



Application area

The new generation of the **CDP-66M** and **CDP-99M** capacitor discharge machines has advanced features such as **digital positioning measurement system** (stud-overlap, lifting dimension, depth of immersion and piston-speed) as well as **mechanical process monitoring for monitoring and recording of all mechanical parameters**. In addition, current and welding time can be recorded, displayed and monitored after tolerance.

Library functions for permanently stored or variably stored welding parameters or optional multi-point operation are only a few features of the comfort control.

The operator structure of the CDP-M-series correlate to our inverter family DAI and the DA-800M.

The electronically controlled inverter charging unit provides the fastest possible charging times, guaranteeing extremely high welding cycles with a low leakage line and a low weight.

The power units can be operated with all contact and gap guns, the CDP - 99M in addition with our automatic welding heads and automatic welding guns.

Technical characteristics

- Electronically controlled inverter charging units allow very short charging cycles with a high welding sequence, which means that very high clock sequences are possible;
- Monitoring and fast control of all parameters and functions in the welding circuit by high-performance microprocessor;
- monitoring the capacity of capacitors;
- Digital position measuring system also allows convenient adjustment of stud overlap and lift measure without the complete and optional process monitoring system;
- In case of undercut of pre-selected minimum values of stud-overlap, lift measure and immersion monitoring of error messages without connected the fully equipped digital process monitoring system;
- Soft start function for gentle charging of the capacitors after a long shutdown period;
- STOP function for all error messages (device-internal or process-related), that means automatic interruption of welding operation;
- State-of-the-art HMI: simple dialog operation through menu structure and one-button operation as well as display of all parameters relevant to the operator on a large four-inch graphic display;
- Library function: permanently stored standard welding programs and additional variable, user-defined welding programs storable;
- Numerous special functions for complex welding tasks;
- Low weight and compact design;
- Low power consumption with very high efficiency: high energy efficiency and therefore better environmental compatibility;
- Thermostatically controlled fan.

Optional:

- **Intelligent multi-station technology:** this means operation of up to four manual and / or automatic welding guns in connection with our new switchbox DA - 4 possible;
- In multi-position mode, automatic detection of the respective welding gun by contact message and automatic switching to the respective setting menu on the inverter (parameter can be stored user-defined);
- Simultaneous operation of up to four automatic welding heads possible in conjunction with our CNC-technology;
- **Integrated digital process data system** and evaluation mechanical welding parameters: Recording of the way of each stud (stud-overlap, lift measure, immersion and speed), Comparison of the recorded parameters with the parameters of reference weldings;
- Additionally: Measurement and recording of welding current and welding time at each welding
- USB interface for transferring the process data to an external PC.



Technical datas control units

| | CDP-66M | CDP-99M |
|---|--|--|
| Welding range | carbon and stainless steel studs M3-M8 zinc-coated metal sheets <15 µm, Aluminium-alloy max. stud M6 | carbon and stainless steel studs M3-M10 zinc-coated metal sheets <15 µm / M8 Aluminium-alloy max. stud M6 |
| Welding process | Capacitor discharge / tip ignition No. 786 according to ISO 4063 | |
| Welding sequence | 20 studs / minute metrics M8 (in continuous operation) | |
| Capacity | 66.000 µF | 99.000 µF |
| Welding tim t(ms) | 1 – 3ms | |
| Loading voltage | 50 – 200V | 50 – 200V (220V) |
| Welding guns connections | controlled separately while using the switch-box DA with 4x welding guns connected; | |
| Applicable welding guns and welding heads | CONTACT / CONTACT- M* ³ , GAP / GAP-M* ³ Automatic and CNC function with the CDP-66M not provided ³ * : "M" for guns with integrated measurement system | CONTACT / CONTACT-M* ³ , GAP / GAP-M* ³ , ATP-8* ¹ / ATP-8M* ^{1*3} , KAH-100D* ² , RAPIDOR QF* ² Enables the connection of a fully automatic bolster feed BZ-V01 ¹ * Automatic welding gun only in combination with optional automatic module; ² *: Automatic welding heads only with CNC-module ³ * : "M" for guns with integrated measurement system |
| Fault diagnosis | Low capacity Overheat Defect lift magnet and/or control cable | |
| Process monitoring system (optional) | Collection and analysis* ¹ of data of an electromechanical positioning system* ² (lifting-off distance, depth of immersion, piston runtime with defining the upper and lower action limits) additional measurement and recording* ¹ of welding current and welding time ¹ * : Evaluation and recording only in conjunction with optional process control ² * : Only in conjunction with guns with integrated positioning measuring system | |
| Interfaces (optional) | USB-B: Optional to transfer the data from the digital process control system and position measuring system to a computer | |
| Power supply | Rubber connector 230V/115V 50/60Hz, 10A | |
| Welding bushes | DIX 50mm ² | |
| Cooling method | E | E (F optional) |
| Degree of protection | I (basisoliert) | |
| Protection class | IP 23 | |
| Dimensions (length x WIDTH x HEIGHT) | 460mm x 200mm x 265mm | |
| Weight | 11,5 kg | 12 kg |



Mechanical process monitoring, recording of electrical parameters and distance measuring system

The optionally available **mechanical process monitoring** consists of process data acquisition and process data storage. If welding guns are connected with the measuring system, the **mechanical parameters of the bolt overlap, the lifting dimension, the melting rate and the piston speed can be measured, documented and evaluated.** The recording of the electrical parameters **welding current** and **welding time** is also possible.

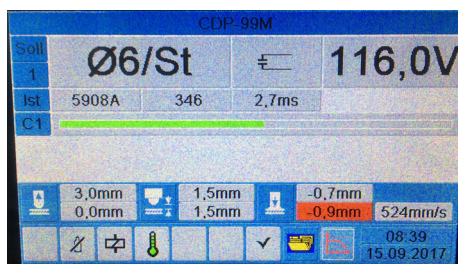


photo 1, above: way-measurement with process monitoring system

Left: Without process monitoring system real-time display of the mechanical parameters without data recording and evaluation after each welding:

- Measurement of the way of the stud (stud overlap, lift adjustment, depth of immersion and the piston speed) also possible without process monitoring system;
- The respective parameter is displayed in red as a warning when the preset intervention limits (adjustable in the submenu "Path measurement") are exceeded or exceeded.

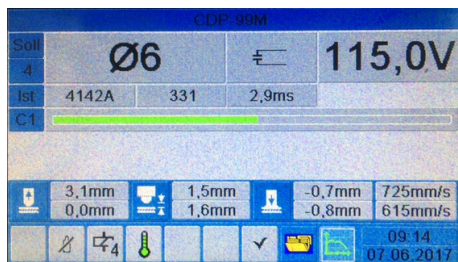


photo 2, above: Activated and ready to use process monitoring system

Photos center left and bottom left: Real-time display as well as recording and checking of electrical and mechanical parameters with data storage as well as referencing of process monitoring system:

- Monitoring of the welding process
- Permanent comparison of nominal and actual values with preset operating limits (in percent)
- Display of the permissible deviations by means of clear warning symbols in the display and recording in the ring memory and process data memory
- **Simple referencing**, that means teaching of the system by reference welding
- Pressing "Okay-Button" only after perfect optical and / or mechanical evaluation of the respective individual welds



photo 3. above: referencing of process monitoring system

Advantages:

- Easy and comfortable adjustment and monitoring of the lifting measure as well as stud overlap directly on the display;
- The complex manual conventional measuring is no longer needed;
- In conjunction with the digital monitoring system, constant comparison of actual and preset setpoints with warning or blocking of the power unit.



Technical datas usable welding guns

At follows a sheet of all hnd-welding guns with and without a position measuring system, which can be used with the **CDP-66M / CDP-99M** in its performance class. The **guns with integrated distance measuring system** enable simple adjustment and correction of the **stud overlap, lift dimension, immersion and speed** by simple reading on the device.

These parameters are immediately displayed when the gun is connected, even if the process control is not activated.

Together with the optional digital process control system, these datas are stored for monitoring the quality.



| Type of welding gun | CONTACT / CONTACT-M* ¹ | GAP / GAP-M* ¹ |
|---|--------------------------------------|---|
| Welding process | Contact | Gap |
| Area of application | Carbon and stainless steel | carbon and stainless steel, Aluminium and brass |
| Welding range (metrics) | 2 - 11mm (M10* ²) | 2 - 11mm (M10* ²) |
| Guidance | Sliding bearing | Präzisions-Linear ball guide |
| Position measuring system, for measurement of stud overlap, lift measure, immersion and velocity of piston | Only CONTACT-M* ¹ | Only GAP-M* ¹ |
| Lift adjustment | . / . | 1,0...4,0mm, Infinitely adjustable via scale on welding gun |
| Pressure of spring | Infinitely adjustable | . / . |
| Welding cable | 6,5m, 25mm ² | 3,0m, 25mm ² |
| Housing material | Glass fiber reinforced thermoplastic | |
| Farbe | grey | |
| Dimensions (Length x WIDTH x Ø) | 180mm x 135mm x 40mm | |
| Weight (without cable / with cable) | 0,7 / 3,0kg | 0,7 / 2,0kg |

*1 :Welding-guns with integrated measurement system (Indication „M“)

*3: Maximum welding-diameter (according standard DIN EN 13918); group of material and class of mechanical strength of usable welding elements and allowed welding-joints of studs und ground material see DVS-Roule 0903 „Capacitor discharge welding“ and DVS-Roule 0967 „Calculation of of welding joints“

Note in case of using CDP-99M with automatic module: Technical data Automatic welding gun ATP-8 / ATP-8M, fully automatic stud feeder BZ-V01 and automatic welding heads KAH-100D / RAPIDOR QF please refer to the separate data sheets.