For delvo Brushless Type C Series

Screw Fastening Monitor Model **DTM10/DTM45**

For traceability management!
Outputs torque value from a screwdriver
(converted value)

- Converts motor current to torque value at torque-up
- Sends data to external devices such as computers and PLCs
- OK(Pass)/NG(Fail) can be judged by the output torque (converted value) and screw fastening time

Fastening Data Log

■ Specifications

Model		DTM10	DTM45
Connectable models	Electric screwdriver	DLV04C10L-AZ DLV10C10L-AZ	DLV45C12L-AZ DLV45C12P-AZ
	Controller	DCC0101X-AZ	DCC0241X-AZ
Transmission data		Operation channel/Converted current value*	
		Screw fastening time	Screw fastening time/Rotation signal
Communication method		RS-232C *When connecting to a PC, please use a conversion adapter available on the market.	
Standard Accessories		· Connection cord DLW9075 (2 m) · Rubber feet	· Connection cord DLW9078 (2 m) · Rubber feet

RS-232C

Specifications: D-SUB 9-pin (female)
Screw: Inch female screw (#4-40)

#4-40
5   1
9   6
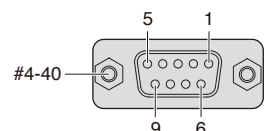
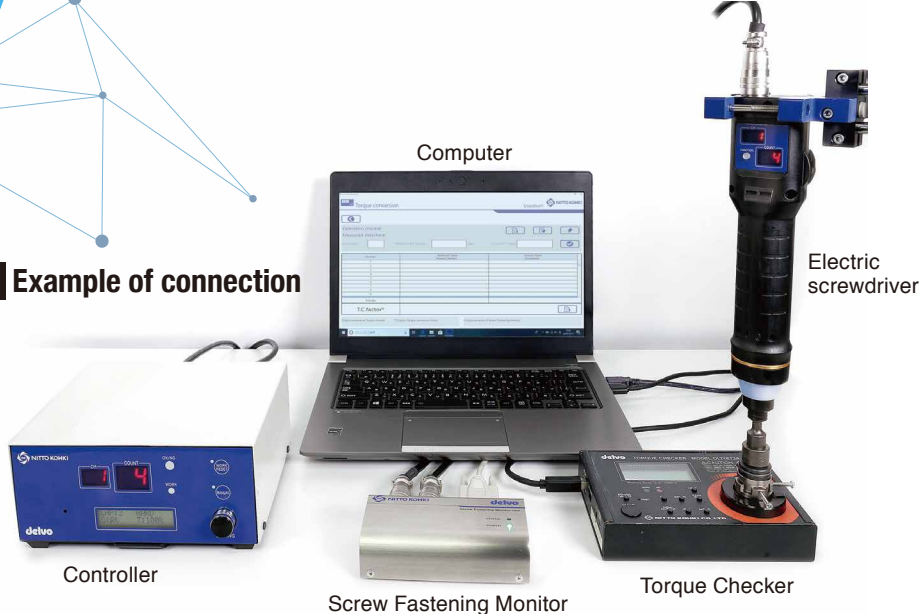*Converted current value: Motor current value at torque-up converted to a value between 0 to 4095

delvo

Preparation

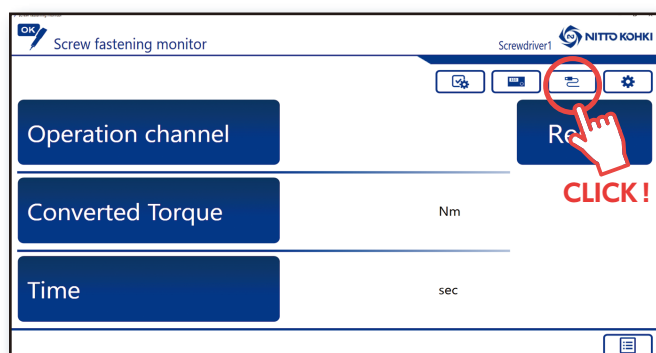Connect peripheral devices and download the dedicated software.

Website

https://www.nitto-kohki.co.jp/e/prd/delvo/

Example of connection

Computer
Electric screwdriver
Controller
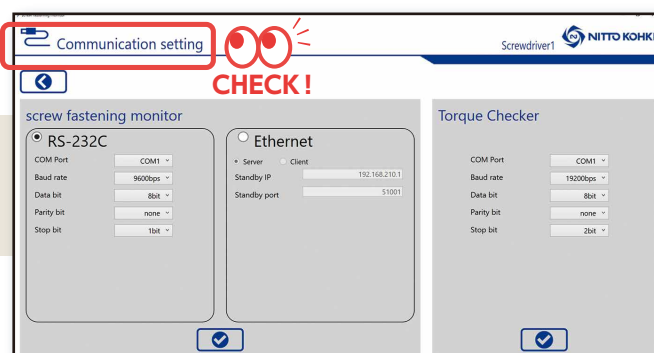Screw Fastening Monitor
Torque Checker

How to measure output torque (converted value)

(Measurement method: TIME)

1. Perform the communication setting for Screw Fastening Monitor and Torque Checker.
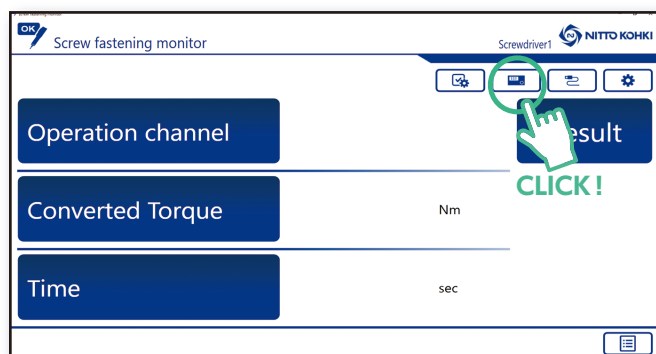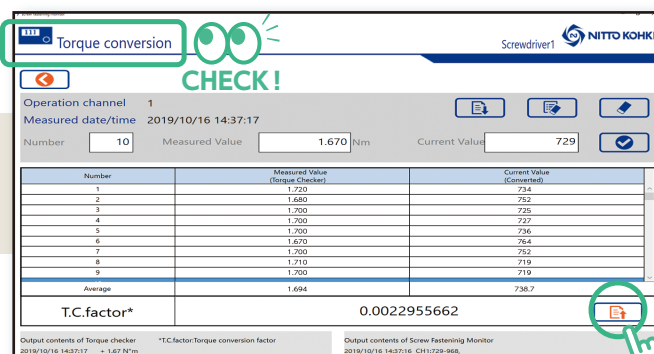
Screw fastening monitor — Screwdriver1 — NITTO KOHKI

Operation channel

Converted Torque — Nm

Time — sec

CLICK!

Main screen

Communication setting — **CHECK!** — Screwdriver1 — NITTO KOHKI

screw fastening monitor

● RS-232C

COM Port	COM1
Baud rate	9600bps
Data bit	8bit
Parity bit	none
Stop bit	1bit

○ Ethernet

○ Server ○ Client

| Standby IP | 192.168.210.1 |
| Standby port | 51001 |

Torque Checker

COM Port	COM1
Baud rate	19200bps
Data bit	8bit
Parity bit	none
Stop bit	2bit

Communication setting

*Please download a driver for RS-232C from a website of each company.

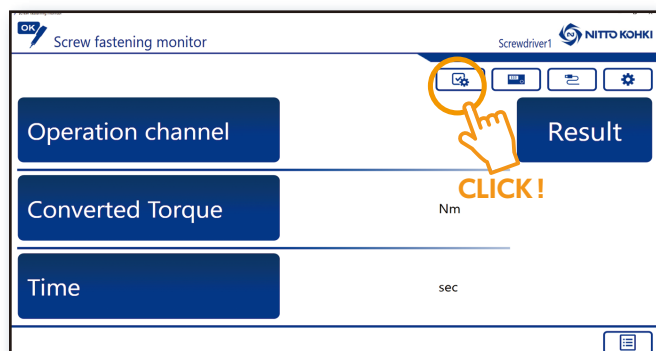---

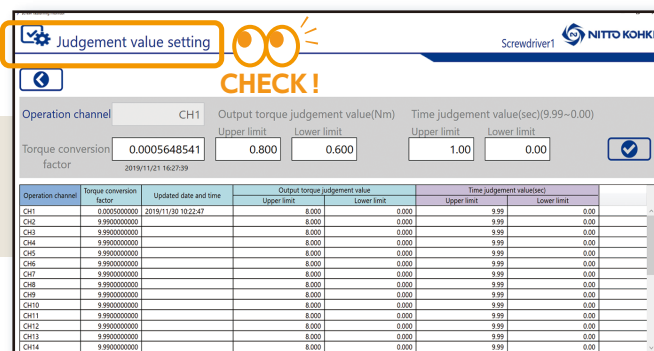**2.** Measure the torque conversion factor for each channel.

Screw fastening monitor — Screwdriver1 — NITTO KOHKI

Operation channel

Converted Torque — Nm

Time — sec

CLICK!

Main screen

Torque conversion — **CHECK!** — Screwdriver1 — NITTO KOHKI

Operation channel 1
Measured date/time 2019/10/16 14:37:17

| Number | 10 | Measured Value | 1.670 Nm | Current Value | 729 |

Number	Measured Value (Torque Checker)	Current Value (Converted)
1	1.720	734
2	1.680	752
3	1.700	725
4	1.700	727
5	1.700	736
6	1.670	764
7	1.700	752
8	1.710	719
9	1.700	719
Average	1.694	738.7

| T.C.factor* | 0.0022955662 |

Output contents of Torque checker
2019/10/16 14:37:17 + 1.67 N*m
*T.C.factor:Torque conversion factor
Output contents of Screw Fastening Monitor
2019/10/16 14:37:16 CH1:729-968,

Torque conversion

*Use Torque Checker or screw joint for the subject models.
(Refer to the compatibility chart on the right page.)

UPDATE

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3. Set the output torque judgement value and time judgement value for each channel as required.

Screw fastening monitor — Screwdriver1 — NITTO KOHKI

Operation channel

Converted Torque — Nm

Time — sec

CLICK!

Main screen

Judgement value setting — **CHECK!** — Screwdriver1 — NITTO KOHKI

Operation channel	CH1	Output torque judgement value(Nm)		Time judgement value(sec)(9.99~0.00)	
		Upper limit	Lower limit	Upper limit	Lower limit
Torque conversion factor	0.0005648541	0.800	0.600	1.00	0.00
	2019/11/21 16:27:39				

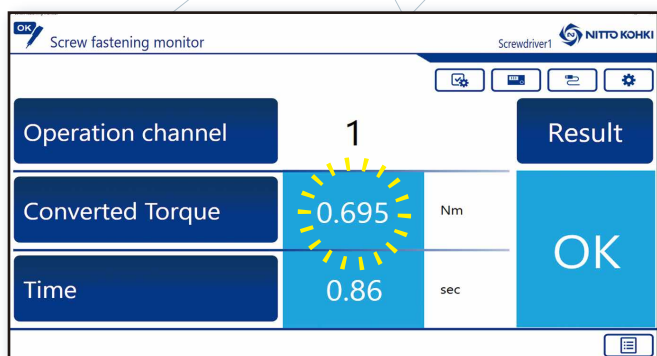| Operation channel | Torque conversion factor | Updated date and time | Output torque judgement value | | Time judgement value(sec) | |
			Upper limit	Lower limit	Upper limit	Lower limit
CH1	0.0005000000	2019/11/30 10:22:47	8.000	0.000	9.99	0.00
CH2	9.9900000000		8.000	0.000	9.99	0.00
CH3	9.9900000000		8.000	0.000	9.99	0.00
CH4	9.9900000000		8.000	0.000	9.99	0.00
CH5	9.9900000000		8.000	0.000	9.99	0.00
CH6	9.9900000000		8.000	0.000	9.99	0.00
CH7	9.9900000000		8.000	0.000	9.99	0.00
CH8	9.9900000000		8.000	0.000	9.99	0.00
CH9	9.9900000000		8.000	0.000	9.99	0.00
CH10	9.9900000000		8.000	0.000	9.99	0.00
CH11	9.9900000000		8.000	0.000	9.99	0.00
CH12	9.9900000000		8.000	0.000	9.99	0.00
CH13	9.9900000000		8.000	0.000	9.99	0.00
CH14	9.9900000000		8.000	0.000	9.99	0.00

Judgement value setting

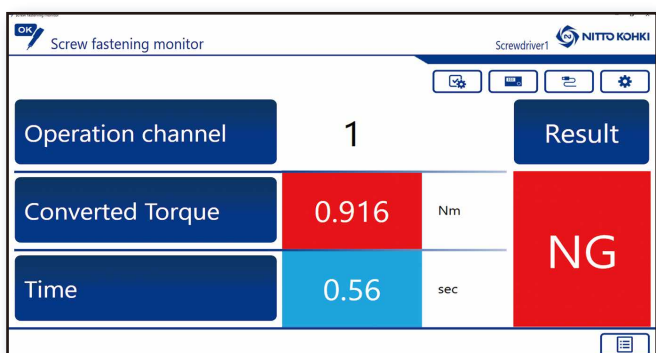*The operation channel can be set as follows. DLV04C/10C: up to CH4 DLV45C: up to CH30

4. Measure the torque with Torque Checker.
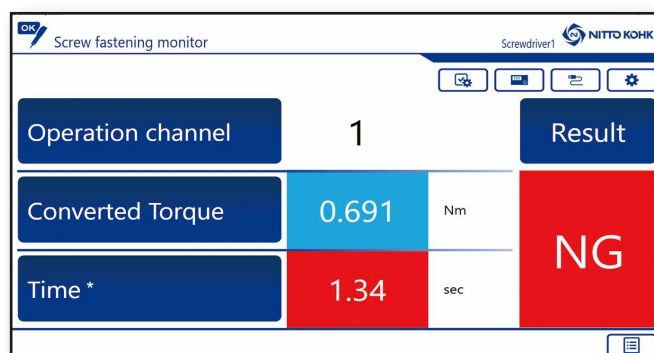Check the difference of the value between the software and Torque Checker.

OK	Screw fastening monitor		Screwdriver1	NITTO KOHKI
Operation channel	1		Result	
Converted Torque	0.695	Nm	OK	
Time	0.86	sec		

The result is OK(Pass).

Check the difference!

Torque Checker

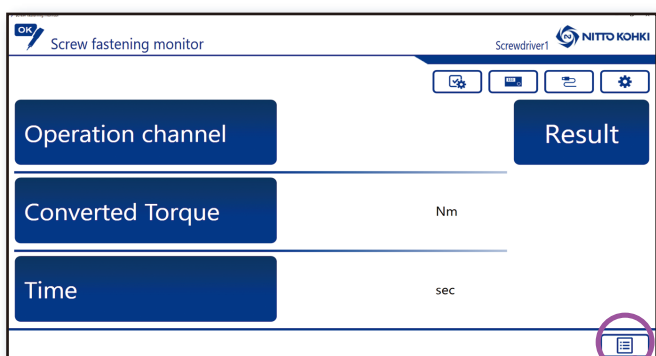**5.** OK(Pass)/NG(Fail) can be judged by the output torque (converted value) and screw fastening time.

OK	Screw fastening monitor		Screwdriver1	NITTO KOHKI
Operation channel	1		Result	
Converted Torque	0.916	Nm	NG	
Time	0.56	sec		

The result of the output torque is NG(Fail).

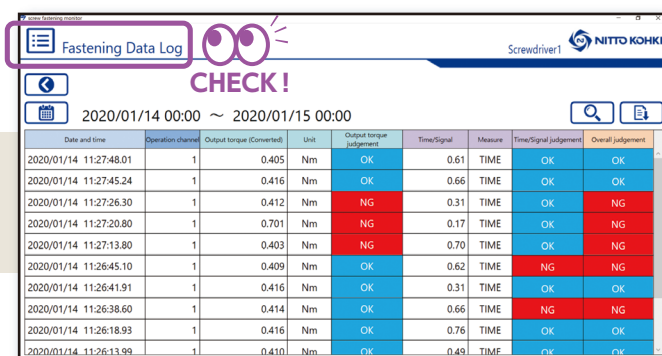| OK	Screw fastening monitor		Screwdriver1	NITTO KOHKI
Operation channel	1		Result	
Converted Torque	0.691	Nm	NG	
Time *	1.34	sec		

The result of the screw fastening time is NG(Fail).
*Only DTM45 can switch time (sec) and rotation signal (signal).

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6. The fastening data log can be checked.

OK	Screw fastening monitor		Screwdriver1	NITTO KOHKI
Operation channel			Result	
Converted Torque		Nm		
Time		sec		

Main screen

CLICK !

▶

Fastening Data Log

CHECK !

2020/01/14 00:00 ~ 2020/01/15 00:00

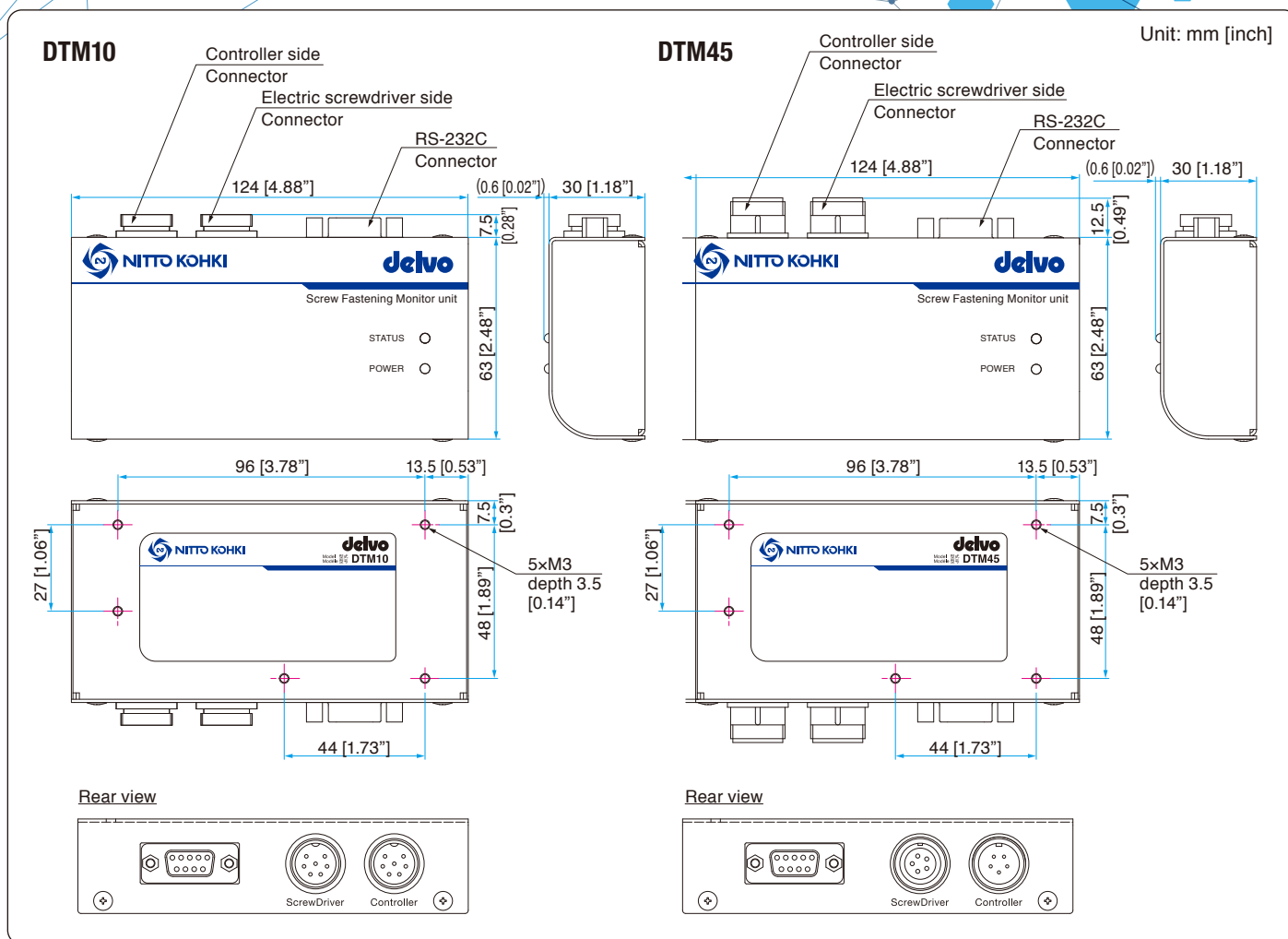| Date and time	Operation channel	Output torque (Converted)	Unit	Output torque judgement	Time/Signal	Measure	Time/Signal judgement	Overall judgement
2020/01/14 11:27:48.01	1	0.405	Nm	OK	0.61	TIME	OK	OK
2020/01/14 11:27:45.24	1	0.416	Nm	OK	0.66	TIME	OK	OK
2020/01/14 11:27:26.30	1	0.412	Nm	NG	0.31	TIME	OK	NG
2020/01/14 11:27:20.80	1	0.701	Nm	NG	0.17	TIME	OK	NG
2020/01/14 11:27:13.80	1	0.403	Nm	NG	0.70	TIME	OK	NG
2020/01/14 11:26:45.10	1	0.409	Nm	OK	0.62	TIME	NG	NG
2020/01/14 11:26:41.91	1	0.416	Nm	OK	0.31	TIME	OK	OK
2020/01/14 11:26:38.60	1	0.414	Nm	OK	0.66	TIME	NG	NG
2020/01/14 11:26:18.93	1	0.416	Nm	OK	0.76	TIME	OK	OK
2020/01/14 11:26:13.99	1	0.410	Nm	OK	0.49	TIME	OK	OK

Fastening Data Log

*The measured data is a reference value obtained by converting the load current of the electric screwdriver to torque, which is not a guaranteed value.

The shape of the connector differs for each model.

DTM10

DTM45

DTM10/DTM45

Compatibility chart

Screw Fastening Monitor	Electric screwdriver	Torque Checker	Screw joint	
			SOFT	HARD
DTM10	DLV04C	DLT1173A	DLW4540	DLW4560
	DLV10C		DLW4550	
DTM45	DLV45C	DLT1673A	DLW4050	DLW4040

DLW4040 DLW4050

DLW4540 DLW4550 DLW4560

External Dimensions

Unit: mm [inch]

DTM10

Controller side Connector
Electric screwdriver side Connector
RS-232C Connector

124 [4.88"]　(0.6 [0.02"])　30 [1.18"]

7.5 [0.28"]

NITTO KOHKI　**delvo**
Screw Fastening Monitor unit

STATUS ○
POWER ○

63 [2.48"]

96 [3.78"]　13.5 [0.53"]

27 [1.06"]

NITTO KOHKI　delvo　Model DTM10

7.5 [0.3"]

48 [1.89"]

5×M3 depth 3.5 [0.14"]

44 [1.73"]

Rear view

ScrewDriver　Controller

DTM45

Controller side Connector
Electric screwdriver side Connector
RS-232C Connector

124 [4.88"]　(0.6 [0.02"])　30 [1.18"]

12.5 [0.49"]

NITTO KOHKI　**delvo**
Screw Fastening Monitor unit

STATUS ○
POWER ○

63 [2.48"]

96 [3.78"]　13.5 [0.53"]

27 [1.06"]

NITTO KOHKI　delvo　Model DTM45

7.5 [0.3"]

48 [1.89"]

5×M3 depth 3.5 [0.14"]

44 [1.73"]

Rear view

ScrewDriver　Controller

Connectable electric screwdrivers

For DTM10

Model	DLV04C10L-AZ K	DLV10C10L-AZ K
Starting Method	Lever Start	
Power Source	From dedicated controller	
Torque Adjustment	1 to 100% (From 1 to 100% in 1% increments)	
Torque (Nm [lbf·in]) SOFT fastening setting (1000 min⁻¹setting)	0.05 to 0.4 [0.4 to 3.5]	0.2 to 1.0 [1.8 to 8.9]
SOFT fastening setting (600 min⁻¹setting)	0.05 to 0.35 [0.4 to 3.1]	0.2 to 0.45 [1.8 to 4.0]
HARD fastening setting	0.05 to 0.4 [0.4 to 3.5]	0.2 to 1.0 [1.8 to 8.9]
Free Speed (min⁻¹) SOFT fastening setting	600 to 1000	
HARD fastening setting	100 to 1000	

For DTM45

Model		DLV45C12L-AZ K	DLV4512P-AZ K
Starting Method		Lever Start	Push to Start
Power Source		From dedicated controller	
Torque Adjustment		1 to 100% (From 1 to 100% in 1% increments)	
Torque (Nm [lbf·in])		0.6 to 4.5 [5.3 to 39.8]	
Free Speed	SOFT fastening setting (min⁻¹)	400 to 1200	
	SOFT fastening setting Speed Level	Level 1 to 9	
	HARD fastening setting (min⁻¹)	100 to 700	
	HARD fastening setting Speed Level	Automatically set by torque setting	

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