Do not use electric tools which cannot be activated or stopped with a switch.

### 21. Use recommended accessories

- Consult this manual or the sales agent from whom you purchased the tool or an authorized dealer for recommended accessories. The use of improper accessories may cause risk of injury to persons.

### 22. Repairs by authorized personnel

- This tool should not be modified as it meets safety requirements.

- Any repairs to the tool or installation of replacement parts should be performed only by the sales agent from whom you purchased the tool or an authorized dealer.

- Failure to utilize the expertise of the sales agent from whom you purchased the tool or authorized dealer or, failure to use genuine replacement parts, may result in an increased risk of injury to the user and may invalidate your warranty.

23. Do not allow the following chemicals to come into contact with the tool housing, as damage will result. For example, trichloroethylene acetone, benzene, thinner, ketone, or other same chemicals.

## 2. OPERATION CAUTIONS

### ⚠ CAUTION

1. Use at the voltage, which is indicated on the rating plate. If used at a higher voltage than indicated, it may cause damage and accident.
2. When the tool does not work properly, or you hear abnormal sounds during usage, switch off immediately and request the repair work to be done by an authorized service facility. If you keep on using the tool, it may cause injury.
3. Install only bits or accessories in accordance with the operation manual.
4. Grounding is necessary to be assured, especially for the bit earth type.
5. Whenever setting the torque, switch off the tools and components.
6. Whenever changing the bit, ensure the changeover switch is in the "O" (Off) position and the tool is unplugged.
7. If the rest interval is shorter than three seconds, the heat of the motor may increase. However, it differs from the kind of screw or from the fastening torque.
8. Do not adjust the torque setting higher than the number of the torque scale mentioned below.  
The number on the torque scale does not indicate the torque value of the screwdriver. The torque varies according to the type, size, and material of screws and work. Therefore, use the following diagram as references to obtain an appropriate

torque.

9. Do not operate the changeover switch when the motor is running.
10. Do not use this screwdriver for tightening wood screws.
11. Whenever a tool is not being used, move the changeover switch to the "O" (Off) position and unplug the screwdriver.
12. Do not overload to the extent that the motor locks or the clutch malfunctions. May cause smoke, fire, failure or injury.
13. If the body is overheating or functioning abnormally, stop using the driver immediately and inspect it to see whether any repairs are necessary. May cause failure or injury.
14. The driver may overheat depending on the type of screw, type of screw-tightened material, or frequency of use. To avoid overheating, stop operating the driver for a time or use several drivers in alternation.  
Overheating may reduce the life of the product or cause failure, burns, or other injuries.
15. The fastening torque may vary depending on how the product is operated or held, the type of screw, and the fastening conditions. Use a torque wrench or similar tool to check that the fastening torque is appropriate.
16. The product's output torques shown here are the values obtained with the following measuring instruments. This value may differ when measuring with different equipment.  
·Dedicated device : DLT1173

## 3. SPECIFICATION

MODEL	Lever Start	DLV7321-BKU	DLV7331-BKU			
Torque	[Lb·in]	0.4 to 4.4	2.7 to 10.6			
	[Nm]	0.05 to 0.5	0.3 to 1.2			
Free Speed [min <sup>-1</sup> ]		700 to 1000	500 to 700			
Input Voltage		36 V DC				
Power Consumption [W]		35				
Duty Cycle [sec]		0.5 ON / 3.5 OFF				
Screw Size (for reference)	Inch thread	#4 or less	#2 to #6			
	Metric coarse thread	1.0 to 3.0 mm	2.0 to 3.5 mm			
Over Voltage Category		category I according to IEC60664-1				
Bit Type		Unit	A	B	C	D
		in	0.28	0.91	0.35	1/4
		mm	7	23	9	6.35
Mass [lbs]		Approx.0.77 (350 g) [except Power Cord]				
Noise emission [dB]	*L <sub>pA</sub>	58 (uncertainty: K=3dB)				
	*L <sub>WA</sub>	69				
Standard Accessories		Bit No.1 x7x50: 1Pic. Bit No.2x7x50: 1Pic. Suspension Bail: 1Pic.				

\*Use the screwdrivers in combination with the following special controllers.

\*L<sub>pA</sub> : A-weighted surface sound pressure level

\*L<sub>WA</sub> : A-weighted sound power level

**CONTROLLER**

MODEL	DLC1213-LUB
Input Voltage	115 V AC 50/60 Hz
Power Consumption [W]	35
Mass [lbs]	5.06 (2300 g)
Over Voltage Category	category II according to IEC60664-1
Standard Accessories	Power Cord (80" (2 m)): 1Pic

DLV7300Series and DLC1213-LUB are common to this item		
Temperature Range [°F]	Operating	23 to 122 (-5 to +50 °C)
	Storage	-4 to 158 (-20 to +70 °C)
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 IEC60664-1	

• **Grounding**

The tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with a three-conductor cord and three-prong grounding-type plug to fit the proper grounding-type receptacle.

**⚠ WARNING**  
 For safe use of adapters, the outlet box must be grounded. If there is any doubt, have a qualified electrician check connections.  
 Use only 3-wire extension cords that have 3-prong grounding type plugs and 3 pole receptacles that accept the plug. Replace or repair damaged cords.

• **Antistatic Screwdriver DLV7300-BKU**

The DLV7300-BKU is an antistatic screwdriver having a connection cord, frame, start lever, and forward/reverse selector all made of antistatic materials and also having a bit ground structure. When combined with a standard controller DLC1213 (antistatic, suited for a bit ground), this product can serve as an antistatic one. It has the same output torque and free speed as the standard type.

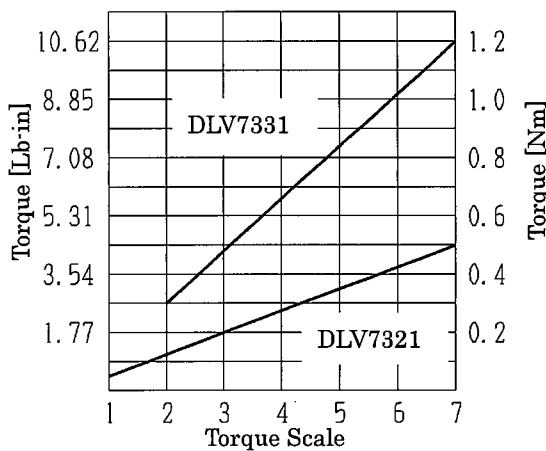
**⚠ WARNING**  
 Pay attention that an abnormal voltage or anything abnormal is not generated in the ground, or you may get an electric shock.  
 The bit and exposed metal portions of the driver and the ground terminal of the power cord for the controller are interconnected with resistances less than 10 Ω. To protect people, therefore, pay attention that an abnormal voltage or anything abnormal is not generated in the ground.

**⚠ CAUTION**  
 Be sure to ground the ground terminal of the power cord.  
 If the ground terminal is not securely grounded, static electricity generated in the bit portion cannot go to the ground. The antistatic system then fails.

The prolonged use of the screwdriver will reduce the continuity between the bit and the ground terminal of the power cord for the controller. A periodic overhaul is therefore needed. The resistance between the bit and the ground terminal of the power cord for the controller cannot be accurately measured by measuring the resistance at weak currents as those generated by commercially available testers and something similar. To measure accurate resistances requires the determination of the resistance by means of a bit manufactured by Nitto Kohki with the voltage and current generated when a current of 1A is applied between the tip of the bit and the ground terminal of the power cord for the controller. If continuity is normal, the resistance will be no more than 10Ω.

• Relationship between Torque and Torque Scale.

\*Reference Value



Adjust the bit torque by changing the driving-in length of the torque adjustment ring at the end.

The relationship between torque scale and torque is as shown right, in the torque diagram. The figures of torque scale do not dictate bit torque values. However, the clamping torque of screw itself is different from type, size, material of the screw and the material of its mating part. Use it as a standard to obtain an appropriate clamping torque.

The [Return torque method] in which once-clamped screw is returned with torque wrench or the like is available as one of torque control methods. However, note that the measured values by the return torque method generally appear in 10% - 30% lower than the actually clamping torque.

The torque checker measures the torque of screwdriver. The clamping torque of screw itself is different from the clamped conditions. Understand the correlation between clamping torque values and the torque checker values to perform the torque control properly.

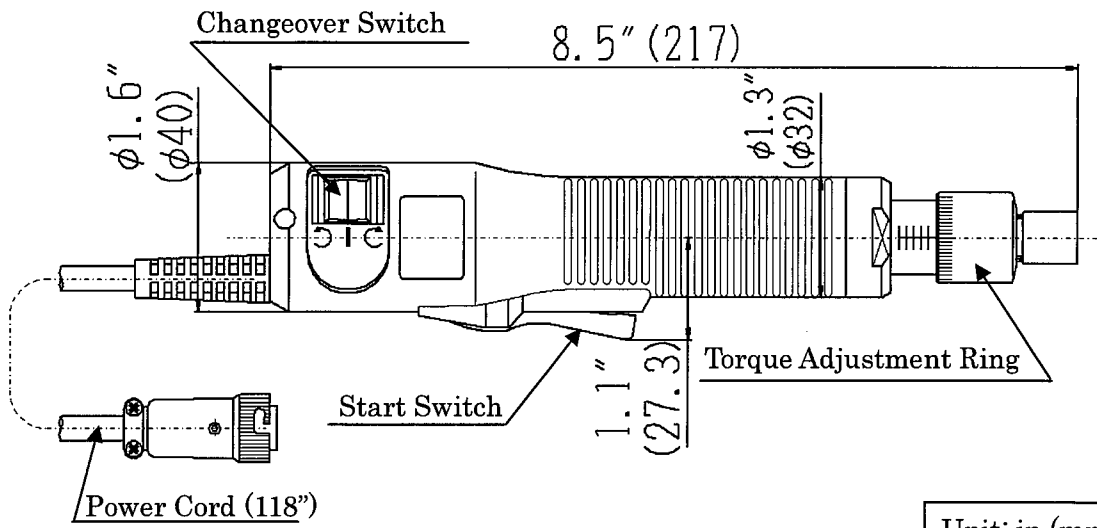
**⚠ CAUTION**

Also in reverse rotation, the clutch is turned off in such manner as in normal rotation, stopping the motor running.

Accordingly, when returning the screw tightened at a large torque, set it to a higher torque scale.

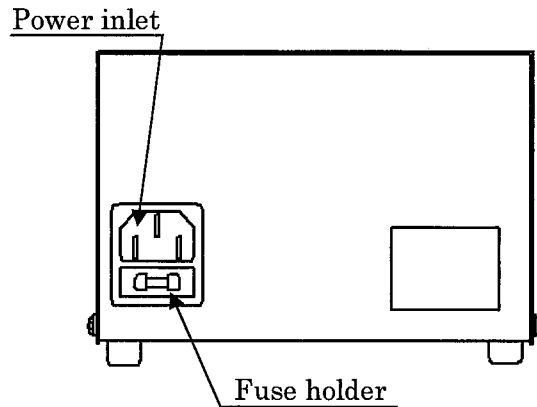
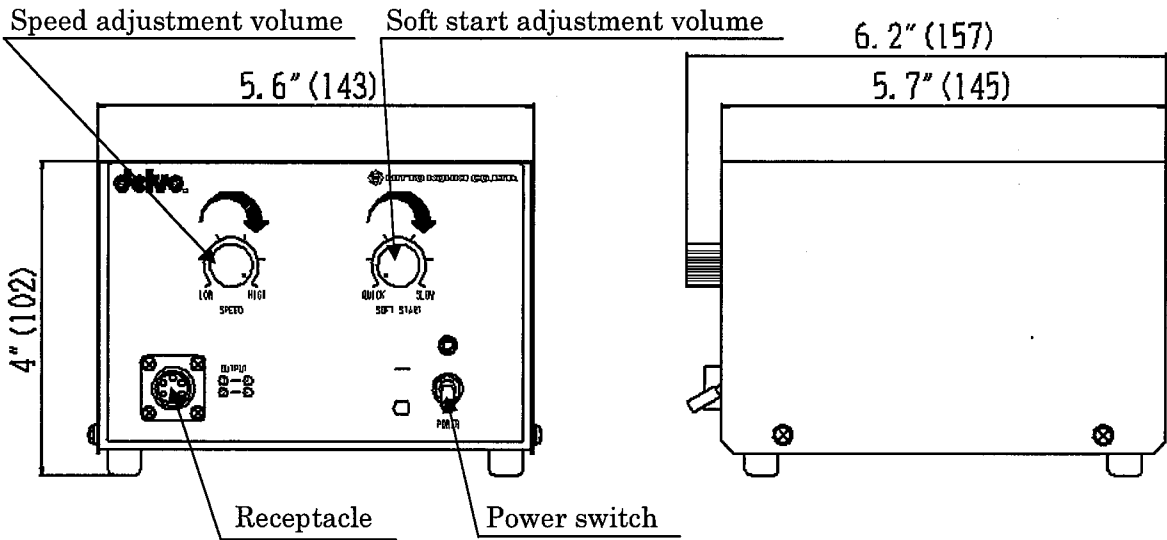
• External Representation

Screwdriver DLV7300 Series



Unit: in (mm)

Controller DLC1213-LUB



Unit: in (mm)

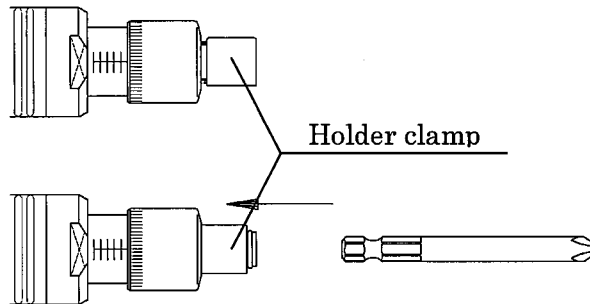
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## 4. HOW TO OPERATE

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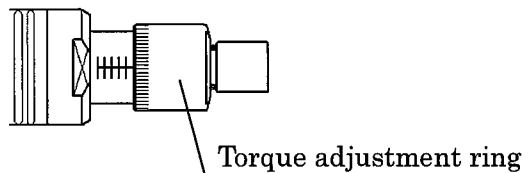
### 1. Attaching and detaching a bit

Push up the holder clamp in direction of the arrow unlocks it. You can then attach or detach a bit.



### 2. Torque Adjustment

To adjust the bit torque, vary the amount of screwing-in of the torque adjustment ring.



### 3. Screwing

- 1) After connecting the screwdriver to the controller, plug into the power source.
- 2) Turn on the power switch of the controller, set the changeover switch at  $\curvearrowright$  (forward), and trigger the switch. The bit starts running.
- 3) When the set torque has been reached, the clutch shuts off immediately and the motor stops at the same time. Return the trigger to the original position.
- 4) Unscrewing  
Turn the changeover switch to  $\curvearrowleft$  (reverse) and trigger the switch.

### 4. Use the screwdrivers in combination with the following special controllers

- DLC1213: This controller features the speed and soft start control.
- Speed control: Set low speed for small size screw and high speed for larger screws.
- Soft start: Set quick start when using higher torque or fastening a tapping screw, otherwise, the tool may not fasten screw.

#### **⚠ CAUTION**

Implement the operation properly. Insufficiently pressed blade or inadequately pulled lever may result in a malfunctioned and defective driver, or related work damage.



## 5.SERVICE AND MAINTENANCE

1. Have the screwdriver or components repaired by a qualified or trained person only.
2. For the purpose of making proper use, request the following check and maintenance by an authorized service facility.

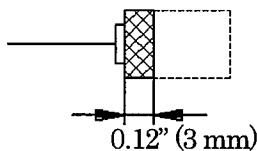
DLV7300 series				
Routine inspections and Parts to be replaced	Number of Tightening (million)			
	0.5	1.0	1.5	2.0
Routine inspection				
(1) Operation check	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(2) Grease-up	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(3) Brake switch timing check		<input type="radio"/>		<input type="radio"/>
Routine inspection and parts to be replaced				
(1) *Brush assembly		<input type="radio"/>		<input type="radio"/>
(2) Armature assembly				<input type="radio"/>
(3) Power cord				<input type="radio"/>
(3) Spindle gear head assembly				<input type="radio"/>
(4) Gear case assembly				<input type="radio"/>
(5) *Cam rollers and Cam guide balls		<input type="radio"/>		<input type="radio"/>
(6) Cam guide				<input type="radio"/>
(7) Spindle bearing				<input type="radio"/>

### \* Brush assembly

If the remainder length of the brush reaches 0.12" (3 mm), change it for the new brush.

When you return the brush again after having checked it, do not insertion opposite side.

Keep former condition.



### **⚠** WARNING

Switch off and take off the plug when you change the brush.

### Contents for operation check

Operation check items	Check procedure
(1) Does screwdriver rotate for both directions smoothly?	With tool plugged, turn on the reverse switch to forward or reverse position and turn on the switch. Then check if the tool rotates smoothly.
(2) Does screwdriver stop at one index of the clutch?	Check if the motor stops instantly at the moment a screw was tightened up.
(3) Is the torque decreasing?	Check by torque checker or equivalent.

3. In case of trouble or repair of this product, contact an authorized service facility
4. Electric tools, accessories, and packaging should be disposed of for recycling in an environmentally friendly manner. Do not dispose of electric tools into household waste!  
If your tool can no longer be used, deliver it to a sales representative.

#### Trouble shootings

Problem	Check item	Countermeasures
(1)No Rotation.	Is the power plug of the power cord connected to the power source outlet?	Connect the power plug of the power cord to the power source outlet securely.
	Is the changeover switch set to "↻" or "↺" ?	Set the changeover switch at "↻" or "↺".
(2)Output torque is low.	Is the output torque correctly set?	Check it by Torque Checker.
(3)The screwdriver is overheating abnormally.	How much time is "OFF" time?	Lengthen "OFF" time more than "ON" time. Check the Rating label of the main body.
	Is the input voltage correct?	Check the input voltage.
	Is not the maximum scale value exceeded?	Set the torque below the maximum scale.

The Repair Parts List is reference attached sheet.

If the abnormality still does not disappear, contact your sales representative from which you purchased the tools.

#### WARNING

Please have the product inspected periodically at the store of purchase or a Nitto Kohki-approved service center. Failure to perform periodic inspections may result in short circuiting.