Minebea

SPECIFICATIONS

Universal Testing Machine

TGE-50kN

SPEC.No.ENTGE4105-C 1/9

1. General

This "TECHNO GRAPH", TGE type universal testing machine has developed with the concept of achieving "Fulfillment of functions and simple operations".
Adopted with AC servo motor, high accurate measurement can be provided, that is, featuring high excellent accuracy in test speed and also realizing stable high speed data sampling.
Moreover, due to the Menu mode that divided into each application, its design is fully considered to make easy operation.
You can make use of this testing machine for the strength test for various kinds of materials and check on products and so on, that is, in wide range of fields.

2. Specifications

2－1	Max. test force	50 kN The maximum allowable test force for the main body of testing machine. The rated capacity of load cell applied will become the maximum test force actually.
2－2	Testing space	Tension and Compression test can be available at the lower section of movable crosshead. Upper tension type: Sold separately.
2－3	Allowable test force for test speed	Within all of the test speed : 50 kN
2－4	Effective test width	420 mm (With protection cover for lead screw is attached.)
2－5	Movable crosshead stroke	Without installing the test jig and load cell: 1 140 mm Extension of stroke: Sold separately.
2－6	Speed range of movable crosshead	0.1 mm/min、0.5 mm/min、1 mm/min ～ 500 mm/min (*) Only for return speed : 0.1 mm/min、0.5 mm/min、1 mm/min ～ 550 mm/min (*) * Setting can be made by the pitch of 1 mm/min.
2－7	Return speed	Setting can be made whichever test speed or the preset method of one (1) speed. Overshoot prevention function applied.
2－8	Manual speed	3 speed changeover method of HIGH, MIDDLE and LOW.
2－9	Setting method of speed	Digital display setting by the Menu mode.
2－10	Accuracy on speed	Whichever is larger, ±0.5 % of set speed or ±0.002 5 mm/min.

2－11 Test force measurement

Test force range	Selection method from 1 (once) (Auto) and 100 times. (When the rated output of load cell is 3 mV/V.) Once (1)(Auto) (In the case of rated capacity is 20 N or less.) When the Once(1)(Auto) is set, full scale for display, decimal point position and display unit can be changed automatically.
Display of test force	5 digits digital display (－sign applied)
Display range	－99 999 ～ 99 999
Measurement accuracy	□Standard accuracy : ±1 % of indicated value □High accuracy : Sold separately.
AD sampling	1 000 times /s
Display times	4 times /s
Peak/Break detection function	With the "PEAK/BREAK" key, test force value of peak and position value, or test force value of break point and position value can be displayed after test.
Automatic zero function	Automatic zero point adjustment with the "ZERO" key.
Unit of measurement	SI unit, mN, N, kN (green LED)
Judgment of capacity of load cell	Automatic judgment function applied.
Analog output	DC±5 V (output connector : BNC female) Load resistance 5 kΩ or more, scaling function applied. Accuracy : ±0.5 %F.S. Resolution : Approx. 1/4 000 Output cable : Sold separately.

2－12 Measurement of position of movable crosshead

Position display	6 digits digital display (－sign applied)
Display range	－1 999.99 ～ 1 999.99
Display resolution	0.01
Display unit	mm (Green LED)
Zero reset	Zero reset can be made at the optional position with the "RESET" key.
Analog output	DC±5 V (Output connector : BNC female) Load resistance 5 kΩ or more, scaling function applied. Accuracy : ±0.5 %F.S. Resolution : Approx. 1/4 000 Output cable : Sold separately.

2－13 Cycle test function

Setting method	Cycle test from the position value, cycle test by the test force value and also by combination of them can be provided.
Maximum repeatability times	10 000 times
Maximum repeatability speed	5 times /min

2－14 Break detection function

Detects the break of sample, stops the operation of movable crosshead and also makes it reversed to the 0 mm position automatically.

- Detects when the test force decreases suddenly more than ** % (0.1 % ～ 9.9 %)of the max. value in display range at present after exceeding 7 % of the max. value in display range at present, or also detects when the test force decreased less than 5 % of the max. value in display range at present.
- Setting the movement of movable crosshead (stop, reverse and ignorance of detection) can be made at the time of break detection from the Menu mode.
- * % (Break sensitivity) can be set from the Menu mode optionally.

2－15 Safety device

EMERGENCY switch: When operated, makes the movable crosshead stopped. (lock method)

Overload limit: When the test force value reaches ±102 % of rated capacity of load cell, this Overload limit outputs the Stop signal of operation to make the movable crosshead stopped. However, at the time of setting 100 times of range, it will stop at ±102 % of 100 times of full scale.

Stroke limit: Setting can be available at the optional upper/lower position within the movable range of movable crosshead. During operation, make the operation of movable crosshead stopped.

Servo amplifier abnormal stop function: During operation, outputs the signal of stop operation and makes the movable crosshead stopped.

※ As for the above safety device, alarm display will be shown during operation.

Ready for drive function: During the operation with the EMERGENCY SW or the Stroke limit, this function makes the servo OFF and shuts off the power to the servo motor. By switching on the SET SW located on the rear side of the testing machine, you can supply power to the servo motor.

2－16 Test condition registration function

Test conditions can be registered in the file up to 10 pcs at max. By reading the registered files, setting the test condition in the testing machine can be made automatically.

2－17 Communication function: Used in the communication with external devices such as personal computer and so on.

Standard: Confirms to USB2.0. You can also use with the standard of USB1.1. (Connector : B type female)

Connection: USB connection port

No. of communication: Transfer of test force and position value can be available with 50 times/s.

SPECIFICATIONS

Universal Testing Machine

2－18	Keeping test condition	Set contents at the time of cutting off the power supply can be stored. However, operation condition will not be stored.
2－19	Horizontal adjustment	Level adjuster that can be adjusted horizontally is attached at the bottom section of the testing machine.
2－20	Outline dimensions	Width 900 mm × Height 1 507 mm (*)× Depth 490 mm Wiring space for the connection of connector at the rear side of testing machine : 150 mm * Excludes lever adjuster.
2－21	Weight	Approx. 300 kg
2－22	Power supply	
	Power supply voltage	3 phase AC200 V ± 20 V
	Power consumption	1.5 kW
	Frequency	50/60 Hz
2－23	Operational condition	Temperature : 5 ℃ ～ 40 ℃ Humidity : 20 %RH ～ 80 %RH (Excludes frozen.)
2－24	Standard accessories	
	Tools	1 set (Tool box, hexagon wrench, plus driver, hook spanner)
	Earth wire	5 m 1 pce
	Power supply cable	5 m 1 pce For AC200V, cable end is separated, one side is ring tongue type vinyl insulated solderless terminal.
	Instruction manual	1 set
	USB driver	CD-ROM 1 pce

3. Functions sold seperately (■Applied. □Not applied.)

□ High accuracy test force (TGE-LHP) ±0.5 % of indicated value

□ USB communication cable (TGE-USB)

A connector male ～B connector male, length : 2 m

□ RS-232C communication function (TGE-232C)

Used for the communication with the personal computer and so on.
(When the RS-232C communication function is installed, the USB interface can't be applied.)

Standard	RS-232C
Communication times	Test force, position value can be transferred with 1 000 times/s.
Cable	RS-232C straight cable attached. (D-sub 9 pin female ～D-sub 9 pin female, length: 2 m)

□ Displacement measurement function (TGE-AMP)

Software for Data processor is required for the display and each setting.

Line up functions	You can select from the below: (plural numbers can be selectable) □ TGE-AMP-01 strain : 1 mV/V ～ 1.5 mV/V, excitation voltage : DC12 V □ TGE-AMP-02 strain : 1.5 mV/V, excitation voltage : DC3 V □ TGE-AMP-04 voltage : DC0 V ～ DC5 V
Display section	5 digits display (－ sign applied.)
Display range	－99 999 ～ 99 999
Measurement range	Once (1)
Measurement accuracy	±0.5 % of indicated value Accuracy may differ depending to the sensor applied.
Measurement unit	mm
Automatic zero function	Attached as a standard.
Capacity judgment function	Attached as a standard.
Calibration function	Attached as a standard.
Analog output	DC±5V (output connector: BNC female) Load resistance: 5 kΩ or more, scaling function applied. Accuracy : ±0.5 %F.S. Resolution : approx. 1/4 000 Cable : Sold separately.

□ Remote control (TGE-RMT)

Handy controller for external control

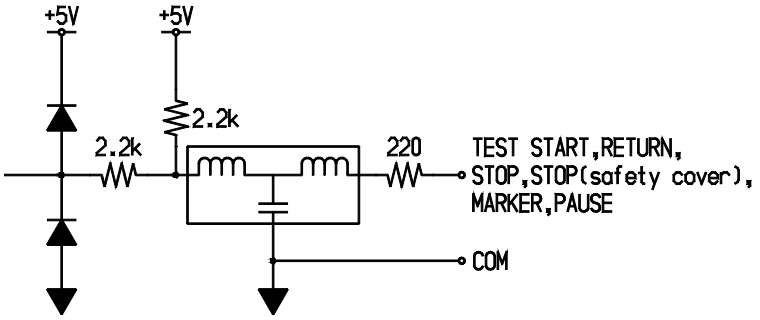
External control	"TEST START"・"RETURN"・"STOP"・"Manual UP"・"Manual DOWN"・"Manual speed SELECT"
Outline dimensions	(W×H×D) 80 mm×131 mm×32 mm
Cable length	2 m

□ Input/output of external contact (TGE-I/O)

Contact input 6 points

Input signal "TEST START"・"RETURN"・"STOP""STOP (safety cover)"・"MARKER" and "PAUSE".

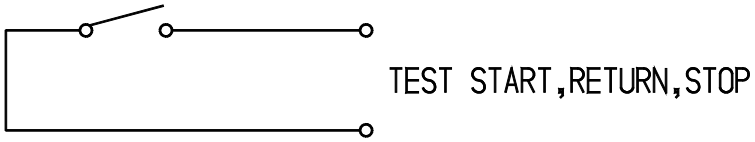
*Equivalent circuit for contact input section



Contact output 3 points

Output signal Outputs "TEST START!,"RETURN" and "STOP".

Equivalent circuit for contact output section



Specifications for input/output contact 1a contact

AC125 V、0.4 A (resistance load)

DC30 V、2 A (resistance load)

Connector pin layout Suitable plug :MR-16M

Pin No.	Signal name	Pin No.	Signal name
1	PAUSE (input)	9	N.C.
2	MARKER (input)	10	COM (input)
3	RETURN (input)	11	RETURN (output)
4	TEST START (input)	12	RETURN (output)
5	STOP (input)	13	TEST START (output)
6	COM (input)	14	TEST START (output)
7	N.C.	15	STOP (output)
8	N.C.	16	STOP (output)

*Never connect with the N.C. pins.

Connector pin layout Suitable plug : R05-PB2M

Pin No.	Signal name
1	STOP(safety cover)
2	COM

SPECIFICATIONS

Universal Testing Machine

TGE-50kN

☐ Automatic cancellation (TGE-LOAD)

The load generated at the time of chucking the sample can be adjusted to zero by automatic control.
At the time of application of this function, software for data processor is required.

Control start	Controlled by using the software for data processor. During controlling, other than the signal of "STOP" will not be accepted.
Control end	Control ends when the test force is zero, or by the "STOP" signal.

☐ Upper section tension type (TGE-UT)

Make the test space for the tension test to the upper section of movable crosshead.

☐ Stroke extension

☐TGE50-L300	The movable crosshead extends by 300 mm.
☐TGE50-L500	The movable crosshead extends by 500 mm.

☐ Chuck adapter (TGE10-CHB)

Installation adapter for lower chuck for tension test.
Used when less the 10kN of chuck is applied.

Accessories tools	Hook for clamping up the chuck. (1 pce)

☐ Chuck adapter (TGE50-CHB)

Installation adapter for lower chuck for tension test.
Used when 20/50kN of chuck is applied.

Accessories tools	Hook for clamping up the chuck. (1 pce)

☐ Analog output cable (CAC-124-2MS)

BNC cable (one side Y terminal, 2 m)

☐ Instant creep test function (TGE-CRP)

Makes Test that keeps on applying load value of setting test force on the sample.

Setting method	Set from the Menu mode.
Setting content	Setting test force value : Test force value to apply on the sample. Creep control width: Setting the PI control starting position. (test force)

☐ Automatic load function (TGE-ALC)

The function to keep the increasing test force constant one.

Setting method	Set form the Menu mode.
Setting content	Arrival time : arrival time to the setting test force *** sec. Maximum speed : the max. speed during control *** mm/min

NOTICE:

※Specifications and outline dimensions and so on which have printed may subject to change for the propose of improvement without notice.

Minebea

SPECIFICATIONS

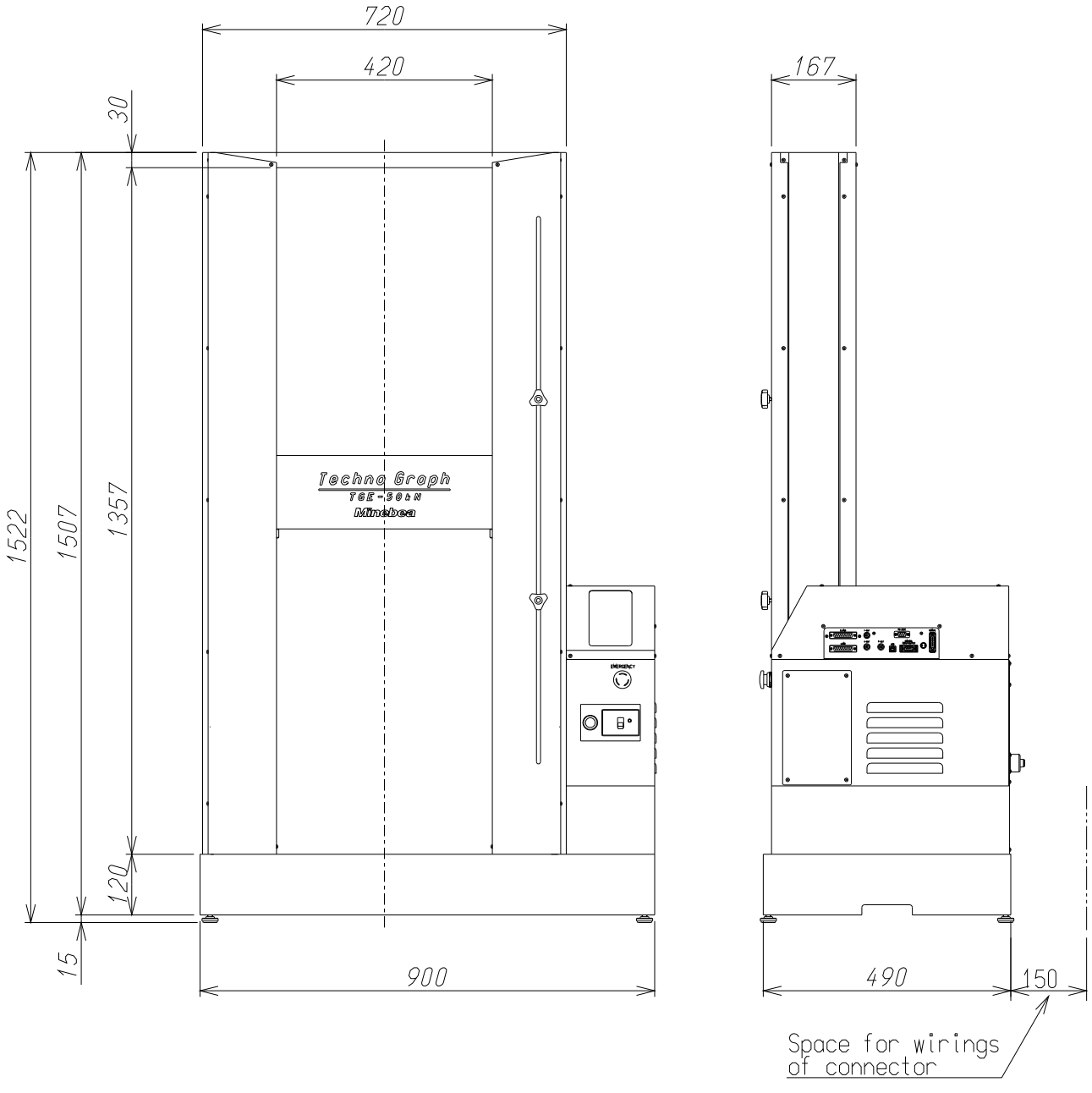
Universal Testing Machine

TGE-50kN

SPEC.No.ENTGE4105-C 8/9

Outline dimensions of testing machine

Unit: mm

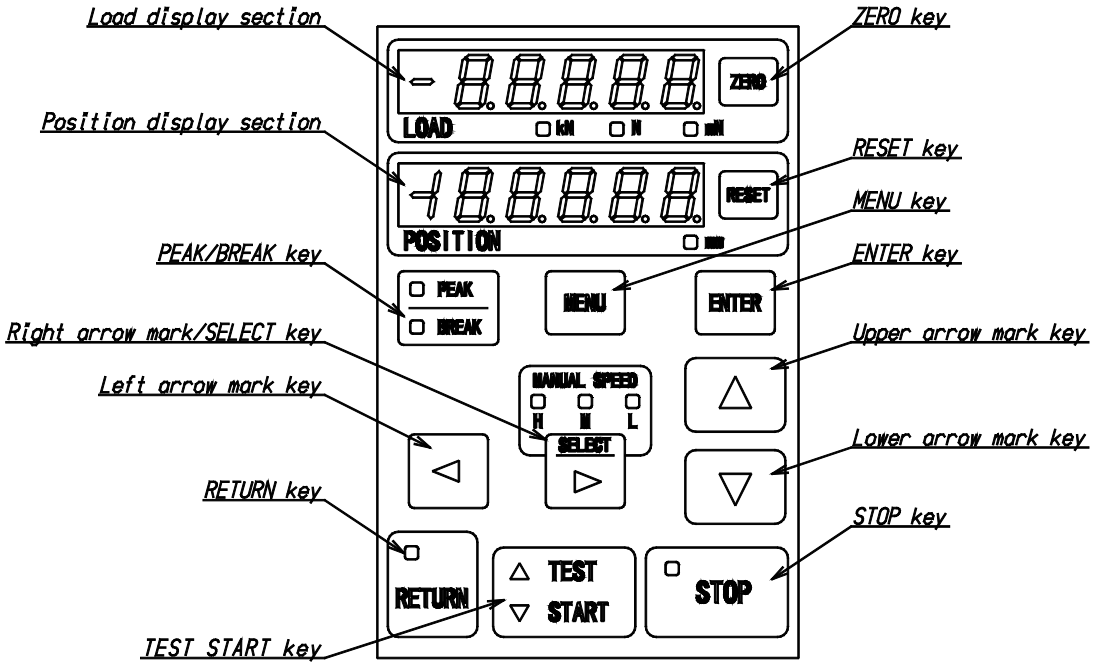


SPECIFICATIONS

Universal Testing Machine

TGE-50kN

Outline of operational panel



Load display section	Displays test force value, menu and alarm display.
Position display section	Displays position value, set value and also alarm display.
ZERO key	Resets the test force to zero.
RESET key	Rests the position value to zero.
PEAK/BREAK key	On the Load display/Position display section each, displays test force value of peak and position value each, or test force value at break point and position value each of the two.
MENU key	Changeover key to the Menu mode. Cancel key during the Menu is setting.
ENTER key	Fixed key during the Menu is setting.
Left arrow mark key	Shifts the digit to the left during the Menu is setting.
Right arrow mark/SELECT key	Shifts the digit to the right during the Menu is setting. Changes the speed (HIGH, MIDDLE, LOW) during the manual operation.
Upper arrow mark key	During manual operation, makes the movable crosshead risen. During setting Menu, makes the value increased. During setting Menu, makes the Menu changed.
Lower arrow mark key	During manual operation, makes the movable crosshead decreased. During setting Menu, makes the value decreased. During setting Menu, makes the Menu changed.
RETURN key	Makes the movable crosshead reversed to the position 0 mm.
TEST START key	Test will start by pressing this key.
STOP key	Test will stop by pressing this key.