

GKL Setting Software Instruction Manual

GIKEN INDUSTRIAL CO., LTD.



■Note

①Please read this instruction manual in order to use this product properly.

- ②We prohibit the use or reproduction of part or all of this instruction manual without permission.
- ③Please don't do it, thinking that handling and operation not described in this instruction manual cannot be done.
 In addition, we will exclude defects that occur as a result of handling and operation not described in this instruction manual from the guarantee range.
- (4) The matters described in this manual are subject to change without notice for improvement.
- ⑤Regarding special products, it may not correspond to this specification. Please consult us separately.
- ⁽⁶⁾Setting personal computer is optional. Please contact us if necessary.



■ Note

If this product is in a dangerous condition, either turn off the power switch of the main unit and the connected device, or unplug the power cord from the outlet. ("Dangerous condition" means a state where the occurrence of fire or danger to the body is expected due to abnormal heat generation, smoke emission, ignition, etc.)

Summary

This software is used to configure the GKL / GKLW controller.

The setting input of $GKL \cdot GKL$ controller can be done manually at the front of the controller. However, since setting input is difficult to understand, we will use this software so that it can be easily understood.

When using the setting personal computer, it is easy to enter the setting by the batch transmission function, and the maintenance is improved. In addition, this software allows you to read the tightening history etc.,

display waveforms such as torque, and monitor the operating condition.

Operating environment

OS : Windows XP (32bit、64bit) Windows Vista (32bit、64bit) Windows 7 (32bit、64bit) Windows 8 (32bit、64bit)

Recommended RAM capacity : Windows XP,Vista : More than 2GB Windows 7,8 : More than 4GB XThe above RAM capacity is a standard for comfortable use.

Place of installation : C¥GIKEN¥GKLSETTING

Starting method : Please click GKL.exe

Note 1) The initial password for writing to the controller is "2014".

- Note 2) Please set the COM port number used for communication with the controller in the C ¥ GIKEN ¥ GKL setting ¥ GKL.ini file.
- Note 3) Set the version of the controller that communicates with the setting PC in the C ¥ GIKEN ¥ GKL setting ¥ GKL.ini file.
- Note 4) In order to communicate with the setting personal computer, you need to install the USB driver of the controller.

**For details, please refer to "9-1. USB driver installation" and "9-2. About controller and setting personal computer connection".

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The terminology explanation

1.Main menu

GKL Ver.0.0.12	2018/12/03 09:10:46
Setting read (F1)	Quality control (F5)
Setting write (F2)	Print/Excel output (F6)
Setting (F3)	I/O monitor (F7)
Auto measurement (F4)	Exit (F12)

Fig (1-1) Main menu

The setting menu is displayed.

The auto measurement menu is displayed.

The print and excel output menu is displayed.

The quality control screen is displayed.

The I/O monitor menu is displayed.

Exit the program.

The setting data is written to file , controller or SD card.

- Setting read (F1) The setting data is read from file , controller , and SD card.
- Setting write (F2)
- Setting(F3)
- Auto measurement(F4)
- Quality control (F5)
- Print/Excel output(F6)
- I/O Monitor(F7)
- Exit(F12)

1-1.Screen composition The screen of the GKL setting software is shown in the figure below. The configuration itself is not different from GSK.



1-2.Main menu initial screen

When the application is started, it automatically gets the data of the GKL controller. Inquiry "Do you want to communicate?" is coming when the application is started. In this time if you select "Yes", version and communication check will be started. If you select "No", you enter the main menu without communication.



Fig.(1-2): "Do you want to communicate?"

1-3.Communication check, version check function

If you select "Yes" in the above "1-2 Main menu initial screen", automatically GKL controller does communication check, and the version check.



Fig.(1-3): Initial communication check error





Fig.(1-4): Unit setting acquisition error(%)





Fig.(1-5): Controller version check error

2.Setting read

Select "Setting read" from the main menu, the following screen will be displayed. In this item, GKL setting data is read from file, controller, SD card.

SKL Ver.0.0.12	a to a succession	
Setting read		
		_
	FILE (F1)	
	CONTROLLER (F2)	
	SD CARD (F3)	
	RETURN (F12)	
		_

Fig.(2-1): Setting read screen

[Button] ·File(F1)	It reads the GKL configuration file from some folder.
•Controller(F2)	It reads the GKL configuration file from the controller. If you read the configuration file from the GKL controller, the controller and computer must be connected by a USB cable.
•SD card(F3)	You can save the settings of GKL controller to the SD card as a file. You can read the GKL settings from the SD card by the configuration PC.
·Return(F12)	Press this button to return to the main menu.

2-1.File



For reading file selection, please select the file with "file extension: GKL". When reading the SD card file, please select file extension: SD "file is read.

Fig.(2-2): Selection of the read files

You select the GKL configuration file to read in the file selection dialog.



Fig.(2-3): Reading files from the folder

When the reading GKL configuration file is complete, the following message is displayed. After the reading, it goes to the "Main menu".



Fig.(2-4): Finish reading configuration file

2-2.Controller

It reads the settings saved in the GKL controller. When reading the setting from the GKL controller, it is necessary that the GKL controller and the personal computer are connected with a USB cable.

KL Ver.0.0.12		
Setting read		
	FILE (F1)	
	CONTROLLER (F2)	
	SD CARD (F3)	
	COMMUNICATING	
	Pretightening setting	
	RETURN (F12)	

Fig.(2-5): Reading files from the controller

GKL Setti	ng	x
i	Setting of the controller was read.	
	ОК	

Fig.(2-6): Finish reading configuration file

When the reading from the controller is finished, you will see a message in the Fig (2-6). After the reading settings from the controller, it goes to the "Main menu".

2-3.SD card

It reads the GKL setting file (extension: SD) saved on the SD card.

*The setting value saved on the SD card using the display function of GKL is the extension SD.

Since reading in this case reads the file with the extension SD,

there is no need for the SD card to be inserted in the personal computer.

Read the file		Setting read		
GIKEN + GKL Setting + UserFile	▼ ↓ UserFileの検索 ♀			
整理 ▼ 新しいフォルダー	II • 🔟 😧		FILE (F1)	
ドキュメント ^ 名前 ^	更新日時 種類 サイズ			
SETTING.SD ■ ビデオ	2018/12/04 13:12 SD ファイル 2,939 KB		CONTROLLER (F2)	
↓ ミュージック				
- ペームグループ			SD CARD (F3)	
▲ OS (C:) TOSHIBA EXT (E:				
🗣 ネットワーク 🗸			Block layout	
ファイル名(<u>N</u>): <mark>*,SD</mark>	▼ SD FILE(*.SD) ▼			
			RETURN (F12)	

Fig.(2-7): SD data reading

GKL Setting	
GKL setting file for the sd card was read.	
ок	

Fig.(2-8):SD data read complete message

When loading of SD data is completed, the message shown in Figure 2-8 is displayed. After loading of SD data is finished, it will automatically move to "Main Menu".

3.Setting write

Select "Setting write" from "Main Menu", the following screen will be displayed. In this case, write the setting to "hard disk drive of connected computer", controller and SD card.

GKL Ver.0.0.12		
Setting write		
	FILE (F1)	
	CONTROLLER (F2)	
	SD CARD (F3)	
	RETURN (F12)	
	Fig.(3-1):Write Settings Screen	
File (F1)	It will write the GKL setting to the file of the extension GKL	
Controller (F2)	It will write the GKL setting to the GKL controller. When it writes the setting to the GKL controller, it is necessary that the controller and the personal computer are connected with the USB cable.	
SD card (F3)	You will write the GKL setting to the extension SD file.	
Return (F12)	You will return to the main menu.	

3-1.File

In the file writing process, it writes the GKL setting information to the HDD (hard disk drive) of the personal computer or other files on accessible media.

The GKL setting file with setting information is saved with the file extension: GKL.

📲 Write the file				x
○ ○ · 👪 « OS (C:) → GIKEN → GKL Setting → UserFile	•	↓ UserFileの検索	50	٩
整理 ▼ 新しいフォルダー				0
ドキュメント ^ 名前 ^	更新日時	種類	サイズ	
■ ピクチャ ■ ピクチャ ■ ピデオ → ミュージック → ホームグループ ■ コンピューター ▲ 05 (C:) ■ TOSHIBA EVT	2018/12/04 11:21 2018/12/04 11:32	GKLR ファイル GKLR ファイル	1 KB 2 KB	
ファイル名(N): TEST,GKL				•
ファイルの種類(I): GKL FILE(*.GKL)				
● フォルダーの非表示		保存(S)	キャンセル	

Fig.(3-2). Write dialog

GKL Setting

It uses the file selection dialog and writes the GKL setting to the file.



Fig.(3-3). Progress of file writing

Fig.(3-4). GKL setting file write completion message

GSK setting file was written.

х

OK

When you select a file, writing begins and the progress of writing the GKL setting file is displayed. (Fig. (3-3))When the writing of the GKL setting file is completed, the message shown in Figure (3-4) is displayed.When you press the OK button, you will automatically go to the main menu screen.

3-2.Controller

Here we write the GKL setting to the controller.

When writing to the controller, it is necessary that the GKL controller and the personal computer are connected with a USB cable. A password is required to write to the controller. (Password: 2014)

If the password is unknown, it can not be written to the controller.

PASSWORD		×
Do you	want to wr	ite to the controller?
	Password	
	ок	Cancel



Fig.(3-5): Confirm password

Fig.(3-6): Confirm preparation OFF

After confirming the password, it will move on to Fig. (3-6) screen. Please select "Yes" if you can turn off preparation for driving. Writing can not be done unless driving preparation is turned off.

KL Ver.0.0.12		
Setting write		
	FILE (F1)	
	CONTROLLER (F2)	
	SD CARD (F3)	
	Soket fitting setting	
	RETURN (F12)	

Fig. (3-7) Progress status of controller writing



Fig. (3-8): Controller write completion message

When writing to the controller is completed, the message of Fig. (3-8) is displayed. When you press the OK button in that figure, it automatically moves to the main menu screen.

3-3.SD card

In the file writing process, it writes the GKL setting information as a file with extension: SD that can be read by the GKL controller.

Although this setting file can be written directly to the SD card connected to the personal computer, it can be saved once in a folder such as "UserFile" and then transferred to the SD card.

🗣 Write the file				×						
🕥 🗸 - 👪 « OS (C:) 🔸 GIKEN 🔸 GKL Setting 🖡 UserFile	•	↓ UserFileの検 ³	榨	Q						
整理 ▼ 新しいフォルダー 胆 ▼ @										
ドキュメント ^ 名前 ^	更新日時	種類	サイズ							
E ビクチャ E ビデオ	に一致する項目はありませ	ίλι»								
↓ ミュージック										
≪ ホームグループ =										
■ コンピューター _ OS (C:)										
TOSHIBA EXT										
ファイル名(N): SETTING.SD	ファイル名(N): SETTING.SD									
ファイルの種類(I): SD FILE(*.SD)				•						
● フォルダーの非表示		保存(S)	キャンセ	w						

Fig. (3-9): Select write file

You will use the file selection dialog to decide where to write the configuration file and the name of the file

GKL Ver.0.0.12	The second state (state) and the second state	
Setting write		
	FILE (F1)	
	CONTROLLER (F2)	
	SD CARD (F3)	
	_	
	Block setting	
	RETURN (F12)	

Fig. (3-10): Progress status of file writing



Fig. (3-11): Write file completion message

When you press the "save" button in the dialog, writing starts. When writing starts, the screen changes to the writing progress of the setting file. When writing of the setting file is completed, the message in the upper right figure is displayed, and when you press the "OK" button, it returns to the main menu.

4.Setting

If "Setting" is selected in the main menu, the screen shown below will be displayed.



Fig. (4-1):Setting menu

[Button]

• Common setting (F1)	Common setting menu is displayed.
Position setting (F2)	Position setting menu is displayed.
• Nut runner setting (F3)	Nut runner setting menu is displayed.
Program setting (F4)	Program setting menu is displayed.
• Return (F12)	It will return to Main Menu.

4-1.Common setting

When you select "common setting" in "Setting menu", the screen shown below will be displayed.

GKL Ver.0.0.12	
Calendar and basic unit setting (F1)	Screw number setting (F2)
	Return to the setting menu
	(F12)

Fig. (4-2):Common setting menu

[Button] • Calendar and basic unit setting (F1)	It displays the "Calendar and basic unit setting menu".
\cdot Screw number setting (F2)	It displays the "Screw number setting".
\cdot Return to the setting menu (F12)	You can return to the setting menu.

4-1-1.Calendar and basic unit setting

If you select "Calendar / basic unit setting" in "common setting", the screen shown below will be displayed.

If you press the button, communication starts and you get

the software version displayed in the version information on the upper right.

If it is not connected or communication fails, the version information will be blank as shown below.



Fig. (4-3): Calendar and basic unit setting

[Button]		and bable and becang
• Calendar setting (I	=1)	It displays the "Calendar setting"
\cdot Unit setting (F2)		It displays the "Unit setting".
• Tightening data ou	Itput setting (F3)	It displays the "Tightening data output setting"
• Option setting(F4)		It displays the "Option setting".
\cdot Return to the com	mon setting (F12)	To return to the "Common setting menu".
[Item] ∙ Version informatio	n	It displays the version of the controller and interface.

[Button] • Setting

• Return

If you select "Calendar Setting" in "Calendar / Basic Unit Setting", the following screen will appear. On the screen shown below, you can display the controller's calendar information and set the PC's calendar information in the controller.

🖳 GKL Ver.0.0.12			×
Calender			
	Date Time		
	18/11/13 18:02:08		
	Setting		
	F	Return	
	Fig. (4-4): Calendar setting		
[Item] • Date, time	Here we display date and time information the controller currently has.		

It sets the calendar information of the PC to the controller.

You can return to the "Calendar and basic unit setting".

4-1-1-2.Unit setting

When "Unit Setting" is selected in "Calendar / basic unit setting", the screen shown below will be displayed. Here, you set the role of the unit to which each axis belongs and the motor to which the axis moves.

KL Ver.0.0	0.12																															-	۰
Jnit	se	ət	tir	ıg																													
				Ĩ																													
No.	1	2	3	4	1	ī	6	7	8	ę	9	10	11	12	12	8 1	4	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Unit	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Kind I	N -	N -	Ν.	N.	N	-	N -	N -	N 7	N	-	N -	N -	N.	- N -	- N	-	N -	N Ŧ	N -	N -					•			•	•		-	,
14113																																	
N : N	Nut	rur	nne	r																													
X : X	(a:	xis																															
Y: Y	ía:	xis																															
2.2	a	xis																															
									1																			٦					
Re	ac	ł			N	(ri	te																		C	ж				C	and	el	

Fig. (4-5): Unit setting

[Item]

• Unit No.	It has to display the affiliation unit of the axis. You can set from 1 to 4 when X, Y or Z is selected in the lower type, and 1 to 7 if it is not.
• Kind	It displays the type of axis. N: Nut runner, X: x-axis, Y: y-axis, Z: z-axis
• Read	It displays the loading screen of the unit configuration.
• Write	It displays the writing screen of the unit configuration.
•ОК	It is to accept the changes and return to the calendar and basic unit setting menu.
• Cancel	It erases the changes and return to the calendar and basic unit setting menu.
Screen pr	inting: This prints the current screen as it is.

4-1-1-3. Tightening data output setting

This sets the tightening data output from the controller and 10.

the	e ou	tput	con	tents	s of	Ch1	.(

GKL Ver.0.0.12	· ··· · ·	
3		
Tightening data output	;	
Axis determination transmis	ssion Yes/No	Transmission No 🔹
Screw number transmission	n Yes/No	Transmission No •
E I N D I I I		
Engine No. digit setting		<u> </u>
Output timing opting		
Output timing setting	Data transmission	n after the tightening total determination output
Transmission digit setting	No transmiss	pe lime remarks
Transmission ulgit setting	NO transmiss	sion
Unit number transmission Y	es/No	Transmission No
Program number transmissi	ion Yes/No	Transmission No -
Date and Time transmission	n Yes/No	Transmission No •
Printer/data output switchi	ing setting	
	Operation as	s a printer board
Read Write		Print OK Cancel

Fig. (4-6): Tightening data output setting

[Item]

Axis determination transmission

This item determines whether to include judgment for each tightening target in the output data to the outside.

- Screw number transmission It sets whether to include the number to be tightened in the output data to the outside.
- Engune No. digit setting
- In this item, you select the number of display digits of the engine No. from the following numbers.
 - 0: Do not transmit
 - 1 to 8: Number of digits
- Output timing setting Here you select the timing to output tightening data.
- Transmission digit setting Here you select the number of digits of the output data such as torque, angle, slope, time etc.
- Unit number transmission You set whether to transmit the unit number.
- Program number transmission In this item, you set whether to include program number in transmission of tightening data.
- Date and time transmission You choose the description of the date and time of the tightening result to be output.

• Printer / data output switching setting You select the CN 10 function of the GKL interface from among the setting items.

• Read	It displays the loading screen of tightening data output settings.
• Write	It displays the writing screen of tightening data output settings.
• Print	It runs the printing of tightening data output settings.
• OK	It is to accept the changes and return to the calendar and basic unit setting menu.
• Cancel	It erases the changes and return to the calendar and basic unit setting menu.

Screen printing: This prints the current screen as it is.

4-1-1-4.Option setting

When "Option setting" is selected in "calendar / basic unit setting menu", the screen shown below will be displayed.

e GKL Ver.0.0.12	
Option setting	
M-NET start address setting	1 •
M-NET I/O monitor unit selection (Selection of 7 SEG display section indication unit	number) •
External display indication setting	Japanese description •
Read Write Pri	nt OK Gancel

Fig. (4-7): Option setting

[Item]

 M-NET start address setting In this item, we will set the address of GKL in M-NET.

- M-NET I/O monitor unit selection Here, you select the unit that displays the signal etc. in Fn.3 of the 7 SEG monitor on the GKL controller. It shows the internal state of the interface when 0 is set, and the status of the input / output signal of that unit number when 1 ~ 7 is set.
- External display indication setting

It sets the display language of GKL attached monitor.

[Button]

Ductorij	
• Read	It displays the loading screen of option setting.

- Write It displays the writing screen of option setting.
- Print It runs the printing of option setting.
- OK It is to accept the changes and return to the calendar and basic unit setting menu.
- Cancel It erases the changes and return to the calendar and basic unit setting menu.
- Screen printing: This prints the current screen as it is.

4-1-2.Screw number setting

When "Screw number array" is selected in "common setting", the screen shown below will be displayed.

Here we set the axis alignment to be displayed on the external display of GKL.



Fig. (4-8): Screw number setting

[Item]

- PRÖGRAM No. It set the program number you want to set.
 Screw No. Select You select the screw number you want to plot.
 Axis array setting form It will set the axis arrangement with the left click of the mouse to this place.
 SCREW No. The number of screw to be set
 DISP No . The number to display
 Big marker It displays the marker of the screw number to be plotted on the axis array form in big size.
- Small marker It displays the marker of the screw number to be plotted on the axis array form in small size.

[Button]						
• Read	It displays the loading screen of option setting.					
• Write	It displays the writing screen of option setting.					
\cdot Print the screen	It runs the printing of option setting.					
• Clear	All the array data on the configuration form to delete.					
• Delete one	It will remove the marker of the screw number that has been selected on the configuration form.					
• ОК	It is to accept the changes and return to the setting menu.					
• Cancel	It erases the changes and return to the setting menu.					
Screen pr	rinting: This prints the current screen as it is.					
🔊 Undo	: Undo changes					
🗈 Сору	: Copies the settings for each program number.					
🛍 Paste	: Paste the information acquired by copying to the specified program number.					

4-2. Position setting

When you select "Positioning setting" from "Setting" menu, the screen shown below will be displayed. Here, we will set the positioning used in the XY axis motion selection in "Program setting".

📑 GKL Ve	r.0.0.12				
Pos	sition setting				
	Cylinder name settin	g (F1)	Timer setting (F5)		
	X rate. Set (F2))			
	Y rate. Set (F3))			
	XY point setting(Tea (F4)	ching)	Return to the setting menu (F12)		
[Button] • Cylinder name cylinder.	Fig. setting(F1)	(4-9): Posi In this ite	tion setting em, we set the type and o	orientation of the	
• X rate. Set(F2)		In this ite for the X	em, we will set the rating axis.	of the motor used	
• Yrate. Set(F3)		In this ite for the Y	em, we will set the rating axis.	of the motor used	
 XY point setting(Teaching)(F4) 		In this item we will register coordinates to use for positioning. Also, when using the Z axis, we set the rating of the motor to be used for the Z axis within this item			
 Timer setting(F5) 		In this ite for interf for positi	m, we will set the maxim erence prevention and th oning operation.	num waiting time ne time upper limit	
\cdot Return to the setting menu(F12)		You can i	return to the setting mer	iu.	

4-2-1. Cylinder name setting

When you select "Cylinder name setting" from "Positioning setting", the screen shown below opens.

n GKL Ver.0.0.12			
A 19			
<u>Cylinder name</u>		Establish	
Cylinder use number	1 pieces	•	
Cylinder1 advance	no setting1	- no setting	 Unit1 cylinder
Cylinder1 return		no setting	•
Cylinder2 advance	no setting2	• no setting	- Unit2 cylinder
Cylinder2 return		no setting	*
Cylinder3 advance	no setting3	• no setting	- Unit3 cylinder
Cylinder3 return		no setting	*
Cylinder4 advance	no setting4	• no setting	- Unit4 cylinder
Cylinder4 return		no setting	*
Read	rite	Print	OK Cancel

Fig. (4-10): Cylinder name setting

If you set the cylinder name, the character of name on the IO monitor is changed to it. (example) Cylinder1 advance \Rightarrow N/R 1 descent

One cylinder can be set for each unit.

Even if you set a number that exceeds the number of units to be used, it can not be used in "program setting" which sets the operation.

[Item]

• Cylinder use number

You select the number of cylinders to be used. You can set up to 4, the maximum number of units. The number of cylinders selected here can be set below.

• Cylinder name setting In this case, you select the name to be moved by the target cylinder. (NR, socket etc.)

On the right side of the name setting, you can s elect the movement direction. (Ascending / descending, forward / backward etc.)

🐺 GKL Ver.0.0.12	
Gylinder name	Inserts X,Yaxis moving action
Cylinder use number 1 pieces	COMMAND SETTING LIST MOVX COMMAND X rate. No. 1 * MOVY Y MOVXY Y rate. No. 1 *
Cylinder1 advance no setting Unit1 cylinder	WAIT1 WAIT2 SPW INX1
Cylinder2 advance no settir 2 no settin, Unit2 cylinder Cylinder2 return no settin	INX2 INY1 INY2 TIME10
Cylinder3 advance no settin - Unit3 cylinder Cylinder3 return no settin	TIME100 TIME500 TIME1000 TIME1500
Cylinder4 advance no setting Unit4 cylinder Cylinder4 return no setting	TIME3000 TIME5000 TIME5000 One line insertion One line insertion
When using this setting, the name is synthesized.	One line delete
Read Write	OK Cancel

[Button]

- Read It displays the loading screen of Cylinder name setting.
- Write It displays the writing screen of Cylinder name setting.
- Print It runs the printing of Cylinder name setting.
- OK This will return to the positioning setting menu while keeping the change contents.
- Cancel It returns to the positioning setting menu without holding the change contents. Even if you press the confirm button, if you return with this button, the change will be reset.
- Print screen: Print the current screen as it is.
- Undo: Undo changes.

4-2-2.X rate.set

When you select "X axis rating" from "Position setting", the following screen will be displayed. Here we set the rating of the X axis positioning motor.

						×
a 🔊 🖻 🛍						
<u>X rate.</u>	Setting No. 1	• E	stablish Delete	•		
Accelerat	tion	32767	10rpm/sec max	2000	10rpm/sec	
Decelerat	tion	32767	10rpm/sec max	2000	10rpm/sec	
Move spe	ed	750mm	n∕sec max	350	mm/sec	
Point coo	ordinates	100 mr	n max	10	mm	
Extent ou	ıtput1 down limit	3276.7	mm max	ax 200.0 mm		
Extent output1 up limit		3276.7 mm max 200.0 mm				
Extent output2 down limit		t 3276.7 mm max 200.0 mm				
Extent ou	ıtput2 up limit	3276.7	mm max	200.0	mm	
Motor 1 r	otate move	32.767	mm/rev max	10.000	mm/rev	
Motor mo	del			TS4603		•
Rotate di	rection			CW -	Motor 0 hom	ne position ccw
Read	Write		Print		ОК	Cancel

Fig. (4-11): X rate. screen

[Item] • Setting No.

In this item, we will select the X rated number to be set.

- Acceleration(Input range: 0 to 32767) Here we set the acceleration constant at which the positioning motor reaches the moving speed from the start of operation.
- Deceleration(Input range: 0 to 32767) It sets the deceleration constant that the motor reaches the operation stop from moving speed.
- Move speed(Input range: ["Motor 1 rotate move" * 75]) It sets the movement speed.
- Point coordinate(Input range: 0 to 100) It sets the range to be detected as the point when you point output in the external communication output signal.
- Extent output 1 down limit(Input range: 0 to 3276.7) It sets the lower limit value of the area that outputs the X range output 1 of the output signal.
- Extent output 1 up limit(Input range: 0 to 3276.7) It sets the upper limit value of the area that outputs the X range output 1. If the current position of the X coordinate is between the lower limit and the upper limit of the range output, the output signal "X range output 1" turns ON.
- Extent output 2 down limit(Input range: 0 to 3276.7) It sets the lower limit value of the area that outputs the X range output 2 of the output signal.
- Extent output 2 up limit(Input range: 0 to 3276.7) It sets the upper limit value of the area that outputs the X range output 2. If the current position of the X coordinate is between the lower limit and the upper limit of the range output, the output signal "X range output 2" turns ON.

- Motor 1 rotate move(Input range: 0 to 32.767) Sets the pitch of the ball screw used for positioning. This setting determines the maximum moving speed.
- Moter model Here we select the type of motor to use.
- Rotate direction
 Here we set the direction of the motor to be in the + direction from the original position.
- Establish It establish the change contents.
- Delete It will return the value of the current set number to default.
- Read It displays the loading screen of X rate. Set.
- Write It displays the writing screen of X rate. Set
- Print It runs the printing of X rate. Set
- O K It retains the changes and returns to the positioning setting menu.
- Cancel It returns to the positioning setting menu without holding the change contents.
- Print screen: Print the current screen as it is.
- 🖻 Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

4-2-3.Y rate.set

When you select "Y axis rating" from "Position setting", the following screen will be displayed. Here we set the rating of the Y axis positioning motor.

GKL Ver.0.0.12	Manual 14 10 10			_	
3 🤊 🖻 🛍					
<u>Y rate.</u>	Setting No. 1	•	Establish Delete	9	
Ac	celeration	32767	10rpm/sec max	2000	10rpm/sec
De	celeration	32767	10rpm/sec max	2000	10rpm/sec
Мо	ve speed	750mm	n/sec max	350	mm/sec
Po	int coordinates	100 mr	n max	10	mm
Ext	tent output1 down limit	3276.7	mm max	200.0	mm
Ext	tent output1 up limit	3276.7	mm max	200.0	mm
Ext	tent output2 down limit	3276.7	mm max	200.0	mm
Ext	tent output2 up limit	3276.7	mm max	200.0	mm
Mo	tor 1 rotate move	32.767	mm/rev max	10.000	mm/rev
Mo	tor model			TS4603	•
Ro	tate direction			CW -	Motor 0 home position ccw
Read	Write		Print		OK Cancel

Fig. (4-12): Y rate. screen

[Item] • Setting No.

In this item, we will select the Y rated number to be set.

- Acceleration(Input range: 0 to 32767) Here we set the acceleration constant at which the positioning motor reaches the moving speed from the start of operation.
- Deceleration(Input range: 0 to 32767) It sets the deceleration constant that the motor reaches the operation stop from moving speed.
- Move speed(Input range: ["Motor 1 rotate move" * 75]) It sets the movement speed.
- Point coordinate(Input range: 0 to 100) It sets the range to be detected as the point when you point output in the external communication output signal.
- Extent output 1 down limit(Input range: 0 to 3276.7) It sets the lower limit value of the area that outputs the Y range output 1 of the output signal.
- Extent output 1 up limit(Input range: 0 to 3276.7) It sets the upper limit value of the area that outputs the Y range output 1. If the current position of the Y coordinate is between the lower limit and the upper limit of the range output, the output signal "Y range output 1" turns ON.
- Extent output 2 down limit(Input range: 0 to 3276.7) It sets the lower limit value of the area that outputs the Y range output 2 of the output signal.
- Extent output 2 up limit(Input range: 0 to 3276.7) It sets the upper limit value of the area that outputs the Y range output 2. If the current position of the Y coordinate is between the lower limit and the upper limit of the range output, the output signal "Y range output 2" turns ON.

- Motor 1 rotate move(Input range: 0 to 32.767) Sets the pitch of the ball screw used for positioning. This setting determines the maximum moving speed.
- Moter model Here we select the type of motor to use.
 Rotate direction Here we set the direction of the motor to be in the + direction from the original position.
 [Button]
 Establish It establish the change contents.
- Delete It will return the value of the current set number to default.
- Read It displays the loading screen of Y rate. Set.
- Write It displays the writing screen of Y rate. Set
- Print It runs the printing of Y rate. Set
- O K It retains the changes and returns to the positioning setting menu.
- Cancel It returns to the positioning setting menu without holding the change contents.
- Print screen: Print the current screen as it is.
- Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

4-2-4.XY point setting(Teaching)

This item opens when you select "XY point teaching" from "Position setting menu". Here we set the coordinate of the tightening point and Z axis rating.



Fig.(4-13):Communication confirmation

When "XY point teaching" is selected, communication confirmation is done on the screen of the above figure.

If you do not communicate, please select "No" as it is.

When communicating, please select either "Acquire setting point only"

or "Always perform communication" and select "Yes".

[Setting point try]

When entering the XY point teaching screen, you acquire the set coordinates and enter. The current coordinates are not read.

[All the time communication]

It acquires the set coordinates when entering the XY point teach screen and updates the current coordinates in real time with real time.

ee GKL Ver.0.0.12			ed GKL Ver.0.0.12			
③ 1 つ 転 路			🕑 🔊 🖻 🛍			
XY point(teaching) XY Avia	No. 1 Establish Dele	ote	XY point(teaching) XY	No. 1 · Establis	sh Delete	
X home position Home position PB	Teaching exection Coordinates setting	Z Axis : Exists	Z home position Home position PB	Teaching exection Coordinates setting	Z Axis	: Exists
Y home position Home position PB	Home position(255) 0.0 0.0	Coordinates 0.0 0.0 Coordinates	Z sarvo condition Sarvo on Sarvo off	X coordinate Home position(255) 0:	s coordinates coordinates 0 0.0 0.0	Coordinates read
X sarvo condition Sarvo on Sarvo off	Return position 2(253) 0.0 0.0 Return position 3(254) 0.0 0.0 POINT 1 0.0 0.0	00 00 00 00 00 00 00 00	Manual jog Up Down	Return position 1(252) 0. Return position 2(253) 0. Return position 3(254) 0. POINT 1 0.	0 00 00	entry Coordinates clear
Y sarvo condition Sarvo on Sarvo off	POINT 2 0.0 0.0 POINT 3 0.0 0.0 POINT 4 0.0 0.0	0.0 0.0 Coordinates 0.0 Setting 3276 7mm max	The JOG speed on the Z axis is set by Z axis rating. Please perform operation after writing Z axis rating.	POINT 2 0. POINT 3 0. POINT 4 0.	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Coordinates
X jog move speed 5 mm/sec Y jog move speed 5 mm/sec	POINT 5 0.0 0.0 POINT 6 0.0 0.0 POINT 7 0.0 0.0 POINT 9 0.0	0.0 Interference 0.0 Estting		POINT 5 0. POINT 6 0. POINT 7 0.	0 0.0 0.0 0 0.0 0.0 0 0.0 0.0	Interference setting
X rotation direction + direction • Y rotation direction + direction •	POINT 9 0.0 0.0 POINT 10 0.0 0.0 POINT 11 0.0 0.0	0.0 Coordinates 0.0 shift 0.0 X coordinates 0.0 0.0 mm		POINT 8 01 POINT 9 01 POINT 10 01	0 0.0 0.0 0 0.0 0.0 0 0.0 0.0	Coordinates shift X coordinates
Manual jog XY execution	POINT 12 0.0 0.0 POINT 13 0.0 0.0 POINT 14 0.0 0.0	0.0 Y coordinates 0.0 0.0 0.0mm	Z rate. Set	POINT 11 0. POINT 12 0. POINT 13 0. POINT 14 0.	0 00 00 0 00 00 0 00 00	0.0mm Y coordinates
X execution Y execution	POINT 15 0.0 0.0 POINT 16 0.0 0.0 POINT 17 0.0 0.0	0.0 Z coordinates 0.0 Z coordinates 0.0 D.0mm		POINT 15 0. POINT 16 0.	0 0.0 0.0	Z coordinates
 ok by judgmont off and manual mode teaching execution and coordinates clear pb is ok by master 	Print OK	Cancel	 ok by judgment off and manual mode toaching execution and coordinates clear pb is ok by master 	Print	ок	Cancel

[Item] • X Y N o . Fig.(4-14): Teaching screen

Here we select the unit number that uses the selected coordinate system.

When the X axis of the target unit is the origin, "Home position OK" is lit, otherwise it will light "Home position NG". Neither will shine when not communicating.

When the X axis of the target unit is the origin, "Home position OK" is lit, otherwise it will light "Home position NG". Neither will shine when not communicating.

(X Y axies)X home position

Y home position

• X sarvo condition	This item indicates whether drive power is supplied to the X axis motor. "Servo ON" lights up when power is supplied to the X axis motor, and "Servo OFF" lights when power is not supplied. "Servo ON" lights up when not communicating.
• Y sarvo condition	This item indicates whether drive power is supplied to the Y axis motor. "Servo ON" lights up when power is supplied to the Y axis motor, and "Servo OFF" lights when power is not supplied. "Servo ON" lights up when not communicating.
JOG move speed	
• X axis	In this item, set the movement speed of X axis coordinate during JOG operation. The unit is [mm / sec].
• Y axis	In this item, set the movement speed of Y axis coordinate during JOG operation. The unit is [mm / sec].
• X rotation direction	When the manual JOG operation is started and the destination coordinate number is not specified, the X axis moves at the jog moving speed in the direction specified here.
• Y rotation direction	When the manual JOG operation is started and the destination coordinate number is not specified, the Y axis moves at the jog moving speed in the direction specified here.
• Manual JOG	The JOG operation is started with the following three kinds of buttons here. The JOG operation is performed only while this button is held down.
• X Y execution	The X axis and the Y axis simultaneously perform JOG operation.
• X execution	JOG operation is performed only on the X axis.
• Y execution	JOG operation is performed only on the Y axis.

 \langle Z axis \rangle %This screen is not displayed unless you have the Z axis motor in the unit setting.

 Z home position 	When the Z axis of the target unit is the origin, "Home position OK" is lit, otherwise it will light "Home position NG". Neither will shine when not communicating.
 Z sarvo condition 	This item indicates whether drive power is supplied to the Z axis motor. "Servo ON" lights up when power is supplied to the Z axis motor, and "Servo OFF" lights when power is not supplied. "Servo ON" lights up when not communicating.
• Mnual JOG	JOG operation is started with the button here. For the Z axis, set the jog moving speed with "Z rate. Set". You can also use the "Up" and "Down" buttons to perform the direction and the execution on the "XY axis".
• Z rate. Set	Here we set the rating of the Z axis positioning.
<pre> <teaching <="" exection="" pre="" teaching=""></teaching></pre>	It sets the current coordinates to the coordinate's cell of the specified point in the table. And furthermore, it writes registered coordinate data to the controller by this function.
 Coordinates setting 	The points from 1 to 160 and the coordinates list of the origin position and relay point are displayed. Please click on the leftmost column to specify the point. If the point number column turns yellow, it is in selected state.
• Coordinates read	It reads the coordinate values that are currently registered from the controller If reading fails, all the values set here are initialized, including interference area setting. However, since initialization is only on the setting software, initialized values are not written to the controller.
 Coordinates entry 	It registers the coordinate values that are displayed on the screen to the controller. You can change the coordinate value by entering it directly into the cell and pressing this button.
• Coordinates clear	This sets the coordinate value of the specified point to 0. (Since we send a write command to the controller, it is not necessary to register the coordinates after clearing the coordinates again.)
- Interference setting
 Pressing this button moves the screen to the interference area setting screen. In the interference area setting, you can specify whether you can specify the area that can be manually entered, set the adjacent interference area, and enable it. In order to enter this screen, it is necessary to enter a password.
- Coordinates shift

All the coordinates set in the coordinate setting table are shifted on the screen below. When the coordinate value is 0, it is not shifted.

(ex	(.) :When (20, 0) is shifted by (30)), 40), it becomes (50, 0).
ĺ	Coordinates shift	

X shift	0.0 mm
Y shift	0.0 mm
Exe	ecution

Fig.(4-15):Coordinates shift screen

- X coordinate This column displays the current coordinate value of the X axis.
- Y coordinate This column displays the current coordinate value of the Y axis.
- Z coordinate This column displays the current coordinate value of the Z axis.
- Print screen: Print the current screen as it is.
- 🗹 Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

4-2-4-1.Z rate. set

GKL Ver.0.0.12	an in y annatain	
Zrate. Unit: 1	Estat	blish
Acceleration	32767 10rpm/sec max	2000 10rpm/sec
Deceleration	32767 10rpm/sec max	2000 10rpm/sec
Move speed	750mm/sec max	350 mm/sec
Point coordinates	100 mm max	10 mm
Return position(Up limit)	3276.7 mm max	50.0 mm
Returning amount	3276.7 mm max	0.0 mm *Valid only when using TAD8811
Down limit	3276.7 mm max	200.0 mm
Motor 1 rotate move	32.767 mm/rev max	10.000 mm/rev
Rotate direction		CW -
Jog move speed	9999 mm/sec max	50 mm/sec
Home position move speed	9999 mm/sec max	80 mm/sec
Driver type		GSK Driver ·
Motor model *Valid only wh	nen using GSK driver	TS4603 -
Write	Print	t OK Cancel

Fig.(4-16):Z rate setting screen

[Item]

- Acceleration(Input range: 0 to 32767)
 Here we set the acceleration constant at which the positioning motor reaches the moving speed from the start of operation.
- Deceleration(Input range: 0 to 32767) It sets the deceleration constant that the motor reaches the operation stop from moving speed.
- Move speed(Input range: ["Motor 1 rotate move" * 75]) It sets the movement speed.
- Point coordinate(Input range: 0 to 100) It sets the range to be detected as the point when you point output in the external communication output signal.
- Return position (Up limit)
 This setting is the maximum value on the rising side of the Z axis.

 In this item, the position where the axis hits in the upward direction is assumed to be 0.
 And it sets how many millimeters down from that state.
- Returning amount(relative distance) This setting is the amount of return when "Cylinder relative return" command is input in program setting.
 ※It can be used only when TAD 8811 is selected for driver type.
- Down limit
 This sets the maximum descent position of the Z axis. In this item, the position where the axis hits in the upward direction is assumed to be 0. And it sets how many millimeters down from that state. This setting also shows the "soft limit" on the Z axis.

 Motor 1 rotate move(Input ran Sets the pitch of the ball scree This setting determines the m 	nge: 0 to 32.767) w used for positioning. aximum moving speed.
Rotate direction	Here we set the direction of the motor to be in the + direction from the original position.
\cdot JOG move speed	This sets the moving speed during JOG operation.
• Home return moving speed	When the return command is input, the return operation is started. This sets the movement speed at that time.
 Driver type This setting selects the contro from GKL and TAD8811. ※Normally "GKL driver" is set 	ller that controls the Z axis positioning motor
• Moter model	Here we select the type of motor to use.
[Button] • Establish	It establish the change contents.
• Write	It displays the writing screen of Z rate. Set
• Print	It runs the printing of Z rate. Set
・ОК	It retains the changes and returns to the XY point setting screen.
• Cancel	It returns to the XY point setting screen without holding the change contents.

Print screen: Print the current screen as it is.

🗹 Undo: Undo changes.

4-2-4-2.Interference setting

When you select "Interference area setting" from "XY point teach", the following screen will be displayed.

Here we set the interference area of the XY unit.

🣴 GKL Ver.0.0.12		A RECOMMENSATION	_	
A 1				
Interference sett	ing	Establish		
X/Y No.1				
X + soft limit	0.0 mm	Interference setting1	0.0 mm	Interference setting
Y + soft limit	0.0 mm	Interference setting2	0.0 mm	Valid
X – soft limit	0.0 mm	Interference setting3	0.0 mm	Vulia
Y – soft limit	0.0 mm	Interference setting4	0.0 mm	
X/Y No.2	0.0	Interference setting5	0.0 mm	
X + soft limit	0.0 mm	Interference setting6	0.0 mm	
X = soft limit	0.0 mm	Interference setting7	0.0 mm	
Y - soft limit	0.0 mm	Interference setting8	0.0 mm	
V/V No 2		Interference setting9	0.0 mm	
X + soft limit	0.0 mm	Interference setting10	0.0 mm	
Y + soft limit	0.0 mm	Interference actting11	0.0 mm	
X – soft limit	0.0 mm	Interference setting 1	0.0	
Y – soft limit	0.0 mm	Interference setting 12	0.0	
X/Y No.4		Interference setting 3	0.0 mm	
X + soft limit	0.0 mm	Interference setting14	0.0 mm	
Y + soft limit	0.0 mm	Interference setting15	0.0 mm	
X – soft limit	0.0 mm	Interference setting16	0.0 mm	
Y – soft limit	0.0 mm			
Write		Print	OK	Cancel

Fig.(4-17):Interference setting

[Item]

- X axis + soft limit, X axis soft limit, Y axis + soft limit, Y axis soft limit (Input range: -3276.7 to 3276.7)
 - : Here we set the operable area for each direction of the X and Y axes. Coordinates exceeding this value can not be registered manually. When it tries to move to a point where the coordinate value exceeds this range, the software limit position is regarded as the target position and it operates. No abnormality is output after operation. Judge that operation has ended normally and proceed to the next step.
- Adjacent interference distance setting
 - : This setting selects whether it uses or does not use adjacent interference distance setting.

[Button]

• Establish	It establish the change contents.
• Write	It displays the writing screen of Interference setting
• Print	It runs the printing of Interference setting
• O K	It retains the changes and returns to the XY point setting screen.
• Cancel	It returns to the XY point setting screen without holding the change contents.

9 Print screen: Print the current screen as it is.

Undo: Undo changes.

interference setting ① - ⑥ (Input range: 0 to 32767)

: This sets the interference distance with the adjacent positioning unit. The X and Y axes that have entered the specified adjacent interference distance stop. In this setting, the location of the distance indicated by each number changes according to the setting of the equipment type "Fn.6 - 00".

When entering the adjacent interference distance and exceeding the interference wait abnormality setting of the timer setting screen,

"interference wait error" is output to the PLC.



Unit arrangement example of standard equipment

If you set "0000" with "Fn.6 - 00", it will be recognized as GKL standard equipment. Maximum values that do not interfere in the X axis direction of each unit

in the above figure are 1X, 2X, 3X, and 4X, respectively.

Assuming that the maximum values that do not interfere in the Y axis direction are 1Y, 2Y, 3Y, 4Y, the values indicated by each number at this time are as follows.

Interference setting ①

The distance that unit 1 and unit 3 interfere as it moves further in the X axis direction This calculates the value to be set by the formula of "setting value = 1X + 3X".

Interference setting⁽²⁾

Distance to interfere if unit 1 and unit 2 advance further in the Y axis direction This calculates the value to be set by the expression "setting value = 1Y + 2Y".

Interference setting ③

Distance to interfere if unit 2 and unit 4 move further in the X axis direction This calculates the value to be set by the formula of "setting value = 2X + 4X".

Interference setting ④

Distance to interfere if unit 3 and unit 4 move further in the Y axis direction This calculates the value to be set by the formula of "setting value = 3Y + 4Y".

Interference setting (5)

Distance to interfere if unit 2 and unit 3 go further in the X axis direction This calculates the value to be set by the formula of "setting value = 2X + 3X".

Interference setting⁶

Distance at which the unit 2 and the unit 3 interfere as it proceeds further in the Y axis direction

This calculates the value to be set by the expression of "setting value = 2Y + 3Y".

Interference setting ⑦

The distance that unit 1 and unit 4 interfere as it moves further in the X axis direction This calculates the value to be set by the expression "setting value = 1X + 4X".

Interference setting (Distance to interfere if unit 1 and unit 4 go further in the Y axis direction This calculates the value to be set by the expression "setting value = 1Y + 4Y".

Interference setting $9 \sim 16$

There is no need to set it because it is a spare.

②Special facilities 1



Unit arrangement example of special equipment 1

If you set "0001" with "Fn.6 - 00", it will be recognized as special equipment 1 in GKL. Maximum values that do not interfere in the X axis direction of each unit in the above figure are 1X, 2X, 3X, and 4X, respectively.

Assuming that the maximum values that do not interfere in the Y axis direction are 1 Y, 2 Y, 3 Y, and 4 Y, the respective values indicated by the interference distances are as follows.

interference setting ①

The distance that unit 1 and unit 2 interfere as it moves further in the X axis direction This calculates the value to be set by the formula of "setting value = 1X + 2X".

Interference setting⁽²⁾

Distance at which the unit 2 and the unit 3 interfere as it proceeds further in the Y axis direction

This calculates the value to be set by the expression of "setting value = 2Y + 3Y".

Interference setting ③

Distance to interfere if unit 3 and unit 4 move further in the X axis direction This calculates the value to be set by the formula of "setting value = 3X + 4X".

Interference setting ④

Distance to interfere if unit 1 and unit 4 go further in the Y axis direction This calculates the value to be set by the expression "setting value = 1Y + 4Y".

Interference setting (5)

The distance that unit 1 and unit 3 interfere as it moves further in the X axis direction This calculates the value to be set by the formula of "setting value = 1X + 3X".

Interference setting⁶

Distance at which the unit 1 and the unit 3 interfere as it proceeds further in the Y axis direction

```
This calculates the value to be set by the expression of "setting value = 1Y + 3Y".
```

Interference setting⑦

Distance to interfere if unit 2 and unit 4 move further in the X axis direction This calculates the value to be set by the formula of "setting value = 2X + 4X".

Interference setting[®]

Distance to interfere if unit 2 and unit 4 move further in the Y axis direction This calculates the value to be set by the formula of "setting value = 2Y + 4Y".

Interference setting $9 \sim 16$

There is no need to set it because it is a spare.



Unit arrangement example of special equipment 2

If you set "0002" with "Fn.6-00", it will be recognized as special equipment 2 in GKL. Maximum values that do not interfere in the X axis direction of each unit in the above figure are 1X, 2X, 3X, and 4X, respectively.

Assuming that the maximum values that do not interfere in the Y axis direction are 1Y, 2Y, 3Y, 4Y, the values indicated by each number at this time are as follows.

Interference setting ①

The distance that unit 1 and unit 2 interfere as it moves further in the X axis direction This calculates the value to be set by the formula of "setting value = 1X + 2X".

Interference setting²

The distance in the Y direction when unit 1 and unit 2 are brought closer to each other as they advance further in both the X axis direction and the Y axis direction. This calculates the value to be set by the expression of "setting value = 2Y - 3Y".

Interference setting ③

Distance to interfere if unit 2 and unit 3 go further in the X axis direction This calculates the value to be set by the formula of "setting value = 2X - 3X

Interference setting ④

The distance in the X direction when unit 2 and unit 3 are brought closer to each other as they advance further in both the X axis direction and the Y axis direction. This calculates the value to be set by the expression of "setting value = 2Y + 3Y

Interference setting (5)

The distance in the X direction when unit 1 and unit 2 are advanced by both the X axis direction and the Y axis direction as far as they interfere with each other. This calculates the value to be set by the formula of "setting value = 1X + 2X".

Interference setting⁶

The distance in the X direction when unit 2 and unit 3 are brought closer to each other as they advance further in both the X axis direction and the Y axis direction. This calculates the value to be set by the formula of "setting value = 2X - 3X

```
Interference setting 7~16
```

There is no need to set it because it is a spare.

4-2-5.Timer setting

When you select "Timer setting" from "Position setting", the timer setting screen opens.

🤤 GKL Ver.0.0.12				
[∍] ″ <u>Fault timer</u>		Establish		
	Interference1 fault	(1~65000ms)	10000 msec	
	Interference2 fault	(1~65000ms)	10000 msec	
	Interference3 fault	(1~65000ms)	10000 msec	
	Interference4 fault	(1~65000ms)	10000 msec	
	Position locator1 fa	ault (1~65000ms)	10000 msec	
	Position locator2 fa	ault (1~65000ms)	10000 msec	
	Position locator3 fa	ault (1~65000ms)	10000 msec	
	Position locator4 fa	ault (1~65000ms)	10000 msec	
Read	Write	Print	OK	Cancel

Fig. (4-18): Timer setting

Interference fault =	 ⇒ When the standby time due to the setting in the adjacent interference area exceeds this set value, GKL judges that there is an abnormality in operation and outputs "Interference wait error" signal. When this signal is output, GKL will not send other notifications.
Positioning locator fault	⇒ If the JOG operation and the MOV_X MOV_Y MOV_XY operation are not completed within this time, the GKL judges that there is an abnormality in operation and outputs a "positioning error" signal. When this signal is output, GKL will not send other notifications.
[Item] • Interference 1 fault	It sets the interference waiting abnormality of the abnormal unit 1.
Interference 2 fault	It sets the interference waiting abnormality of the abnormal unit 2.
• Interference 3 fault	It sets the interference waiting abnormality of the abnormal unit 3.
• Interference 4 fault	It sets the interference waiting abnormality of the abnormal unit 4.
• Positioning locator 1 fa	ault It sets the positioning abnormality of the abnormal unit1.
• Positioning locator 2 fa	ault It sets the positioning abnormality of the abnormal unit 2.
• Positioning locator 3 fa	ault It sets the positioning abnormality of the abnormal unit 3.
• Positioning locator 4fa	ult It sets the positioning abnormality of the abnormal unit 4.

[Button] • Establish

- Establish It establish the change contents.
- Read It displays the loading screen of Timer setting
- Write It displays the writing screen of Timer setting
- Print It runs the printing of Timer setting
- OK It is to accept the changes and return to the position setting menu.
- Cancel It erases the changes and return to the position setting menu.
- Print screen: Print the current screen as it is.
- Undo: Undo changes.

4-3.Nutrunner setting

When you select "Nut runner Setting" from "Setting menu", the following screen will be displayed.

📴 GKL Ver.0	0.0.12	
Nuti	runner setting	
	RATE. SET (F1)	Auto setting (F4)
	[]	
	Block control (F2)	Return to the main menu (F5)
	Manual setting (Parametor) (F3)	Return to the setting menu (F12)
	Fig. (4-19):N	ut runner setting

[Button]

• RATE.SET(F1) Here, we set the rated data of the nut runner to be used.

- Block control(F2) This displays the block setting management screen used for program setting.
- Manual setting(Parametor)(F3) This sets each tightening motion.
- Auto setting (F4) In this case, the tightening data required for auto setting is set, and the tightening data is automatically created based on it.
- Return to the main menu(F5) When this button is pushed, it returns to the main menu.
- Return to the setting menu(F12) When this button is pressed, it returns to the setting menu.

4-3-1.RATE.SET

When the screen is selected "Rating setting" from "Nut runner setting menu" it will be the screen shown below.

- GKL Ver.0.0.12				x
🚑 i 🤊 🔖 🏙				
RATE.SET	Rate No. 1	Establish		
Nut runner type	ANM-400 -	Change of data Torque sensor rating	49.0	N.m
Motor model Tightening direction	TS4617N1920E203 • Right •	Rating limit	4.9	N.m
		Setting limit	9.8	N.m
		CAL	100.0	%
		Reducation ratio	38.5	
Read	ite	Print (ЭК	Cancel

[Item]

Fig.(4-20):RATE.SET screen

• Rate No.

You select the rated number to set.

- Nut runner type You select the type of nutrunner to use.
 ※If you select the Nutrunner model, the motor model and the details on the right side of the above figure become to the corresponding values.
- Motor model You select the motor model to use.
- Tightening derection This sets the direction of rotation in PRE.T and REA.T operation of the nut runner.

Details:

- Torque sensor rating (input range: 0 to 6550) This shows the maximum torque of the nut runner to be used.
- Rating limit (input range: 0 to 3276.7) This is a tolerance of variation during current check.
- Setting limit (Input range: 0 to 3276.7) This is the maximum value of the allowable current output value during current check.

• CAL (Input range: 0 to 3276.7) It is a coefficient to set so that the display value of the reference instrument and GKL monitor value are the same.

• Reduction ratio (input range: 0 to 9999) This shows the reduction ratio of the nut runner.

- [Button] • Establish It establish the change contents.
- Read It displays the loading screen of Rate setting
- Write It displays the writing screen of Rate setting
- Print It runs the printing of Rate setting
- OK It is to accept the changes and return to the Nut runner setting menu.
- Cancel It erases the changes and return to the Nut runner setting menu.
- Print screen: Print the current screen as it is.
- Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

4-3-2.Block control

When you select "Block Management" from "Nut Runner Setting Menu", the following screen will be displayed.

You need to create a block to set up tightening behavior in the program and register the block to use for the axis.

Here we edit and delete that block and register on each axis.

1	Axis No.1 Block1	Axis No.2	Axis No.3	Axis No.4	Axis No.5	Axis No.6	Axis No.7	Axis No.8	Axis No.9	Axis No.10	Axis No.11	Axis No.12	Axis No.13	Axis No.1	4 Axi
2	Block2														
3															
4															
5															
6															
7															
8															
9															
€Ë Lis	st of bl	ock c	C)elete	block	De	lete bl	ock la	yout	Blo	ck layo	out	Edit	of blo	ck
ت Lis	st of bl	ock c)elete ts	block	De	lete bl	ock la	yout	Block 7	ck layo	out	Edit	of blo	ck
Lie	st of bl	ock c	C ontent Block2 OC T2)elete ts Block3	block	De	lete bl Block5	ock la	yout	Block7	ck layo	out	Edit Block 9	of blo Bloc	⊷ ck ±10
	st of bl Block 1 SOC.T1 REV.T1	ock c	Onteni Block2 OC.T2 RE.T1	Delete ts Block 3	block	De	lete bl	ock la	yout	Block7	ck layo	out	Edit Block 9	of blo Bloo	⊧ck ±10
Lis	st of bl Block 1 SOC.T1 REV.T1 REA.T1	ock c	Ontent Block2 OC.T2 RE.T1 RE.V.T2	Delete ts Block 3	block	De	lete bl Block5	ock la	yout	Block7	ck layo	out	Edit Block 9	of blo Bloc	rck ≭10
Lis 1 2 3 4	St of bl Block 1 SOC.T1 REV.T1 REA.T1 END	ock c	Content Block2 OC.T2 RE.T1 REV.T2 REA.T2	Delete ts Block3	block	De	Block5	ock la	yout	Block7	ck layo	out	Edit Block 9	of blo Bloo	⊭ k10
Lis 1 2 3 4 5	St of bl Block 1 SOC.T1 REV.T1 REA.T1 END	ock c s F F	Onteni Block2 OG.T2 RE.T1 REV.T2 RE.T2 RE.T2 RE.T2 END	Delete ts Block3	Block	De	Block5	ock la	yout	Block7	ck layo	out ock8	Edit Block 9	of blo Bloc	*10
Lis 1 2 3 4 5 6	st of bl Block 1 SOC.T1 REV.T1 REA.T1 END	ock c s F F	Onteni Block2 OC.T2 RE.T1 REV.T2 REA.T2 END	Delete ts Block3	Block	De	lete bl	ock la	yout ock6	Block 7	ck layo	out uck8	Edit Block 9	of blo Bloc	≥k10
Lis 1 2 3 4 5 6 7	St of bl Block 1 SOC.T1 REV.T1 REAT1 END	ock c s F F	Content Block2 OC.T2 RE.T1 REV.T2 REA.T2 END	Uelete ts Block3	Block	De Nock 4	lete bl	ock la	yout ock6	Block7	ck layo	out	Edit Block 9	of blo Bloc	*10
Lis 1 2 3 4 5 6 7 8	St of bl Block 1 SOC.T1 REV.T1 REA.T1 END	ock c s F F	Content Block2 OC.T2 RE.T1 REV.T2 RE.T2 END	Block3	B	De Nock4	lete bl	ock la	yout ock6	Block 7	ck layo	out	Edit Block 9	Bloc	

Fig.(4-21):Block control screen

[Item]

• List of block layout

This displays the blocks registered for each axis.

• List of block c0ntents

This shows the composition of the created block.

[Button]

• Delete block

This deletes the currently selected block in the block contents list. The block to be deleted turns yellow when selected before deleting.

• Delete block layout

This deletes the block selected in the block allocation list. When selected for each cell, the block in the currently selected cell is deleted, and when the axis number is selected, all the blocks registered on that axis are deleted.

XYou can substitute Delete key and Back space key for the function of this button. However, in that case, it can only delete per cell.

• Block layout

The created block is stored in the selected cell on the list of block layout. This means that the block is registered to the axis number to which the stored cell belongs. XIf you enter a number directly in the selected cell on the list of block layout, the block number of that number is registered.

• Edit of block

This opens the block edit screen and edits and creates the contents of each block.

- Read It displays the loading screen of Block control.
- Write It displays the writing screen of Block control.
- Image of torque curve This displays the waveform image screen of the selected block. You can also change the settings on the screen that opens here.
- Program setting When this button is pressed, you go to the program setting screen.
- •ок

It is to accept the changes and return to the Nut runner setting menu. %If you come to this screen from the program setting, you will return to the program setting screen.

Cancel

It erases the changes and return to the Nut runner setting menu.

*If you come to this screen from the program setting, you will return to the program setting screen.

4-3-2-1.Edit of block

(_____

When you press the block edit button, the following block edit screen will be displayed.

	<u> </u>					
	Special set	ting Block	No. 1 🔹	Establish		
	SOC.T	PRE.T	REV.T	REA.T	SETTING LIST	
	SOC.T1 📥	PRE.T1	REV.T1	REA.T1	COMMAND	DETDY
	SOC.T2	PRE.T2	REV.T2	REA.T2	SOC.T1	IL IIII
	SOC.T3	PRE.T3	REV.T3	REA.T3	REV.T1	
	SOC.T4	PRE.T4	REV.T4	REA.T4	REA.T1	END
	SOC.T5	PRE.T5	REV.T5	REA.T5	END	LIND
	SOC.T6	PRE.T6	REV.T6	REA.T6		
	SOC.17	PRE.T7 =	REV.T7 =	REA.T7		
	SOC.T8	PRE.T8	REV.T8	REA.T8		
	SOC.T9	PRE.T9	REV.T9	REA.T9		
	SOC.T10	PRE.T10	REV.T10	REA.T10		
	SOC.T11	PRE.T11	REV.T11	REA.T11		
	SOC.T12	PRE.T12	REV.T12	REA.T12		
	SOC.T13	PRE.T13	REV.T13	REA.T13		
	SOC.T14	PRE.T14	REV.T14	REA.T14		
	SOC.T15	PRE.T15	REV.T15	REA.T15		
	SOC.T16	PRE.T16	REV.T16	REA.T16		
	SOC.T17	PRE.T17	REV.T17	REA.T17		
	SOC.T18	PRE.T18	REV.T18	REA.T18		
	SOC.119	PRE.119	REV.119	REA.119		
	SOC.120	PRE.120	REV.120	REA.120		
	SUC.121	PRE.121	REV.121	REA.121	One line insertion	
	SUC.122	PRE.122	REV.122	REA.122		
	SUC.123	PRE.123	REV.123	REA.123	One line delete	
'	500.124	PRE.124	REV.124	REA.124	Clear	
					Creat	
			Change	of tighting	e k	
			para	Imetor	UK	Cancel

Fig.(4-22): Edit of Block

Here, if you select the setting number from "SOC.T, PRE.T, REV.T, REA.T" list, the tightening motion is stored in the setting list on the right side of the screen. If you press the retry button, a retry command is entered,

and when the end button is pressed, the end command is stored in the setting list. This setting list becomes a block.

- *The insertion method of the command has difference by the cell color difference. Yellow overwrites, white inserts into the selected cell, and shifts the following commands down. The color of the cell changes by clicking.
- 注) The setting of each tightening operation is white as input, and purple as not yet input. If you select by right click or when you select an unentered action, it becomes yellow as currently selected, but it is not inserted in the setting list.

[Button]

• Establish

Normally it is used to confirm the change, but this function can not be used on this screen.

• RETRY

It inserts a retry command into the configuration list.

If the operation above the retry command within the block does not yield NG, the block is terminated as is, and if NG occurs,

the operation below the retry is performed.

• END

It inserts an end command into the configuration information. This command is used to make it recognize that the entire operation of the block has ended.

Even if it is not inserted in the setting information list by the command, it is automatically inserted at the end of the block when setting is completed.

• One line insertion

It inserts an empty cell in front of the currently selected cell in the setting list.

• One line delete

It deletes the currently selected cell in the setting list.

The commands lower than the delete command are moved up by the deleted command.



Fig.(4-23): Change due to "One line delete"

• Clear

It deletes all commands in the setting list.

- Change od tightening parametor It moves to the setting screen of the operation being selected in the tightening operation list.
- •ОΚ

It is to accept the changes and return to the Block control screen.

• Cancel

It erases the changes and return to the Block control screen.

4-3-3.Manual setting

When you select "Manual setting [Parameter]" from "Nutrunner setting", the following screen will appear.



Fig.(4-24):Manual setting

[Button]

• SOC.T SET(F3)

When this button is pushed, the SOC.T SET screen is displayed.

- PRE.T SET(F4) When this button is pushed, the PRE.T SET screen is displayed.
- REV.T SET(F5) When this button is pushed, the REV.T SET screen is displayed.
- REA.T SET(F6) When this button is pushed, the REA.T SET screen is displayed.
- Return to the setting menu(F12) When this button is pushed, it will return to the Nut runner setting screen.

When you select "SOC.T SET" from "Manual setting menu (Parametor)", the following screen is displayed. Here, we set up the operation of "SOC.T".

SOC.T SET Setting No. 1 Establish Delete SOC.T PRE.T REV.T REAT Rotation angle 360 ° • <
SOC. I SET Setting No. 1 Establish Delete SOC. PRE.1 REV.1 REA.1 Rotation angle 360 •
Rotation angle 360 Change of option Speed 100 rpm Rotation direction Loosening direction Operation Torque determination OFF • Detection torque 0.0 N.m Time before socket fitting O msec. Over time 60 sec. Sec.
Speed 100 rpm Operation Torque determination OFF * Rotation direction Loosening direction Detection torque 0.0 N.m Time before socket fitting Over time 0 msec. Over time 60 sec.
Constant of the section of the sect
Time before socket fitting0msec.Over time60sec.
Over time 60 sec.
Read Write Print OK Cancel

Fig.(4-25):SOC.T SET screen

XYou can move to "PRE.T", "REV.T", "REA.T" with the button on the upper right of this screen.

[Item]

- Rotation angle It sets the operating angle during SOC.T operation.
- Speed It sets the rotation speed at SOC.T operation。
- Rotation direction

This sets the direction of rotation during this operation. The direction set here varies to the rate setting to use.

Change of option

By setting a check here, you can set the function in the SOC.T operation such as changing the operation type.

• Operation

o

This selects the operation type of SOC.T from among the 4 below.

- Torque determination OFF
 - \Rightarrow Normal operation will not be performed based on the detected torque value.
- Fiting

⇒This function confirms that the socket has entered the screw head. If it does not reach the detection torque value during the rotation angle, it becomes NG.

- Gear check
 - \Rightarrow That confirms the state of the gear of the nut runner. When it reaches the detection torque value, it stops working and becomes NG.

- Detection torque Here, we set the torque value to be used for gear check and fitting judgment.
- Time before socket fitting This sets the waiting time before the SOC.T operation starts
- \cdot Over time

This sets the maximum operation time of the SOC.T operation. If the operation does not end before this time, the operation is terminated and the NG judgment is output.

%If the rotation angle is zero, it is assumed that the SOC.T operation is not set and input check is not executed.

[Button]

• Establish

It establish the change contents.

• Delete

This function returns all values of the setting No. being displayed before changing.

• Read

It displays the setup reading screen of the SOC.T setting.

• Write

It displays the setup writing screen of SOC.T setting.

• Print

It will print socket alignment settings. Printing is done in a dedicated format.

•ок

It is to accept the changes and return to the Manual setting screen.

Cancel

It erases the changes and return to the Manual setting screen.

- Print screen: Print the current screen as it is.
- 🔄 Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

When you select "PRE.T SET" from "Manual setting menu (Parametor)", the following screen is displayed. Here, we set up the operation of "PRE.T".

Fitting thread				Fast forwarding			
Turning angle 36				Angle of fast forwarding	900 °		
Speed	80 r	pm		Speed	310 rpm		
				Premature tightening determination torque	14.0 N	l.m	
Fit on work surface							
Pretightening torque	14.0	N.m	-6	Change of option			
Speed 1 finsh torque	2.8	N.m	Ti	me before pretightening	C	msec.	
Upper torque limit	16.8	N.m	U	oper angle limit	999.9	0	
Lower torque limit	11.2	N.m	Lo	ower angle limit	0.0	0	
Speed 1	80	rpm	M	onitoring time for no-torgu	•	msec	
Speed 2	40	rpm	141			mooo.	
Over time	15	sec.					
Sampling start torque	7.0	N.m					
Stole time	50	msec.					

Fig.(4-26):PRE.T SET screen

XYou can move to "SOC.T", "REV.T", "REA.T" with the button on the upper right of this screen.

[Item]

Fitting thread

This is the operation to align the screw with the screw hole.

• Turning angle

This sets the rotation angle during screw alignment operation.

Speed

This sets the rotation speed during screw alignment operation.

Fast forwarding

This is the operation to turn the screw up to near the seating at high speed.

• Angle of fast forwarding

This sets the rotation angle during fast forward operation. It shows the turning angle until the screw head is seated.

Speed

This sets the rotation speed during fast forward operation. It is almost no-load rotation until the screw head is seated. Therefore, it sets possible high speed with the nut runner.

 Premature tightening determination torque Normal torque does not reach during fast forward operation which should be no load rotation.
 When this set torque has passed during fast-forward operation, it is judged to be abnormal and fast-tightening NG is output. Fit on work surface This is an operation section from the end of fast forward to the end of PRE.T.

- Pretightening torque
 This sets the target torque in the PRE.T motion.
 The PRE.T operation is terminated by reaching this torque.
- Speed 1 finish torque This sets the torque to switch from Speed 1 to Speed 2.
- Upper torque limit This sets the torque value to be used for torque over judgment.
- Lower torque limit This sets the torque value to be used for torque under judgment.
- Speed 1

This sets the speed until the torque sits from the end of fast forward.

• Speed 2

This sets the final speed up to the target torque of this operation.

• Over time

This sets the maximum operation time of the PRE.T operation. If the operation does not end before this time, the operation is terminated and the NG judgment is output.

- Sampling start torque This sets the torque to start angle measurement.
- \cdot Stole time

When the tightening torque reaches the cut torque, it is necessary to maintain the tightening torque for a certain time so that the torque does not decrease. Here we set the holding time.

Change of option

Time before PRE.T

This sets the wait time until this operation starts.

• Upper angle limit

This measures the tightening angle from the sampling starting torque. If the measurement angle exceeds this setting value, angle over NG is output.

• Lower angle limit

This measures the tightening angle from the sampling starting torque. If the measured angle does not exceed this set value, angle under NG is output.

• Monitoring time for no-torque This sets the time when torque judgment is not made from the start of operation.

%If speed 1 and speed 2 are both zero, it is assumed that PRE.T operation is not set. In the PRE.T SET screen, the input check is performed under the following conditions. You can not set contrary to the input rule by input check.

However, when it is judged that it is not set, it does not perform input check. [input condition]

 \cdot Övertime> = 1

- · Fast-forward angle >= rotation angle
- · Upper angle limit > Lower angle limit
- PRE.T torque > Sampling start torque
- · Upper torque limit > PRE.T torque > Lower torque limit

[Button]

• Establish

It establish the change contents.

• Delete

This function returns all values of the setting No. being displayed before changing.

• Read

It displays the setup reading screen of the PRE.T setting.

• Write

It displays the setup writing screen of PRE.T setting.

• Print

It will print PRE.T settings. Printing is done in a dedicated format.

•ок

It is to accept the changes and return to the Manual setting screen.

• Cancel

It erases the changes and return to the Manual setting screen.

Print screen: Print the current screen as it is.

🗹 Undo: Undo changes.

Copy: It copies the setting contents for each setting number.

Paste: It pastes the information acquired by copying to the specified setting number.

4-3-3-3.REV.T SET

When you select "REV.T SET" from "Manual setting ", the following screen is displayed.

REV.T SET	Setting No. 1	Establish Delete SOC.T PRE.T REV.T REA.T
Judgement of torque	2.0 N.m	Change of option setting
Reverse angle	190 °	Speed 1 finish angle 50 °
Speed 1	30 rpm	Speed 2 80 rpm
Measurement angle	180 °	Time before reverse rotation 0 msec.
Passing torque	7.0 N.m	
Baking torque	21.0 N.m	
Over time	5 sec.	
Read	te	Print OK Cancel

Fig.(4-27):REV.T SET screen

XYou can move to "SOC.T", "PRE.T", "REA.T" with the button on the upper right of this screen.

[Item]

Judgment of torque

It sets the measurement angle so as to measure at no-load rotation. It judges whether the torque at that time exceeds this set value or not.

- Reverse angle This sets the movement angle in this operation.
- Speed 1

This sets the rotation speed at the start of the REV.T operation.

• Measurement angle

This sets the angle from the start of operation to judge the state of the screw using the judgment torque.

• Passing torque

It is the torque to judge whether it was tightened correctly before this operation. If the slackening torque does not exceed this torque even once, the NG judgment is output.

Baking torque

Screws may be seized in the previous tightening operation. This setting is the torque to confirm that it is baked.

• Over time

This sets the maximum operation time of the REV.T operation. If the operation does not end before this time, the operation is terminated and the NG judgment is output.

Option

• Speed 1 finish angle

When loosening the fastened screw with high torque, you need to loosen it at low speed immediately after starting operation. This setting value is the starting point for switching from low speed to high speed. • Speed 2

When loosening the tightened screw, the no-load rotation is performed after the torque has come off. This setting will be the speed for high-speed rotation at that time.

- Time before reverse rotation This sets the standby time before the REV.T operation starts.
- XIf the Reverse angle is zero, we regard it as not set for the REV.T operation. In the REV.T SET screen, the input check is performed under the following conditions. However, when it is judged that it is not set, it does not perform input check.
- Over time $\geq = 1$
- \cdot Reverse angle >= Measurement angle
- Reverse angle \geq Speed 1 finish angle

[Button]

• Establish

It establish the change contents.

• Delete

This function returns all values of the setting No. being displayed before changing.

• Read

It displays the setup reading screen of the REV.T setting.

• Write

It displays the setup writing screen of REV.T setting.

• Print

It will print REV.T settings. Printing is done in a dedicated format.

• O K

It is to accept the changes and return to the Manual setting screen.

• Cancel

It erases the changes and return to the Manual setting screen.

Print screen: Print the current screen as it is.



- Copy: It copies the setting contents for each setting number.
- B Paste: It pastes the information acquired by copying to the specified setting number.

4-3-3-4.REA.T SET

When you select "REA.T SET" from "Manual setting" the following screen is displayed.

P GKL Ver.0.0.12 글 │ ♥ 🕞 💼			A BUTTOMETUTO		
<u>REA.T SET</u> Set	tting N	lo.1 -	Establish Delete	SOC.T PF	RE.T REV.T REA.T
Reatightening torque	28.0	N.m	Over time	5	Sec.
Sampling start torque	14.0	N.m	Upper torque limi	t 35.0	N.m
Speed 1	80	rpm	Lower torque limi	t 25.0	N.m
Speed 1 finish angle	180	0	Stole time	50	msec.
Speed 2	20	rpm	Over cutting ang	e 360	•
Change of option					
Time before final tightening	0	msec.	Option mode of Speed 2 calent of	speed 3,4	0
Upper angle limit	999.9	0	Speed S select a		
Lower angle limit	0.0	0	opeed o	0	rpm
Premature tightening determination angle	0	0	Speed 4 select to	orque 0.0	N.m
Monitoring time for no-torque	0	msec.	Speed 4	0	rpm
Read Write			Print	ОК	Cancel

Fig.(4-28):REA.T SET screen

%You can move to "SOC.T", "PRE.T", "REV.T" with the button on the upper right of this screen.

[Item]

• Reatightening torque

This sets the target torque value in the REA.T operation.

- Sampling start torque This sets the torque to start angle measurement.
- Speed 1

This sets the speed 1 value of the REA.T motion.

- Speed 1 finish angle This sets the angle value to switch to Speed 2 after finishing Speed 1.
- Speed 2

This sets the rotation speed of speed 2.

- Over time This sets the maximum operation time of the REA.T operation. If the operation does not end before this time, the operation is terminated and the NG judgment is output.
- Upper torque limit
 This sets the torque value to be used for torque over judgment.
- Lower torque limit This sets the torque value to be used for torque under judgment.
- Stole time When the tightening torque reaches the cut torque, it is necessary to maintain the tightening torque for a certain time so that the torque does not decrease. Here we set the holding time.

- Over cutting angle This sets the maximum movement angle of the REA.T motion. When this angle is reached, this operation is terminated.
- **This setting value will not output NG judgment. If tightening condition is satisfied even a little, please note that OK judgment output.

Option

- Time before final tightening This sets the time until the REA.T operation starts
- Upper angle limit

This measures the tightening angle from the sampling starting torque. If the measurement angle exceeds this setting value, angle over NG is output.

• Lower angle limit

This measures the tightening angle from the sampling starting torque. If the measured angle does not exceed this set value, angle under NG is output.

Premature tightening determination angle
 This sets the angle to be used for judging the fast-tightening abnormality.

 If the final tightening torque is detected before the angle from the start
 of operation exceeds this set value, NG of the quick tightening will be output.

• Monitoring time for no-torque This sets the time when torque judgment is not made from the start of operation.

Option mode of speed 3, 4

- Speed 3 select angle This is the angle to switch to Speed 3.
- Speed 3 This sets the rotation speed of Speed 3.
- Speed 4 select torque This sets the torque value to switch from Speed 3 to Speed 4.
- Speed 4

This sets the rotation speed of Speed 4.

- %If the Reatightening torque is zero, we regard it as not set for the REA.T operation. In the REA.T SET screen, the input check is performed under the following conditions. However, when it is judged that it is not set, it does not perform input check.
- \cdot Overtime> = 1
- Upper angle limit > Lower angle limit
- Upper torque limit > PRE.T torque > Lower torque limit

[Button]

Establish
 It establish the change contents.

• Delete

This function returns all values of the setting No. being displayed before changing.

• Read

It displays the setup reading screen of the REA.T setting.

• Write

It displays the setup writing screen of REA.T setting.

• Print

It will print REA.T settings. Printing is done in a dedicated format.

•ок

It is to accept the changes and return to the Manual setting screen.

• Cancel

It erases the changes and return to the Manual setting screen.

Print screen: Print the current screen as it is.

- Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

4-3-4.Auto setting

When you select "Auto setting" from "Nutrunner setting", the screen shown below will be displayed.



Fig.(4-29): Auto setting screen

STEP1 :

Here, you enter basic information to perform auto setting.

Basic information refers to the rated number of NR to be used, screw tightening direction, tightening method of REA.T, target torque, upper torque limit value, lower torque limit value.

STEP2 :

"Full-auto setting" or "Setting of sampling data" is selected.

[Button]

• Cancel

It is to accept the changes and return to the Nut runner setting screen.

• NEXT

The page of the destination is different by selecting the setting method of STEP 2.

- In the cace of "Full-auto setting" When full auto setting is selected, the "Standard setting" screen is displayed. There, it inputs "screw type, distance to seated, inclusion".
- In the cace of "Setting of sampling data"
 - When "Setting of sampling data" is selected,

the "Setting of sampling data" screen is displayed.

There, it automatically performs sampling tightening and automatically performs the setting for the operation set by using the data detected from it.

4-3-4-1.Full-auto setting

If you select "Full-auto setting" in "Auto setting" and press "NEXT", the "Standard setting" screen shown below will be displayed.

	Kind of thread Standard bolt	-		
	10105 No. 10			
-2019	Bolt seat is fit Unfit on F on work surface work surface s	it on Tightening d	rection	
	⊛ Gap of bolts 0		Right-hand thread	
	Pitch of thread 0.00	mm I		
	 Revolving number of times untill fit on work surface Revolving 	tate Torque mod	•	Upper torque 35.0 Ni
	Inclusion Nothing	•	1-1	Reatightening torque
			/	Lower torque 25.0 N.r
	ſ			

Fig.(4-30):Full-auto setting(Standard seting)screen

* Refer to "9-3. Preparation of tightening program" for setting flow chart.

[Item]

• Rate No.

The rated number of the nut runner set on the "Full-auto setting" screen is displayed.

- Axis No. It selects axis number. It assigns the block you created to this axis.
- Kind of thread It selects the type of screw.
- Bolt seat is fit on work surface It chooses whether the bolt is seated or not. If it is seated, the only items you set are inclusions. In case of non-seating, it is necessary to set the distance(angle) to sit in addition to that.
 - Gap of bolt It sets the distance between the screw head and the workpiece seat.
 - Pitch of thread It sets the screw pitch.
 - Revoling number of times until fit on work surface It sets the number of revolutions until sitting.
- Inclusion

It selects inclusions to enter between the screw and the seat.

[Button]

• Cancel

It erases the changes and return to the Manual setting screen.

• Back

It erases the changes and return to the previous setting screen.

• Next

It creates a block and its behavior from this screen and the data set on the previous screen.

Then, the created block is displayed as a waveform image.

When you select "Next" on the "Standard setting" screen, the "Screen for image of torque curve" as shown below will be displayed.

🥊 GKL Ver.0.0.12	the second se	
Screen for image of to	orque curve Block 1	
Socket fitting	Reverse rotation	Reatightening upper forque limit 35.0 Reatightening 28.0 Lorque torque limit 25.0
	Judgement of torque 2.0 Nm	Sampling start torque 14.0 N
Rotation	Passing torque 7.0 Nm 21.0 Nm	Premature tightening determination a
on direction	Measurement angle 180 ° Reverse angle 190 ° Speed 1 finish angle	Monitoring time for no-torque 0 msec Speed 1 finish angle 180 °
e determination OFF Speed 100 rpm	Speed 1 30 rpm	Speed 1 80 rpm
e 0 msec Over time 60 sec	Time before reverse rotation 0 msec 0 ver time 5 sec	Time before final tightening 0 msec Over time
Read	Write Graph checking	OK Cancel

Fig.(4-31):Screen for image of torque curve

In this screen, you can change the behavior of the block created based on the previous setting while confirming it as a waveform.

*Please check the setting items of each operation about the contents of detailed setting.

[Button]

• Read

This is the same operation as "Setting read" in the main menu.

• Write

This is the same operation as "Setting write" in the main menu.

Graph checking

When this button is pushed, a simple waveform that reflects the set contents will be displayed.

۰OK

This holds the created block and each action and displays it on the Nut runner setting screen.

Cancel

This discards the created block and each action and returns to the previous screen.

4-3-4-2.Setting of sampling data

When you select " Setting of sampling data " with "Auto setting" and press "NEXT", "SAMPLING SETTING" is displayed.

kat Jsi Jut Kot Re	e No. ng runner ion axis No fering of su	> . npl	1 ANM-400 1)]	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ste Ste Ste Ste	p2 PR p3 RE p4 RE p5 p6	E.' V.' A.'	г г г -									
	Fac	t for	Preti	ght	tening Fit on		k surface.	_	Reverse rotation	,		Rea	tieł	itening	_			lorqu
	Angle of fast forwarding	NG	Maximum torque of measurement dara	ri F	Pretightening torque	NG	Measurement area	N G	Maximum torque of measurement dara	N	Tightening N Sn torque G Sn	iag torque	N G	Turning angle	N G	Slope	All OK NG	e curve indicatio
1				1		E		10			873	[[]
2												[[JE
3												[[
4												1						
5 6												1		6				
7		m		1		m		m		1		1	m	1				1 1
8													٦	[I
9			[1					[1	[[1
0												[[
a× lin ve																		

Fig.(4-32): Setting of sampling data

*Please check the setting items of each operation about the contents of detailed setting.

①The angle until the taking a seat is gauged with a low-speed revolving try.

Please choose movement axis number and set it in the state until a bolt is tightened up.

Please press a low-speed revolving try button including driving preparations at the tightening starting position.

The angle until the taking a seat of a screw is measured

by pressing a low-speed revolving try button.

After that it revolves by the speed of the 40RPM,

and when I reach "the tightening sampling stop torque", stops. The degree

of general rotation angle from a start to the stop of that case is measured.

About 1.5 times more than the degree of rotation angle measured after tightening is reversed and the movement which slackens a screw is performed, and it's a movement end. During moving, following message goes out.

Proc	WaitDialog
	A low-speed revolution is being
	tried.
	Cancel

Fig.(4-33): During low speed rotation try

%1:Please establish the "tightening sampling stop torque" of the controller before a low-speed revolving try.

It's 0, so if it's just as it is, defaults don't circulate at low speed.

%2: When or the operation time exceeds 60 seconds when not reaching

"tightening sampling stop torque" even if it revolves 9999 times during a try, a controller takes out an alarm "E33".

⁽²⁾The data for which setting is made with a measurement starting button is acquired.

When a step is chosen by movement choice and a measurement starting button is pressed, the setting value and the program originated with the data a low-speed revolving try gave are sent to the controller.

Please carry out the following program number by a PLC

after a measurement starting button is pressed.

*The program made with a low-speed revolving try is preserved by the last program number.

The number of program changes with the program Max value choice in the following.

- 30axis, 16program, 220steps ⇒ program number : 16 30axis, 50program, 70steps ⇒ program number : 50 8axis, 50program, 220steps ⇒ program number : 50

The setting made with a low-speed revolving try starts to be the next.

Socket adjusting is 47-49, pre-tightening is 50 reverse rotation is 50

and final tightening is 50.

During beginning to measure, following message goes out.

Only that it's necessary, please execute a program.

If data is acquired, it "now sampling", please press a cancellation button of the window of a message.

ProcWaitDialog	Processili surface	×
	Now on sampling	
	Cancel	

Fig.(4-34): Now on sampling

③If I finish acquiring data as much as it's necessary by measurement starting,

a cancellation button is pressed.

When making the set value with acquired data, excluded data is chosen

by "NG" and the data acquired by a "sampling data, shifting" button after that is preserved in the setting PC.

When you'd like to set setting in a block, a in-depth setting data shift button is pressed. (To④) When you'd like to gauge with the set value which was made with acquired data,

a measurement starting button is usually pressed. (To 2)

The screen upper right develops and is corrugated.

④It's to press an in-depth setting data shift button, moves to a corrugated image screen and indicates a block of the made set value.

Information on the block is preserved by a setting PC by pushing OK.

*The made block number is the first block number which isn't being used. It's also possible by screen for image of torgue to change the set value.

4-4.Program setting You select "Program Setting" from "Setting Menu". When "Program Setting" is selected from "Setting Menu", "Select of maximum program number" screen will appear.



Fig.(4-35): Select of maximum program number By default, "30 axes, 16 program No., 220 steps" is selected. If you change the program Max value selection, you will need to recreate the program.

PF	20)(GF	RAM S	<u>SET</u>	PRO	G	RA	M No.	1 -	Block	inse	rt	Open st eliminati	ion	Check program
	l	Jnit	1		Unit 1					Un	it: 1				Unit 1	
					NR: Axis	1				NR: I	Axis 2				NR: Axis 3	
		2	퓑				ZEF	SYNC				ZEF	SYNC			ZEF
EP	~	=	Ę				ర	SE				ő	S E			ĉ
1				RATE : 1	SOC.T1				RATE : 2	SC	C.T1			RATE : 3	SOC.T1	
2				BLOCK : 1	SOC.T2				BLOCK : 1	SC	C.T2			BLOCK : 1	SOC.T2	
3				SCREW: 1	SOC.T3				SCREW : 2	SC	C.T3			SCREW: 3	SOC.T3	
4																
5																
6																
7					PRE.T1					PF	E.T1				PRE.T1	
8					REV.T1					RE	V.T1				REV.T1	
9					REA.T1					RE	A.T1				REA.T1	
10					END					E	ND				END	
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
~	4	_				1										

Fig.(4-36): Program setting

[Item]	
• IN	It enables 'IN signal wait'. It waits for this step to start until the IN signal is input from the outside.
• OUT	It outputs "OUT" signal after the operation is completed. The "OUT" signal is stopped by input of the next "IN" signal.
• PRINT	After step execution, it will print the contents specified for the connected printer.
• (Program area)	The contents of the selected program number are displayed.
• ZERO	We will do zero check.
• SYNC-S	It synchronizes with other axes at the start of this step.
• SYNC-E	It will retighten at the end of this step.

[Button]

- Block incert It inserts an empty block above the selected cell.
- Open step elimination It deletes and packs the vacant steps of the selected axis.
- Check program
 It checks whether the block used in the program has
 the same configuration as the block registered.
- Read It displays the loading screen of program setting
- Write It displays the writing screen of program setting
- Print It runs the printing of program setting
- Tightening block operation select
 This displays the tightening block motion selection screen.
 On this screen you can select the block to be inserted into the program, synchronize etc.
- X,Y axis operation select
 The XY axis motion selection screen is displayed.
 On this screen, you can select the XYZ axis motion from the command list and set it to the program area selection step.
- OK It is to accept the changes and return to the setting menu.
- Cancel It erases the changes and return to the setting menu.
- Print screen: Print the current screen as it is.
- 🖻 Undo: Undo changes.
- Copy: It copies the setting contents for each setting number.
- Paste: It pastes the information acquired by copying to the specified setting number.

4-4-1. Tightening block operation select

In "Program setting", select the block to be inserted in the program on the "Tightening block operation select " screen.

Inserts tighte	ning block					
Auto Na d	Block information		Contents of prog	grami	ing	- ZERO/GAIN
AXIS NO.	COMMAND		COMMAND	S١	(NC	Check
Rating No. 1 🔹	SOC T1			s	E	START SYNC
Scrow No. 1 -	SOC.T2					
	SOC.T3					All axes start synchronous
Block No. 1 🔹						END SYNC
	DRF T1					
	REV.T1	->				All axes end synchronous
	REA.T1					All axes retry
	END					One line
						insertion
						One line delete
						Clear
					ок	Cancel

Fig.(4-37): "Tightening block operation select " screen

[Item]

• Axis No. It displays the axis number where the tightening block is inserted.

- Rate No. This specifies the rating number of the nut runner to be used for the operation of the tightening block to be selected.
- Screw No. This specifies the screw number to be tightened with the tightening block.
- Block No. This specifies the number of the tightening block to be inserted.
- $\cdot \rightarrow$ This inserts the currently selected block information into the program.
- ZERO/GAIN Check Before starting the block operation, it checks zero times the check function of the torque sensor.
- START SYNC It is to synchronize the steps next to each other. It is effective only when there is positioning in the unit. %If there is no positioning inside the unit, synchronize without setting it.
- All axes start synchronous
 This enables start synchronization for all axes in the program.
 ※It can be confirmed that start synchronization is entered on all axes in the program.
- END SYNC We will retighten after REA.T action. * REA.T step is effective only.
- All axes end synchronous
 This enables all axis end synchronization for all axes in the program.
 XYou can confirm that the end synchronization is entered on all axes in the program.
- All axes retry synchronous

This function is effective only when Retry is selected in Block.

* when all-axis retry is set, if there is NG even for 1 axis,

all-axis retry processing will be done.

۰OK

This enables the setting on this screen and returns to the program setting screen.

Cancel

This discards the setting on this screen and returns to the program setting screen.

4-4-2. X,Y axis operation select

The following screen is displayed with "XY axis operation select" button from the setting screen.

You can select the XY action you want to set from the command and insert it into the program.

COMMAND	_	SETTING LIST			
MOVX		COMMAND	Xn	ate. No.	1 -
MOVY					
MOVXY			Yra	ate. No.	I ▼
WAIT1			Poi	nt No	1 -
WAIT2			101	110.	
SPW					
INX1					
INX2					
INY1					
INY2					
TIME10					
TIME100					
TIME500					
TIME1000					
TIME1500					
TIME3000					
TIME5000					
TIME10000				One line	insertion
CYLINDER1ADVANCE					inter cion
CYLINDER1RETURN				One lir	ne delete
PULSE					
CYLINDER RELATIVE RETURN	-	· · · · · · · · · · · · · · · · · · ·		c	lear

Fig.(4-38): "X,Y axis operation select " screen

[Item]

- X rare. No. This sets the X axis rated number of the same unit as the setting axis.
- Y rare. No. This sets the Y axis rated number of the same unit as the setting axis.
- Point No. This sets the point number where the destination coordinates are registered.

[Button]

One line insertion	This inserts one empty cell above the selected cell in the setting list column.
• One line delete	This deletes the cell selected by the setting list and fills it up.
• Clear	This clears all contents of the setting list column
• O K	This will insert the contents of the setting list column into the program step and return to the program setting screen.
• Cancel	This discards the contents of the setting list field and returns to the program setting.
[Command] • MOVX	This will move the X axis motor to the specified point.
---------------------	--
• MOVY	This will move the Y axis motor to the specified point.
• MOVXY	This will move the X and Y axis motors to the specified point at the same time.
•WAIT1,WAIT2	This waits without advancing to the next step until the WAIT input signal corresponding to each command is entered.
• SPW	If you enter SPW command for all axis step number, it becomes usable. All axes become steps of this command and wait without proceeding to the next step until the SPW signal is input.
• INX①, INX②	This waits without advancing to the next step until the INX input signal corresponding to each command is entered.
• INY1), INY2)	This waits without advancing to the next step until the INY input signal corresponding to each command is entered.
•TIME10~10000	This command stops the operation for the number of minutes of the command. The unit is msec. It will proceed to the next step after the specified time has elapsed

SYLINDER 1 ADVANCE
 It can be used when the input signal at the cylinder return end is input.
 It outputs a cylinder motion signal and moves the cylinder.
 It goes to the next step at the input of the signal at the cylinder working end.

• SYLINDER 1 RETURN

It can be used when an input signal at the cylinder operation end is input. It outputs a cylinder return signal and moves the cylinder. It will proceed to the next step at the input of the signal at the cylinder return end.

• PULSE

The operation of the cylinder continues until the end signal is input. This command is used to protect the cylinder by forcibly turning OFF when the cylinder operation continues for a certain time.

• SYLINDER RELATIVE RETURN This command can be used only when using a special driver for positioning. It will rise at cylinder return to the position of Z axis rated return amount and move to the next point.

4-5. About reading and writing setting of each setting screen

"Rate, SOC.T, PRE.T, REV.T, REA.T, block, Block control, screw No., cylinder name, X rate, Y rate, Timer, Program, Unit, tightening data output, option" in the Setting menu, the setting reading of each setting screen and the setting writing are shown below. For "Cylinder name, monitoring timer, unit, tightening data output, option" there is no setting number so selection reading and selection writing of setting can not be done.

4-5-1. Each setting read

You read the settings from a file or a controller.

Read the socket fitting se	tting	
ALL(SOC.T 1 to SOC.T 50) Select	FILE (F1)	
SOC.T3 SOC.T4 SOC.T5 SOC.T6 SOC.T7	CONTROLLER (F2)	
SOC.T8 SOC.T9 SOC.T10 SOC.T11 SOC.T12 SOC.T13 SOC.T14 SOC.T15 SOC.T16 SOC.T17 SOC.T18 SOC.T19		
SOC.T20 SOC.T21 SOC.T22 SOC.T23	RETURN (F12)	
SOC.T24		
Fig.	(4-39):Setting read screr	I

[Item] • ALL

This sets all objects to be read. "Item name ()" varies depending on the setting to be read.

 Select It selects the number of settings to load. By specifying "Select", you can select the list BOX of each setting. In this selective reading, it clicks on an arbitrary number and it becomes selected and the color changes. Multiple numbers can also be selected. [Button] • FILE(F1)

It reads each setting from the file.

When "All" is selected, setting of all numbers is read, and when "Selection" is selected, only the setting of the number being selected is read from the file of the extension of each setting.

• CONTROLLER(F2)

This loads each setting from the GKL controller.

When it reads the setting from the GKL controller, it is necessary that the GKL controller and the PC are connected with the USB cable.

A communication error occurs when the controller and PC are not connected.



Fig.(4-40):Communication error

• RETURN(F12)

It returns to each setting screen.

 File
 In the file processing, HDD (hard disk drive) or, over the file on the other accessible media, we read each setting information. Configuration files are saved with the file extension of each setting.

Rate : GKLT, SOC.T : GKLR, PRE.T : GKLK, REV.T : GKLG, REA.T : GKLH, Screw No. : GKLJ, Block control : GKLB, Cylinder name : GKLCN, X rate : GKLXT, Y rate : GKLYTP, Timer setting : GKLST, Unit : GKLU, Tightening data output : GKLOT, Option : GKLOP

In the selection of reading files, please select the file extension of each setting.

- Read the file	ocket fitting setti	ng l		×
🔾 🗸 🖉 🖉 🖉 🖉) GIKEN GKL Setting Use	rFile 🗸 4		Q
整理 ▼ 新しいフォノ	レダー		:==: :	• 🔳 🔞
📄 ドキュメント	^ 名前 ^	更新日時	種類	サイズ
 ビクチャ ドデオ 	TEST SETING.GKLR	2018/12/04 11:21	GKLR ファイル	1 KB
↓ ミュージック				
 ホームグルーブ コンピューター OS (C:) TOSHIBA EXT (E: ホットワーク 	E			
77	イル名(<u>N</u>): TEST SETING.GKLR	•	GKLR FILE(*.GKLI	R) ・ キャンセル

Fig.(4-41): Select reading file

It uses the file selection dialog, select the settings file to be loaded. When the reading of each configuration file is complete, the following message is displayed.



Fig.(4-42): Read complete message

②Controller

It will read each setting from GKL controller.

If you read the configuration file from the GKL controller, the controller and computer must be connected by a USB cable. Communication error occurs when not connected.

GKL Setting	MUNICAT								
🔞 The	The communication error occurred.								
	ОК								
Fig.(4-4	13):Communication	n error							
Read the socket fitting set	ting								
ALL(SOC.T 1 to SOC.T 50) Select Soc T1	FILE (F1)								
SOC 12 SOC 13 SOC 14 SOC 15 SOC 15 SOC 16 SOC 17 SOC 18	CONTROLLER (F2)								
SOC TI9 SOC TI10 SOC TI12 SOC TI2 SOC TI2 SOC TI3 SOC TI4 SOC TI5	COMMUNICATING								
SOC 116 SOC 117 SOC 117 SOC 119 SOC 120 SOC 121 SOC 121 SOC 122 SOC 123 SOC 124	RETURN (F12)								

Fig.(4-44): Progress status of controller reading

When the reading from the controller is finished, the following message appears.



Fig.(4-45): Controller read complete message

③Reading selection of each setting

If you want to read the specification of the set only, choose a selection option. Please select the specified setting because list BOX will be selected. When you press the file button, you read only the specified settings from the file. When you press the controller buttons, you read only the specified settings from GKL controller.

*Since there is no set number for cylinder name and timer setting and unit and tightening data output and option, you cannot read only the specified settings.



Fig.(4-46): Select setting read

4-5-2. Each setting write

It will write the settings file, or, to the controller.

Write the socket fitti	ng setting	
All (SOC.T 1 to SOC.T 50) Select SOC.T1	FILE (F1)	
SOC.T2 SOC.T3 SOC.T4 SOC.T5 SOC.T6 SOC.T7 E	CONTROLLER (F2)	
SOC.T9 SOC.T10 SOC.T11 SOC.T12 SOC.T12 SOC.T13 SOC.T14 SOC.T15		
SOC.T16 SOC.T17 SOC.T17 SOC.T19 SOC.T20 SOC.T21	RETURN (F12)	
SOC.122 SOC.723 SOC.724 •		

Fig.(4-47): Setting write screen

[Item]

 ALL It sets all objects to be written.

"Item name ()" depends on the setting to be written.

• Select

It selects the number of the setting to be written.

If you select selection, you can select the list BOX of each setting.

In this selective writing, clicking an arbitrary number changes it as selected and the color changes.

Multiple numbers can also be selected.

[Button]

• FILE(F1)

It writes the settings from the file.

• CONTROLLER(F2)

It will write each setting from GKL controller.

If you write the configuration file from the GKL controller, the controller and computer must be connected by a USB cable.

Communication error occurs when not connected.



Fig.(4-48):Communication error

• RETURN(F12)

It returns to each setting screen.

1File

In "File", it writes each setting information to HDD (hard disk drive) or other file on accessible media.

The setting file that saves each setting information is automatically selected in the write dialog.

🖳 Write the file	ocket fitting setting				X
🔾 🗸 🕹 🗸 OS (C:)	▶ GIKEN ▶ GKL Setting ▶ UserFile	•	↓ UserFileの検	索	٩
整理 ▼ 新しいフォルタ	Ž—				0
■ ドキュメント ^	名前	更新日時	種類	サイズ	
■ ピクチャ ビデオ	TEST SETING.GKLR	2018/12/04 11:21	GKLR ファイル	1 KB	
 ♪ ミュージック ■ ● <l< th=""><th></th><th></th><th></th><th></th><th></th></l<>					
1 コンピューター					
실 OS (C:)					
TOSHIBA EXT					
ファイル名(<u>N</u>): C:¥GI	KEN¥GKL Setting¥UserFile¥TEST SETING.G	KLR			•
ファイルの種類(<u>T</u>): GKLR	FILE(*.GKLR)				•
● フォルダーの非表示			保存(S)	キャンセル	·

Fig.(4-49): Writing file named

You will use the file selection dialog, and name to write the configuration file. When the writing of the configuration file is complete,

the following message is displayed.



Fig.(4-50):Writing complete message

②Controller

It will write each setting from GKL controller.

If you write the configuration file from the GKL controller, the controller

and computer must be connected by a USB cable.

Communication error occurs when not connected.

The password to write to the controller is required. (Initial Password: 2014)

If the password is unknown, the configuration file cannot be written to the controller.



(
PASSWORD	
Do you want to writ	e to the controller?
Password	
ОК	Cancel

Fig.(4-51):Communication error

Fig.(4-52):Password check

Please turn OFF the operation preparation. It cannot be written the configuration file when you don't turn OFF the operation ready.



Fig.(4-53):Operation ready OFF confirmation

When writing to the controller is finished, the following message appears.



Fig.(4-54):Writing complete message to controller

③Writing selection of each setting

If you want to write the specification of the set only, choose a selection option. Please select the specified setting because list BOX will be selected. When you press the file button, you write only the specified settings to the file. When you press the controller buttons, you write only the specified settings to GKL controller.

Since there is no set number for the cylinder name and timer setting and the unit and the data output and the option, you cannot write only the specified settings.

GKL Ver.0.0.12	the second se	
Write the socket fitting set	tting	
• All (SOC.T 1 to SOC.T 50)		1
Select SOC.T1 SOC.T2 SOC.T3	FILE (F1)	
SOC.T4 SOC.T5 SOC.T6 SOC.T7	CONTROLLER (F2)	
SOC.T8 SOC.T9 SOC.T10 SOC.T11		
SOC.112 SOC.113 SOC.114 SOC.115		
SOC.T17 SOC.T17 SOC.T18 SOC.T19 SOC.T20		
SOC.T21 SOC.T22 SOC.T22 SOC.T23 SOC.T24	RETURN (F12)	

Fig.(4-55): Select setting write

5.Auto measurement When you select "Auto measurement" from "main menu" the following screen will be displayed.

🤐 GKL Ver.0.0.12	
AUTO MEASUREMENT	
Online (F1)	Cycle monitor (F5)
Tightening wave (F2)	Display of current step (F6)
Tightening record (F3)	
Alarm history (F4)	Return to the main menu (F12)

Fig.(5-1):Auto measurement screen

[Button] • Online(F1)	In this item it is possible to obtain and check the result data each time the tightening ends. It can also be saved by selection.
 Tightening wave(F2) 	In this item, you can check and save the tightening waveform of each axis.
• Tightening record(F3)	In this item you can see the record of the tightening result saved in the controller.
• Alarm history(F4)	In this item you can see the history of alarms saved in the controller.
• Cycle monitor(F5)	In this item you can monitor the signals exchanged between the PLC and the controller.
 Display of current step(F6) 	In this item, you can check the operation which is executed by the equipment from the program table.
\cdot Return to the main menu(F12)	We can return to th main menu.

5-1.Online

When you select "Online" from "Automatic measurement screen", the following screen will appear.

In this item, the tightening result is received from the controller and displayed at the end of block.

A.Se	Scram						Soket fitting		Pretighte	Pretightening		Reverse rotation	Final tightening				
No.	No.	Date	Time	PNo.	UNo.	Determination	Torque	Fast feed torque	Torque	Angle	Time (1 Omseo)	Torque	Torque	Angle	Time (1 Omseo)	Sampling start torque	WorkNo.
1	1	18/11/13	16:54:25	1	1	0	2.3	2.2	5.0	3.6	590	1.3	7.4	7.6	66	350)
2	2	18/11/13	16:54:25	1	1	ODetermin	ation 2.3	2.1	4.9	4.1	524	1.0	7.4	7.0	65	3.5 0)
3	3	18/11/13	16:54:25	1	1	0	2.6	2.2	4.9	10.5	515	1.4	7.4	15.1	68	35)
4	4	18/11/13	16:54:25	1	1	0	2.3	2.2	4.9	7.4	527	1.2	7.4	7.6	65	35)
5	5	18/11/13	16:54:25	1	1	0	2.5	2.2	5.0	8.7	517	1.7	7.4	8.6	65	35)
6	6	18/11/13	16:54:25	1	1	0	2.3	1.9	4.9	4.5	513	1.0	7.4	7.7	66	3.5	
7	7	18/11/13	16:54:25	1	1	0	27	2.2	5.0	4.7	525	1.3	7.4	7.6	65	3.5	
8	8	18/11/13	16:54:25	1	1	0	2.3	2.1	5.0	6.7	515	1.0	7.4	8.5	65	35	
9	9	18/11/13	16:54:25	1	1	0	2.3	2.1	5.0	9.3	516	1.0	7.4	11.8	66	35	
10	10	18/11/13	16:54:25	1	1	0	2.2	1.9	5.0	9.0	527	1.1	7.4	10.2	67	350	
11	11	18/11/13	16:54:25	1	1	0	2.3	2.1	4.9	1.4	600	1.2	7.4	4.5	64	350	
12	12	18/11/13	16:54:25	1	1	0	2.4	2.4	5.0	7.2	588	1.7	7.4	9.1	66	35	
13	13	18/11/13	16:54:25	1	1	0	21	2.1	5.0	10.0	602	1.2	7.5	20.0	73	3.5	
14	14	18/11/13	16:54:25	1	1	0	1.8	1.6	5.0	11.0	601	0.8	7.5	20.9	72	35	
15	15	18/11/13	16:54:25	1	1	0	2.2	2.0	5.0	14.5	666	1.0	7.4	25.2	79	35	
16	16	18/11/13	16:54:25	1	1	0	21	1.8	5.0	11.4	665	0.7	7.4	19.1	73	35	
17	17	18/11/13	16:54:25	1	1	0	2.3	2.0	5.0	1.4	663	11	7.5	20.3	74	35 4	
18	18	18/11/13	16:54:25	1	1	0	1.8	1.5	4.9	10.1	602	1.4	7.5	19.9	<i>n</i>	35 4	
14	19	18/11/13	16:54:45	1	1	0	00	0.0	0.0	0.0	0	0.0	7.5	1.2	21	35 9	1

Fig.(5-2):Online screen

GKL Ver.0.0.12							
Do you want to communicate?							
💟 Online data is saved at a file.							
YES	NO						

Fig.(5-3):Communication check

If you want to automatically save the tightening result,

please check "Save online to file".

The result saved in this "online" is the result of each operation for 1 tightening. If duplicate actions are found within the tightening block, the result of the last executed action is saved.

% As an example, if there is a tightening block of "SOC.T 1 → PRE.T 1 → PRE.T 2 → REV.T 1 → REA.T 2 → REA.T 3", the saved result is "SOC.T 1 → PRE.T 2 → REV.T 1 → REA.T 3 ".

%The tightening result of the online item is saved

in "C: ¥ GIKEN ¥ GKL setting ¥ automatic measurement ¥ Online".

[Item] Axis No. It displays the axis No. that executed the tightening. ScrewNo. The tightened screw No. is displayed. • Date This will display the date at the end of the tightening. This displays the time at the end of the tightening. Time • P No. Here, the program No. used for tightening is displayed. The unit number to which the tightened shaft • U No. belongs is displayed. Ditermination If this item is OK, \bigcirc is displayed, and if it is NG, NG code is displayed. · SOC.T The torque value at the end of "SOC.T" is displayed. Torque The unit is Nm. • PRE.T Fast feed torque When NR reaches the fastening angle, the maximum torque value within the fast feed section is displayed. The unit is Nm. If NR does not turn to the fastening angle, 0 Nm will be displayed. The torque value at the end of the • Torque PRE.T operation is displayed. The unit is Nm. Here, the angle from the sampling start torgue is displayed. Angle • Time Here, the time since the PRE.T start is displayed. The unit is 10 msec. • REV.T The torque value at the end of Torque the REV.T operation is displayed. • REA.T The torque value at the end of • Torque the REA.T operation is displayed. The unit is Nm. Angle The angle from the sampling start torque is displayed in the unit of "°". The time from the start of REA.T is displayed • Time in units of 10 msec. Sampling start torgue The angular measurement starting torque of Rea.T is displayed in the unit "Nm". • Work No. The classification number to be tightened is displayed when that information is received. [Button]

Return to the Auto measurement menu

You can return to the automatic measurement menu.

5-2. Tightening wave

When you select "Tightening waveform" from "Automatic measurement screen" the following figure is displayed.

In this screen you can display or save the tightening waveform.

GKL Ver.0.0.12
Do you want to communicate?
📝 Wave data is saved at a file.
Waveform type:
YES NO

Fig.(5-4):Communication check

The behavior of this item changes with the answer to the first "do you want to communicate?"

In case of "Yes"

Automatically displays the tightening waveform ("time – torque and speed", "angle – torque and speed", elongation waveform) each time the tightening block ends. Switching the display axes is done by selecting the axis No. at the top of the screen. When "Save waveform data" is selected, the waveform information is automatically saved in a file.

In case of "No"

If you select "No", you can manually read the tightening waveform

("time – torque and speed", "angle – torque and speed", elongation waveform) from the controller.

The loaded waveform data can be saved to a file manually.

In addition, you can read the saved waveform data file and display the waveform.

%The file of tightening waveform information is saved

in "C: ¥ GIKEN ¥ GKL setting ¥ automatic measurement ¥ waveform".

In case of checking automatic saving of tightening waveform

It is necessary to set the OK range for each program displayed as a waveform. %The part specified in the OK range is surrounded by a red frame in the graph. When setting the OK range is completed, it operates

in the automatic display mode and communicates with the controller.

PROGRAM No.	Upper torque limit (N.m)	Lower torque limit (N.m)	Upper angle limit (*)	Lower angle limit (*)	Work name
1	0.0	0.0	0	0	
2	0.0	0.0	0	0	
3	0.0	0.0	0	0	
4	0.0	0.0	0	0	
5	0.0	0.0	0	0	
6	0.0	0.0	0	0	
7	0.0	0.0	0	0	
8	0.0	0.0	0	0	
9	0.0	0.0	0	0	
10	0.0	0.0	0	0	
11	0.0	0.0	0	0	
12	0.0	0.0	0	0	
13	0.0	0.0	0	0	
14	0.0	0.0	0	0	
15	0.0	0.0	0	0	
16	0.0	0.0	0	0	
17					
18					

[Item]

- PROGRAM No.
- Upper torque limit
- Lower torque limit
- \cdot Upper angle limit
- Lower angle limi
- Work name
- [Button]
- OK
- Cancel

- Fig.(5-5): Set OK range
- This indicates the program number for setting "OK range".
- This sets the upper torque limit of the OK range.
 - This sets the lower torque limit of the OK range.
 - This sets the upper angle limit of the OK range.
 - This sets the lower angle limit of the OK range.
 - You can fill in the work name and notes.
 - It saves the settings and moves to the auto collection screen.
 - This will move to the automatic collection screen without setting it.



Fig.(5-6): Automatic waveform acquisition mode

[Item]	
• (Wave type%)	It is fixed to the waveform of preselected type. XThis item name is not listed on the screen.
•AXIS No.	This selects the axis number for displaying the waveform. When "All axes" is selected, graphs of all axes overlap and they are displayed. Also, if you select each axis number, a graph of each axis will be displayed.
• Waveform data making	It displays the date and time when the tightening waveform information was acquired.
• PROGRAM No.	The program No. that acquired the tightening waveform information is displayed.
• SCREW No.	This shows the screw number from which the tightening waveform information was acquired.
• Work name	This item displays the work name and attention etc. indicated at setting the "OK range".
 (Detailed data display%) 	It is located on the right side of the screen and displays the following values for each screw number.
• COLOR	The waveform of the corresponding screw number is displayed in this color.
• TRQ	This will display the result torque.
• SNAG	This shows the resulting snug torque (sampling start torque).
• ANGLE	This displays the result angle.
 Total ditermnation 	This judgment result of 1 tightening will be displayed.
• Graph	It displays a graph corresponding to each axis (color of detailed data). The speed waveform is indicated by the dotted line, and the torque waveform is indicated by the solid line.

[Button] • Checkbox

- Torque When this is checked, the torque waveform is displayed in the graph area.
- Speed When this is checked, the speed waveform is displayed in the graph area.
- Zoom clear This button returns the graph enlarged with the mouse to the original graph.
- Print the screen This button prints the currently displayed screen.
- Return to the Auto measurement menu You can return to the automatic measurement menu.

Print the screen : This button prints the currently displayed screen.

In case of tightening waveform manual save mode (When "No" is selected)



Fig.(5-6): Tightening waveform screen

%The red line shows the torque graph and the blue line shows the speed graph. Dragging the graph will enlarge the range.

・(Wave type※)	In to to (ti יאד	this item, you select the type of tightening waveform be displayed on the graph from three types me - torque and speed, angle - torque and speed, xtension waveform) this item name is not listed on the screen
[Item]	Thi	a colocta the axis number for displaying the wayoform
AXIS NO.		s selects the axis number for displaying the waveform.
 Waveform data ma It displays the date 	king and t	ime when the tightening waveform information was acquired
• PROGRAM No.	The th	e program No. that acquired e tightening waveform information is displayed.
• SCREW No.	Thi wl	s shows the screw number from nich the tightening waveform information was acquired.
・TIGHTENING RESU ・Total ditermnat	LT ion	This judgment result of 1 tightening will be displayed.
• TORQUE		If the final operation is REA.T or PRE.T, the final torque value is displayed in the unit Nm. For other operations, 0 is displayed.
• ANGLE		When the final motion is REA.T or PRE.T, the angle from the sampling start torque is displayed in °. For other operations, 0 is displayed.
 Sampling start When the final the angle mea For other opera 	torqu opera isurer ations	e Ition is REA.T or PRE.T, nent start torque value is displayed. , 0 is displayed.
• TIME		When the final motion is REA.T or PRE.T, the angle from the sampling start torque is displayed. For other operations, 0 is displayed.

• (Detailed data display※	 It is located on the right side of the screen and displays the following values for each item. By selecting the data in the table with the mouse and pressing the graph creation button, you can create a waveform in an arbitrary data range.
• TRQ	The torque value acquired for each sampling from the start of tightening is displayed.
• TIME	This shows the time when sampling was started from the start of tightening to the end.
• ANGLE	The angle value acquired for each sampling from the start of tightening is displayed.
• SPEED	The speed value acquired for each sampling from the start of tightening is displayed. (This unit is "rpm".)
• Graph	It displays a graph corresponding to the axis. (This axis number is selected in the "axis number" item.)
[Button] • Checkbox • Torque	When this is checked, the torque waveform is displayed in the graph area.
• Speed	When this is checked, the speed waveform is displayed in the graph area.
• Zoom clear	This button returns the graph enlarged with the mouse to the original graph.
 Graph creation 	This creates a waveform from the information being selected from the detailed data list.
• READ	Specified axis No. Read the waveform data from the controller. It also reads the waveform data from the saved file.
• Save data	This saves the waveform data read from GKL in a file.
 Print the screen 	This button prints the currently displayed screen.
 Return to the Auto mea You can return to the ar 	surement menu utomatic measurement menu.
Print the screen : Thi	s button prints the currently displayed screen.

5-3.Tightening record

When you select "tightening history" from "automatic measurement menu", it will change to the screen shown below.

In this case, you can acquire and display the tightening record information from the controller.

In this screen you can also save the displayed tightening history in a file.

h	tening	g rec	or	d	AXI	IS N	lo. /	۱LL	. A	XIS -	READ	CANC	EL
	SOREW No.	Date	Time	P No.	UNo.	TQ	Angle	Time	Snag	Determination	NG Processing	DATA No.	4
1	1	18/10/29	10:35	1	1	7.4	176.0	64	3.5	0		844200	=
2	10	18/10/29	10:35	1	1	7.4	14.1	65	3.5	0		844200	
3	11	18/10/29	10:35	1	1	7.4	5.0	64	3.5	0		844200	
4	12	18/10/29	10:35	1	1	7.4	179.9	68	3.5	0		844200	
5	13	18/10/29	10:35	1	1	7.5	17.5	69	3.5	0		844200	
6	14	18/10/29	10:35	1	1	7.5	17.9	71	3.5	0		844200	
7	15	18/10/29	10:35	1	1	7.5	21.3	69	3.5	0		844200	
8	16	18/10/29	10:35	1	1	7.4	16.1	68	3.5	0		844200	
9	17	18/10/29	10:35	1	1	7.5	20.4	67	3.5	0		844200	
10	18	18/10/29	10:35	1	1	7.5	189.4	74	3.5	0		844200	
11	2	18/10/29	10:35	1	1	7.4	19.4	65	3.5	0		844200	
12	3	18/10/29	10:35	1	1	7.4	16.6	65	3.5	0		844200	
13	4	18/10/29	10:35	1	1	7.4	12.6	63	3.5	0		844200	
14	5	18/10/29	10:35	1	1	7.4	5.8	64	3.5	0		844200	
15	6	18/10/29	10:35	1	1	7.4	5.7	64	3.5	0		844200	
16	7	18/10/29	10:35	1	1	7.4	8.3	65	3.5	0		844200	
17	8	18/10/29	10:35	1	1	7.4	11.3	65	3.5	0		844200	
18	9	18/10/29	10:35	1	1	7.5	68.5	68	3.5	0		844200	
19	1	18/10/29	10:43	1	1	7.4	1745	64	3.5	0		844200	
20	10	18/10/29	10:43	1	1	7.4	15.2	66	3.5	0		844200	
21	11	18/10/29	10:43	1	1	7.4	6.7	65	3.5	0		844200	
22	12	18/10/29	10:43	1	1	7.4	178.0	64	3.5	0		844200	
23	13	18/10/29	10:43	1	1	7.5	20.9	71	3.5	0		844200	
24	14	18/10/29	10:43	1	1	7.5	16.8	71	3.5	0		844200	
25	15	18/10/29	10:43	1	1	7.4	185.8	75	3.5	0		844200	
26	16	18/10/29	10:43	1	1	7.4	18.8	69	3.5	0		844200	
27	17	18/10/29	10:43	1	1	7.5	178.0	70	3.5	0		844200	
28	18	18/10/29	10:43	1	1	7.4	196.2	81	3.5	0		844200	
29	2	18/10/29	10:43	1	1	7.4	175.5	64	3.5	0		844200	
30	3	18/10/29	10:43	1	1	7.4	13.1	65	3.5	0		844200	
31	4	18/10/29	10:43	1	1	7.4	20.1	68	3.5	0		844200	
32	5	18/10/29	10:43	1	1	7.4	6.8	63	3.5	0		844200	
33	6	18/10/29	10:43	1	1	7.5	5.5	64	3.5	0		844200	Record cloar
34	7	18/10/29	10:43	1	1	7.5	5.5	64	3.5	0		844200	necoru clear
35	8	18/10/29	10:43	1	1	7.5	7.3	64	3.5	0		844200	
36	9	18/10/29	10:43	1	1	7.4	88.6	69	3.5	0		844200	
37	1	18/10/29	10:48	1	1	7.4	10.6	64	3.5	0		844200	
38	10	18/10/29	10:48	1	1	2.7	0.1	1500	0.0	0233 : Pretigh	NO	844200	Deres 1 13
39	11	18/10/29	10:48	1	1	7.4	4.9	64	3.5	0		844200	Record write
40	12	18/10/29	10:48	1	1	7.4	182.4	67	3.5	0		844200	
41	13	18/10/29	10:48	1	1	7.5	23.1	70	3.5	0		844200	
42	14	18/10/29	10:48	1	1	7.5	19.0	73	3.5	0		844200	
43	15	18/10/29	10:48	1	1	7.4	22.6	72	3.5	0		844200	Return to the au
44	16	18/10/29	1.0.48	1	1	74	21.0	70	2.5	0		944000	

Fig.(5-8):Tightening record

[Item]

SCREW No.	It displays the screw number.
-----------	-------------------------------

- Date It displays the date when the tightening of the target data was completed.
- Time It displays the hour and minute when the tightening of the target data is completed.
- P.No. It displays the program No. used for the target data.
- U.No. It displays the unit number of the target data.
- TQ It displays the torque result of the target data. (Unit: Nm)
- Angle It displays the angular result of the final action of the target data. (Unit: °)
- Time It displays the time result of the target data. For this time result the thing of the final operation is used. (Unit: msec)
 - %If the final operation is PRE.T, REA.T, it is the same as the value of online temporary tightening and final tightening.
- Snag It displays angle measurement start torque value.

- Determination When the judgment is OK, \bigcirc is displayed. And when it is NG, the NG code is displayed.
- NG Processing It shows whether there was NG processing by QL input. If there is QL processing, it displays "presence ". Others it displays "absence "
- When using the positioning mode, it is not saved in the tightening record regardless of whether QL processing is performed or not.
- DATA No. It displays the engine number of the workpiece that was tightened.
- *The order of the data is obtained from the controller and rearranged in the order of date, time and screw number.

[Button]

- AXIS No.. You select axis numbers to read from all axes and each axis.
- READ It will read the tightening record of the selected axis number.
- CANCEL You can cancel reading by pressing during loading.
- Record clear It clears the tightening history information stored in the controller.
- Record write It saves the displayed tightening record in a CSV format file.
- Return to the Auto measurement menu You can return to the automatic measurement menu.

5-4.Alarm history When you select "Alarm history" from "Automatic measurement", the following screen will appear.

You can acquire alarm history information from the controller and save the displayed alarm history to a file.

	AXIS No.	DATE	TIME	ALARM CODE	
1	1	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
2	2	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
3	3	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
4	4	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
5	6	18/10/31	10:31	C4 Communication error of outside equipment (M-net	
6	5	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
/	1	18/10/31	10:31	C4: Communication error of outside equipment (M-net	
8	8	18/10/31	10:31	C4: Communication error of outside equipment (M-net	
9	9	19/10/31	10:31	C4 : Communication error of outside equipment (M-net	
10	10	19/10/91	10.01	C4 : Communication error of outside equipment (Minet	
10	12	19/10/91	10.01	C4 : Communication error of outside equipment (M-net	
12	18	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
14	14	18/10/31	10:31	G4 : Communication error of outside equipment (M-net	
15	15	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
16	16	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
17	17	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
18	18	18/10/31	10:31	C4 : Communication error of outside equipment (M-net	
					History clear
					History write

Fig.(5-9):Alarm history

[Item]

• Axis No.	The axis number where the alarm occurred is displayed.
• Date	It displays the year, month, and day when the alarm occurred.
• Time	It displays the time when the alarm occurred.
• Alarm code	The alarm code and contents of the occurred alarm are displayed.
[Button] • History clear	It clears the alarm history saved in the controller.
History write	It saves the displayed alarm history in a CSV format file.

 Return to the auto measurement menu You can return to the automatic measurement menu.

5-5.Cycle monitor

You will see this screen when you select "Cycle monitor" from "Automatic measurement". This function shows the operation status of the input / output signal the controller is exchanging with PLC etc. Also, you can save the displayed data.

I/O		Mo	nitorobject Unit No.	1 •			
Operation ready	<u>^</u>		Monitor		Comment	4	One line
AUTO / MANU		1	Operation ready				risercio
Start		2	Program bit 1			-	One line
Inching start		3	Program bit 1			1	delete
Determination reset		4	Start				
Alarm reset		5					Clear
QL input		6					
QL mode		7					
Program bit 1		8					
Program bit 2		9					
Program bit 3		10					
Program bit 4		11					
Program bit 5		12					
Program bit 6		13					
Input enabled		14					
GSK reset		15					
XJ0G+		16					
XJOG-		17					Cance
YJDG+		18					
YJOG-		19					
INX1		20					ок
INX2		21					

Cycle monitor Data read Data write Setting read Setting write Object setting Collect object Print Unit No.1 Texa passage time(sec) operation ready 165420 operation 5 165520 operation 1655200 operation 1655200 operation	E	
Unit No.1 Time 16528 5 1655 1657 1657 1657 1657 1657 1657 16		E
Operation ready	4:36	
Program bit 1		
Program bit 1		_
Start		

Fig.(5-10):Cycle monitor

- [Button]Data readIt reads previously collected signal and its waveform from the file.
- Data write It saves the information of the displayed signal in a file.
- Setting read It reads the previously selected signal from the file.
- Setting write It selects signals to collect data and it saves the list to a file.
- Object select On the left screen of Figure 5-9, you select the name of the signal that you want to get data.
- Print This prints the current screen.
- Exit It will exit this screen and return to the automatic measurement menu.

5-6.Display of current step

You select "Display current step" from "Automatic measurement menu".

If you select it, you will be asked whether you want to read the program information in the controller.

If you select "Yes", the program information that the controller has is displayed as shown below.

This screen shows the executing step of the running program.

			_		Unit	1	2	3	4		5	6	7		
Pro	gra	m No.	1	Pre	ogram No.	1									
Uni	: 1		Unit: 1				Ur	nit: 1					Unit 1		
			NR: Axis	1			NR:	Axis 2					NR: Axis 3		
g	PRINT				RO SYNC				ZERO	SYNC S E				ZERO	SYN S E
		RATE : 1	SOC.T	1		RATE : 2	S	DO.T1			RATE : 3		SOC.T1		
		BLOCK : 1	SOC.T	2		BLOCK : 1	S	DO.T2			BLOCK : 1		SOC.T2		
		SCREW : 1	SOC.T	3		SCREW: 2	S	DC.T3			SCREW: 3		SOC.T3		
			005 T	1				05.71					005.71		
	_		PRE.I	1			P	RE.TT					PRETT		
			REV.I	1			R	EV.II					REV.II		
	-		END				n.						END		
Ľ.															Ľ,

Fig.(5-11):Display of current step

[Table]

1 1	The diameter and a set in the second
• Unii	IL DISDIAVS EACH UNIT DUMDER
Office	re displays caell and hamben

• Program No. The program number entered for each unit number is displayed.

[Item]

- Program No. The program number currently recognized by the controller is displayed.
- Step display The currently executing step is displayed in yellow as shown in Fig. 5-11-2.

[Button]

• Return

You can return to the automatic measurement menu.

6.Quality control



When you select "Quality Control" from "Main Menu", it will be the following screen.

Fig.(6-1): Quality control menu

[Button]

- Gear check result(F1) We are planning to display the results of the gear check, but we can not use it now.
- Self diagnosis(F2) This shows the version of PC, IF unit, controller, display. It checks whether the controller versions are all the same.
- Return to the main menu (F12) You can return to the main menu.

6-1.Gear check result

When you select "Gear check result" on "Quality control menu" screen, this screen will be displayed.

	MEASUREMENT	SETTING		MEASUREMENT	SETTING		MEASUREMENT	
AXIS No.	0.0	0.0	AXIS No.11	0.0	0.0	AXIS No.21	VIICOL	VIILOE
AXIS No.:	2 0.0	0.0	AXIS No.12	0.0	0.0	AXIS No.22		
AXIS No.3	3 0.0	0.0	AXIS No.13	0.0	0.0	AXIS No.23		
AXIS No.	0.0	0.0	AXIS No.14	0.0	0.0	AXIS No.24		
AXIS No.	5 0.0	0.0	AXIS No.15	0.0	0.0	AXIS No.25		
AXIS No.	6 0.0	0.0	AXIS No.16	0.0	0.0	AXIS No.26		
AXIS No.	2 0.0	0.0	AXIS No.17	0.0	0.0	AXIS No.27		
AXIS No.3	3 0.0	0.0	AXIS No.18	0.0	0.0	AXIS No.28		
AXIS No.	0.0	0.0	AXIS No.19			AXIS No.29		
AXIS No.1	0.0	0.0	AXIS No.20			AXIS No.30		

Fig.(6-2): Gear check result

[Button]

• Return to the Quality control menu You can return to the "Quality control menu".

%Please note that this screen is not currently available.

6-2.Self diagnosis

When you select "Self-diagnosis" from "Quality control menu",

it becomes the following screen.

It display version of the personal computer and the IF unit and the controller and the display.

And the controller version is checked that everything is same.

Setting personal computer IF Unit				
Driver controller				
Axis No.	Version	Axis No.	Version	
Axis No.1		Axis No.16		
Axis No.2		Axis No.17		
Axis No.3		Axis No.18		
Axis No.4		Axis No.19		
Axis No.3		Axis No.20		
Axis No.0		Axis No.21		
Axis No.7		Axis No.22		
Avia Na D		Axis No.23		
Axis No.5		Axis No.24 Axis No.25		
Axis No.10		Avia No 26		
Avic No.11		Avis No.20		
Avis No.12		Axis No.27 Axis No.28		
Axis No.14		Axis No.29		
Avis No.15		Avis No.30		
100100.00		7001000		
Display				
				Paturna to the quality
				control menu
<u>[</u>	Fig.(6-3): Self dia	agnosis	
		-	_	
	مام ۲۴		ion of the e	ماجم مصرم مراجله

• Interface It shows the version of the Interface.

• Driver controller It shows the version of the driver controller.

%If it does not match the driver version of the GKL.ini file, "ROM Ver error" is displayed.

• Display

It shows the version of the display.

[Button]

• Return to the Quality control menu You can return to the "Quality control menu".

7.Print/Excel output

If you select "Print / Excel output" from "Main Menu", the following screen will be displayed.

🤗 GKL Ver.0.0.12			_	
Print				
Set online print for controller data	Ρ	C setting print		
At every tightening end	•	Print preview REV.	of SOC.T_PRE.T F_REA.T	
Socket fitting result print		Print preview of RATE	Print preview of PROGRAM	
Reverse rotation result print		Print preview of BLOCK	Print preview of SCREW NUMBER	
		Print preview Timer I	of Cylinder name nterference	
Setting		Print preview of X rate. Y rate.	Print preview of XY point	
		All set	tings print	
		All setting	s XLS output	
			Return to the ma	in menu
				in menu

Fig.(7-1):Print display

In "Print / Excel output", you can perform the print setting to use the printer. Also you can print and convert to Excel file of each setting.

In "ONLine printing", it is necessary to connect the printer to the interface, and in "PC setting printing", the setting PC and the interface must be connected.

[Item]

• Perform online print setting of controller data

We will select the timing to send the tightening result to the printer connected to the interface and the tightening operation to send the result.

• PC setting print

It prints data of each setting and converts the print data to Excel file.

[Button]

• Return to the main menu

You can return to the main menu.

7-1. Perform online print setting of controller data

Here, we will set the printing of the tightening result. In order to use this function, the printer must be connected to the interface.

- Print mode select
 It sets the timing of the automatic printing in the print mode selection.
 Please select from the following items.
- No automatic print Automatic printing is not performed.
- Every tightening end time Each tightening result is printed each time tightening ends.
- NG occurrence The tightening result is printed only when NG occurs.

 First N set + Data when NG occurrence
 Each time the equipment is started up and set, every time the tightening ends, only when printing of the set number of copies ends, it prints only when NG occurs.

XIf you select anything other than "No automatic print", select the printing operation. For this selection, you select from the following items.

- Socket fitting result print
- Pretightening result print
- Reverse rotation result print
- Real tightening result print
- Zero magnification result print

 When "First N set + Data when NG occurrence " is selected, set the first number.
 When "No automatic print" is selected, result print selection and initial number setting are not displayed.

After selecting the printing operation, press the "Setting" button, the setting of the selected printing is written to the controller.

7-2.PC setting print

- Print preview of SOC.T PRE.T REV.T REA.T It displays the print preview screen of SOC.T, PRE.T, REV.T, and REA.T currently held on the setting software. Pressing the "Print" button on this preview screen prints each motion setting.
- Print preview of RATE It displays the print preview screen of "Rate setting" currently held on the setting software.
- Print preview of PROGRAM It displays the print preview screen of "Program setting" currently held on the setting software.
- Print preview of BLOCK It displays a print preview screen of setting block data in the deployment on the software.
- Print preview of SCREW NUMBER It displays a print preview of setting screw number data in the deployment on the software.
- Print preview of Cylinder name Timer Interference It displays a print preview of setting data Cylinder name and Timer and Interference in the deployment on the software.
- Print preview of X rate Y rate It displays a print preview of setting X rate and Y rate data in the deployment on the software
- Print preview of X Y point It displays a print preview of setting X Y point data in the deployment on the software.
- All settings print It prints the all configuration data that are deployed on software.
- All settings XLS output All configuration data that are deployed on software is output in XLS format.

8.I/O monitor

When you select "Monitor" from "I / O monitor menu", the following screen will appear. In this screen, the controller monitors signals exchanged with the PLC etc.

GKL Ver.0.0.12	the second se	
I/O MONITOR		
	Monitor (F1)	
	Dummy input (F2)	
	Dummy output (F3)	
	Return to the main menu (F12)	

Fig.(8-1): I/O monitor menu

[Button] • Monitor (F1)

- The monitor screen is displayed.
- Dummy input (F2) The dummy input screen is displayed.
- Dummy output (F3) The dummy output screen is displayed.
- Return to the main menu (F12)

You can return to the main menu.

8-1.Monitor

When you select "Monitor" from "I / O monitor menu", the following screen will appear. In this screen, the controller monitors signals exchanged with the PLC etc.

Jnit No.	Operation ready	AUTO / MANU	Start	Teching start							
1 •				incring start	Determination reset	Alarm reset	QL input	QL mode			
	Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Input enabled	GSK reset			
	XJ0G+	XJ0G-	YJOG+	YJOG-	INX 1	INX 2	INY 1	INY 2			
	cylinder1 returned	cylinder1 advanceed	X return signal	Y return signal	WAIT 1	WAIT 2	SPW	JOG start			
	Position 1 signal	Position2 signal	Position4 signal	Position8 signal	Position 16 signal	Position 32 signal	Position64 signal	Position 128 signal			
	IN					ZJOG rise	ZJOG descent	Tightening sampling start			
	OUTPUT MONITOR GKL => PLC										
	Operation ready completed	NR unit OK	Battery OK	Total OK	Total NG	NR running	QL COMP.	Program running			
	Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Output enabled	Z axis home return complete			
-	Tightening total OK	Tightening total NG	X axis home return complete	Yaxis home return complete	ZERO/GAIN OK	ZERO/GAIN NG	Cycle stop	OUT			
					Z axis position 1	Z axis position 2	Tightening block OK	Tightening block NG			
	Block 1 end	Block 2 end	Block 4 end	Block 8 end	Block 16 end	Block 32 end	Position locator running	Z axis moving			
	Position1 output	Position2 output	Position4 output	Position8 output	Position 16 output	Position32 output	Position64 output	Position 128 output			
	X extent output1	X extent output2	Y extent output1	Y extent output2	Interference fault	Position locator fault	cylinder1 advance	cylinder1 return			
i	Screw 1 OK	Screw 2 OK	Screw 3 OK	Screw 4 OK	Screw 5 OK	Screw 6 OK	Screw 7 OK	Screw 8 OK			
i	Screw 9 OK	Screw 10 OK	Screw 11 OK	Screw 12 OK	Screw 13 OK	Screw 14 OK	Screw 15 OK	Screw 16 OK			
i	Screw 17 OK	Screw 18 OK	Screw 19 OK	Screw 28 OK	Screw 21 OK	Screw 22 OK	Screw 23 OK	Screw 24 OK			
i	Screw 25 OK	Screw 26 OK	Screw 27 OK	Screw 28 OK	Screw 29 OK	Screw 30 OK	Screw 31 OK	Screw 32 OK			
i i	Screw 33 OK	Screw 34 OK	Screw 35 OK	Screw 36 OK	Screw 37 OK	Screw 38 OK	Screw 39 OK	Screw 40 OK			
	Screw 41 OK	Screw 42 OK	Screw 43 OK	Screw 44 OK	Screw 45 OK	Screw 46 OK	Screw 47 OK	Screw 48 OK			
i	Screw 49 OK	Screw 50 OK	Screw 51 OK	Screw 52 OK	Screw 53 OK	Screw 54 OK	Screw 55 OK	Screw 56 OK			
	0 F3.0K	0 50.0×	C								

Fig.(8-2): Monitor screen

[Item] • Unit No.	It selects the unit number to display.
INPUT MONITOR	Displays the input signal of the controller. Normally, a list is displayed, and when the input signal enters from the outside, the column of the input signal glows green.
• OUTPUT MONITOR	The output signal of the controller is displayed. Normally, a list is displayed, and when the GKL outputs a signal, the output signal field glows green.
[Button]	
 Return to I/O monitor 	You can return to the I/O monitor menu.

8-2.Dummy input

When you select "Force input" from "I / O monitor", the following screen will appear. Unlike the "monitor" screen, you can select and input the input signal from the outside. Like "Monitor" screen, "Output monitor" lights the column of the signal which is output by GKL in green.

It changes to green when input signal is selected. Multiple input signals can be selected at the same time, and the selected signal is simultaneously input to GKL. By pressing the "execute" button at the bottom of the screen, the signal is input to GKL.

XUnlike the "monitor" screen, please note that it will not be entered until the execute button is pressed.

Dummy	DUMMY INPU	DUMMY INPUT PLC => GKL												
nput	Operation ready	AUTO / MANU	Start	Inching start	Determination reset	Alarm reset	QL input	QL mode						
Jnit No.	Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Input enabled	GSK reset						
1	XJ0G+	XJOG-	YJ0G+	YJOG-	INX 1	INX 2	INY 1	INY 2						
I ·	cylinder1 returned	cylinder1 advanceed	X return signal	Yreturn signal	WAIT 1	WAIT 2	SPW	JOG start						
	Position1 signal	Position2 signal	Position4 signal	Position8 signal	Position 16 signal	Position32 signal	Position64 signal	Position 128 signal						
	IN					ZJOG rise	ZJOG descent	Tightening sampling start						
	OUTPUT MONITOR GKL => PLC													
	Operation ready completed	NR unit OK	Battery OK	Total OK	Total NG	NR running	QL COMP.	Program running						
	Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Output enabled	Z axis home return complete						
	Tightening total OK	Tightening total NG	X axis home return complete	Yaxis home return complete	ZERO/GAIN OK	ZERO/GAIN NG	Cycle stop	OUT						
					Z axis position 1	Z axis position 2	Tightening block OK	Tightening block NG						
	Block 1 end	Block 2 end	Block 4 end	Block 8 end	Block 16 end	Block 32 end	Position locator running	Z axis moving						
	Position 1 output	Position2 output	Position4 output	Position8 output	Position 16 output	Position32 output	Position64 output	Position 128 output						
	X extent output1	X extent output2	Y extent output1	Y extent output2	Interference fault	Position locator fault	cylinder1 advance	cylinder1 return						
	Screw 1 OK	Screw 2 OK	Screw 3 OK	Screw 4 OK	Screw 5 OK	Screw 6 OK	Screw 7 OK	Screw 8 OK						
	Screw 9 OK	Screw 10 OK	Screw 11 OK	Screw 12 OK	Screw 13 OK	Screw 14 OK	Screw 15 OK	Screw 16 OK						
	Screw 17 OK	Screw 18 OK	Screw 19 OK	Screw 28 OK	Screw 21 OK	Screw 22 OK	Screw 23 OK	Screw 24 OK						
	Screw 25 OK	Screw 26 OK	Screw 27 OK	Screw 28 OK	Screw 29 OK	Screw 30 OK	Screw 31 OK	Screw 32 OK						
	Screw 33 OK	Screw 34 OK	Screw 35 OK	Screw 36 OK	Screw 37 OK	Screw 38 OK	Screw 39 OK	Screw 40 OK						
	Screw 41 OK	Screw 42 OK	Screw 43 OK	Screw 44 OK	Screw 45 OK	Screw 46 OK	Screw 47 OK	Screw 48 OK						
	Screw 49 OK	Screw 50 OK	Screw 51 OK	Screw 52 OK	Screw 53 OK	Screw 54 OK	Screw 55 OK	Screw 56 OK						
	Screw 57 OK	Screw 58 OK	Screw 59 OK	Screw 60 OK										
					Run	Canc	el Re	turn to I/O monitor						

[Itom]	ig.(8-3): Dummy input screen
• Unit No.	It selects the unit number to display.
• DUMMY INPUT	The input signal of the controller is displayed. Normally, the list is displayed, and select the signal to be input to GKL from this list. The column of the selected signal glows green
• OUTPUT MONITOR	The output signal of the controller is displayed. Normally, a list is displayed, and when the GKL outputs a signal, the output signal field glows green.
[Button] • Run	It sends the selected signal to the controller. It needs the password to run. (Initial Password: 2014)
• Cancel	It clears the selected signal before transmission.
\cdot Return to I/O monitor	You can return to the I/O monitor menu.

8-3.Dummy output

When you select "Dummy output" from "I / O monitor", it will be the following screen. It sends a signal that you specified in the configuration PC from the controller to the PLC. When you select the input signal changes to green.

Please select the input signal, and press the Run button.

The controller forcibly outputs the signal selected at that time to the outside with SIO communication.

Dummy	INPUT MONI	TOR PLC =>	GKL								
output	Operation ready	AUTO / MANU	Start	Inching start	Determination reset	Alarm reset	QL input	QL mode			
Unit No.	Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Input enabled	GSK reset			
1 .	XJ0G+	XJ0G-	YJOG+	YJOG-	INK 1	INX 2	INY 1	INY 2			
I	cylinder1 returned	cylinder 1 advanceed	X return signal	Y return signal	WAIT 1	WAIT 2	SPW	JOG start			
	Position1 signal	Position2 signal	Position4 signal	Position8 signal	Position 16 signal	Position32 signal	Position64 signal	Position 128 signal			
	IN					ZJOG rise	ZJOG descent	Tightening sampling start			
	DUMMY OUT	DUMMY OUTPUT GKL => PLC									
	Operation ready completed	NR unit OK	Battery OK	Total OK	Total NG	NR running	QL COMP.	Program running			
	Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Output enabled	Z axis home return complete			
	Tightening total OK	Tightening total NG	X axis home return	Yaxis home return	ZERO/GAIN OK	ZERO/GAIN NG	Cycle stop	OUT			
			complete		Z axis position 1	Z axis position 2	Tightening block OK	Tightening block			
	Block 1 end	Block 2 end	Block 4 end	Block 8 end	Block 16 end	Block 32 end	Position locator running	Z axis moving			
	Position1 output	Position2 output	Position4 output	Position8 output	Position16 output	Position32 output	Position64 output	Position128 output			
	X extent output 1	X extent output2	Y extent output1	Y extent output2	Interference fault	Position locator fault	cylinder1 advance	cylinder1 return			
	Screw 1 OK	Screw 2 OK	Screw 3 OK	Screw 4 OK	Screw 5 OK	Screw 6 OK	Screw 7 OK	Screw 8 OK			
	Screw 9 OK	Screw 10 OK	Screw 11 OK	Screw 12 OK	Screw 13 OK	Screw 14 OK	Screw 15 OK	Screw 16 OK			
	Screw 17 OK	Screw 18 OK	Screw 19 OK	Screw 20 OK	Screw 21 OK	Screw 22 OK	Screw 23 OK	Screw 24 OK			
	Screw 25 OK	Screw 26 OK	Screw 27 OK	Screw 28 OK	Screw 29 OK	Screw 30 OK	Screw 31 OK	Screw 32 OK			
	Screw 33 OK	Screw 34 OK	Screw 35 OK	Screw 36 OK	Screw 37 OK	Screw 38 OK	Screw 39 OK	Screw 40 OK			
	Screw 41 OK	Screw 42 OK	Screw 43 OK	Screw 44 OK	Screw 45 OK	Screw 46 OK	Screw 47 OK	Screw 48 OK			
	Screw 49 OK	Screw 50 OK	Screw 51 OK	Screw 52 OK	Screw 53 OK	Screw 54 OK	Screw 55 OK	Screw 56 OK			
	Screw 57 OK	Screw 58 OK	Screw 59 OK	Screw 60 OK							
					Run	Cance	l Re	turn to I/O monitor			

Fig.(8-4): Dummy output screen

[Item] • Unit No.	It selects the unit number to display.
• Input monitor	Displays the input signal of the controller. Normally, a list is displayed, and when the input signal enters from the outside, the column of the input signal glows green.
• Dummy output	The output signal of the controller is displayed. Normally, the list is displayed, and select the signal to be output to PLC etc. from this list. The column of the selected signal glows green.
[Button] • Run	It sends the selected signal to the controller. It needs the password to run. (Initial Password: 2014)
• Cancel	It clears the selected signal before transmission.
• Return to I/O monitor	You can return to the I/O monitor menu.

9.Other 9-1.About USB driver

In order to connect the GKL controller and the setting PC with the USB cable, it is necessary to make the setting personal computer recognize the GKL controller. Therefore, you need to install the specified USB driver. Please install by executing things with OS of 32 bits \Rightarrow "VCP_V1.3.1_Setup.exe". Please install by executing things with OS of 64 bit \Rightarrow "VCP_V1.3.1_Setup_x64.exe".

9-2. Regarding controller and setting PC connection

- Please set the COM port number used for communication with the controller to "GSS_Com =" in "C ¥ GIKEN ¥ GKL setting ¥ GKL.ini".
- Please set the version of the controller that communicates with the setting PC to "ChkIFUnitVersionSingle =" or "ChkIFUnitVersionDouble =" in "C ¥ GIKEN ¥ GKL setting ¥ GKL.ini".

9-3. About creation of tightening program

The tightening program can be created in the following way.



Fig.(9-1): About the tightening program creation method

9-4. About Operation preparation OFF of configuration reading This section describes Operation preparation OFF at the time of reading

and writing configuration.

Operation preparation OFF is done in order to ensure the time of the reading and writing of data.

The following table shows how read and write operations on whether the operation preparation OFF is necessary.

 \bigcirc : not need , \times : need

• When the setting read

Overall setting	0
Nut runner setting (Rate setting, Block control, SOC.T, PRE.T, REV.T, REA.T)	0
Unit setting	0
Tightening data output setting	\bigcirc
Option setting	0
Screw number setting	\bigcirc
Program setting	0
Position setting(Cylinder name、X rate、Y rate、Interference)	0
XY Point	0
Timer setting	Ó
Tightening record	×

• When the setting write

Overall setting	×
Nut runner setting (Rate setting, Block control, SOC.T, PRE.T, REV.T, REA.T)	×
Unit setting	×
Tightening data output setting	×
Option setting	×
Screw number setting	×
Program setting	×
Position setting(Cylinder name、X rate、Y rate、Interference)	×
Timer setting	×
XY Point	(Note1)

(Note1) With judgment OFF, each individual operation is unnecessary.
The terminology explanation

• Unit

GKL allows each axis up to 30 axes to operate independently, or it can treat several axes as one "unit".

GKL can control up to seven units with one interface unit.

A controller belongs to at least one axis (1 unit at maximum 30 axes) for one unit. Then, all the axes belonging to one unit are started simultaneously by one input command.

In SIO, another station number is allocated to each unit for GKL.

• Program

The screw tightening program can have 16 programs of 220 steps for 30 axes.

Before entering the program setting, these maximum values can be selected

from the following 1 to 3 which is a combination of axis, program, step maximum value on the program Max value selection screen.

① 30 axes, 16 program No., 220 steps.

2 30 axes, 50 program No., 70 steps,

③ 8 axes, 50 program No., 220 steps

One program starts with the control flag (synchronous etc) and the rated setting, you can set the operation of maximum 220 steps.

(It changes according to the setting of the program Max value selection screen.) However, it treats the end as one step.

At least one block must be set in the program.

• Block

The block is an operation group of the screw tightening program.

On the setting PC, you can set each action and see the setting value of the block operation with the waveform image.

In the program setting, the block is inserted with a rated screw number, zero check, etc.

In the program setting, the inserted block starts from the rating and shows a block until the end step.

In automatic operation, one block is executed by one program start.

In the block end step, the judgment (block OK / NG) for the operated block is output.

If it becomes "NG" at any step in the block, it becomes "block NG" judgment

(except when there is a retry), the next step in the block will not be executed.

• Step

Each operation(SOC.T, PRE.T, REV.T, REA.T) in the program, end, and retry are called steps. One or more blocks are required in the program.

The program runs from step 1 and ends at the end of the last block.

In the final block end step, comprehensive judgment (total OK / NG) is output.

Each axis in the unit operates in step synchronization.

In addition, the servo is turned off for the axes that have completed the step and wait for the step action to complete of the other axes.

Once all axis steps have been completed, the next step will work.

 \cdot QL input

If the screw tightening operation is not within the OK range in the block performing the tightening operation, "NG" is output for that block. At this time, judgment "NG" can be changed to "OK" by inputting the tightening output

At this time, judgment "NG" can be changed to "OK" by inputting the tightening output of the torque wrench with limit switch to the controller.

This input is called "QL input".

• Retry

Using this function, when each action(SOC.T, PRE.T, REV.T, REA.T)

in the block becomes NG, you can perform the retry operation.

When retry is set on the step, GKL executes the operation from the retry step to the end step when NG occurs from the block start to the step before the retry step.

If NG does not occur, the process jumps from the retry step to the end step,

and the subsequent operation is not executed.

• SOC.T

This operation is used for the crown action of the socket and screw before tightening and for the socket sticking prevention action after screw tightening.

• PRE.T

This is an operation to perform temporary attachment until the screw is seated.

• REV.T

This motion is an operation to loosen the screw after seating a few turns. By monitoring the residual torque at the time of this loosening operation, it is possible to judge the seizing of the bolt.

• Rea.T

This is the final tightening operation to tighten the screw to the target torque.

- Tightening data output setting You can connect the interface unit and the PLC by serial communication, exchange engine numbers, set calendar, send result data, etc.
- Tightening sampling operation
 It rotates in a tightening direction at a constant speed and ends when it reaches "tightening sampling stop torque".
 By this operation, information to be used for "tightening sampling setting" of "Auto setting" is collected.
- End synchronization

With this synchronization, after completion of the PRE.T or REA.T, it will tighten until it reaches the end torque at 5 rpm.

• Stretching waveform

This is the waveform of the amount of torque increase for each fixed angle from the start torque of angle measurement to the cut torque.

The revise history

Version	Change contents	notes
The 1st edition	Creation	18.12.01
The 2 nd edition	Contact information update	20.03.11



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