Minebea

SPECIFICATIONS

Universal Testing Machine

TGJ-50kN

1. General

The TGJ series of Universal testing machines is designed to offer extensive functionality, a broad range of applications, and ease of use.

2. Specifications

2-1	Maximum test force	50 kN (5.099 tf)
2-2	Test space	Tensile/compression testing is possible beneath the movable crosshead. Optional model:Allows tensile testing above the movable crosshead and compression testing beneath the movable crosshead.
2-3	Permissible testing force and test speed	50 kN (5.099 tf) over entire speed range
2-4	Effective test width	420 mm
2-5	Movable crosshead stroke	1 010 mm without test jig and load cell
2-6	Movable crosshead speed range	
	Test speed	21 steps: 0.005, 0.01, 0.02, 0.03, 0.05, 0.1, 0.2, 0.3, 0.5, 1, 2, 3, 5, 10, 20, 30, 50, 100, 200, 300, 500 mm/min
	Custom test speed	0.1 mm/min ～ 499.9 mm/min in 0.1 mm/min increments
	Return speed	Single preset speed or test speed setting With zero-overshoot function
2-7	Speed setting method	
	Test speed	Digital display setting using cursor keys
	Custom test speed	Digital display setting using function keys and cursor keys
	Return speed	Digital display setting using function keys and cursor keys
2-8	Speed accuracy	
	Test speed	Speed setting ± 0.1 %
	Custom test speed	Speed setting ± 2 %
	Return speed	Speed setting ± 2 %
2-9	Test force measurement	
	Test force display	5-digit digital display (with negative sign)
	Measurement range	7 steps: x1, x2, x5, x10, x20, x50, x100 (for 3 mV/V load cell)
	Measurement accuracy	Between 20 and 100 % for each range ☐ Indicated value ± 1 % ☐ Indicated value ± 0.5 %
	Peak hold function	Standard function: Auto peak reset at start of testing

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Auto zero function	Standard function Long press: Hold down the [AUTO ZERO] key for at least 2 seconds to adjust the zero point for all ranges. Short press: Press the [AUTO ZERO] key to adjust the zero point.
Auto calibration function	Standard function: Auto span adjustment with load cell connected up to 10 load cells can be registered.(A single tensile and compressive load cell is registered as two load cells.)
Measurement units	Choice of SI units and gravitational units (kgf system) Automatic switching between mN, N, and kN or gf, kgf, and tf. Also allows user selection. (Normal/special display)
Load cell capacity evaluation function	Standard function
Maximum/minimum settings	Digital display setting using function keys and cursor keys
Analog output	± 5 V DC (output connector: BNC female) Load resistance 5 kΩ or more, with scaling function Accuracy: ± 0.5 %F.S. Resolution: Approx. 1/4 000 Output cable: Optional item

2-10 Movable crosshead position display

	5 1/2-digit digital display (with negative sign)
Display range	Minimum unit: 0.01 mm, maximum display: 1 999.99 mm
Zero reset	Zero can be reset to any position using the [RESET] key.
Maximum/minimum settings	Digital display setting using function keys and cursor keys

2-11 Cycle testing function

Standard function	Cycle testing is possible using position values, test force values, displacement values, or any combinations of these values.(Cycles using displacement values are controlled by the data processing software.) Maximum number of cycles: 9 999 cycles; maximum cycle speed: 5 cycles/min

2-12 Sample break detection function

Standard function	Detected when test force exceeds 7 % of full scale then suddenly decreases by more than ## % of current value or passes 5 % of test force full scale. Movable crosshead can be set to stop, reverse, or ignore when a rupture is detected. ## % can be set by the user using the function keys. Setting range: 0.1 % to 9.9 %

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2-13 Safety devices

Emergency stop switch	Cuts off power to the servo motors when activated. (Locking switch)
Load cell connection confirmation function	Stops the movable crosshead when no load cell is connected.
Overload limit	Stops the movable crosshead if the test force reaches ± 102 % of the corresponding range full scale.
Overscale limit	Stops the movable crosshead if the displacement value reaches ± 102 % of the corresponding range full scale. (Optional: With displacement measurement function fitted)
Operation standby function	Press the SET switch to turn on the power to the servo motors.(This sets the machine to standby mode.)
Stroke limits	The movable crosshead movement upper and lower limit positions can be set by the user. Power to the servo motors is cut off when activated.
Servo amplifier emergency stop function	Cuts off power to the servo motors when activated.
Ball screw protective cover	Standard feature: Prevents entrapment by the ball screw.
Alarm functions	Display alarms when activated. Emergency stop switch: E-STOP, Stroke limit: L-STOP Operation standby OFF:S-STOP, Overload limit: OL/-OL Overscale limit: OS/-OS Load cell connection confirmation function: NC

2-14 Test condition memory

Standard function	Stores up to 10 test conditions. Test conditions can be set automatically by calling up previously stored test conditions.

2-15 Test status retention

Retains settings when the power is turned off.
Note that the operating status is not retained.
(The moving crosshead remains stopped.)

2-16 Horizontal adjustment function

Level adjusters are provided beneath the testing machine base to enable machine leveling.

2-17 External dimensions

Width 795 mm × Height 1 500 mm(*) ×Depth 495 mm
* Not including level adjusters
Space for connector cables at rear of testing machine
: 150 mm

2-18 Weight

Approx. 310 kg

2-19 Power supply

Three-phase 200 V ± 10 % AC, 1.5 kW

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2-20 Operating conditions — Temperature: 5 °C ～ 40 °C,
Humidity: 20 % ～ 80 % (no condensation)

2-21 Standard accessories

Tools	1 set Tool box, hex wrench set, Phillips screwdriver
Fuse	Midget fuse 1 A
Grounding cable	5 m ×1
Power supply cable	5 m ×1 200 V AC Round type crimp terminal lugs are attached at cable end
Instruction manual and certificate sheet	1 copy each

3. Optional Functions (■ indicates included function, □ indicates function not included.)

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

□ Upper tensile model (TGJ50-UT)
Test space for tensile testing is located above the movable crosshead.

□ Extended stroke model (TGJ50-L**0)
Extends total testing machine length to **0 mm.

□ Extended width model (TGJ50-W**0)
Extends effective test width to **0 mm.

□ Chuck adapter (TG10-CHB)
Lower chuck mounting adapter for tensile testing
Used when using a chuck of 10 kN or less.
Accessory tools: Chuck tightening hook ×1

□ Chuck adapter (TG50-CHB)
Lower chuck mounting adapter for tensile testing
Used when using a chuck of 20 kN and 50 kN.

□ RS-232C interface (TGJ-232C)
Connects to PC or other external device.
Accessory: RS-232C cross cable
(D-sub 9-pin female to D-sub 9-pin female, length: 3 m)
USB/RS-232C adapter

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☐ Position analog output (TGJ-ANG)

Function outputs movable crosshead displacement as an analog voltage.
Output setting One customer-selected output can be preset before product shipment.

☐ Analog output cable (CAC-124S-2M)

BNC cable (Y connector at one end, 2 m)

☐ Recorder control function (TCA-003A)

Proportional chart feed function

Outputs chart feed signal to the recorder at preset ratio.

Ratio settings:	×20, ×10, ×5, ×2, ×1, ×0.5, ×0.2, ×0.1
Setting method	Set using function mode.
	Supports R-01A recorder.

Recorder control function

Outputs signal to synchronize recorder paper with movable crosshead.

Operation details	The recorder paper is synchronized with the movable crosshead and fed forward during testing.

☐ Remote controller (TG-RMT)

Handheld controller for external control

"STOP", "TEST START", "MANUAL UP", "MANUAL DOWN", "RETURN", "MANUAL SPEED SELECT"
External dimensions (W × H × D)
80 mm × 125 mm × 30 mm
Cable length 2 m

☐ Remote controller (TG-RMT-J)

Handheld controller for external control

"STOP", "TEST START", "MANUAL UP", "MANUAL DOWN", "RETURN", "MANUAL SPEED SELECT", "JOG DIAL"
External dimensions (W × H × D)
80 mm × 180 mm × 37 mm
Cable length 2 m

The remote controller requires an input/output of external contact (TGJ-I/O).

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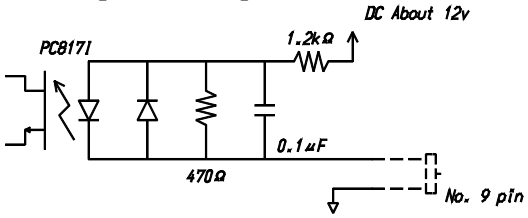
☐ Input/output of external contact (TGJ-I/O)

Contact input Allows external control of movable crosshead.
No. of contact inputs 6
Input signals "STOP", "TEST START", "MANUAL UP", "MANUAL DOWN", "RETURN", "MANUAL SPEED SELECT"

Control input connector layout (Supported plug: MR-25M)

Pin number	Signal name	Pin number	Signal name
1	STOP	14	N.C.
2	TEST START	15	N.C.
3	MANUAL UP	16	N.C.
4	MANUAL DOWN	17	N.C.
5	RETURN	18	N.C.
6	N.C.	19	N.C.
7	N.C.	20	N.C.
8	MANUAL SPEED SELECT	21	N.C.
9	COM	22	
10		23	
11	N.C.	24	
12	N.C.	25	
13	N.C.		

Contact input unit equivalent circuit



Contact output Outputs contact information based on test status (operating status of movable crosshead).
No. of contact outputs 3
Output signals "TEST START", "RETURN", "STOP"

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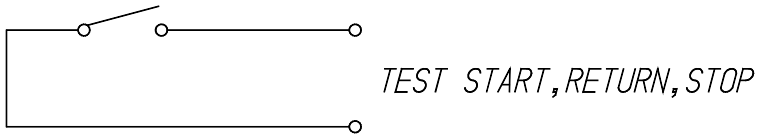
Control output connector pin layout (Supported plug: MR-8F)

Pin number	Signal name
1	TEST START
2	TEST START
3	RETURN
4	RETURN
5	STOP
6	STOP
7	N.C.
8	N.C.

Contact output unit equivalent circuit



☐ Auto range function (TGJ-ARG)

Automatically switches to the next largest range when the test force reaches 95 % of the full scale.

* This function is disabled when the data processing software is in use.

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☐ Displacement measurement function (TGJ-AMP-**)

Input:	Select one of the following: TGJ-AMP-01: Strain; 3 mV/V, applied voltage 3 V DC TGJ-AMP-02: Strain; 1.5 mV/V, applied voltage 3 V DC TGJ-AMP-03: Voltage; 0 V to 1 V DC TGJ-AMP-04: Voltage; 0 V to 5 V DC TGJ-AMP-05: Voltage; 0 V to 10 V DC
Display:	5-digit digital display (with negative sign)
Measurement range:	4 steps: 1, 2, 5, 10
Measurement accuracy:	± 0.5 % of corresponding full scale Note that accuracy may vary depending on the sensor used.
Auto zero function:	Standard function
Auto calibration function:	Standard function
Capacity evaluation function:	Standard function
Measurement units:	mm/cm
Analog output:	± 5 V DC (output connector: BNC female) Load resistance 5 kΩ or more, with scaling function Accuracy: ± 0.5 %F.S. Resolution: Approx. 1/4 000 Cable: Optional

☐ Simple creep testing function (TGJ-CRP)

	Function for maintaining constant test force Testing continues until the operator presses the “Stop” key.
Setting method	Set using testing machine function keys and cursor keys.

☐ Auto load function (TGJ-ALC)

	Function for maintaining a constant test force increase (Varies test speed.)
Setting method	Set using testing machine function keys and cursor keys.

☐ Cycle testing keep timer (TGJ-KTM)

	Function for pausing while reversing during cycle testing (Pause duration: 5 to 500 seconds) The return can be set to “RAPID” for cycle testing.
Setting method	Set using testing machine function keys and cursor keys.

Specifications and visual appearance are subject to change without notice to allow product improvements.

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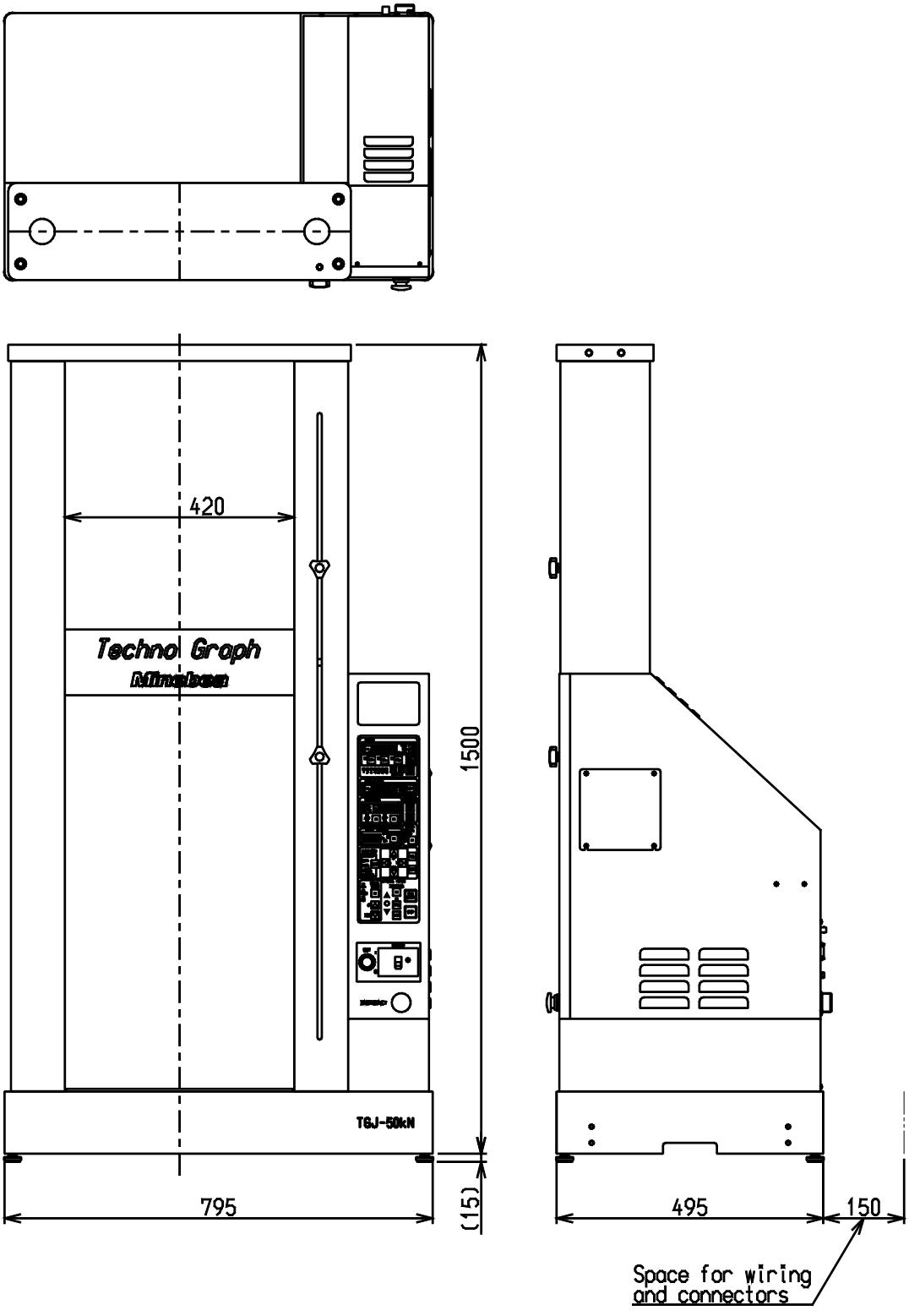
SPEC.No.ENTGJ4105 9/10

Units: mm

Testing machine external appearance



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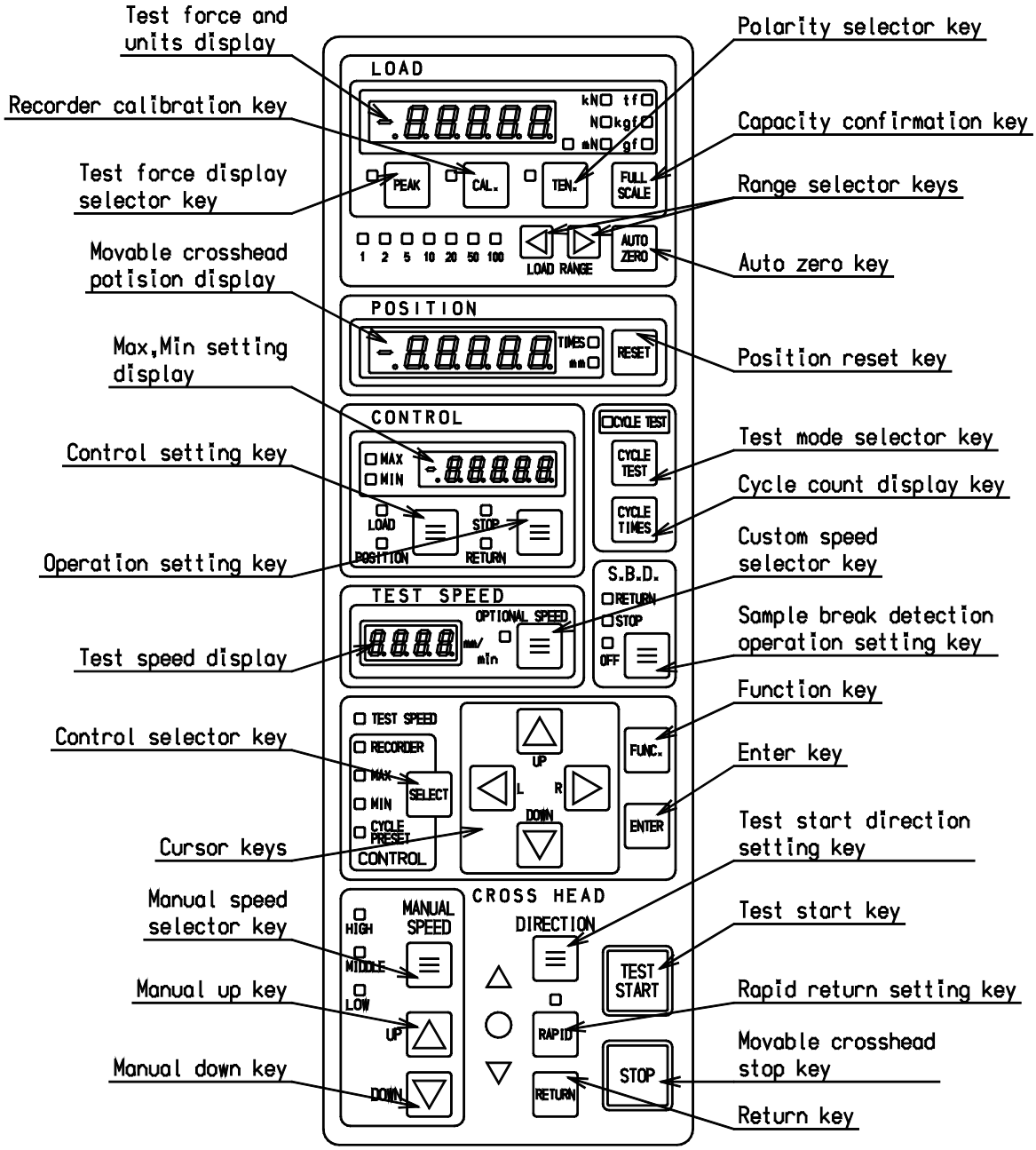
Control panel external appearance