

FGS-VC Series Motorized Stand Operation Manual



Read Manual thoroughly prior to operation.

Use instrument only after reading the complete manual.
Follow all safety precautions.

Safety Precautions

Be sure to read the entire instruction manual thoroughly before initial set-up, operation and maintenance. The instruction manual provides three grades of safety precautions: "Danger", "Warning" and "Caution". Follow these precautions.



Danger

"Danger" marking indicates possible death, severe injury or fire if the user disregarded.



Warning

"Warning" marking indicates possibility of a serious injury if the user does not follow the instruction.



Caution

"Caution" marking indicates possibility of severe bodily or object damage if operated improperly.

The following marks indicate the sort of contents which are completed with



The mark indicates warning.







The mark indicates a prohibited operation.









Execute this warning.

⚠ Warning

	Heavy! Pay close attention to operation. When FGS-VC falls on your foot, it leads to serious injury.		Do not use in atmosphere with the ignition and the explosion hazard. Never use in oils and fats and the flammability gas atmosphere, etc. with the ignition and the explosion hazard.
	Keep hands, hair and jewelry away from stand when drive assembly is in motion. May cause damage or injury.		Never put fingers or insert stick, etc. in drive assembly at measuring or adjusting. May cause damage or injury.

⚠ Caution

	Fix object surely. May cause damage or noisy.		Avoid humid and place where water splashed directly. May cause electric shock, a fire and injury.
	Do not pull out the AC outlet pulling the code. May cause electric shock, a fire and injury.		Never do carrying and the movement of FGS-VC with the AC code. May cause electric shock, a fire and injury.
	Do not use except AC 230V. May cause electric shock, a fire.		Do not plug AC connector into outlet by a wet hand. May cause electric shock.

Attention Safety

Warning



Pull out the AC outlet for maintenance and check or un using a long time.
Do not plug AC connector into outlet by a wet hand.
May cause electric shock, a fire and injury.

Attention before using FGS-VC

Avoid the following.

Place where water, oil, and medicine splash
Dusty locations
Place where dewfall is generated
Place with ignition and explosion hazard
Place where vibration such as machines is received
Operate without 32-104°F (0-40°C)
Cleaning with thinner and gasoline, etc.

Note drawing the cable so that the force gauge cable should not narrow in the slide.

Install the force gauge after turning off the power switch.

Adjust the limit switches when the motor stops.

When digital force gauge FGP/FGPX series is installed

Set "ovEr" in the F06 parameter, which is the parameter of Output Type.
If "ovEr" is not set, FGS-VC does not stop by the overload of the force gauge.

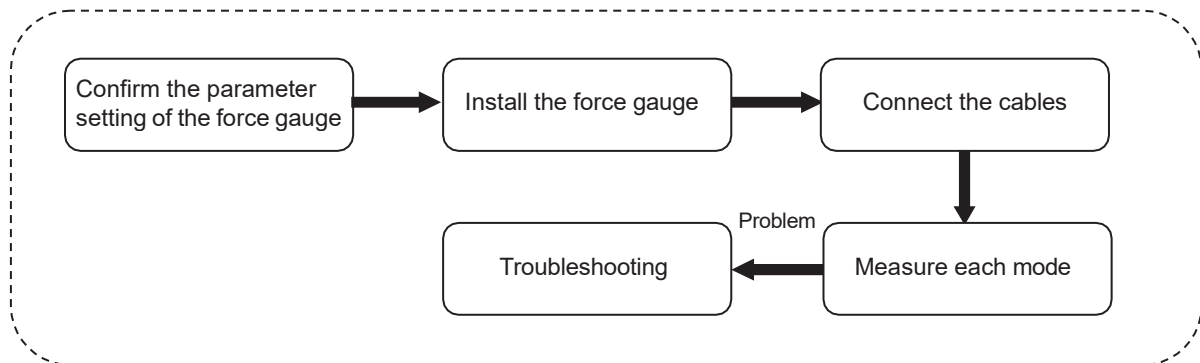
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1. Ahead of the use

1.1. Procedure from the Installation of a force gauge to the measurement

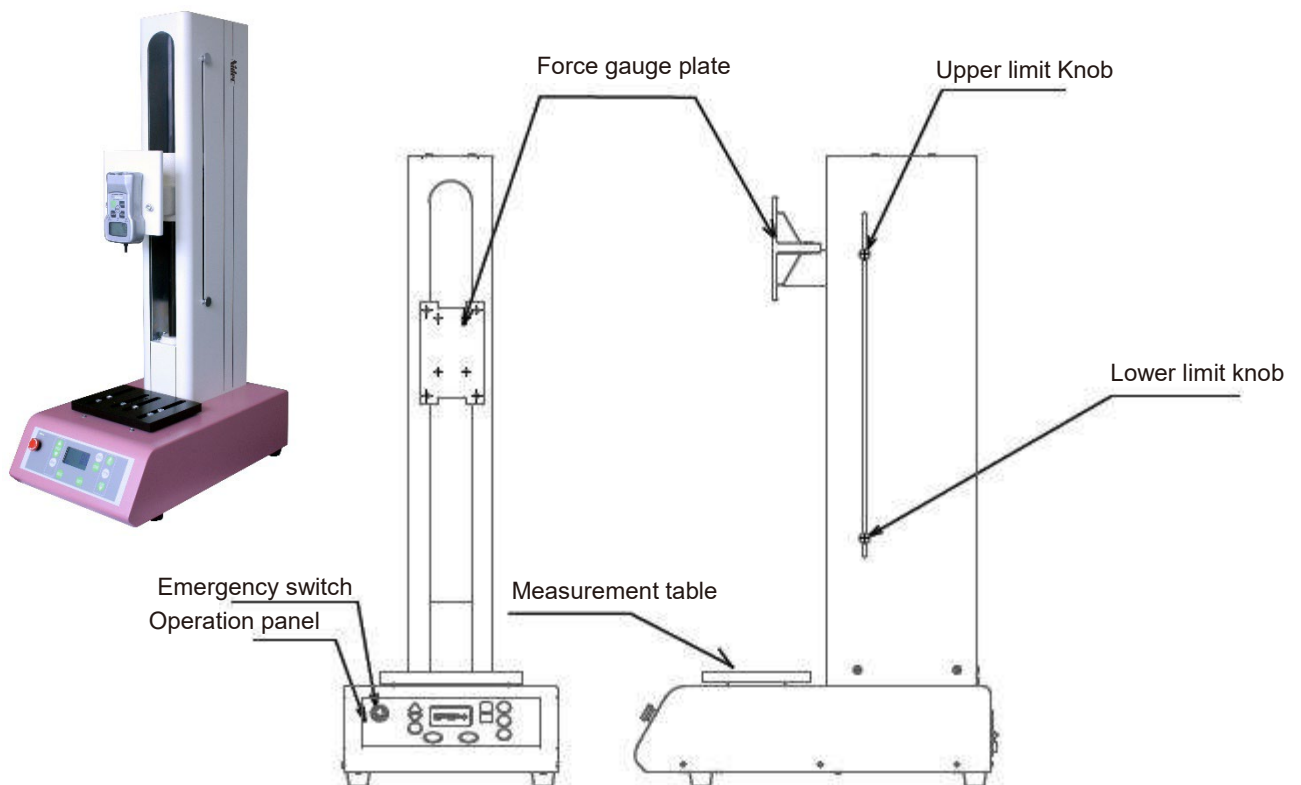
FGS-VC can measure various loads using our digital force gauges which are FGP series and FG PX series. Confirm the following procedures before use.



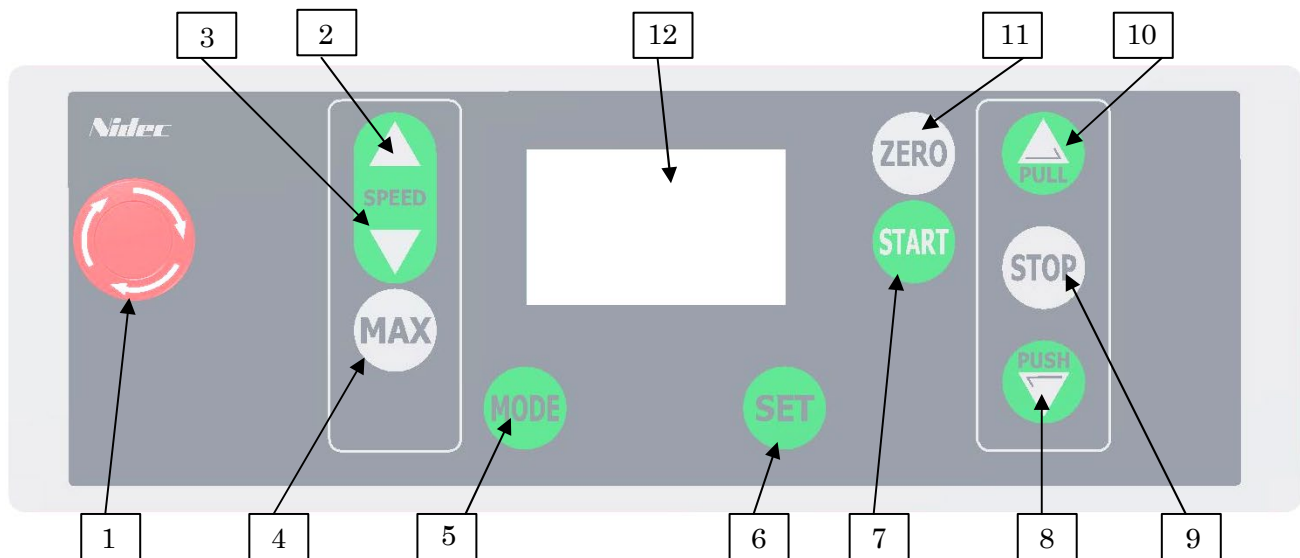
1.2. Confirmation of product packing

FGS-VC	1	Cable to force gauge	1
Cable clip	1	USB cable (2m)	1
Hex-head spanner	1	Bolt (M8 x 8mm)	4
Socket bolt (M6 x 16mm)	2	Set screw (M6 x 20mm)	1
Washer	2	Manual	1

2. Names of components



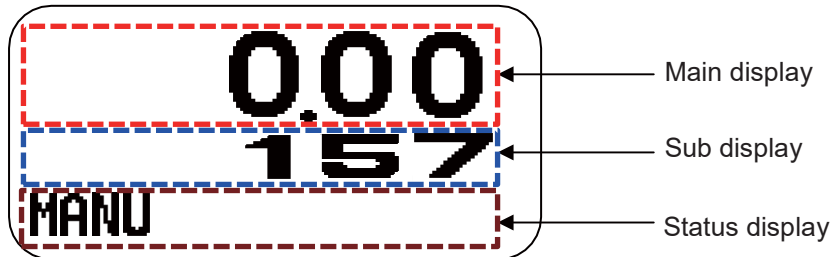
3. Names and functions of the operation panel



No	Name	Description
1	Emergency switch	Emergency stops when pushing. Push the switch when FGS-VC becomes abnormality or hazardous situation at measuring. Release the emergency stop to restart operation.
2	Speed key (up)	The moving speed is increase or decrease when pushing Up or Down key. If the key keeps to push, the speed increases/ decreases continuously.
3	Speed key (Down)	
4	MAX key	The moving speed becomes the maximum while pushing. The speed returns to previous speed when releasing the key. The key is available at Manual and Jog.

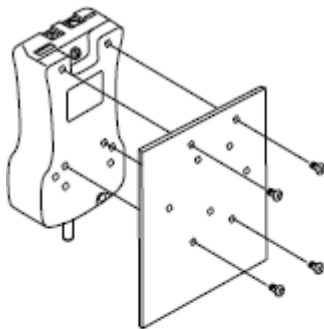
		mode
5	MODE key	Use to change operation mode and function setting.
6	SET key	The indicated data is set when the key is pushed.
7	START key	Start to operate at the program mode.
8	PUSH key	Move to the direction of PUSH.
9	STOP key	Stop.
10	PULL key	Move to the direction of PULL.
11	ZERO key	Clear distance in case of the manual and Jog mode. Clear repeat time in case of the Single, Continuous and Program mode.
12	LCD display	Displays distance, speed and mode, etc.

LCD display



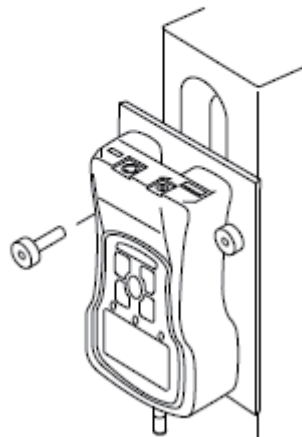
4. Setup

4.1. Installation of force gauge



The force gauge is set in the mounting plate.

In case of FGS-100VC



The force gauge is fixed to the stand.

Remove the mounting plate using the hex-head spanner of the accessory.



Set the force gauge in the mounting plate.



Fix the mounting plate with the force gauge to the stand using bolts.



The force gauge that can be connected with FGS-VC is FGP series and FG PX series.
The force gauges up to 100kgf is available in FGS-100VC.
As for FGS-250VC, up to 250kgf is available.

4.2. Connection to the force gauge and the stand

The connection and confirmation between FGS-VC and a force gauge is the following procedure.

Parameter setting of the force gauge

Set the following parameters.
Measurement polarity: +
RS232C baud rate: 19,200 bps
Refer to the manual of the force gauge.

Connect to FGS-VC

Connect the force gauge to FGS-VC by the attached cable.

Power on

Turn on the power of the force gauge.
Next, turn on FGS-VC in the power switch of back.

Confirmation of the connection

Display of FGS-VC as follows:
1. Indicate "FGS-100VC" or "FGS-250VC".
2. Indicate "MANU"(Manual Mode)
If the connection is wrong,
Indicate "NO FORCE GAUGE" in 3 seconds, then
indicate "MANU".

If the connection is wrong, check:

- Is the parameters setting of the force gauge correct?
- Is the sequence of power on correct?
- Is the cable correct?

If no problem, please ask to our technical support.

FGS-100VC

FGS-250VC

0.00
157
MANU

FGS-100VC

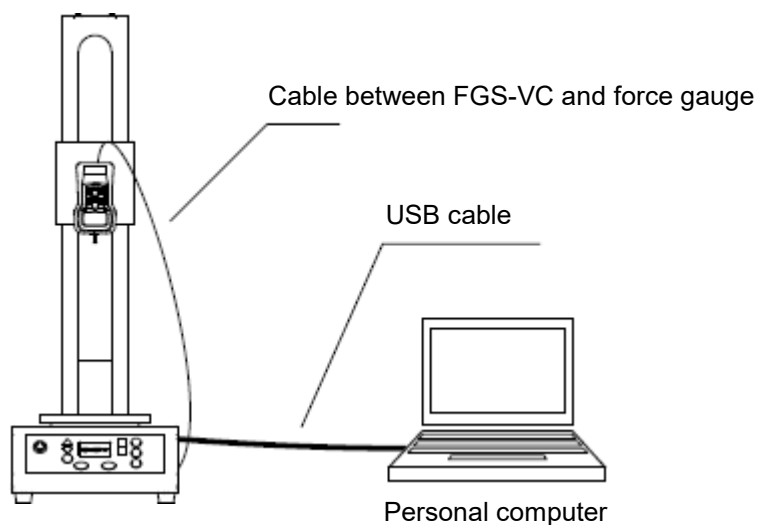
NO FORCE GAUGE

4.3. Connection to PC and the stand

FGS-VC can connect to PC for taking force and displacement.

The software is able to be downloaded from our HP free of charge.

Refer to the software manual.



5. Operation

5.1. Basic operation flow

The procedure of basic operation is described as follows.



Keep hands, hair and jewelry away from stand when drive assembly is in motion.
May cause damage or injury.

Force gauge power

Turn on the power of the force gauge.

FGS-VC power

Turn on the power of the stand.

Separate hands from the force gauge and FGS-VC movable part.
Turn on FGS-VC.

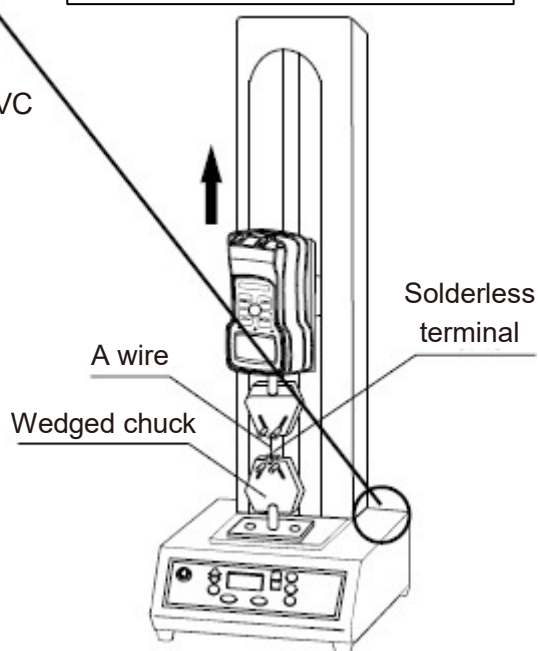
FGS-100VC

FGS-250VC

Then display as below:

0.00
157
MANU

Example. Tension test of a wire



Select measurement mode

Select Manual, Jog, Single, Continue and Program mode according measurement purpose and the usage.
Mode can be changed by Mode switch.

MANU

0.00
157

JOG

0.00
157

SING C=0001

0.00
0.4

CONT C=0000

0.00
0.4

PROG C=0000

0.00
157

Start to measure.

Start each mode by pressing PUSH, PULL or START switch.
Refer to each mode section.

FGS-VC is able to test as follows:

- Compression test
- Tension test
- Welding test
- Peel test
- Suck test
- Repulsion test
- Cork test
- Open test
- Etc.

5.2. Operation mode

The operation mode consists of manual and program.

The mode is selected by the measurement purpose and the usage.

You wish to test by PUSH or PULL key.

e.g.,

- You want to move to the position of PULL limit by pressing PULL switch.
- You want to move only while you press the PUSH key.
- You want to move the round trip operation many times between limits of PUSH and PULL.

etc.

Select **manual operation mode**.

You wish to move complex operations.

e.g.,

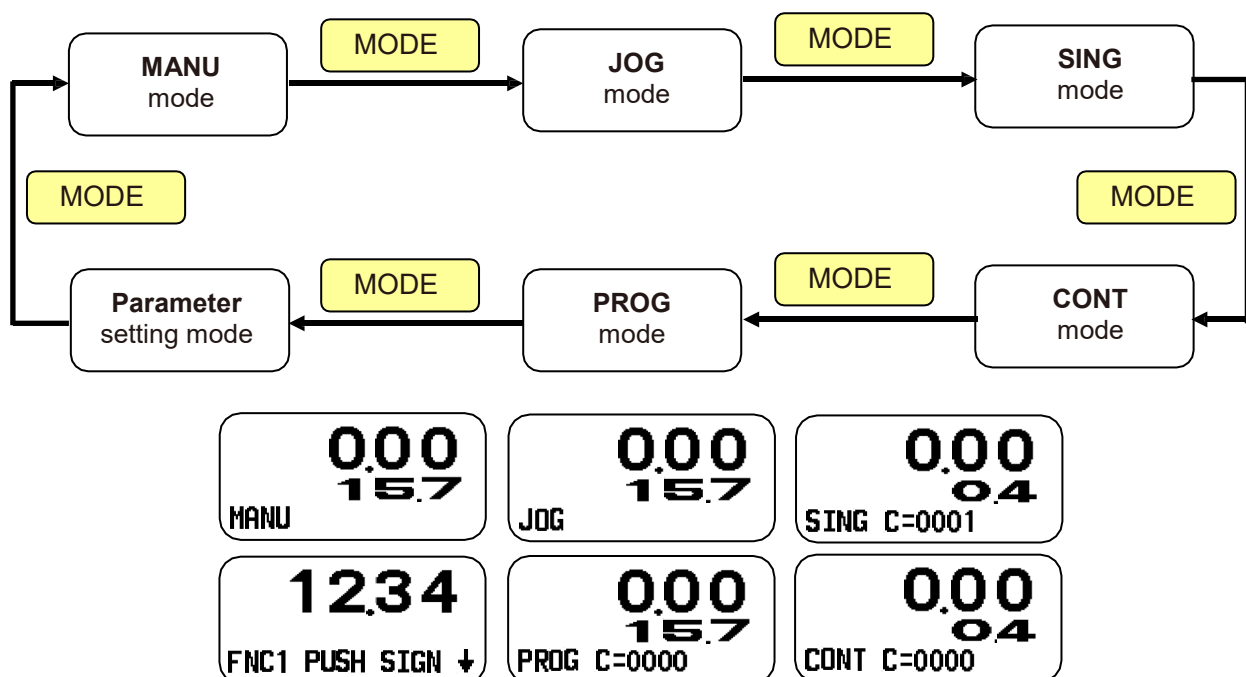
- You want to measure by specifying the positions.
- The position of the object to be measured cannot be specified.
- You want to combine a different direction (PUSH/PULL) of operation with a test.

etc.

Select **Program operation mode**.

How to select the mode?

Pressing MODE switch in the Operation panel, the mode changes one by one as follows. A present operational mode is displayed under the left of LCD.



5.3. Manual operation mode

The manual operation modes are MANU, JOG, SING and CONT mode as follows.
The mode is selected by the measurement purpose and the usage.

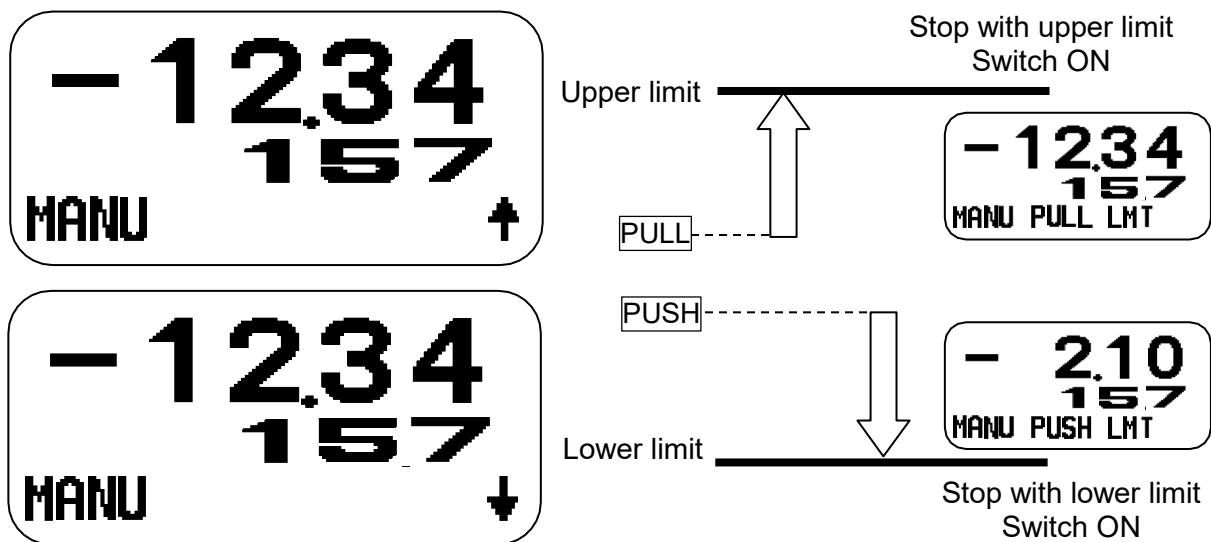
MANU mode	When pressing the PUSH (PULL) key, FGS-VC goes to PUSH (PULL) limit switch position. FGS-VC stops if reaching the limit position.
JOG mode	This mode of operation is identical to MANU, except that the movement in any direction will only occur while either the PUSH or PULL key is depressed.
SING mode	Pressing PUSH or PULL key, FGS-VC moves for completing one cycle between manual distance limits.
CONT mode	Pressing PUSH or PULL key, FGS-VC moves repeatedly cycle up and down continuously between manual distance limits.

5.3.1 MANU mode

This mode of operation is ideal for manually recording force measurements. The test stand will only operate between the limits that are set by the test stand user. These limits can be either manually adjusted(distance limits).

Contents

The test stand will move in the downward or upward direction when the respective **PUSH** or **PULL** button is selected. The stand will continue to move in the selected direction until one of the following occurs: **STOP** button is pushed, one of the manual limit switches is tripped, the emergency reset button is pushed.

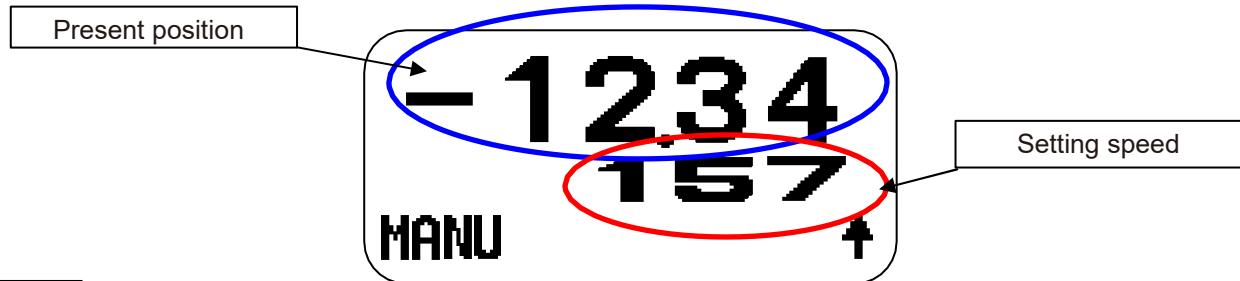


Speed

Speed can be changed by **UP** or **DOWN** button of the SPEED.

The speed setting of MANU and JOG mode is common.
Also the speed is able to be changed while moving.

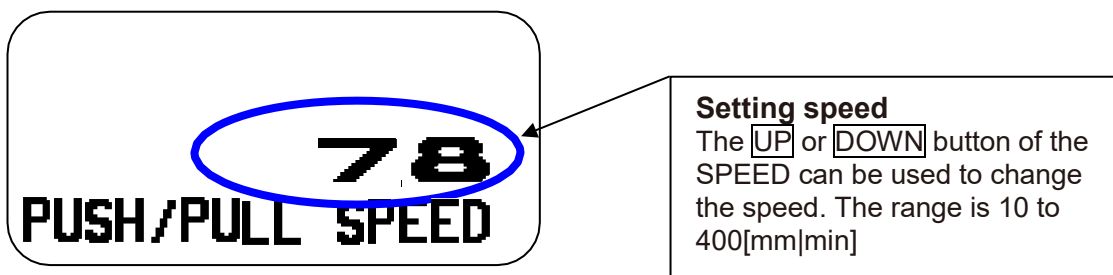
Display



Parameter

The parameter, which is the speed of MANU and JOG mode, is available while stopping.
Pressing **SET** button, and the speed can be changed by **UP** or **DOWN** key of the SPEED.
Then press **SET** button for saving.

If you want to cancel the setting, press **ZERO** button.



5.3.2 JOG mode

Contents

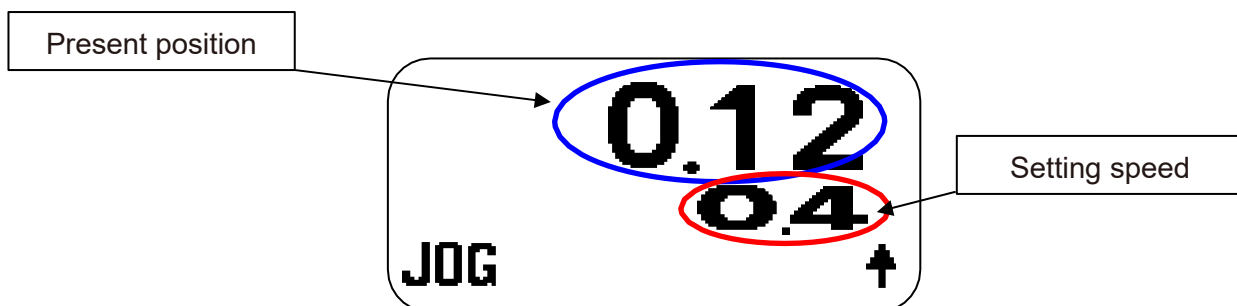
This mode of operation is identical to MANU mode, except that the movement in any direction will only occur while either the **PUSH** or **PULL** button is depressed.

Speed

Speed can be changed by **UP** or **DOWN** button of the SPEED.

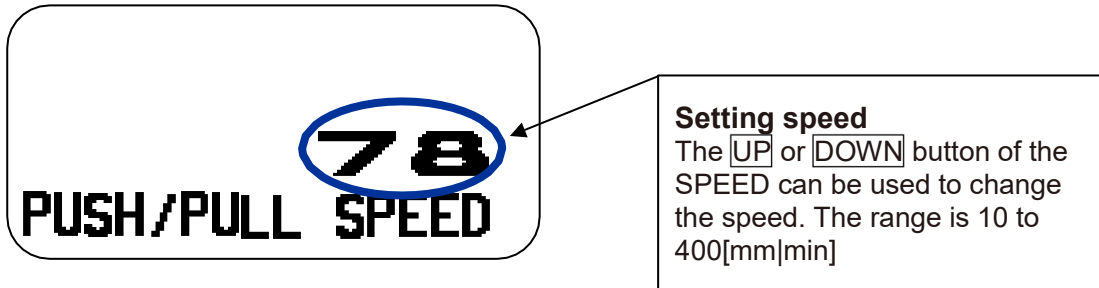
The speed setting of MANU and JOG mode is common.
Also the speed is able to be changed while moving.

Display



Parameter

The parameter, which is the speed of MANU and JOG mode, is available while stopping.
Pressing **SET** button, and the speed can be changed by **UP** or **DOWN** key of the SPEED.
Then press **SET** button for saving.
If you want to cancel the setting, press **ZERO** button.



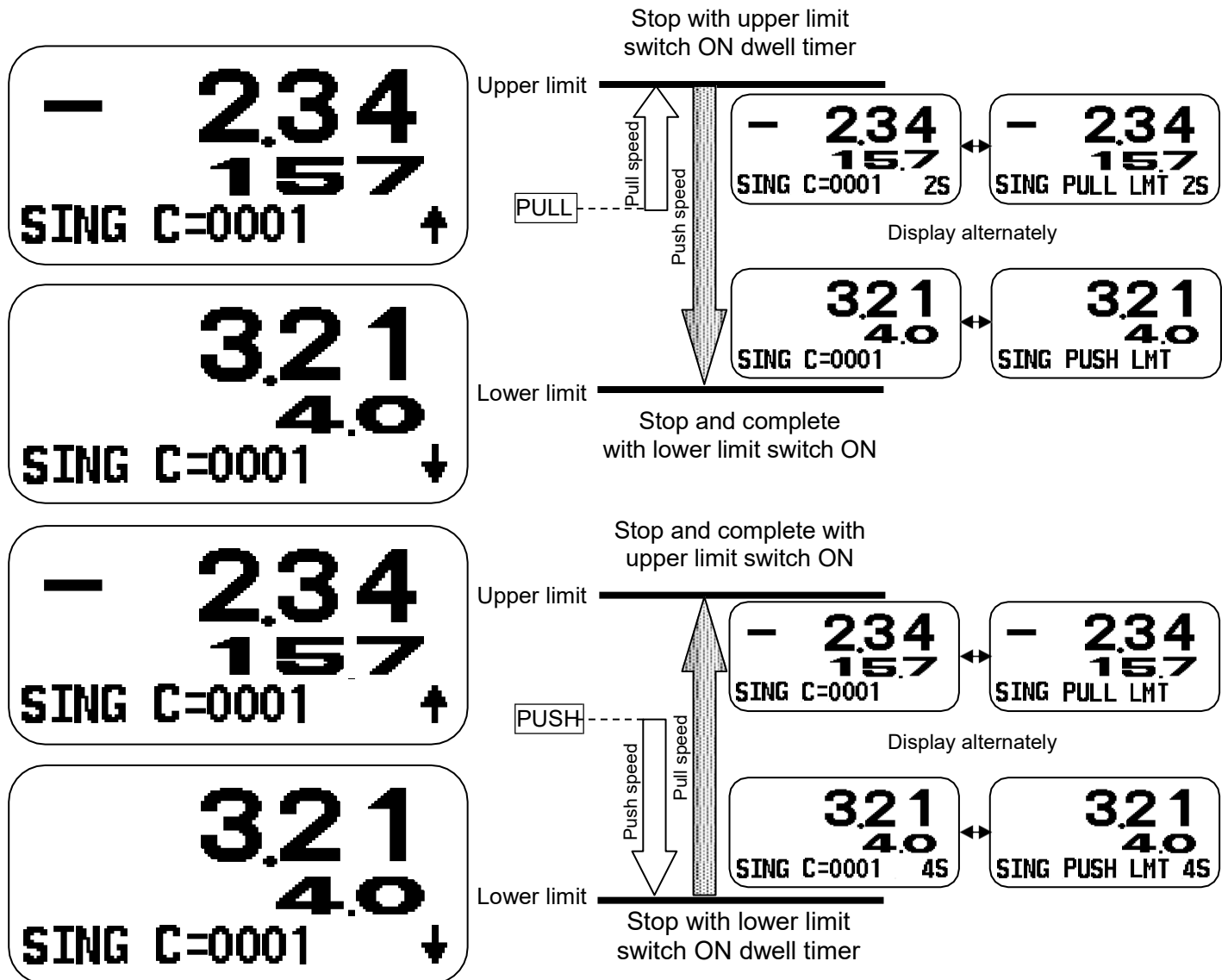
5.3.3 SING mode

This mode of operation is ideal for completing one cycle between manual distance limits. The test stand will only operate between the limits that are set by the test stand user. These limits can be either manually adjusted (distance limits).

Contents

The test stand will move downward or upward when the respective **PUSH** or **PULL** button is selected.

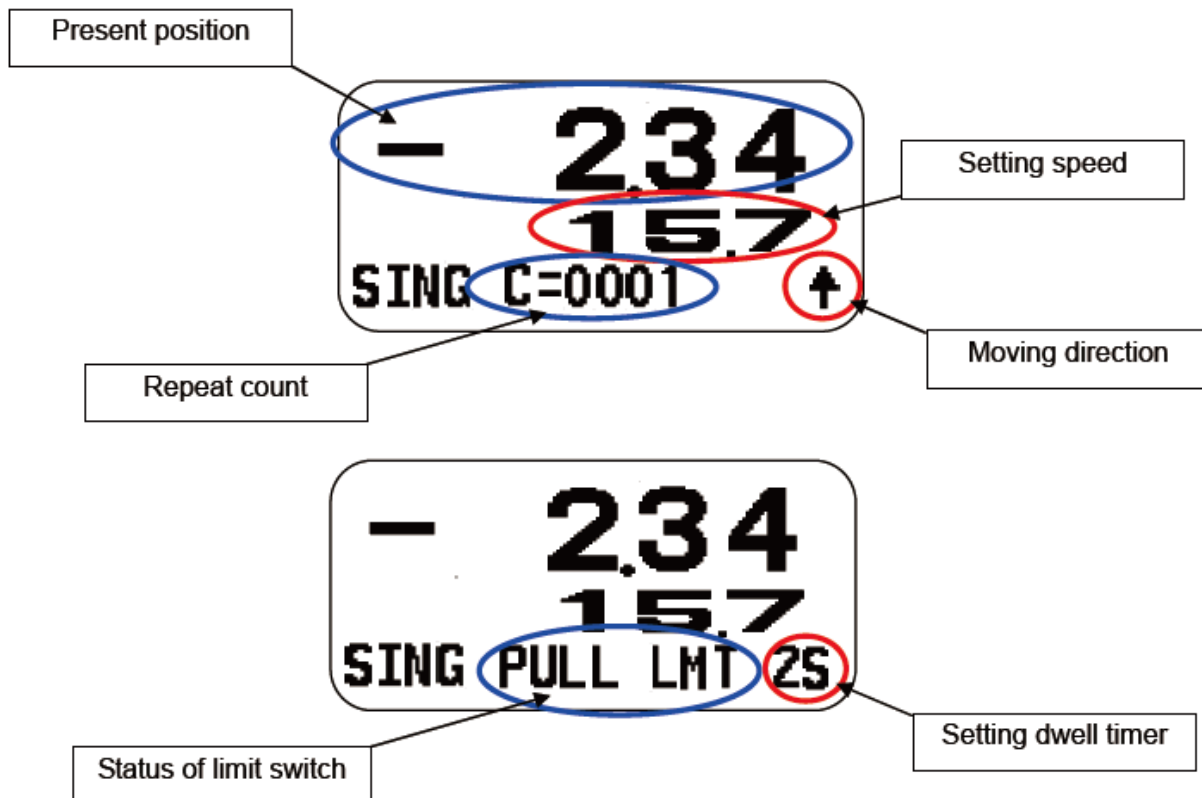
The stand will continue to move until one of the following events occurs: the **STOP** button is pushed, one of the manual limit switches is tripped, the emergency reset button is pushed.



Speed

Speed can be changed by **UP** or **DOWN** button of the SPEED.
The speed setting of SING and CONT mode is common.
Also the speed is able to be changed while moving.

Display



Repeat count

Incremental count at pressing **PUSH** or **PULL** button.

The count is cleared with the **ZERO** button. When the mode is changed, the count will be zero, too.

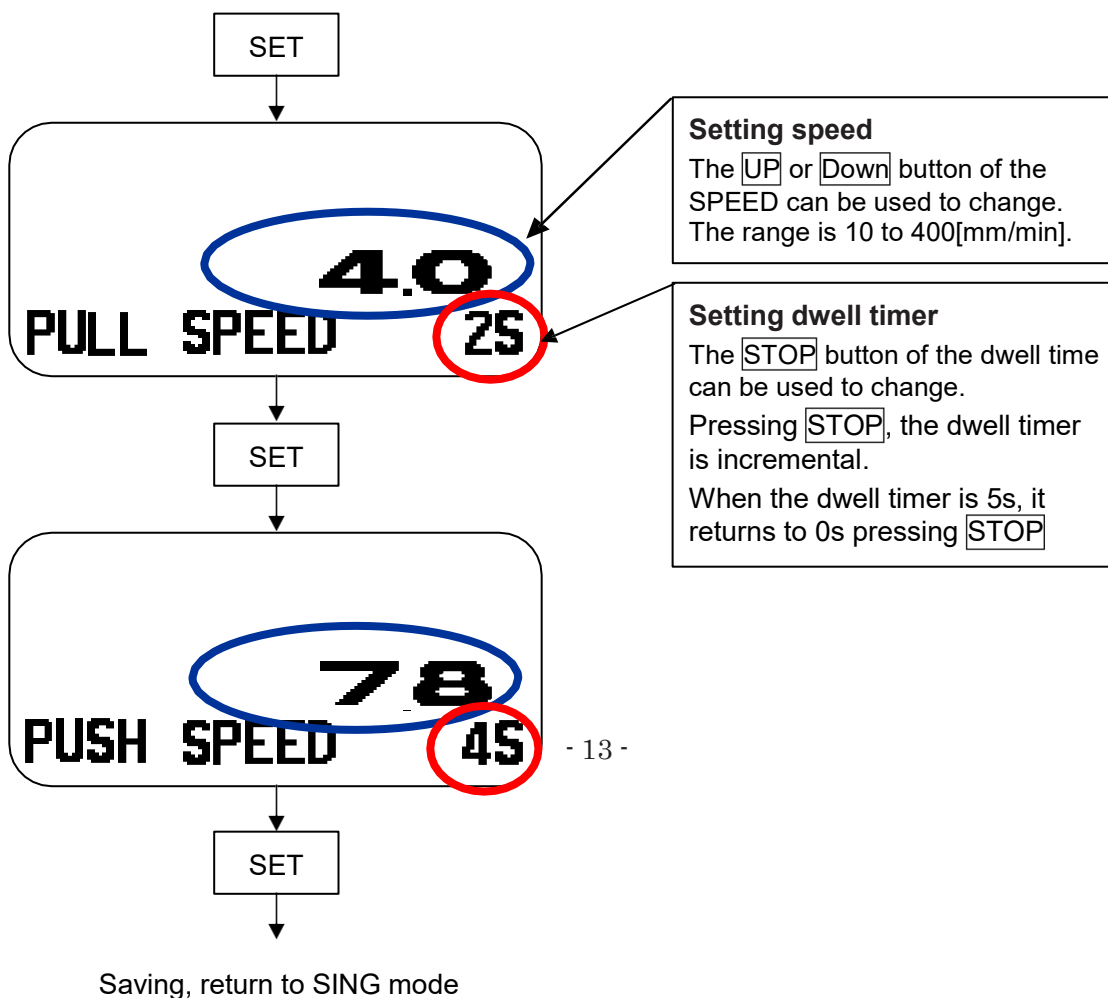
Parameter

The parameter, which is the dwell timer and the speed of pull and push, is available while stopping.

Pressing **SET** button, the speed can be changed by **UP** or **DOWN** key of the SPEED, the dwell timer can be changed by **STOP**.

Finally press **SET** button for saving.

If you want to cancel the setting, press **ZERO** button.

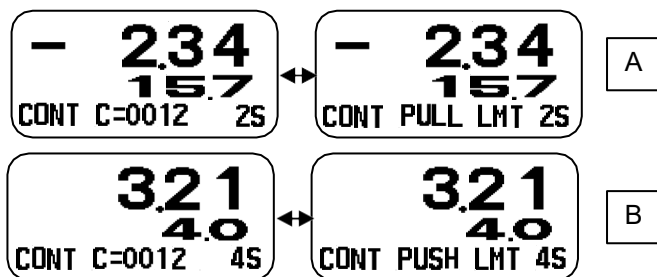
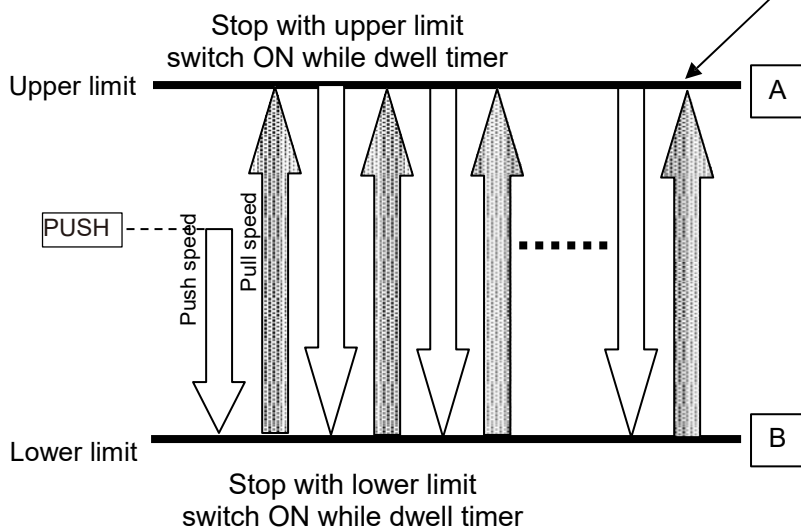
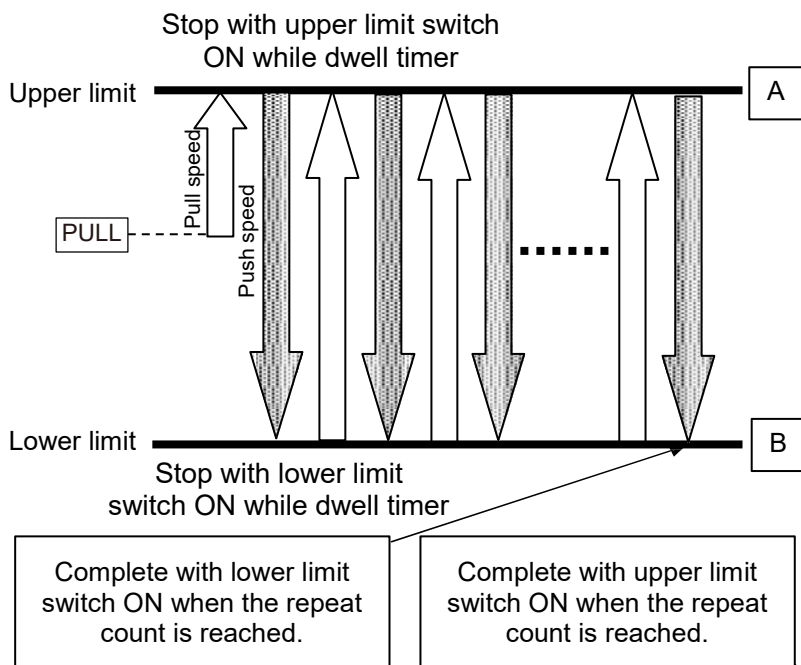
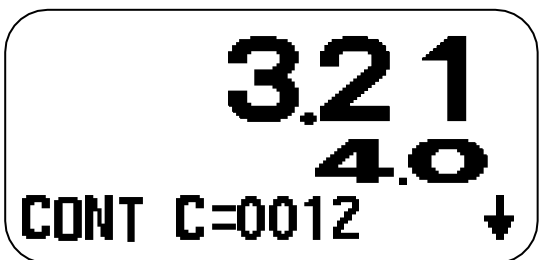
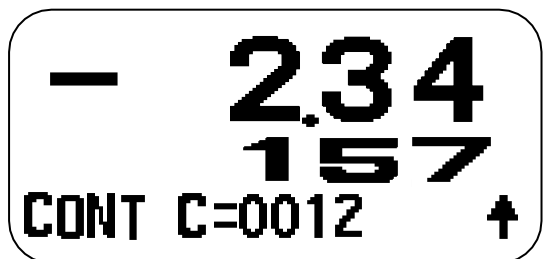
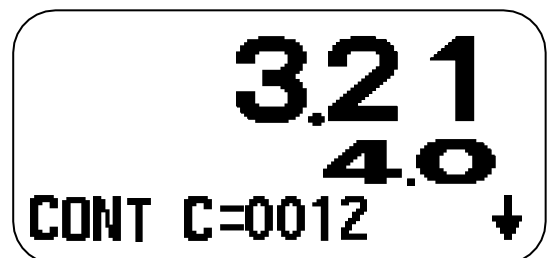
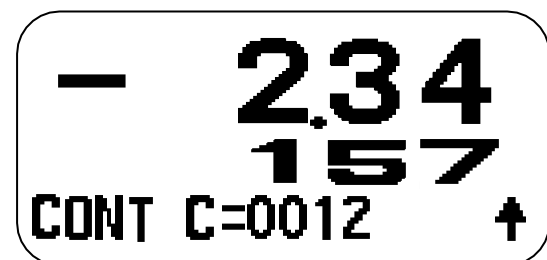


5.3.4 CONT mode

This mode of operation is ideal if the user wants the test stand to repeatedly cycle up and down continuously or for a user-programmed number of times. The stand will start in either direction depending on whether **PUSH** or **PULL** button is selected.

Contents

The test stand will start to move downward or upward when the respective **PUSH** or **PULL** button is selected. The stand will continue to move until one of the following events occurs: the **STOP** button is pushed, the emergency reset button is pushed.

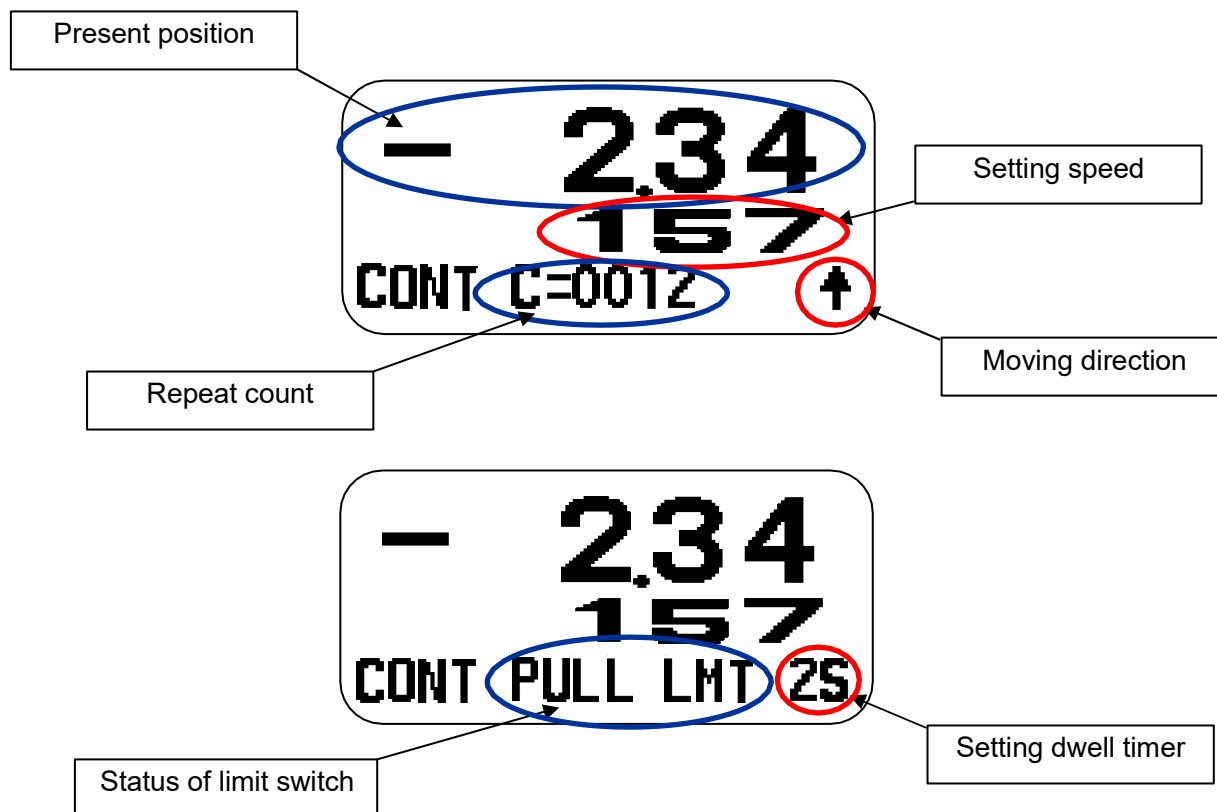


Display alternately

Speed

Speed can be changed by **UP** or **DOWN** button of the SPEED.
The speed setting of SING and CONT mode is common.
Also the speed is able to be changed while moving.

Display



Repeat count

Incremental count at pressing **PUSH** or **PULL** button.

The count is cleared with the **ZERO** button. When the mode is changed, the count will be zero, too.

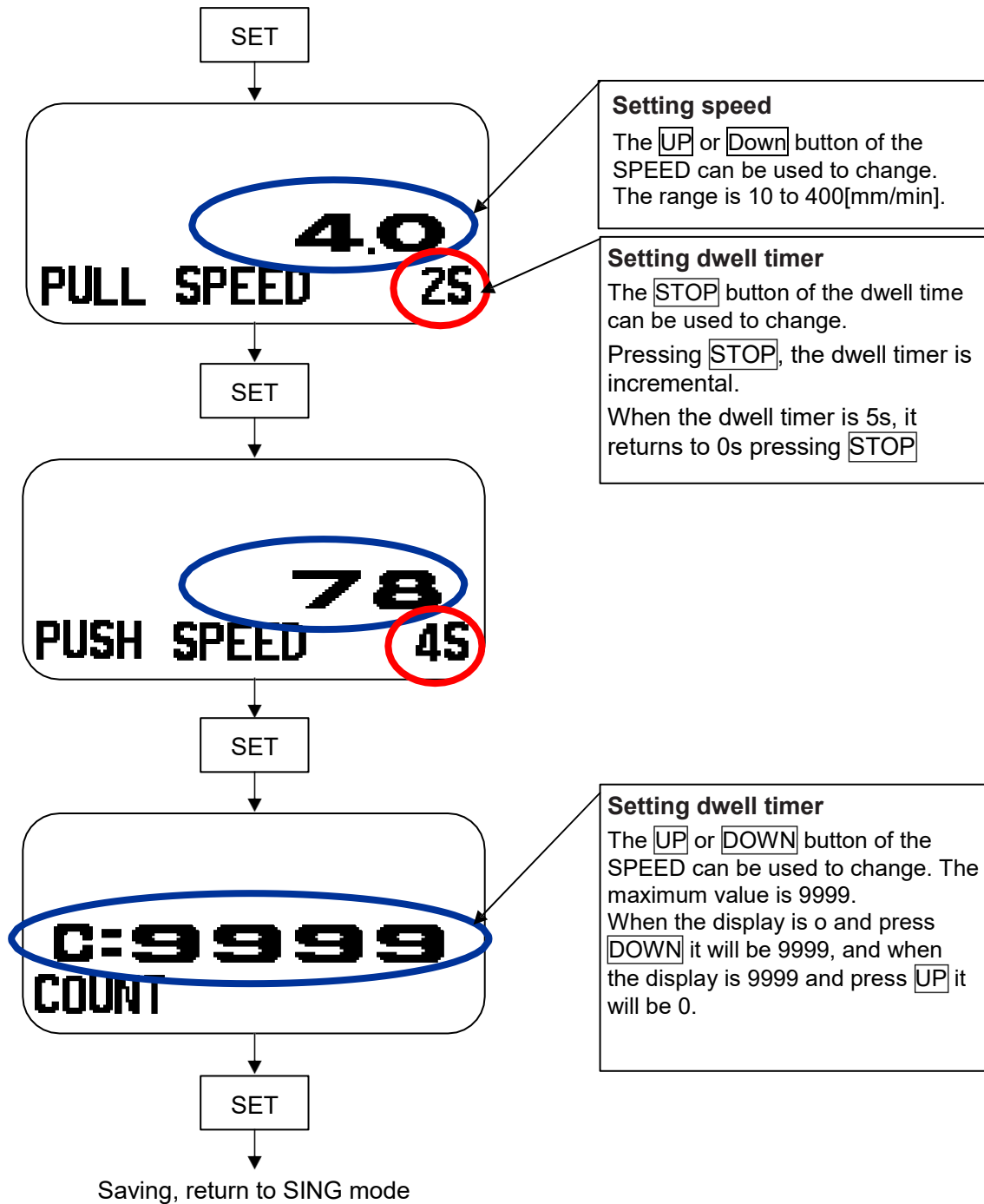
Parameter

The parameter, which is the repeat times and the dwell timer and the speed of pull and push, is available while stopping.

Pressing **SET** button, the speed and the repeat times can be changed by **UP** or **DOWN** key of the SPEED, the dwell timer can be changed by **STOP**.

Finally press **SET** button for saving.

If you want to cancel the setting, press **ZERO** button.



5.4. Program operation mode

5.4.1 PROG mode

This mode of operation is ideal if user wants the test stand to programmed complex moving.

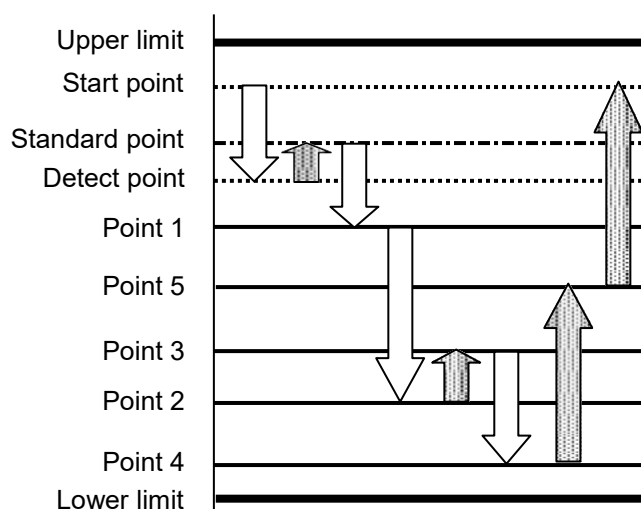
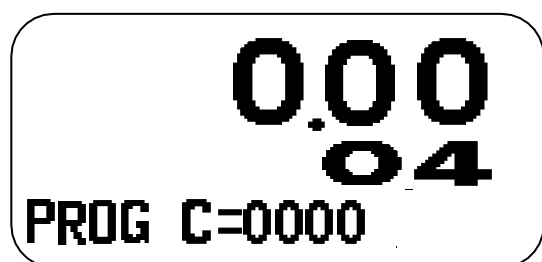
Even if the user does not know the length of the object, the accurate measurement is possible because the function to detect the object to be measured is provided.

Contents

The programmed data consists of a condition setting, starting point, a method of detection of the object, five measurement points and a method of return.

The test stand will start to move when **START** button is pressed.

The stand will continue to move until one of the following events occurs: the **STOP** button is pushed, one of the manual limit switches is tripped, the emergency reset button is pushed or the overload of the force gauge is detected. If the force limit of the condition setting is detected, the present operation is interrupted and it will jump to next point operation

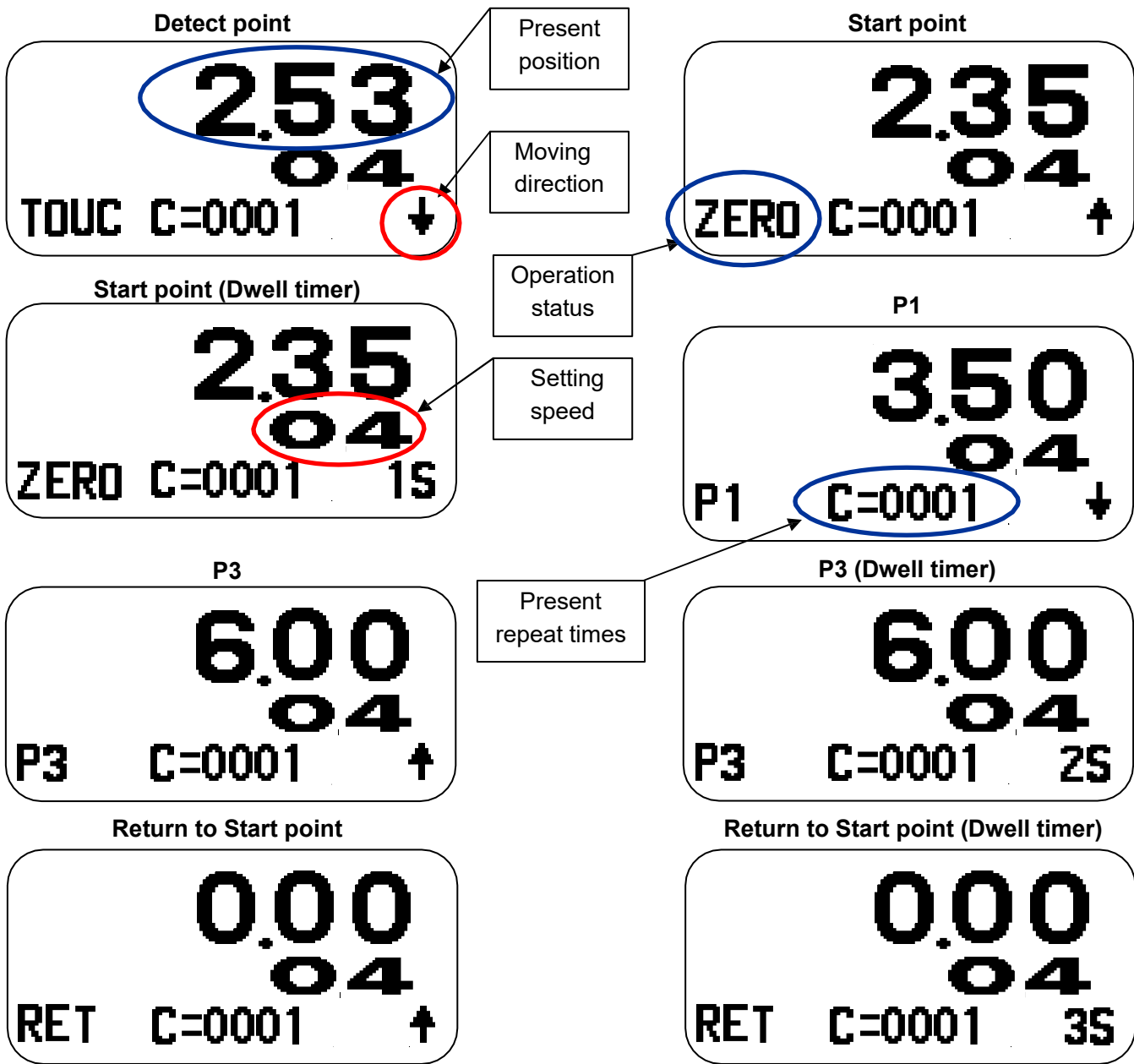


Example

Start point	Program start point and return point
Detect point	Object detected point according to the condition
Standard point	Standard point for measurement
Point 1 to 5	Programmed point

Display

The example of the display under operation is shown below.



Parameter

The parameters are available while stopping.

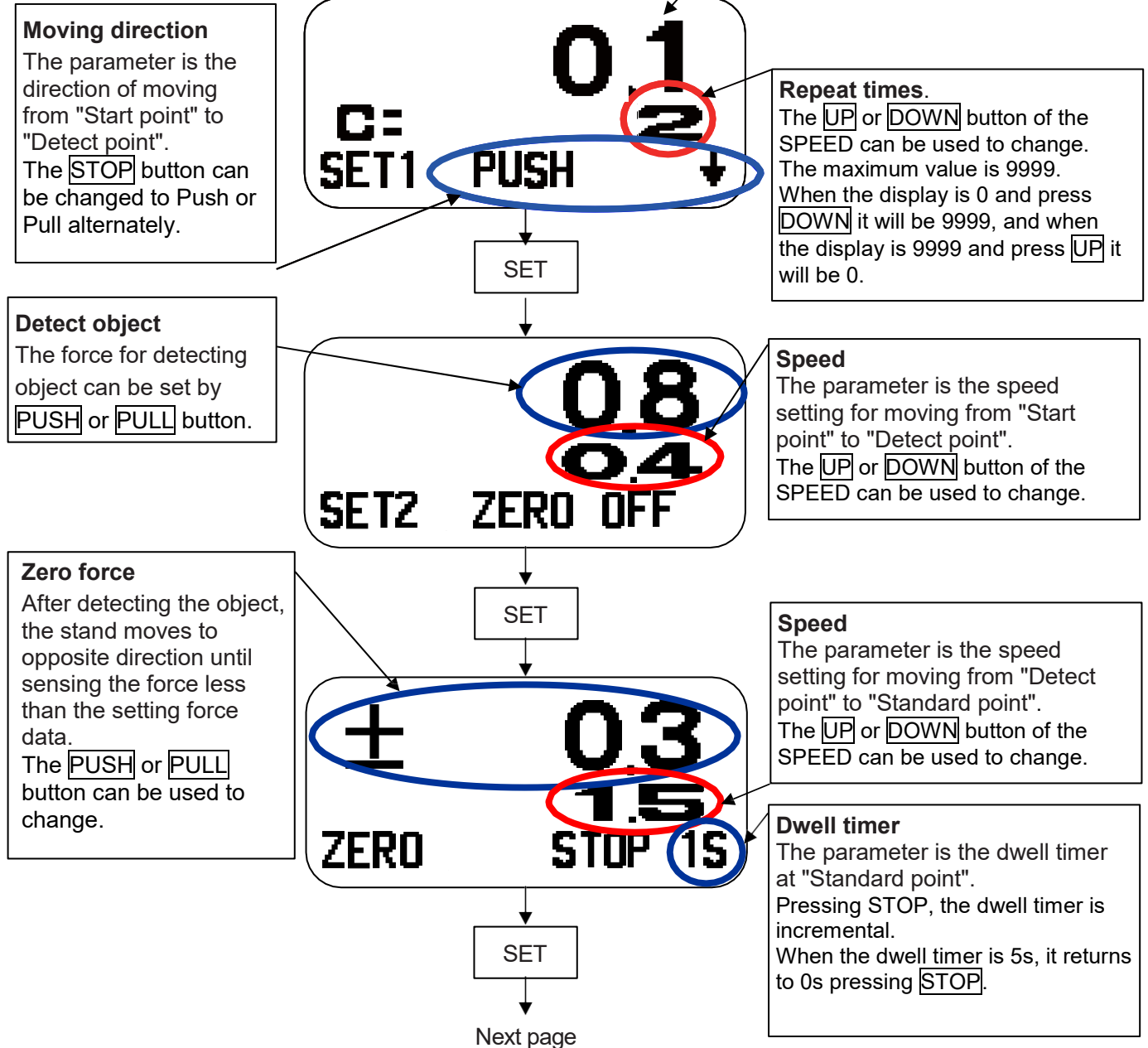
Pressing **SET** button, the parameter setting starts.

The contents of the parameters setting is shown in the below flowchart.

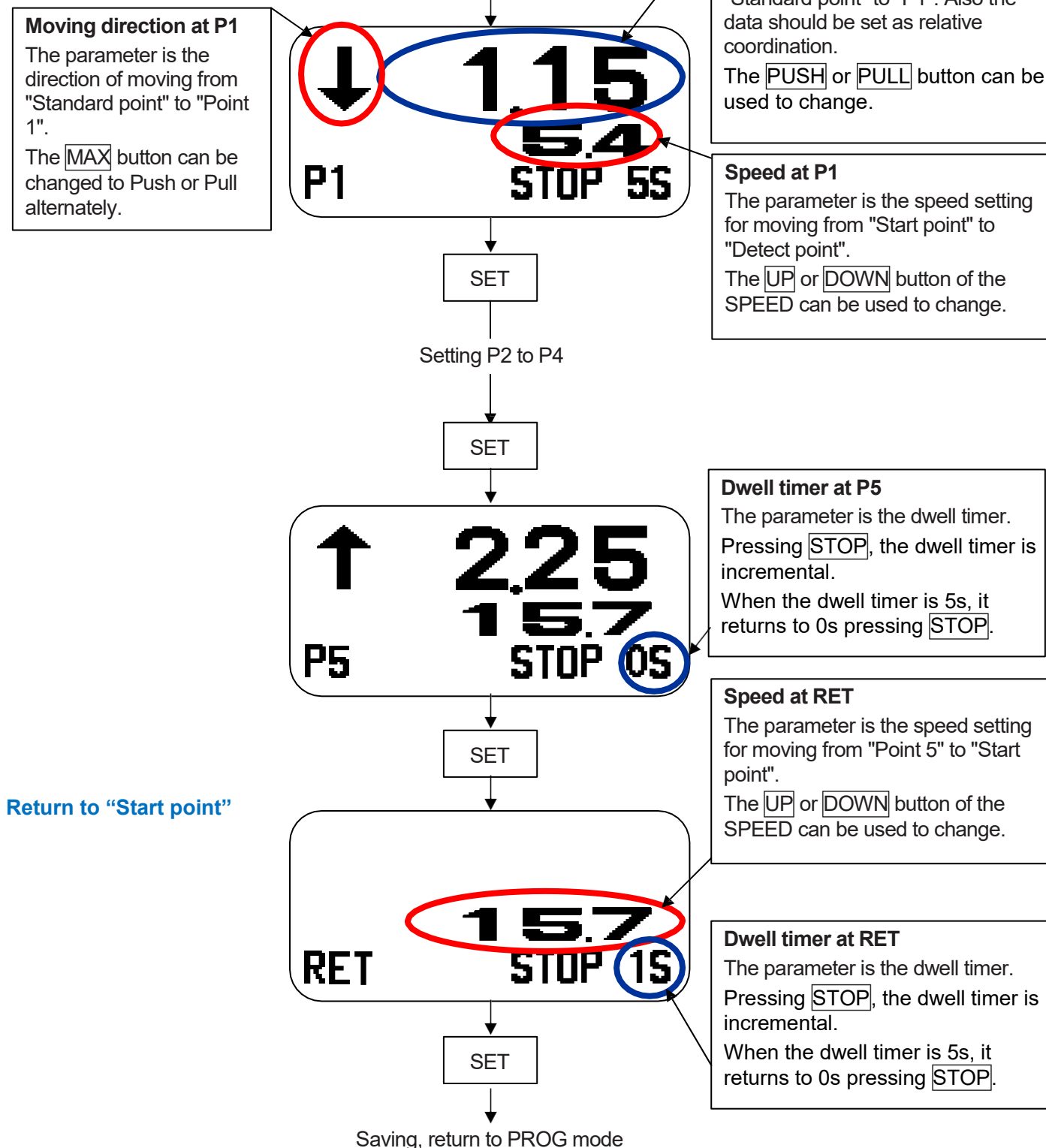
Finally press **SET** button for saving.

If you want to cancel the setting, press **ZERO** button.

Condition setting



Point 1 to 5



Detect object

The parameter is the threshold force level for detecting the object.

When the setting force of "Detect object" parameter is detected, the stand will stop immediately. Next the stand moves to opposite direction until detecting "Zero force".

The recommended "Detect object" that the user should program into the stand is more than 0.2% of the full scale of the mounted force gauge, i.e., if the programmer is using an FGV-200H force gauge, the programmed "Detect object" should be 0.4lb (200lb x 0.2%).

5.5. Parameter setting mode

The relations function is set to the entire stand.

Contents

The parameters are shown in the below table.

Items	Description	Range
Sign of Push direction	The sign at the position of the direction of Push is set. If it sets "-" and the stand moves to Push, the display of position is decrement.	[space], -
Acceleration	The acceleration of the motor of the stand is set. The acceleration means the slope from motor starting to reach to the setting speed. If the parameter sets maximum 100, the motor moves quickly.	1 to 100 (step 1)
Volume of buzzer	The volume of the buzzer is adjusted.	OFF, Low, Middle, High

Parameter

If you want to cancel the setting, press **ZERO** button.

Sign of Push direction

Space means '+'.
The **UP** or **DOWN** button can be used to change. Pressing the button, the setting will be changed alternately.

-12.34

FNC1 PUSH SIGN ↓

MODE

Saving and go to
MANU mode

012.34

FNC1 PUSH SIGN ↓

SET

50

FNC2 ACCEL

MODE

Saving and go to
MANU mode

SET



FNC3 BEEP VOL

MODE

Saving and go to
MANU mode

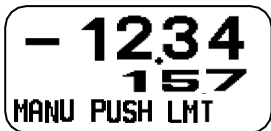
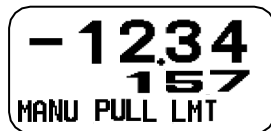
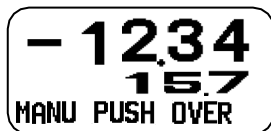
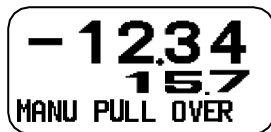






SET

FNC3 BEEP VOL

FNC3 BEEP VOL

FNC3 BEEP VOL

6. Message of status and error

	<p>The lower limit was reached. "PUSH LMT" is blinking.</p>	<p>If the status is abnormal, move the lower limit switch position.</p>
	<p>The upper limit was reached. "PULL LMT" is blinking.</p>	<p>If the status is abnormal, move the upper limit switch position.</p>
	<p>The over load of the mounted force gauge occurred in push direction.</p>	<p>Confirm whether the force gauge used is correct. Check whether the measurement is an abnormal.</p>
	<p>The over load of the mounted force gauge occurred in pull direction.</p>	<p>Confirm whether the force gauge used is correct. Check whether the measurement is an abnormal.</p>
	<p>The emergency stop was pushed.</p>	<p>Confirm that an abnormal is not found, then release the emergency stop.</p>
	<p>ALARM 01: Low voltage error occurred. ALARM 03: Overcurrent error occurred. ALARM 04: Overvoltage error occurred. ALARM 05: Thermistor error has occurred. ALARM 06: Overspeed error occurred. ALARM 07: Hall sensor error has occurred. ALARM 08: Encoder error occurred. ALARM 10: EEPROM error occurred. ALARM 13: Power failure error occurred. ALARM 80: Abnormality other than the above occurred.</p>	<p>Press the STOP key to return. If it does not, contact us from "Web Page Information" on the back cover.</p>
	<p>The communication error between the controller and the motor driver in the stand occurred.</p>	<p>Turn off and wait one minute, then turn on. If it does not, contact us from "Web Page Information" on the back cover.</p>
	<p>The read error of the memory in the stand occurred.</p>	<p>Turn off and wait one minute, then turn on. If the error is not canceled, initialize the parameter. Refer to the below procedure of the initialization.</p>
	<p>The write error of the memory in the stand occurred.</p>	<p>Turn off and wait one minute, then turn on. If the error is not canceled, initialize the parameter. Refer to the below procedure of the initialization.</p>
	<p>The stand could not recognize the mounted force gauge.</p>	<p>Check: The parameters setting of the force gauge, the sequence of power on and the cable. If no problem, ask to our technical support.</p>

Procedure of the initialization of the parameters

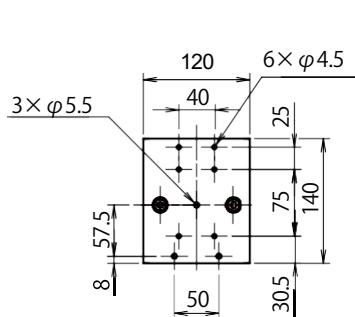
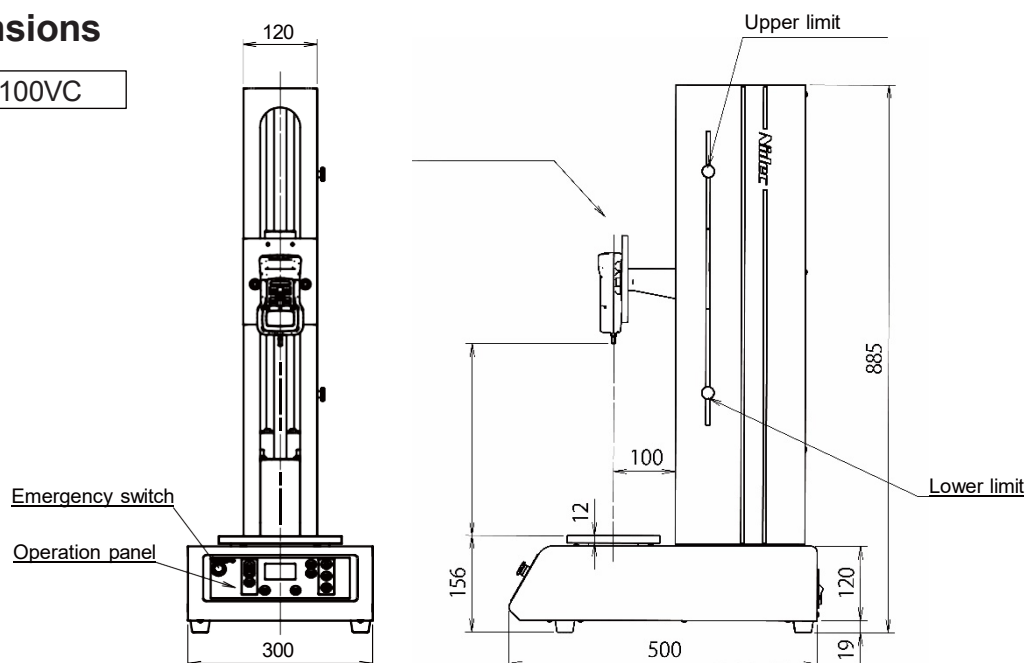
1. Turn off, wait one minute.
2. Press **ZERO** and **SET** button both, turn on in keeping to press these buttons.

FGS-100VC

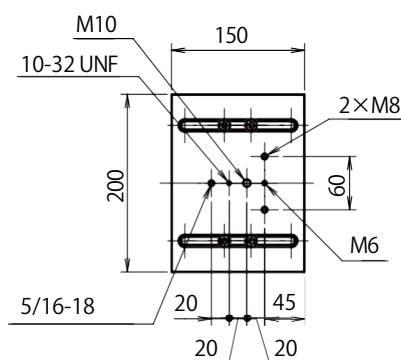
PARAMETER INIT

7. Dimensions

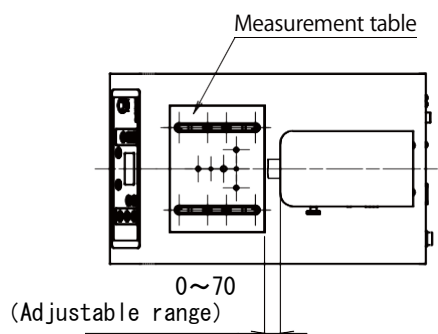
FGS-100VC



Force gauge mounting
surface detail

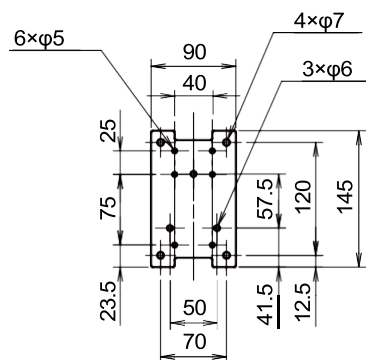
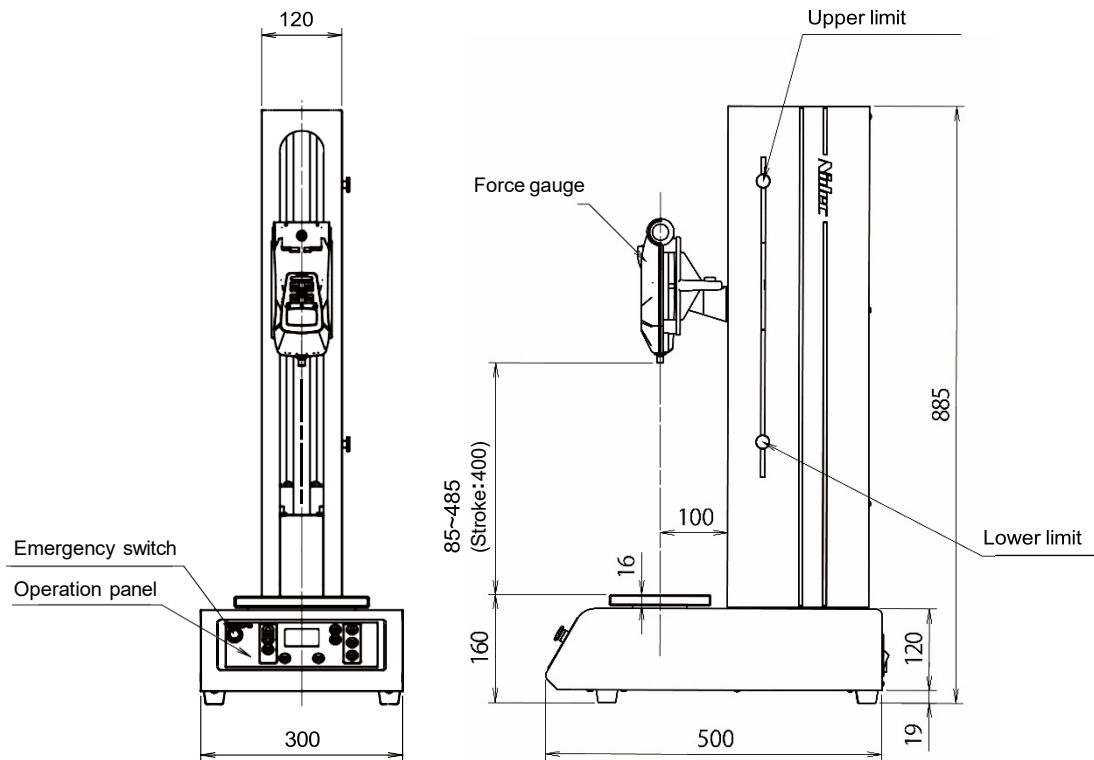


Measurement table
surface detail

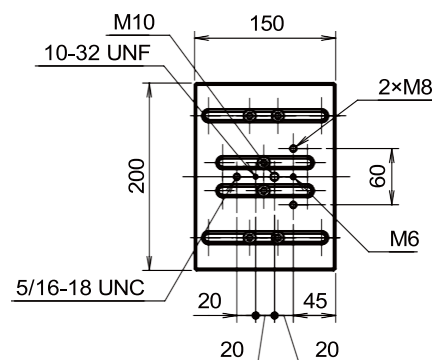


[mm]

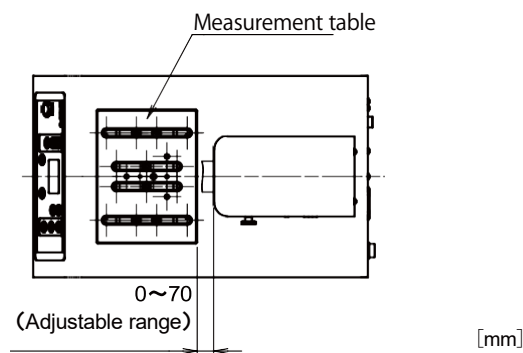
FGS-250VC



Force gauge mounting
surface detail



Measurement table
surface detail



[mm]

8. Specifications

Model	FGS-100VC-SEG	FGS-250VC-SEG
Capacity	100kg (1,000N, 220lb)	250kg 550lb(2,500N, 550lb)
Travel Speed	10-400mm/min (0.40-15.75"/min)	
Stroke	400mm (15.75")	
Display	Dot-matrix LCD Four digit with sign	
Operating Mode	MANU, JOG, SING, CONT, PROG	
Communication	USB	
Input	Over load from force gauge (The stand will stop immediately, if the over load is detected.)	
Measurement Table	150 x 200mm (5.91 x 7.87")	
Operating Temperature	32-113 degrees Fahrenheit (0-45 degrees Centigrade)	
Power	200~300VAC	
Weight	63kg (139lb)	65kg (144lb)
Dimensions	300 x 885 x 500mm (11.81 x 34.84 x 19.69")	
Accessories	USB cable Communication cable for force gauge(FGP or FG PX)	
PC Software	Free software is provided.	
Available Force Gauge	FGP-0.2 to FGP-100 FGPX-0.2 to FG PX-100	FGP-0.2 to FGP-100 FGPX-0.2 to FG PX-100 FGPX-250H

9. Troubleshooting

The following are general checkpoints; please call your local NIDEC DRIVE TECHNOLOGY representative or contact NIDEC DRIVE TECHNOLOGY Instruments directly for further assistance.

Even if the power supply is turned on, LCD doesn't display.	Confirm the voltage of the input supply.
The force gauge/load cell mounting plate does not move.	Check power connections and power source, ensure that test stand power is on. Check whether the load hangs too much. Check manual limit switches and adjust accordingly. Confirm whether the emergency switch is ON. Check the mounted force gauge is over load. Check to see if the full travel range has already been achieved. Check to be sure you are in the correct mode of operation.
The stand will not accept a program.	Move force gauge/load cell mounting plate to Home position. Check to see if you are in the correct mode of operation (PROG).
The stand is noisy at operating.	It is not abnormal though the sound of the motor gear is high at rapid moving. Use the lower speed than the current setting.

10. Warranty

Procedure of the initialization of the parameters

NIDEC DRIVE TECHNOLOGY Instruments warrants, to the original purchaser of new products only, that this product shall be free from defects in workmanship and materials under normal use and proper maintenance for one year from the date of original purchase. This warranty shall not be effective if the product has been subject to overload, misuse, negligence, or accident, or if the product has been repaired or altered outside of NIDEC DRIVE TECHNOLOGY Instrument's authorized control in any respect which in NIDEC DRIVE TECHNOLOGY Instrument's judgment, adversely affects its condition or operation.

DISCLAIMER OF ALL OTHER WARRANTIES

The foregoing warranty constitutes the SOLE AND EXCLUSIVE WARRANTY, and NIDEC DRIVE TECHNOLOGY Instruments hereby disclaims all other warranties, expressed, statutory or implied, applicable to the product, including, but not limited to all implied warranties of merchantability and fitness.

LIMITATION OF REMEDY

Under this warranty, NIDEC DRIVE TECHNOLOGY Instruments. SOLE OBLIGATION SHALL BE TO REPAIR OR REPLACE the defective product or part, at NIDEC DRIVE TECHNOLOGY Instrument's option. NIDEC DRIVE TECHNOLOGY Instruments reserves the right to satisfy warranty obligation in full by reimbursing Buyer for all payments made to NIDEC DRIVE TECHNOLOGY Instruments, whereupon, title shall pass to NIDEC DRIVE TECHNOLOGY Instruments upon acceptance of return goods. To obtain warranty service, Purchaser must obtain NIDEC DRIVE TECHNOLOGY Instrument's authorization before returning the product, properly repackaged, freight pre-paid to NIDEC DRIVE TECHNOLOGY Instruments.

INDEMNIFICATION & LIMITATION OF DAMAGES

Buyer agrees to indemnify and hold NIDEC DRIVE TECHNOLOGY Instruments harmless from and against all claims and damages imposed upon or incurred arising, directly or indirectly, from Buyer's failure to perform or satisfy any of the terms described herein. In no event shall NIDEC DRIVE TECHNOLOGY Instruments be liable for injuries of any nature involving the product, including incidental or consequential damages to person or property, any economic loss or loss of use.

MERGER CLAUSE

Any statements made by the Seller's representative do not constitute warranties except to the extent that they also appear in writing. This writing constitutes the entire and final expression of the parties' agreement.

NIDEC DRIVE TECHNOLOGY CORPORATION

〈Web Page Information〉 Please scan the QR code or access the URL below.



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NIDEC DRIVE TECHNOLOGY CORPORATION

NIDEC SHIMPO CORPORATION change its company name to NIDEC DRIVE TECHNOLOGY CORPORATION on April 1, 2023.