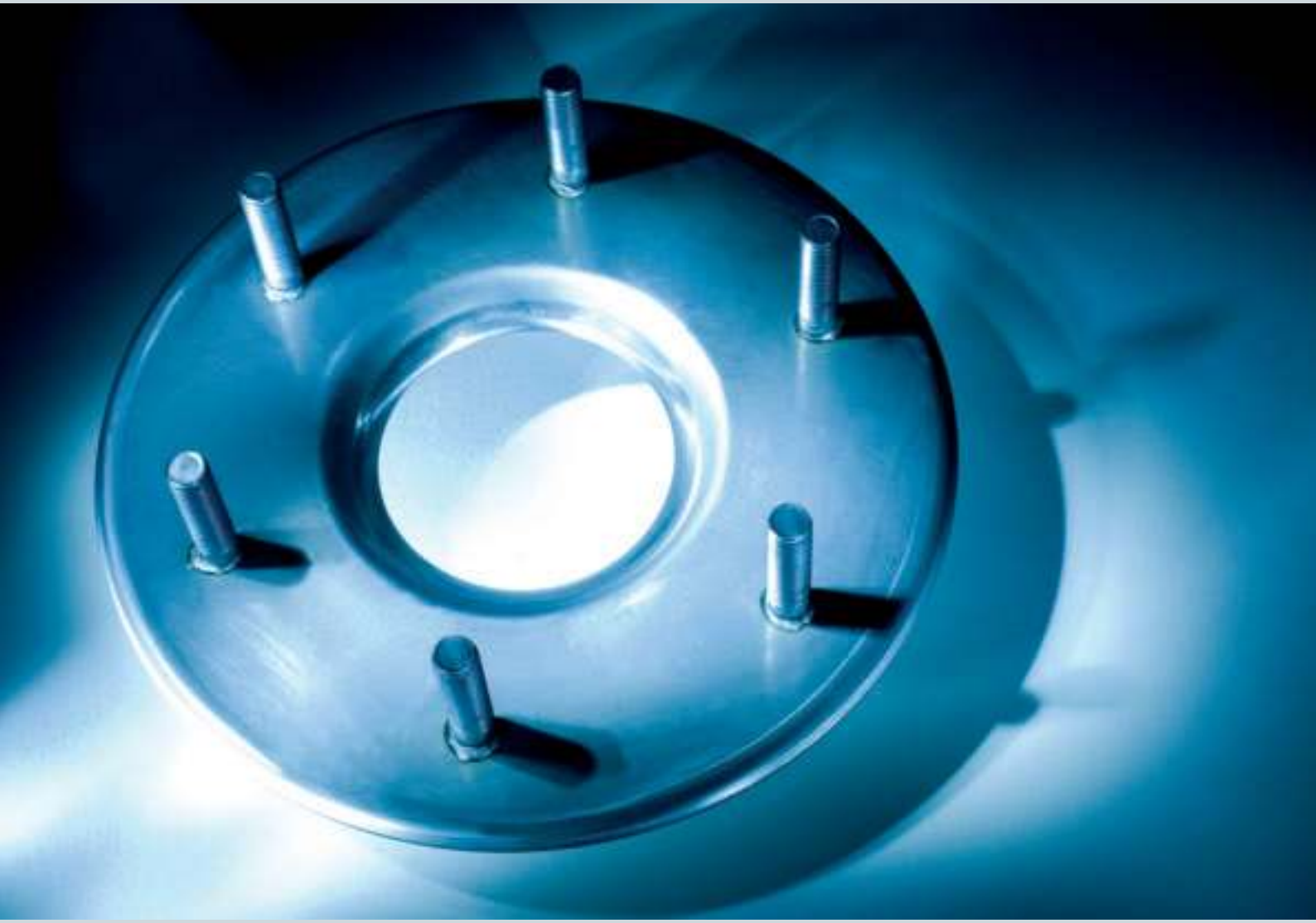


ARC/SC

Drawn arc/Short cycle stud welding

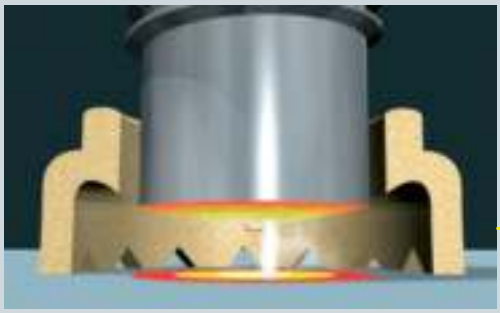
ARC

Drawn arc stud welding with ceramic ferrule or shielding gas

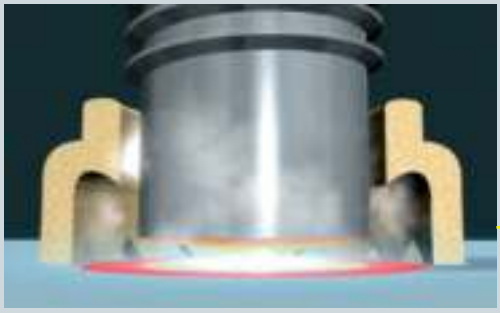
The process drawn arc stud welding is mostly used for stud diameters of 3 to 25 mm and a welding time of 100 to 1,500 msec.

Drawn arc stud welding with ceramic ferrule is recommended for studs with diameter of more than 12 mm. If it is required to protect the weld pool from atmosphere, shielding gas should be used. This process variant is also used with automated applications.

Welding process with ceramic ferrule: Joining of stud-type welding elements with a diameter 2 to 25 mm (M24) onto thicker sheets of about 2 mm or higher. Mild steel and stainless steel.

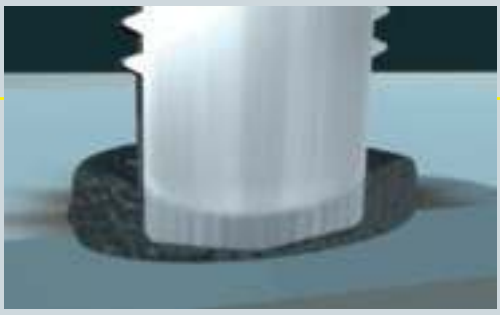


The welding stud is lifted and a secondary arc (pilot arc) of low current is ignited between stud tip and work piece.



Then the ignition of the main arc is carried out. Stud and work piece are melted. The stud is moved to the work piece, the two molten zones join.

The molten areas solidify. The short and clean welding process does not require any machining.



As a result, an even joint is achieved with a strength which is above the strength of stud and base material.

Tremendous time and cost savings
Unmatched economic efficiency with HBS

ARC

Best Solution for Best Result

Specifically designed for thicker sheets of about 2 mm or higher. Application ranges: steel construction, engineering construction, shipbuilding industry, vehicle construction, structural and civil engineering.

ARC Drawn arc stud welding with ceramic ferrule, shielding gas or without.

ARC Uncompromising drawn arc power units

The ARC series provides both impressive performance and application variety. Highest degree of mobility from the economic efficient up to the highest performance machine on big rubber wheels.

We match the requirement

They are compact and mobile, the ARC machines, with highest operational convenience and comprehensive safety standards. A microcontroller and an automated function monitoring system guarantee optimum welding. In addition, there is another reserve capacity. Best results with high economic efficiency.

Closed welding connection and high welding quality in spite of minimal heat input.

Top in any of the items:

- Precise process times via microcontroller
- Lift test
- Function monitoring
- Integrated mains filter
- Maximum operating convenience
- Best price/performance ratio

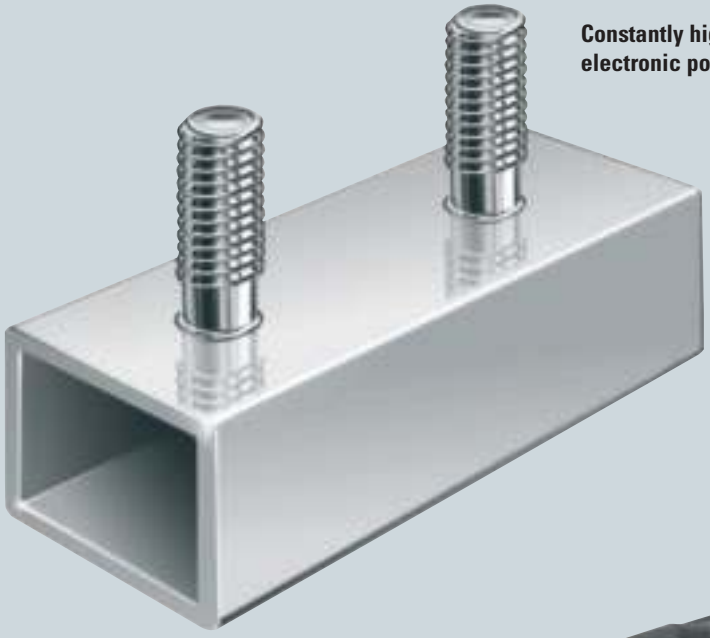
The success of systematic measures

ARC 500
A strong light weight unit with 580 A welding current.

ARC 800
The top seller – compact, powerful and fully equipped (as an option).

ARC 1550
Powerful welding unit on rubber wheels, the premium power unit of the ARC series. With electronic power regulation for constant power input.

	ARC 500	ARC 800	ARC 1550
Welding range	M3 to MR10 dia. 2 to 8 mm	M3 to MR12 dia. 2 to 10 mm	M3 to M20 RD dia. 2 to 19 mm
Welding rate	5 to 15 studs/min	7 to 17 studs/min	3 to 35 studs/min
	(depending on application and stud dia.)		
Sheet thickness	Especially suitable for thicker sheets of about 2 mm or higher		
Welding current	580 A	800 A	1,550 A Adjustment range 500 to 1,550 A
Welding time	5 to 350 msec	5 to 1,000 msec	5 to 1,500 msec (stepless)
Weight	31 kg	37 kg	133 kg



Constantly high welding quality through electronic power regulation (ARC 1550).

A 12
Especially light and accurate welding gun for industrial application: welding range dia. 2 to 12 mm.

A 16
Rigid and ergonomic casing. Highest weld quality achieved by a double damping system which is unique in the world. Specially designed for high clock sequences with big diameters. Welding range dia. 3 to 16 mm.

CA 08
Especially light and accurate welding gun. Welding range M3 to M8.

A12/A16 with integrated automatic length compensation.

IT

Newest inverter technology for drawn arc stud welding

HBS EFFICIENT TECHNOLOGY

Reduces energy consumption and weight. Increases welding quality and welding rate.

Innovative and future-oriented technology, integrated in the compact and very mobile inverter power unit series „IT“ from HBS.

HBS inverter technology means:

Maximum welding quality
Maximum welding rates
Minimum energy consumption
Minimum weight
Maximum efficiency

Quality

Best welding quality through extremely high stability of the arc, even at weak welding currents or large fluctuations of the mains voltage.

Welding rates

Highest welding rates - increased by 100% compared to standard conventional transformer technology.

Energy consumption

Minimized energy consumption - energy needed is reduced by 50% compared to standard power units with transformer technology.

Weight

Minimized weight - inverter technology reduces the weight by 50% compared to power units with transformer technology.

Degree of efficiency

Maximum degree of efficiency - innovative inverter technology offers best input / output ratio.

IT
Newest inverter technology for drawn arc stud welding

The first complete inverter series with welding current up to 2,600 A.

Best welding quality

Very high arc stability even at weak welding current. In this way, a constantly optimized welding quality is achieved even with large mains voltage fluctuations.

Ahead of competition by dynamics

Highly dynamic regulation of the welding process through high process flexibility.

Higly cost effective

The innovative inverter welding power source provides a higher efficiency of 80 % compared with conventional power sources. In this way, energy consumption is reduced by 50% (smaller generators = 50% less diesel fuel consumption).

Realization of highest quality demands, even for welding on difficult geometrical shapes.

Top in any of the items:

In addition to the features of the ARC series, the inverter power units provide the following characteristics.

- Outstanding welding quality – very high arc stability
- Process monitoring
- High process flexibility (clock frequency 30 kHz)
- Compact, highly mobility
- Up to 100% higher welding rate compared with conventional transformer machines

	IT 1002	IT 2002	IT 3002	IT 90	IT 130
Welding range	M3 to MR16 dia. 2 to 14 mm	M3 to M24 dia. 2 to 22 mm	M3 to M24 dia. 2 to 25 mm	M3 to M24 dia. 2 to 22 mm	M3 to M24 dia. 2 to 25 mm
Welding rate	M12= 25 studs/min	dia. 22= 7 studs/min	dia. 25= 6 studs/min	dia. 22= 4 studs/min	dia. 25= 5 studs/min
Sheet thickness	Minimum metal sheet thickness is (ceramic ferrule) and 1/8 (shielding gas) of stud diameter, however, at least 1 mm.				
Welding current	1,000 A (max.)	2,000 A (max.)	2,600 A (max.)	2,000 A (max.)	2,500 A (max.)
Current adjustment range	100 to 1,000 A (stepless)	300 to 2,000 A (stepless)	300 to 2,600 A (stepless)	300 to 2,000 A (stepless)	300 to 2,500 A (stepless)
Welding time	5 to 1,000 msec (stepless)	5 to 1,500 msec (stepless)	5 to 1,500 msec (stepless)	5 to 1,500 msec (stepless)	5 to 1,500 msec (stepless)
Weight	29 kg	95 kg	160 kg	140 kg	160 kg

The success of systematic measures

IT 1002
Our economically efficient model for industry and job site applications. The topseller of the inverters.

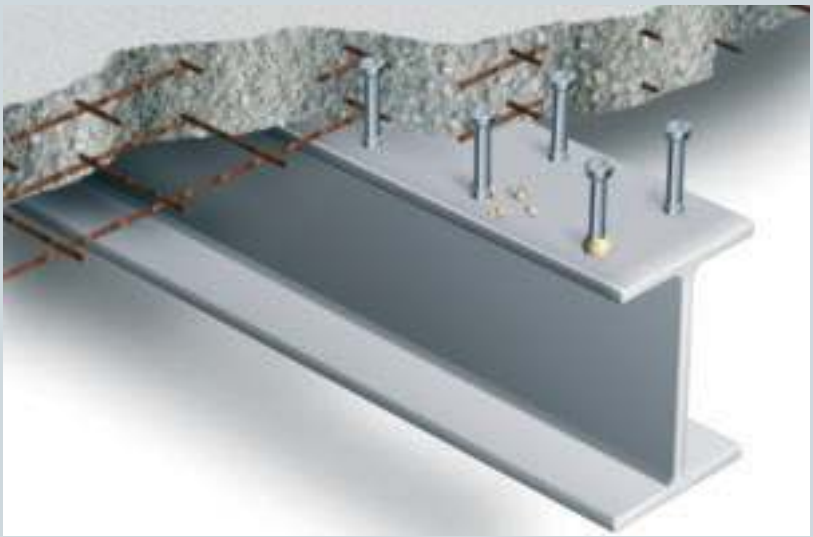
IT 2002
Robust and very powerful. Very high welding rate, especially for job site applications.

IT 3002
The most powerful inverter for job site applications. Welding rate with dia. 25 = 6 studs/min.

IT 90/IT 130
Specially developed for industrial use with integrated process monitoring and RS232 interface for data output. Optional 4 gun connections (IT 90).

A 22/A25
Especially rigid casing. Highest welding quality through a worldwide unique double damping system.

A 12/A16
Description see page 5.



Shear connector application in steel composite construction.

A22/A25 with integrated automatic length compensation.

SC

Short cycle drawn arc stud welding

High current, shorter duration of welding time

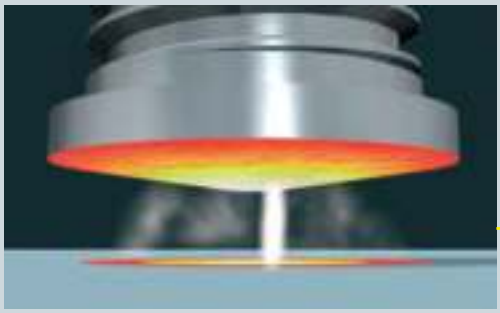
The welding sequence is the same as the sequence of drawn arc welding (ARC), however, with relatively higher currents and shorter welding times (≤ 100 msec). The short cycle drawn arc stud welding is very suitable for stud diameters up to 16 mm on thin metal sheets.

Also without shielding gas

Up to 8 mm stud diameter, the process is often carried out without weld pool protection. Normally studs with flange are used to achieve high tensile strengths in spite of pores in the weld zone.

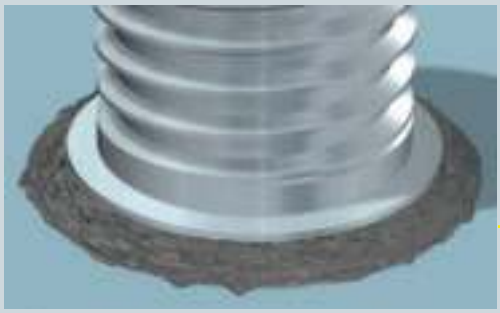
The short cycle process is especially suitable for welding of material combinations like steel (base material), stainless steel (stud) as well as aluminum. To achieve a high welding quality, use of shielding gas is recommended.

Joining of stud-type welding elements with a diameter 2 to 16 mm onto thin sheets, min. 0.5 mm. Mild steel, stainless steel and aluminum.



The welding stud is lifted and a secondary arc (pilot arc) of low current is ignited between stud tip and work piece.

Then the ignition of the main arc is carried out. Stud and work piece are melted. The stud is moved to the work piece, the two molten zones join.



The molten areas solidify. The short and clean welding process does not require any machining.

The low thermal, accurate load provides welding onto thin sheets.

Best results
Best price-performance ratio

SC

Best Solution for Best Result.

Multiple applications with: studs, tapped pads and pins onto thin metal sheets. A wide field of application is in vehicle construction, in particular using christmas tree studs to fasten conduits and trims.

With SCD and IT power units for short cycle drawn arc stud welding. (with and without shielding gas).

SCD, IT
More productive – better – stronger compared with competition

Latest technology

You select between four different but equally powerful, modern power units – the most competitive machines of their class with best price-performance ratio.

Application: Fastening element for automotive industry

SCD 3201 works to the procedure of capacitor discharge drawn arc stud welding.
Short welding time: 5 to 15 msec
Welding range: dia. 3 to 6 mm
Minimum plate thickness: 0.5 mm

The inverter power units:
IT 1002/IT 90 work to the procedure of short cycle drawn arc stud welding.
Welding time: 5 to 100 msec
Welding range SC: up to dia. 16 mm
Minimum plate thickness: 0.5 mm

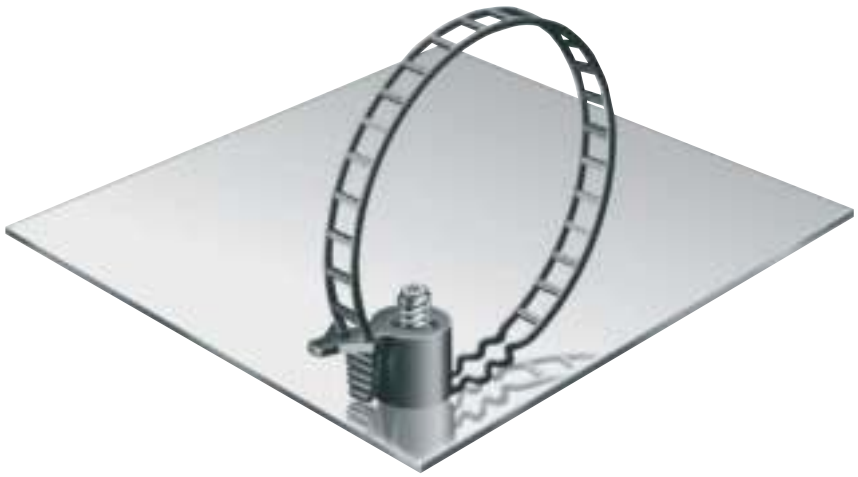
Top in any of the items:

- Best welding results with thin metal sheets
- Short welding time, high welding rate.
- Process monitoring
- RS232 interface
- Function monitoring
- Highest operational convenience
- Capacitor discharge and short cycle drawn arc stud welding with one stud welding unit (SCD 3201)

	SCD 3201 Capacitor discharge:	SCD 3201 Short cycle:	IT 1002	IT 90
Welding range	M3 to M10 dia. 2 to 10 mm	M3 to M8 dia. 3 to 6 mm	M3 to MR16 dia. 2 to 14 mm	M3 to M24 dia. 2 to 22 mm
Welding rate	15 to 40 studs/min (depending on application and stud dia.)	8 to 15 studs/min	M12= 25 studs/min	dia. 22= 4 studs/min
Sheet thickness	Minimum plate thickness: 1/10 of stud diameter, but not less than 0.5 mm		Minimum plate thickness: 1/8 of stud diameter, but not less than 0.6 mm	
Welding current	–	900 to 3,000 A stepless (over charging voltage)	1,000 A (max.)	2,000 A (max.)
Current adjustment range	–	–	100 to 1,000 A (stepless)	300 to 2,000 A (stepless)
Welding time	1 to 3 msec	5, 10, 15 msec	5 to 1,000 msec (stepless)	5 to 1,500 msec (stepless)
Weight	29 kg	29 kg	29 kg	140 kg

The success of systematic measures

SCD 3201
Two in one – the high tech power unit. Equipped with a 85 to 265 V mains connection (instead of 400 V 3-phase current connection!).
To be used with the processes capacitor discharge and capacitor discharge drawn arc stud welding.



Application: Christmas tree studs with plastic fastening element.

IT 1002/IT 90
If you want to weld high-strength materials and material combinations (mild steel/stainless steel) or larger stud diameters (up to 16 mm), welding with IT 1002 and IT 90 in short cycle range will be often the only technical solution.

CA 08
Especially light and accurate welding gun. Welding range M3 to M8.

A12
Description see page 5.

Benefit with HBS

Leading through
technology,
quality and service.

5 welding processes,
12 model series
and more than
30 model variants.

HBS Bolzenschweiss-
Systeme GmbH & Co. KG
Felix-Wankel-Strasse 18
85221 Dachau / Germany
Phone +49 (0) 8131 511-0
Fax +49 (0) 8131 511-100
post@hbs-info.com
www.hbs-info.com