

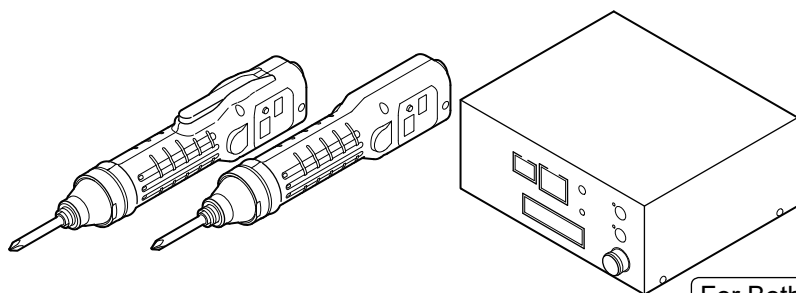
INSTRUCTION MANUAL

Professional tool ELECTRIC SCREWDRIVER / CONTROLLER

delvo

Model: DLV45C Series / DCC0241X-AZ

Product Operational Information



Indoor Use Only

Torque Current Control System

Low-Voltage Brushless Motor

ESD Protection

For Both Hand-Held / Automatic Machine

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.

Diese Bedienungsanleitung ist auf Englisch verfasst.

DE

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	Push start type	DLV45C12P-AY
	Lever start type	DLV45C12L-AY
Output Torque [N·m (Lb-in)]	0.6 to 4.5 (5.3 to 39.8)	
Rated Speed (No load) [min ⁻¹] (for reference)	SOFT fastening setting	400 to 1200min ⁻¹ Speed level: 9 levels
	HARD fastening setting	100 to 700min ⁻¹ Speed level: Automatically decided according to the torque setting
Operation Voltage	40 V DC (supplied from the controller)	

Controller

Model	DCC0241X-AZ
Input Power Supply	100 to 240 V AC, 50/60 Hz
Output Voltage	40 V DC (supplied to the screwdriver)
Main Functions	<ul style="list-style-type: none"> ● Saving 30 channels screw fastening conditions ● Channel switching ● Workpiece signal detection ● External input signal startup ● ESD protection

■ Refer to p. 9 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)
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Instructions

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.

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Product Specific Safety Rules

WARNING

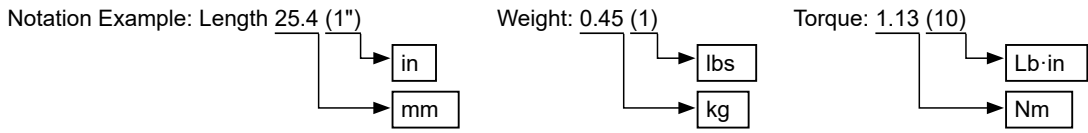
- **Always use the electric screwdriver and controller as a set.**
Using other power supplies could result in a fire or accident.
- **Do not look directly into the LED (light-emitting part) from close up.**
Powerful LED light could damage your eyes. Also, do not point the LED (light-emitting part) at people's or animals' eyes.

CAUTION

- **Since this tool uses the motor current to control the torque, individual differences in measurement joints or the measurement conditions, etc. may lead to fluctuations in the measured torque value. Measurement and control of torque under the same measurement conditions is recommended.**
- **The output torque graph is for reference.**
The output torque range is not guaranteed. Always measure the torque.
- **The speed setting value is for reference.**
- **The torque and speed may show individual differences.**
Perform the settings and preliminary evaluation and then use the specified electric screwdriver and controller combination.
If changing the electric screwdriver and controller combination, before using the new combination, verify the settings and preliminary evaluation again.
- **The torque or speed of the electric screwdriver will change over time. Inspect the torque or speed regularly and conform to the value for your use.**
By using the correct torque, the electric screwdriver will last longer.
- **The speed or output torque changes based on the temperature of the main unit.**
- **The effect of the bit part thrust and radial direction load on the motor may lead to fluctuations in the torque or speed.**
- **Do not apply a shock (such as dropping) or excessive load to the button, switch, or external signal connector.**
Doing so could cause a failure.
- **Do not attempt to perform refastening on a screw that has already been fastened (second fastening, check fastening). High torque is applied.**
- **For screw fastening of screws with short necks, or other screw fastening conditions where the screw is quickly seated after the start, high torque may be applied.**
Perform preliminary evaluations, and then use with caution.
- **This tool is not an impact type electric screwdriver. Do not fasten twice (refastening). Also, it cannot be used for screw fastening into a material such as wood or drywall.**
Depending on the 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 fastening.**
It should not be used for tasks such as drilling or threading (such as a tapper).
- **Connect a connection cord to the electric screwdriver and controller and then provide a power source.**
Note that disconnecting the connection cord during operation will result in an error.
- **For the torque setting, use our Torque Checker and special measuring joint. (p. 64)**
- **Use this tool after performing adequate evaluation and verification beforehand to check that the various settings, screw fastening speed, output torque, operability, and control systems are suited to the usage environment.**
- **To ensure that there are no mistakes in operation channel switching, use full caution when performing operations.**
- **Do not perform unnecessary operation of the electric screwdriver (spinning in idle, etc.).**
This has an effect on the service life of the mechanical part and motor heating.
- **If you use the push start type with the automatic machine, make sure to push completely and then start the tool.**

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.



1. Product Overview

Application

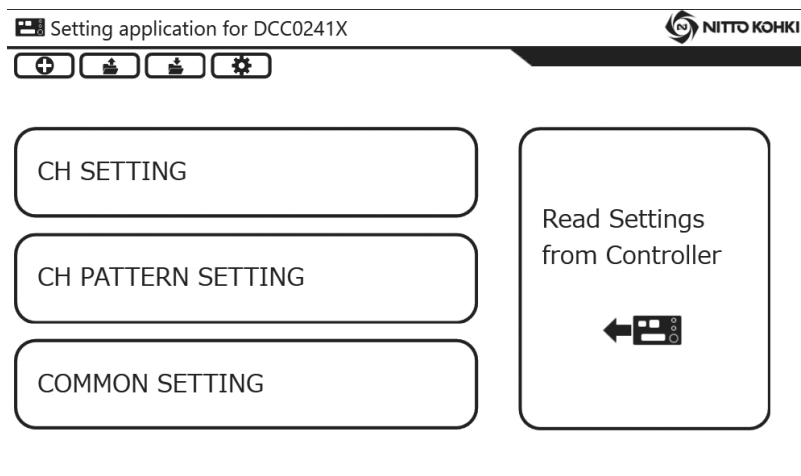
This is both a hand-held and automatic electric screwdriver used to fasten screws.

Utilizing features to control the screw fastening torque by detecting the current flowing to the motor, you can retain up to 30-channel torque and speed in memory. In addition, you can use "channel patterns" to register operation patterns of 8 channels. (Maximum 30 patterns)

You can switch to the desired torque (operation channel) according to the screw fastening operation, and use a single electric screwdriver to handle various screw fastening operations.

Furthermore, the following features are useful in improving various fastening operation quality, efficiency and management.

- Environmentally friendly brushless motor mounting
- Secure and safe low-voltage drive
- Bit grounding function
- ESD protection (Electro-static discharge prevention function)
- Screw count
- Measurement of screw fastening time
- Linkage with workpiece detection sensor
- Linkage with facilities with I/O signal
- For operator hand-held use and mounting on an automatic screw fastening machine (external input signal startup possible)
- Can be equipped with a vacuum pickup (sold separately)
- The values can be set from the PC (for details, visit Nitto Kohki's website.)



⚠ CAUTION

- **Because it is specified to use the motor current to control output torque, changes in the motor current due to operation conditions or the usage environment can have an effect on output torque.**
Read this chapter carefully and fully perform preliminary evaluations and verifications, then use with caution.

Channel

A unit with which fastening is performed continuously under the same conditions, such as the screw fastening torque, rotational speed, and number of fastening screws, is registered as a "channel". Up to 30 channels can be registered.

CH1	CH2	CH3	...	CH30
Screw count: 4 Fastening speed: Lv9 Torque: 10% :	Screw count: 10 Fastening speed: Lv3 Torque: 50% :	Screw count: 5 Fastening speed: Lv5 Torque: 20% :	...	Screw count: 8 Fastening speed: Lv7 Torque: 40% :

For setting of the channel screw fastening conditions, refer to "7. Channel Setting" (p. 28).

For a setting example, refer to "Channel/channel pattern setting example" (p. 70).

Channel pattern

You can register a series of operations combining a maximum of eight channels as a "channel pattern". Up to 30 channel patterns can be registered.

To combine nine channels or more, multiple channel patterns are used.

Pattern example CHPAT1

4-channel registration

① CH11→② CH12→③ CH13→④ CH14→⑤ End→Repeat

Pattern example CHPAT2

8-channel registration

① CH21→② CH22→③ CH23→④ CH24→⑤ CH25→⑥ CH26→⑦ CH27→⑧ CH28→Repeat

Pattern example CHPAT3/CHPAT4

10-channel registration

(CHPAT3)

① CH11→② CH12→③ CH13→④ CH14→⑤ CH15→⑥ CH16→⑦ CH17→⑧ CH18→Move to CHPAT4

(CHPAT4)

⑨ CH19→⑩ CH20→⑪ End→Move to CHPAT3

To register a channel pattern, refer to "8. Channel Pattern Setting" (p. 38).

For a setting example, refer to "Channel/channel pattern setting example" (p. 70).

Checking inside the package

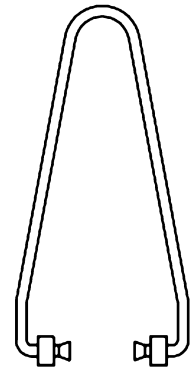
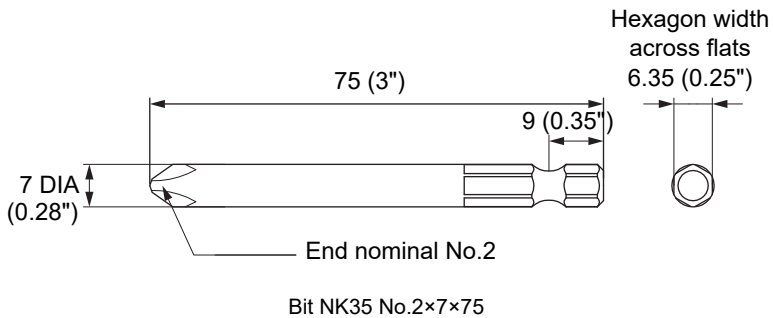
When you open the package box, check the contents of the package and also check for any damage caused by incidents during transportation.

If a problem is found, consult with your dealer where you purchased the product.

Electric screwdriver	DLV45C12P-AY	DLV45C12L-AY	Controller	DCC0241X-AZ
Package content and accessories	Quantity	Quantity	Package content and accessories	Quantity
Electric screwdriver (main unit)	1	1	Controller (main unit)	1
Connection cord DLW9078	1	1	Instruction Manual (this document, Chinese)	2
Suspension bail	1	1		
Bit NK35 (No.2×7×75)	1	1		
Instruction Manual (this document)	1	1		



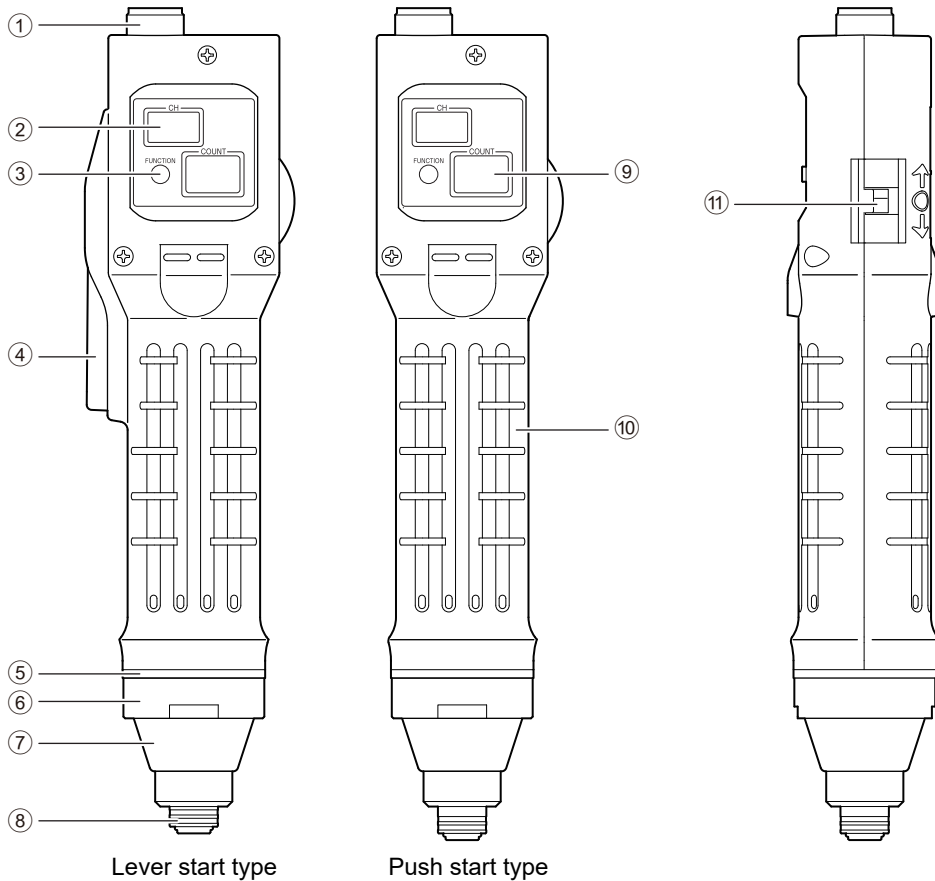
Connection cord DLW9078 (2 m (78.7"))



Suspension bail

Part names

Electric screwdriver

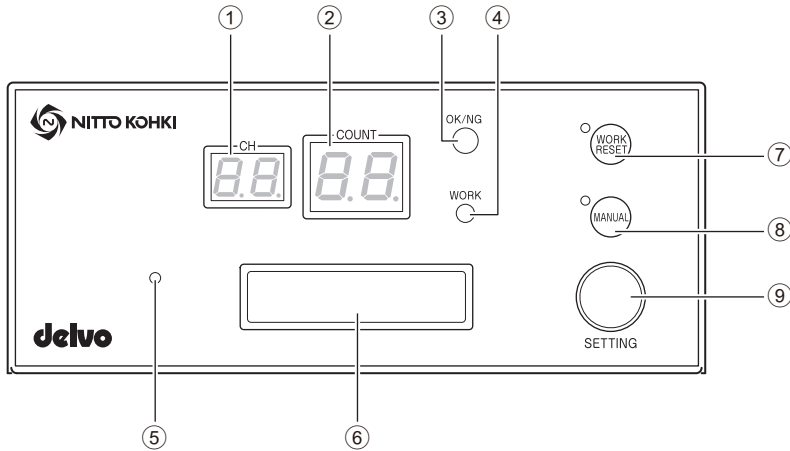


Lever start type

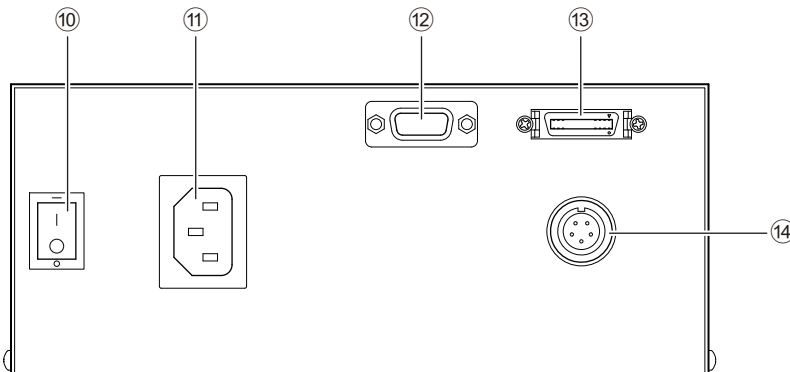
Push start type

Name	Function
① Receptacle	Connection cord used to connect the controller.
② [CH] display	Displays the current channel.
③ [FUNCTION] button	Controls the screwdriver. This is used on the following occasions. <ul style="list-style-type: none"> ● Resetting the screw count (p. 24) ● Control in the case of count return ON2 (p. 35) ● Cancellation of screw fastening NG standby (p. 41) ● Cancellation of high torque caution mode (p. 43)
④ Lever switch	Press when starting. (Lever start type only)
⑤ Accent ring	Identifies the model using color.
⑥ Coupling	Fixes the frame handle. When mounting the separately sold diamond shape flange, remove this part. (p. 15)
⑦ Screwdriver LED	Displays the electric screwdriver status using a color. (p. 19) Blue: Torque up Green: Screw count ends and operation is OK. Red: Screw fastening is NG or operation is NG. <ul style="list-style-type: none"> ● Since a color can be set for each channel, this can be used for workpiece identification, etc. (p. 37)
⑧ Sleeve	Pull when mounting or removing a bit.
⑨ [COUNT] display	Displays the screw count (count number) in a countdown.
⑩ Frame handle	
⑪ Changeover switch	Switches between the screw fastening direction, neutral, and the unscrewing direction. (p. 17)

Controller



Name	Function
① [CH] display	Displays the current channel.
② [COUNT] display	Displays the screw count (count number) in a countdown.
③ [OK / NG] LED	Displays the electric screwdriver status using a color. (p. 19) Blue: Torque up Green: Screw count ends and operation is OK. Red: Screw fastening is NG or operation is NG.
④ [WORK] LED	Green flashing: Workpiece setup time in progress Green: Electric screwdriver in operation (rotation) enabled state Off: Electric screwdriver not in operation (rotation) state
⑤ LCD intensity control	Controls the intensity of the LCD display.
⑥ LCD screen	Displays the set content or state.
⑦ [WORK RESET] button	If the button is pressed and held during screw fastening mode, the screw count or the operation channel decrements by 1. (p. 24)
⑧ [MANUAL] button	If the button is pressed and held during screw fastening mode, the mode transits to manual mode. (p. 21)
⑨ [SETTING] dial	Dial for the push switch embedded setting. Push operation: Transits to the setting mode or decides the setting item and setting value Rotation operation: Changes the setting item and setting value



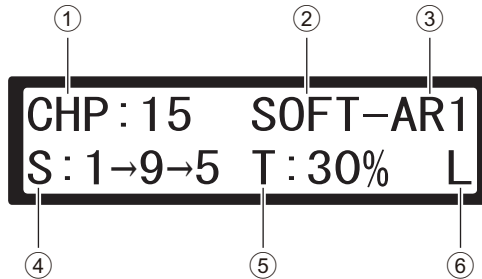
Name	Function
⑩ Power switch	Push the (I) side to turn ON. (p. 16)
⑪ Inlet	Connects the power cord. Input the rated voltage. (p. 16)
⑫ RS-232C connector	RS-232C cable is used to connect a PC or sequencer (PLC). (p. 55)
⑬ External signal connector	Provided with various I/O signals and service power supply 24 V DC. (p. 47)
⑭ Receptacle	Communication cable used to connect the electric screwdriver.

⚠ CAUTION

- Do not apply a shock (such as dropping) or excessive load to the [SETTING] dial or the external signal connector.
Doing so could cause a failure.

LCD display

The LCD of the controller displays the status and setting content.



Name	Details
① Channel switching	Displays the set channel switching method. (p. 41) Displays the current channel pattern number when the channel pattern is set. Displays "INPUT" if the channel pattern was changed with external input.
② Screw fastening type	"SOFT" or "HARD" is displayed. (p. 30)
③ Auto reverse	When "Auto reverse" (No.20 AUTO-RVS) is set to ON1 or ON2, "AR1" or "AR2" is displayed, respectively. (p. 35)
④ Screw fastening speed	Displays the initial speed/midterm speed/fastening speed. (p. 30) When HARD fastening is set, the speed is automatically set and "At" is displayed accordingly.
⑤ Fastening torque	Displays the fastening torque value set for "Torque" (No.4 TORQUE). (p. 30)
⑥ Rotation direction	Display "L" when the "Screw fastening direction" (No.26 SCREW) is set to leftward rotation. (p. 37)

[Display example 1] Channel change type: External signal, Screw fastening type: HARD, Speed: AUTO, Torque 30%, Leftward rotation



[Display example 2] Channel change type: Channel pattern 1, Screw fastening type SOFT, Speed: 9→3, Torque 100%



[Display example 3] Channel change type: External signal, Screw fastening type: HARD, Speed: 1→9→AUTO, Torque 30%, Leftward rotation



Specifications

⚠ CAUTION

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

Electric screwdriver

Model		DLV45C12P/L-AY	
Output torque [Nm (Lb-in)]		0.6 to 4.5 (5.3 to 39.8)	
Rated speed (No load)	SOFT fastening setting	(min ⁻¹)	400 to 1200
		Speed level	9 levels
	HARD fastening setting	(min ⁻¹)	100 to 700
		Speed level	Automatically decided according to the torque setting
Applicable screws [mm (in)]	Small screw		3.0 to 6.0 (0.12 to 0.24)
	Tapping screw		2.5 to 5.0 (0.1 to 0.2)
Suitable bit shape		NK35 (6.35 mm hexagon width across flats (0.25"))	
Operation voltage		40 V DC (supplied from the controller)	
ESD protection (Electro-static discharge prevention function)*		Yes (compliant with International Electrostatics Standards IEC 61340-5-1)	
Bit grounding function		Yes (safe resistor 1 MΩ bond within controller)	
Mass (weight) [kg (lbs)]		0.63 (1.39)	
Rated operation		ON 0.5 seconds / OFF 3.5 seconds	
Usage atmosphere temperature range [°C (°F)]		10 to 40 (50 to 104)	

Controller

Model	DCC0241X-AZ
Input power supply	100 to 240 V AC, 50/60 Hz
Output voltage	40 V DC (supplied to the screwdriver)
Input signal method	Photocoupler input (24 V DC drive (5 mA/1 input), can be switched between NPN and PNP)
Output signal method	Photocoupler output (30 V DC or less, 80 mA/1 output or less, can be switched between NPN and PNP)
Service power supply	24 V DC (maximum capacity 200 mA)
Serial signal method	RS-232C
ESD protection (Electro-static discharge prevention function)*	Yes (compliant with International Electrostatics Standards IEC 61340-5-1)
Power consumption (W)	44
Mass (weight) [kg (lbs)]	1.8 (3.97)

* ESD is an abbreviation for Electro-Static Discharge. It means the discharge of static electricity.

Output torque measuring devices

When measuring the output torque using this tool, use the following special joint. (p. 64)

Torque checker (sold separately)	DLT1633A
SOFT fastening joint	DLW4050
HARD fastening joint	DLW4040

Refer to "11. Torque Check Mode" (p. 46) for torque measurement.

DLV45C Specifications		
Duty cycle		ON 0.5 seconds / OFF 3.5 seconds
Noise emission (dB) (according to EN60745)	LPA ^{*1}	75 (uncertainty : K=3dB)
	LWA ^{*2}	86
Vibration level (m/s ²) (according to EN60745)		Less than 2.5
ESD protection ^{*3}		Complied with IEC 61340-5-1
Temperature range [°C (°F)]	Operating	-5 to +50 (+23 to +122)
	Storage	-20 to +70 (-4 to +158)
Relative humidity		Free of dew (include time of the storage)
Operating environment		Less than 2000 m above sea level
Pollution degree (according to IEC 60664-1)		Pullution degree 2
Over voltage category (according to IEC 60664-1)		Over voltage category I

*1 LPA; A-weighted surface sound pressure level

*2 LWA; A-weighted sound power level

*3 ESD is an abbreviation for Electro-Static Discharge. It means the discharge of static electricity.

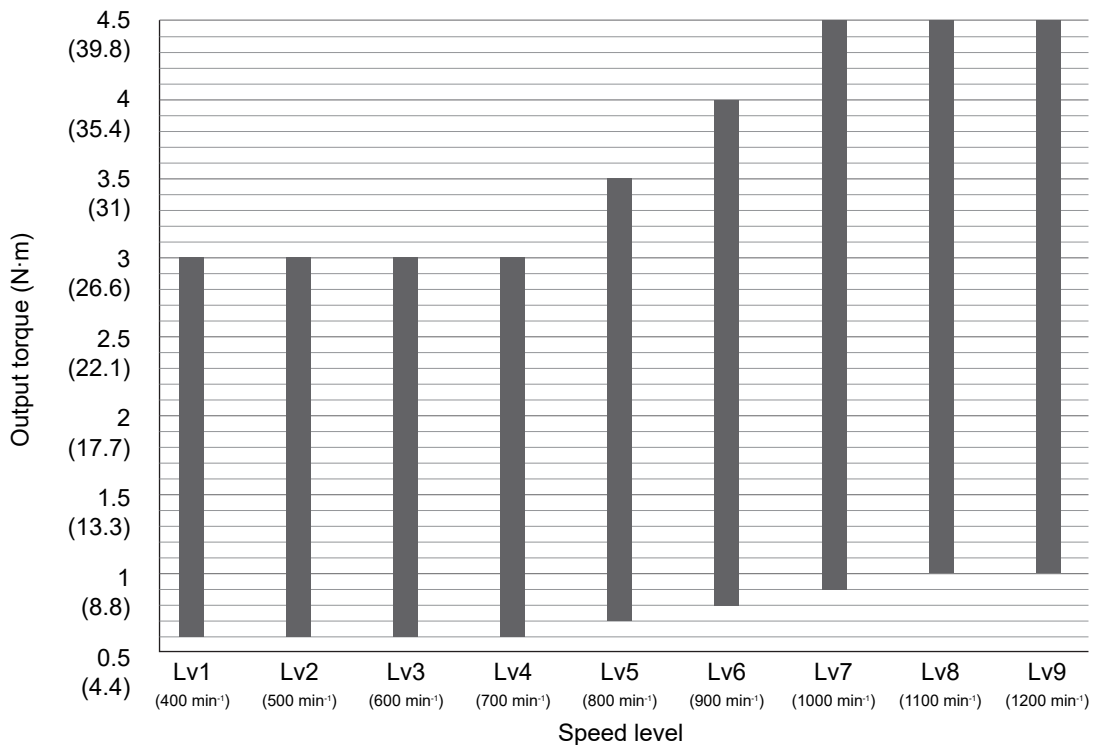
Torque Measurement Device	
Electric screwdriver	DLV45C
Torque checker	DLT1673A
Bit joint	DLW4040
	DLW4050

Output torque graph

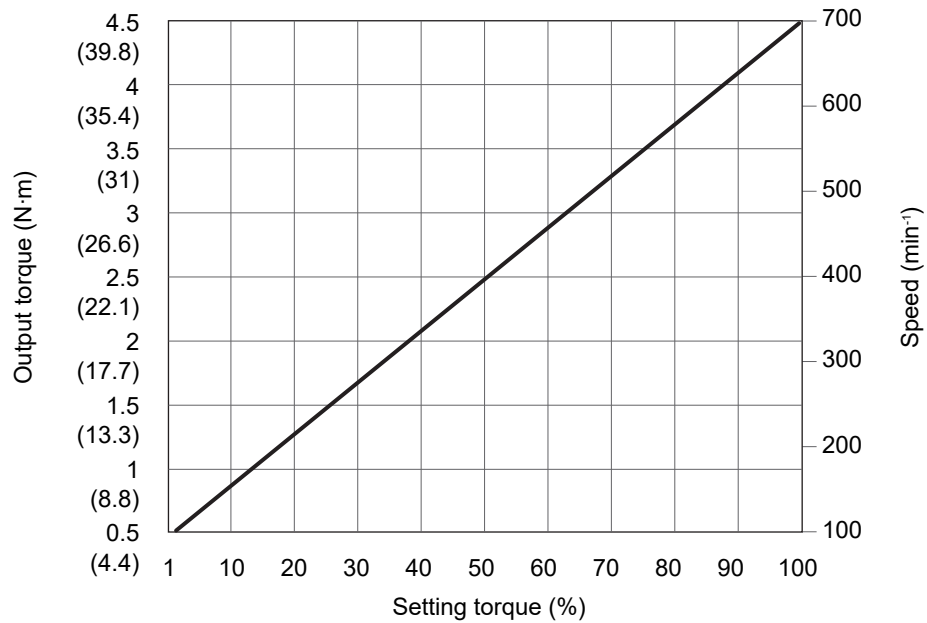
⚠ CAUTION

- **The graph is for reference. The output torque range is not guaranteed.**
After setting, always be sure to measure the output torque.
- **Use the tool within the specified range.**
- **Regularly check the output torque and speed, and adjust the settings if changes have occurred.**
- **The speed setting value is for reference.**
The actual speed changes depending on the temperature of the main unit, mechanical loss, and grease conditions. Also, the speed may show individual differences.
- **When the speed is changed, the motor sound changes. This is not an error.**

Torque range of SOFT fastening



Torque range of HARD fastening



⚠ CAUTION

- **For the HARD fastening setting, the torque greatly fluctuates depending on the fixing state of the electric screwdriver or the workpiece.**

When fixing to an automatic machine or when using a screwdriver stand or the like, torque higher than the rated value may be applied. Make sure to always set a torque lower than the rated value.

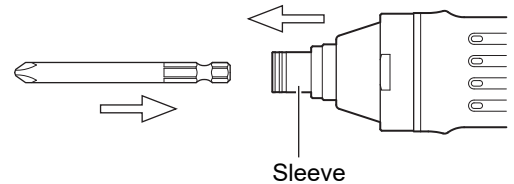
2. Preparation

Attaching a bit

⚠ WARNING

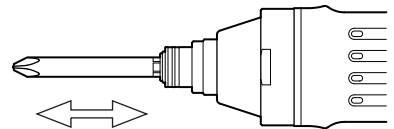
- Before attaching or detaching a bit, always turn OFF the power.

1 Insert the bit while pulling the sleeve



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

To remove the bit, pull it out while pulling the sleeve.



⚠ CAUTION

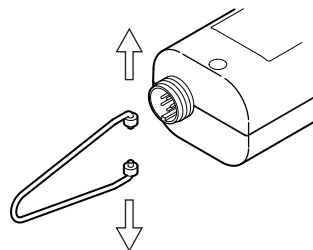
- If the screws and bits do not match, it could lead to wear on the bits and scratches on the screw heads. Use bits that match the screw heads.
- If using a long bit, use caution since bit vibration could increase or excess stress could be applied.

Attaching the suspension bail

⚠ CAUTION

- If the suspension bail is pulled forcefully, it may not return to its 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



Mounting a vacuum pickup

⚠ WARNING

- Before removing or mounting the coupling or vacuum pickup, always turn OFF the power.

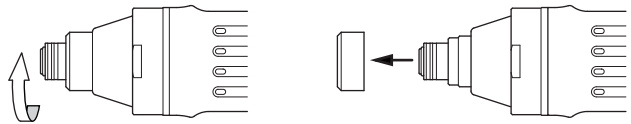
You can mount the separately sold vacuum pickup (DLP7401-K).

To the tip, mount a vacuum sleeve that matches the shape of the fastening screw and use a vacuum pump to vacuum the screw.

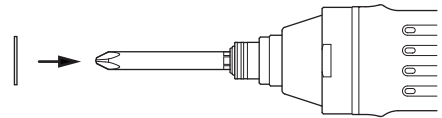
⚠ CAUTION

- The coupling mounting is a left-hand thread. To prevent it from becoming loose during use, make sure to properly attach it.
- Be careful to avoid fastening the coupling too much.

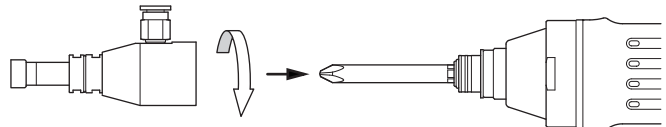
1 Remove the cap



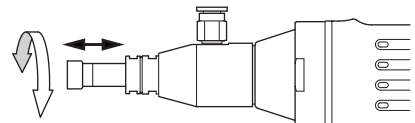
2 Attach a bit and attach the spacer that comes with the tool



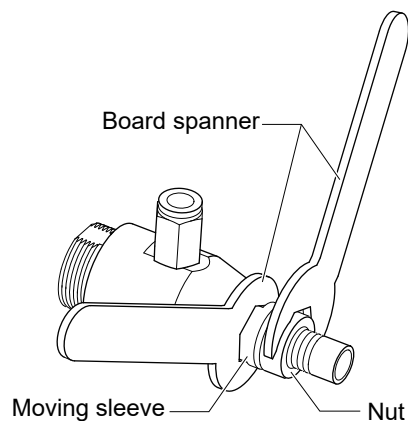
3 Mount the vacuum pickup Screw in to install.



4 Adjust the length of the vacuum sleeve



5 Use the attached two board spanners to fix the nut and moving sleeve Make sure the sleeve does not rotate.



6 Insert a tube

The outer diameter of the applicable tube is 6.0 mm (0.24") DIA.

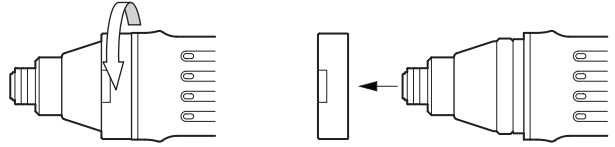
When removing the tube, pull the tube while pressing the tip of the tube fitter.

Mounting a flange coupling

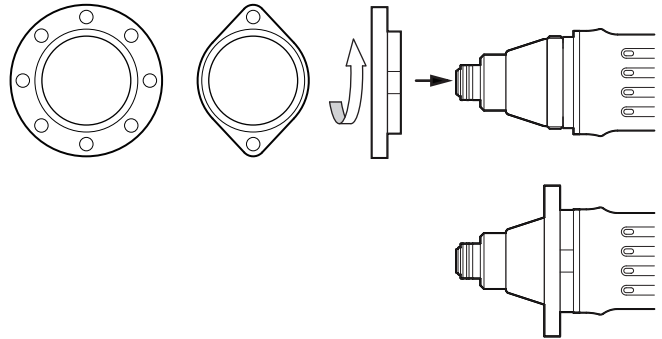
By mounting a separately sold diamond shape coupling and flange coupling, you can secure the electric screwdriver to an automatic machine, etc.

1 Remove the coupling

The coupling is a left-hand thread.
Be careful not to remove the accent ring.



2 Mount the diamond shape coupling or flange coupling



⚠ CAUTION

- If fastening with a left-handed screw, the flange coupling may become loose.
Use a commercially available screw lock, etc. together.

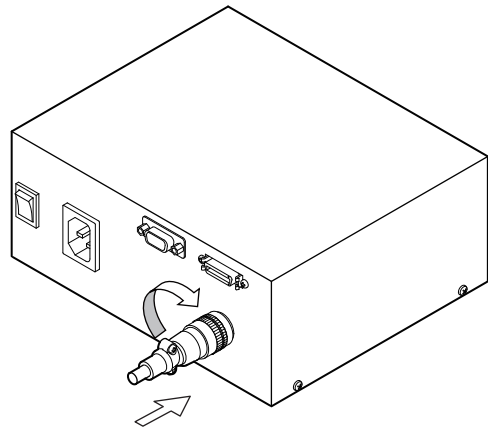
3. Basic Operation

Start

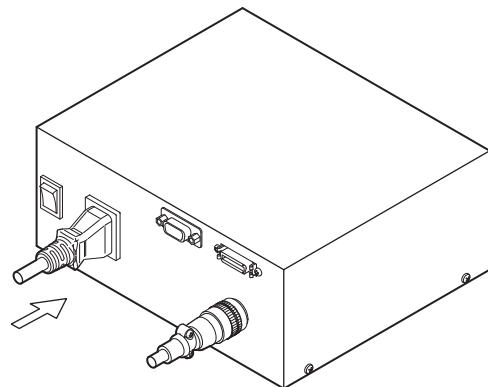
WARNING

- **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 properly grounded.
When an extension cord is used, use a 3-core cord that includes a ground wire.
- **Make sure to properly connect the connection cord.**
The connection cord is connected to the ground for the power supply and elimination of 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 ask Nitto Kohki or your dealer to perform an overhaul on the tool.

- 1 Check that the power is turned OFF, and then connect the electric screwdriver and the controller with a connection cord**
Align the connection cord and the notches of receptacle, connect them, and then fasten the sleeve.



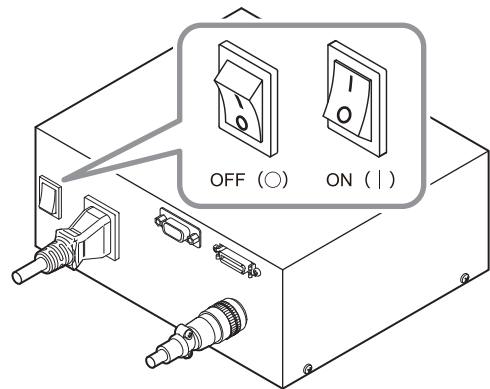
- 2 Insert the power cord into the controller inlet**



- 3 Insert the power plug into an outlet to supply electricity**
The power plug should be inserted into a grounded outlet (100 to 240 V AC).

4 Turn ON (I) the power switch

A buzzer sounds and the LED lights up.
The electric screwdriver and controller model and the program version are displayed on the LCD screen.
The electric screwdriver enters screw fastening mode.



Changeover switch

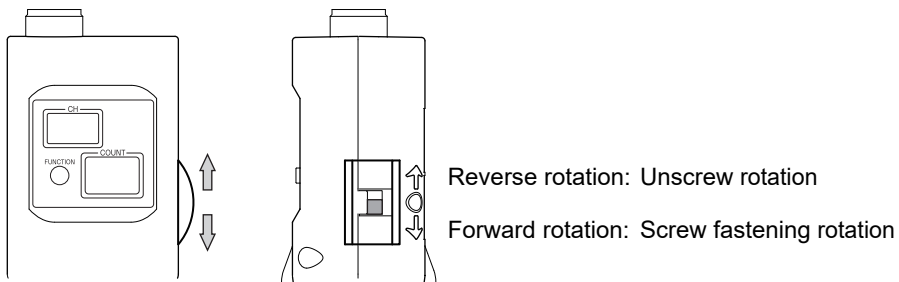
⚠ CAUTION

- Do not operate the changeover switch while the tool is rotating. Doing so could cause a failure.
- If you are not using the tool, set the switch to neutral.
- 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.

"O" means neutral. The electric screwdriver does not rotate.

For the screw fastening direction, set the rightward/leftward rotation for the "Screw fastening direction" (No.26 SCREW) in the channel settings. (p. 37)



If started by an external input signal, the changeover switch position is invalid.

Start and stop

You can use the start switch on the electric screwdriver or an external input signal to start up the electric screwdriver.

⚠ WARNING

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

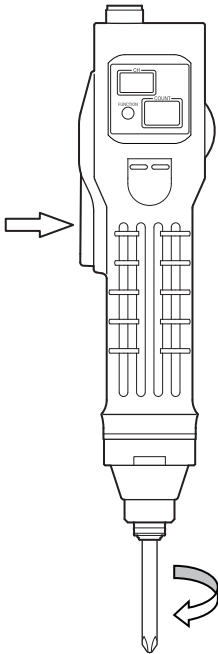
⚠ CAUTION

- Make sure to properly press the start switch.

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

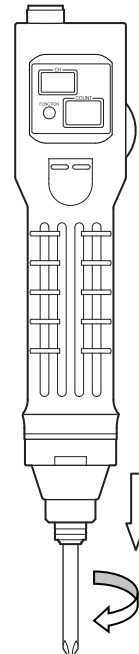
Lever start type

When you press the lever switch, the bit rotates. Releasing the lever switch stops rotation. For the lever start type, the lever switch works as the start switch.



Push start type

The bit rotates when the electric screwdriver is pushed in the bit direction. Releasing it stops rotation. The push start type has a start switch inside the electric screwdriver.



Use the external input signal to start

Refer to "Using external I/O signal" (p. 52).

Screw fastening mode

When turning ON the power of the controller, the tool starts in screw fastening mode.

⚠ WARNING

- Firmly hold the main unit to avoid losing your grip.
- Do not look at the LED (light-emitting part) from close up. In addition, do not bring it near people's eyes. Powerful LED light could damage people's eyes.

⚠ CAUTION

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

- 1 Slide the changeover switch to the screw fastening side (↓)
- 2 Apply the bit end to the screw head and press the start switch
- 3 When the screw has been fastened and the electric screwdriver has stopped, release the start switch.

When screw fastening is completed according to the setting

The electric screwdriver becomes torque up status (the electric screwdriver arrives at the set torque and stops automatically).

The screwdriver LED of the electric screwdriver and the [OK / NG] LED of the controller light up in blue and a buzzer sounds. The screw count of the [COUNT] display of the controller decreases by 1.

When screw fastening is not completed according to the setting

The screwdriver LED of the electric screwdriver and the [OK / NG] LED of the controller light up in red and a buzzer sounds. The [COUNT] display does not change.

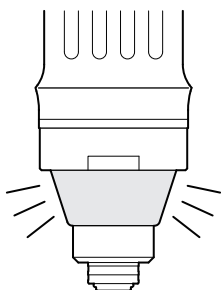
The LCD screen displays the screw fastening NG number. Refer to "Screw fastening NG" (p. 58) and review your operation.

Screw fastening is completed up to the set number

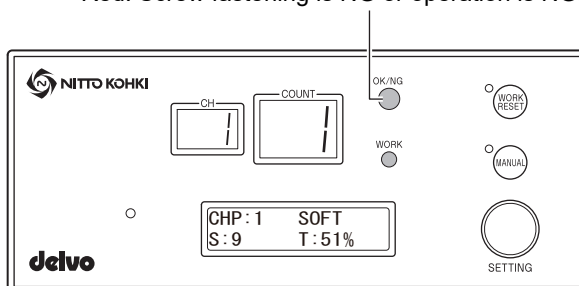
The OK signal (the signal that is output when a series of operations is completed) is output.

The screwdriver LED of the electric screwdriver and the [OK / NG] LED of the controller light up in green and a buzzer sounds.

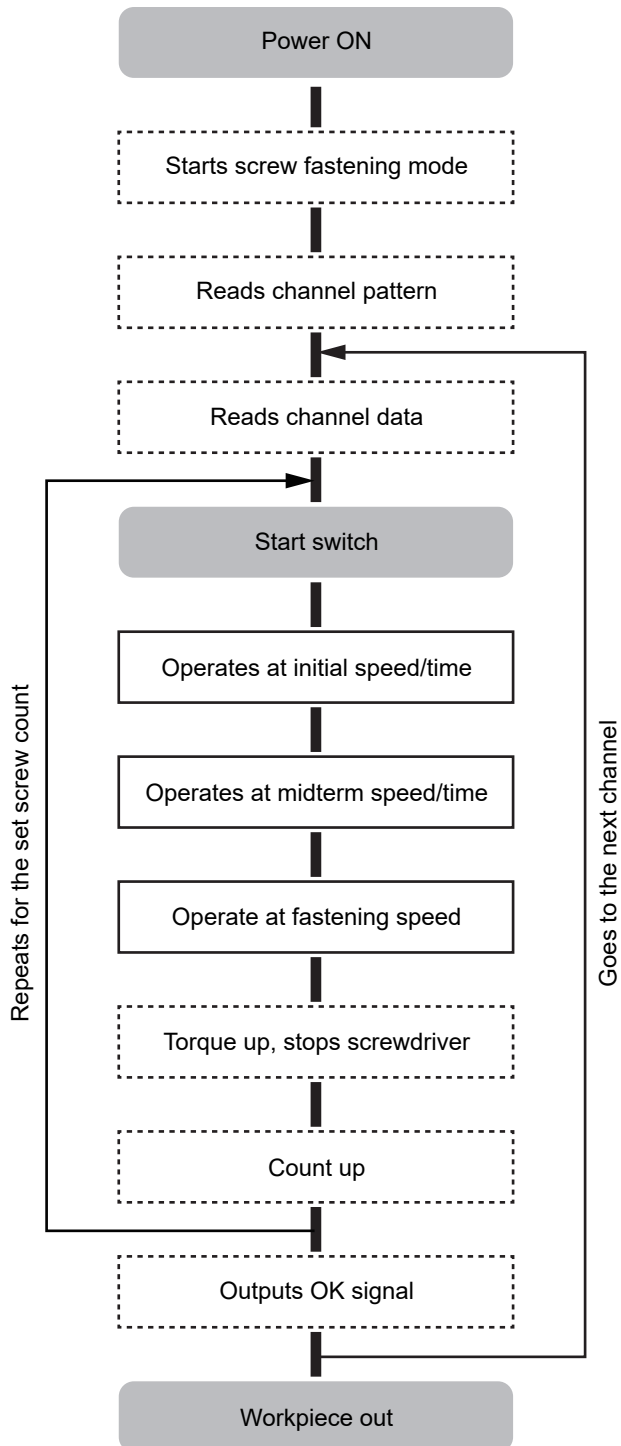
After that, if the channel pattern is set, switching to the next operations channel occurs. If an external input is used, moving to the specified channel occurs.



Blue: Torque up
 Green: Screw count ends and operation is OK.
 Red: Screw fastening is NG or operation is NG.



In screw fastening mode, the electric screwdriver operates as follows.



4. Manual Mode

Manual mode is used to manually switch the channel or channel pattern, or to operate a specific channel during the middle of a channel pattern.

Operation differs depending on the "Channel change type (CH CHANGE)" (p. 41) setting.

To prohibit manual operation by operators, refer to "Manual mode (MANUAL MODE)" (p. 43) of the common settings.

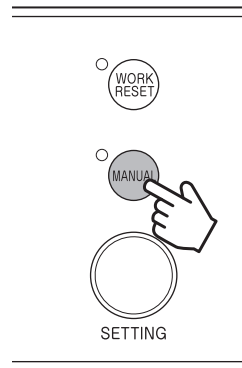
For channel change type "CH PAT" (channel pattern)

1 In the screw fastening mode, press and hold the [MANUAL] button

The manual mode setting screen appears and the LED next to the [MANUAL] button flashes.

To cancel, press and hold the [WORK RESET] button.

CHP : 1	SOFT
S : 9→3	T : 100%



2 Turn the [SETTING] dial to select [CH] or [CHP]

Select [CH] when temporarily using a channel for torque check, etc.

Select [CHP] when manually changing the channel pattern.

--MANUAL MODE--	
→CH	CHP

--MANUAL MODE--	
CH	→CHP

3 Press the [SETTING] dial

A channel or channel pattern selection screen is displayed.

4 Turn the [SETTING] dial to select a channel or channel pattern

If you selected [CH] in Step 2, select the channel to transit to.

```

---SELECT CH---
CH1
  
```

If you selected [CHP] in Step 2, select the channel pattern to transit to.

```

---CH PATTERN---
CH PATTERN1
  
```

5 Press the [SETTING] dial

Manual mode will be set.

If you selected [CH] in Step 2, the channel is switched to the specified channel.

During manual mode, the LED next to the [MANUAL] button flashes.

To quit manual mode, press and hold the [MANUAL] button.

```

MANUAL   SOFT
S: 9     T: 50%  L
  
```

If you selected [CHP] in Step 2, the pattern is switched to the specified channel pattern.

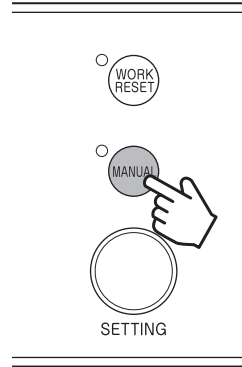
```

CHP: 12  SOFT
S: 1→9→5 T: 30%  L
  
```

For channel change type "INPUT" (external signal)

- 1** In the screw fastening mode, press and hold the [MANUAL] button
The manual mode setting screen appears and the LED next to the [MANUAL] button flashes.

INPUT	HARD
S: At	T: 30%



- 2** Turn the [SETTING] dial to select the channel to transit to

---SELECT CH---
CH1

- 3** Press the [SETTING] dial

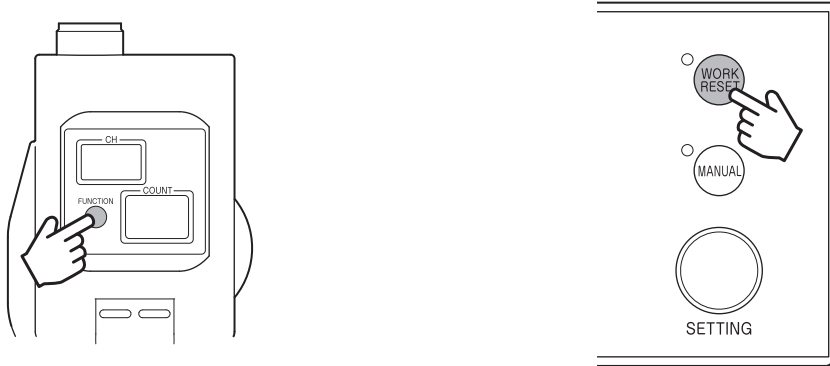
Manual mode will be set and the channel transits to the specified channel.

INPUT	SOFT (AR)
S: 9	T: 30% L

5. Reset Mode

Reset the workpiece when a workpiece problem occurs during screw fastening work and the workpiece has been removed.

Press and hold the [FUNCTION] button of the electric screwdriver or the [WORK RESET] button of the controller.



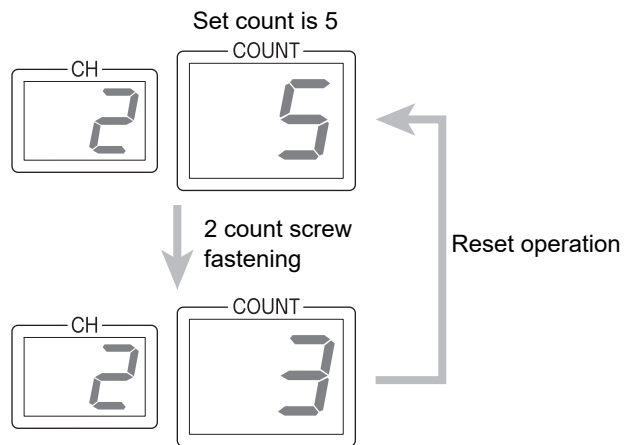
To prohibit reset operation by operators, refer to "Reset (RESET)" (p. 43) of the common settings.

Resetting the screw count

If a problem occurs during screw fastening and the workpiece is removed and line-out occurs, you can reset the series of operations.

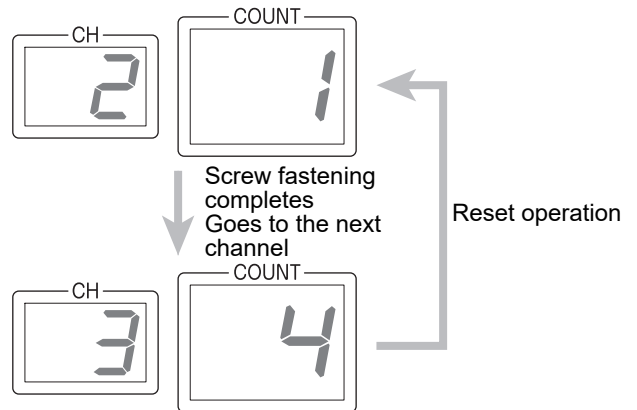
Resetting returns the count to the screw count of the operation channel setting.

You can perform reset even during screw fastening confirmation time (No.16 CHECK-T) after completion of screw fastening.



Restoring the operation channel

When performing reset before starting the set screw count, the status returns to that there is one remaining screw to be fastened in the previous channel.



6. Setting Mode

There are four types of settings. Refer to the following for respective details.

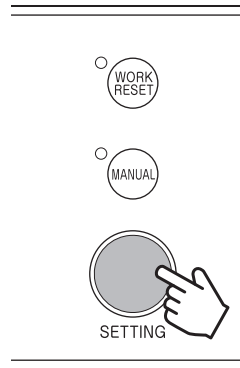
Setting	LCD display	Details	Reference
Channel setting	1) CH SETTING	Set screw fastening conditions of each channel.	p. 28
Channel pattern setting	2) CH PATTERN	Register the combination of channels to operate the electric screwdriver.	p. 38
Common settings	3) COM SETTING	Configure the entire controller.	p. 40
Setting transmission	4) SEND SETTINGS	Transmit the data set for the controller to another controller and copy the settings.	p. 45

This section describes the basic operation of the setting mode.

1 Press and hold the [SETTING] dial in screw fastening mode

To return to screw fastening mode, press and hold the [WORK RESET] button.

If "Torque check mode (TORQUE CHECK)" (p. 44) is set to OFF, proceed to Step 3.



2 Turn the [SETTING] dial to select [SETTING MODE], and press the [SETTING] dial

The mode enters setting mode.

If the setting mode lock is set to ON, you are prompted for a password. (p. 42)

If the [WORK RESET] button is pressed and held in the middle of setting, the mode returns to screw fastening mode without changing the setting.

TORQUE CHECK
→SETTING MODE

3 Turn the [SETTING] dial to display the setting to be changed

The setting item is displayed in the 2nd line on the LCD screen.

Select from "1) CH SETTING", "2) CH PATTERN", "3) COM SETTING", or "4) SEND SETTINGS".

—SETTING SELECT—
1) CH SETTING

4 Press the [SETTING] dial

The setting values of the displayed setting item can now be changed.

—SETTING SELECT—
4) SEND SETTINGS

5 Turn the [SETTING] dial to change the value

The selected value flashes.

If the [WORK RESET] button is pressed while the value is flashing, the screen returns to the previous screen without changing the setting.

—SEND SETTING—
→CH CHPAT COM

- 6 Press the [SETTING] dial**
The setting value is determined.
- 7 Repeat Steps 3 to 6 to perform settings**
- 8 Press and hold the [SETTING] dial**
The setting is saved and the tool returns to screw fastening mode.

7. Channel Setting

Set screw fastening conditions of each channel.
The following settings are available.

Details	LCD display	Setting value	Default	Reference
Screw fastening type	1) FSTN-TYPE	SOFT / HARD	SOFT	p. 30
Screw count	2) COUNT	OFF / 1 to 99	4	p. 30
Fastening speed	3) SPEED	Lv1 to Lv9	Lv5	p. 30
Torque	4) TORQUE	1% to 100%	10%	
Initial speed	5) 1stSpeed	OFF / Lv1 to Lv9	OFF	p. 30
Initial speed time	6) 1stTime	OFF / 0.01s to 9.99s * ¹ OFF / 0 to 60000 * ²	OFF	
Midterm speed	7) 2ndSpeed	OFF / Lv1 to Lv9	OFF	p. 32
Midterm speed time	8) 2ndTime	OFF / 0.01s to 9.99s * ¹ OFF / 0 to 60000 * ²	OFF	
Reverse speed	9) RvsSpeed	OFF / Lv1 to Lv9	Lv9	p. 32
Screw fastening measurement lower limit	10) CRT-L	DIS / 0.01s to 9.99s * ¹ DIS / 0 to 60000 * ²	DIS	p. 32
Screw fastening measurement upper limit	11) CRT-U	DIS / 0.01s to 9.99s * ¹ DIS / 0 to 60000 * ²	DIS	
Workpiece signal	12) WORK	OFF / ON	OFF	p. 33
Workpiece setup time	13) WORK-S-T	OFF / 0.1s to 9.9s	OFF	p. 34
Screw fastening OK signal	14) OKsig	OFF / ON	ON	p. 34
OK output timing	15) OKTiming	C-F / W-O	C-F	p. 34
Screw fastening confirmation time	16) CHECK-T	OFF / 0.1s to 9.9s	OFF	p. 34
Operation OK sound	17) OK-BUZZ	OFF / TYPE1 to TYPE9	TYPE1	p. 35
Operation NG sound	18) NG-BUZZ	OFF / TYPE1 to TYPE9	TYPE1	
Count up sound	19) CU-BUZZ	OFF / TYPE1 to TYPE9	TYPE1	
Auto reverse	20) AUTO-RVS	OFF / ON1 / ON2	OFF	p. 35
Reverse time	21) RvsTime	DIS / 0.01s to 9.99s * ¹ DIS / 0 to 60000 * ²	DIS	p. 35
Count return	22) COUNT-RTN	OFF / ON1 / ON2	ON1	p. 35
Bit brake	23) BitBrake	OFF / ON	ON	p. 36
Refastening prohibited time	24) REFST-T	OFF / 0.1s to 9.9s	1.0s	p. 36
Screwdriver LED	25) LED	OFF / RED / GREEN / BLUE / YELLOW / CYAN / MAGENTA / WHITE	OFF	p. 37
Screw fastening direction	26) SCREW	RIGHT / LEFT	RIGHT	p. 37

*1 When "Measurement method (MEASURE)" (p. 41) of the common settings is TIME

*2 When "Measurement method (MEASURE)" (p. 41) of the common settings is SIGNAL

CAUTION

- Always record the setting values. Refer to "Setting memo" (p. 77).
If the tool fails, all settings may be initialized. Also, settings may be initialized at the time of repair in order to check operation.

1 Press and hold the [SETTING] dial in screw fastening mode

To return to screw fastening mode, press and hold the [WORK RESET] button.

2 Turn the [SETTING] dial to select [SETTING MODE], and press the [SETTING] dial

The mode enters setting mode.

- 3 Press the [SETTING] dial
"1) CH SETTING" is selected.
- 4 Turn the [SETTING] dial to select the channel to set
You can select in a range from CH1 to CH30.
- 5 Press the [SETTING] dial
Channel setting items are displayed.
- 6 Turn the [SETTING] dial to select the item to set
The selected item is displayed in the 1st line, and the No. flashes.
Select from "1) FSTN-TYPE" to "26) SCREW".
- 7 Press the [SETTING] dial
The setting values can now be changed.
- 8 Turn the [SETTING] dial to change the value
- 9 Press the [SETTING] dial
Determines the value and returns to Step 6.
- 10 Repeat Steps 6 to 9 to perform settings

—SETTING SELECT—
1) CH SETTING

—CH SETTING—
CH1

—CH SETTING—
CH5

Flashes

1) FSTN-TYPE : SOFT
2) COUNT : 3

Flashes

25) LED : OFF
26) SCREW : RIGHT

Flashes

2) COUNT : 3
3) SPEED : Lv9

Flashes

2) COUNT : 99
3) SPEED : Lv9

11 Press and hold the [SETTING] dial

The setting is saved and the process returns to Step 3.
To set other channels, repeat Steps 3 to 11.



Save... OK

Screw fastening type (No.1 FSTN-TYPE)

Sets the screw fastening type to SOFT or HARD.

Which setting to specify depends on the type, size, material of the screw, presence or absence of adhesive, presence or absence of a washer or spring washer, the material of the workpiece, the presence or absence of tap, lower hole diameter, rigidity, fastening speed, and other conditions. Using an actual workpiece and screws, to determine the screw fastening type, torque, and speed, attempt adjustment of each setting under operation conditions. Refer to "About screw fastening type" (p. 68) for details.

Screw count (No.2 COUNT)

Set the screw count in a range from 1 to 99. When fastening of the set number of screws completes, the channel is switched to the next channel.

The screw count displayed in the [COUNT] display during screw fastening mode uses a countdown method.

Fastening speed (No.3 SPEED) / Torque (No.4 TORQUE)

Set the torque and speed.

For the relationship between the setting of torque/speed and output torque, refer to "Output torque graph" (p. 11).

⚠ CAUTION

- Perform setting while checking the fastening torque on an actual workpiece.
- Perform screw fastening at the speed set with "Fastening speed".
If screw fastening is performed at the initial speed/midterm speed, an error occurs.


Initial speed (No.5 1stSpeed) / Initial speed time (No.6 1stTime)

Sets the speed level and rotation time at the start.

Alternatively, you can set these items through operation of the electric screwdriver using the following steps.

1 Set the initial speed "5) 1stSpeed"


Set in a range from Lv1 to Lv9.



5) 1stSpeed: Lv5
6) 1stTime: OFF

2 Select the initial speed time "6) 1stTime"

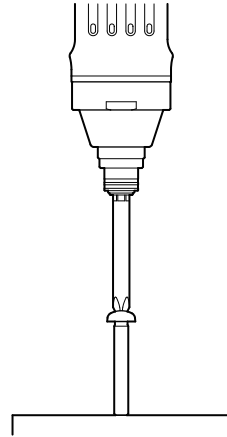
Flashes



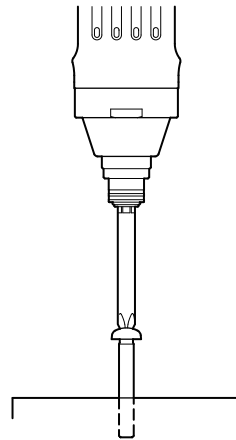
6) 1stTime: OFF
7) 2ndSpeed: OFF

3 Start the electric screwdriver

The electric screwdriver turns at the speed set in Step 1.
Rotate the screwdriver for the time you wish to set.



4 Stop the electric screwdriver



The "6) 1stTime" value is updated.
To change the value, repeat Steps 3 to 4.
To initialize the value, press the [WORK RESET] button.

Flashes

6) 1stTime : 1500
7) 2ndSpeed : OFF

* Display example when "Measurement method (MEASURE)" (p. 41) of the common settings is SIGNAL

5 To determine the value, press the [SETTING] dial

⚠ CAUTION

- Do not perform torque up during the initial speed time/midterm speed time.
If excessive torque is applied to the workpiece, it could result in damage or injury.

Midterm speed (No.7 2ndSpeed) / Midterm speed time (No.8 2ndTime)

Sets the speed level and rotation time at screw fastening.

Alternatively, you can set the speed level and rotation time through operation of the electric screwdriver as with "Initial speed time" (No.6 1stTime). (p. 30)

Reverse speed (No.9 RvsSpeed)

Sets the speed level at reverse rotation.

When "Auto reverse" (No.20 AUTO-RVS) (p. 35) is set, reverse rotation is performed at this speed.

To prohibit reverse operation by operators, set to "OFF".

Screw fastening measurement lower limit (No.10 CRT-L) / Screw fastening measurement upper limit (No.11 CRT-U)

Sets the screw fastening time (Collect timer) lower limit value (Lower) and upper limit value (Upper). Correct fastening is determined only when a value between the lower limit and the upper limit is measured. You can set either limit to OFF.

After setting "Screw fastening type" (No.1 FSTN-TYPE) to "Midterm speed time" (No.8 2ndTime), set the lower limit value and upper limit value of screw fastening time.

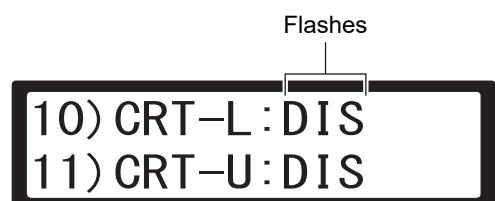
Setting	Details
Screw fastening measurement lower limit (No.10 CRT-L)	<ul style="list-style-type: none"> When the actual screw fastening time is shorter than the setting time, count is not performed (detection of short screw, refastening, screw galling, etc.) Setting at DIS / 0.01 to 9.99 seconds (DIS: Lower limit value function invalid) When "Measurement method" (MEASURE) of the common settings is SIGNAL, set DIS / 0 to 60000 Set a value smaller than "No.11 CRT-U"
Screw fastening measurement upper limit (No.11 CRT-U)	<ul style="list-style-type: none"> When the actual screw fastening time is longer than the setting time, count is not performed (detection of mistakenly long screw fastening, etc.) Setting at DIS / 0.01 to 9.99 seconds (DIS: Upper limit value function invalid) When "Measurement method" (MEASURE) of the common settings is SIGNAL, set DIS / 0 to 60000 Set a value larger than "No.10 CRT-L"

CAUTION

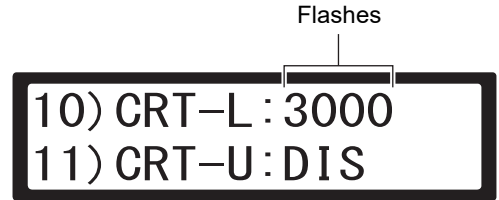
- To fix the screw fastening time, use the same operations method to perform the screw fastening.

Alternatively, you can set these items through operation of the electric screwdriver using the following steps.

1 Select "10) CRT-L" or "11) CRT-U"



- 2 Perform fastening with the screw**
The value is updated when torque up occurs.



* Display example when "Measurement method (MEASURE)" (p. 41) of the common settings is SIGNAL

- 3 Repeat Step 2 to update the setting value**
"10) CRT-L" updates the lower limit value, and "11) CRT-U" updates the upper limit value.
To return to "DIS" (initial value), press the [WORK RESET] button.

- 4 To determine the value, press the [SETTING] dial**

⚠ CAUTION

- Periodically measure the screw fastening time.
- The electric screwdriver speed may show individual differences. Also it changes due to the effects of heating or mechanical loss, etc.
- As shown below, perform setting with consideration for scattering in screw length or screw fastening operations.
Screw fastening time lower limit value: -10% from measurement minimum value
(Example: set to measurement minimum value 0.6s → 0.54s)
Screw fastening time upper limit value: +10% from measurement maximum value
(Example: set to measurement maximum value 0.7s → 0.77s)
-10%, +10% is one example. Take into consideration the screw length tolerance, workpiece individual differential, and operations scattering, etc.

Workpiece signal (No.12 WORK)

Sets whether you use the workpiece signal (workpiece detection sensor) or not.

By using the workpiece signal, it is possible to prevent human errors and improve work quality. When the workpiece signal is set to OFF, the electric screwdriver does not operate. This prevents inadvertent starting of the tool.

Setting	Operation
OFF	<ul style="list-style-type: none"> ● The electric screwdriver is always available for operation and the screw fastening operations start automatically ● After screw fastening operation is completed, OK is activated for 0.3 seconds after "Screw fastening confirmation time" (No.16 CHECK-T) has elapsed, and automatically switches to the next operation channel ● Operation NG cannot be determined
ON	<ul style="list-style-type: none"> ● The electric screwdriver only activates when the workpiece signal has been input (prevention of inadvertent operation) ● If the workpiece signal input is set to OFF when the screw fastening operation is not yet completed (screw count still remains), operation NG is output (in this case, set the workpiece signal input to ON again and restart the screw fastening operation, or release the operations NG by WORK RESET and move the workpiece to line-out).

For the workpiece signal (workpiece detection sensor) wiring, refer to "Using the workpiece signal" (p. 54).

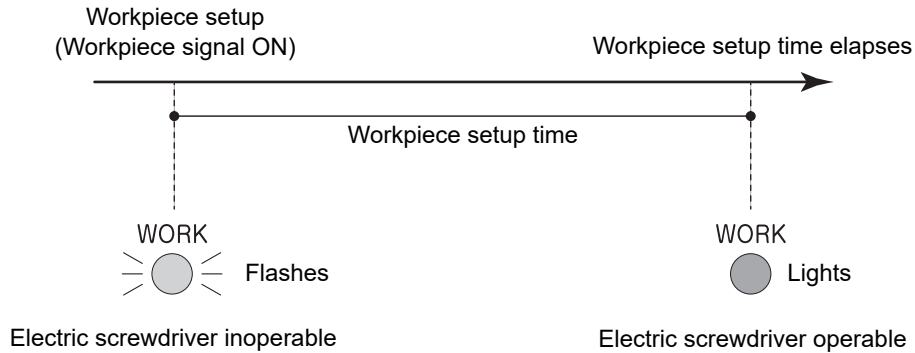
⚠ CAUTION

- To improve screw fastening operations control and quality, use of "Screw count" (No.2 COUNT) and "Workpiece signal" (No.12 WORK) is recommended.

Workpiece setup time (No.13 WORK-S-T)

Sets the time from setting up the workpiece (workpiece signal input ON → [WORK] LED flashing) to the electric screwdriver action being enabled ([WORK] LED lighted) at 0.0 to 9.9 seconds. This can be set only when "Workpiece signal" (No.12 WORK) is "ON".

Within this time period, the electric screwdriver does not activate, and even if workpiece signal input ON/OFF repeatedly occurs due to workpiece removal, position adjustment, or redo, etc., operation NG does not occur.



Screw fastening OK signal (No.14 OKsig)

When the screw count set by "Screw count" (No.2 COUNT) has been completed, selects whether to perform the buzzer sound, LED lighting up, and external signal output.

OK output timing (No.15 OKTiming)

Sets the timing to output the OK signal when a series of operations completes. This can be set only when "Screw fastening OK signal" (No.14 OKsig) is "ON".

When the OK signal is output, the [OK / NG] LED of the controller lights in green.

Setting	Details
C-F	(Count Finish) When screw fastening of the set screw count has been completed, and the "Screw fastening confirmation time" (No.16 CHECK-T) has elapsed, an OK signal is output
W-O	(Work Out) When screw fastening of the set screw count has been completed, and the workpiece signal is set to OFF, an OK signal is output (including workpiece signal OFF during the screw fastening confirmation time) This can only be set when "Workpiece signal" (No.12 WORK) is "ON".

When the workpiece signal is set to OFF during "Screw fastening confirmation time" (No.16 CHECK-T), an OK signal is output immediately.

Screw fastening confirmation time (No.16 CHECK-T)

Sets the time from when screw fastening of the set screw count is completed until when the OK signal is output (0.1 to 9.9 sec).

Since you can perform reverse rotation of the electric screwdriver during the screw fastening confirmation time, you can check the operation and loosen the screw (forward rotation cannot be performed). If loosening the screw, "Count return" (No.22 COUNT-RTN) is activated. After the screw fastening confirmation time, an OK signal is output, and the electric screwdriver does not operate.

Operation OK sound (No.17 OK-BUZZ) / Operation NG sound (No.18 NG-BUZZ) / Count up sound (No.19 CU-BUZZ)

To differentiate between the OK buzzer sound upon completion of operation, NG buzzer sound at incomplete operation, and buzzer sound at count up, you can set from 10 different kinds of buzzer sounds. At the same time as the buzzer sounds, the [OK / NG] LED lights up.

Buzzer sound	[OK / NG] LED	Conditions for sounding the buzzer
Operation OK sound (No.17 OK-BUZZ)	Lights in green	When screw fastening of the set screw count completes and operation is OK, a buzzer sounds.
Operation NG sound (No.18 NG-BUZZ)	Lights in red	When any of the conditions below occur during screw fastening, a buzzer sounds. <ul style="list-style-type: none"> ● Workpiece out occurs even though the count remains ● When screw fastening results in NG (p. 58)
Count up sound (No.19 CU-BUZZ)	Lights in blue	When screw fastening of the set screw count completes, a buzzer sounds.

Auto reverse (No.20 AUTO-RVS)

Automatically switches the electric screwdriver rotation to the reverse direction. This function is used for temporary fastening or loosening of screws.

Setting	Details
OFF	Does not perform auto reverse
ON1	Starts reverse operation after the torque up operation set by "Torque" (No.4 TORQUE) This function is used to unify the screw return amount
ON2	Performs reverse operation after the screw fastening measurement time elapses, which is set in "Screw fastening measurement lower limit" (No.10 CRT-L) This function is used when you do not want to apply the force of the screw seating to the workpiece By setting "Reverse time" (No.21 RvsTime) to OFF, you can stop the operation after the screw fastening measurement time elapses.

Reverse time (No.21 RvsTime)

Sets the rotation time of auto reverse.

Alternatively, you can set the rotation time through operation of the electric screwdriver as with "Initial speed time" (No.6 1stTime). (p. 30) Set the changeover switch to the reverse rotation side and start the electric screwdriver.

Count return (No.22 COUNT-RTN)

If the fastened screw has been loosened, you can return the screw count. Reverse rotation of the electric screwdriver is detected and the count return function activates.

Setting	Details
OFF	Set when the loosening operation is not performed and the count return function is not necessary Even when reversed, the screw count does not return
ON1	Regardless of the number of screws loosened (number of reverse rotation of the electric screwdriver), the count number is returned by 1 count only (the same count return method as the screw fastening counters DLR5640-WN/DLR5040A-WN/DLR5340-WN)
ON2	The count number is returned by the number of screws loosened (number of reverse rotation of the electric screwdriver) (the same count return method as the multifunction Brushless delvo DLV30S12P-AA series)

"ON2" operation procedure

- 1 In a state where 1 or more screws are fastened and the screw count has decreased, or during the screw fastening confirmation time, slide the changeover switch to the reverse rotation side**
- 2 Press the [FUNCTION] button**
The LCD is displayed as shown below.

COUNT RETURN
Pls. REVERSE

- 3 Start the electric screwdriver in reverse rotation**
If reverse-rotated, after returning by 1 count, it returns to operations mode.
Repeating Steps 2 to 3 further returns the screw count.

To cancel count return mode, perform any of the following operations.

- Slide the changeover switch to the neutral or the forward rotation side
- Use an external signal to set the forward rotation start input signal to ON (starts forward rotation at same time as cancellation of the count return mode)

CAUTION

- **Have the operator perform a visual check on whether or not the screw is loose.**
To maintain the screw count integrity, perform the operations while checking whether the screw is loose.
- **To loosen the screw, loosen it completely from the screw hole. If not, "Screw fastening measurement lower limit" (No.10 CRT-L) will not match when fastening the screw again.**
- **When even one screw has not been fastened (when "the current screw count = the set screw count"), the count number cannot be returned.**

Bit brake (No.23 BitBrake)

"Bit brake" is a function to stop the tool without inertial rotation of the bit when the start switch is released. If "OFF" is set, inertial rotation occurs when stopping the tool.

Set to "OFF" only when the bit brake has an adverse effect when picking up screws with a screw feeder or the like.

Refastening prohibited time (No.24 REFST-T)

To prevent refastening (fastening twice, check fastening, etc.), you can set the time for prohibition of forward rotation start after torque up, to 0.0 to 9.9 seconds.

Adjust the setting value based on operator familiarity or the screw fastening operation interval.

⚠ CAUTION

- **Do not perform refastening for screws that have already been fastened.**
Torque control is not performed for refastening. There will be times when a torque larger than the set torque is applied, which could damage the workpiece or screw.

Screwdriver LED (No.25 LED)

You can always light the screwdriver LED at the tip of the electric screwdriver in the specified color. (The LED lights in the default color at OK, NG, and count up time. p. 6)

This function can be used to do color coding for each workpiece.

⚠ CAUTION

- **Do not perform screw refastening in a dark place.**
The screwdriver LED is not a light to brighten dark places.

Screw fastening direction (No.26 SCREW)

Specifies the screw fastening direction during forward rotation. For a right-handed screw, set to "RIGHT"; for a left-handed screw, set to "LEFT".

8. Channel Pattern Setting

Register the combination of channels to operate the electric screwdriver.

For example settings of the channel pattern, refer to "Channel/channel pattern setting example" (p. 70).

1 Press and hold the [SETTING] dial in screw fastening mode

To cancel, press and hold the [WORK RESET] button.

2 Turn the [SETTING] dial to select [SETTING MODE], and press the [SETTING] dial

The mode enters setting mode.

TORQUE CHECK
→SETTING MODE

3 Turn the [SETTING] dial to display "2) CH PATTERN", and press the [SETTING] dial

→SETTING SELECT→
2) CH PATTERN

4 Turn the [SETTING] dial to select a channel pattern, and press the [SETTING] dial

The channel pattern is selected and the channel to be executed first (No.1) is displayed.

---CH PATTERN---
CH PATTERN1

5 Turn the [SETTING] dial to select No.1 to No.8, and press the [SETTING] dial

The channels are executed from No.1 to No.8 in order.

Pattern No.
---CH PATTERN10---
No. 1 : CH1
Channel to operate

When "Fin" is selected, the operation ends at that point and the next No. cannot be set.

In the default, No.2 is set for "Fin". If No.2 is set for other than "Fin", No.3 can be set.

---CH PATTERN10---
No. 2 : Fin
Finish

6 Turn the [SETTING] dial to select a channel pattern to operate, and press the [SETTING] dial

The channel is registered in the selected number.

Repeat Steps 5 to 6 to register channels to operate in order.

---CH PATTERN10---
No. 4 : CH15

If you will not use up to No.8, register "Fin" for the next number of the last number.

The example on the right shows when No.4 is the last number.

---CH PATTERN10---
No. 5 : Fin

- 7 Press and hold the [SETTING] dial**
The channel patterns are registered.
Operation after the channel pattern ends is displayed.

- 8 Turn the [SETTING] dial to select the transition destination after the channel pattern ends**
Select the next channel pattern in a range from "CHP1" to "CHP30".

To not transit to another channel pattern, select "LOOP".

--FINISH MOVE--
to CHP23

--FINISH MOVE--
to LOOP

- 9 Press the [SETTING] dial**
A confirmation screen is displayed.

- 10 Turn the [SETTING] dial to select "OK" or "NOK" (Not OK)**

To redo, select "NOK". Returns to Step 8.

--FINISH MOVE--
to CHP23 →OK NOK

--FINISH MOVE--
to CHP23 OK→NOK

- 11 Press the [SETTING] dial**
The setting is saved and the process returns to Step 4.
To set other channel patterns, repeat Steps 4 to 11.

Save . . . OK

9. Common Settings

Set the entire controller.

The following settings are available.

Details	LCD display	Setting value	Default	Reference
Channel change type	CH CHANGE	CH PAT / INPUT	CH PAT	p. 41
Measurement method	MEASURE	TIME / SIGNAL	SIGNAL	p. 41
Check buzzer sound	CHECK BUZZ	OFF / ON	ON	p. 41
Buzzer volume	BUZZ VOL	OFF / 30% / 50% / 80% / MAX	MAX	p. 41
Screw fastening NG check	NG WAIT	OFF / ON	OFF	p. 41
LCD back light	BACK LIGHT	OFF / ON	ON	p. 41
Setting lock	SETTING LOCK	OFF / ON	OFF	p. 42
Manual mode	MANUAL MODE	OFF / ON	ON	p. 43
Reset	RESET	OFF / CONTROLLER / DRIVER / BOTH	BOTH	p. 43
Caution mode	CAUTION MODE	OFF / 1% to 99%	OFF	p. 43
Torque check mode	TORQUE CHECK	OFF / ON	ON	p. 44
Idling NG time	IDLING NG	OFF / 0.1s to 9.9s	OFF	p. 44

1 Press and hold the [SETTING] dial in screw fastening mode

To cancel, press and hold the [WORK RESET] button.

2 Turn the [SETTING] dial to select [SETTING MODE], and press the [SETTING] dial

The mode enters setting mode.

TORQUE CHECK
→SETTING MODE

3 Turn the [SETTING] dial to display "3) COM SETTING", and press the [SETTING] dial

—SETTING SELECT—
3) COM SETTING

4 Turn the [SETTING] dial to select an item to set, and press the [SETTING] dial

—COM SETTING—
CH CHANGE : CH PAT

5 Turn the [SETTING] dial to change the value

—COM SETTING—
MEASURE : TIME

Flashes

6 Press the [SETTING] dial

Determines the value and returns to Step 4.

7 Repeat Steps 4 to 6 to perform settings

- 8 Press and hold the [SETTING] dial**
The setting is saved and the process returns to Step 3.

Save . . . OK

Channel change type (CH CHANGE)

Selects the channel change method.

Setting	Details
CH PAT	Uses a channel pattern to switch the channel (p. 38)
INPUT	Uses an external signal to switch the channel (p. 47)

Measurement method (MEASURE)

Selects the measurement method of the setting times such as initial speed, midterm speed, etc.

Setting	Details
TIME	Measures by time You can decide the setting value intuitively.
SIGNAL	Measures by the motor rotation signal Even if you change the rotation speed, you do not need to set the measurement time or rotation time.

Check buzzer sound (CHECK BUZZ)

Sets whether to sound an operation check buzzer.

A "beep" check buzzer sounds in the following cases.

- When a workpiece signal is recognized and the electric screwdriver becomes operable
- When the screw count returns by 1 by count return

Buzzer volume (BUZZ VOL)

Sets the buzzer volume.

If the buzzer volume is small even if the buzzer volume is set to 100%, use the output signal to add a lamp or a buzzer.

Screw fastening NG check (NG WAIT)

Sets the behavior of returning to screw fastening mode when screw fastening NG occurs.

Setting	Details
OFF	Returns to screw fastening mode in 0.3 seconds
ON	Returns to screw fastening mode when the [WORK RESET] button of the controller or the [FUNCTION] button of the electric screwdriver is pressed, or external reset is performed

LCD back light (BACK LIGHT)

Sets the back light of the LCD screen.

Setting lock (SETTING LOCK)

Sets to request that the operator enter the password when entering setting mode.
Perform the following procedure to set the password.

- 1** Turn the [SETTING] dial in "3) COM SETTING" to select "SETTING LOCK", and press the [SETTING] dial

```

--COM SETTING--
SETTING LOCK:OFF
  
```

- 2** Turn the [SETTING] dial to select "ON", and press the [SETTING] dial

```

--COM SETTING--
SETTING LOCK:ON
  
```

Flashes

- 3** Operate the [SETTING] dial, [WORK RESET] button, and [MANUAL] button to enter the password

```

--SET PASSWORD--
  
```

The following characters can be entered.

Character	Operation
←	[SETTING] dial leftward rotation
→	[SETTING] dial rightward rotation
R	[WORK RESET] button
M	[MANUAL] button

Up to 8 characters can be entered.

```

--SET PASSWORD--
-->>RRM<<<
  
```

Password

- 4** Press the [SETTING] dial
The password re-entry screen is displayed.

```

RETYPE PASSWORD
-->>RRM<<<
  
```

- 5** Enter the password again and press the [SETTING] dial

When correctly entered, the Step 1 screen is displayed again.

```

RETYPE PASSWORD
SET OK
  
```

If the wrong password is entered, "SET NG" is displayed and the setting lock returns to the "OFF" state.

```

RETYPE PASSWORD
SET NG
  
```

```

--COM SETTING--
SETTING LOCK:OFF
  
```


When a password is set, the password will be requested the next time setting mode is entered.
Enter the set password.

Manual mode (MANUAL MODE)

Switches between enable/disable of manual mode. When "OFF" is set, manual mode cannot be used during screw fastening mode.

Refer to "4. Manual Mode" (p. 21) for manual mode.

Reset (RESET)

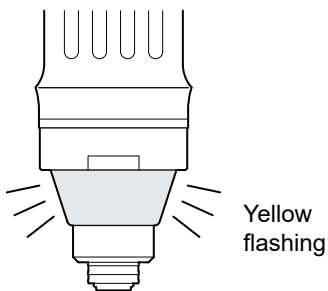
Switches between enable/disable of reset mode. When "OFF" is set, reset mode cannot be used during screw fastening mode.

Refer to "5. Reset Mode" (p. 24) for reset mode.

Caution mode (CAUTION MODE)

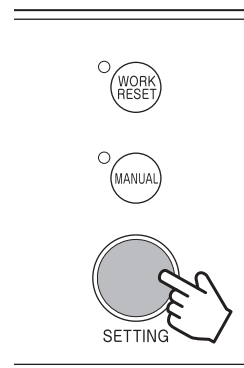
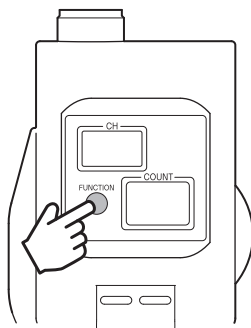
Sets a torque at which the operator is alerted.

When the channel is switched, if the channel setting value exceeds the value set in caution mode, the following warning is displayed and the electric screwdriver cannot be driven.



*******CAUTION*******
****HIGH TORQUE****

To recover, press the [FUNCTION] button of the electric screwdriver or the [SETTING] dial of the controller.



When mounting the electric screwdriver in an automatic machine, set caution mode to "OFF".

Torque check mode (TORQUE CHECK)

Switches between enable/disable of torque check mode. When "OFF" is set, the mode immediately transits to setting mode when pressing and holding the [SETTING] dial in screw fastening mode.
Refer to "11. Torque Check Mode" (p. 46) for torque check mode.

Idling NG time (IDLING NG)

Sets the time that idling is judged to be NG. When the screwdriver has been idled for a period longer than the set time, screw fastening NG occurs. When "OFF" is set, judgement of idling NG is not performed.

Initialization of settings

To delete all settings, perform initialization.

- 1** While pressing the [WORK RESET] button, turn ON the power of the controller
- 2** Turn the [SETTING] dial to select the item to initialize
 CH: Channel setting
 CHPAT: Channel pattern setting
 COM: Common settings
 When pressing and holding the [WORK RESET] button, the usual startup status occurs.
- 3** Press the [SETTING] dial
 The selected items are initialized.

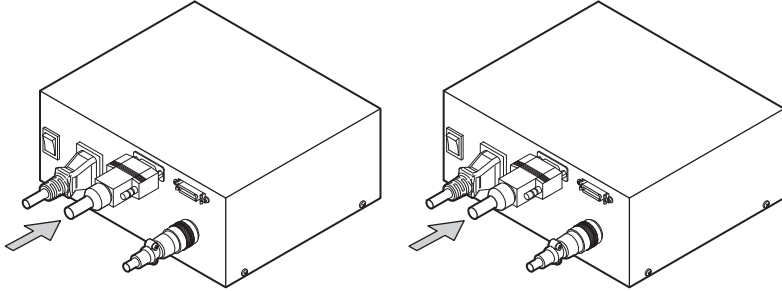
--- INITIALIZE ---
->CH CHPAT COM

Set... OK

10. Setting Transmission

Transmit the data set for the controller to another controller and copy the settings.

- 1 Use the separately sold communication cable (cross) DLW9093 to connect two controllers
Insert the cable into an RS-232C connector.



- 2 Turn ON (I) the power switch of the two controllers
- 3 Set the sending side controller to setting mode, display "4) SEND SETTING" and press the [SETTING] dial

```

-SETTING SELECT-
4) SEND SETTING
  
```

- 4 Turn the [SETTING] dial to select the items to send
CH: Channel setting
CHPAT: Channel pattern setting
COM: Common settings

```

--SEND SETTING--
->CH  CHPAT  COM
  
```

- 5 Press the [SETTING] dial
The data is transmitted.

```

Sending. . .
[                               ]
  
```

When the data is correctly transmitted, the Step 4 screen is displayed again.

```

Sending. . . OK
[ ■■■■■■■■■■■■■■■■■■■■ ]
  
```

If the data cannot be transmitted, check if the cable is connected properly.

```

Sending. . . NG
[                               ]
  
```

⚠ CAUTION

- Do not disconnect the communication cable or turn OFF the power while data is being transmitted. Doing so could cause a failure or setting error.

11. Torque Check Mode

This mode is used to measure torque with a torque checker.
In torque check mode, only the following channel settings are enabled.

- Screw fastening type (No.1 FSTN-TYPE)
- Fastening speed (No.3 SPEED)
- Torque (No.4 TORQUE)
- Reverse speed (No.9 RvsSpeed)
- Screwdriver LED (No.25 LED)
- Screw fastening direction (No.26 SCREW)

1 Press and hold the [SETTING] dial in screw fastening mode

To return to screw fastening mode, press and hold the [WORK RESET] button.

2 Turn the [SETTING] dial to select [TORQUE CHECK], and press the [SETTING] dial

The tool enters torque check mode.

→TORQUE CHECK
SETTING MODE

3 Turn the [SETTING] dial to select the channel to set

You can select in a range from CH1 to CH30.

--TORQUE CHECK--
CH1

4 Press the [SETTING] dial

The setting value of the selected channel is displayed.

TorqueCheck CH5
SOFT S:5 T:30%

5 Start the electric screwdriver to perform torque check

Use the special measuring device. (p. 9)

6 To change the "Torque" (No.4 TORQUE) setting value, turn the [SETTING] dial

Adjustment of the setting value is possible in $\pm 10\%$.

TorqueCheck CH5
SOFT S:5 T:40%

7 Press the [SETTING] dial

The adjusted value is saved.
To not save the setting, press the [WORK RESET] button.

Save... OK

12. Using External Signals

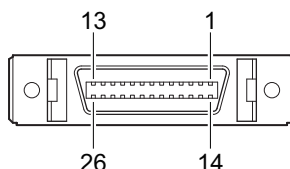
You can input or output external signals via an external signal connector.

⚠ CAUTION

- In the I/O circuit drive, you can use a built-in service power supply (24 V DC, 200 mA or less). If wiring a load with capacity exceeding 200 mA, use an external power supply.
- Before connecting the wire for the external signal, always turn OFF the power.

External I/O signal specifications

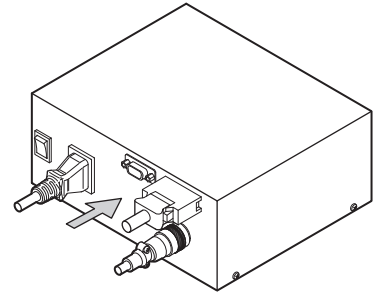
Connector: IEEE 1284 half pitch connector (26-pin)



Terminal No.	Function	Details	I/O	
1	+24 V DC	Built-in service power supply (Capacity: Maximum 200 mA)	Service power supply	
2	0 V DC			
3	Input signal common terminal	Input signal common terminal (connection example: p. 49)	Input	
4	Output signal common terminal	Output signal common terminal (connection example: p. 50)	Output	
5	Switching signal A	A channel or channel pattern is specified using a 5-bit input signal (p. 52)	Input	
6	Switching signal B			
7	Switching signal C			
8	Switching signal D			
9	Switching signal E			
10	Forward rotation start	Startup with an external input signal (p. 53)	Input	
11	Reverse rotation start	The electric screwdriver operates while the input signal is ON		
12	Workpiece	The workpiece signal (workpiece detection sensor output) is input (p. 54) The workpiece signal is ON while the input signal is ON		
13	External reset	An external reset signal is input (p. 53)	Output	
14	Space	Connection is not possible		-
15	Channel A	The channel being operated or being set is ON (p. 51)		Output
16	Channel B			
17	Channel C			
18	Channel D			
19	Channel E			
20	Forward rotation signal	Output signal is set to ON during forward rotation		Output
21	Reverse rotation signal	Output signal is set to ON during reverse rotation		
22	Operation OK	Output signal is set to ON when the screw fastening of the set count completes and operation OK is determined		
23	Count up	Output signal is set to ON for 0.3 seconds when screw fastening is normal (torque up)		
24	Operation NG	Output signal is set to ON when the workpiece signal is set to OFF during operation and operation NG is determined		
25	Screw fastening NG	Output signal is set to ON for 0.3 seconds when screw fastening is NG		
26	Space	Connection is not possible	-	

Connecting external signals

Insert the separately sold external I/O cable DLW9091 to the external signal connector to connect between the terminal and wiring.

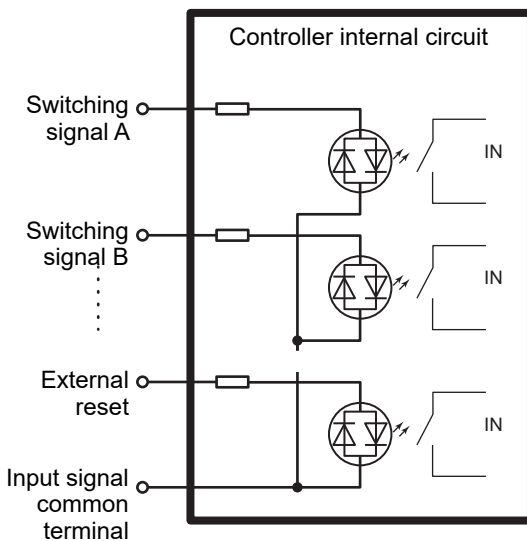


I/O circuit specifications

⚠ CAUTION

- In the I/O circuit drive, you can use a built-in service power supply (24 V DC, 200 mA or less). If connecting a load with capacity exceeding 200 mA, use an external power supply.
- The I/O signal circuits (terminal No.3 to 26) are insulated by a photocoupler from the controller internal circuit. However, the service power supply (24 V DC) is connected to the (secondary side) controller internal circuit (the primary side commercial power supply and secondary side circuit are insulated). For that reason, for the I/O signal circuit wiring, use an external power supply as necessary.
- Be careful about applying excess voltage or noise, etc., to each terminal.

Input circuit



Bidirectional photocoupler input
24 V DC
5 mA consumption per input

Output circuit

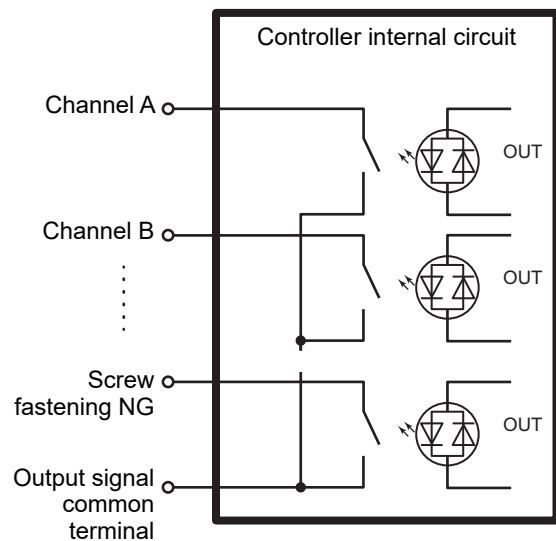


Photo relay open collector
24 V DC or less
Up to maximum 80 mA per input

I/O signal connection examples

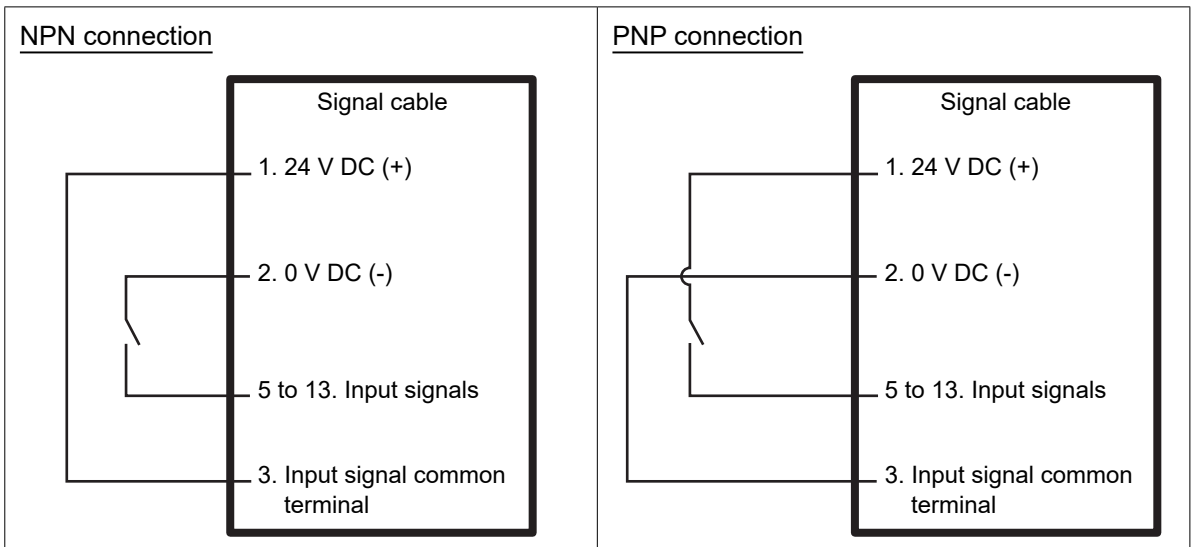
⚠ WARNING

- Before connecting the wire for the external signal, always turn OFF the power.

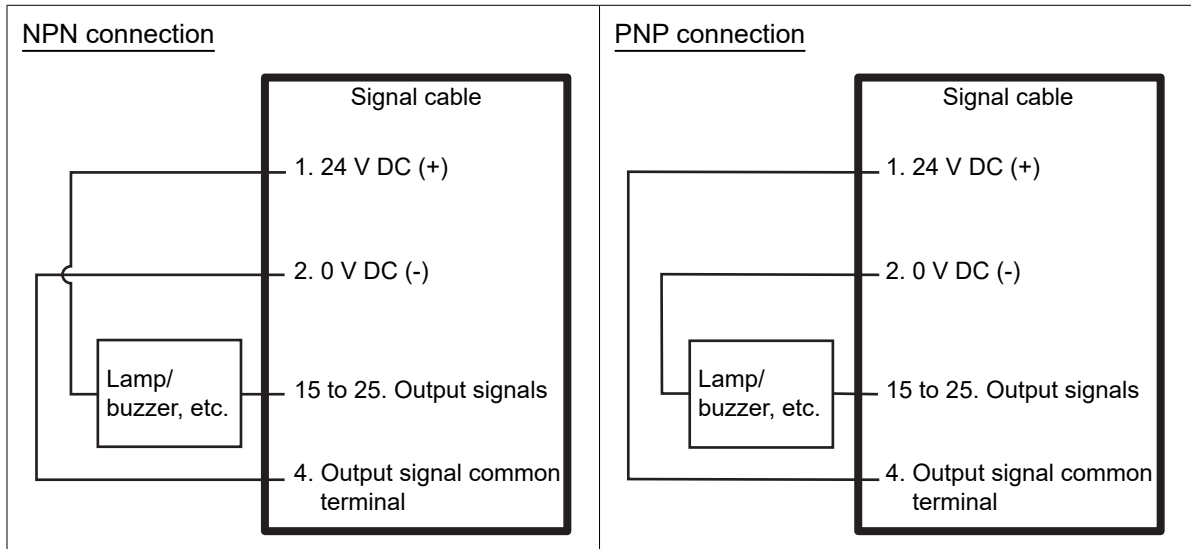
⚠ CAUTION

- The drawings are connection examples. Components such as resistance are omitted. Add resistance, etc. according to the electronic parts to be used.
- For connection, use thick wire as much as possible. (AWG20 or more is recommended)
- A 2-wire sensor cannot be used. A 2-wire sensor has a flow of fine current even while OFF, and could cause a malfunction.
- For the sensor, use an appropriate one according to the connection.
- Depending on the sensor installation environment, a malfunction could occur due to noise. Make sure to take sufficient noise measures such as grounding (earth), etc. For details, read the instruction manual of the sensor to be used.

Connection example of input signal

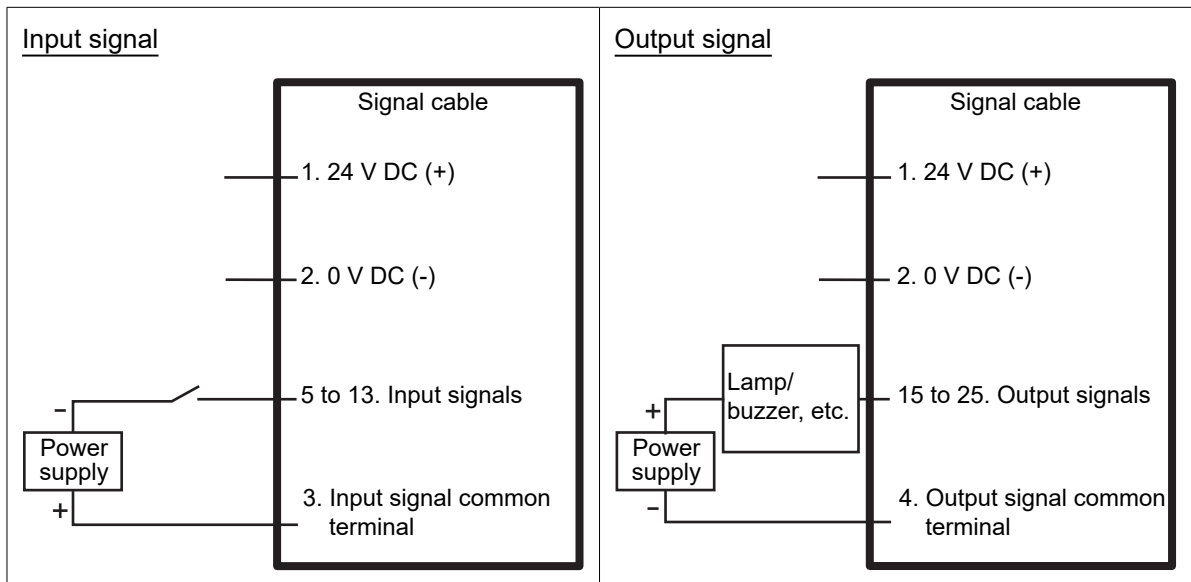


Connection example of output signal



Connection example when using external power supply

The drawing shows an NPN connection. PNP connection is possible.



⚠ CAUTION

- When an external power supply is used, do not connect anything to 1. 24 V DC and 2. 0 V DC. Doing so could cause a failure.

Timing of I/O signal

Input signal

Terminal No.	Function	Timing
5	Switching signal A	Switching signals A to E are ON while the input signal is ON
6	Switching signal B	
7	Switching signal C	
8	Switching signal D	
9	Switching signal E	
10	Forward rotation start	The electric screwdriver operates while the input signal is ON
11	Reverse rotation start	
12	Workpiece	The workpiece signal is ON while the input signal is ON
13	External reset	Reset occurs when the input signal changes from ON to OFF

Output signal

Terminal No.	Function	Timing
15	Channel A	The channel being operated or being set is ON
16	Channel B	
17	Channel C	
18	Channel D	
19	Channel E	
20	Forward rotation signal	ON while running
21	Reverse rotation signal	
22	Operation OK	ON for 0.3 seconds when the OK signal is output
23	Count up	ON for 0.3 seconds when screw fastening ends normally
24	Operation NG	Always ON while operation NG occurs
25	Screw fastening NG	ON for 0.3 seconds when screw fastening is NG

The channel outputs and corresponding switching signals A to E are as follows.

I: ON, Blank: OFF

Channel	Value																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
A	I		I		I		I		I		I		I		I		I		I		I		I		I		I		I		I
B		I	I			I	I			I	I			I	I			I	I			I	I			I	I			I	I
C				I	I	I	I					I	I	I	I					I	I	I	I					I	I	I	I
D								I	I	I	I	I	I	I	I									I	I	I	I	I	I	I	I
E																I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

Using external I/O signal

Switching channel/channel pattern

It is possible to switch the channel or channel pattern by input from an external signal.

The channel and channel pattern values and corresponding switching signals A to E are as follows.

I: ON, Blank: OFF

Switching signal	Value																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
A	I		I		I		I		I		I		I		I		I		I		I		I		I		I		I		I
B		I	I			I	I			I	I			I	I			I	I			I	I			I	I			I	I
C				I	I	I	I					I	I	I	I					I	I	I	I					I	I	I	I
D								I	I	I	I	I	I	I										I	I	I	I	I	I	I	I
E																I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

For channel change type "INPUT" (external signal)

- 1 Input the switching signal for the value to change**
- 2 Operate the electric screwdriver and set the count to 0.**
Upon ending of "Screw fastening confirmation time" (No.16 CHECK-T), switching to the specified channel takes place.

When forcefully switching the channel/channel pattern

- 1 Input the switching signal for the value to change**
- 2 Set the terminal No.13 (external reset) to ON**
The LCD screen is displayed as shown on the right.

RESET SIGNAL ON
P1s. SIGNAL OFF

- 3 Set the terminal No.13 (external reset) to OFF**
Switching to the specified channel or specified channel pattern takes place.

Resetting the screw count

Refer to "5. Reset Mode" (p. 24) for details of resetting the screw count.

- 1 Set switching signals A to E to OFF**
- 2 Set the terminal No.13 (external reset) to ON**
The LCD screen is displayed as shown on the right.



RESET SIGNAL ON
PI s. SIGNAL OFF

- 3 Set the terminal No.13 (external reset) to OFF**
The screw count is reset.

Starting the electric screwdriver

Start the electric screwdriver with the input from an external signal. This function can be used when mounting the tool on an automatic machine or the like.

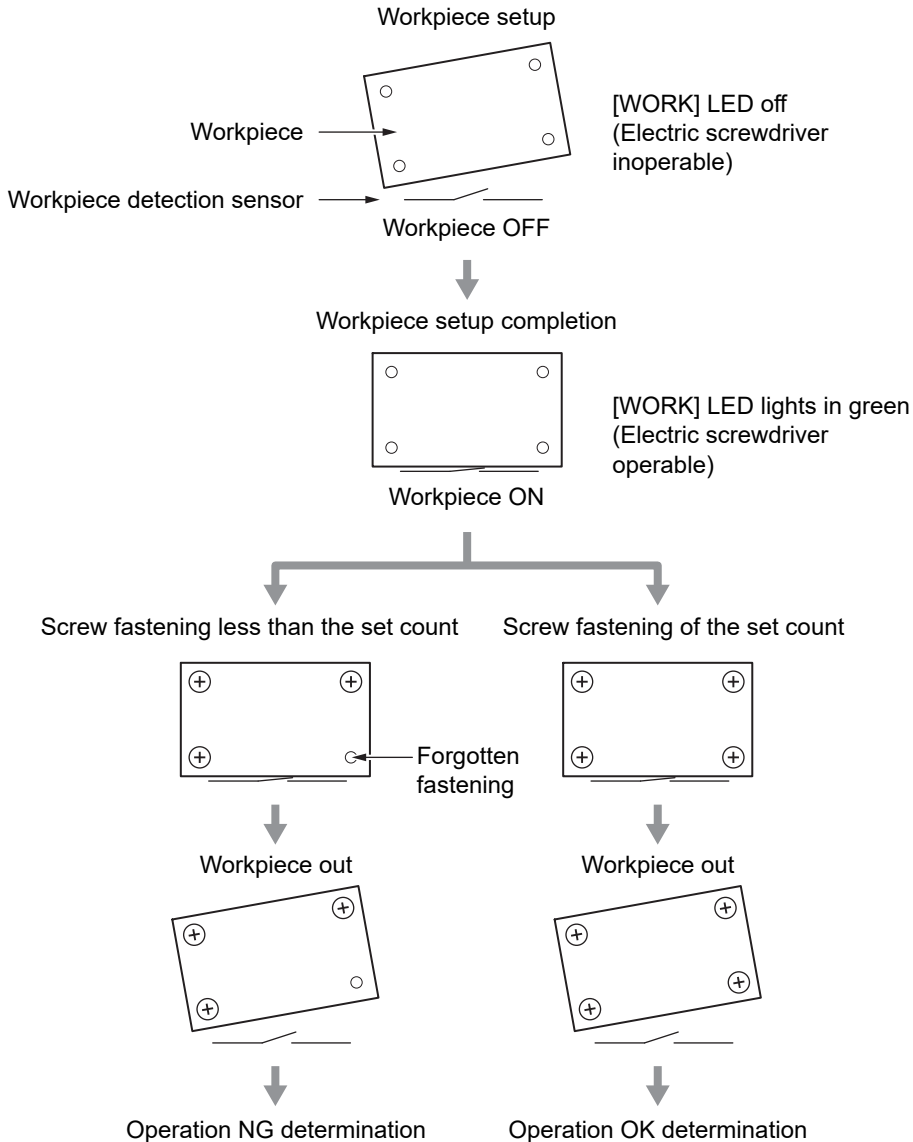
- 1 Check that the start switch of the electric screwdriver is OFF**
- 2 Set the terminal No.10 (forward rotation start) or 11 (reverse rotation start) to ON**
The electric screwdriver operates while the signal is ON.
When screw fastening completes, the tool automatically stops and the signal is turned OFF.
When an error has occurred, turn OFF the signal immediately.

Using the workpiece signal

By using the workpiece signal (workpiece detection sensor), it is possible to prevent human errors and improve work quality. When the workpiece signal is set to OFF, the electric screwdriver does not operate. This prevents inadvertent starting of the tool.

Sensors or switches that can determine workpiece setup are used.

Set "workpiece signal" (No.12 WORK) of the channel that will use workpiece input to "ON".



Settings related to the workpiece signal

If the workpiece signal is used, the settings below are valid.

Setting item	Reference
Workpiece setup time (No.13 WORK-S-T)	p. 34
OK output timing (No.15 OKTiming)	p. 34
Screw fastening confirmation time (No.16 CHECK-T)	p. 34
Operation NG sound (No.18 NG-BUZZ)	p. 35

13. Using External Signals (RS-232C)

RS-232C cable is used to connect a PC or sequencer (PLC).

⚠ CAUTION

- Before connecting the wire for the external signal, always turn OFF the power.

RS-232C specifications

The RS-232C settings of this tool are as shown below.

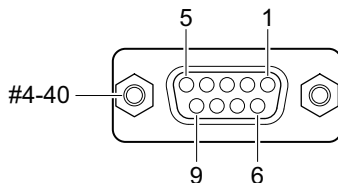
Since these settings are fixed, perform setting at the PC or sequencer side.

Transmission method	Asynchronous (asynchronous communication)
Communication line	Full duplex
Transmission speed	38400 bps
Number of data	8
Parity	None
Stop bit	1
Handshake	None
Delimiter (communication separator)	Receive: CR+LF (␣␣) Send: CR+LF (␣␣)

Electrical characteristics

Input voltage level	HIGH	3 to 15 V
	LOW	-15 to -3 V
Output voltage level	HIGH	5 to 9 V
	LOW	-9 to -5 V

Connector pin layout (D-SUB 9pin (female))



Pin No.	Signal name	I/O
2	TxD	OUT (this tool → PC)
3	RxD	IN (PC → this tool)
5	GND	GND

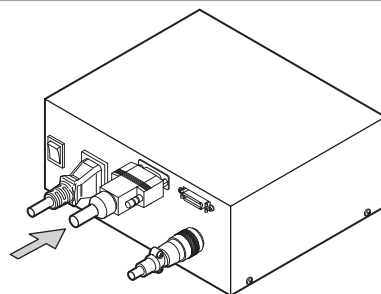
- Other pins are not used

Communication cable DLW9092 specifications

Cable	Straight connection
Connector 1	D-SUB 9pin (male)
Connector 2	D-SUB 9pin (female)

RS-232C connection

Insert the separately sold communication cable (straight) DLW9092 to the RS-232C connector to connect to a PC or sequencer.



⚠ CAUTION

- If the PC to be connected does not have an RS-232C connector, use a device that converts the D-Sub9 pin to USB, etc.
Nitto Kohki has confirmed connectivity with the following product. (We do not provide support.)
BSUSRC0610BS made by BUFFALO

Command

When a command is sent from a PC or sequencer to the controller, the corresponding processing is executed. When the processing completes, the result is sent to the PC or sequencer.

Commands consist of 3 alphabet characters, parameters, and a delimiter.

FWD\r\n

Command (3 byte) Delimiter

MOV:3\r\n

Command (3 byte) Delimiter

Parameter

⚠ CAUTION

- Send the next command after sending a command from the PC or sequencer and receiving a response from the controller.
If sending a command continuously without waiting for a response, a command error occurs and processing cannot be executed.

Send/receive command

Operation	Send command	Response from controller
Forward rotation drive	FWD\r\n	FWD\r\n
Reverse rotation drive	RVS\r\n	RVS\r\n
Drive stop	STP\r\n	STP\r\n
Switching channel/channel pattern*1	MOV:p\r\n (p = 1 to 30)	At channel switching CH:p\r\n At channel pattern switching CHP:p\r\n
Resetting the screw count	CRT\r\n	CRT\r\n
Workpiece reset	WRT\r\n	WRT\r\n
Workpiece signal ON	WIN\r\n	WIN\r\n
Workpiece signal OFF	WOT\r\n	WOT\r\n
Resend request *2	RSD:p\r\n (p = 1 to 10)	Command sent nth time before, which is specified by the parameter value

*1 The switching target differs depending on the setting of the common settings "Channel change type" (CH CHANGE). Since when the channel pattern is switched the channel is also switched, responses are sent continuously.

*2 Regarding commands sent from the controller to a PC or sequencer, up to the latest 10 commands are stored. When signals could not be received correctly due to noise or some other reason, the PC or sequencer sends the command sent the nth time before, which is specified by the parameter.

[Example] Sends command "RSD:3\r\n" → Returns the command sent by the controller the 3rd time before

Since control is performed even when communication between the controller and PC or sequencer fails, use this function when you wish to maintain the reliability of transmission and reception. This command transmission is not included in the 10 commands that are stored.

Notification command

In addition to RS-232C signals, commands are sent from the controller to the PC or sequencer when processing is performed manually or by contact signals.

Operation	Notification from controller
At forward rotation drive start	FWD\r\n
At reverse rotation drive start	RVS\r\n
At drive stop completion	STP\r\n
Operation OK notification	OK \r\n
Workpiece signal ON	WIN\r\n
Workpiece signal OFF	WOT\r\n
Count up (screw fastening completes normally) notification p = Measured fastening time or signal is output (When time is output, its unit is in msec [Example] CUP:1500 → 1.5 sec)	CUP:p\r\n (p = 1 to 60000)
Operation NG (workpiece out occurs while the fastening count remains) notification	WNG\r\n
Screw fastening NG notification (p. 58) p1 = Screw fastening NG No. (p. 58) p2 = Measured fastening time or signal is output	FNG:p1:p2\r\n
At channel switching	CH:p\r\n (p = 1 to 30)
At channel pattern switching	CHP:p\r\n (p = 1 to 30)
When a non-supported command or non-supported parameter is input	CER\r\n

14. Error Detection

The status of the controller and electric screwdriver is detected and if an error is determined the tool operation is stopped.

Screw fastening NG

If a mistake in screw fastening is detected, screw fastening NG is notified. Either change the setting or review the screw fastening operation.

[Display example]

Fastning NG No:1
CORRECT LOWER

Screw fastening NG No.	LCD display	Details
No.1	CORRECT LOWER	Screw fastening less than the "Screw fastening measurement lower limit" (No.10 CRT-L) value occurred
No.2	CORRECT UPPER	Screw fastening exceeding the "Screw fastening measurement upper limit" (No.11 CRT-U) value occurred
No.3	AutoRvs Torque UP	Torque up when "Auto reverse" (No.20 AUTO-RVS) ON2 is set
No.4	AutoRvs Stop	Stops before the end of reverse rotation when "Auto reverse" (No.20 AUTO-RVS) is set
No.5	Restart	Starts within "Refastening prohibited time" (No.24 REFST-T)
No.6	TIGHTEN	Refastening determination
No.7	1or2SPEED Tup	Torque up at the initial speed/midterm speed
No.8	MOTOR LOCK	Motor lock occurs
No.9	IDLING TIME OVER	Idling NG occurs

System error

A system error is notified upon detecting an error in the controller or electric screwdriver.

Since operation is stopped when the system error is notified, restart the controller.

If "No.1 INCOMMUNICABLE" occurs frequently, attach a commercially available ferrite core or the like to the connection cord to take countermeasures for noise. If other errors occur frequently, contact the dealer where you purchased the tool.

[Display example]

SystemError No:1
INCOMMUNICABLE

Error No.	LCD display	Details
No.1	INCOMMUNICABLE	Communication error between the controller and electric screwdriver
No.2	Mem-MALFUNCTION	Memory damage error
No.3	Sens-MALFUNCTION	Current detection sensor damage error
No.4	Msns-MALFUNCTION	Motor sensor damage error

15. Appendix

When an abnormality has occurred (Troubleshooting)

Symptoms	Location to investigate	Solution
Controller power won't turn ON	Is the power plug inserted into an outlet? Has the power cord slipped out of the inlet? Has the rated voltage been input? Is the power switch set to OFF (O side)?	Check the power supply. Firmly insert the power cord, and set the power switch to ON (I side).
An error is displayed on the controller	Are the electric screwdriver and controller correctly connected?	Use the connection cord to connect the electric screwdriver and controller, and then turn ON the power again.
The electric screwdriver does not operate	Is the [WORK] LED lighted up?	If using the workpiece signal, either set up the workpiece (workpiece signal ON) or set the "Workpiece signal" (No.12 WORK) to "OFF". (p. 33)
	Is the workpiece signal set to "ON"?	Either set up the workpiece (workpiece signal ON) or set the "Workpiece signal" (No.12 WORK) to "OFF". (p. 33)
	Is the changeover switch set to "O" (neutral)?	Slide the changeover switch.
	If starting up with external input signal, is there a mistake or error in wiring, or a disconnection?	Check the wiring. (p. 47) Check the external input signal device being used.
	Is the setting value for the workpiece setup time too long?	Even if the workpiece signal is set to ON, the tool does not operate during the workpiece setup time. Set the "Workpiece setup time" (No.13 WORK-S-T) to a shorter time. (p. 34)
	Is it during the refastening prohibited time immediately after screw fastening?	While the "Refastening prohibited time" (No.24 REFST-T) is active, forward rotation cannot be started. (p. 36)
	Is the electric screwdriver in error mode and displays an error message on the LCD screen?	Check the error message content. (p. 58)
	Has each setting been set according to the instruction manual?	Review each of the settings. (p. 38) To initialize the settings, execute "Initialization of settings". (p. 44)
Count not performed	Is the screw count function set to "ON"?	If "Screw count" (No.2 COUNT) is set to ON, you can use the count function. (p. 30)
	Does the torque up condition cause count up?	Check the count conditions and operation. (p. 30)
When a screw is loosened, the screw count does not return	Is the "Count return" (No.22 COUNT-RTN) setting set to "ON1" or "ON2"?	Review the settings. (p. 35)
	Is the current screw count number less than the setting number?	Return cannot be performed if the count is not 1 or higher.
	Are the current screw count number and the setting number the same?	The screw count does not return to the setting number or higher.
	If the "Count return" (No.22 COUNT-RTN) is set to "ON2", is it in count return mode?	Check the count return mode procedure. (p. 35)

Symptoms	Location to investigate	Solution
The tool stops during the screw fastening rotation	Are burrs, dregs, or particles caught in the screw hole or screw part?	Check the screw or workpiece.
	Is the tapping screw fastened?	It is possible that the setting torque was exceeded when fastening the screw (before seating). Check the screw fastening state, and raise the setting torque.
	Have you attached a heavy jig or a jig having a large radius at the bit tip?	It is possible that the jig inertial force has boosted the motor current, to attain the setting torque. Either review the jig (make it lighter, make it smaller), or boost the setting torque.
	Can it be stopped by idling (rated speed (No load) state)?	It is possible that some sort of load can be applied to the bit area, to boost the motor current, and attain the setting torque.
	Is a load applied to the bit area during screw fastening?	Either cancel the load applied to the bit area or boost the setting torque.
The output torque is low Screws cannot be fastened	Are you correctly combining the measuring devices for measurement? In addition, is the assembly order of washers into screw joints, or their orientation, correct?	Use a combination of Nitto Kohki designated measuring devices for measurement. Check whether the measuring joints are correct, and perform measurement.
	Has the permanent set in fatigue, cracks, and deformation occurred in the washers, bearing, etc. incorporated into screw joints?	There is a need to replace with new joints.
	Has the output torque changed?	The output torque changes over time. Regularly check the output torque, and adjust the setting torque. (p. 46)
	Did you check the correlation between the torque that occurs on screws and the output torque measured using a measuring device?	The torque that occurs on screws and the output torque measured by the measuring device are different. Adjust the output torque according to the screw fastening conditions. (p. 46)
	Are there differences in the screw fastening operation methods (operator, force for handling or pressing the electric screwdriver, fixing method, etc.)?	Torque transmitted to the motor current or screw changes depending on the operations method. Perform the screw fastening under fixed operation conditions.
	Is the bit worn out?	When the bit is worn out, it becomes difficult to transmit the torque to screws. Replace the bit.
	Are you fastening while crushing the inside part with the screw? Has regression loosening occurred?	Torque may not be transmitted. Crush the part once and then fasten the screw.
	Has axial force occurred to the screw?	Without axial force, even though the output torque is increased, screws are not fastened. Review the screw fastening conditions.
	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 fastened or outside force is applied. Remove the screw and fasten it 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.
	Has the temperature surrounding the electric screwdriver, screw, or workpiece changed?	Changes in temperature can deform the workpiece, stretch or loosen the screws, or cause changes in the electric screwdriver characteristics. Review the screw fastening conditions and process.
	Are there occurrence or impressions of vibrations or external force?	Loosening of screws can occur if no measures are taken for vibration or outside force. Take appropriate loosening prevention measures, as necessary.

Symptoms	Location to investigate	Solution
The output torque is high Screws are fastened too much	Are you correctly combining the measuring devices for measurement? In addition, is the assembly order of washers into screw joints, or their orientation, correct?	Use a combination of Nitto Kohki designated measuring devices for measurement. Check whether the measuring joints are correct, and perform measurement.
	Has the permanent set in fatigue, cracks, and deformation occurred in the washers, bearing, etc. incorporated into screw joints?	There is a need to replace with new joints.
	Has the output torque changed?	The output torque changes over time. Regularly check the output torque, and adjust the setting torque. (p. 46)
	Did you check the correlation between the torque that occurs on screws and the output torque measured using a measuring device?	The torque that occurs on screws and the output torque measured by the measuring device are different. Adjust the output torque according to the screw fastening conditions. (p. 46)
	Are there differences in the screw fastening operation methods (operator, force for handling or pressing the electric screwdriver, fixing method, etc.)?	Torque transmitted to the motor current or screw changes depending on the operations method. Perform the screw fastening under fixed operation conditions.
	Has the temperature surrounding the electric screwdriver, screw, or workpiece changed?	Changes in temperature can deform the workpiece, stretch or loosen the screws, or cause changes in the electric screwdriver characteristics. Review the screw fastening conditions and process.
	Have you attached a heavy jig or a jig having a large radius at the bit tip?	After the torque reaches the set torque, the inertial force of the jig might have been transmitted to screws. Review the jig (make it lighter, make it smaller).
	Are you performing a refastening or fastening of short head length screws?	Since this can output high torque, do not perform these operations. Perform adequate evaluations and verifications on actual workpieces, and then use with caution.
	Is the initial speed or midterm speed being performed?	The torque is not controlled during the initial speed or midterm speed.
The output torque graph and actual output torque do not match	The graph value is for reference. The output torque range is not guaranteed. The output torque range sometimes differs from the graph but this is not a product error. (p. 10)	
The speed setting value and actual speed do not match	The setting value of "Fastening speed" (No.3 SPEED) is a reference value for the rated speed (No load). The actual speed is not guaranteed. The actual speed sometimes differs from the setting value but this is not a product error. (p. 10) Note that if the electric screwdriver motor is warm it has the property of rated speed (No load) rising.	
	Is this a "HARD" fastening setting?	The setting speed rotates for just the fastening time period only. If the fastening time is exceeded, it automatically switches to the seating speed.
The speed is not stable	Is the electric screwdriver generating heat? Is this a case where a load is applied to the bit area? Is this a case of a comparison with another electric screwdriver?	The specification value and setting value is for reference. The speed of electric screwdrivers varies depending on the temperature of the main unit, mechanical loss and grease conditions. If a load is applied to the bit part, the speed drops. In addition, the electric screwdriver speed may show individual differences. (p. 10)
Input signal does not react	Is there a mistake or error in wiring, or a disconnection?	Check the wiring. (p. 47)
	Is the input signal (switch or PLC output signal) firmly set to ON?	Check the external input signal device being used.
	Does the product setting and state match the conditions receiving the input signals?	Check each type of setting or state, and input a signal at the suitable timing.

Symptoms	Location to investigate	Solution
The output signal is not output	Is there a mistake or error in wiring, or a disconnection?	Check the wiring. (p. 47)
	Do the output signal specifications (output circuit or output time, etc.) match the input device or load specifications detecting the output signal (input circuit or reaction speed)?	Check the connecting external device or load.
	Is a load in excess of the output signal rating (30 V DC, 80 mA), or the capacitive load or inductive load, connected?	Since the output terminal (built-in photocoupler) has the possibility of breaking down, do not perform its connection.
I wish to use a 2-wire sensor	A 2-wire sensor cannot be used.	
The service power supply +24 V DC cannot be extracted	Is there a mistake or error in wiring, or a disconnection?	Check the wiring. (p. 47)
	Has the output current capacity (200 mA) been exceeded for use?	Do not exceed the output current capacity for use. If the output current capacity is not sufficient, use another external power supply.
The electric screwdriver gets hot	Is the ON (rotation) time of the electric screwdriver too long? Or is the OFF time too short?	Review the operation time. The rated operation time is 0.5 sec. ON/3.5 sec. OFF. Aim at 15 screws or less for the screw fastening per minute. (p. 9)
	Is the tapping screw fastened?	If the load is high during tapping screws and other screw fastening, the electric screwdriver temperature will also tend to become higher. Review the operations time, and lengthen the OFF (stop) time.
	Is the rated voltage input?	Check the power supply voltage, and input the rated voltage.
	Does it become so hot that it cannot be touched?	If so much heat is generated that it is too hot to touch, even if the screw fastening load is not heavy and the rated operation time is maintained, a failure is suspected.
An error message is displayed on the LCD	Check the error message (p. 58), and turn ON the power again.	
The setting conditions are unknown The tool does not operate as expected	Did you write down the settings on the setting memo?	Review each of the settings. (p. 28) To initialize the settings values, execute "Initialization of settings". (p. 44) After the setting, write down the settings on the setting memo. (p. 77)

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, contact your dealer where you purchased the tool.
Repairing 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 cause of the failure so do not change the status.

Inspection locations	Caution
Cord	<p>Failure to perform inspection could result in fire or electric shock.</p> <ul style="list-style-type: none"> ● Check if the cord is damaged and if found stop using the tool. ● Do not store the cord by wrapping it around the main unit. If it has been stored with the cable wrapped around the main unit, immediately change the storage method.
Power plug	<p>Failure to perform inspection could result in fire or electric shock.</p> <ul style="list-style-type: none"> ● Check for damage on the power plug. If damaged, stop using it. ● 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. ● Check that the power plug is properly inserted into the outlet all the way to the base. ● Check for play in the power plug and outlet.
Bit	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Check for damage, cracks or breaks on the main unit. ● Check for loose screws on the main unit. If screws are loose, fasten them.
Output torque	<ul style="list-style-type: none"> ● Use a combination of Nitto Kohki's measuring devices to measure the output torque. ● If the output torque value has changed, adjust the setting torque.
Screw fastening time	<ul style="list-style-type: none"> ● Use the screw fastening time measurement function to check if the screw fastening time has not changed. ● The speed is for reference. It may change due to the temperature of the main unit, mechanical loss, and grease conditions.
Care	<ul style="list-style-type: none"> ● If the main unit is stained, use a cloth soaked in soapy water and wrung out well to wipe off the stains. The tool does not have a waterproof structure and if water enters inside it could fail. ● Because the main unit uses plastic, the following chemicals cannot be used. Acetone, benzene, thinner, ketone, ether, trichloroethylene and other similar chemicals

Disposal

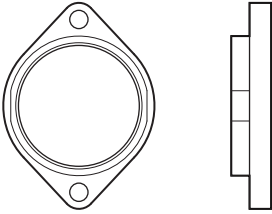
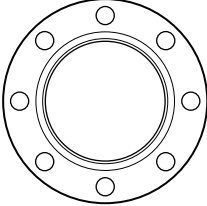

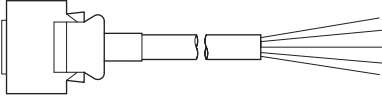
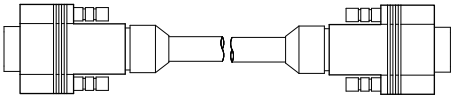
- Separate power tools, accessories, and packing materials for environmentally-friendly recycling.
- Do not dispose of the power tool as household garbage.
- When disposing of electric tools, hand them over to Nitto Kohki or your dealer.



Separately-sold products

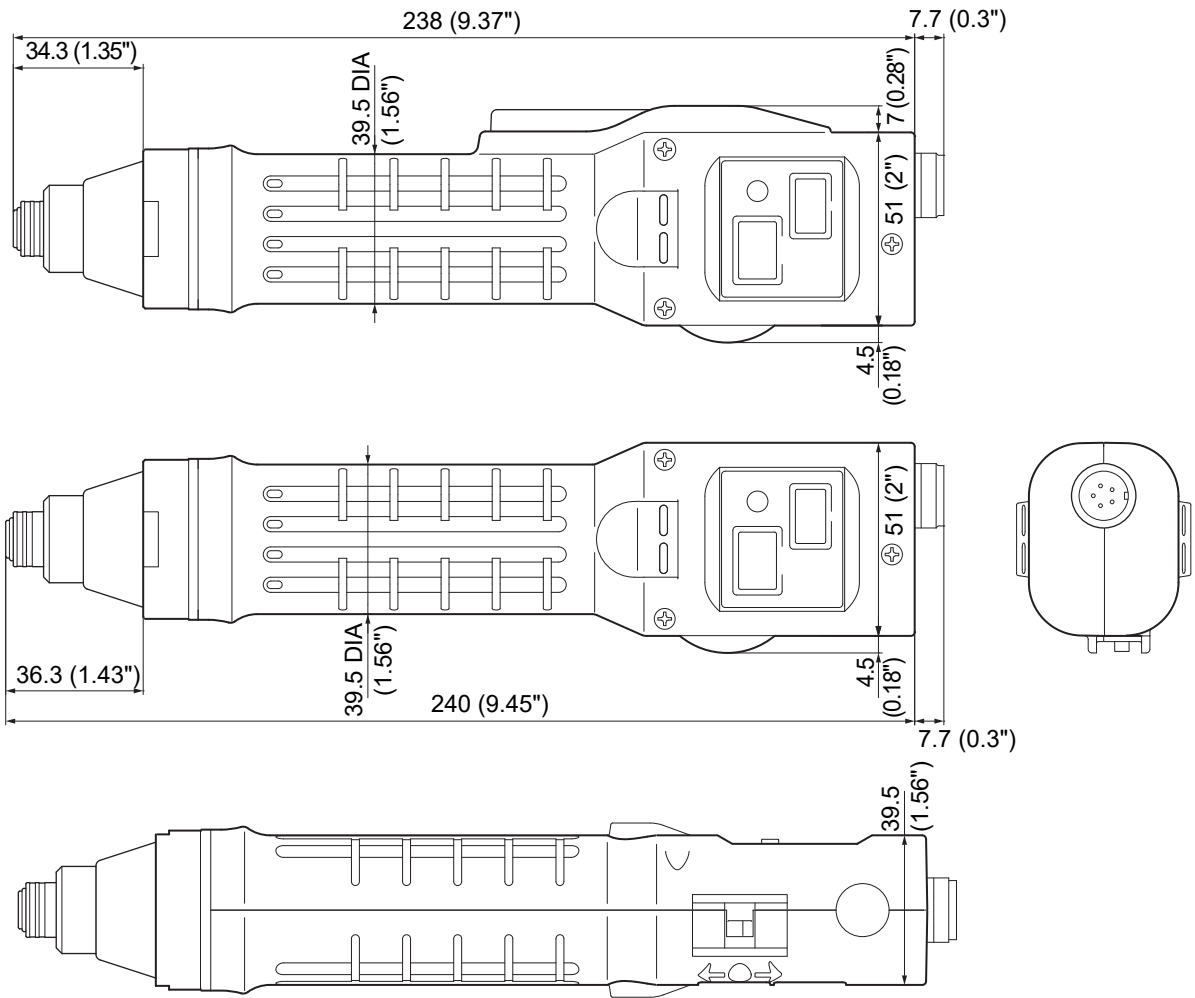
The following products are sold separately. To purchase these items, contact your dealer where you purchased your electric screwdriver.

Product name (model)	Appearance	Specifications, etc.
Power cord DLW9220		Grounded 3-prong power cord set (North America)
Power cord DLW9240		Grounded 3-prong power cord set (Europe)
Power cord DLW9250		Grounded 3-prong power cord set (UK)
Connection cord DLW9078		Connects between controller and electric screwdriver, 2 m (79") long
Extension cable DLW9310		Extends the length between controller and electric screwdriver, 3 m (118") long
Bit		With various shapes
Soft joint DLW4050		Dedicated to SOFT fastening torque measurement
Hard joint DLW4040		Dedicated to HARD fastening torque measurement
Vacuum pickup DLP7401-K		An attachment used to vacuum screws (p. 14) <ul style="list-style-type: none"> ● Attached vacuum sleeve: DLS4220/ DLS4221 ● Use DLP7401-J for the J-bit type electric screwdriver.

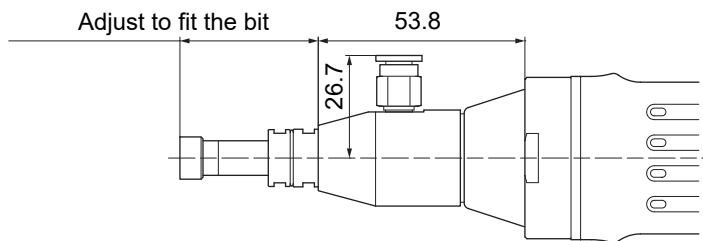
Product name (model)	Appearance	Specifications, etc.
Diamond shape flange DLW9017		For use by mounting in automatic screw fastening machine (p. 67)
Flange coupling DLW9019		For use by mounting in automatic screw fastening machine
Vacuum sleeve DLS4000 series		Sleeve for screw vacuuming <ul style="list-style-type: none"> ● Mount at the vacuum pickup tip ● Select according to the screw or bit shape
External I/O cable DLW9091		Connected when using external signals (p. 48)
Communication cable (straight) DLW9092		Connects PC/sequencer when using external signals (p. 56)
Communication cable (cross) DLW9093		Connects between controllers for transmitting settings (p. 45)

External dimensions

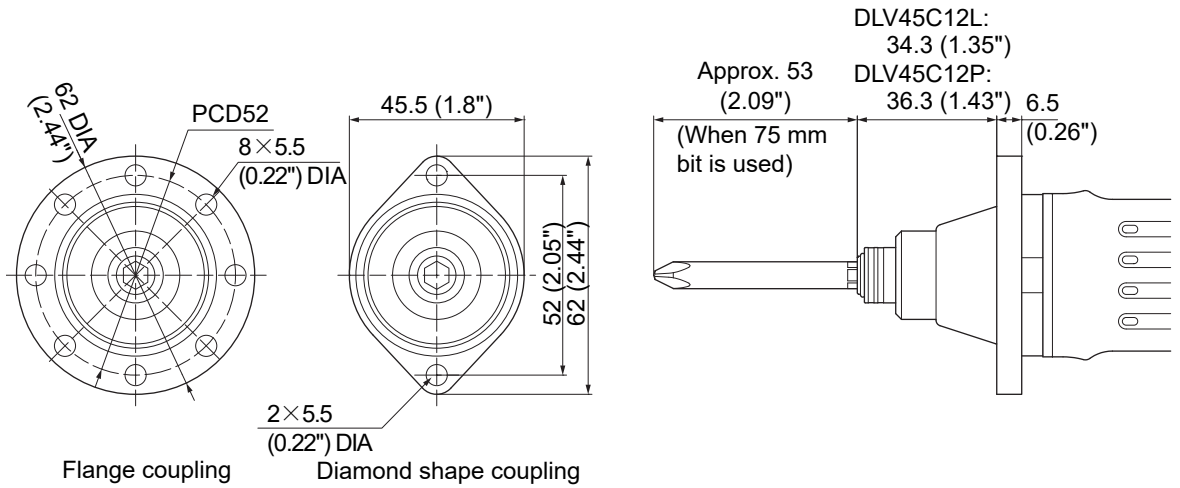
DLV45C12P-AY / DLV45C12L-AY



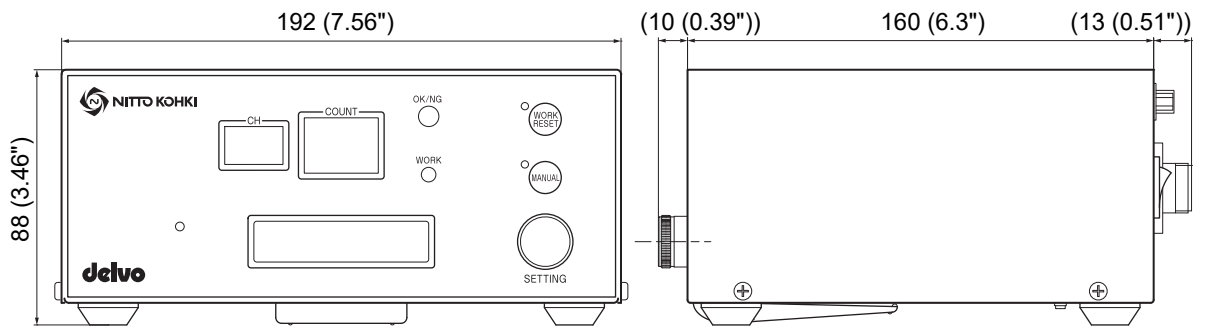
When vacuum pickup DLP7401-K is mounted



When equipped with the diamond shape flange coupling DLW9017 / flange coupling DLW9019



DCC0241X-AZ



About screw fastening type

"Screw fastening type" (No.1 FSTN-TYPE) is selected according to the screw type, workpiece conditions, etc.

Screw fastening type "SOFT"

This type is set when using tapping screws or a soft body connecting part such as rubber for fastening with a fastening load.

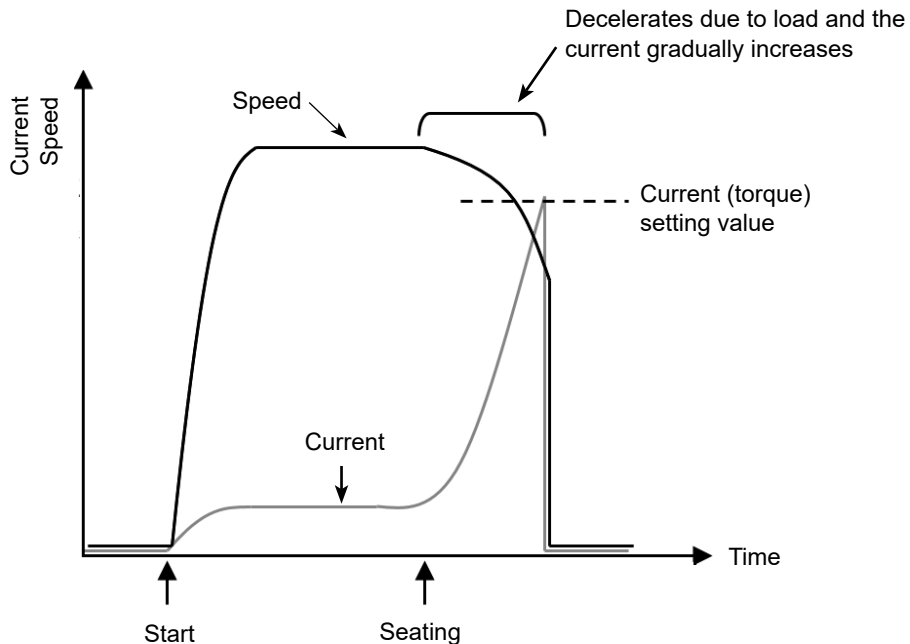
⚠ CAUTION

- Even though a tapping screw or the connecting part is soft such as rubber, it may be equivalent to **HARD** fastening.

If excessive torque is applied when fastening with the SOFT setting, HARD fastening is considered appropriate. In that case, set "Screw fastening type" (No.1 FSTN-TYPE) to "HARD" or decrease "Fastening speed" (No.3 SPEED), and perform verification.

Timing chart

Image of control action seating the screw fastening at the set speed



Screw fastening type "HARD"

This type is set when the screw fastening load is small, such as when fastening screws on a tapped workpiece or fastening a rigid body.

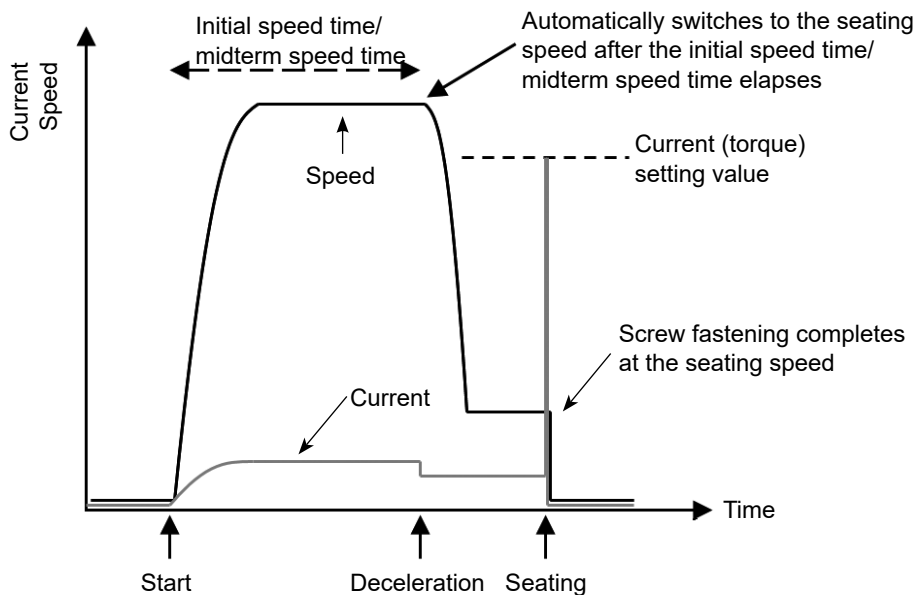
⚠ CAUTION

- Even under the above conditions, it could be equivalent to SOFT fastening due to the effect of washers, spring washers, etc.

If "Torque" (No.4 TORQUE) does not reach 4.5 N·m (39.8 lb-in) at 100%, SOFT fastening is considered appropriate. In that case, set "Screw fastening type" (No.1 FSTN-TYPE) to "SOFT", and perform verification.

Timing chart

Image of the control operation to switch to the seating speed in response to setting the torque value after the initial speed time/midterm speed time elapses, and perform seating of the screw fastening



When fastening screws on a tapped workpiece, the fastening load during screw fastening is small, and the relationship "the speed during screw seating (inertial force) \approx screw fastening torque" is established.

For that reason, with the "HARD" fastening setting, control is performed to automatically switch to the seating speed according to the set torque and seat the screw.

If the setting torque is small, the seating speed may slow, and the screw fastening time may become longer.

To compensate for this, it is possible to shorten screw fastening by setting the "Initial speed time" (No.6 1stTime)/"Midterm speed time" (No.8 2ndTime).

⚠ CAUTION

- Do not perform torque up during the initial speed time/midterm speed time.

Because it corresponds to the relationship "the speed during screw seating (inertial force) \approx screw fastening torque", excess torque is applied.

Channel/channel pattern setting example

For channel and channel pattern setting, refer to the following.
The following channel settings are the minimum required settings.

Setting example 1

After temporarily fastening (CH1) with the setting of automatic return after seating, fastens (CH2) with the specified torque (30%)

Channel	Channel setting	Setting value
CH1	Reverse speed (No.9 RvsSpeed)	(Any speed)
	Auto reverse (No.20 AUTO-RVS)	ON1
	Reverse time (No.21 RvsTime)	(Any time)
CH2	Torque (No.4 TORQUE)	30%

Pattern	No.1	No.2	No.3	to
CHPAT1	CH1	CH2	Fin	LOOP
			↑	↑
			End at No.2	Repeat

Setting example 2

After temporarily fastening (CH3) in the middle of screw fastening, fastens (CH4) with the specified torque (50%)

Channel	Channel setting	Setting value
CH3	Reverse speed (No.9 RvsSpeed)	(Any speed)
	Screw fastening measurement lower limit (No.10 CRT-L)	(Any value)
	Auto reverse (No.20 AUTO-RVS)	ON2
	Reverse time (No.21 RvsTime)	DIS
CH4	Torque (No.4 TORQUE)	50%

Pattern	No.1	No.2	No.3	to
CHPAT2	CH3	CH4	Fin	LOOP

Setting example 3

Fastens a single workpiece with 10 types of fastening patterns (including temporary fastening CH1)

Pattern	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	to
CHPAT3	CH1	CH5	CH1	CH6	CH1	CH7	CH1	CH8	CHPAT4
	↑	↑		↑		↑		↑	↑
	Temporary fastening	1st type		2nd type		3rd type		4th type	Goes to CHPAT4

Pattern	No.1	No.2	No.3	to
CHPAT4	CH1	CH5	Fin	CHPAT3
		↑		↑
		5th type		Goes to CHPAT3

Glossary

Term	Description
A	
Accent ring	Ring for identification of electric screwdriver model
B	
Bit	Fitting part that transmits torque to the screw It is also known as a socket
Bit brake function	A function to prevent the bit from inertial rotation when the start switch is released
Bit grounding function	Refers to structure connecting the electric screwdriver tip metal part (bit part) to the ground Via resistor 1 MΩ within controller
C	
Channel	Refers to "CH1" to "CH30" The folder in which the settings are saved
Channel return function	Function for returning operation channel by 1 channel Executed when "WORK RESET" is input for 1 second
Collect timer	Setting item "No.10 CRT-L" (screw fastening measurement lower limit), "No.11 CRT-U" (screw fastening measurement upper limit) Measures the screw fastening time, and judges count up of screw fastening within the upper limit and lower limit setting values only
Count return	Setting item "No.22 COUNT-RTN" Function for returning screw count number
Count up	State when torque up is performed normally and the screw count is counted
Count up sound	Setting item "No.19 CU-BUZZ" Buzzer that sounds every time one screw fastening completes
Coupling	The part that secures the frame handle so that it does not open
E	
Electric screwdriver connection detection function	Function that displays an error when the electric screwdriver and controller are disconnected
Electro-static discharge prevention function	Refers to "ESD protection" Electro-static discharge prevention function in electric screwdriver and controller main unit
ESD protection	(Electro-Static Discharge) Electro-static discharge prevention function in electric screwdriver and controller main unit
External signal	Signal with external device connected to the external signal connector
External signal connector	Terminal for connecting the I/O signal of the controller
External startup control function	Function using input signal for forward rotation or reverse rotation startup of electric screwdriver
F	
Fastening speed	Setting item "No.3 SPEED" Setting speed for forward rotation, rated speed (No load)
Forward rotation signal	Output signal showing that the electric screwdriver is in forward rotation
Forward rotation startup input signal	Input signal starting up forward rotation of the electric screwdriver
Frame handle	The resin part of the main unit Also called a cover or housing
I	
Input signal	Signal for inputting to the controller external signal connector
L	
LCD	Controller liquid crystal screen
Lever switch	Press when starting
M	
[MANUAL] button	Pressing and holding in screw fastening mode switches to manual mode
Manual mode	Mode that temporarily switches to the desired channel setting, regardless of the line operation, to enable operation (rotation) of the electric screwdriver
Motor startup error detection function	Function that gives an error warning when the motor does not start normally after starting operation

Term	Description
N	
NG	Workpiece setup NG, screw fastening operation NG NG state where workpiece signal is OFF during operation
NG signal	Signal that is output when screw fastening operation is NG
NPN output signal	Output signal method for type connecting the load between the + (plus) side of the power supply and transistor output
O	
OK	Screw fastening operation OK State when a series of screw fastening operations is completed
OK signal	Signal that is output when screw fastening operation is OK
Open collector	One electronic circuit output method With this output method, the collector of an output transistor is not connected inside and signals are output as is to one terminal
Operation channel	Channel during operations (while settings are valid)
Output signal	Signal for outputting from the controller external signal connector
P	
Photocoupler	Element that internally converts electric signals to light and then returns it to electric signals to transmit signals while performing electrical insulation
PLC	(Programmable Logic Controller) Electronic device performing sequential control according to a program
R	
Rated Speed (No load)	Speed in state where a load is not applied to the electric screwdriver
Receptacle	Connector for connecting the connection cord
Refastening prohibited time	Setting item "No.24 REFST-T" Prohibits forward rotation start during the setting time after completion of screw fastening, and prevent inadvertent refastening
Refastening torque methods	Torque measurement method for measurement of torque value when the fastened screw is further fastened with a torque wrench and the screw is rotated again
Return torque method	Torque measurement method for measurement of torque value when the fastened screw is loosened with a torque wrench, and the screw starts rotating
Reverse rotation signal	Output signal showing that the electric screwdriver is in reverse rotation
Reverse rotation startup input signal	Input signal starting up reverse rotation of the electric screwdriver
S	
Screw fastening confirmation time	Setting item "No.16 CHECK-T" Possible time for reverse rotation operation confirming the operation after screw fastening up to the set screw count number (time until OK is output)
Screw fastening mode	Mode for implementation of screw fastening operation
Screw fastening NG	Refers to screw fastening when torque up is not performed normally
Screw fastening time	Setting item "No.10 CRT-L" (screw fastening measurement lower limit), "No.11 CRT-U" (screw fastening measurement upper limit) Refers to "collect timer" Measures the screw fastening time, and judges count up of screw fastening within the upper limit and lower limit setting values only
Screw fastening time measurement function	Function for measurement of screw fastening time by performing screw fastening when the screw fastening time has been set
Seating speed	Refers to speed for screw fastening (seating) in HARD fastening setting
Service power supply	24 V DC power supply (current capacity 200 mA) Power source for I/O signal drives, or for sensor and other external device drives
[SETTING] dial	Pushbutton built-in dial performing various settings
Setting mode	Mode performing each setting
Sleeve	Electric screwdriver tip parts Pull out to enable bit mounting and removal
T	
Torque checker	Torque measuring instrument
Torque up	Automatically stops the operation when the set torque is reached

Term	Description
V	
Vacuum pickup	An attachment used to vacuum screws
Vacuum sleeve	A sleeve used to vacuum screws Select according to the screw size and bit shape
W	
[WORK] LED	Lights when the electric screwdriver becomes operable (rotatable)
[WORK RESET] button	Function for resetting the screw fastening operation or returning the operation channel by 1 channel
Workpiece	Target object for screw fastening, screw fastening operation
Workpiece detection sensor	Refers to an opto-electronic sensor, infrared sensor, or mechanical switch, etc., for detection of the workpiece setup
Workpiece reset input signal	Function for resetting the screw fastening operation, at 1 sec input
Workpiece setup NG	Refers to screw fastening operation NG Workpiece not completed state where the workpiece signal is OFF during operation
Workpiece setup time	Setting item "No.13 WORK-S-T" A period during which whether the workpiece is incorrectly set up is checked During this period, even when the workpiece is removed, NG does not occur (the electric screwdriver does not operate)
Workpiece signal	Setting item "No.12 WORK" Signal input when a workpiece is set up

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Setting memo

Copy and then perform entry of the setting values.

Entry date (mm/dd/yyyy):

Affiliation:

In charge:

CH No.: Process name						
Targeted torque						
Speed						
Setting item	Setting range	Setting value				
1) FSTN-TYPE	SOFT / HARD					
2) COUNT	OFF / 1 to 99					
3) SPEED	Lv1 to Lv9					
4) TORQUE	1% to 100%					
5) 1stSpeed	OFF / Lv1 to Lv9					
6) 1stTime	OFF / 0.01s to 9.99s (TIME) OFF / 0 to 60000 (SIGNAL)					
7) 2ndSpeed	OFF / Lv1 to Lv9					
8) 2ndTime	OFF / 0.01s to 9.99s (TIME) OFF / 0 to 60000 (SIGNAL)					
9) RvsSpeed	OFF / Lv1 to Lv9					
10) CRT-L	DIS / 0.01s to 9.99s (TIME) DIS / 0 to 60000 (SIGNAL)					
11) CRT-U	DIS / 0.01s to 9.99s (TIME) DIS / 0 to 60000 (SIGNAL)					
12) WORK	OFF / ON					
13) WORK-S-T	OFF / 0.1s to 9.9s					
14) OKsig	OFF / ON					
15) OKTiming	C-F / W-O					
16) CHECK-T	OFF / 0.1s to 9.9s					
17) OK-BUZZ	OFF / TYPE1 to TYPE9					
18) NG-BUZZ	OFF / TYPE1 to TYPE9					
19) CU-BUZZ	OFF / TYPE1 to TYPE9					
20) AUTO-RVS	OFF / ON1 / ON2					
21) RvsTime	DIS / 0.01s to 9.99s (TIME) DIS / 0 to 60000 (SIGNAL)					
22) COUNT-RTN	OFF / ON1 / ON2					
23) BitBrake	OFF / ON					
24) REFST-T	OFF / 0.1s to 9.9s					
25) LED	OFF / RED / GREEN / BLUE / YELLOW / CYAN / MAGENTA / WHITE					
26) SCREW	RIGHT / LEFT					



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