

Weld Checkers®



Resistance welding derives its ability to form a proper weld nugget from the simple formula for heat: $H = I^2 \times R \times T$, where “I” is the current, “R” is the resistance, and “T” is the time. The ability to keep these variables within predefined limits allows the process to be maintained. Weld consistency can vary over time due to a number of variables, which affect the heat delivered to the weld. The changes can result in:

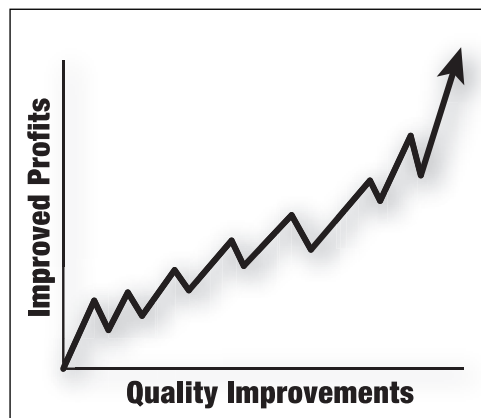
- High quality welds
- Improved uptime (identification of PM)
- Lower maintenance costs
- Revenue streams

Amada Miyachi America’s range of checkers provide the ability to monitor the variables that result in changes in weld heat such as current and time. Other factors that affect weld quality can also be monitored, such as voltage, displacement and force.

USE with all Amada Miyachi power supplies and other power supplies

KEY FEATURES

- Lower scrap rate through identify weld windows
- Improved process control
- ISO 9000 data collection
- Decreased machine downtime
- Accurate machine set up
- Weld optimization and Design of Experiments (DoE)
- Welding process diagnostics



MM-380

Next Generation Hand-held Portable Weld Checker

KEY FEATURES

- Measures current, voltage and force, resistance, weld time
- Weld-through sensor
- Easy screen-menu navigation
- Intuitive waveform and data analysis
- Printer and RS232 output



Measure current, voltage and force

Understand, optimize and benchmark your process and equipment

Weld through sensor

Measure force, current and voltage simultaneously at the electrodes

Easy screen navigation

Scroll through and select menus with rotary dial

Waveform and data analysis

Precise graphical displays of waveform time and amplitude

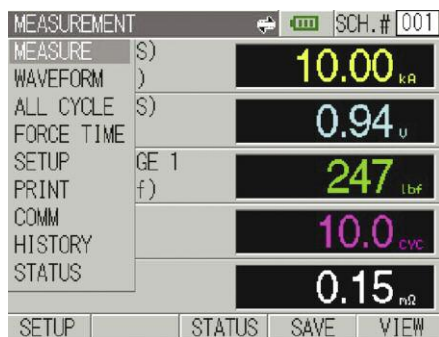
Printer option

Instant screen prints and waveforms

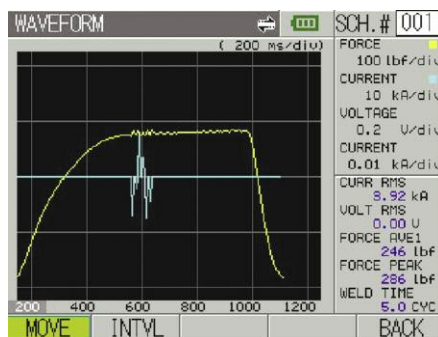
RS232 output

Color screen capture and data collection through COM port





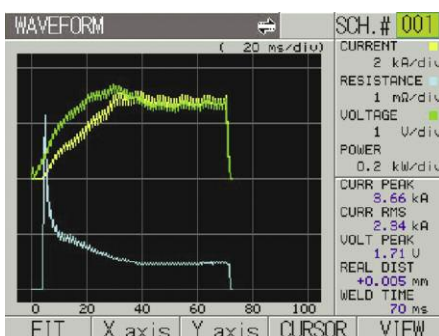
Drop-down menu navigation



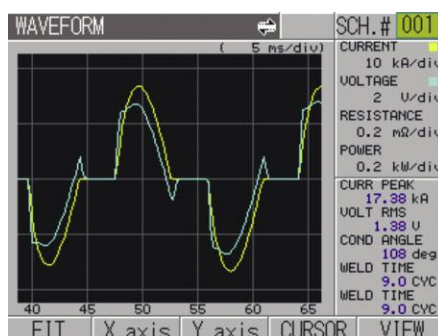
Force and current timing

DATE	TIME	SCH	CURRENT (RMS)
~ 06/15	16:28:54	001	10.00 kA
~ 06/15	16:28:46	001	10.03 kA
~ 06/15	16:28:39	001	9.94 kA
~ 06/15	16:28:33	001	10.13 kA
06/15	16:28:27	001	9.82 kA
06/15	16:28:22	001	9.69 kA
06/15	16:28:16	001	8.70 kA
06/15	16:28:10	001	8.22 kA
06/15	16:26:50	001	7.93 kA

Weld history



Current, voltage and resistance



Zoom of current and voltage

ACCESSORIES



Printer



Coils

TECHNICAL SPECIFICATIONS

Current Range	0.010 to 200.0 kA
Force range	MA-770A-01: 55 to 1102 lbf, (25 to 500 kgf) MA-771A-01: 110 to 2204 lbf, (50 to 1000 kgf) MA-520: 1.10 to 22.04 lbf, (0.50 to 10.00 kgf) MA-521: 11.0 to 220.4 lbf, (5.0 to 100.0 kgf) MA-522: 110 to 2204 lbf, (50 to 1000 kgf)
Voltage range	0.30 to 20.0 V
Current measurement time	AC current, cycles: 0.5 to 600.0 cycles at 60 Hz ; AC current, ms: 1 to 2000 ms DC current, cycles: 0.5 to 120.0 cycles at 60 Hz; DC current, ms: 1 to 2000 ms
Force measurement time	1 to 6000 ms
Measurement mode for voltage and current	Arithmetic mean RMS or maximum, (peak)
Data output	RS-232 and optional external printer
Number of schedules	127
Power requirements, (AC adapter)	100 - 240 VAC, 50/60 Hz
Battery operation time	Approximately 2 hours with 1 battery, 4 hours with 2 batteries. 1 battery included.

WEIGHT & DIMENSIONS

Dimensions L x W x H	2.2 in x 5.5 in x 9.9 in (56 mm x 140 mm x 252 mm) excluding protrusions
Weight	2 lb (0.9 kg)

MM-400A Machine Mounted Weld Monitor

KEY FEATURES

- New pre-weld check
- Measures current, voltage, force and displacement, weld time for spot or seam welding
- Set limits for all parameters using the envelope function
- Comprehensive machine I/O
- Measured data and waveform data can be saved in a USB memory device
- Easy screen-menu navigation
- Built-in printer and RS232C/485/Ethernet-output
- Multilanguage support
- Measurement based on ISO17657 standard
- Touchscreen programming
- Successor to MM-370C
- Supports wide range of resistance welding power supplies - Linear DC, DC inverter, AC inverter, transistor and capacitive discharge



ACCESSORIES

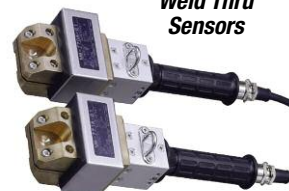
Coils



Displacement Sensor



*MA-770 and 771
Weld Thru
Sensors*



TECHNICAL SPECIFICATIONS

Current range	0.010 to 200.0 kA
Force range (MM-400A)	MA-770A-01: 55 to 1102 lbf, (25 to 500 kgf) MA-771A-01: 110 to 2204 lbf, (50 to 1000 kgf); MA-520: 1.10 to 22.04 lbf, (0.50 to 10.00 kgf) MA-521: 11.0 to 220.4 lbf, (5.0 to 100.0 kgf); MA-522: 110 to 2204 lbf, (50 to 1000 kgf)
Displacement range	GS-1813 A: 0 - 13 mm, 1 micron accuracy; GS-1830 A: 0 - 30 mm, 1 micron accuracy GS-510 0A: 0 - 100 mm, 10 micron accuracy
Voltage range	0.30 to 20.0 V
Current measurement time	AC current, cycles: 0.5 to 600.0 cycles at 60 Hz ; AC current, ms: 1 to 2000 ms DC current, cycles: 0.5 to 120.0 cycles at 60 Hz; DC current, ms: 1 to 2000 ms
Force measurement time	1 to 6000 ms
Measurement mode for voltage and current	Arithmetic mean RMS or maximum, (peak)
Data output	Data can be acquired using the built-in printer, USB port, or standard RS-232/RS-485 port
Number of schedules	127
Power requirements	100 to 240 VAC, 50/60 Hz, 0.7 A

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	11.4 in x 6.8 in x 10.6 in (290 mm x 172 mm x 269 mm) excluding protrusions
Weight	11 lb (5 kg)

MM-315B Pocket Weld Testers

KEY FEATURES

- Simple current measurement in the palm of your hand
- For AC and Inverter power supplies
- Measures current, cycles, milliseconds and conduction degrees
- Impulse memory, 9 welds
- Rechargeable batteries or AC
- Includes coil, charger and carrying case
- Easy-view LCD
- Memory function for easy recall of impulses



The perfect pocket size troubleshooter.

TECHNICAL SPECIFICATIONS

Power supply	Rechargeable battery and AC charger
Current sensor	Toroidal coil (see table in this brochure)
Current range	1.00-9.99A, 5.0-49.9kA
Time range	1 – 99 cycles or 0.01 – 0.80 sec
Conduction angle	30° – 180°

WEIGHT & DIMENSIONS

Dimensions L x W x H	1.18 in x 2.95 in x 6.7 in (30 mm x 75 mm x 170 mm)
Weight	1.1 lb (0.5 kg)

ELECTRONIC FORCE GAUGE



Portable force setting and verification tool.

MM-601A

KEY FEATURES

- Simple and accurate handheld force measurement
- Hold and zero functions
- One touch tare setting
- Rechargeable batteries or AC
- External I/O for analog out and measurement hold
- Easy-view LCD
- Analog force output

TECHNICAL SPECIFICATIONS

Power supply	Rechargeable battery and AC charger
Force sensor	MA-520: 1.10 to 22.04 lbf (0.50 to 10.00 kgf) MA-521: 11.0 to 220.4 lbf (5.0 to 100.0 kgf) MA-522: 110 to 2204 lbf (50 to 1000 kgf)
Accuracy	±3% full scale
Measurement speed	Approx. 4 times per second

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	1.18 in x 2.95 in x 6.7 in (30 mm x 75 mm x 170 mm)
Weight	1.1 lb (0.5 kg)

TOROIDAL COILS



- For use with all current monitors.

MB-400K	400 mm long 1.0 x sensitivity, 5 in I.D.* (127 mm)
MB-800K	800 mm long 1.0 x sensitivity, 10 in I.D. (254 mm)
MB-29F	10 x sensitivity, 1 1/2 in I.D. (29 mm)
MB-35E	1.0 x sensitivity, 1 1/2 in I.D. (35 mm)
MB-45F	10 x sensitivity, 1 1/2 in I.D. (45 mm)
MB-60E	1.0 x sensitivity, 2 1/2 in I.D. (60 mm)
MB-500-15	500 mm long 1.0 x sensitivity, 3 in I.D. (76 mm)

Extension cables for toroidal coils are optional.

*Inner diameter

ISO TOROIDAL COILS

- MB-400M (ISO17657 compliant)
- MB-800M (ISO17657 compliant)
- Must be used with MM-400A

FORCE SENSORS & ACCESSORIES



FORCE AND CURRENT SENSORS

Part Number	Description	Product
MA-520	Force sensor 1.10 to 22.04 lbf (0.50 to 10.00 kgf)	MM-601A, MA-770A-01, MA-771A-01
MA-521	Force sensor 11.0 to 220.4 lbf (5.0 to 100.0 kgf)	MM-601A, MA-770A-01, MA-771A-01
MA-522	Force sensor 110 to 2204 lbf (50 to 1000 kgf)	MM-601A, MA-770A-01, MA-771A-01

ACCESSORIES

Part Number	Description	Product
145-013	Rechargeable battery, 1.2 V 500MAH (4 required for checker)	MM-315B, MM-601A
TP-50KM-A60	Printer paper, 60 mm x 25 mm (W x L)	MM-370A, MM-380A optional printer
18-042-01	Toroidal coil extension (specify length)	All checkers

DATA COLLECTION SOFTWARE – WINWEDGE®

Taltech™ Winwedge software can be used to collect data from most checker models. Amada Miyachi America has written some front-end programs that accept basic data to start you on the road to process control and data collection. Exports data directly into Microsoft Excel®

Applicable Models	MM-122A*, MM-370A, MM-380A
Part Number	10-900-02

*MM-122A has its own software – MA-716A

MODEL	MM-122A	MM-315B	MM-370A	MM-380A	MM-400A	MM-601A
Current	✓	✓	✓	✓		–
Voltage	–	–	✓	✓		–
Time	✓	✓	✓	✓		✓
Force	–	–	✓	✓		✓
Displacement	–	–	✓	–		–
Schedules	31	–	127	127		–
Stand-alone	✓	–	✓	–		–
Hand held	–	✓	–	✓		✓
Pocket	–	✓	–	–		✓
Communications	232/485	–	232/485	232		–
Printer	Option	–	✓	Option		–
Battery powered	–	✓	–	✓		✓
Line powered	✓	✓	✓	✓		✓
ISO17657 measurement						



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