Mercedes-Benz

service information

Date: April 2002
Order No.: S-B-58.30/103B, 60.00/08B
Supersedes: S-SI-58.30/103A, 60.00/08A
Group: 58, 60

Revision: ADDITIONAL PRODUCT INFORMATION ADDED

SUBJECT: ALL MODELS

MULTISPOT M83 RESISTANCE SPOT WELDER – (in addition to Multispot M80)

DaimlerChrysler AG and MBUSA, LLC have approved the use of the Multispot M83 Resistance Spot Welder (Figure 1) for automotive collision repairs. Resistance Spot Welding is the preferred method of performing structure repairs according to Mercedes-Benz Repair Procedures.

The Multispot M83 offers digital microprocessor control to monitor each weld, and it automatically corrects welding current and time as needed. The M83 also offers many other innovative features:

1. Tools and cables are air cooled for extended duty cycle. The optional water cooled pliers and cables offer additonal extended duty cycle.
2. Pneumatic welding pliers provide over 400 PSI (1800 N) of pressure at the tips.
3. High-speed central connection allows for fast changeover between tools
4. Provides factory appearance welds.
5. An alarm to alert the technician if a weld cannot or should not be made.
6. Built-in diagnostic program to assist in diagnosing complaints.

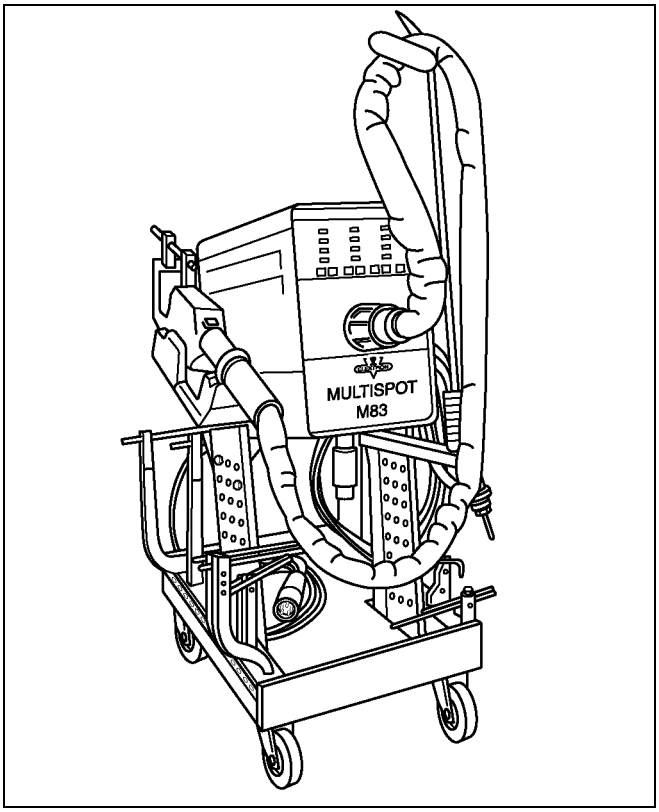

Figure 1 P58.30-2015-02

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7. The Multispot M83 has a three phase power supply, which results in a lower current load per phase and with it the voltage drop. This means that full power is available even with a weak power supply.
8. Via welding with direct current, a better utilization of the power provided by the unit is accomplished. Thus, the welding process is faster due to continuous welding current.
9. Multispot advantage: All tools such as tongs with and without cable cooling (water) and electrode arms can be used with all Multispot units.
10. The operation and monitoring of all Multispot units are identical.

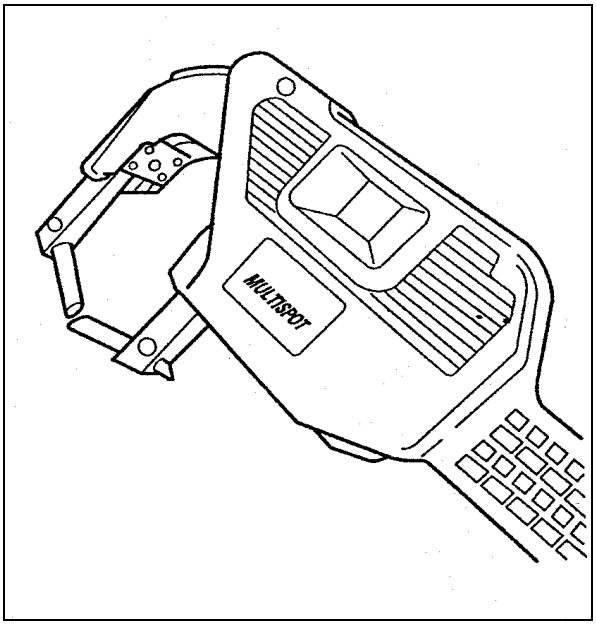


Figure 2 P58.30-2017-01

The microprocessor automatically adjusts machine settings for each tool used, for standard body panels. If working on thicker metals, input that information into the machine. Maximum welds with the pneumatic welding pliers is 3 mm or 11 guage (Figure 2). In areas where the pneumatic pliers cannot reach, the single-sided welding gun may be used. This unit also comes with carbon rod and "mini-shrinking“ tool for shrinking sheet metal.

The Multispot M83 is supplied with the following standard equipment:

230 volt power supply unit
Spot welding tongs (includes 01/120)
Welding gun
Extractor tool
Wheeled cart with tool holders
Work box, including washers, T-pins, welding studs, and as well as other parts.

USING THE MULTISPOT M83 IN PLACE OF THE M80

The Multispot M83 should be utilized in place of the Multispot M80 should the following conditions exist.
In the body shops, where the wire diameter of the wiring from the fuse box to the wall socket may not be sufficient for the use of the Multispot M80. Therefore, the rewiring costs may exceed the difference between the price difference between a Multispot M80 and a M83.
The use of the Multispot M83 would be advantageous where poor supply power for the welder exists.
The use of the Multispot M83, with its considerable lower primary power requirements, will result in full welding performance.

Using the Multispot M83 in place of the M80 (continued):

With an approximate 30% lower power draw the Multispot M83 will reach a higher welding power than the M80 in a similar welding job, with the following advantages:

1. With a 3 phase power source, the voltage drop is reduced by 50%
2. Lower voltage drop means reduced welding time, which results in less heating of the cables and therefore reducing current losses.
3. This yields higher welding current and consequently better productivity.

Optional electrode arms (Figure 3), allow the technician to reach most areas of the vehicle.

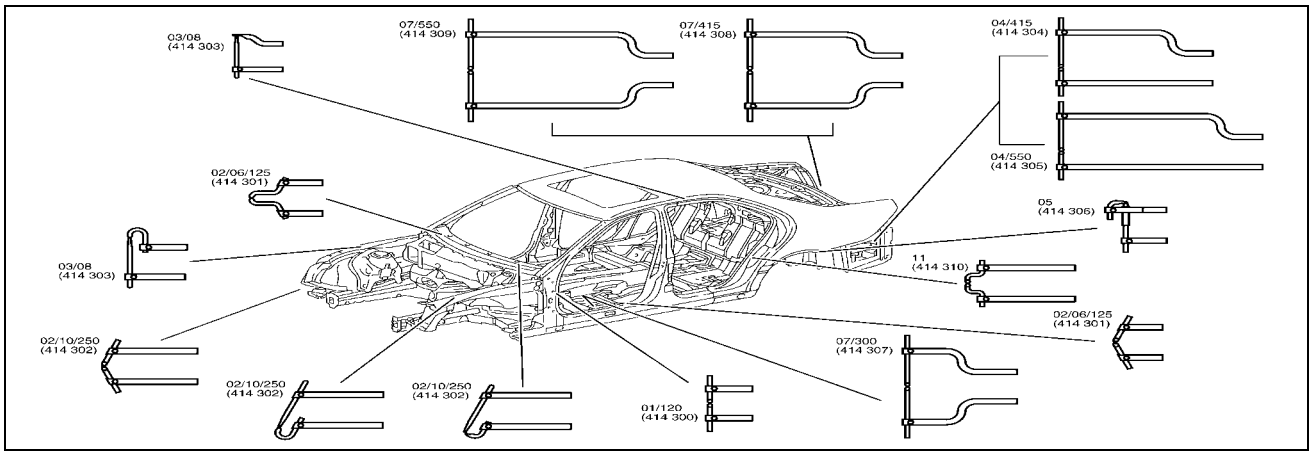


Figure 3 P58.30-2010-09

Technical Data

Power supply unit WST 8000D (3 x 400 V, 380 – 415 volt)

Power supply	3 x 400 Volt (3 phase)
Slow blow fuse	25 Amp.

Power supply unit WST 8000D (3 x 230 V, 190 – 240 volt)

Power supply	3 x 230 Volt (3 phase)
Slow blow fuse	50 Amp.
Current frequency	50/60Hz
Power supply capacity	15 kVA
Welding capacity	50 kVA
Open-circuit voltage	13 V DC
Welding current	6800 A (DC)
Peak current (welding tongs 2 m)	10700 A (DC)
Ambient temperature	104 ° F (40 ° C)
Circuit protection	IP 21
Power supply unit located on cart	
Dimensions (H/W/D)	41.76 X 20.37 X 23.64 inches (1060 X 517 X 600mm)
Total weight including accessories	254 lbs. (115 kg)

Push spot welder

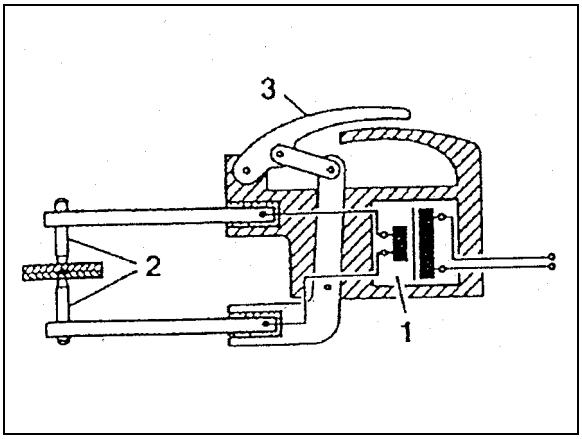
Welding cable dia./length	120 mm² / 7.22 feet (2.2m)
Ground cable	120 mm² /4.92 feet (1.5 m)
Weight	14 lbs.(6.2 kg)

Spot welding tongs (pneumatic)

Weight (without cable)	7.72 lbs. (3.5 kg)
Weight (with cable)	25.35 lbs. (11.5 kg)
Operating pressure	116 psi. (8 bar)
Electrode clamping force	396.8 lbs. (1800 N)
Welding cable dia. / length	120 mm² / 8.2 feet (2.5 m)

Squeeze type, Resistance Spot Welding (STRSW)

Resistance spot welding is the most frequently employed welding method in the production process. This method is based on the principle that a resistor heats up when an electrical current flows through it. With spot welding tongs, the panels to be welded are pressed together by the electrodes by means of a lever mechanism. The electrode tips have rounded shape to keep the electrical resistance low. A high current can now flow through the circuit closed by the electrode tips. The high resistance heats the material until it becomes plastic and melts together. The pressure of the electrodes prevents the material from flowing away.



1 Transformer
2 Electrodes
3 Mechanism for generating the pressure

Figure 4 P58.30-2018-01

Quality Assurance

A sample panel should be spot-welded to check the quality of the weld spots and the settings of the welding tongs (pressure, amperage, welding time). The welding sample can be clamped in a vise and the plates separated using pliers (unbuttoning test, Figure 5). If the weld spot on one plate remains intact and a matching hole is produced in the other plate, then the weld is considered satisfactory (Figure 6).

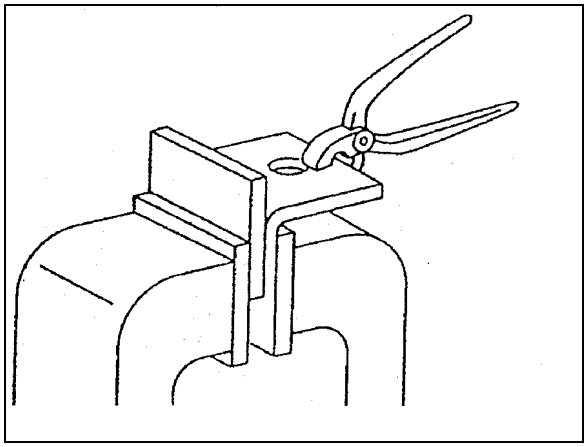


Figure 5 P58.30-2019-01

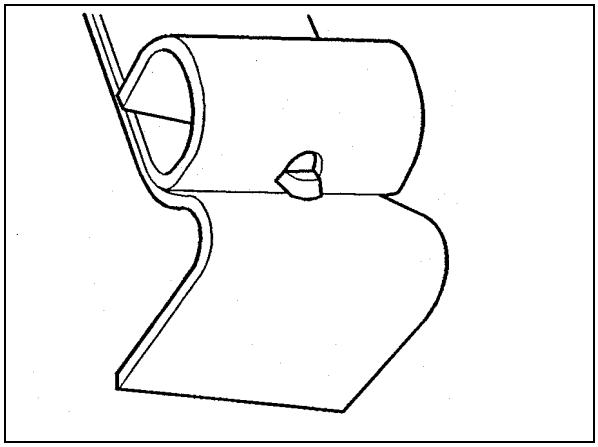


Figure 6 P58.30-2020-01

In addition to quality testing by means of the unbuttoning method described above, particular attention must be paid to the condition of the electrodes. The electrode surfaces must be checked for cleanliness and roundness before each use (reworking with an electrode cutter may be required). Satisfactory welds cannot be produced with flattened or burnt-out electrodes.

Parts list

Milweld No.	Description	Suggested List ($)
515 706	Multispot M80	$7495.00
515 715	Multispot M80 – CCS (CCS = cable cooling system)	$8400.00
515 801	Multispot M83	$8945.00
515 809	Multispot M83 – CCS (CCS = cable cooling system)	$9945.00
414 300	Electrode Set	$121.00
414 301	Electrode Set	$214.00
414 302	Electrode Set	$234.00
414 303	Electrode Set	$227.00
414 304	Electrode Set	$244.00
414 305	Electrode Set	$270.00
414 306	Electrode Set	$237.00
414 307	Electrode Set	$262.00
414 308	Electrode Set	$297.00
414 309	Electrode Set	$323.00
414 310	Electrode Set	$203.00
414 320	Round Replacement Caps (pk/6)	$34.30
414 321	Beveled Replacement Caps (pk/6)	$34.30
315 664	10mm Refacing Tool	$125.00
316 971	12mm Refacing Tool for E414 320	$125.00
417 168	High Speed Planishing Tool	$151.00
415 068	Replacement Planishing Tips (pk/25)	$22.80
415 640	Cable Balancer Arm	$96.00

As the welding pliers and single-sided gun are used, the electrodes wear and flatten out. The electrode caps can be replaced or they can be reshaped, using a drill and one of the two refacing tools. Beveled caps are reshaped likewise, using a file.

Note: Both M80 and M83 units can be ordered with optional water cooled pliers which will increase duty cycle in high production workshops.

THE MULTISPOT M83 AND OPTIONAL ACCESSORIES CAN BE ORDERED VIA THE MBUSA STANDARD SERVICE EQUIPMENT PROGRAM (SEE CATAOG OR **PHONE [Toll Free] 1-888-458-4040)**