

Freedom³ LAB - Features

Freedom³ LAB

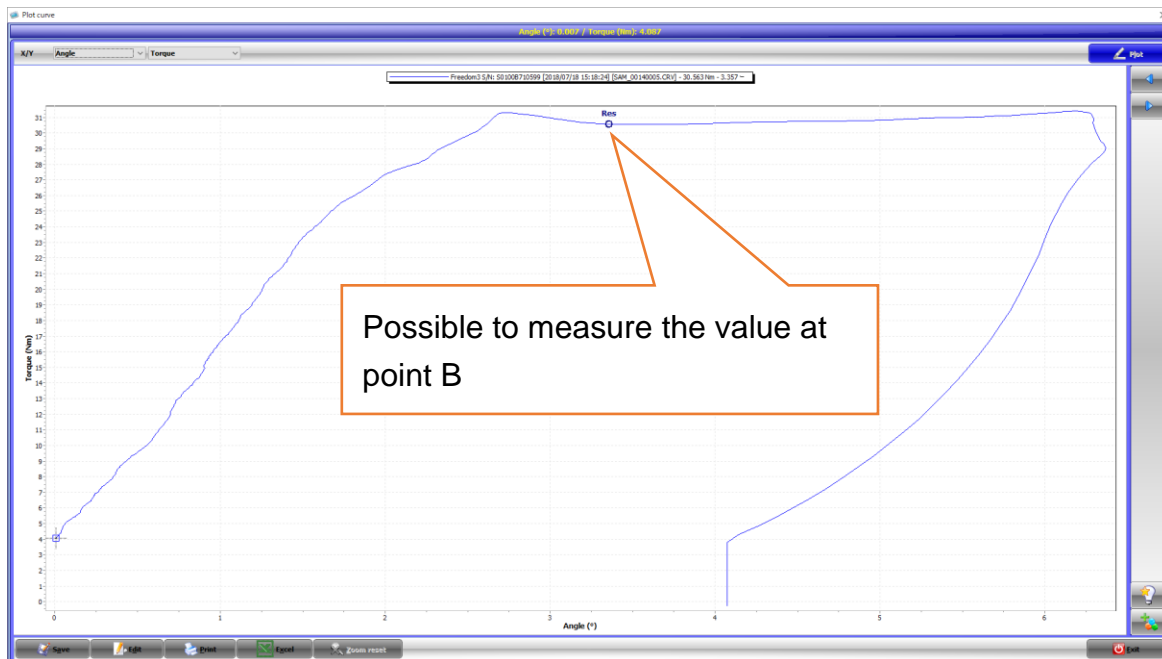


memo

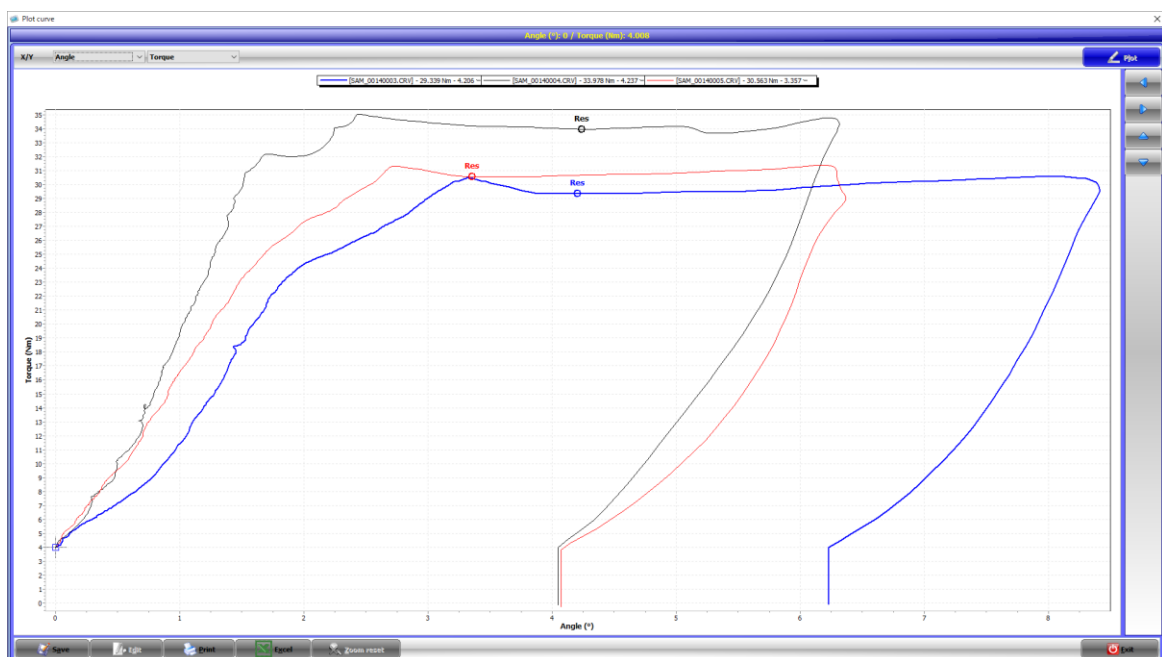
Improve Quality of Retightening Process

- Embed with LCD.
Torque value and angle value can be indicated on display after retightening.
- Operator can check quality variation and slipping point of the screw.

Ex, Possible to check slipping point of screws. (measure static torque and dynamic torque)



Easy to compare multiple data



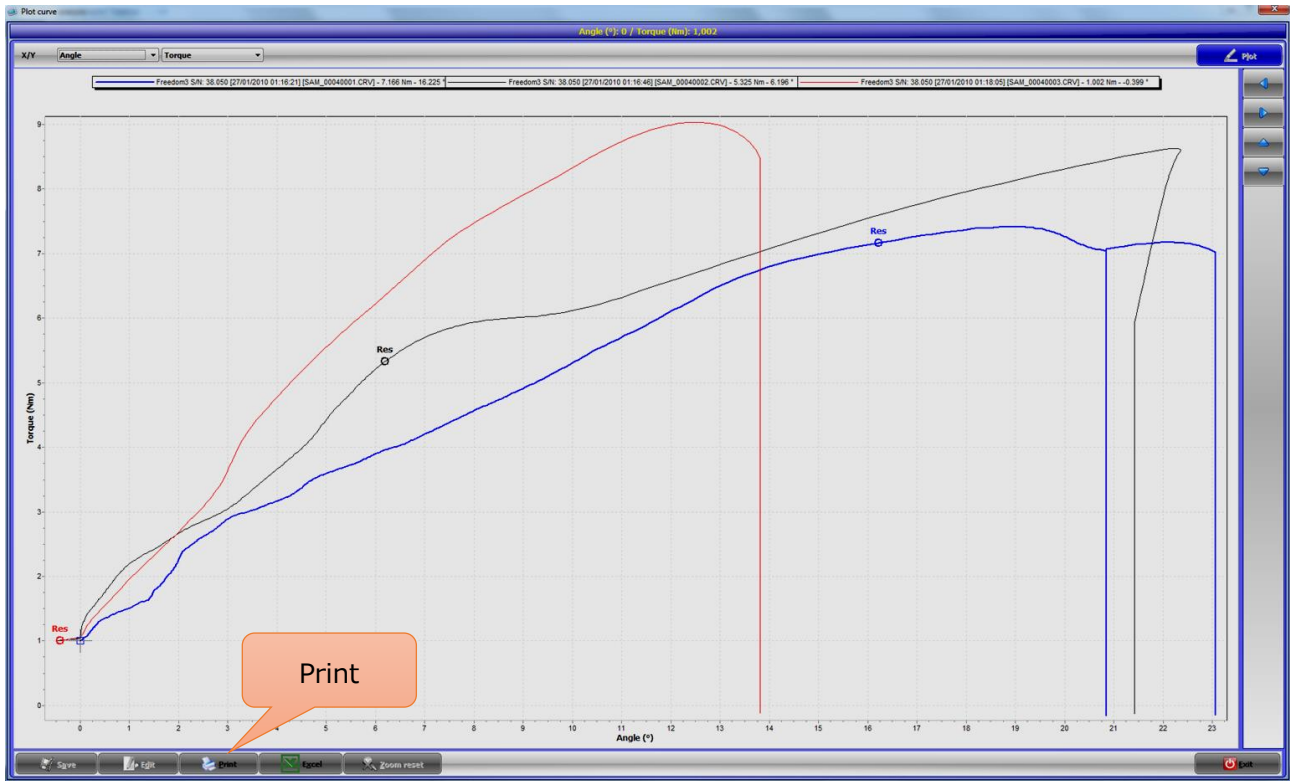
Contribution to Traceability

- Automatic saving for measured quality data : Data can be stored up to 20,000 data.
- Cooperation with PC : Data can be output to PC through software. (Excel, PDF)

Name	Type															Res.	Sel.
joint analysis																	
Date/time	Nom torque	Min torque	Max torque	Nom angle	Min angle	Max angle	Threshold	T. res.	A. res.	Max t.	Max a.	T. last	A. last	Force	VIN	Res.	Sel.
27/01/2010 01:16:	0	8	0	0	0	0	4	7,166	16,2	7,414	18,7	7,02	23,1	---	---	---	<input type="checkbox"/>
27/01/2010 01:17:	0	8	0	0	0	0	4	5,325	6,2	8,621	22,1	8,613	22,3	---	---	---	<input type="checkbox"/>
27/01/2010 01:18:	0	8	0	0	0	0	4	0	0	9,032	12,3	8,485	13,8	---	---	---	<input type="checkbox"/>
27/01/2010 01:18:	0	8	0	0	0	0	4	0	0	10,06	116,7	9,405	119,3	---	---	---	<input type="checkbox"/>
27/01/2010 01:40:	0	8	0	0	0	0	4	0	0	29,075	14,6	28,125	14,7	---	---	---	<input type="checkbox"/>
27/01/2010 04:21:	0	8	0	0	0	0	4	7,483	23	7,723	25,1	7,265	28,4	---	---	---	<input type="checkbox"/>
27/01/2010 04:23:	0	8	0	0	0	0	4	6,49	12,3	7,003	15,6	6,695	16,6	---	---	---	<input type="checkbox"/>
27/01/2010 04:26:	0	8	0	0	0	0	4	7,055	17,6	7,56	20	7,252	22,9	---	---	---	<input type="checkbox"/>
29/01/2010 01:55:	0	2	0	0	0	0	1	8,673	50,2	8,947	57,8	8,536	59,9	---	---	---	<input type="checkbox"/>
29/01/2010 01:55:	0	2	0	0	0	0	1	4,914	37,1	4,983	38,8	4,717	---	---	---	---	<input type="checkbox"/>
29/01/2010 01:56:	0	8	0	0	0	0	4	6,233	52,1	6,31	54,7	5,942	---	---	---	---	<input type="checkbox"/>
#	T Min	T Max	T Avg	T Sigma	T Cm/Cp	T Cmk/Cp	A Min	A Max	A Avg	A Sigma	A Cm/Cp	A Cmk/Cp					
11	0	8,673	4,845	3,2737	-0,41	-0,49	0	52,1	19,534	19,2571	0						
OK / Not OK																	
Name Type																	
t + a Tightening (angle)																	
Date/time	Nom torque	Min torque	Max torque	Nom angle	Min angle	Max angle	Threshold	T. res.	A. res.	Max t.	Max a.	T. last	A. last	Force	VIN	Res.	Sel.
28/01/2010 04:00:	10	9	11	20	15	25	5	3,853	26,8	5,497	15,2	3,853	26,8	---	---	---	<input type="checkbox"/>
28/01/2010 04:00:	10	9	11	20	15	25	5	7,217	20,9	7,894	20,8	7,217	20,9	---	---	---	<input type="checkbox"/>
28/01/2010 04:00:	10	9	11	20	15	25	5	9,692	23	9,923	22,4	9,692	23	---	---	---	<input type="checkbox"/>
28/01/2010 04:02:	10	9	11	20	15	25	5	17,66	19,8	24,95	12,7	17,66	19,8	---	---	---	<input type="checkbox"/>
28/01/2010 04:03:	10	9	11	20	15	25	5	19,874	30,2	28,297	28,6	19,874	30,2	---	---	---	<input type="checkbox"/>
28/01/2010 04:11:	10	9	11	20	15	25	5	9,648	1,7	13,058	1,4	9,648	1,7	---	---	---	<input type="checkbox"/>
28/01/2010 04:11:	10	9	11	20	15	25	5	10,565	24,1	13,535	16,6	10,565	24,1	---	---	---	<input type="checkbox"/>
28/01/2010 04:11:	10	9	11	20	15	25	5	7,637	20,3	8,216	15,5	7,637	20,3	---	---	---	<input type="checkbox"/>
#	T Min	T Max	T Avg	T Sigma	T Cm/Cp	T Cmk/Cp	A Min	A Max	A Avg	A Sigma	A Cm/Cp	A Cmk/Cp					
8	3,853	19,874	10,765	5,38694	0,06	0,01	1,7	30,2	20,85	8,50324	0,2	0,16					

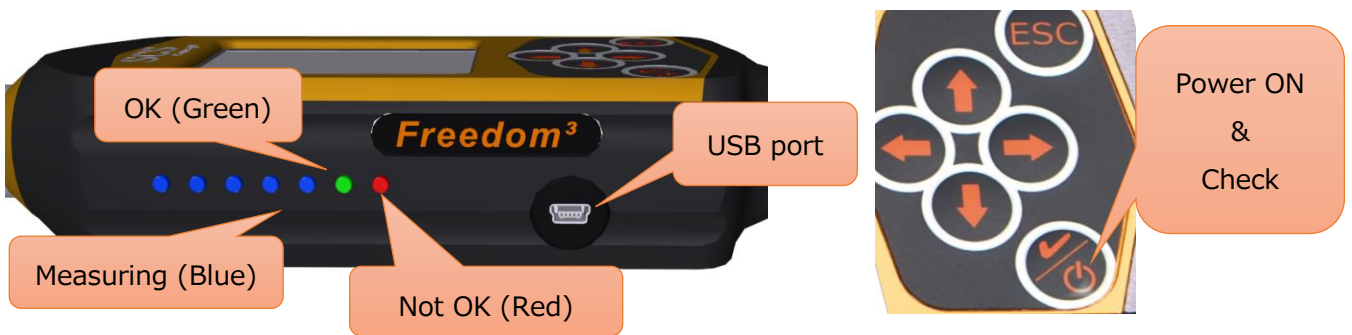
Output by PDF

Print



Print

Function



Inspection & Fastening Mode

Inspection Mode	Application
Break-away Peak	Detect maximum torque during retightening
Break-away Angle	Detect maximum tightening torque at specified angle
Smart Break-away Angle	Detect screw slipping torque during retightening
Minimum Torque	Check if bolt has been already tightened
Loosen Torque	Detect torque when loosening to the specified angle
Loosen/Tighten	Detect torque by loosening and tightening
Joint Analysis	Bolt fracture analysis

Fastening Mode	Application
Fast. Torque	Torque screw tightening
Fast. Torque + Angle	Screw tightening at an angle from the specified torque
Fast. Yield	Yield point tightening
Fast. Yield + Angle	Tightening at an angle from the yield point

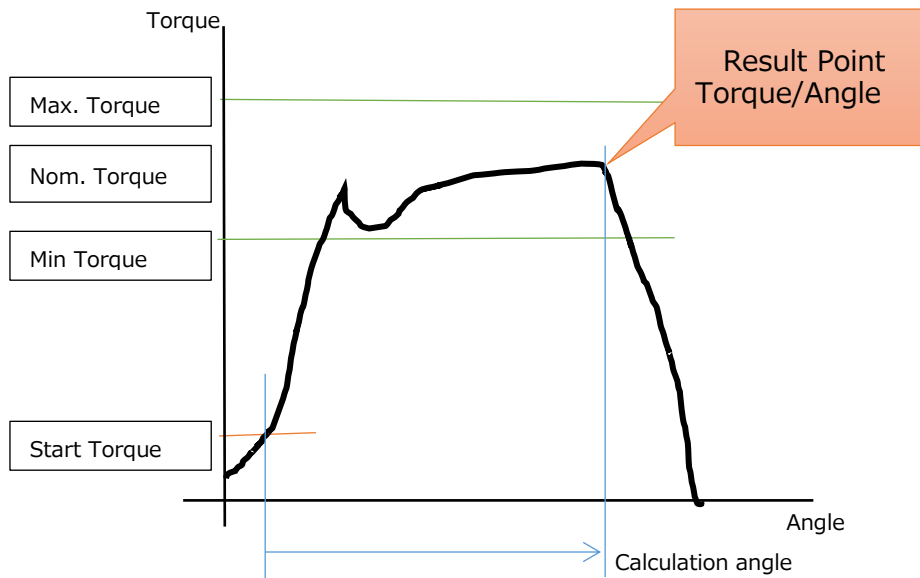
Specification

Torque accuracy	0.5 % Reading \pm 1 Dig (20%~100% of Max Torque) 1 %Reading \pm 1 Dig (10%~20% of Max Torque)
Torque Overload Capacity	110 %
Angle Accuracy	\pm 1° over 360°
Maximum Angular Velocity	300 °/s
Memory Capacity	1,000 tightening programs 20,000 result data * 20,000 curve data * (*Save the latest data on reaching maximum capacity)
Touch Screen Display	2.8" Touch screen display (Resistive type) Display 320 x 240 Pixels 65535 colors
Temperature Stability of Torque Measurement	0.1% / °C of maximum torque value
Battery Information	Operating time :9 hours Charging time : Battery Charger / 4 hours USB Cable / 6 hours

Inspection Mode【Break-away Peak】

This mode is to detect and display peak torque during retightening.

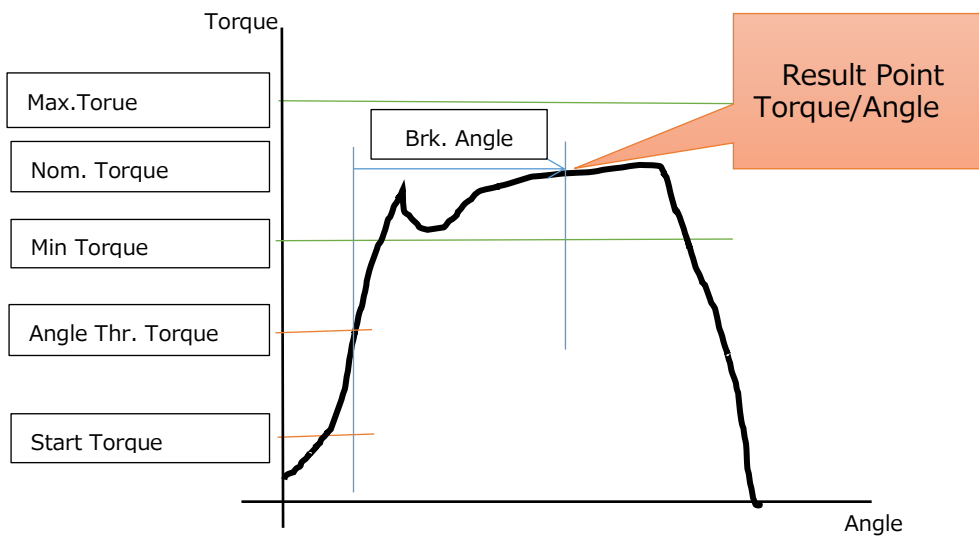
Retighten the tightened bolt and stop tightening when the bolt starts to rotate.



Inspection Mode【Break-away Angle】

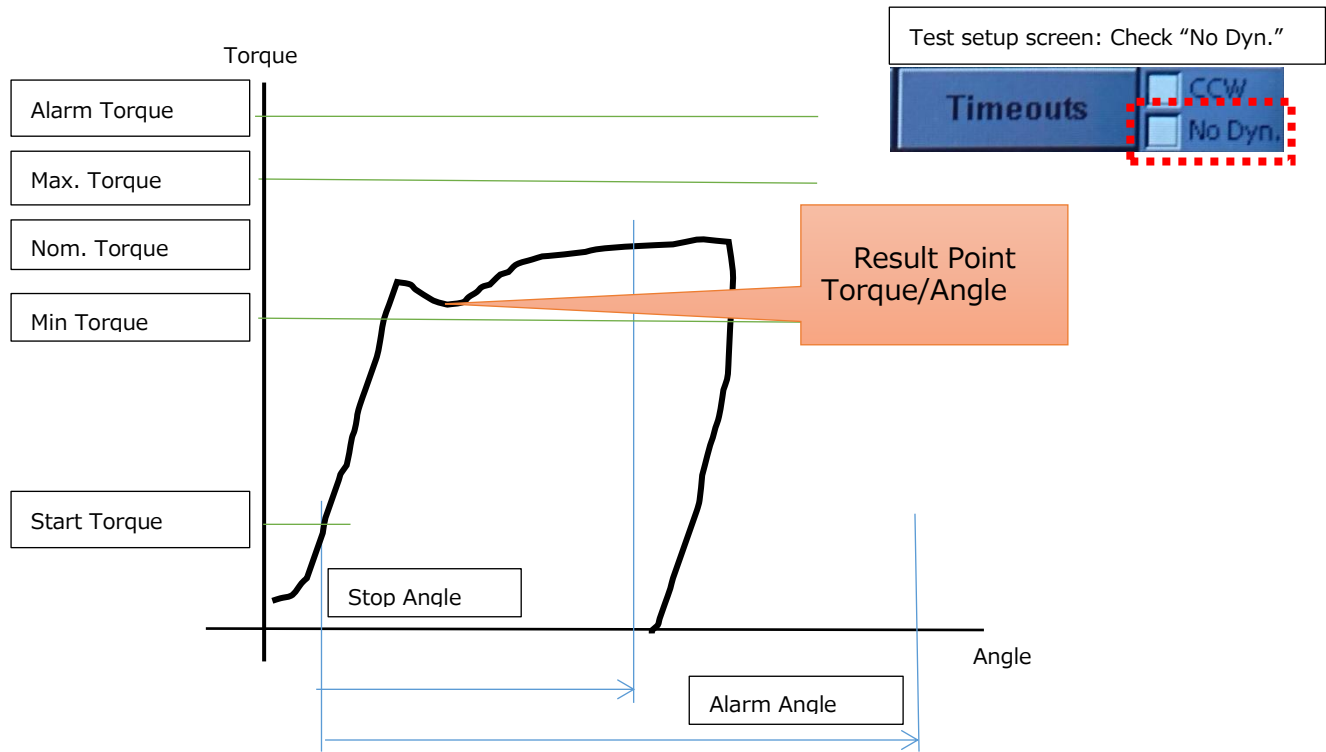
This mode is to measure torque / angle when tightening up to break angle, starting from angle threshold torque during retightening.

Retighten the tightened bolt and stop tightening when the bolt starts to rotate.



Inspection Mode[Smart Break-away Angle]

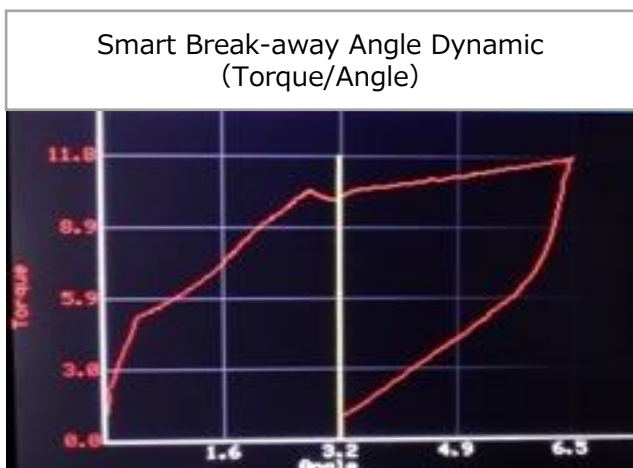
This mode is used for measuring the slip-out torque when retightening.
 The result value can select from dynamic torque / No Dynamic by setting.
 Retighten the tightened bolt and stop tightening when the bolt starts to rotate.



※If you enter stop angle, the operation applies for angle method.

When the specified angle is reached, buzzer and [Release Torque] message is shown on display. Then stop measuring.

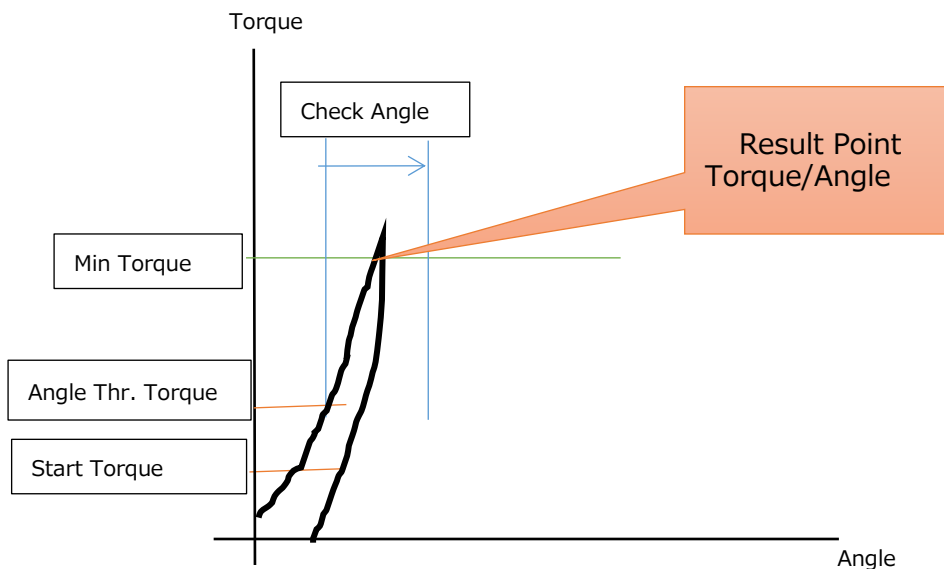
※When alarm torque and alarm angle are reached, judge that screws are overtightened and alarm warning.



Inspection Mode[Minimum Torque]

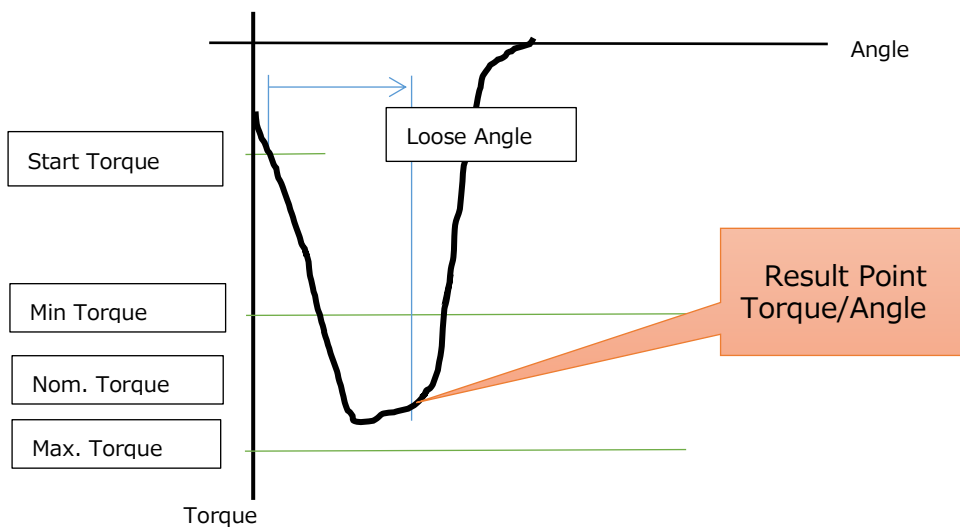
This mode is to check if the specified Torque (Minimum Torque) is reached from Angle Threshold Torque to Check Angle.

Use when you want to check the tightening torque easily.



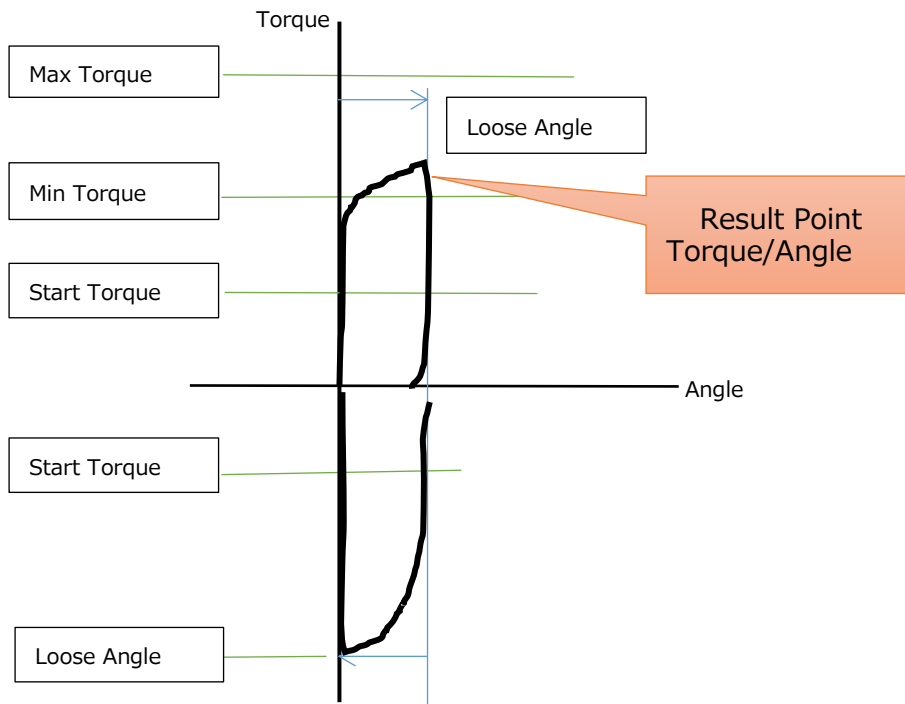
Inspection Mode[Loosen Torque]

This mode is to measure Torque / Angle when loosening from Start Torque to Return Angle. Torque value is shown as negative.



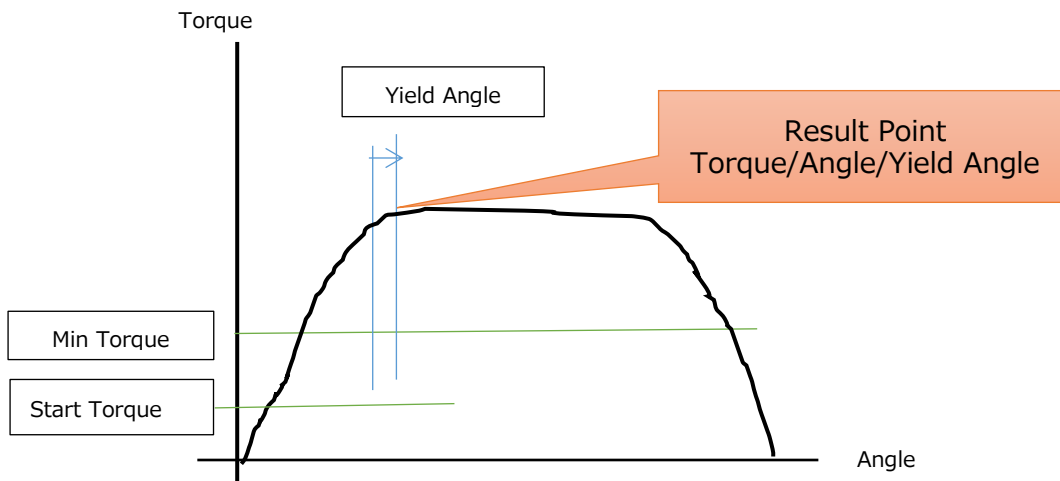
Inspection Mode[Loosen/Tighten]

This mode is to measure Torque / Angle when the tightened bolt is loosened to the specified Angle and then tightened again to the specified Angle.
Use when you want to avoid excessive tightening.



Inspection Mode[Joint Analysis]

This mode is to measure Yield point when bolts are tightened.
Use when you want to check joint analysis.

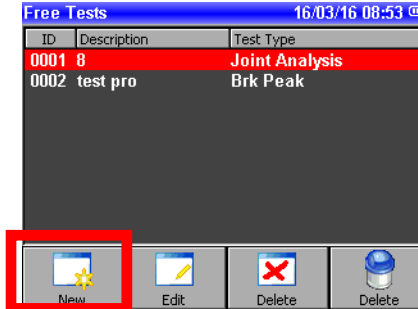


Break-away Peak Setting

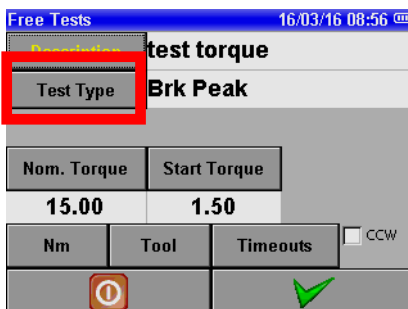
Select [Free Tests]



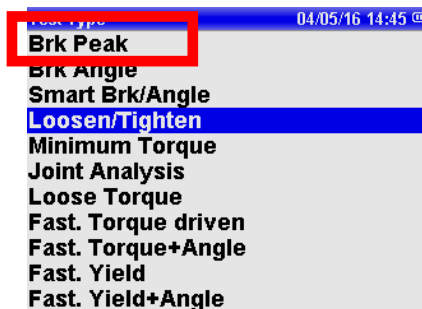
Select [New]



Select [Test Type]



Select [Brk Peak]



Select [Nom. Torque]



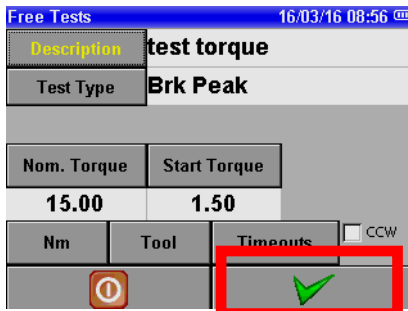
Input Target Torque and select [OK]



Select and input [Min Torque][Max Torque]

Select [Start Torque] and input Start Torque as well.

Select [↵] to save the settings.

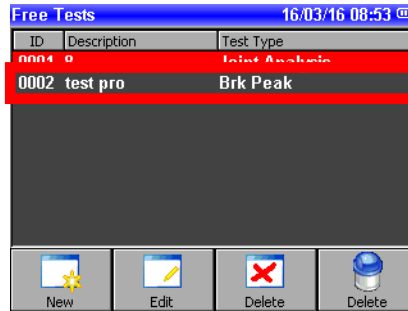


Confirmation of Break-away Peak Result

Select [Free Tests]



Select the stored setting and push check button

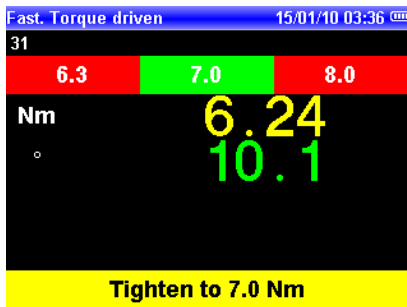


Check

Display changes measurement screen and start measuring.

After measuring, Peak Torque and Peak Angle are shown on screen.

Conduct the following operations to check the curve.



↑ : Torque & Time
↓ : Torque & Angle

Time Curve

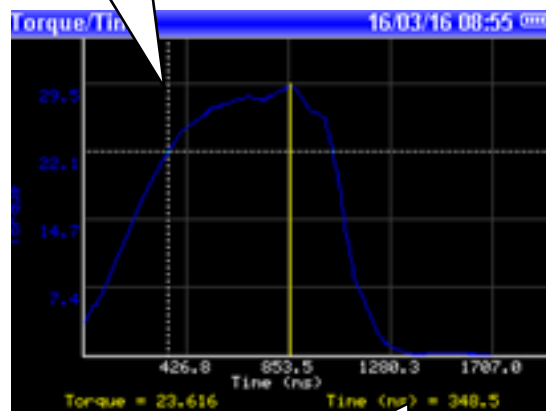


Angle Curve

The following operations are available on the curve screen.

←/→ : Move cursor
↑ : Zoom in cursor
↓ : Zoom out cursor
ESC : Return

Cursor



Cursor Operation



Return

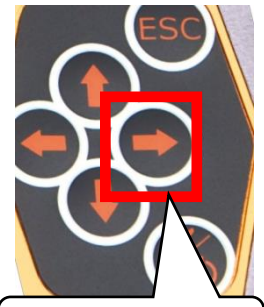
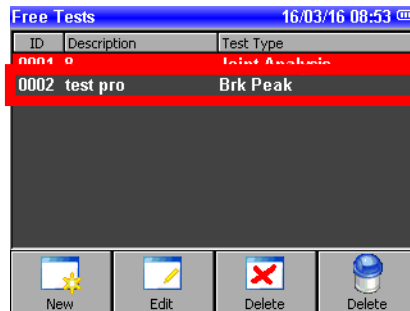
Cursor Data

Break-away Peak History Check

Select [Free Tests]



Select the stored setting and push "→" button



History Display

Move to history list screen.

If you want to display the curve in history data, select the data and push [Check] button.

Select the curve to draw.

No.	Torque	Angle	N
1	1.44	10.7	
2	25.74	4.8	
3	4.47	22.7	
4	30.49	12.4	
5	40.62	10.4	
6	35.37	15.9	
7	32.35	36.3	
8	25.00	17.0	

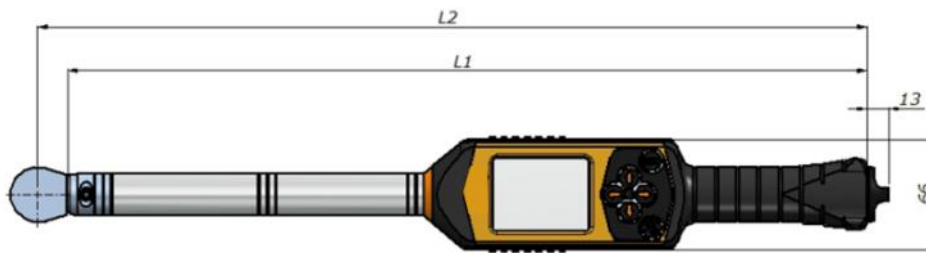
tightening



Check



Wrench Specification



Model	Capacity (Nm)	L1 (mm)	L2 (mm)	Weight (kg)	Joint Drive (mm)	Socket Drive (mm)*1
Freedom ³ TA 15	15	375	393	0.80	9x12 凹	9.5
Freedom ³ TA 30	30	375	393	0.86	9x12 凹	9.5
Freedom ³ TA 70	70	480	498	0.93	9x12 凹	9.5
Freedom ³ TA 100	100	480	498	0.93	9x12 凹	12.7
Freedom ³ TA 200	200	604	629	1.50	14x18 凹	12.7
Freedom ³ TA 300	300	754	779	1.86	14x18 凹	19.0
Freedom ³ TA 400	400	854	879	2.00	14x18 凹	19.0
Freedom ³ TA 600	600	1032	1057	3.65	14x18 凹	19.0
Freedom ³ TA 800	800	1250	1330	5.10	Ø 20	19.0
Freedom ³ TA 1000	1000	1520	1610	6.25	Ø 20	19.0
Freedom ³ TA 1200	1200	1530	1732	7.00	Ø 28	25.4

*1 Square drive size above mentioned is the reversible ratchet attached with wrench.



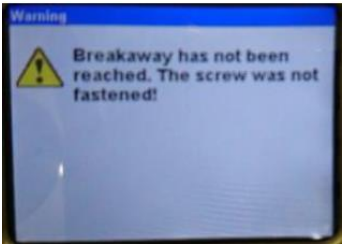
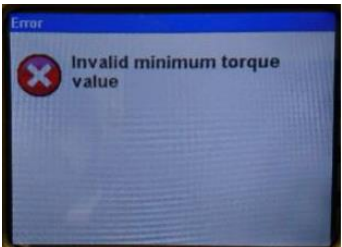
Maintenance and Inspection

Equipment with sensors should be measured and verified on a regular basis. Use calibrated measuring instruments for this purpose. This ensures that the equipment is functionally correct and accurate.

We recommend periodic accuracy inspections and calibration checks once a year to ensure accurate sensor value (torque and angle values) control.

Our calibration and inspection services enable us to issue "Torque and Angle Accuracy Checklists" and "Traceability Certificates and their System Diagrams" for accuracy-tested measuring devices. In addition, the diagnosis of the inspection work enables us to provide our customers with information on the most suitable inspection items and replacement parts.

Freedom3 Error List

No	Screen	Solution
1		Please tighten within the setting range.
2		Please check the screw are tightened.
3		Please check the screw are tightened.
4		Please make settings.

Package Contents

Freedom Body Battery USB Cable

Reversible Ratchet PC Software Instruction Manual

Accessories

Open End



Joint drive

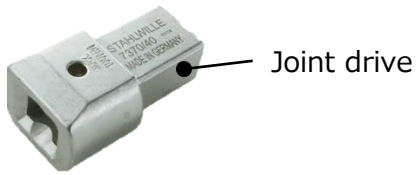
Model	Size [mm]	Joint drive size [mm]
731/10-7	7	9X12
731/10-8	8	9X12
731/10-9	9	9X12
731/10-10	10	9X12
731/10-11	11	9X12
731/10-12	12	9X12
731/10-13	13	9X12
731/10-14	14	9X12
731/10-15	15	9X12
731/10-16	16	9X12
731/10-17	17	9X12
731/10-18	18	9X12
731/10-19	19	9X12
731/40-13	13	14X18
731/40-14	14	14X18
731/40-15	15	14X18
731/40-16	16	14X18
731/40-17	17	14X18
731/40-18	18	14X18
731/40-19	19	14X18
731/40-21	21	14X18
731/40-22	22	14X18
731/40-24	24	14X18
731/40-25	25	14X18
731/40-27	27	14X18
731/40-30	30	14X18
731/40-32	32	14X18
731/40-34	34	14X18
731/40-36	36	14X18
731/40-38	38	14X18
731/40-41	41	14X18

Ring End



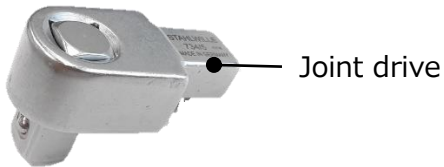
Model	Size [mm]	Joint drive size [mm]
732/10-7	7	9X12
732/10-8	8	9X12
732/10-10	10	9X12
732/10-11	11	9X12
732/10-12	12	9X12
732/10-13	13	9X12
732/10-14	14	9X12
732/10-15	15	9X12
732/10-16	16	9X12
732/10-17	17	9X12
732/10-18	18	9X12
732/10-19	19	9X12
732/10-21	21	9X12
732/10-22	22	9X12
732/40-13	13	14X18
732/40-14	14	14X18
732/40-15	15	14X18
732/40-16	16	14X18
732/40-17	17	14X18
732/40-18	18	14X18
732/40-19	19	14X18
732/40-21	21	14X18
732/40-22	22	14X18
732/40-24	24	14X18
732/40-27	27	14X18
732/40-28	28	14X18
732/40-30	30	14X18
732/40-32	32	14X18
732/40-34	34	14X18
732/40-36	36	14X18
732/40-41	41	14X18

Conversion Adapter Head



Model	Joint drive size [mm]	Head size [mm]
7370/10	9X12	14X18
7370/40	14X18	9X12

Square Drive Head



Model	Joint drive [mm]	Drive hex [mm]
734/4	9X12	6.35 (1/4 inch)
734/5	9X12	9.5 (3/8 inch)
734/10	9X12	12.7 (1/2 inch)
734/20	14X18	12.7 (1/2 inch)
734/40	14X18	19.0 (3/4 inch)

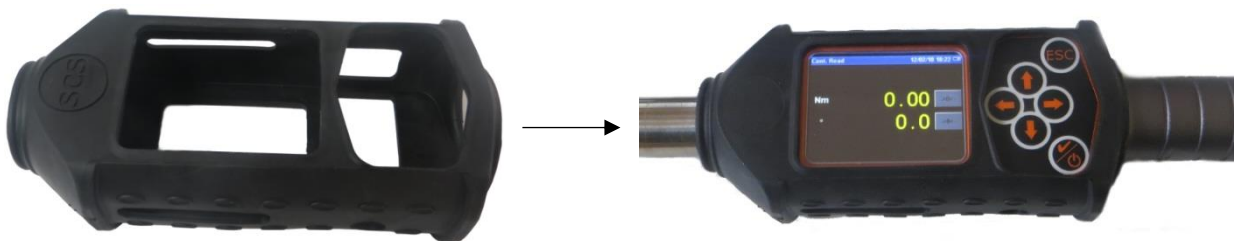
Battery (Model : Freedom³-BA)



Charger (Model : Freedom³-EC1)



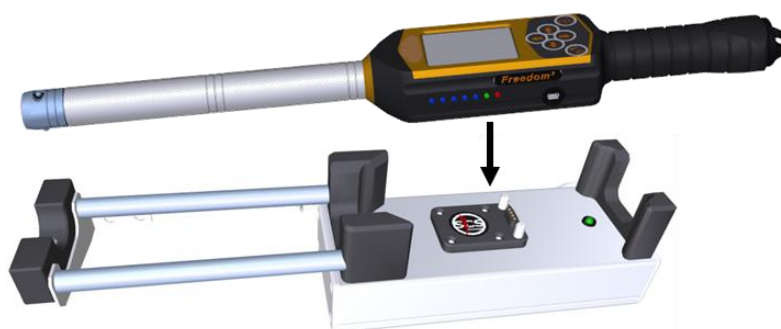
Display Protector (Model : Freedom³-DRP)



Storage Case ※Order manufacturing



Charging Cradle ※Required Option Freedom3-CP(Can be retrofitted)



Model	Model (with display protector)
TAW-PSS3 - 15/30/50 Nm	TAW-PSS3 RP - 15/30/50 Nm
TAW-PSS3 - 70/100 Nm	TAW-PSS3 RP - 70/100 Nm
TAW-PSS3 - 200 Nm	TAW-PSS3 RP - 200 Nm
TAW-PSS3 - 300 Nm	TAW-PSS3 RP - 300 Nm
TAW-PSS3 - 400 Nm	TAW-PSS3 RP - 400 Nm
TAW-PSS3 - 600 Nm	TAW-PSS3 RP - 600 Nm
TAW-PSS3 - 800 Nm	TAW-PSS3 RP - 800 Nm
TAW-PSS3 - 1000 Nm	TAW-PSS3 RP - 1000 Nm
TAW-PSS3 - 1200 Nm	TAW-PSS3 RP - 1200 Nm



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