# INSTRUCTION MANUAL FOR GSS/GSSW SETUP SOFTWARE

Mar, 2020 GIKEN INDUSTRIAL CO., LTD.

# **Before beginning operation:**



■Note

- 1. Please read this instruction manual carefully in order to ensure that you use this product correctly.
- 2. A part or no part of this instruction manual may be used or reproduced without the permission of Giken Industrial Co.,Ltd.
- 3. Regarding the handling process and operation that are not listed in this instruction manual, please think that they cannot be operated, and do not attempt to operate them. Any defect that would occur when the handling process or the operation that is not listed in this instruction manual is executed should be excluded in the scope of the warranty.
- 4. Matters listed in this instruction manual are subject to change for the improvement without notice.



■Measures in case of an emergency

If this product is in a dangerous condition, immediately turn OFF all power switches of the main unit or the connected equipment, or pull out all power cords from the plug outlets. ("Dangerous condition" means the condition when the fire break out or the danger to personal injury can be expected due to the excessive heat generation, smoking or ignition.)

# Outline

This product is the setup software for the GSS/GSSW controller. Setup input can be entered from the front panel of the controller manually for the GSS/GSSW controller, but this software is used to facilitate the setup input in a way easy to understand. When the personal computer with this software installed is used, it is possible to simplify the initial setup input and improve the maintainability due to its batch transmission function while monitoring the display screen. As the other feature, the tightening history can be read and the torque waveform display can be checked by sampling the tightening torque value.

Hardware requirements OS: WINDOWS'95 WINDOWS'98 WINDOWS NT WINDOWS ME WINDOWS 2000 WINDOWS 2000 WINDOWS XP RAM: 64MB or more Installation destination: C:¥Program Files¥GSS Setup Activation method: Execute GSS IF.exe

Password to write to the controller is 2003.

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# Contents

# 1. MAIN MENU

GSS Ver.6.0.7	
MAIN MENU	2004/05/18 18:18:58
Setting read (F1)	Quality control (F5)
	1
Setting write (F2)	Print (F6)
Setting (F3)	I/O monitor (F7)
Auto measurement (F4)	Exit (F12)

Fig. 1-1. MAIN MENU

- SETTING READ (F 1) Loads settings from a file or the controller.
- SETTING WRITE (F 2) Writes settings to a file or the controller.
- SETTING (F 3) Displays the SETTING screen.
- QUALITY CONTROL (F 5) Displays the QUALITY CONTROL screen.
- I/O MONITOR (F 7) Displays the I/O MONITOR MENU.
- AUTO MEASUREMENT (F 4) Displays the AUTO MEASUREMENT MENU.
- PRINT (F 6) Displays the PRINT screen.
- EXIT (F 12) Exits the program.

# 1-1. Organizations of Screens

The organization of screens is diagrammatically shown below



## 1-2. Automatic Communication Check

When the program is started, the communication baud rate of the GSS controller is automatically detected and set accordingly. If the program is started without connecting the GSS controller, the settings for the last successful communication are used.



Fig. 1-2. MAIN MENU (communication check in progress)

GSS SE	TTING
⚠	The error occurred by the early stage communication checking. Check the connection with the GSS controller. The communication speed starts in [ 38400 ]
	OK I

Fig. 1-3. Initial communication check error



Fig. 1-4. Unit setting acquisition error When the program is started, the unit settings of the GSS controller are automatically acquired.

# 1-3. Automatic Communication Check Function

When the program is started, the version of the GSS controller is automatically checked. When the product is attempted to connect with the GSS controller that cannot be connected, the alarm message appears and the program exits.

GSS SE	TTING
8	The error occurred by controller version checking processing. A program cannot be started.
	OK]

Fig.1-5. Controller version check error

GSS SE	TTING 🛛 🔀
8	This controller has been set to GSL A program cannot be started.
	<u>OK</u>

Fig.1-6. GSS check error

When the product is connected with the controller that is set to GSS, the alarm message also appears and the program exits.

# 2. SETTING READ

The SETTING READ screen allows you to load GSS settings from a file or the controller.

Setting read		
	FD/HD (F1)	
	CONTROLLER (F2)	
	]	
	RETURN (F12)	

2-1. FD/HD

• FD/HD (F 1) Loads GSS settings from a file.

 CONTROLLER (F 2) Loads GSS settings from the GSS controller. This requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.
 RETURN (F 12)

Returns to the MAIN MENU.

To load GSS settings, select a file with this extension.

Fig. 2-1. SETTING READ screen

ファイルの場所の	Co UserFile		•	÷ 🗈 💣 🗊•	
した 最近使ったファイル					
ごう デスクトップ					
VXLEFT TV					
マイネットワーク	ファイル名(N):	*GSS	_	•	<b>開</b> (@)
	ファイルの種類(工):	GSS FILE(#.GSS)	_	•	キャンセル
		□ 読み取り専用ファイルとして聞く(B)			

Fig. 2-2. Selecting the file to be loaded

Using the File Select dialog box, select the GSS settings file you want to load.

? 🛛

READ THE SE	ETTING	
	FD/HD (F1)	
	CONTROLLER (F2)	
	Program setting	
	RETURN (F12)	

When a file for GSS settings is selected, its loading is started. The progress of this loading is displayed.

The GSS settings file contains the following settings:

Unit settings Rotation settings Reverse rotation settings Axial arrangement settings Rating settings Pretightening settings Final tightening settings Program settings

Fig. 2-3. Progress of loading from FD/HD

When the GSS settings file has been loaded successfully, the following message appears. After the GSS settings file has been loaded, the SETTING screen is displayed. Password input appears to display the SETTING screen.



Fig. 2-4. Message for successful completion of loading the data

# 2-2. Using the CONTROLLER Key

When the CONTROLLER key is clicked, GSS settings are loaded from the GSS controller. This requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

GSS Ver.6.0.6		
READ THE SE	TTING	
	FD/HD (F1)	
	CONTROLLER (F2)	
	Rating setting	
	RETURN (F12)	



Fig. 2-5. Progress of loading from controller

Fig. 2-6. Message for successful completion of loading the data from controller

When the loading from the controller has been finished, the message on the right appears. When the loading from the controller has been finished, the screen moves to the setting menu. Password input appears to display the SETTING screen.

# 3. SETTING WRITE

The SETTING WRITE screen allows you to write settings to a file or the controller.

Setting write		
	FD/HD (F1)	
	CONTROLLER (F2)	
	RETURN (F12)	

Fig. 3-1. SETTING WRITE screen

• FD/HD (F 1)

Writes GSS settings to a file.

• CONTROLLER (F 2)

Writes GSS settings to the GSS controller.

This requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

- RETURN (F 12)
  - Returns to the MAIN MENU.
- 3-1. Using the FD/HD Key

When the FD/HD key is clicked, GSS settings are written to a file on the floppy disk (FD), hard disk (HD), or other accessible media.

The file for the GSS settings is saved under a name with an extension of GSS.

Write the file					? 🛛
(保存する場所(1):	🗀 UserFile		<b>•</b>	- 🗈 💣 🎫	
	<u>Dummy2</u> <u>tesuto.GSS</u>				
厳近使ったJア1ル					
マイ ネットワーク	ファイル:名(N):	tesuto		•	保存(S)
	ファイルの権類(①):	GSS FILE(*.GSS)		<u> </u>	44201

#### Fig. 3-2. Selecting a file to write settings

Using the FILE SELECT dialog box, select the file to which you want to write GSS settings.

G55 ¥er.6.0.7		
WRITE THE S	ETTING	
	FD/HD (F1)	
	CONTROLLER (F2)	
	Program setting	
	RETURN (F12)	



Fig. 3-3. Progress of writing to FD/HD

When a file is selected, writing is started.

The progress of writing GSS settings to the file is displayed.

Fig. 3-4. Message for successful completion of writing the data to the GSS settings file

 The following settings are saved in the GSS settings file.
 Unit settings
 Rating settings
 Rotation settings
 Pretightening settings

 Reverse rotation settings
 Final tightening settings
 Axial arrangement settings
 Program settings

When the settings have been successfully written to the GSS settings file, the message on the right appears:

# 3-2. Using the CONTROLLER Key

When the CONTROLLER key is clicked, GSS settings are written to the GSS controller.

This requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

Writing data to the controller requires entering your password. If your password is incorrect, you are not permitted to write GSS settings to the controller.



Fig. 3-5. Password check

Operation ready is forcibly turned OFF after checking



Fig. 3-6. Operation ready OFF check Select "Yes" when the operation ready is the password

allowed. If the operation ready is not turned OFF, you are not permitted to write.

to be turned OFF.

WRITE THE SETTING	
FD/HD (F1)	
CONTROLLER (F2)	
	GSS SETTING
Program setting	Setting of the controller was written.
RETURN (F12)	<u>с</u>

Fig. 3-7. Progress of writing to the controller

Fig. 3-8. Message for successful completion of writing the data to the controller

When the GSS settings have been successfully written to the controller, the message (Fig. 3-8.) appears.

# 4. SETTING

When SETTING is selected from the MAIN MENU, the SETTING screen is displayed.

GSS Ver.6.0.7	
SETTING MENU	
Sampling set (F1)	Changing the setting from the torque waveform (F7)
RATE. SET (F2)	Changing the setting from the speed waveform (F8)
MOM.T SET (F3)	AXIS.ARRANGE SET (F9)
PRE.T SET (F4)	Program set (F10)
REV.T SET (F5)	Calendar and basic unit setting (F11)
REA.T SET (F6)	Return (F12)
· · · · · · · · · · · · · · · · · · ·	

Fig. 4. SETTING screen

- SAMPLING SET (F 1)
- Displays the SAMPLING SET screen.
- MON.T SET (F 3)
- Displays the MON.T SET screen.
- REV.T SET (F 5) Displays the REV.T SET screen.
- AXIS.ARRANGE SET (F 9) Displays the AXIS.ARRANGE SET screen.
- CALENDAR AND BASIC UNIT SETTING (F 11)
- Displays the CALENDAR AND BASIC UNIT SETTING screen

- RATE. SET (F 2) Displays the RATE. SET screen.
- PRE.T SET (F 4)
   Displays the PRE.T SET screen.
- REA.T SET (F 6) Displays the REA.T SET screen.
- PROGRAM SET (F 10) Displays the PROGRAM SET screen.
- RETURN (F 12)

Returns to the MAIN MENU

# 4-1. SAMPLING SET

The SAMPLING SET screen allows you to sample the tightening angle and simply provide the rating, pretightening, final tightening, and program settings.

For the pretightening and final tightening settings, values are established in the uncompleted setting No.

GSS Ver.6.0.7				
Sampling set				
PROGRAM No.	1 -			Sampling setting history
AXIS No.	1 •			
Nut runner type	ANZ-200	•		
Tightening pattern	MOM.T+PRE.T	REV.T+REA.	r+mom.t 🗸	
Final tightening torque upper	0.0			
limit	0.0	N.M		
Final tightening torque lower limit	0.0	N.m		
IT sets from the design size.				
Bolt thread pitch	0.00	mm		
Tightening length	0.0	mm		
Tightening angle sampling start	Sampling o	lata loading	Run	Return to SETTING

#### Fig. 4-1. SAMPLING SET screen

• Program No.

Specify the setting number for which the pretightening, final tightening, and program settings are being simply provided. The pretightening, final tightening, and program settings for the specified number are updated.

• Axis No.

Specify the axis number for which the settings are being simply provided.

The rating and program settings for the specified number are updated.

• Nut Runner Type

Specify a nut runner type.

The specified nut runner is updated in the rating settings.

Tightening Pattern

Select the tightening pattern that is being simply provided.

The program settings are updated with the specified tightening pattern.

• Final Tightening Torque Upper Limit (0 to 999.9)

The pretightening and final tightening settings are updated with the specified upper limit of final tightening torque.

• Final Tightening Torque Lower Limit (0 to 999.9)

The pretightening and final tightening settings are updated with the specified lower limit of final tightening torque.

- Bolt Thread Pitch (0 to 99.99)
  - The pretightening settings are updated with the specified bolt thread pitch.
- Tightening Length (0 to 999.9)

The pretightening settings are updated with the specified tightening length.

Sampling Setting History

The program number and axis number for which the simple settings have been provided are displayed as history.

- Tightening Angle Sampling Start
   The tightening angle starts being sampled.
- Sampling Data Loading

Based on the sampled data on tightening angle, either bolt thread pitch or tightening length is set.

• Run

The simple settings are run.

Return to SETTING

You return to the SETTING screen.

The SAMPLING SET screen allows you to check the input under the following conditions. Setting against the input rule is not allowed.

- Final Tightening Torque Upper Limit > Final Tightening Torque Lower Limit
- Bolt Thread Pitch > 0
- Tightening Length > 0

## 4-2. RATE. SET

The RATE.SET screen allows you to modify the rating settings.

ର ସର୍ଚ୍ଚ Ver.6.0.7 💦 💽 🔀					
RATE.SET	XIS No. 1 - Establis	ih			
Nut runner type	ANZ-850	☐ Change of data Torque sensor rating	100.0 N.m		
Sensor type	OTHER •	Rating limit	20.0 N.m		
Tightening direction RIGHT - Setting limit 20.0 N.m			20.0 N.m		
		Zero point preset value	0.0 N.m		
Magnification preset value			50.0 N.m		
Gain correction 50.0 N.m			50.0 N.m		
Reduction ratio 100					
Read W	rite Preview Pri	nt OK	Cancel		

Fig. 4-2-1. RATE. SET screen

• Setting No.

Select the setting number for which settings are to be modified.

- Read button
   Displays the RATE. SET READ screen.
- Preview button Displays the print preview for the rating settings.
- OK button

Establishes the modification and returns to the SETTING screen.

- Nut Runner Type Enter a nut runner type.
- Tightening direction
   Enter a tightening direction.
- Rating Limit (0 to 999.9) Enter a rating limit.
- Zero point preset value Enter a zero point preset value.
- Gain correction Enter a gain correction.

- Print Undo Copy
  - t : Prints out the current screen as it is.
  - lo : Undoes the last entered data.
  - : Copies the settings for each axis number.

Paste : Pastes the copied data to the specified setting number.

- Establish button Establishes the modification.
- Write button Displays the RATE. SET WRITE screen.
- Print button Prints out the rating settings.
- Cancel button
- Cancels the modification and returns to the SETTING screen.
- Sensor Type Enter a sensor type.
- Setting Limit (0 to 999.9) Enter a setting limit.
- Reduction Ratio (0 to 9999) Enter a reduction ratio.
- Magnification preset value (0 to 999.9) Magnification preset value (0 to 999.9)

The RATE. SET screen allows you to check the input under the following conditions. Setting against the input rule is not allowed.

- Rating Limit < Torque sensor rating
- Setting Limit < Torque sensor rating
- Zero point preset value < Torque sensor rating
- Magnification preset value < Torque sensor rating
- Gain correction < Torque sensor rating

# 4-3. MOM.T SET

The MOM.T SET screen allows you to provide rotation settings.

ର ୦୦୫୨ Ver 6 0 7 କାରମାନ ଲୋ	
MOM.T SET SETTING No. 1 Establish Delete Rotation direction Loosening direction Operation Operation Torque determination OFF Lower torque limit Lower torque linit Lower torque linit Lower torque limit	Print : Prints out the current screen as it is.
Cutting angle 90 °	Undo : Undoes the last entered data.
Speed 100 rpm Fitting torque 0.0	Copy : Copies the settings for each axis number.
	Paste : Pastes the copied data to the specified
Read Write Preview Print OK Cand	setting number.
Setting No	Establish button
• Select the setting number for which settings are	a be modified Establishes the modification
Read button	Write button
Disnlays the MOM T SET READ screen	Displays the MOM T SET WRITE screen
Preview hutton	Print button
Displays the print preview for the rotation setting	Prints out the rotation settings
OK button	Cancel button
Establishes the modification and returns to the	ETAILED Cancels the modification and returns to the DETAILED SETTING
SETTING screen.	screen.
Rotational Direction	• Delete button
Enter a rotational direction.	Deletes the settings for the specified setting number.
• Operation	
Without Torque Evaluation: You cannot en	r the upper and lower torque limits and the fitting torque.
With Torque evaluation: You cannot en	er the fitting torque.
Fitting: You cannot en	r the upper and lower torque limits.
• Overtime (1 to 60)	• Cut Angle (0 to 9999)
Enter the overtime.	Enter the cutting angle.
• Speed (0 to 9999)	
Enter the speed.	
• Upper Torque Limit (0 to 999.9)	
Enter the upper torque limit. Note: This val	e may be entered when "With Torque Evaluation" is selected in Operation.
• Lower Torque Limit (0 to 999.9)	
Enter the lower torque limit. Note: This val	e may be entered when "With Torque Evaluation" is selected in Operation.
• Fitting Torque (0 to 999.9)	
Enter the fitting torque. Note: This val	e may be entered when "Fitting" is selected in Operation.
• Prerotation Time (0 to 9999)	
Enter the prerotation time.	

MOM.T SET screen allows you to check the input under the following conditions.

Setting against the input rule is not allowed.

- Overtime  $\geq 1$
- When the action is "Torque determination is ON."
- Upper Torque Limit > Lower Torque Limit

# 4-4. PRE.T SET

The PRE-T SET screen allows you to modify the pretightening settings.





- Setting No.
  - Select the setting number for which settings are to be modified.
- Read button Displays the PRE.T SET READ screen.
- Preview button
- Displays the print preview for the pretightening settings.
- OK button Establishes the modification and returns to the DETAILED SETTING screen
- Upper Torque Limit (0 to 999.9)
- Enter the upper torque limit.
- Overtime (1 to 60) Enter the overtime.
- Moving Angle (0 to 9999)
  - Enter the moving angle.
  - It will be unconditionally the third speed after the specified angle.
- Delete button
  - Deletes the settings for the specified setting number.
- Speed 2 Select Angle (0 to 9999) Enter Speed 2 Select Angle.
- Speed 2 (0 to 500)
  - Enter Speed 2.
- Time Before Pretightening (0 to 65500) Enter the time before pretightening.

- Print K) Undo C) Copy P Paste
  - : Prints out the current screen as it is.
  - : Undoes the last entered data.
  - : Copies the settings for each axis number.
  - : Pastes the copied data to the specified setting number.
  - Establish button Establishes the modification.
  - Write button Displays the PRE.T SET WRITE screen.
  - Print button Prints out the pretightening settings.
  - Cancel button Cancels the modification and returns to the DETAILED SETTING screen
  - Lower Torque Limit (0 to 999.9) Enter the lower torque limit.
  - Speed 1 (0 to 9999) Enter speed 1.
  - Speed 3 (0 to 200) Enter Speed 3.
  - Speed 2 Select Torque (0 to 999.9) Enter Speed 2 Select Torque.
  - Cutting torque (0 to 999.9) Enter a cutting torque.
  - Monitoring time for no-torque (0 to 65500) Sets the monitoring time for no-torque condition.

• Change the premature tightening/monitoring time for no-torque (in the check box) Check in the check box to change the premature tightening determination angle/monitoring time for no-torque. It allows you to change the premature tightening determination angle/monitoring time for no-torque.

Premature tightening determination angle

Determines as the premature tightening NG if it reaches the cutting torque value within the specified angle. Change TQ1, TS1 (in the check box)

- TQ1: Pretightening sample start, TS1: Check in the box to change the pretightening cutting torque value.
- TQ1: Pretightening sample start, TS1: It allows you to change the pretightening cutting torque value.
- TQ1: Pretightening sample start (0 to 999.9) TQ1: Set the pretightening sample start.
- TS1: Pretightening cutting torque value (0 to 999.9) TS1: Enter the pretightening cutting torque value.
- AS1: Pretightening cutting angle (0 to 9999)
- 14 -

AS1: Set the pretightening cut angle.

• Change the previous time before pretightening (in the check box)

Check to change the previous time. It allows you to change the previous time.

PRE-T SET screen allows you to check the input under the following conditions. Setting against the input rule is not allowed.

- Overtime  $\geq 1$
- Upper torque limit > Lower Torque Limit
- Upper time limit > Lower time limit
- Moving Angle  $\geq$  Speed 2 Select Angle
- TS1: Pretightening cut torque value > TQ1: Pretightening sample start
- Upper torque limit > TS1: Pretightening Cutting Torque > Lower Torque Limit

# 4-5. REV.T SET



REV.T SET	SETTIN	G No. 1	▼ Establish Delete
			Change of speed 2
Upper torque limit	2.0	N.m	Speed 2 select angle 30 °
Lower torque limit	0.0	N.m	Speed 2 80 rpm
Upper time limit	4000	msec.	
Lower time limit	1	msec.	Change of measurement angle
Overtime	5	840	Measurement angle
Overuine		Sec.	Passing torque 1.0 N.m
Cutting angle	190	0	Baking torque 25.0 N.m
Speed 1	30	rpm	
			Change of time before reverse rotation
Time before reverse rotation 0 msec.			
Read Write	Р	review	Print OK Cancel
Reau			rink On Cancer

Fig. 4-5-1. REV.T SET screen

• Setting No.

Select the setting number for which settings are to be modified.

- Read button
   Displays the REV.T SET READ screen.
- Preview button Displays the print preview for the reverse rotation settings.
- OK button Establishes the modification and returns to the DETAILED SETTING screen.
- Upper Torque Limit (0 to 999.9) Enter the upper torque limit.
- Overtime (1 to 60) Enter the overtime.
- Speed 1. (0 to 9999) Enter speed 1
- Baking torque (0 to 999.9)

When the torque exceeds its preset value in the reverse rotation, it becomes "REV.T BAKING TORQUE NG".

3	Print	: Prints out the current screen as it is.
റ	Undo	: Undoes the last entered data.
ß	Сору	: Copies the settings for each axis number.
2	Paste	: Pastes the copied data to the specified

setting number.

• Establish button Establishes the modification.

- Write button Displays the REV.T SET WRITE screen.
- Print button Prints out the reverse rotation settings.
- Cancel button
   Cancels the modification and returns to the DETAILED
   SETTING screen.
- Lower Torque Limit (0 to 999.9) Enter the lower torque limit.
- Cutting Angle. (0 to 9999) Enter the cutting angle
- Passing Torque. (0 to 999.9)
   When the step stops while no condition exists more than the specified value in the reverse rotation, it becomes "REV.T PASSING TORQUE NG".
- Measurement angle (0 to 9999) Enter a measurement angle.

- Change Speed 2 (in the check box)
   Check in the check box to change Speed 2 Select Angle
   and Speed 2. It allows you to change Speed 2 Select Angle and Speed 2.
- Speed 2 Select Angle. (0 to 9999) Enter Speed 2 Select Angle.
- Change the measurement angle (in the check box).
   Check in the box to change the measurement angle, passing torque and baking torque.
   It allows you to change the measurement angle, passing torque and baking torque.
- Change the time before reverse rotation (in the check box). Check in the check box to change the time before reverse rotation. It allows you to change the time bore reverse rotation.
- Time Before Reverse Rotation (0 to 65500) Enter the time before reverse rotation

REV.T SET screen allows you to check the input under the following conditions. Setting against the input rule is not allowed.

- Overtime ≥ 1
- Upper Torque Limit > Lower Torque Limit
- Upper Time Limit > Lower Time Limit
- Measurement Angle  $\leq$  Cutting Angle
- Select Angle  $\leq$  Cutting Angle

#### 4-6. REA.T SET

The REA.T SET screen allows you to modify the final tightening settings.

Three types of tightening modes are provided for this product, which are the Torque Method, Angle Method and Yield Method. When the tightening mode is changed, the setting screen corresponding to the mode appears because the setting items are different in each mode respectively.



Fig. 4-6-1. REA.T SET screen

Each tightening mode common items

• Setting No.

Select the setting number for which settings are to be modified.

Read button

Displays the REA.T SET READ screen.

Preview button

Displays the print preview for the final tightening settings.

- Establish button Establishes the modification.
- Write button
- Displays the REA.T SET WRITE screen.
- Print button Prints out the final tightening settings.

Delete button

Deletes the settings for the specified setting number.

• Speed 2. (0 to 9999) Enter speed 2

- OK button
   Establishes the modification and returns to the DETAILED
   SETTING screen.
- Upper Torque Limit (0 to 999.9) Enter the upper torque limit.
- Overtime (1 to 60)
- Enter the overtime.
- Speed 2 Select Angle (0 to 9999)
   Enter Speed 2 Select Angle.
- Speed 3 Select Torque (0 to 999.9) Enter the speed 3 select torque.

Cancel button

Cancels the modification and returns to the DETAILED SETTING screen.

- Lower Torque Limit (0 to 999.9) Enter the lower torque limit.
- Speed 1 (0 to 9999) Enter speed 1.
- Speed 2 (0 to 999) Enter speed 2.
- Speed 3 (0 to 999) Enter speed 3
- Change The Premature Tightening Angle/Monitoring Time for No-Torque (in the check box) Check in the check box to change the premature tightening angle/monitoring time for no-torque. It allows you to change the premature tightening angle/ monitoring time for no-torque.
- Premature tightening determination angle (0 to 9999) Enter the premature tightening angle.
- Monitoring time for no-torque (0 to 65500) Enter the monitoring time for no-torque.
- Change TQ2, TS2, AS2 (in the check box)
   Check to change TQ2: Snag torque, TS2: Final tightening cutting torque, AS2: Final tightening cutting angle.
   It allows you to change TQ2: Snag torque, TS2: Final tightening cutting torque, AS2: Final tightening cutting angle.
- TQ2: Snag torque (0 to 999.9) TQ2: Enter the snag torque.
- AS2: Final tightening cutting angle (0 to 9999) AS2: Enter the final tightening cutting angle.
- TS2: Final tightening cutting torque (0 to 999.9) TS2: Enter the final tightening cutting torque.
- Delete button
  - Deletes the settings for the specified setting number.
- Change the time before final tightening (in the check box) Check to change the time before final tightening. It allows you to change the time before final tightening.
- Time Before Final Tightening (0 to 65500)
- Enter the time before final tightening. Tightening mode: Torque method



Fig. 4-6-2. Final tightening setting Torque method

• Change the zone determination (in the check box)

Check to change the zone determination. It allows you to change the zone determination.

- Zone monitoring range
  - Enter the zone monitoring range.
- Tolerance of the zone starting point (0 to 999.9) Enter the zone starting point tolerance.
- Tolerance of the zone end point (0 to 999.9) Enter the zone end point tolerance.

- Zone starting point (0 to 999.9) Enter the zone starting point.
- Zone end point (0 to 999.9) Enter the zone end point.

Tightening mode: Angle method

GSS Ver.6.0.7		
<u>a - 66</u>		
REA.T SET SETTING	No. 1 · Establish D	Delete
Tightening mode Angle	e mode 🔹 💌 Change of T	TQ2,TS2,AS2
Upper torque limit Lower torque limit Upper time limit Lower time limit Upper angle limit Upper angle limit Overtime Speed 1 Speed 2 select angle	58.0         N.m         TQ2:Snag torqu           52.0         N.m         TS2:Final tighten           2100         msec.         AS2:Final tighten           10         sc         Change of tighten           10.0         •         Time before final           10.0         •         Time before final           7         sec.         TO2:Change of tighten           7         sec.         TQ2:Lower sn           100         •         TQ2:Lower sn           102         •         TQ2:Lower sn           102         •         TQ2:Lower sn	ue 28.0 N.m ing Cutting torque 56.0 N.m 200 Nm 200 Nm 200 nsec. brang torque (determination value lag torque limit 0 0 N.m ag torque limit 0 0 N.m
Speed 3 select torque Speed 3 Change the premature tightening angle ar monitoring time for no-torque. Premature tightening determination angle Monitoring time for no-torque	3.0     N.m.     Gradient de       20     rpm     Gradient sampl       0     °     Gradient deterr       0     msec.     Gradient deterr	termination setting ling number 0 Times e number 0 Times mination value 0 %
Read Write Prev	view Print	OK Cancel

Fig. 4-6-3. Final tightening setting Angle method

• TQ2: Change the snag torque determination value (in the check box).

Check in the check box to change the snag torque determination value. It allows you to change the snag torque determination value.

- TQ2: Snag torque upper limit (0 to 999.9) TQ2: Enter the snag torque upper limit.
- Gradient sampling number (0 to 99) Enter the gradient sampling number.
- Gradient determination value (0 to 99) Enter the gradient determination value.

- TQ2: Snag torque lower limit (0 to 999.9) TQ2: Enter the snag torque lower limit.
- Moving average number (0 to 199) Enter the moving average number.

Tightening	g mode:	Yield	method
	_		

S GSS Ver.6.0.7	🗙 ፍ GSS Ver.6.0.6
	Yield mode
REA.T SET     SETTING No.     1     Establish     Delete       Tightening mode     Yield mode     Vield mode     Vield mode     Vield mode	Change of detection vield Samplint number of slope kp 1 TIMES Detection washer slip
Upper torque limit     58.0     N.m.       Lower torque limit     52.0     N.m.       Upper time limit     2100     msec.       Lower three limit     2100.0     •       Lower angle limit     1.0     •       Covertime     7     sec.	Point number of movement averages 1 TIMES Sampl start of yield TK1 0.0 N.m Percentage of yield cut 0 % Detection width of yield 0 % Detection point number of yield 1 POINT Auto switching of NG wave case OFF •
Speed 2     Speed 2       Speed 3     20       rpm     30       Speed 3     20       rpm     30       Change the premature tightening angle and the monitoring time for no torgue     rpm       0     0       monitoring time for no torgue     0	Change of quality checking       Quality checking angle     0.0       Angle toterance     0.0       Quality checking TQ     0.0       N.m     TQ toterance       Quality checking cut angle     0.0
Read     Write     Preview     Print     OK     Cancel	Over cut angle 0 • Return

Fig. 4-6-4. Final tightening setting Yield method -(1)

• Change the yield detection (in the check box).

- Check in the check box to change the yield detection. It allows you to change the yield detection.
- Gradient sampling number (0 to 99)

Enter the gradient sampling number. Enter the moving average number (0 to 199).

- Yield sampling start (0 to 999.9) Enter the yield sampling start.
- Yield detection width (0 to 100) Enter the yield detection width.
- · Automatic cutoff for the extraordinary waveform
- Yield cutting ratio (0 to 100) Enter the yield cutting ratio.
- Yield detection point (0 to 100) Enter the yield detection point.

Fig. 4-6-5. Final tightening setting Yield method -(2)

Enter the automatic cutoff for the extraordinary waveform.

• Change the quality check (retightening) (in the check box).

Check in the check box to change the quality check (retightening). It allows you to change the quality check (retightening).

- Quality check angle (0 to 999.9) Changes the quality check angle.
- Quality check torque (0 to 999.9) Changes the quality check torque.
- Quality checker cutting angle (0 to 999.9) Changes the quality checker cutting angle.
- Change the washer sip detection (in the check box).

Check in the check box to change the washer slip detection. It allows you to input the washer slip detection.

• Enter the washer slip detection Enter the washer slip detection setting. ou to input the washer slip detection.

• Overcutting angle (0 to 9999)

Changes the overcutting angle.

• Quality check angle tolerance (0 to 999.9)

Changes the quality check angle tolerance.

Changes the quality check torque tolerance.

• Quality check torque tolerance (0 to 999.9)

- Washer slip detection torque (0 to 999.9) Enter the washer slip detection torque.
- Restart torque for the Yield method (0 to 999.9) Enter the restart torque for the Yield method.

REA.T SET screen allows you to check the input under the following conditions.

Setting against the input rule is not allowed.

- Overtime  $\geq 1$
- Upper Torque Limit > Lower Torque Limit
- Upper Time Limit > Lower Time Limit
- Upper Angle Limit > Lower Angle Limit
- Speed 2 Select Angle ≤ Cutting angle for the reverse rotation setting 6

When the tightening mode is the "Torque Method":

- Upper Torque Limit > TS2 : Final tightening cutting torque > Lower Torque Limit
- When the tightening mode is the "Angle Method":
- Upper Snag Torque Limit > Lower Snag Torque Limit
- Gradient Sampling Number  $\geq 1$
- Moving Average Number  $\geq 1$
- Gradient Determination Value  $\geq 1$

When the tightening mode is the "Yield Method":

- Gradient Sampling Number  $\geq 1$
- Moving Average Number ≥ 1
- Yield Cutting Ratio  $\geq 1$
- Yield Detection Width  $\geq 1$
- Number of the yield detection points ≥ 1
- TQ2 : Snag torque ≤ TK1 : Yield Sampling Start
- TK1 : Yield Sampling Start < TS2 : Final Tightening Cutting Torque
- AS2 : Final Tightening Cutting Angle  $\leq$  Overcutting Angle

#### 4-7. Changing the setting from the torque waveform

Moves to each setting screen from the torque waveform.

When you click on any part of the torque waveform that you want to change, you can move to the specified setting screen.



Fig. 4-7. Changing the setting from the torque waveform

• Setting

If the setting number has been specified in advance, the specified setting number appears when you move to the specified setting screen.

• Return Returns to the setting menu.

#### 4-8. Changing the setting from the speed waveform

Moves to each setting screen from the speed waveform.

When you click on any part of the speed waveform that you want to change, you can move to the specified setting screen.



Fig. 4-8. Changing the setting from the speed waveform

• Setting

If the setting number has been specified in advance, the specified setting number appears when you move to the specified setting screen.

• Return

Returns to the setting menu.

# 4-9. AXIS.ARRANGE SET

The AXIS.ARRANGE SET screen allows you to enter axial arrangement data.



#### Fig. 4-9-1 AXIS.ARRANGE SET screen

• Program No.

Enter the desired program number.

- Screw No. Select Select screw numbers you want to plot.
- Axial Arrangement Form

Determine the axial arrangement on the axial arrangement form by clicking on the left mouse button. Screw No. : Screw No. to determine Display No. : No. to display

- Big marker Marker on the screen appears in large size.
- Read

Displays the AXIS.ARRANGE SET READ screen.

• Preview button

Displays a print preview of the AXIS.ARRANGE SET.

• Clear

Deletes all the axial arrangement data on the screen.

• OK.

Establishes the settings and returns to the SETTING screen

Print K) Undo Gg Copy P Paste

: Prints out the current screen as it is.

- : Undoes the last entered data.
- : Copies the settings for each axis number.

: Pastes the copied data to the specified setting number.

• Small marker Marker on the screen appears in small size. • Write Displays the AXIS.ARRANGE SET WRITE screen.

- Print the screen button Prints out the AXIS.ARRANGE SET.
- Delete One Deletes the last entry of the axial arrangement.
- Cancel Cancels the settings and returns to the SETTING screen.

#### 4-10. PROGRAM SET



# The PROGRAM SET screen allows you to change the program.

#### Fig. 4-10-1. PROGRAM SET screen

• Program No.

Specify the program number you want to set up.

• Unit No.

Specify the unit number.

Program Sheet
 Displays the pro

Displays the program selected with the specified program number or unit number. Also specifies IN/OUT/PRINT.

- Setting Read button Displays the PROGRAM SET READ screen.
- Preview button
   Displays a print preview of the program settings.

Copy: Copies the settings for each program number.

It allows you to copy in the axis unit/block unit/program unit. It can be selected in the drop down menu. When the button is clicked on, "Copy of the axis and block" will be made.

Paste: Pastes the copied data to the specified program number.

- Setting Write button Displays the PROGRAM SET WRITE screen.
- Print button
  - Prints out the program settings.

Select an area on the program sheet and then press this button, the PROGRAM OPERATION SELECT screen will be displayed.

OK button

• Operation Select button

Establishes the modification and returns to the SETTING screen.

• Cancel button Cancels the modification and returns to the SETTING screen.

#### 4-10-1. OPERATION SELECT screen

OPERATION	SELECT				
мом.т	PRE.T	REV.T	REA.T	SETTING LIST	RATING No.
MOM.T1	PRE.T1	REV.T1	REA.T1	COMMAND END A	
MOM.T2	PRE.T2	REV.T2	REA.T2	MOM.T1	
MOM.T3	PRE.T3	REV.T3	REA.T3	PRE.T1	SCREW NO.
MOM.T4	PRE.T4	REV.T4	REA.T4	REV.T1	
MOM.T5	PRE.T5	REV.T5	REA.T5	REA.T1	ZERO/GAIN
MOM.T6	PRE.T6	REV.T6	REA.T6	END	Check
MOM.T7	PRE.T7	REV.T7	REA.T7		Check
MOM.T8	PRE.T8	REV.T8	REA.T8		All avon
MOM.T9	PRE.T9	REV.T9	REA.T9		END SYNC
MOM.T10	PRE.T10	REV.T10	REA.T10		synchronous
MOM.T11	PRE.T11	REV.T11	REA.T11		
MOM.T12	PRE.T12	REV.T12	REA.T12		
MOM.T13	PRE.T13	REV.T13	REA.T13		RETRY All axes retr
MOM.T14	PRE.T14	REV.T14	REA.T14		
MOM.T15	PRE.T15	REV.T15	REA.T15		
MOM.T16	PRE.T16	REV.T16	REA.T16		1
MOM.T17	PRE.T17	REV.T17	REA.T17		End
MOM.T18	PRE.T18	REV.T18	REA.T18		
MOM.T19	PRE.T19	REV.T19	REA.T19		
MOM.T20	PRE.T20	REV.T20	REA.T20		
MOM.T21	PRE.T21	REV.T21	REA.T21	One line insertion	1
MOM.T22	PRE.T22	REV.T22	REA.T22	One line delete	01/ 0
MOM.T23	PRE.T23	REV.T23	REA.T23	Une inte delete	UK Cancel
MOM.T24	PRE.T24	REV.T24	REA.T24	Clear	

#### 4-10-2. OPERATION SELECT screen

- Rotation, Pretightening, Reverse, Final Tightening Select List Clicking a setting item will add it to the setting list.
- Setting list

Displays the programmed data.

- One line Delete button Deletes one line from the settings list.
- Rating number
  - Sets the rating number.
- End synchronous button

In Rotation, Pretightening, Reverse, Final Tightening Select Lists, only the setting items in the white fields are available for the program

- One line insertion button Inserts one line to the setting data list.
- Clear button Clears all the lines of the settings list.
- Tightening screw number Sets the tightening screw number.

When a line is selected from the setting list and the end synchronous button is clicked on, the end synchronous is set. The end synchronous that has been synchronized for all axes can not release the setting of end synchronous when the mouse is clicked in the all axes synchronous check box. It can be released when the check mark in the all axes synchronous check box is removed.

Note :

All axes synchronous check box

Performs the end synchronous for all axes. The end synchronous that has been synchronized for all axes cannot be changed. To change it, remove the check mark in the end synchronous box.

Retry button

Adds a retry to the settings list. Inserts the retry to the same step of other axis even if the check mark in the all axes retry check box has been removed.

• All axes retry check box

Adds an End to the setting list.

Adds a retry to all axes. Retry that has been retried to all axes cannot be changed.

- To change, remove the check mark in the all axes retry check box.
- End button

OK button

Establishes the settings and returns to the PROGRAM SET screen.

• Cancel button

Cancels the settings and returns to the PROGRAM SET screen.

#### 4-11. CALENDAR AND BASIC UNIT SETTING

The CALENDAR AND BASIC UNIT SETTING screen allows you to set the calendar and basic units.

GSS Ver.6.0.7	
Calendar and basic uni	it setting
,	Version information
History clear	DRIVER Ver.
Calendar Time	IF Ver.
00/00/00 00:00:00	Communication speed
Setting	9600 bps 19200 bps 38400 bps
Unit setting	
Establish Cancel	Read Write
1 2 3 4 5 6 7 8 9 10 11 12	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Tightening data Option settin	ng Return to the setting menu

Fig. 4-11-1. CALENDAR AND BASIC UNIT SETTING screen

- History Clear button Clears the history on the controller.
- Calendar Display Displays the calendar information on the controller in real time.
  Calendar Setting button
- Sets the current date and time on the PC to those on the controller.
- Transmission Rate Display
  - Displays the transmission rate with the controller.
- Establish button Establishes the entered unit data.
- Read button
   Displays the UNIT SETTING READ screen.
- Tightening data output setting
   Displays the TIGHTENING DATA OUTPUT SETTING screen.
- Return to SETTING screen Returns to the SETTING screen.

Note: To operate the history clear/calendar setting button, the password is required. (Password: 2003)

- Version Display Displays the version of the controller.
- Unit Setting Sets the unit to which each axis belongs.
- Cancel button Cancels the entered unit data.
- Write button Displays the UNIT SETTING WRITE screen.
- Option setting Displays the OPTION SETTING screen.

# 4-12. TIGHTENING DATA OUTPUT SETTING

Sets the tightening data output.

S GSS Ver.6.0.7	×
<u>a</u>	
Tightening data output setting	
Printer/data output _QC personal computer switching setting	
Operation as a printer board	
Output timing setting	
Data transmission after the tightening total determination output	
Engine No. digit setting	
Axis number transmission Yes/No Transmission No 🔹	
Unit number transmission Yes/No Transmission No 🔹	
Transmission digit setting	
Torque, Angle, Slope Time Remarks	
Read Write Preview Print OK	Cancel

Fig. 4-12-1. TIGHTENING DATA OUTPUT SETTING screen



Print : Prints out the current screen as it is.

- Read button
   Displays the TIGHTENING DATA OUTPUT SETTING READ screen.
- Write button Displays the TIGHTENING DATA OUTPUT SETTING WRITE screen.
- Preview button Displays the TIGHTENING DATA OUTPUT SETTING print preview.
- Print button

Prints out the tightening data output setting.

OK button

Establishes the changed contents and returns to the CALENDAR AND BASIC UNIT SETTING screen.

Cancel button

Cancels the changed contents and returns to the CALENDAR AND BASIC UNIT SETTING screen.

# 4-13. OPTION SETTING

Sets an option

GSS Vor.6.0.7		E
<b>a</b>		
Option setting		
M-NET start address setting	1 -	
PC communication speed setting For PC	9600bps -	
For QC PC	19200bps -	
M-NET I/O monitor unit selection (Selection of 7 SEG display section indication unit number)	1	
External display indication setting Japa	nese description 🔹	
Read Write Preview Print	ок	Cancel

Fig. 4-13-1. OPTION SETTING screen

E,

Print : Prints out the current screen as it is.

Read button

Displays the OPTION SETTING READ screen.

- Write button Displays the OPTION SETTING WRITE screen.
- Preview button Displays the OPTION SETTING print preview.
- Print button

Prints out the option setting.

OK button

Establishes the changed contents and returns to the CALENDAR AND BASIC UNIT SETTING screen.

Cancel button

Cancels the changed contents and returns to the CALENDAR AND BASIC UNIT SETTING screen.

# 4-14. SETTING READ AND WRITE ON SETTING SCREENS

Reads and writes the setting of setting screens about the rating, rotation, pretightening, reverse rotation, final tightening, axial arrangement, program, tightening data output and option. Similar setting screens are described in a lot.

4-14-1. Reading the rating,/rotation/pretightening/reverse rotation/final tightening/axial arrangement/program setting Reads each setting from a file or the controller.

GSS Ver.6.0.6	
Read the rating setting	
<ul> <li>ALL(Rate 1 to Rate 30)</li> <li>Select</li> </ul>	FD/HD (F1)
RATE1	
RATE3 RATE4 RATE5	CONTROLLER (F2)
RATE6 RATE7	
RATE9 RATE10	
RATE11 RATE12 RATE13	
RATE14 RATE15 PATE16	
RATE17 RATE18	RETURN (F12)
RATE19	

Fig. 4-14-1. SETTING READ screen

- All (Rating 1 to Rating 30) Set all items to read.
- Select
  - Selects a setting to read. When the select option is specified, it allows you to select the list box of settings.
- FD/HD(F 1)

Reads each setting from the file.

• Controller (F 2)

Reads each setting from the GSS controller.

To read the setting from the GSS controller, this requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-2. Communication error

• Return (F12) Returns to each SETTING screen.

#### 1. FD/HD

Reads each setting data from the FD (floppy disk), HD (hard disk) or other files on the media that is allowed to access in this FD/HD processing.

Setting file that saves each setting data will be saved with a file extension of each setting file.

(Rating: GST, Rotation: GSR, Pretightening: GSK, Reverse rotation: GSG, Final tightening: GSH, Axial arrangement: GSJ, Program: GSP, Unit: GSU, Tightening data output: OUT, Option: OPT)

To select the file to read, select a file with the extension for each file.

Read the file							(	? 🔀
ファイルの場所Φ	🗀 UserFile	•	·	← 🖻	) 🖆	•		
した 最近使ったファイル	🖬 tesuto GST							
<b>び</b> デスクトップ								
VI F#1X/h								
Q								
マイ ネットワーク	77イル名(N):	*GST	_	_		•	1100	)
	ファイルの種類(工):	GST FILE(#.GST)	_			-	キャンセ	n I
		□ 読み取り専用ファイルとして聞く(B)						

Fig. 4-14-3. READ FILE SELECT screen

Use the file select dialog to select each setting file to read. When loading of each setting file is finished, the following message appears.

GSS SE	TTING 🛛 🔀
(į)	The rated rated setting file was read.
	(OK

Fig. 4-14-4. Message for successful completion of loading the setting file

2. Controller

Reads each setting from the setting value saved in the GSS controller.

When the setting is read from the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-5. Communication error

Read the rating setting	
ALL(Rate 1 to Rate 30) Select	FD/HD (F1)
RATE2 RATE3 RATE4 RATE5 PATE5	CONTROLLER (F2)
RATEO RATE7 RATE8 RATE9 RATE10	COMMUNICATING
RATE11 RATE12 RATE13 RATE14	
RATE15 RATE16 RATE17 RATE18	RETURN (F12)

Fig. 4-14-6. Progress of reading from the controller

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

GSS SE	TTING 🛛 🔀
(į)	Rating setting was read from the controller.
	<u>(ОК]</u>

Fig.4-14-7. Message for successful completion of loading the data from the controller

3. Read select of each setting

If you want to read the specified setting only, choose the select option.

Select the specified setting because the options in the list box can be now selected.

When the FD/HD button is clicked on, only the specified setting is read from the file.

When the controller button is clicked on, only the specified setting is read from the GSS controller.

GSS Ver.6.0.6	
Read the rating setting	
CALL(Rate 1 to Rate 30) CALL(Rate 1 to Rate 30) RATE1 RATE2 RATE3 RATE3 RATE5	FD/HD (F1) CONTROLLER (F2)
RATES           RATE3           RATE3           RATE10           RATE11           RATE12           RATE13           RATE14           RATE15           RATE16	
RATE10 RATE17 RATE18 RATE19 🛛	RETURN (F12)

Fig. 4-14-8. Setting Select

4-14-2. Writing the rating/rotation/pretightening/reverse rotation/final tightening/axial arrangement/program setting Writes each setting to a file or the controller.



Fig. 4-14-9. SETTING WRITE screen

• FD/HD(F 1)

Writes each setting to the file.

• Controller (F 2)

Writes each setting to the GSS controller.

When the setting is read from the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.

GSS SE	TTING 🛛 🛛 🛛	
8	The communication error occurred	
	C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.	

Fig.4-14-10. Communication error

• Return (F 12)

Returns to each setting screen.

1. FD/HD

Writes each setting data to the FD (floppy disk), HD (hard disk) or other files on the media that is allowed to access in this FD/HD processing. Setting file that saves each setting data will be saved with a file extension of each setting file. (Rating: GST, Rotation: GSR, Pretightening: GSK, Reverse rotation: GSG, Final tightening: GSH, Program: GSP, Axial arrangement: GSJ, Unit: GSU, Tightening data output: OUT, Option: OPT)

Write the file					? 🛛
(保存する場所の)	🗀 UserFile		•	+ 🗈 💣 📰•	
	Dummy2				
最近使ったファイル	tesuto GST				
デスクトップ					
<b>&gt;</b>					
77 14132					
V1 10E1-9					
V1 49PJ-9	ファイル:名(11):	tesuto		•	保存©
	ファイルの種類(工):	GST FILE(#.GST)		*	キャンセル

Fig. 4-14-11. Select the file to write

Use the file select dialog to select the setting file to write.

When writing the setting file is finished, the following message appears.



Fig. 4-14-12. Message for successful completion of writing the setting file

#### 2. Controller

Writes each setting to the GSS controller.

To write to the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.

GSS SE	TTING 🛛 🔀
8	The communication error occurred.
	COK

Fig. 4-14-13. Communication error

Password is required to write to the controller. (Password: 2003).

If your password is incorrect, you are not permitted to write to the controller.

Do you want to write to the controller?
,
Password
OK Cancel

Fig. 4-14-14. Password check

Operation ready is forcibly turned OFF after checking the password. Select "Yes" when the operation ready is allowed to be turned OFF. If the operation ready is not turned OFF, you are not permitted to write.



Fig. 4-12-15. Operation ready OFF check

Vrite the rating setti	ng
ALL(Rate 1 to Rate 30)	FD/HD (F1)
RATE2 RATE3 RATE4 RATE5	CONTROLLER (F2)
RATE6 RATE7 RATE8 RATE9 RATE10	
RATE11 RATE12 RATE13 RATE14	
RATE15 RATE16 RATE17	DETURN (E42)
RATE18 RATE19 -	RETURN (F12)

Fig. 4-14-16. Progress of writing to the controller

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

GSS SE	TTING 🛛 🔀
(į)	Rating setting was transmitted.
	OK



## 3. Read select of each setting

If you want to write the specified setting only, choose the select option.

Select the specified setting because the options in the list box can be now selected.

When the FD/HD button is clicked on, only the specified setting is written to the file.

When the controller button is clicked on, only the specified setting is written to the GSS controller.

Write the rating setting	
<ul> <li>ALL(Rate 1 to Rate 30)</li> <li>r Select</li> </ul>	FD/HD (F1)
RATE1 2 RATE2 RATE3 RATE4 RATE5	CONTROLLER (F2)
RATE6 RATE7 RATE8 RATE9	
RATE10 RATE11 RATE12 BATE12	
RATE14 RATE15 RATE16	
RATE17 RATE18 RATE19 M	RETURN (F12)

Fig. 4-14-18. Setting Select

4-14-3. Reading the unit/tightening data output/option setting Reads each setting from a file or the controller.

GSS Ver.6.0.6				
Read the unit setting				
	FD/HD (F1)			
	CONTROLLER (F2)			
	RETURN (F12)			

Fig. 4-12-19. SETTING READ screen

• FD/HD

Reads each setting from the file.

• Controller

Reads each setting from the GSS controller.

When each setting is read from the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-20. Communication error

• Return

Returns to each setting screen.

1. FD/HD

Reads each setting data from the FD (floppy disk), HD (hard disk) or other files on the media that is allowed to access in this FD/HD processing. Setting file that saves each setting data will be saved with a file extension of each setting file. (Rating: GST, Rotation: GSR, Pretightening: GSK, Reverse rotation: GSG, Final tightening: GSH, Program: GSP, Axial arrangement: GSJ, Unit: GSU, Tightening data output: OUT, Option: OPT)

To select the file to read, select a file with the extension for each file.

Read the file					? 🛛
ファイルの場所の:	🗀 UserFile	•	] ← 🗈	💣 💷-	
2	desuto.GSU				
最近使ったファイル					
デスクトップ					
<b>&gt;</b>					
71 142321					
マイコンピュータ					
S 💭					
マイネットワーク	ファイル名(N):	IGSU		•	BK(Q)
	ファイルの種類(①):	GSU FILE(*.GSU)		•	キャンセル
		□ 読み取り専用ファイルとして聞((B)			

Fig. 4-14-21. Select the file to read

Use the file select dialog to select each setting file to read.

When writing of each setting file is finished, the following message appears.



Fig. 4-14-22. Message for successful completion of loading the setting file

#### 2. Controller

Reads each setting from the setting value saved in the GSS controller.

When the setting is read from the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-23. Communication error

GSS Ver.6.0.7		
Read the unit	setting	
	FD/HD (F1)	
	CONTROLLER (F2)	
	RETURN (F12)	

Fig. 4-14-24. Progress of reading

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



Fig. 4-14-25. Message for successful completion of loading the data from the controller

4-14-4. Writing of the unit/tightening data output setting Writes each setting to the file or the controller.

GSS Ver.6.0.6		
Write the unit	setting	
	FD/HD (F1)	
	CONTROLLER (F2)	
	RETURN (F12)	

Fig. 4-14-26. SETTING WRITE screen

• FD/HD (F 1)

Writes each setting to the file.

• Controller (F 2)

Writes each setting to the GSS controller.

When the setting is written from the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-27. Communication error

• Return

Returns to the unit setting.

#### 1. FD/HD

Writes each setting data to the FD (floppy disk), HD (hard disk) or other files on the media that is allowed to access in this FD/HD processing. Setting file that saves each setting data will be saved with a file extension of each setting file. (Rating: GST, Rotation: GSR, Pretightening: GSK, Reverse rotation: GSG, Final tightening: GSH, Program: GSP, Axial arrangement: GSJ, Unit: GSU, Tightening data output: OUT, Option: OPT)

Write the file					? 🔀
保存する場所①:	🗀 UserFile		•	+ 🗈 📸 🖬	
日本 最近使ったファイル デスクトップ マイドキュメント マイ ドキュメント マイ コンピュータ	EDummy2 Tesuto.GSS Tesuto.GSI Tesuto.GSU				
₹1 Â9FD-D	ファイル名( <u>N</u> ): ファイルの種類( <u>T</u> ):	<mark>tesuto</mark> GSU FILE(*,GSU)		•	保存(S) キャンセル

Fig. 4-14-28. Select the file to write

Use the file select dialog to select each setting file to write.

When writing of each setting file is finished, the following message appears.

GSS SE	TTING 🛛 🔀
(į)	The unit setting file was written.
	OK I

Fig. 4-14-29. Message for successful completion of writing the setting file

2. Controller

Writes the unit setting to the GSS controller.

When writing to the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-30. Communication error

Password is required to write to the controller. (Password: 2003).

If your password is incorrect, you are not permitted to write to the controller.

PASSWORD	
Do you want to write	to the controller?
Papaward	
Fassword	
OK	Cancel
	Cancer

Fig. 4-14-31. Password check

Operation ready is forcibly turned OFF after checking the password. Select "Yes" when the operation ready is allowed to be turned OFF. If the operation ready is not turned OFF, you are not permitted to write.

GSS SE	TTING
?	Operation ready will be turned OFF. Is this acceptable?
	はいか <u> しいまいの</u>

Fig. 4-14-32. Operation ready OFF check

Write the unit	t setting	
	FD/HD (F1)	
	CONTROLLER (F2)	
	RETURN (F12)	

Fig. 4-14-33. Progress of writing to the controller

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

GSS SETTING 🛛 🛛 🛛	
(į)	Unit setup was transmitted.
	<u>OK</u>

4-14-5. Writing the option setting

Writes the option setting to a file or the controller.

Write the optioon	setting	
	FD/HD (F1)	
	CONTROLLER (F2)	
	RETURN (F12)	

Fig. 4-14-35. SETTING WRITE screen

• FD/HD (F 1)

Writes the option setting to the file.

• Controller (F 2)

Write the option setting to the GSS controller.

When the setting is written from the GSS controller, it requires that the GSS controller be previously connected to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.



Fig. 4-14-36. Communication error

• Return

Returns to the option setting.

#### 1. FD/HD

Writes the option setting data to the FD (floppy disk), HD (hard disk) or other files on the media that is allowed to access in this FD/HD processing. Setting file that saves each setting data will be saved with a file extension of each setting file. (Rating: GST, Rotation: GSR, Pretightening: GSK, Reverse rotation: GSG, Final tightening: GSH, Program: GSP, Axial arrangement: GSJ, Unit: GSU, Tightening data output: OUT, Option: OPT)

Write the file					2 🛙
保存する場所の	🙆 UserFile		•	- 🗈 💣 📰	
<ul> <li>単近使ったファイル</li> <li>デスクトゥブ</li> <li>マイ ドキュメント</li> <li>マイ コンセュータ</li> </ul>	Examina Secto 265 The secto 265 Secto 261 Secto 261 The secto 261				
२न २११२-७	7元(1)名(1):	tesuto		•	(编程S)
	ファイルの種類①	OPT FILE(+.OPT)		•	キャンセル

Fig. 4-14-37. Select the file to write

Use the file select dialog to select the option setting file to write. When writing to the option setting file is finished, the following message appears.

GSS SETTING		
(į)	Option setting file is written.	
	<u> </u>	

Fig. 4-14-38. Message for successful completion of writing the option setting file

#### 2. Controller

Writes the option setting to the GSS controller.

When writing to the GSS controller, it requires that the GSS controller be previously connected

to the personal computer using an RS-232C cable.

If they are not connected via the cable, the communication error occurs.

GSS SE	TTING 🛛 🔀
8	The communication error occurred.
	ОК

#### Fig. 4-14-39. Communication error

It is required to turn ON and OFF the power to the controller when the option setting is written to the controller.

GSS SET	ITING	
?	Controller power needs to be turned ON/OFF. Do you want to execute?	
	(#U) (1007.10	

Fig. 4-14-40. Power ON/OFF check

Password is required to write to the controller. (Password: 2003)

If your password is incorrect, you are not permitted to write to the controller.



Fig.4-14-41. Password check

Operation ready is forcibly turned OFF after checking the password. Select "Yes" when the operation ready is allowed to be turned OFF. If the operation ready is not turned OFF, you are not permitted to write.

GSS SE	TTING	$\times$
?	Operation ready will be turned Is this acceptable?	OFF.

Fig. 4-14-42. Operation ready OFF check

Write the opt	ion setting	
	FD/HD (F1)	
	CONTROLLER (F2)	
	RETURN (F12)	

Fig. 4-14-43. Progress of writing to the controller

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

GSS SETTING	
(į)	Option setting is transmitted.
	ÖK

Fig. 4-14-44. Message for successful completion of writing the data to the controller It is required to turn ON and OFF the power to the controller after writing. Turn ON and OFF the power to the controller following the message.

GSS SET	TING
(į)	Turn on and off the power of the controller.
	OK I

Fig.4-14-45. Controller power ON and OFF

Checks the communication after turning the power ON and OFF.



Fig. 4-14-46. Communication check confirmation

When an error occurred in the communication check, the error message appears.

Select "Yes" to retry.

GSS SET	TING		
?	The error occurred in the communication check. Do you want to retry?9600		

Fig. 4-14-47. Communication check error

# 5. AUTO MEASUREMENT

The AUTO MEASUREMENT screen provides the auto measurement options.

GSS Ver.6.0.7		
AUTO MEASUREN	IENT	
	Online (F1)	
	Tightening wave (F2)	
т	ightening record (F3)	
	Alarm history (F4)	
Ret	urn to the main menu (F12)	

Fig. 5-1. Auto measurement options

• ONLINE

Displays the ON LINE screen.

Also it automatically saves the online information and zero magnification information.

- TIGHTENING WAVE Displays the TIGHTENING WAVE screen. Also it automatically saves the extension waveforms and zero magnification information.
- TIGHTENING RECORD
  - Displays the TIGHTENING RECORD screen.
- ALARM HISTORY Displays the ALARM HISTORY screen.
- RETURN TO MAIN MENU Returns to the MAIN MENU

# 5-1. Using the ONLINE key

When the ONLINE key is clicked, the ON LINE screen is displayed.

This screen allows you to receive the online information as appropriate from the controller and display it.

nl	ine																		
Screw	Date	Time	P.No.	Pretigh	tening		Revers	e rotatio	n	Final tig	ghtening	I				Rotation	Determination	U.No.	Work
No.				Torque	Time	Angle	Torque	Time	Angle	Torque	Time	Angle	Snag	Slope1	Slope2	Torque			No.
		_																	
														-					
																	Return to	o the	automa

Fig. 5-2. ON LINE screen

GSS Ver.6.0.7	
Do you want to com	municate?
I⊄ Online data is saved a I⊄ Zero/Gain data is sav	at a file. ed.
YES	NO

Fig. 5-3. Communication check

To automatically save the online information, tick the Save Online to File option. To automatically save the zero magnification data, tick the Save Zero Magnification Data option.

• Return to AUTO MEASUREMENT screen

Returns to the AUTO MEASUREMENT screen.

# 5-2. Using the TIGHTENING WAVE key

When the TIGHTENING WAVE key is clicked, the tightening waveform is displayed. This operation also saves the extension waveform and zero magnification data automatically.

GSS Ver.6.0.7	
Do you want to com	municate?
I♥ vvave data is saved a I♥ Zero/Gain data is save	a πie.j ed.
YES	NO

Fig. 5-4. Communication check	
Do you want to communicate?	— In the case of "Yes":
	Displays the tightening waveform and extension waveform automatically.
	When "Save the waveform data." is selected, the information of waveform is
	automatically saved in a file.
	When "Save the zero magnification data." is selected, the data of zero magnification is
	automatically saved in a file.
	— In the case of "No":
	Tightening waveform and extension waveform can be manually loaded from the
	controller.
	The loaded waveform information can be manually saved in a file.
	The saved waveform information file can be also read and the waveform can be
	displayed.

In the case of the automatic saving mode for the tightening waveform and extension waveform (When "Yes" is selected): Sets the OK range per program that is shown by the waveform.

When the OK range setting has been finished, the product is activated in the automatic saving mode and communicates with the controller.

ROGRAM 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	0.0	0.0	0	0	
18	0.0	0.0	0	0	
19	0.0	0.0	0	0	
20	0.0	0.0	0	0	
21	0.0	0.0	0	0	
22	0.0	0.0	0	0	
23	0.0	0.0	0	0	
24	0.0	0.0	0	0	

Fig. 5-5. Setting the OK range

• Upper torque limit

Enter the upper torque limit in the OK range.

- Lower torque limit
- Enter the lower torque limit in the OK range.
- Upper angle limit
- Enter the upper angle limit in the OK range.
- Lower angle limit Enter the lower angle limit in the OK range.
- Work name
- Enter the work name.

Tightening wave       Extension wave       AXIS No. ALL         Wave       PROGRAM No.       SCREW No.         TIGHTNING RESULT       Torque       Time       Angle       Snaq       Slop         Torque(N.m)       1       2       3       4       1         0.8       9       5       5       5       5         0.8       9       0       11       1       11       1         0.8       1       1       1       1       1       1       1         0.8       1<	🖨 GSS Ver.6.0.7								
Tightening wave       Extension wa'       AXIS No. ALL         Waveform data making       PROGRAM No.       SCREW No.       I         TIGHTNING RESULT       Torque       Time       Angle       Snaq       Slop         I       1       2       1       1       1         Total determination       Torque       Time       Angle       Snaq       Slop         I       0.8       10       1       1       1       1       1         0.8       10       11       1	8								
Waveform data making       PROGRAM No.       SCREW No.       TQ       SNAG       ANGLE         TIGHTNING RESULT       Torque       Time       Angle       Snag       Slop       3       -       4       -       -       3       -       -       4       -       -       3       -       -       4       -       <	Tightening	xtension w		o. <mark>ALL -</mark>					
TIGHTNING RESULT       2       3       4         Torque(Nm)       5       6       6         1.0       6       7       8         0.8       9       11       11         0.6       13       14       11         1.1       12       13       14         0.6       13       14       15         0.4       13       14       15         0.4       19       20       19         0.2       20       21       •	Waveform data making		PROGR	AM No.	SCREW No.		TQ 1	SNAG	ANGLE _
Torque(N.m)     5       1.0     6       0.8     9       0.8     9       0.6     11       1.1     12       1.2     13       1.3     14       1.4     15       1.5     16       0.4     16       1.7     18       1.9     20       2.1	TIGHTNING RESULT Total determination	Torque	Time	Angle	Snag	Slop	2 3		
1.0     7       0.8     9       0.6     11       0.6     13       0.4     15       0.2     18       19     20       20     21	Torque(N.m)						4 5 6		
0.8     9       0.6     11       0.6     13       0.4     15       0.4     16       17     18       19     20       20     21	1.0						7 8		
0.6	0.8						9 10 11		
0.0 0.4 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	0.6						12 13		
0.4	0.0						14 15		
0.2	0.4						16 17 18		
	0.2						19 20		
							21		<b></b>
O.0     Print the screen       0     0       0     0	0.0	0	0	1	1	1	Print the screen	Return measur	to the auto ement menu

Fig. 5-6. Automatic saving of waveform

It is not allowed to read a file, to read from the controller and save in a file manually while saving the tightening waveform and extension waveform.

• Axis No.

When "All axes" is selected, the graphs of all axes appear being overlapped.

When each axis No. is selected, only the graph of each axis appears.

• Detailed data display

When "All axes" is selected, the torque, snag and angle of each axis appear.

The axis that causes error appears in red.

When each axis No. is selected, the torque, time and angle of each axis appear.



Print : Prints out the current screen as it is.

Wave Mode

Extension waveform: It is not allowed to select in the automatic saving mode.

• Axis No.

Select the axis No. that you want to display the tightening waveform and extension waveform.

• Time of Tightening Data

Displays the time and date when the tightening waveform information was obtained.

- Program No.
- Displays the program number for which the tightening waveform information was obtained.
- Screw No.
  - Displays the screw number for which the tightening waveform information was obtained.
- Print button

Prints out the currently displayed screen.

Return to AUTO MEASUREMENT screen

Returns to the AUTO MEASUREMENT screen.

In the case of manual saving mode for the tightening waveform (When "No" is selected)

GSS Ver.6.0.7				
<u>a</u>				
Tightening wave	Forque AXIS No. 1	•	Graph Creation Re	ad Save Data
Waveform data making	PROGRAM No.	SCREW No.	ΤΟ	TIME ANGLE
TIGHTNING RESULT Total determination Torqu	ue Time Angl	e Snaq Slop	•	
Torque(N.m) 1.0				
0.8				
0.6				
0.4				
0.2				
0.0	0 1	1 1	Print the	Return to the auto
		Time(msec	.)	

Fig. 5-7. TIGHTENING WAVE screen



Print : Prints out the current screen as it is.

Wave Mode

Displays a graph for time vs. angle, time vs. torque, or angle vs. torque.

Axis No.

Enter the axis number for which the tightening waveform information is being obtained.

• Time of Tightening Data

Displays the time and date when the tightening waveform information was obtained.

• Program No.

Displays the program number for which the tightening waveform information was obtained.

• Screw No.

Displays the screw number for which the tightening waveform information was obtained.

• Tightening Result

Displays the information of the total determination, torque, time, angle, snag and gradient.

Graph Creation button

Creates a tightening result graph.

- Data Save button
- Saves the wave data loaded from the controller to a file.
- Read button

Loads the tightening wave data for the specified axis number from the controller. This also allows you to load wave data from the saved file.

• Data Display

Numerically displays the tightening result information.

Select the displayed tightening result and then click the Graph Creation button. A graph will be created in an arbitrary data range.

- Graph Display Displays a graph from the tightening result information.
- Print button
   Prints out the currently displayed screen.
- Return to AUTO MEASUREMENT screen Returns to the AUTO MEASUREMENT screen.

# 5-3. Using the TIGHTENING RECORD button

When the TIGHTENING RECORD button is clicked, the tightening history is displayed. The displayed TIGHTENING RECORD screen allows you to save the displayed tightening history to a file.

G	SS Ver.	6.0.7													
•	Tigh	nten	ing	re	со	rd		AX	IS No	o. ALI	REA	D   0			
	SCREW No.	Date	Time	P.No.	τα	Angle	Time	Snag	Slope	Determination	NG Processina	U.No.	DATA No.	-	
															Record write
															Record write
															Return to the auto
														-	measurement menu

Fig. 5-8. TIGHTENING RECORD screen

- Axis No. Select the axis No. to read.
- Read button Executes reading.
- Cancel button
- Cancels reading.
- Record Write

Saves the displayed history information to a file.

Return to AUTO MEASUREMENT screen

Returns to the AUTO MEASUREMENT screen.

# 5-4. Using the ALARM HISTORY button

When the ALARM HISTORY button is clicked, the alarm history is displayed.

The displayed the ALARM HISTORY screen allows you to save the displayed alarm history to a file.

GSS	Ver.6.0.	7		
ΔΙ	arm	histo	rv	
<b></b>			• <b>y</b>	7
	AXIS NO.	DATE	TIME	
				 History write
				[]
				 Return to the auto

Fig. 5-9. ALARM HISTORY screen

- History Write Saves the displayed history information to a file.
- Return to AUTO MEASUREMENT screen Returns to the AUTO MEASUREMENT screen.

# 6. QUALITY CONTROL

GSS Ver.6.0.7		
QUALITY	CONTROL	
	Zero/magnification, TQ1 results (F1)	
	Torque sensor zero point adjustment (F2)	
	Self diagnosis (F3)	
	RETURN TO MAIN MENU (F12)	

Fig. 6-1. QUALITY CONTROL menu

- Zero magnification, TQ1 result Displays the zero point, magnification and sample start toque result.
- Torque sensor zero point adjustment Adjusts the zero point of the torque sensor.
- Self diagnosis

Displays the versions of the personal computer, IF unit, controller and display. Also checks whether all versions of controllers are same or not.

• Return to MAIN MENU Returns to the MAIN MENU.

# 6-1. Zero magnification, TQ1 result

Displays the zero point, magnification and sample start torque. Zero point display

	MEASUREMENT	SETTING		MEASUREMENT	SETTING		MEASUREMENT	SETTING
	VALUE	VALUE		VALUE	VALUE		VALUE	VALUE
AXIS NO.1			AXIS NO.11			AXIS NO.21		
AXIS NO.2			AXIS NO.12			AXIS NO.22		
AXIS NO.3			AXIS NO.13			AXIS NO.23		
AXIS NO.4			AXIS NO.14			AXIS NO.24		
AXIS NO.5			AXIS NO.15			AXIS NO.25		
AXIS NO.6			AXIS NO.16			AXIS NO.26		
AXIS NO.7			AXIS NO.17			AXIS NO.27		
AXIS NO.8			AXIS NO.18			AXIS NO.28		
AXIS NO.9			AXIS NO.19			AXIS NO.29		
VIS NO.10			AXIS N0.20			AXIS NO.30		

Fig. 6-2. Zero point display

- Zero point display Displays the measurement value and setting value of each axis.
- Return to QUALITY CONTROL screen
  Returns to the QUALITY CONTROL screen

#### Magnification display

	100000000000	0575910			0575010			0575710
	VALUE	VALUE		VALUE	VALUE		VALUE	VALUE
AXIS NO.1			AXIS NO.11			AXIS NO.21		
AXIS NO.2			AXIS NO.12			AXIS NO.22		
AXIS NO.3			AXIS NO.13			AXIS NO.23		
AXIS NO.4			AXIS NO.14			AXIS NO.24		
AUS NO.5			AXIS NO.15			AXIS NO.25		
AUS NO.6			A00S NO.16			AXIS NO.26		
AXIS NO.7			AXIS NO.17			AXIS NO.27		
AXIS NO.8			AXIS NO.18			AXIS NO.28		
AXIS NO.9			AXIS NO.19			AXIS NO.29		
VIS NO.10			AXIS NO.20			AXIS NO.30		
5 NO.8 5 NO.9 5 NO.10			AXIS NO.18 AXIS NO.19 AXIS NO.20			AXIS NO.28 AXIS NO.29 AXIS NO.30		

Fig. 6-3. Magnification display

- Magnification display Displays the measurement value and setting value of each axis.
- Return to QUALITY CONTROL screen
  Returns to the QUALITY CONTROL screen

#### TQ1: Pretightening sample start torque

	MEASUREMENT VALUE		MEASUREMENT VALUE		MEASUREMENT VALUE	
AXIS NO.1		AXIS NO.11		AXIS NO.21		
AXIS NO.2		AUS NO.12		AXIS NO.22		
NUS NO.3		AUG NO.13		ANIS NO.23		
AXIS NO.4		AUS NO.14		AUS NO.24		
AXIS NO.5		AUS NO.15		AXIS NO.25		
AVER NO.5		AUG NO.16		ANIS NO.26		
AVID NO.7		AVIO NO.40		AVIO NO 20		
AVIS NO.8		AVIS NO.18		AVIS NO.28		
VIS NO 10		AVIS NO 20		AVIS NO 20		

Fig. 6-4. PRETIGHTENING SAMPLING START TORQUE screen

- Magnification display Displays the measurement value of each axis.
- Return to QUALITY CONTROL screen Returns to the QUALITY CONTROL screen
- 6-2. Torque sensor zero point adjustment
  - Corrects the zero point of the torque sensor.

Torque sensor zero point adjustment PRESET ON PRESET ON OCCUPATION OF CONTRACT	DR
GSS         SENSOR         GSS         SENSOR         VALUE         V	DR
GSS         SENSOR         GSS         SENSOR         CSS         SENSOR         VALUE         VA	DR
GSS         SENSOR         GSS         SENSOR         GSS         SENSOR         VALUE         VA	DR
OSS         SERIOR         OSS         SERIOR         OSS         SERIOR         OSS         SERIOR         OSS         SERIOR         VALUE         VALU	DR
Axis No.1 Axis No.11 Axis No.21	F
Avis No 2 Avis No 12 Avis No 22	
700110.2	
Axis No.3 Axis No.13 Axis No.23	
Axis No.4 Axis No.14 Axis No.24	
Axis No.5 Axis No.15 Axis No.25	
Avis No.6 Avis No.16 Avis No.26	
Axis No.7 Axis No.17 Axis No.27	
Axis No.8 Axis No.18 Axis No.28	
Axis No.9 Axis No.19 Axis No.29	
Axis No.10 Axis No.20 Axis No.30	

Fig. 6-5. Torque sensor zero point adjustment

- Zero point adjustment ON Select the axis number on the screen.
  - Runs the zero point correction of the specified axis number.
- Return to QUALITY CONTROL screen
  Returns to the QUALITY CONTROL screen

# 6-3. Self diagnosis

Displays the versions of the personal computer, IF unit, controller and display.

Also checks whether all versions of controllers are same or not.

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.5		Axis No.20	
Axis No.6		Axis No.21	
Axis No.7		Axis No.22	
Axis No.8		Axis No.23	
Axis No.9		Axis No.24	
Axis No.10		Axis No.25	
Axis No.11		Axis No.26	
Axis No.12		Axis No.27	
Axis No.13		Axis No.28	
Axis No.14		Axis No.29	
Axis No.15		Axis No.30	

Fig. 6-6. Self diagnosis

• Return to QUALITY CONTROL screen Returns to the QUALITY CONTROL screen

# 7. PRINT

The PRINT screen is shown below:

GSS Ver.6.0.7		
Print the tightening settings from controller Print data select All data in uso	Set online print for controller data First N set + Data when NG occurry • © Golation result print Periolitomic result and	PC setting print Print preview of all settings
	Production of the source of th	All settings print
Print	Setting	Return to the main
		Return to the main menu



- Print Tightening Settings from Controller Prints out tightening settings from the printer connected to the controller.
- Print Data Select

From Print Data Select, the following items may be selected:

All settings used Program (1 to 24) Rotation settings (1 to 24) Pretightening settings (1 to 24) Reverse rotation settings (1 to 24) Final tightening settings (1 to 24) Rating settings (1 to 30) Axis arrangement settings (1 to 24) Final data on tightening (1 to 7)

• Number Select

Enter the setting number you want to print out or the axis number.

When any option other than the All Settings Used option is selected from Print Data Select, the selected settings are displayed on the screen.

• Print button

Prints out the data in accordance with the settings in Print Data Select and Number Select.

• Set Online Print for Controller Data

Allows you to set the controller to print out data.

Print Mode Select

Allows you to select any of the following options

No Auto Print

After Each Tightening

When Rejection Occurs

When Rejection Occurs After Initial N Units

When the No Auto Print option is selected, Result Print Select and Initial Number of Units are not displayed.

- Result Print Select
  - Allows you to select any of the following options:
    - Rotation Result Print
    - Pretightening Result Print
    - Reverse Rotation Result Print
    - Final Tightening Result Print
    - Zero Magnification Result Print
- Initial Number of Units
  - Enter the initial number of units.
  - Initial Number of Units is only displayed when the print mode is "When Rejection Occurs After Initial N Units".
- PC Setting Print
  - Prints out settings from the personal computer.
- Print Preview of All Settings Displays a print preview of all the settings.
- All Settings Print
   Prints out all the settings.

# 8. I/O MONITOR

The I/O MONITOR screen is displayed below:



Fig. 8-1. I/O MONITOR screen

• MONITOR

Displays the monitor screen.

- DUMMY INPUT Displays the DUMMY INPUT screen.
- DUMMY OUTPUT Displays the DUMMY OUTPUT screen.
- RETURNS TO MAIN MENU Returns to the MAIN MENU.

# 8-1. Using the MONITOR button

When the MONITOR button is clicked, the input/output of the controller will be monitored.

<b>P</b>																
GSS V	er.6.U.6															
Monite	or															
		INPUT	MONITOR	2 P	LC =	> GSS										
		Ocception				hine start	Datas	ala atla a	Alasa		01		01			
UNIT	NO.	ready	AUTO / MANU	Start	Inc	ning start	Detern	nination eset	Alarn	nreset	QLI	input	QLm	ode		
	- 1	Program hit 1	Program hit 2	Program bit	3 Pro	aram hit 4	Progr	am hit 5	Innut 4	enabled	888	reset	IN sig	inal		
1	-		r rogramon 2	, rogramon		9.4			mpur							
1.	i	Blook bit 1	Blook bit 2	Blook bit 3	3 Blo	ook bit 4	Bloo	k bit 5					Tightenin	g angle		
													samp	oling		
					~											
	OUIP		OR G	SS => PI	_C											
0	peration read	dy NR unit O	K Battery	OK Tota	I OK	Total	NG	NR run	ining	QL CON	1P.	Program	running			
	completed Program bit	1 Program bi	it 2 Program	bit 3 Progra	am bit 4	Program	n bit 5	Outo	ut	Block O	к	Block	NG			
								enab	led							
	Blook bit 1	Blook bit	2 Blook bi	it 3 Blook	bit 4	Blook	bit 5	Step	end	Cycle st	top	OU	т			
	Block 1 OK	Block 2 O	K Block 3	OK Block	4 OK	Block 5	ок	Block	бок	Block 7	ОК	Block 8 OK				
	Block 9 OK	Block 10.0	K Block 11	OK Block	12 OK	Block 1	3 OK	Block 1	A OK	Block 15	0K	Block 1	IS OK			
	DIOCK D OI	DIOCKTOC	DIOCK III	OIX DIOCK	12 010	DIOCK	JOR	DIOCK	4 010	DIOCK 13	U.K.	DIOCK				
E	Block 17 OI	K Block 18 C	DK Block 19	OK Block	20 OK	Block 2	1 OK	Block 2	2 OK	Block 23	ок	Block 2	24 OK			
E	Block 25 OI	K Block 26 C	OK Block 1 E	ND Block	2 END	Block 3	END	Block 4	END	Block 5 E	ND	Block 6	6 END			
i i	Torque ove	r Time ove	r Angle ov	ver Zon	e NG	Snag	NG	Passi	ing	ZERO/G/	AIN	Gear	ОК			
								torq	ue	ОК						
Т	orque unde	er Time unde	er Amgle un	ider Gradi	ent NG	NR fail	ure comont	Brand	ling	ZERO/GA	AIN	Gear	NG			
						presinosi	oemen.			NG						
	AXIS1 OK	AXIS2 O	K AXIS3 (	OK AXIS	4 OK	AXIS5	0K	AXIS6	0K	AXIS7 0	DК	AXIS8	3 OK			
	AXIS9 OK	AXIS10 C	K AXIS11	OK AXIS	12 OK	AXIS13	3 OK	AXIS14	4 OK	AXIS15	ОK	AXIS16 OK				
1	AXIS17 OF	K AXIS18 C	K AXIS19	OK AXIS:	20 OK	AXIS21	1 OK	AXIS22	2 OK	AXIS23	0K	AXIS2	4 OK			
1	AXIS25 OF	K AXIS26 C	K AXIS27	OK AXIS:	28 OK	AXIS29	9 OK	AXIS3	0 OK	AXIS31	0K	AXIS3	2 OK			
1	AXIS33 OF	K AXIS34 C	K AXIS35	OK AXIS:	36 OK	AXIS37	7 OK	AXIS38	3 OK	AXIS39	0K	AXIS4	0 OK	ſ		
1	AXIS41 OF	K AXIS42 C	K AXIS43	OK AXIS4	44 OK	AXIS45	5 OK	AXIS4	6 OK	AXIS47	0K	AXIS4	8 OK	Ret	urn to	I/O
1	AXIS49 OF	K AXIS50 C	K AXIS51	OK AXIS	52 OK	AXIS53	3 OK	AXIS54	4 OK	AXIS55	0K	AXIS5	6 OK	m	onito	r I
1	AXIS57 OF	K AXIS58 C	K AXIS59	OK AXIS	50 OK									L		

Fig. 8-2. Monitor screen

• Unit No.

Specify the unit number to be monitored.

- Input Monitor Allows you to monitor the input to the controller.
- Output Monitor Allows you to monitor the output from the controller.
- Return to I/O MONITOR screen Returns to the I/O MONITOR screen.

#### 8-2. Using the DUMMY INPUT button

GSS	Ver.6.0.7															
Dum	my inp	out														
		DUMM	INPUT		PLC	=> GSS										
UNIT	No.	Operation	AUTO / MANU	5	Start I	nching start	Deterr	nination	Alarn	n reset	QL	input	QL m	node		
	!	ready	Dragram hit 2	Drog	ram hit 2	raaram bit 4	re Drogr	eset	lagut	appled	055	react	IN ai	anal		
1	•	Program bit i	Program bit 2	Progr	ram bit 5 P	rogram bit 4	Progr	ambico	mpur	enableu	633	reset	IN SI	gnai		
1.	i	Blook bit 1	Blook bit 2	Bloc	ok bit 3	Blook bit 4	Bloo	k bit 5					Tightenir	ig angle		
	I													a		
	OUTP		FOR G	SS =	> PLC											
	Operation rea	dy NR unit O	K Battery	ок	Total OK	Total	NG	NR rur	nning	QL COM	IP.	Program	running			
	Program bit	1 Program b	it 2 Program	bit 3	Program bit	4 Program	n bit 5	Outp	out	Block C	ж	Block	NG			
								enab	led							
	Blook bit 1	1 Blook bit	2 Blook b	it 3	Blook bit 4	4 Blook	Blook bit 5 Step e		end	Cycle stop OU		т				
	Block 1 OF	Block 2 0	K Block 3	ок	Block 4 Of	C Block S	Block 5 OK Block 6 OK Block 7 O		ок	Block 8 OK						
	Block 9 Oł	C Block 10 C	DK Block 11	ок	Block 12 O	K Block 1	3 OK	Block 1	Block 14 OK Block 15 OK B		Block 16 OK					
	Block 17 O	K Block 18 (	DK Block 19	ок	Block 20 O	K Block 2	1 OK	Block 2	22 OK	Block 23	ck 23 OK Block 24 OK					
	Block 25 O	K Block 26 (	DK Block 1 B	ND	Block 2 EN	D Block 3	END	Block 4	END	Block 5 E	END	Block 6	6 END			
	Torque ove	er Time ove	r Angle o	ver	Zone NG	Snag	NG	Pass	ing	ZERO/G/	AIN	Gear	ок			
								torq	ue	ОК						
	Torque und	er Time und	er Amgle ur	nder	Gradient N	G NR fail preannoun	ure cement	Brand	ding	ZERO/G/ NG	AIN	Gear	NG		Run	
							01/				214		016			
		AXIS2 0			AXIS4 OF			AXIS		AXIS7 (		AXIS8	S OK			
	AXIS9 04			OK	AXIS12 0			AVIOD	4 UK	AVIE22	OK	AVIOD	4 OK	0	CANCE	L
	AXIS 17 U	K AVIS26 C		OK	AXIS20 0			4102		AVIS23	OK	AVI02	2 OK			
	AXIS33.0	K AXIS34.0	K AXIS35	OK	AXIS36 0	K AXIS37		AXISS	8 OK	AXIS30	OK	AXIS4	0 OK			
	AXIS41.0	K AXIS42.0	K AXIS43	OK	AXIS44 0	K AXIS4	5 OK	AXIS4	6 OK	AXIS47	OK	AXIS4	8 OK	Re	turn to	
	AXIS49 O	K AXIS50 C	K AXIS51	OK	AXIS52 O	K AXIS53	BOK	AXIS5	4 OK	AXIS55	OK	AXIS5	6 OK		monito	
	AXIS57 O	K AXIS58 C	K AXIS59	OK	AXIS60 O	K									monito	

When the DUMMY INPUT button is clicked, the dummy input is provided.

Fig. 8-3. DUMMY INPUT screen

• Unit No.

Select the unit number for which you want to provide the dummy input.

• Dummy Input

Click the signals you want to select for the dummy input.

Multiple signals may be selected.

When the Run button is clicked, the dummy input will be started.

• Output Monitor

Allows you to monitor the output from the controller.

Run button

Sends the selected signals for the dummy input to the controller.

This requires previously entering your password. (Pass word: 2003)

Cancel button

Cancels the selected signals for the dummy input.

Returns to I/O MONITOR screen
 Returns to the I/O MONITOR screen.

## 8-3. Using the DUMMY OUTPUT button

🛢 GSS Ver.6.0.7													
Dummy ou	itput												
	INPUT	MONITOR	PLC	=> GSS									
UNIT No.	Operation	AUTO / MANU	Start	Inching start	Determ	ination	Alarm	n reset	QL in	nput	QL m	ode	
	ready				re	set							
1 🚽	Program bit 1	Program bit 2 Pr	ogram bit 3 F	Program bit 4	Progra	m bit 5	Input e	enabled	GSS r	reset	IN sig	nal	
	Blook bit 1	Blook bit 2 B	llook hit 3	Block bit 4	Blook	hit 5					Tightening	angle	
	DIOOK DIL I	DIOOK DIEZ D	NOOK DIL S	DIOOK DIL4	DIOOK	UIL U					samp	ling	
DUMN	<b>//Y</b> OUTPU	IT GSS	S => PLC										
Operation rea	dy NR unit O	K Battery OK	Total OK	Total	NG	NR run	ining	QL COM	P. P	rogram r	running		
Program bit	t 1 Program bit	2 Program bit 3	Program bi	t 4 Program	bit 5	Outo	ut	Block O	к	Block	NG		
rigiano			5 Trogramol 4 Trogram			enab	led	i Dioon on					
Blook bit	1 Blook bit	2 Blook bit 3	Blook bit	4 Blook	bit 5	Step	end Cycle		op	OUT			
Block 1 Ol	K Block 2 O	K Block 3 OK	Block 4 O	K Block 5	ок	Block (	5 OK	K Block 7 OK		Block 8 OK			
Block 9 OI	K Block 10 O	K Block 11 OK	Block 12 C	K Block 13 OK		Block 1	4 OK	Block 15 OK		Block 16 OK			
Block 17 O	K Block 18 0	K Block 19 OK	Block 20 C	K Block 2	1 ОК	Block 2	2 OK	DK Block 23 OK		K Block 24 OK			
Block 25 O	K Block 26 O	K Block 1 END	Block 2 EN	ID Block 3	END	Block 4	END	Block 5 END Block		Block 6 END			
Torque over	er Time over	r Angle over	Zone NG	Snag	NG	Passi	ing	ZERO/GA	JN	Gear	ОК		
		-		-		torq	ue	ОК					1
Torque und	ler Time unde	er Amgle under	Gradient N	IG NR fail	ure	Brand	ling	ZERO/GA	JN	Gear	NG		Run
								NG					
AXIS1 OF	K AXIS2 OF	K AXIS3 OK	AXIS4 O	K AXIS5	OK	AXIS6	OK	AXIS7 0	K	AXIS8	OK		1
AXIS9 OF	< AXIS10.0	K AXIS11 OK	AXIS12 0	K AXIS13	3 OK	AXIS14	4 OK	AXIS15 (	ок 🛛	AXIS16	6 OK	C	
AXIS17 0	K AXIS18 0	K AXIS19 OK	AXIS20 0	K AXIS21	OK	AXIS22	2 OK	AXIS23 (	DK	AXIS24	4 OK	0	
AXIS25 0	K AXIS26 O	K AXIS27 OK	AXIS28 0	K AXIS29	0 OK	AXIS3	0 OK	AXIS31 (	DK	AXIS32 OK			
AXIS33 0	K AXIS34 O	K AXIS35 OK	AXIS36 0	K AXIS37	OK	AXIS3	BOK	AXIS39 (	DK	AXIS40	O OK		
AXIS41 0	K AXIS42 O	K AXIS43 OK	AXIS44 0	K AXIS45	5 OK	AXIS4	5 OK	AXIS47 (	DK	AXIS48	3 OK	Ret	urn to I/O
AXIS49 O	K AXIS50 O	K AXIS51 OK	AXIS52 0	K AXIS53	3 OK	AXIS54	4 OK	AXIS55 (	DK	AXIS56	6 OK	n	nonitor
AXIS57 0	K AXIS58 O	K AXIS59 OK	AXIS60 O	K									

When the DUMMY OUTPUT button is clicked, the dummy output is provided.

Fig. 8-4. DUMMY OUTPUT screen

• Unit No.

Select the unit number for which you want to provide the dummy output.

• Input Monitor

Allows you to monitor the output from the controller.

• Dummy Output

Click the signals you want to select for the dummy output.

Multiple signals may be selected.

When the Run button is clicked, the dummy output will be started.

Run button

Sends the selected signals for the dummy output to the controller.

This requires previously entering your password. (Pass word: 2003)

Cancel button

Cancels the selected signals for the dummy input.

Returns to I/O MONITOR screen
 Returns to the I/O MONITOR screen

# Glossary

# UNIT:

Multiple axes control up to 30 axes can be treated as each axis to independently operate or as a group of several axes (a unit) to operate together. One interface unit can control the maximum 7 units. At least one controller belongs to one unit (maximum 30 axes control to one unit), and one input command is assigned to one unit and then all belonging axes start operation simultaneously. In SIO, different station numbers are assigned to each unit.

# PROGRAM:

Screw tightening program can form the program from 1 to 24 on each axis. One program begins with the control flag (Zero magnification check is performed or not, etc.) and rating setting, and it is possible to set operation to maximum 50 steps. However, the end is treated as one step. At least one block should have been set in the program.

# BLOCK:

A set of operations in tightening program. Block start begins from rating step and shows the set of steps to the end declaration. In automatic operation, one-time program start executes one block. It is also possible to start from the block on the way by designating the block number. The determination (Block OK/NG) against the operated block is output on the step in the block end declaration. If "NG" is determined on either step in the block, it becomes the "block NG" determination (excluding the case when there is a retry); the next step will not be executed.

After determination output, the program start initiates the next block.

# STEP:

Each operation (Rotation, pretightening, reverse rotation and final tightening), block end declaration, and retry are called steps respectively. More than one block is needed in a program. Program is executed from the step 1 and finished by the end declaration at the final block. On the step of the final block end declaration, the total determination (Total OK/NG) is output.

Each axis in the unit operates by step synchronization and the axis in which step has been complete turns OFF the servo motor and waits for the step completion of other axes. When steps of all axes are complete, the next step will be operated.

# QL INPUT:

In the block where the tightening operation is in progress, if the tightening operation is not within the OK range, "NG" determination is output in this block. At this time, it is possible to change the determination "NG" to "OK" by inputting the tightening output of the manual torque wrench to the controller. This input is called a QL input.

# RETRY:

It is possible to retry (try again) operation if NG occurred in each operation (rotation, pretightening, reverse rotation or final tightening) in the block. When the retry operation is set on the step, if NG occurred on the way from the block start declaration till the previous step of retry, the operation following the retry will be executed. If NG did not occur, the operation following the retry will not be executed.

# **ROTATION:**

Used for screw pick up (a socket picks up a screw head) operation before tightening or preventive operation against socket-engagement after tightening.

# PRETIGHTENING:

Operation to perform temporary tightening until a screw seats.

# **REVERSE ROTATION:**

Operation to unfasten the seated screw by several turns. It is possible to determine the screw baking by monitoring the residual torque during this tightening operation.

FINAL TIGHTENING: Final tightening operation of screws

# APPLICABLE TO ID CONTROLLERS:

It is possible to transfer the engine number, set the calendar and transmit the result data by connecting the interface unit and ID controller via serial communication. (Exclusive use with a printer.)

# APPLICABLE TO PRINTERS:

Connects with a printer through Centronics interface. Setting data and tightening result can be printed. (Exclusive use with a QC personal computer and ID controller.)

# TIGHTENING ANGLE SAMPLING OPERATION:

Operation to rotate the screw in the tightening direction at a constant speed and then stop when it reaches the preset torque, in order to measure the screw length. This operation allows you to easily set the tightening program. (Executable only from a personal computer.)

**Revised Contents** 

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	I add a homepage address



Headquarters

97-8, Imago-cho Yamatokoriyama, Nara, 639-1031 TEL: 0743-59-3730 FAX: 0743-59-3733 E-Mail(Sales engineering department): gyomu@gikenkogyo.com E-Mail(Control engineering section): seigyo@gikenkogyo.com HomePage address: http://www.gikenkogyo.com

■ Nagoya Branch Office 1202, Kumada, Nagakute-cho Aichi Country, Aichi, 480-1144 TEL: 0561-63-5321 FAX: 0561-63-5320 E-Mail: nagoya@gikenkogyo.com

■ Kanto Branch Office 1-2-15, Matoba, Kawagoe-city, Saitama, 350-1101 TEL: 0429-65-9321 FAX: 0429-65-9322 E-Mail: kanto@gikenkogyo.com

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