



Quality meets Innovation

Stud Welding Systems Catalogue





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HBS - World

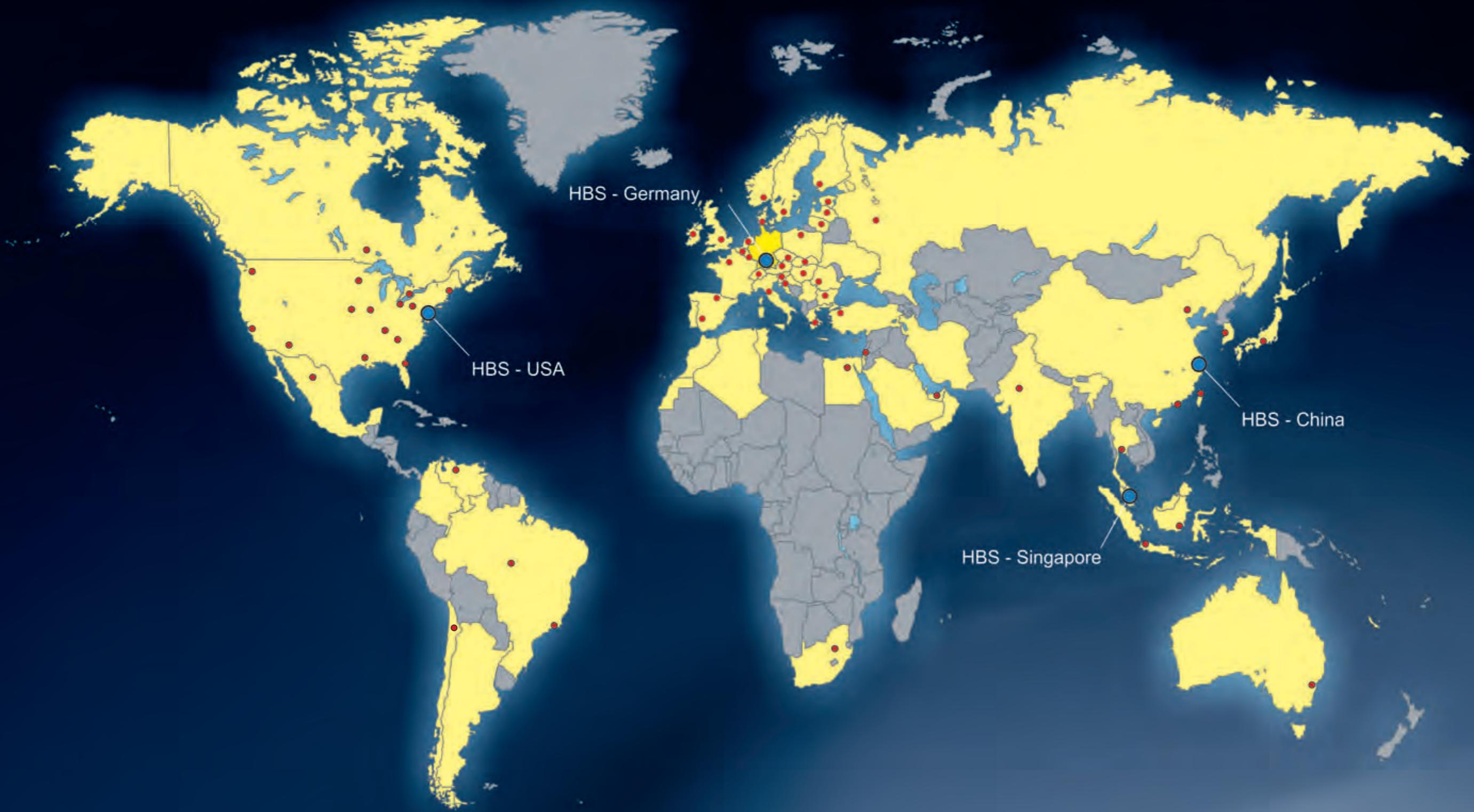




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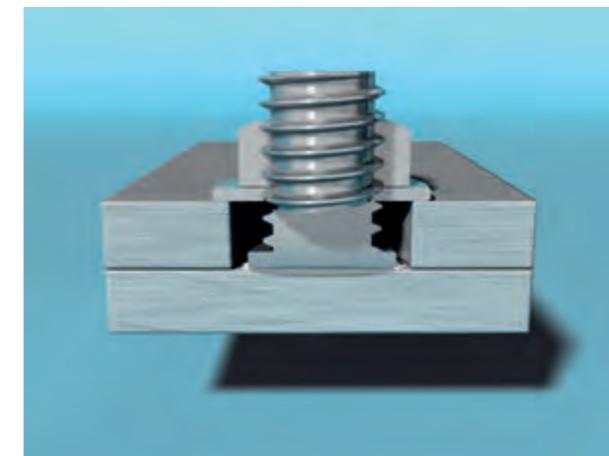


Quality Management System according to ISO 9001:2008

- Certified since 1994
- Implementation of our Company Policy and Corporate Mission
- Guaranteed high quality of our products and services
- Well-defined and clearly structured processes
- Continuous improvement of our:
 - management processes
 - business processes
 - supporting processes

Stud Welding - Advantages

Saves time. Saves money. Unchallenged.

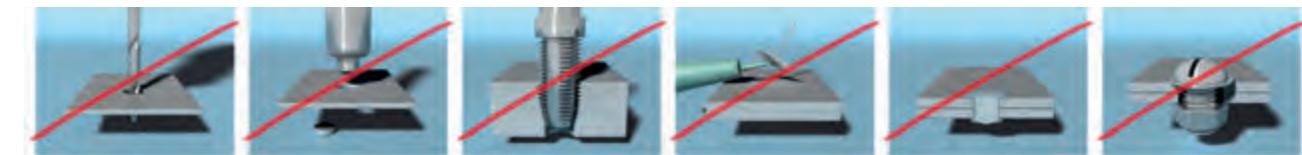


No reworking!

In many areas stud welding is the most economic fastening method for components. If using thin sheet metal, stud welding is often the only technical solution.

Tremendous time and cost savings

No: drilling - punching - threading - gluing - riveting - screwing



New design potentials

- Very low distortion by extremely short welding time.
- No leaking caused by drilled holes.
- High strength.
- One-sided accessibility of the component is sufficient.
- Weldable even onto very thin plates.
- Joining of different materials is possible.

Unsurpassed economy

- Can be automated to a very high degree.
- Very short welding time (1 ms to 1.500 ms), fast weld rates.
- Fast and easy handling leads to high productivity.
- No marks on backside of coated or high alloyed plates.
- Low prices for standard studs.

CD

Capacitor Discharge (CD) stud welding with tip ignition

HBS power units provide outstanding reductions in costs and time. Every weld is precise avoiding any need for post treatment.

The recipe for success:

Extremely short welding time! (1 to 3 ms). No additional welding products are needed. Because of a very low thermal load, the welding zone is minimal. In this way, distortion of the work piece is avoided. Often this is the only applicable technical solution.

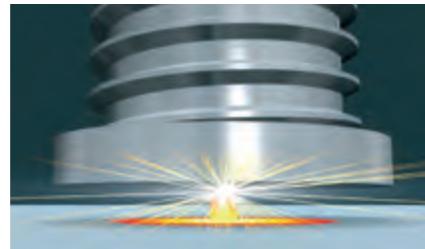
Contact or gap

In contrast to contact welding, with gap welding the stud is positioned at a defined distance shortly before welding starts. This creates a higher plunging speed which leads to a shorter welding time (only 1 ms!).

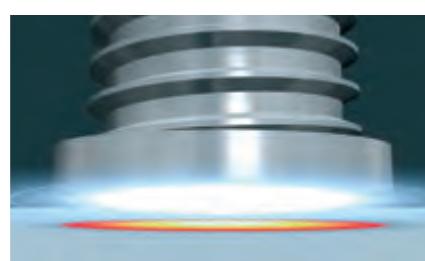
This characteristic also allows welding of difficult materials like e.g. aluminium and brass.



Joining of stud-type welding elements with a diameter M3 to M10 (dia. 2 to 10 mm) onto thin sheets, min. 0.5 mm. Mild steel, stainless, steel, aluminium and brass.



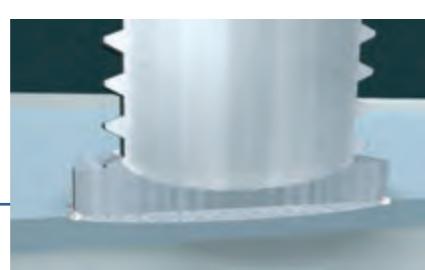
An arc is ignited between the face of stud and the surface of a work piece.



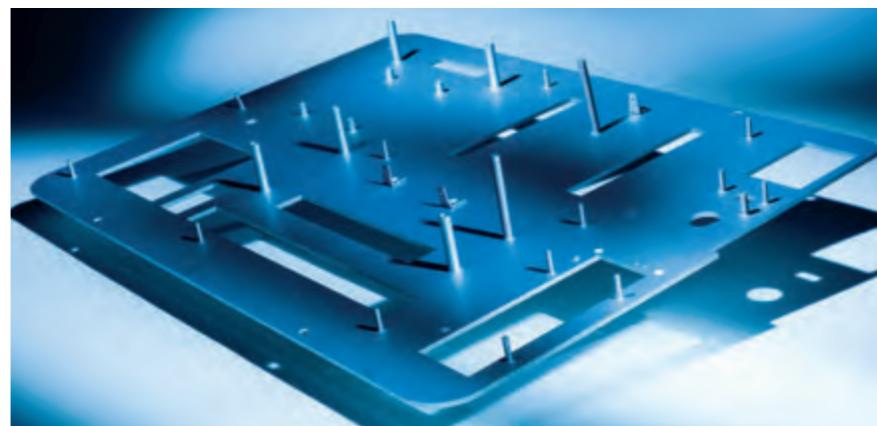
Both parts are melted, the stud is gently pressed against the work piece and than joined together.



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



As a result, an even and complete joint is achieved with a strength which is above the strength of stud and base material. The low thermal load provides welding onto thin sheets without damage to the rear side.

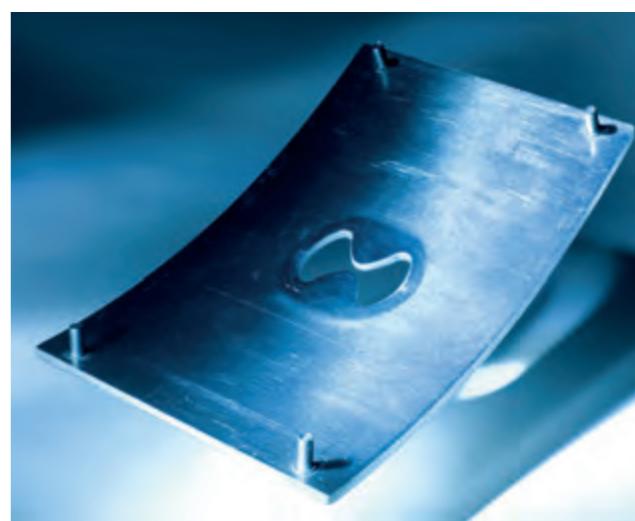


CD

**Best Solution
Best Results**

Typical applications include:
Sheet metalwork, electronic industries, switchboard cabinets, laboratory and medical equipment, food industry, household appliances, etc.

When studs are welded to thin sheets (steel, aluminium and brass), the procedure of tip ignition will always be the most cost effective process and sometimes the only solution.



**Keep it simple. Save time and money.
Unmatched economic efficiency with HBS.**

CD

Cutting edge technology is combined with time proven power units

The professional generation

The HBS R&D department unceasingly reviews components for new, improved, cost effective and efficient technology to keep all HBS products at the cutting edge.



All the available experience and knowledge in the stud welding industry are part of HBS products which we have been developing for over 40 years. HBS welding elements are a part of this technology.



Studs to fasten trowel handle

Cutting edge technology

C 06-3

Simple – no setting required for lift and spring pressure. Stud welding gun specially paired with the power source for outstanding results.

CA 08

High-performance stud welding gun for tip ignition process of gap welding. High accuracy provided by zero-play ball linear bearing for guiding the welding piston.

C 08

Rugged casing with ergonomic grip. All-rounder also used for welding aluminium studs to M4 (#8).

CI 03

For welding cupped head pins. Fixing HVAC insulation matting (heating, ventilation and air-conditioning).



Configuration

Capacitor discharge stud welding



Configuration

Capacitor discharge stud welding



Material **Diameter** M3 to M10 **Catalogue** Welding Elements

Type PT
Threaded stud

Material **Diameter** M4 to M8 **Catalogue** Welding Elements

Type PT
Paint clearing threaded stud

Material **Diameter** 5 mm **Catalogue** Welding Elements

Type PT
Fir tree stud

Material **Diameter** 3 to 7,1 mm **Catalogue** Welding Elements

Type UT
Unthreaded stud (pin)

Material **Diameter** M3/dia.5mm - M5/dia.7,1mm **Catalogue** Welding Elements

Type IT
Stud (pin) with internal thread

Material **Diameter** 6,3 mm **Catalogue** Welding Elements

Type Ground clips

Material **Welding range** M3 to M6 #4 to 1/4" **Page** 16

Pegasar 500 accu
Mobile, light and robust **battery powered** for construction sites and workshops (IP 44). Intuitive, simple to operate thanks to quick-access buttons and pre-stored parameters.

Ground cable 92-40-154

Material **Welding range** M3 to M6 #4 to 1/4" **Page** 19

C 06-3 with foot ring
Universal design for use on flat surfaces.
Easy handling.
No setting for lift and spring pressure.
Aluminium to M4 (#8).

Material **Welding range** M3 to M6 (Aluminium up to M4) #4 to 1/4" (Aluminium up to #8) **Page** 19

C 06-3 with centering tube PPR-2
Used for welding with templates and for protection against spatter.
Easy handling. No setting for lift and spring pressure. Aluminium to M4 (#8).

Material **Welding range** M3 to M8 (M10) #4 to 5/16" **Page** 19

C 08 with foot ring
Universal design for use on flat surfaces.
All-rounder also used for welding galvanised base material.
Aluminium to M4 (#8).

Material **Welding range** M3 to M8 (M10) #4 to 5/16" **Page** 19

C 08 with centering tube PPR-2
Used for welding with templates and for protection against spatter.
All-rounder also used for welding galvanised base material. Aluminium to M4 (#8).

Material **Welding range** M3 to M8 (M10) #4 to 5/16" (7/16") **Page** 19

CA 08 with foot ring
Universal design for use on flat surfaces.
Used to avoid rear side marking on thin sheets.
Aluminium to M6 (1/4").
Brass to M4 (#8).

Material **Welding range** M3 to M8 (M10) #4 to 5/16" (7/16") **Page** 19

CA 08 with centering tube PPR-2
Used for welding with templates and for protection against spatter. Gap gun used to avoid rear side marking on thin sheets and provides optimal results with aluminum studs to M6 (1/4").

Accessories **Page** 19

Legend

Material	Stud-/Welding material
	Mild steel
	Stainless steel
	Aluminium
	Brass



Pegasar 500 accu

NEW



- Mobile, light and robust battery powered for construction sites and workshops (IP 44)
- Intuitive, simple to operate thanks to quick-access buttons and pre-stored parameters

M3 to M6
#4 to 1/4"

Pegasar 500 accu

NEW



- Mobile, light and robust battery powered for construction sites (IP 44)
- Intuitive, simple to operate thanks to quick-access buttons and pre-stored parameters

Cupped head pins: dia. 2 and 2.7 mm
CD ISO nail: dia. 2 and 3 mm

Welding process	CD
Welding material	● ● (●)
Technology	Inverter-Capacitor Charging Technology
Welding range	Studs (steel) M3 to M6 / #4 to 1/4" Studs (aluminium) M3 to M4 / #4 to #8
Welding rate	M3 / #4 = 40 studs/min. (Charging voltage 55 V), M6 / 1/4" = 20 studs/min. (Charging voltage 95 V)
Count of weldings per battery	400 welds (M6 / 1/4")
Capacitance	100000 µF
Welding time	1 to 3 ms
Energy	500 Ws
Charging voltage	50 to 100 V (stepless voltage regulation)
Power source	Capacitor
Battery	25.55 V / 5.7 Ah / 145.64 Wh (LiNiCoAlO2)
Battery charging time	Max. 2.5 h
Battery life	At least 400 charging cycles (at 800 charging cycles still approx. 60 % of the initial capacity)
Dimension LxWxH	475 x 300 x 355 mm / 18.70" x 11.81" x 13.98" (with handle)
Weight	12 kg / 26.46 lbs incl. battery, 10.7 kg / 23.59 lbs without battery
Primary power	100 V to 240 V, 50/60 Hz, 10 AT (slow blow); in battery operation: 25.55 V
Connected load	500 W
Cooling type	F (temperature controlled cooling fan)
IP	With inserted battery: IP 44, without battery: IP 23
Suitable guns	C 06-3

Displays

Pegasar 500 accu (metric)



Pegasar 500 accu (imperial)



Pegasar 500 accu Insulation



Legend

Welding process: CD = Capacitor discharge stud welding

● Mild steel ● Stainless steel ● Aluminium

● Mild steel ● Stainless steel ● Aluminium

Quick battery change



Toolbag

For Pegasar 500 accu and Visar 650
Order no. 88-24-466



Just 2 steps! To the perfect weld

Simply the best - C 06-3

1.
Select diameter



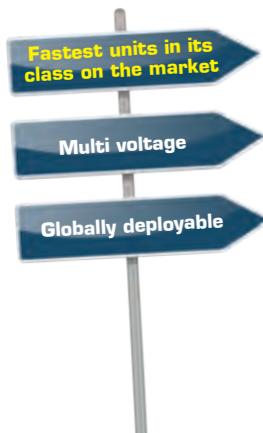
2.
Push trigger



Everything at
the ready

CDi series

Systems for capacitor discharge



CDi 1502



- For construction sites and workshops (IP 23)
 - Welds to M8 (5/16") on thin sheets
- M3 to M8
#4 to 5/16"

CDi 2302



- All-rounder for construction sites and workshops (IP 23)
 - Welds limited to M10 (7/16") on thin sheets
- M3 to M8 (M10)
#4 to 5/16" (7/16")

CDi 3102



- Energy package for construction sites and workshops (IP 23)
 - For larger studs with energy reserve for coated surfaces
- M3 to M10
#4 to 7/16"

Welding process	CD	CD	CD
Welding material			
Technology	Inverter-Capacitor Charging Technology	Inverter-Capacitor Charging Technology	Inverter-Capacitor Charging Technology
Display	Digital	Digital	Digital
Welding range	M3 to M8, dia. 2 to 8 mm / #4 to 5/16", dia. 14 ga to 5/16" Capped head pins: dia. 2 and 2.7 mm / 14 ga and 12 ga Insulation pins: dia. 2 and 3 mm / 14 ga and #4	M3 to M8 (M10 limited), dia. 2 to 8 mm (dia. 10 mm limited) / #4 to 5/16" (7/16" limited), dia. 14 ga to 5/16" (dia. 3/8" limited)	M3 to M10, dia. 3 to 10 mm / #4 to 7/16", dia. #4 to 3/8"
Welding rate	M3 / #4 = 33 studs/min. (voltage 60 V) M8 / 5/16" = 14 studs/min. (voltage 200 V)	M3 / #4 = 33 studs/min. (voltage 60 V) M8 / 5/16" = 12 studs/min. (voltage 170 V) (M10 / 7/16" = 9 studs/min. (voltage 210 V))	M3 / #4 = 20 studs/min. (voltage 50 V) M8 / 5/16" = 10 studs/min. (voltage 140 V) M10 / 7/16" = 6 studs/min. (voltage 200 V)
Capacitance	66000 µF	99000 µF	132000 µF
Welding time	1 to 3 ms	1 to 3 ms	1 to 3 ms
Energy	1600 Ws	2400 Ws	3200 Ws
Charging voltage	50 to 220 V (stepless voltage regulation)	50 to 220 V (stepless voltage regulation)	50 to 220 V (stepless voltage regulation)
Primary power	230 V/115 V*, 50/60 Hz, 10 AT (slow blow) *alternative primary power see „Order No.“	230 V/115 V*, 50/60 Hz, 10 AT (slow blow) *alternative primary power see „Order No.“	230 V/115 V*, 50/60 Hz, 10 AT (slow blow) *alternative primary power see „Order No.“
Connected load	600 VA	600 VA	600 VA
Power source	Capacitor	Capacitor	Capacitor
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP-Code	IP 23	IP 23	IP 23
Dimension LxWxH (without handle)	400 x 205 x 250 mm / 15.75" x 8.07" x 9.84"	480 x 205 x 250 mm / 18.90" x 8.07" x 9.84"	480 x 205 x 250 mm / 18.90" x 8.07" x 9.84"
Weight	14 kg / 30.87 lbs	17 kg / 37.48 lbs	18 kg / 39.68 lbs
Suitable guns	C 08, CA 08, CI 03	C 08, CA 08	C 08, CA 08

Order No.	Order No.	Order No.
92-10-1502B (230 V)	92-10-2302B (230 V)	92-10-3102B (230 V)
92-12-1502B (115 V)	92-12-2302B (115 V)	92-12-3102B (115 V)
92-13-1502B (100 V)	92-13-2302B (100 V)	92-13-3102B (100 V)
92-40-095 (Ground cable, 2.5 m, 25 mm ² , 2 vice grips 10")	92-40-095 (Ground cable, 2.5 m, 25 mm ² , 2 vice grips 10")	92-40-095 (Ground cable, 2.5 m, 25 mm ² , 2 vice grips 10")

Für CI 03:
92-40-091 (Ground cable, 6.7 m, 1 Vice grip 10")

Legend

Welding process: CD = Capacitor discharge stud welding
 Mild steel Stainless steel Aluminium Brass

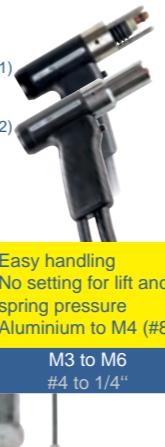


CD Stud welding guns

Systems for capacitor discharge

NEW

C 06-3



- Easy handling
 - No setting for lift and spring pressure
 - Aluminium to M4 (#8)
- M3 to M6
#4 to 1/4"

C 08



- All-rounder also used for welding galvanised base material
 - Aluminium to M4 (#8)
- M3 to M8 (M10)
#4 to 5/16" (7/16")

CA 08



- Used to avoid rear side marking on thin sheets
 - Aluminium to M6 (1/4")
 - Brass to M4 (#8)
- M3 to M8 (M10)
#4 to 5/16" (7/16")

CI 03



- Especially suitable for welding on cupped head pins (HVAC)
- Dia. 2/2.7 mm
14 ga/12 ga

Legend

Welding process: CD = Capacitor discharge stud welding
 Mild steel Stainless steel Aluminium Brass



ACCU-TWIN



Battery powered

- Especially suitable for welding heat costs measurement systems through twin stud welding

2 x M3

Welding process	CD
Welding material	● ●
Welding range	2 x M3
Welding rate	2 twin welds per minute
Capacitor charging time	approx. 30 sec
Battery	12 V, 5 Ah (leakproof)
Battery capacity	200 twin M3 welds
Battery charging time	Max. 10 hours
Battery life	Min. 200 charging cycles
Stud spacing	Stepless adjustable from 25 mm up to 61 mm (from 19 mm upon request)
Welding gun cable length	approx. 1.1 m (92-10-2280A) approx. 2.1 m (92-10-2285B)
Capacitance	80 000 µF
Energy	325 Ws (92-10-2280A) 375 Ws (92-10-2285B)
Charging voltage	Max. 90 V (92-10-2280A) max. 97 V (92-10-2285B)
Power source	Capacitor
Dimension LxWxH	360 x 135 x 210 mm (Gun 165 x 25 x 95 mm)
Weight	7 kg (incl. welding gun - 550 g)
Gun	Supplied fixed – non interchangeable

Order No.

92-10-2280A (1.1 m)
92-10-2285B (2.1 m)



Legend

Welding process: CD = Capacitor discharge stud welding

● Mild steel ● Stainless steel

5) Rubber edge protection



1) Convenient cable wrap system
2) External gun compartment



3) Intelligent energy display
4) Counter for completed welds



ARC

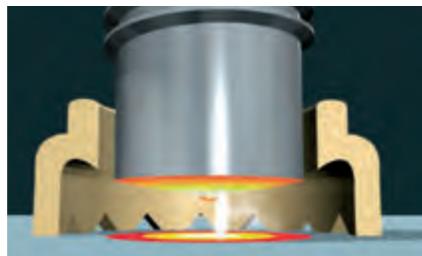
Drawn arc (ARC) stud welding with ceramic ferrule or shielding gas

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 ms.

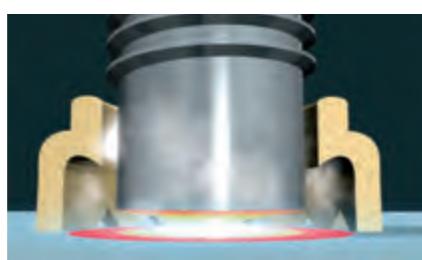
Drawn arc stud welding with ceramic ferrule is recommended for studs with diameter of more than 12 mm. If it is required to protect the weld pool from atmosphere, shielding gas should be used. This process variant is also used with automated applications.



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 strength is achieved which is above the stud and base material.

**Tremendous time and cost savings
Unmatched economic efficiency with HBS**

ARC
Best Solution
Best Results



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



Short cycle stud welding



SC

Short cycle (SC) 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 (max. 100 ms). The short cycle drawn arc stud welding is very suitable for stud diameters up to 16 mm on thin metal sheets.

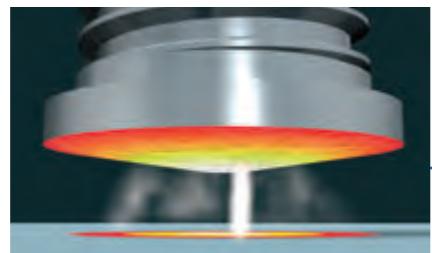
Also without shielding gas

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 aluminium. To achieve a high welding quality, use of shielding gas is recommended.



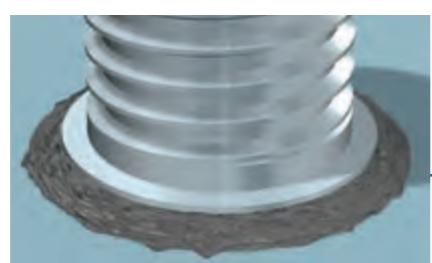
Joining of stud-type welding elements with a diameter 2 to 16 mm onto thin sheets, min. 0.5 mm. Mild steel, stainless steel and aluminium.



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.



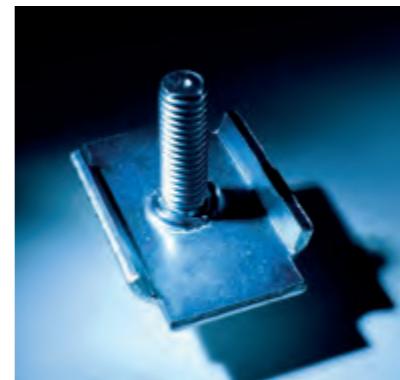
The low thermal, accurate load provides welding onto thin sheets.

Best results
Best price-performance ratio



Short cycle stud welding

SC
Best Solution
Best Results



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

IT

Inverter technology for drawn arc and short cycle

The first complete inverter series with welding current up to 2600 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

Dynamic regulation of the welding process through high process reliability and consistency.

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).



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

Top in:

- Outstanding welding quality – very high arc stability
- Process monitoring
- Compact, highly mobility
- Up to 100 % higher welding rate compared with conventional transformer machines



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.



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 units from HBS.



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.

Configuration

Drawn arc stud welding with
ceramic ferrule - up to M16 / 5/8" (type RD)



Configuration

Drawn arc stud welding with
ceramic ferrule - up to M16 / 5/8" (type RD)



Material	Diameter	Catalogue
Mild steel	M6 to M24	Welding Elements

Type RD
Threaded stud with reduced shaft

Material	Diameter	Catalogue
Mild steel	M6 to M16	Welding Elements

Type DD
Virtually fully threaded stud

Material	Diameter	Catalogue
Mild steel	M6 to M20	Welding Elements

Type PD
Partially threaded stud

Material	Diameter	Catalogue
Mild steel	6 to 16 mm	Welding Elements

Type UD
Unthreaded stud (pin)

Material	Diameter	Catalogue
Mild steel	M6/dia.10mm - M10/dia.16mm	Welding Elements

Type ID
Stud (pin) with internal thread

Material	Diameter	Catalogue
Mild steel	10 to 25 mm	Welding Elements

Type SD
Shear connector

Material	Welding range	Page
Mild steel	M3 to M10 (type RD) #4 to 3/8" (type RD)	44

ARC 500
Low cost entry level, robust transformer for small stud diameters for workshops and construction sites (IP 23).

Material	Welding range	Page
Mild steel	M3 to M10 (type RD) #4 to 7/16" (type RD)	40

Visar 650
Tough! Single phase inverter (supply voltage range 100 to 240 V). Compact, lightweight with high protection class (IP 44) for welding without shielding gas.

Material	Welding range	Page
Mild steel	M3 to M12 (type RD) #4 to 1/2" (type RD)	44

ARC 800
Robust transformer for workshops and construction sites (IP 23).

Material	Welding range	Page
Mild steel	M3 to M16 (type RD) #4 to 5/8" (type RD)	40

IT 1002
All-rounder for construction sites and workshops (IP 23). Precise welding results through advanced inverter technology.



Material	Welding range	Page
Mild steel	M3 to M12 #4 to 1/2"	46

A 12 with ceramic leg assembly PSC-1
All-rounder for workshop use, small, compact gun with easy set-up. Length compensation for stable welding results.

Material	Welding range	Page
Mild steel	M3 to M12 #4 to 1/2"	46

A 16
All-rounder for construction sites, robust gun with plunge damper and length compensation. Level on rear of gun to line studs level.

Accessories
ARC ceramic
Page 32-35



Ceramic leg assembly PSC-2
Page 32-35



Legend	
Material	Stud-/Welding material
Mild steel	
Stainless steel	
Aluminium	

Configuration

Drawn arc stud welding with
ceramic ferrule - up to M24 (dia. 25 mm) / 1"



Material	Diameter	Catalogue
Welding Elements		
Type RD	M6 to M24	
Threaded stud with reduced shaft		

Material	Diameter	Catalogue
Welding Elements		
Type DD	M6 to M16	
Virtually fully threaded stud		

Material	Diameter	Catalogue
Welding Elements		
Type PD	M6 to M20	
Partially threaded stud		

Material	Diameter	Catalogue
Welding Elements		
Type UD	6 to 16 mm	
Unthreaded stud (pin)		

Material	Diameter	Catalogue
Welding Elements		
Type ID	M6/dia.10mm - M10/dia.16mm	
Stud (pin) with internal thread		

Material	Diameter	Catalogue
Welding Elements		
Type SD	10 to 25 mm	
Shear connector		



Material	Welding range	Page
Type RD	M3 to M20 (type RD) #4 to 3/4" (type RD)	44

Material	Welding range	Page
Type DD	M3 to M24 #4 to 1"	41

Material	Welding range	Page
Type PD	M3 to M24 #4 to 1"	41

Material	Welding range	Page
Type UD	M3 to M24 (dia. 25 mm) #4 to 1"	41

Material	Welding range	Page
Type ID	M3 to M24 (dia. 25 mm) #4 to 1"	41

Material	Welding range	Page
Type SD	M3 to M24 (dia. 25 mm) #4 to 1"	41



Configuration

Drawn arc stud welding with
ceramic ferrule - up to M24 (dia. 25 mm) / 1"

2

Systems for manual applications - ARC/SC

Material	Welding range	Page
Type RD	M3 to M12 #4 to 1/2"	46

Material	Welding range	Page
Type DD	Dia. 3 to 16 mm Dia. #4 to 5/8"	47

Material	Welding range	Page
Type PD	Dia. 14 to 22 mm (25 mm) Dia. 9/16" to 7/8" (1")	47

Material	Welding range	Page
Type UD	Dia. 14 to 25 mm Dia. 9/16" to 1"	47

Legend	
Material	Stud-/Welding material
Mild steel	
Stainless steel	
Aluminium	

Overview Ceramic Application

Drawn arc stud welding



Overview Ceramic Application

Drawn arc stud welding

Suitable for					Included in accessories	
Stud type	Stud diameter	Order No.	Order No.		Diameter	
	M6	83-50-006	80-31-095		Ø = 22 mm	93-41-012, 93-41-016
	M8	83-50-008	80-31-120		Ø = 22 mm	93-41-012, 93-41-016
	M10	83-50-010	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	M12	83-50-012	80-31-170		Ø = 22 mm	93-41-012, 93-41-016, 93-40-082
	M16	83-50-016	80-30-116		Ø = 28 mm	93-41-016, 93-40-086
	M20	83-50-020	80-31-262		Ø = 28 mm	93-40-042
	M24	83-50-024	80-31-307		Ø = 34 mm	93-40-043
	M6	83-50-006	80-31-095		Ø = 22 mm	93-41-012, 93-41-016
	M8	83-50-008	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	M10	83-50-010	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	M12	83-50-012	80-31-205		Ø = 22 mm	93-41-012, 93-41-016, 93-40-082
	M16	83-50-016	80-31-262		Ø = 28 mm	93-41-016, 93-40-081
	M6	83-50-006	80-31-095		Ø = 22 mm	93-41-012, 93-41-016
	M8	83-50-008	80-31-120		Ø = 22 mm	93-41-012, 93-41-016
	M10	83-50-010	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	M12	83-50-012	80-31-170		Ø = 22 mm	93-41-012, 93-41-016, 93-40-082
	M16	83-50-016	80-30-116		Ø = 28 mm	93-40-086, 93-41-016
	M20	83-50-020	80-31-262		Ø = 28 mm	93-40-042
	4 mm*	83-50-004	80-30-104*		Ø = 22 mm	
	5 mm*	83-50-005	80-30-105*		Ø = 22 mm	
	6 mm	83-50-006	80-31-095		Ø = 22 mm	93-41-012, 93-41-016
	8 mm	83-50-008	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	10 mm	83-50-010	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	12 mm	83-50-012	80-31-205		Ø = 22 mm	93-41-012, 93-41-016, 93-40-082
	16 mm	83-50-016	80-31-262		Ø = 28 mm	93-41-016, 93-40-081
	Ø 10 / M6	83-50-010	80-31-150		Ø = 22 mm	93-41-012, 93-41-016
	Ø 12 / M8	83-50-012	80-31-205		Ø = 22 mm	93-41-012, 93-41-016, 93-40-082
	Ø 16 / M10	83-50-016	80-30-262		Ø = 28 mm	93-41-016

* Ceramic ferrule not standardised

A 12 93-20-275 incl. leg assembly 93-40-022 (studs up to length 150 mm)	A 16 93-20-280 with leg assembly 93-40-028 (studs up to length 170 mm)	A 16 93-20-280 with leg assembly 93-40-040 (studs up to length 150 mm)	A 22 93-20-290 with leg assembly 93-40-040 (studs up to length 150 mm)	A 25 93-20-295 with leg assembly 93-40-040 (studs up to length 150 mm)	A 25 93-20-295 with leg assembly 93-40-073 (studs up to length 290 mm)

Ø = 22 mm Ø = 28 mm Ø = 34 mm

2

Overview Ceramic Application

Drawn arc stud welding



Overview Ceramic Application

Drawn arc stud welding



Suitable for		Chuck	Ceramic ferrule grip		A 16 93-20-280	A 16 93-20-280	A 16 93-20-280	A 16 93-20-280	A 22 93-20-290	A 22 93-20-290	A 25 93-20-295	A 25 93-20-295	A 25 93-20-295
Stud type	Stud diameter	Order No.	Order No.	Diameter	Included in accessories	d = 22 mm	d = 28 mm	d = 29 mm	d = 34 mm				
	6 mm / 1/4"	83-53-006	80-30-206	D = 22 mm									
	10 mm / 3/8"	83-53-010	80-30-210	D = 22 mm									
	13 mm / 1/2"	83-53-012	80-31-213	D = 22 mm									
	13 mm / 1/2"	83-53-012	80-30-213	D = 28 mm	93-40-008								
	16 mm / 5/8" 19 mm / 5/8"	83-53-019	80-30-219	D = 29 mm	93-40-010			only Ø 16	only Ø 16				
	22 mm / 7/8"	83-53-022	80-30-222	D = 29 mm	93-40-011								
	25 mm / 1"	83-53-025	88-15-823	D = 34 mm	93-40-085								

Configuration

Drawn arc stud welding with shielding gas



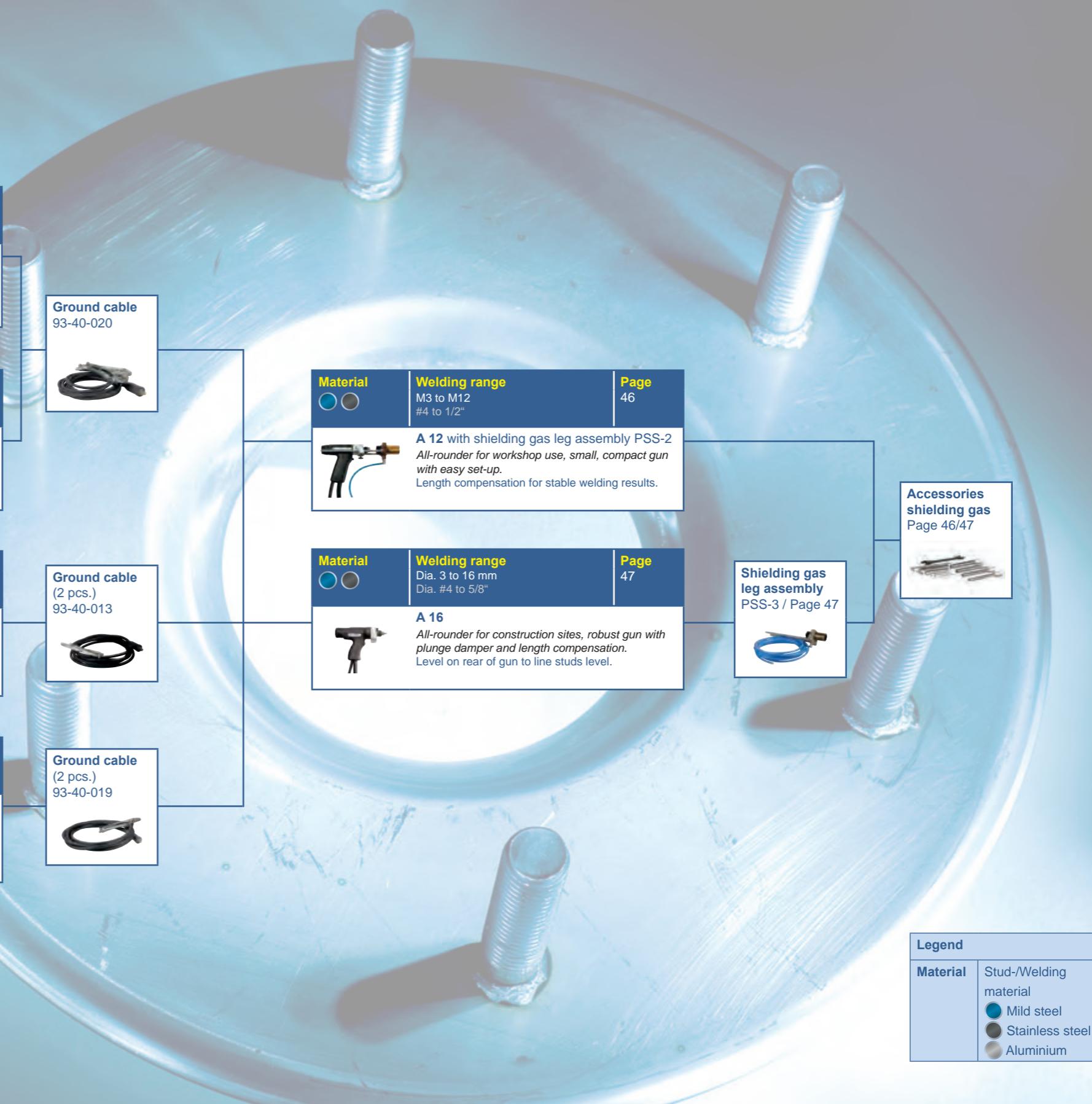
Configuration

Drawn arc stud welding with shielding gas



Material	Diameter	Catalogue
Welding Elements		
Type RD	M6 to M16	
Threaded stud with reduced shaft		
Type DD	M6 to M16	
Virtually fully threaded stud		
Type PD	M6 to M20	
Partially threaded stud		
Type UD	6 to 16 mm	
Unthreaded stud (pin)		
Type ID	M6/dia.10mm - M10/dia.16mm	
Stud (pin) with internal thread		

Material	Welding range	Page
	M3 to M12 (type RD) #4 to 1/2" (type RD)	44
ARC 800	Robust transformer for workshops and construction sites (IP 23).	
	M3 to M16 (type RD) #4 to 5/8" (type RD)	40
IT 1002	All-rounder for construction sites and workshops (IP 23). Precise welding results through advanced inverter technology.	
	M3 to M20 (type RD) #4 to 3/4" (type RD)	44
ARC 1550	Robust transformer with step switching, power regulation and automation function.	
	M3 to M24 #4 to 1"	41
IT 2002	Energy Package for larger studs, used on construction sites and workshops.	



Legend	
Material	Stud-/Welding material
●	Mild steel
●	Stainless steel
●	Aluminium



Material	Diameter	Catalogue
Welding Elements		
	M5 to M8	Type PS
Threaded stud with reduced shaft		

Material	Diameter	Catalogue
Welding Elements		
	M6 to M8	Type PS
Paint clearing stud		

Material	Diameter	Catalogue
Welding Elements		
	5 mm	Type PS
Fir Tree Stud		

Material	Diameter	Catalogue
Welding Elements		
	3 to 8 mm	Type US
Type US		

Material	Diameter	Catalogue
Welding Elements		
	M3/dia.5mm - M6/dia.8mm	Type IS
Stud (pin) with internal thread		

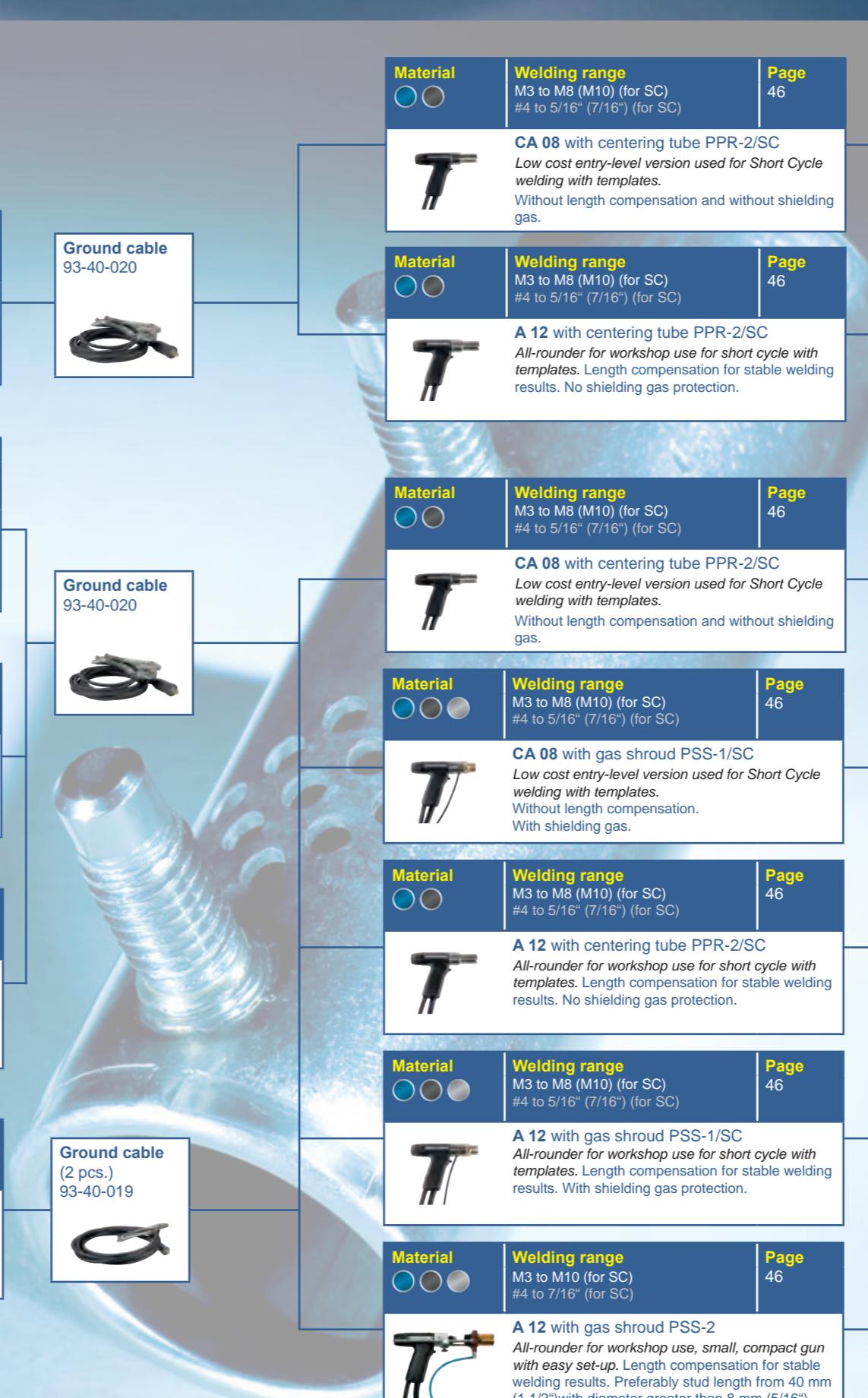
Material	Welding range	Page
	M3 to M6 (for SC) #4 to 1/4" (for SC)	40

Material	Welding range	Page
	M4 to M8 (for SC) #8 to 5/16" (for SC)	44

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16" (for SC)	40

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16" (for SC)	42

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16" (for SC)	42



Legend	
Material	Stud-/Welding material
	Mild steel
	Stainless steel
	Aluminium



Visar 650



- Tough! Single phase inverter (supply voltage range 100 to 240 V)
- Compact, lightweight with high protection class (IP 44)

M3 to M10 (type RD)
#4 to 7/16" (type RD)



Welding process ARC, SC

Welding material Mild steel, Stainless steel, Aluminium

Technology Inverter

Equipment

Welding with ceramic ferrule X

Welding with shielding gas --

Process control --

Display --

Welding range ARC: M3 to M10 (type RD), dia. 2 to 8 mm / #4 to 7/16" (type RD), dia. 14 ga to 5/16"

SC: M3 to M6, dia. 2 to 6 mm / #4 to 1/4", dia. 14 ga to 1/4"

Welding rate M3 / #4 = 40 studs/min

M8 / 5/16" = 12 studs/min

Welding current 650 A (max.)

Current adjustment range 100 to 650 A

Welding time 5 to 200 ms (stepless)

Primary power 100 to 240 V, 1 phase, 50/60 Hz, 16 AT (slow blow)

Primary plug 16 A, 2-pin grounded safety plug (plug type F ; CEE 7/4)

Connected load 3 kVA

Cooling type F (temperature controlled cooling fan)

IP Code IP 44

Dimension LxWxH (without handle) 474 x 337 x 351 mm / 18.66" x 13.27" x 13.82"

Weight 18 kg / 39.68 lbs

Suitable guns A 12 (welding cable not possible to extend), AI 06

Order No.

93-60-0650 (Plug E+F; Europe + China),
93-66-0650 (Plug B; USA, Kanada + China)

93-40-020 (Ground cable,
5 m, 25 mm², 2 vice grips 10")

88-24-466 (Toolbag)
(accessories and welding gun not included)



Legend Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding

Mild steel Stainless steel Aluminium

IT 1002



- All-rounder for construction sites and workshops (IP 23)
- Compact, lightweight with high protection class (IP 44)
- Precise results through advanced inverter technology

M3 to M16 (type RD)
#4 to 5/8" (type RD)



Welding process ARC, SC

Welding material Mild steel, Stainless steel, Aluminium

Technology Inverter

Equipment

Welding with ceramic ferrule X

Welding with shielding gas --

Process control --

Display Digital

Welding range M3 to M16 (type RD), dia. 2 to 14 mm / #4 to 5/8" (type RD), dia. 14 ga to 9/16"

Welding rate M12 / 1/2" = 25 studs/min

Welding current 1000 A (max.)

Current adjustment range 100 to 1000 A, electrode 50 to 400 A (stepless)

Welding time 5 to 1000 ms (stepless)

Primary power 2000 A (max.)

Primary plug 300 to 2000 A (stepless)

Connected load 300 to 2600 A (stepless)

Cooling type Digital

IP Code IP 23

Dimension LxWxH (without handle) 660 x 280 x 340 mm / 26" x 11" x 13.4"

Weight 31 kg / 68.343 lbs

Suitable guns A 12, A 16, AI 06, CA 08

Order No.

93-60-1202 (400 V)
93-66-1202 (480/460 V)

93-40-020 (Ground cable,
5 m, 25 mm², 2 vice grips 10")

Legend Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding

Mild steel

Stainless steel

Aluminium

IT 2002



- Energy Package for larger studs, used on construction sites and workshops

M3 to M24
#4 to 1"



IT 3002



- Heavy Duty Inverter for larger studs and shear connectors
- Precise welding results through inverter even with longer cables

M3 to M24 (dia. 25 mm)
#4 to 1"



IT 130



- Heavy Duty Inverter for larger studs and shear connectors
- Process control

M3 to M24 (dia. 25 mm)
#4 to 1"



	IT 50	IT 90
<i>1 or 4 gun connections</i>		
Welding process	ARC, SC	ARC, SC
Welding material		
Technology	Inverter	Inverter
Equipment		
Welding with ceramic ferrule	X	X
Welding with shielding gas	X	X
Process control	X	X
Automation	X	X
4 gun/head connections	X	(optional)
Display	Digital	Digital
Welding range	M3 to M16 (type RD), dia. 2 to 14 mm / #4 to 5/8" (type RD), dia. 14 ga to 9/16" M12 / 1/2" = 25 studs/min	M3 to M24, dia. 2 to 22 mm / #4 to 1", dia. 14 ga to 7/8" Dia. 22 / 7/8" = 6 studs/min
Welding rate		
Welding current	1000 A (max.)	2000 A (max.)
Current adjustment range	100 to 1000 A (stepless)	5 to 1500 A (stepless)
Welding time	5 to 1000 ms (stepless)	5 to 1500 ms (stepless)
Primary power	400 V*, 3 phases, 50/60 Hz, 35 AT (slow blow) *alternative primary power see „Order No.“	400 V*, 3 phases, 50/60 Hz, 63 AT (slow blow) *alternative primary power see „Order No.“
Primary plug	32 A (with 400 V mains)	63 A (with 400 V mains)
Connected load	50 kVA (with 400 V mains)	100 kVA (with 400 V mains)
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP Code	IP 21	IP 21
Dimension LxWxH (without handle)	650 x 560 x 1290 mm / 25.6" x 22" x 50.8"	650 x 560 x 1290 mm / 25.6" x 22" x 50.8"
Weight	145 kg / 319.67 lbs	145 kg / 319.67 lbs (1 gun conn.) 165 kg / 363.76 lbs (4 gun conn.)
Suitable guns	A 12, A 16, AI 06	A 12, A 16, A 22, A 25, AI 06
Order No.	93-60-42056 (400 V - 4 gun connection) 93-66-42056 (480/460 V - 4 gun connection)	93-60-12096 (400 V - 1 gun connection) 93-60-42096 (400 V - 4 gun connection) 93-66-12096 (480/460 V - 1 gun connection) 93-66-42096 (480/460 V - 4 gun connection)
	93-40-020 (Ground cable, 5 m, 25 mm², 2 vice grips 10")	93-40-019 (Ground cable, 2 pcs., 5 m, 70 mm², 1 vice grip 10")

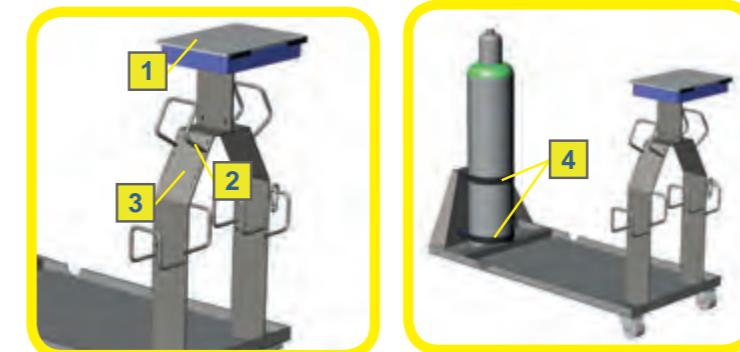
Legend

Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding

Mild steel Stainless steel Aluminium

IT Mobility System

Practical, mobile, efficient
Order no. 88-21-510 (customisation done at HBS)



1) Practical small storage box

2) 4 mounts for stud welding guns and 2 mounts for ground cables

3) Flexible adjustment options for cable mounts

4) Secure stands for gas cylinders

Maximum mobility

All devices and materials necessary for welding neatly combined in one mobile workstation.

Easily stored and always ready

Neatly arranged mountings for stud welding guns and ground cables take all the hassle out of welding.
Makes your working day more efficient.

Time-consuming tangled cables are a thing of the past.

Flexible array

You can arrange the cable mounts as you wish.

Practical work aid

Logically organised small storage box for welding elements and accessories.

Secure stands for gas cylinders

Safety first. Which is why we secure the gas cylinders with two retainers.
For gas cylinders up to max. of 20 L.

Sturdy design

System integrated in machine frame of stud welding unit.



	ARC 500	ARC 800	ARC 1550
Basic model			
Simple operation			
Welding time steplessly adjustable			
Welding process	ARC, SC	ARC, SC	ARC, SC
Welding material			
Technology	Transformer	Transformer	Transformer
Equipment			
Welding with ceramic ferrule	X	X	X
Welding with shielding gas	--	X	X
Automation	--	X (optional)	X (optional)
Display	Digital	Digital	Digital
Welding range	M3 to M10 (type RD), dia. 2 to 8 mm / #4 to 3/8" (type RD), dia. #2 to 5/16"	M3 to M12 (type RD), dia. 2 to 10 mm / #4 to 1/2" (type RD), dia. 14 ga to 3/8"	M3 to M20 (type RD), dia. 2 to 19 mm / #4 to 3/4" (type RD), dia. 14 ga to 3/4"
Welding rate	5 to 15 studs/min (depending on application and stud dia.)	7 to 17 studs/min (depending on application and stud dia.)	3 to 35 studs/min (depending on application and stud dia.)
Welding current	580 A	800 A	1550 A
Current adjustment range	--	--	500 to 1550 A (500 A - 800 A - 1000 A - 1200 A - 1550 A)
Welding time	5 to 350 ms (stepless)	5 to 1000 ms (stepless)	5 to 1500 ms (stepless)
Primary power	400 V*, 3 phases, 50/60 Hz, 35 AT (slow blow) *alternative primary power see „Order No.“	400 V*, 3 phases, 50/60 Hz, 35 AT (slow blow) *alternative primary power see „Order No.“	400 V*, 3 phases, 50/60 Hz, 63 AT (slow blow) *alternative primary power see „Order No.“
Primary plug	32 A (at 400 V mains)	32 A (at 400 V mains)	63 A (at 400 V mains)
Connected load	$I_{1\max} = 27\text{A}$	$I_{1\max} = 31\text{A}$	40 kVA (at 400 V mains)
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP Code	IP 23	IP 23	IP 23
Dimension LxWxH (without handle)	470 x 230 x 220 mm / 18.50" x 9.06" x 8.66"	470 x 230 x 220 mm / 18.50" x 9.06" x 8.66"	460 x 400 x 730 mm / 18.11" x 15.74" x 28.74"
Weight	33.5 kg / 73.855 lbs	40 kg / 88.185 lbs	133 kg / 293.21 lbs
Suitable guns	A 12, A 16, AI 06, CA 08	A 12, A 16, AI 06, CA 08	A 12, A 16, A 22, AI 06
Order No.	Order No.	Order No.	
93-10-0401A (400 V) 93-16-0401A (230/460 V) 93-15-0401A (575 V)	93-10-0702A (400 V) 93-16-0702A (230/460 V) 93-15-0702A (575 V)	93-10-1552A (400 V) 93-16-1552A (460 V)	
93-40-020 (Ground cable, 5 m, 25 mm ² , 2 vice grips 10")	93-40-020 (Ground cable, 5 m, 25 mm ² , 2 vice grips 10")	93-40-013 (Ground cable, 2 pcs., 5 m, 50 mm ² , 1 vice grip 10")	

Legend

Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding



Mild steel



Stainless steel



ARC 500/800 Simple operation



Two-button operation

Fast set-up with intuitive operation helps to get started.

ARC 1550 Welding current/Multiple-contact switch

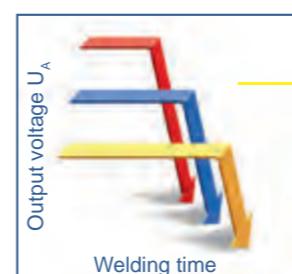


Multiple-contact switch

Adjustable: 500 / 800 / 1000 / 1200 / 1550 A

More targeted adjustment of the welding process: adjustment of the welding energy via fixed current characteristics and variable welding time.

Energy control



Guarantees consistent welding results:
the welding time is automatically adjusted
and thereby facilitates a stable energy
output.

■ U_A too high - welding time will be reduced

■ Referenz weld

■ U_A too low - welding time will be extended

ARC Stud welding guns

Systems for drawn arc



ARC Stud welding guns

Systems for drawn arc



AI 06



- For ARC insulation pins

Dia. 3 to 6 mm
Dia. #4 to 1/4"

CA 08



- Entry-level version used for SC welding without length compensation

M3 to M8 (M10)
#4 to 5/16" (7/16")

A 12



- Compact gun with easy set-up
- Length compensation (stable welding results)

M3 to M12
#4 to 1/2"

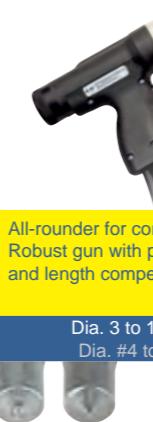
A 12



- Small gun with easy set-up for SC welding
- Length compensation (stable welding results)

M3 to M8 (M10)
#4 to 5/16" (7/16")

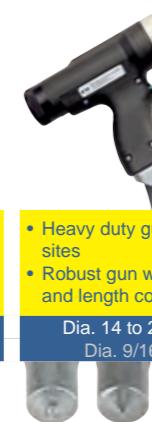
A 16



- All-rounder for construction sites
- Robust gun with plunge damper and length compensation

Dia. 3 to 16 mm
Dia. #4 to 5/8"

A 22



- Heavy duty gun for construction sites
- Robust gun with plunge damper and length compensation

Dia. 14 to 22 mm (25 mm)
Dia. 9/16" to 7/8" (1")

A 25



- Especially for 1" shear connectors and through deck welding
- Robust gun with plunge damper and length compensation

Dia. 14 to 25 mm
Dia. 9/16" to 1"

Suitable stud welding unit	ARC 500, ARC 800, IT 1002	ARC 500, ARC 800, IT 1002	ARC 500, ARC 800, ARC 1550, IT 1002, IT 2002, IT 3002, IT 50, IT 90, IT 130	ARC 800, IT 1002, IT 50, IT 90, IT 130
Welding process	ARC (ceramic, gas), SC	SC	ARC (ceramic, gas), SC	ARC (ceramic, gas), SC
Stud material	● ●	● ● (●)	● ● (●)	● ●
Welding range	ARC ISO pins dia. 3 to 6 mm / dia. #4 to 1/4"	M3 to M8 (M10 with special equipment), dia. 2 to 8 mm / #4 to 5/16" (7/16" with special equipment), dia. 14 ga to 5/16"	M3 to M12, dia. 2 to 12 mm / #4 to 1/2", dia. 14 ga to 1/2"	
Stud length	10 to 400 mm / 0.39" to 15.74" (depending on leg assembly)	6 to 40 mm / 0.24" to 1.57", longer studs with optional accessories	10 to 400 mm / 0.39" to 15.74" (depending on leg assembly)	6 to 40 mm / 0.24" to 1.57", longer studs with optional accessories
Stud type	ARC insulation pin, ARC fiberfix pin, ARC threaded stud, ARC pin	Any type or shape (spe- cial chucks if required)	Any type or shape (spe- cial chucks if required)	Any type or shape (spe- cial chucks if required)
Length compensation	3 mm / 0.12" automatic	--	3 mm / 0.12" automatic	3 mm / 0.12" automatic
Stroke	Adjustment range 3 mm / 0.12", lockable	Adjustment range 4.5 mm / 0.18", lockable	Adjustment range 3 mm / 0.12", lockable	Adjustment range 3 mm / 0.12", lockable
Spring pressure	Adjustable, arresting	Adjustable, arresting	Adjustable, arresting	Adjustable, arresting
Welding cable	9.3 m / 30.51', 35 mm ² , SK 50	3 m / 9.84', 25 mm ² , SK 50	4.8 m / 15.75', 35 mm ² , SK 50	4.8 m / 15.75', 50 mm ² / 1/0, SK 50
IP Code	IP 20	IP 20	IP 20	IP 20
Workplace noise level	Up to 90 dB (A) may occur during welding	Up to 90 dB (A) may occur during welding	Up to 90 dB (A) may occur during welding	Up to 90 dB (A) may occur during welding
Dimension LxWxH (without cable)	180 x 65 x 140 mm / 7.09" x 2.56" x 5.51"	190 x 40 x 140 mm / 7.48" x 1.57" x 5.51"	200 x 65 x 140 mm / 7.87" x 2.56" x 5.51" (with foot piece)	260 x 74 x 220 mm / 10.24" x 2.91" x 8.66"
Weight (without cable)	0.8 kg / 1.76 lbs	0.7 kg / 1.54 lbs	0.8 kg / 1.76 lbs	2 kg / 4.41 lbs

Order No.	Order No.	Order No.	Order No.
93-20-250 (excluding leg assembly)	¹⁾ 92-20-281 (PPR-2/SC) ²⁾ 92-20-283 (PSS-1/SC)	³⁾ 93-20-274 (Gas) ⁴⁾ 93-20-275 (Ceramic)	⁵⁾ 93-20-276 (PPR-2/SC) ⁶⁾ 93-20-277 (PSS-1/SC)
93-40-044 (leg assembly PSI, from l = 6 mm up to l = 80 mm)	92-40-018 (Accessories CD M3 to M8)	93-40-114 (Accessories for shielding gas; M6 to M12) 93-41-012 (Accessories for ceramic; M6 to M12)	92-40-018 (Accessories CD M3 to M8)
93-40-066 (leg assembly PSI-3, from l = 40 mm up to l = 280 mm)			
93-40-065 (leg assembly PSI-3, from l = 40 mm up to l = 460 mm)			

Legend

Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding

● Mild steel ● Stainless steel ● Aluminium

Legend

Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding

● Mild steel ● Stainless steel

MARC

Innovative ARC welding technique

HBS presents MARC, a manual nut welding system which is more and more replacing traditional processes all over the world due to the innovative procedure with a magnetic rotating ARC.

Regardless of whether only static stability is required or if additional, customerspecific connection properties (e.g., pressure tight) need to be fulfilled, you always achieve the best results – with considerable time and cost savings.

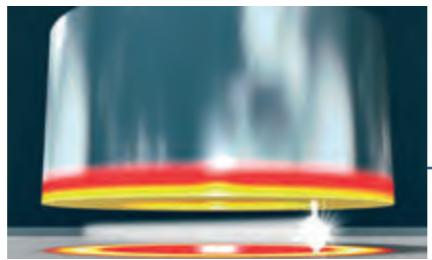
Spatter free joints can be achieved with a high welding cycle time of up to 10 welds/ minute. This is especially suited for thin metal sheets from 1 mm upwards.

MARC provides the access to a new future to international trusts, medium-sized companies as well as to crafts enterprise.

Optimum results, efficiency and a convincing price/performance ratio provide advantages with view to competition.



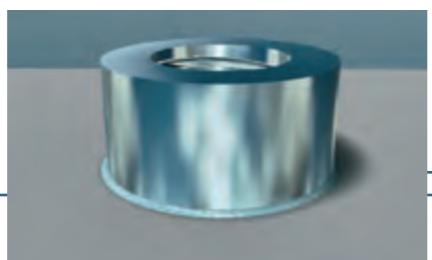
Joining of welding elements



A burning ARC is put into rotation in a controlled way. A ring-shaped weld pool is generated where the welding element is plunged in.



The very precise and clean welding process does not require any subsequent machining of the work piece or welding element (e.g. caused by distortion or welding spatters at the thread).



Based on a very short welding time and low energy consumption, extraordinary welding results are achieved featured by high process stability and best economical efficiency.

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



MARC

Best Solution for Best Results



With MARC:
Welding of pads and nuts on punched and unpunched metal sheets.



Applications are e.g. sprinkler systems, ventilation tubes, hinges, pressure vessels, exhaust systems.



MARC 1 A



Hex^{Nut}
M6 - M12

- For welding of welding nuts of type HexNut
- For welding on perforated and unperforated metal sheets
- Especially suitable for workshop and assembly area
- Up to 4 welding nuts/min



AM 12 A

Suitable stud welding unit

Welding process

Welding range

Wall thickness

Welding element material

Welding element type

Welding rate

Length compensation

Stroke

Spring pressure

Welding cable

IP-Code

Workplace noise level

Dimension LxWxH

Weight

IT 1002 (see page 40)

Magnetic rotating arc

Welding nuts of type Hex^{Nut} M6 - M12

1 to 3 mm / 0.04" to 0.12" (other sheet thicknesses on request)

A2-50

MARC welding nut - type Hex^{Nut}

Up to 4 welding nuts/min.

The maximum welding sequence is limited by a number of parameters.

3 / 0.12" mm, automatic

Adjustment range 3 / 0.12" mm, lockable

Adjustable, arresting

5 m / 16.40'

IP 20

Up to 90 dB (A) may occur during welding

320 x 70 x 200 mm / 12.60" x 2.76" x 7.87" (without cable, with leg assembly)

0.9 kg / 1.98 lbs (without cable)

Order No.

93-20-242 (Welding gun AM 12 A)

93-60-1202 (Welding unit IT 1002)

93-40-020 (Ground cable, 5 m, 25 mm²; 2 vice grips 10")

Complete equipment for AM 12 A:

93-40-0030068 for Hex^{Nut} M

93-40-003008 for Hex^{Nut} M8

93-40-003010 for Hex^{Nut} M10

93-40-003012 for Hex^{Nut} M12

Dimensions of welding element	Dimension	M6	M8	M10	M12
	Height - Hex ^{Nut}	8	8	9	11
	WAF	WAF 14	WAF 14	WAF 17	WAF 19
Bore diameter	Bore diameter - metal sheet (based on DIN EN ISO 4032)	10.6 ^{+0.1...+0.4}	10.6 ^{+0.1...+0.4}	12.6 ^{+0.1...+0.4}	14.9 ^{+0.1...+0.4}
Tightening torque	Thightening torque in Nm (μ=0.18)	3.8	9.5	19.0	33.0



MARC 1 W



Welding unit
IT 1002

Cooling unit
CU

Nut welding gun
AM 12 W

Welding unit
IT 1002

Cooling unit
CU

Nut welding gun
AM 12 W

Welding unit
IT 1002

Cooling unit
CU

Nut welding gun
AM 12 W

Welding unit
IT 1002

Cooling unit
CU

Nut welding gun
AM 12 W

Welding unit
IT 1002

Cooling unit
CU

- Water-cooled field former for higher welding sequences
- 250% higher welding rate (compared to MARC 1 A)
- Up to 10 welding nuts/min.



Hex^{Nut}
M6 - M12

AM 12 W

IT 1002 (see page 40)

Magnetic rotating arc

Welding nuts of type Hex^{Nut} M6 - M12

1 to 3 mm (other sheet thicknesses on request)

A2-50

MARC welding nut - type HexNut

Up to 10 welding nuts/min.

The maximum welding sequence is limited by a number of parameters.

3 / 0.12" mm, automatic

Adjustment range 3 / 0.12" mm, lockable

Adjustable, arresting

5 m / 16.40'

IP 20

Up to 90 dB (A) may occur during welding

320 x 70 x 200 mm / 12.60" x 2.76" x 7.87" (without cable, with leg assembly)

0.9 kg / 1.98 lbs (without cable)

Order No.

93-20-243 (Welding gun AM 12 W)

93-60-1202 (Welding unit IT 1002)

88-15-477A (Cooling unit CU)

93-40-020 (Ground cable, 5 m, 25 mm²; 2 vice grips 10")

Complete equipment for AM 12 W:

93-40-0030068 for Hex^{Nut} M

93-40-003008 for Hex^{Nut} M8

93-40-003010 for Hex^{Nut} M10

93-40-003012 for Hex^{Nut} M12



CU

Pump type

Coolant

Tank capacity

Flow rate sensor

Primary power

IP-Code

Dimension LxWxH

Weight

Diaphragm pump, Qmax = 2 l/min / delivery head Hmax = 2.5 m

GLYSANTIN Alu Protect/Water, Safety precaution: Coolant is dangerous to health if swallowed!

4.5 l for replacement filling with coolant composition above

Switching point < 0.5 l/min

230 V, 50/60 Hz, 10 AT

IP 23

660 x 220 x 340 mm (without handle)

24 kg (incl. coolant)

Order No.

88-15-477A (Cooling unit CU)

PC-M3



- The most effective as well as most economical welding procedure for the welding hollow cylindrical parts
- Closed and pressure sealed weld all-over
- For gas tight connections like e.g. at exhaust systems
- Energy controlled welding system

Min. dia. 8 mm, max. dia. 32 mm
or internal thread M4 to M18



Welding range
Min. dia. 8 mm, max. dia. 32 mm or internal thread M4 to M18
Min. dia. 5/16", max. dia. 1.26" or internal thread #8 to 0.71"

Height of nut
Min. 4 mm, max. 30 mm
Min. 0.16", max. 1.18"

Welding material
Weldable, high and low alloys, mild steel

Welding rate
Depending on dia. 12 pieces/min
(dia. 28, dia. 1.10" approx. 2 to 4 pieces/min)

Welding current
300 to 1000 A stepless remote controllable

Welding time
5 to 2000 ms stepless remote controllable

Primary power
400 V (480 V), 16 A

Gas connection
Series

Air pressure connection
6 bar/inner hose dia. 6 mm, dia. 1/4"

Power source
Inverter

Controller
CEL M440, 186 GHz

Programming modes
Welding current, welding time, any motion profile, welding piston, shielding gas, fully controlled and tempered magnetic field former

Welding head
Linearmotor driven

Field former unit
Tempered

Pneumatic work stroke
120 mm, 4.72"

Height adjustment
250 mm, 9.84"

Order No.

According to project



Best Solution for Best Results

To be used for nearly any application in metal working industry:
The very low heat input avoids any distortion of the work piece and you get a perfect gas-tight weld with high and dynamic loading capacity.



Recommended material:
Stainless steel (1.4301, AISI 304 and similar)



Very short welding time (≤ 1 second) and consequently short cycle time in production ensures high productivity together with low manufacturing costs.

Extremely clean process.

Small and even circulating welding seam.

Only one-sided accessibility to the work piece required.

No reworking of work piece or welding element (thread).

No welding additives required (only shielding gas).

Automatically faster, better



Material	Diameter	Catalogue
Mild steel Stainless steel Aluminium Brass	M3 to M10	Welding Elements
Type PT		
Threaded stud		

Material	Diameter	Catalogue
Mild steel Brass	M4 to M8	Welding Elements
Type PT		
Paint clearing threaded stud		

Material	Diameter	Catalogue
Mild steel Stainless steel	5 mm	Welding Elements
Type PT		
Fir tree stud		

Material	Diameter	Catalogue
Mild steel Stainless steel Aluminium Brass	3 to 7,1 mm	Welding Elements
Type UT		
Unthreaded stud (pin)		

Material	Diameter	Catalogue
Mild steel Stainless steel Aluminium	M3/dia.5mm - M5/dia.7,1mm	Welding Elements
Type IT		
Stud (pin) with internal thread		

Material	Welding range	Page
Mild steel Stainless steel Aluminium Brass	M3 to M8 (#4 to 5/16")	63
CDi 1502		
Entry level automation for semi automatic use. Simple library function for ease of use.		

Material	Welding range	Page
Mild steel Stainless steel Aluminium Brass	M3 to M8 (M10) (#4 to 5/16" (7/16"))	63
CDMi 2402		
All-rounder for automation. Extensive library function. Change over of capacitors for optimal energy input.		

Material	Welding range	Page
Mild steel Stainless steel Aluminium Brass	M3 to M10 (#4 to 7/16")	63
CDMi 3202		
Energy package for automation. Extensive library function. Change over of capacitors for optimal energy input.		

Material	Welding range	Page
Mild steel Stainless steel Aluminium Brass	M3 to M8 (#4 to 5/16")	67
PAH-1 with foot ring		
Universal design for flat surfaces Hand gun for fully automatic stud feed (with VBZ-3) or hand feed; recommended for large-scale production.		

Material	Welding range	Page
Mild steel Stainless steel Aluminium Brass	M3 to M8 (#4 to 5/16")	67
PAH-1 with centering device PZV 3 dia. 30		
Used for welding with templates Hand gun for fully automatic stud feed (with VBZ-3) or hand feed; recommended for large-scale production.		

Ground cable 92-40-095			

VBZ-3 Page 66			

Legend			
Material	Stud-/Welding material		
	Mild steel		
	Stainless steel		
	Aluminium		
	Brass		

Material	Diameter	Catalogue
	M3 to M10	Welding Elements
Type PT		
Threaded stud		

Material	Diameter	Catalogue
	M4 to M8	Welding Elements
Type PT		
Paint clearing threaded stud		

Material	Diameter	Catalogue
	5 mm	Welding Elements
Type PT		
Fir tree stud		

Material	Diameter	Catalogue
	3 to 7,1 mm	Welding Elements
Type UT		
Unthreaded stud (pin)		

Material	Diameter	Catalogue
	M3/dia.5mm - M5/dia.7,1mm	Welding Elements
Type IT		
Stud (pin) with internal thread		

Material **Welding range** **Page**

M3 to M8 (M10) #4 to 5/16" (7/16") 63

CDMi 2402
All-rounder for automation.
Extensive library function.
Change over of capacitors for optimal energy input.

Material **Welding range** **Page**

M3 to M10 #4 to 7/16" 63

CDMi 3202
Energy package for automation.
Extensive library function.
Change over of capacitors for optimal energy input.

Ground cable 92-40-095

Connecting line **Page**

Page 75

VBZ-3 **Page**

Page 66

Ring initiator and Coupling **Page**

Page 75

Material **Welding range** **Page**

M3 to M8 #4 to 5/16" 63

KAH 412
Setting the lift and plunge via digital display (selection mm/inch).
No length compensation.

Working stroke with ring initiator **Page**

Page 75

Material **Welding range** **Page**

M3 to M8 #4 to 5/16" 63

KAH 412 LA
Setting the lift via adjustment screw (increments 0.1 mm).
Length compensation of length variances in studs height and variances of the workpiece.

Further accessories **Page**

Page 74-75

Legend

Material	Stud-/Welding material
	Mild steel
	Stainless steel
	Aluminium
	Brass

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Systems for automatic applications - Components

Material	Diameter	Catalogue
Mild steel	M5 to M8	Welding Elements
Type PS		
Threaded stud with reduced shaft		

Material	Diameter	Catalogue
Mild steel	M6 to M8	Welding Elements
Type PS		
Paint clearing stud		

Material	Diameter	Catalogue
Mild steel	5 mm	Welding Elements
Type PS		
Fir Tree Stud		

Material	Diameter	Catalogue
Mild steel	3 to 8 mm	Welding Elements
Type US		

Material	Diameter	Catalogue
Mild steel	M3/dia.5mm - M6/dia.8mm	Welding Elements
Type IS		
Stud (pin) with internal thread		

Welding current sensor
Page 75

Material	Welding range	Page
Mild steel	M3 to M10 (for SC) #4 to 7/16" (for SC)	40
IIT 1002		
All-round for construction sites and workshops (IP 23). Precise welding results through advanced inverter technology.		

Material	Welding range	Page
Mild steel	M3 to M10 (for SC) #4 to 7/16" (for SC)	42
IT 50		
Inverter (1000 A) with 4 outputs, process monitoring and shielding gas. Precise welding results through inverter technology for use with SC on thin sheets and drawn arc.		

Material	Welding range	Page
Mild steel	M3 to M10 (for SC) #4 to 7/16" (for SC)	42
IT 90		
Inverter (2000 A) with options for 4 outputs, process monitoring and shielding gas. Precise results through inverter technology for use with SC on thin sheets and critical surfaces (e.g. galvanised) and drawn arc to stud size of 22 mm (7/8").		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
KAH 412		
Setting the lift and plunge via digital display (selection mm/inch). No length compensation.		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
KAH 412 LA		
Setting the lift via adjustment screw (increments 0.1 mm). Length compensation of length variances in studs height and variances of the workpiece.		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
VBZ-3		
Page 66		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
Working stroke with ring initiator		
Page 75		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
Ground cable		
92-40-095		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
Connecting line		
Page 75		

Material	Welding range	Page
Mild steel	M3 to M8 #4 to 5/16"	68-69
VBZ-3		
Page 66		

Further accessories
Page 74-75

Legend

Material	Stud-/Welding material
Mild steel	
Stainless steel	
Aluminium	
Brass	

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Systems for automatic applications - Components

	Stud welding machines	Welding process	Order no.	Primary power	Charging units	Automatic	Gas	Welding gun or head connection	Process control	Emergency stop function	Remote control
	CDi 1502 M3 to M8 #4 to 5/16"	CD	92-10-1504B 92-12-1504B 92-13-1504B	230 V 115 V 100 V	--	X	--	1	--	--	--
	CDMi 2402 M3 to M8 (M10 limited) #4 to 5/16" (7/16" limited)	CD	92-10-22412B 92-12-22412B 92-13-22412B	230 V 115 V 100 V	2	X	--	1	--	--	--
	CDMi 3202 M3 to M10 #4 to 7/16"	CD	92-10-23212B 92-12-23212B 92-13-23212B	230 V 115 V 100 V	3	X	--	1	--	--	--
	ARC 800 Dia. 2 to 10 mm 14 ga to 3/8"	ARC SC	93-10-0704A 93-16-0704A 93-15-0704A 93-10-0705A	400 V 460/230 V 575 V 400 V	--	X	X	1	--	--	--
	ARC 1550 Dia. 2 to 19 mm 14 ga to 3/4"	ARC SC	93-10-1554A 93-16-1554A 93-10-1555A	400 V 460 V 400 V	--	X	--	1	--	--	--
	IT 1002 Dia. 2 mm to M16 (type RD) 14 ga to 5/8" (type RD)	ARC SC	93-60-1204 93-66-1204 93-60-1205 93-60-1206 93-66-1206 93-60-1208 93-60-1207	400 V 480/460 V 400 V 400 V 480/460 V 400 V 400 V	--	X	X	1	--	--	--
	IT 50 Dia. 2 mm to M16 (type RD) 14 ga to 5/8" (type RD)	ARC SC	93-60-42056 93-66-42056 93-60-42057	400 V 480/460 V 400 V	--	X	X	4	X	--	--
	IT 90 Dia. 2 to 22 mm 14 ga to 7/8"	ARC SC	93-60-12096 93-66-12096 93-60-12097 93-60-42096 93-66-42096 93-60-42097	400 V 480/460 V 400 V 400 V 480/460 V 400 V	--	X	X	1	X	--	--

CDi 1502

CDMi 2402

CDMi 3202

4



- Entry level automation for semi-automatic use
- Simple library function for ease of use

- All-rounder for automation
- Extensive library function
- Change over of capacitors for optimal energy input

- Energy package for automation
- Extensive library function
- Change over of capacitors for optimal energy input

M3 to M8
#4 to 5/16"

M3 to M8 (M10)
#4 to 5/16" (7/16")

M3 to M10
#4 to 7/16"

Welding process	CD	CD	CD
Welding material			
Technology	Inverter-Capacitor Charging Technology	Inverter-Capacitor Charging Technology	Inverter-Capacitor Charging Technology
Equipment Automation	X	X	X
Display	Digital	LCD	LCD
Welding range	Studs: M3 to M8, dia. 2 to 8 mm #4 to 5/16" (7/16" limited), dia. 14 ga to 5/16" M3 to M10, dia. 3 to 10 mm #4 to 7/16", dia. #4 to 3/8"	M3 / #4 = 40 studs/min. (voltage 60 V) M8 / 5/16" = 14 studs/min. (voltage 200 V) M8 / 5/16" = 21 studs/min. (voltage 170 V) (M10 / 7/16" = 17 studs/min. (voltage 220 V))	M3 / #4 = 43 studs/min. (voltage 50 V) M8 / 5/16" = 25 studs/min. (voltage 140 V) M10 / 7/16" = 18 studs/min. (voltage 200 V)
Welding rate	66 000 µF	99 000 µF/33 000 µF* * with change over of capacitors	132 000 µF/66 000 µF* * with change over of capacitors
Capacitance	1 to 3 ms	1 to 3 ms	1 to 3 ms
Welding time	1 600 Ws	2 400 Ws/800 Ws*	3 200 Ws/1 600 Ws*
Energy	50 to 220 V (stepless voltage regulation)	50 to 220 V (stepless voltage regulation)	50 to 220 V (stepless voltage regulation)
Charging voltage	230 V**, 50/60 Hz, 10 AT (slow blow)	230 V**, 50/60 Hz, 10 AT (slow blow)	230 V**, 50/60 Hz, 10 AT (slow blow)
Primary power	**alternative primary power see „Order No.“	**alternative primary power see „Order No.“	**alternative primary power see „Order No.“
Connected load	600 VA	1 000 VA	1 800 VA
Power source	Capacitor	Capacitor	Capacitor
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP Code	IP 23	IP 21	IP 21
Dimension LxWxH (without handle)	400 x 205 x 250 mm / 15.75" x 8.07" x 9.84"	570 x 285 x 290 mm / 22.44" x 11.22" x 11.42"	570 x 285 x 290 mm / 22.44" x 11.22" x 11.42"
Weight	14 kg / 30.87 lbs	26 kg / 57.32 lbs	27 kg / 59.53 lbs
Suitable guns/heads	PAH-1	PAH-1, KAH 412, KAH 412 LA	PAH-1, KAH 412, KAH 412 LA

Order No.
92-10-1504B (230 V)
92-12-1504B (115 V)
92-13-1504B (100 V)

Order No.
92-10-22412B (230 V)
92-12-22412B (115 V)
92-13-22412B (100 V)

Order No.
92-10-23212B (230 V)
92-12-23212B (115 V)
92-13-23212B (100 V)

Legend

Welding process: CD = Capacitor discharge stud welding

Mild steel Stainless steel Aluminium Brass



ARC 800



- Robust transformer with automation function

M3 to M12 (type RD)
#4 to 1/2" (type RD)



Welding process ARC, SC

Welding material

Technology Transformer

Equipment

Welding with ceramic ferrule X

Welding with shielding gas X

Automation X

Display Digital

Welding range Dia. 2 to 10 mm, M3 to M12 (type RD)

dia. 14 ga to 3/8", #4 to 1/2"

Welding rate 7 to 17 studs/min (depending on application and stud dia.)

Welding current 800 A

Current adjustment range --

Welding time 5 to 1000 ms (stepless)

Primary power 400 V*, 3 phases, 50/60 Hz, 35 AT (slow blow)

*alternative primary power see „Order No.“

Primary plug 32 A (at 400 V mains)

Connected load I1max = 31A

Cooling type F (temperature controlled cooling fan)

IP Code IP 23

Dimension LxWxH (without handle) 470 x 230 x 220 mm /

18.50" x 9.06" x 8.66"

Weight 40 kg / 88.185 lbs

Suitable guns/heads PAH-1, KAH 412, KAH 412 LA

Order No.

93-10-0704A (400 V)
93-16-0704A (230/460 V)
93-15-0704A (575 V)

ARC 1550



- Robust transformer with step switching, power regulation and automation function

M3 to M20 (type RD)
#4 to 3/4" (type RD)



Welding process ARC, SC

Welding material

Technology Transformer

Equipment

Welding with ceramic ferrule X

Welding with shielding gas X

Automation X

Display Digital

Welding range Dia. 2 to 19 mm, M3 to M20 (type RD)

dia. 14 ga to 3/4", #4 to 3/4"

Welding rate 3 to 35 studs/min (depending on application and stud dia.)

Welding current 1550 A

Current adjustment range 500 to 1550 A (500 A - 800 A - 1000 A - 1200 A - 1550 A)

Welding time 5 to 1500 ms (stepless)

Primary power 400 V*, 3 phases, 50/60 Hz, 63 AT (slow blow)

*alternative primary power see „Order No.“

Primary plug 63 A (at 400 V mains)

Connected load 40 kVA (at 400 V mains)

Cooling type F (temperature controlled cooling fan)

IP Code IP 23

Dimension LxWxH (without handle) 460 x 400 x 730 mm /

18.11" x 15.74" x 28.74"

Weight 133 kg / 293.21 lbs

Suitable guns/heads PAH-1, KAH 412, KAH 412 LA

Order No.

93-10-1554A (400 V)
93-16-1554A (460 V)



IT 1002



- All-rounder for automation
- Precise welding results through advanced inverter technology

M3 to M16 (type RD)
#4 to 5/8" (type RD)



Welding process (Ceramic ferrule only for manual application)

Welding material ARC, SC

Technology Inverter

Equipment

Welding with ceramic ferrule X

Welding with shielding gas X

Process control (optional)

Automation X

4 gun/head connections --

Display Digital

Welding range Dia. 2 to 14 mm, M3 to M16 (type RD)

dia. 14 ga to 9/16", #4 to 5/8" (type RD)

Welding rate M12 / 1/2" = 25 studs/min

Welding current 1000 A (max.)

Current adjustment range 100 to 1000 A, electrode 50 to 400 A (stepless)

Welding time 5 to 1000 ms (stepless)

Primary power 400 V*, 3 phases, 50/60 Hz, 35 AT (slow blow)

*alternative primary power see „Order No.“

Primary plug 32 A (with 400 V mains)

Connected load 50 kVA (with 400 V mains)

Cooling type F (temperature controlled cooling fan)

IP Code IP 23

Dimension LxWxH (without handle) 660 x 280 x 340 mm /

26" x 11" x 13.4"

Weight 31 kg / 68.343 lbs

Suitable guns/heads PAH-1, KAH 412, KAH 412 LA

Order No.

93-60-1204 (400 V)
93-66-1204 (480/460 V)

IT 50

- Inverter with 4 outputs, process monitoring and shielding gas
- Precise results for use with SC on thin sheets and drawn arc

M3 to M16 (type RD)
#4 to 5/8" (type RD)



Welding process (Ceramic ferrule only for manual application)

Welding material ARC, SC

Technology Inverter

Equipment

Welding with ceramic ferrule X

Welding with shielding gas X

Process control X

Automation X

4 gun/head connections (optional)

Display Digital

Welding range Dia. 2 to 14 mm, M3 to M16 (type RD)

dia. 14 ga to 9/16", #4 to 5/8" (type RD)

Welding rate M12 / 1/2" = 25 studs/min

Welding current 1000 A (max.)

Current adjustment range 100 to 1000 A (stepless)

Welding time 5 to 1000 ms (stepless)

Primary power 400 V*, 3 phases, 50/60 Hz, 35 AT (slow blow)

*alternative primary power see „Order No.“

Primary plug 32 A (with 400 V mains)

Connected load 50 kVA (with 400 V mains)

Cooling type F (temperature controlled cooling fan)

IP Code IP 23

Dimension LxWxH (without handle) 650 x 560 x 1290 mm /

25.6" x 22" x 50.8"

Weight 145 kg / 319.67 lbs (1 gun conn.)

Suitable guns/heads PAH-1, KAH 412, KAH 412 LA

IT 90



- 4 outputs (optional), process monitoring and shielding gas
- For critical surfaces (e.g. galvanised)

M3 to M24
#4 to 1"



Welding process (Ceramic ferrule only for manual application)

Welding material ARC, SC

Technology Inverter

Equipment

Welding with ceramic ferrule X

Welding with shielding gas X

Process control X

Automation X

4 gun/head connections (optional)

Display Digital

Welding range Dia. 2 to 22 mm, M3 to M24

dia. 14 ga to 7/8", #4 to 1"

Welding rate Dia. 22 / 7/8" = 6 studs/min

Welding current 2000 A (max.)

Current adjustment range 5 to 1500 A (stepless)

Welding time 5 to 1500 ms (stepless)

Primary power 400 V*, 3 phases, 50/60 Hz, 63 AT (slow blow)

*alternative primary power see „Order No.“

Primary plug 32 A (with 400 V mains)

Connected load 60 kVA (with 400 V mains)

Cooling type F (temperature controlled cooling fan)

IP Code IP 23

Dimension LxWxH (without handle) 650 x 560 x 1290 mm /

25.6" x 22" x 50.8"

Weight 165 kg / 363.76 lbs (4 gun conn.)

Suitable guns/heads PAH-1, KAH 412, KAH 412 LA

Order No.

93-60-4206 (400 V

VBZ-3



- Feeding unit VBZ-3 for automatic feeding for welding elements with flange according to current standards
- Fully automatic feeding of welding elements from dia. 3 up to 8 mm (with flange) (other dia. on request)
- Length from 8 to 50 mm
- Simple, fast change over to different welding elements (by means of quick-change system)

M3 to M8
#4 to 5/16"



Stud diameter M3 to M8, dia. 3 to 8 mm / #4 to 5/16" (other diameter on request)

Stud length 8 to 50 mm / 0.31" to 1.97"

Feed speed Up to 30 studs/min (depending on welding element and feeding tube)

Air pressure connection 6 bar/800 litre/min

Primary power 230 V*, 50 Hz, 0.9 A

*alternative primary power see „Order No.“

IP Code IP 20

Dimension LxWxH 470 x 310 x 280 mm / 18.50" x 12.20" x 11.02"

Weight Approx. 24 kg / 52.91 lbs

Order No.

230 V

115 V

94-63-103B (for dia. 3 mm)

94-63-104B (for dia. 4 mm)

94-63-105B (for dia. 5 mm)

94-63-106B (for dia. 6 mm)

94-63-171B (for dia. 7.1 mm)

94-63-108B (for dia. 8 mm)

94-63-153B (for fir tree stud dia. 5)

94-63-163B (for fir tree stud dia. 6)

94-66-103B (for dia. 3mm)

94-66-104B (for dia. 4 mm)

94-66-105B (for dia. 5 mm)

94-66-106B (for dia. 6 mm)

94-66-171B (for dia. 7.1 mm)

94-66-108B (for dia. 8 mm)

94-66-153B (for fir tree stud dia. 5)

94-66-163B (for fir tree stud dia. 6)

Change over kit (for 230 V and 115 V)



94-43-203B (Ø 3)

94-43-204B (Ø 4)

94-43-205B (Ø 5)

94-43-206B (Ø 6)

94-43-271B (Ø 7,1)

94-43-208B (Ø 8)

94-43-253B (Ø 5 fir tree stud)

94-43-263B (Ø 6 fir tree stud)

- Universal design for flat surfaces
- Hand gun for fully automatic stud feed (with VBZ-3) or hand feed
- Recommended for large-scale production

M3 to M8
#4 to 5/16"



- Used for welding with templates
- Hand gun for fully automatic stud feed (with VBZ-3) or hand feed
- Recommended for large-scale production

M3 to M8
#4 to 5/16"



Suitable stud welding unit

CDi 1502, CDMi 2402, CDMi 3202, ARC 800, ARC 1550, IT 1002, IT 50, IT 90

CD, SC



M3 to M8, dia. 3 to 8 mm / #4 to 5/16", dia. #4 to 5/16"

8 to 30 mm / 0.31" to 1.18"

Welding elements with flange according to current standards (other studs on request)

Adjustment range 5 mm / 0.20"

3 m / 9.84'

IP 20

>90 dB (A) may occur during welding

295 x 60 x 170 mm / 11.61" x 2.36" x 6.70" (without cable)

1.4 kg / 3.09 lbs (without cable)

Welding process

Stud material

Welding range

Stud length

Stud type

Stroke

Welding cable

IP

Workplace noise level

Dimension LxWxH

Weight

CDi 1502, CDMi 2402, CDMi 3202, ARC 800, ARC 1550, IT 1002, IT 50, IT 90

CD, SC



M3 to M8, dia. 3 to 8 mm / #4 to 5/16", dia. #4 to 5/16"

8 to 30 mm / 0.31" to 1.18"

Welding elements with flange according to current standards (other studs on request)

Adjustment range 5 mm / 0.20"

3 m / 9.84'

IP 20

>90 dB (A) may occur during welding

295 x 60 x 170 mm / 11.61" x 2.36" x 6.70" (without cable)

1.4 kg / 3.09 lbs (without cable)

Order No.

94-20-025 (Tripod)
(equipped for one stud dimension according to customer request)

Order No.

94-20-028 (PZV dia. 30 mm)
(equipped for one stud dimension according to customer request)

Sets

CDi1504PAH (CDi 1502, PAH-1, ground cable)

CDMi242AT (CDMi 2402, PAH-1, ground cable)

ARC8001AT (ARC 800, PAH-1, ground cable)



Assortment box

(Pin stop, guide bushing, mounting tool, feed tube, socket wrench, plunger, pin)

84-40-013A (dia. 3 to 8 mm, length 6 to 30 mm - for manual stud feeding by hand)

84-43-013A (dia. 3 to 8 mm, length 6 to 30 mm - for automatic stud feeding by VBZ-3)



Quick-Boy

92-40-140 for PAH-1

Assortment box

(Pin stop, guide bushing, mounting tool, feed tube, socket wrench, plunger, pin)

84-40-013A (dia. 3 to 8 mm, length 6 to 30 mm - for manual stud feeding by hand)

84-43-013A (dia. 3 to 8 mm, length 6 to 30 mm - for automatic stud feeding by VBZ-3)

Legend

Welding process: CD = Capacitor discharge stud welding, SC = Short cycle stud welding





Welding process	CD - Contact welding (optional) CD - Gap welding SC, ARC (optional)
Stud material	
Welding range	M3 to M8, dia. 3 to 8 mm; #4 to 5/16", dia. #4 to 5/16" (dia. 10 to 12.7 mm; dia. 3/8" to 1/2" with modification only)
Stud length	8 to 40 mm; 0.31" to 1.57" (other lengths on request)
Stud type	Welding elements with flange according to current standards (other studs on request)
Stroke/Length compensation	--
Spring pressure	Arresting
IP Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding
Dimension LxWxH	375 x 66 x 145 mm, 14.76" x 2.60" x 5.71" with chuck and quick change system
Weight	3.4 kg; 7.50 lbs

Order No.	Order No.
94-31-412C (equipped for one stud dimension according to customer request)	94-37-412 (with length compensation) (equipped for one stud dimension according to customer request)



Assortment box
(Pin stop, guide bushing, mounting tool, feed tube, socket wrench, plunger, pin)

84-41-312A (Ø 3 - 8 mm, length 6 - 40 mm - for manual stud feeding by hand)
84-42-312A (Ø 3 - 8 mm, length 6 - 40 mm - for automatic stud feeding by VBZ-3)

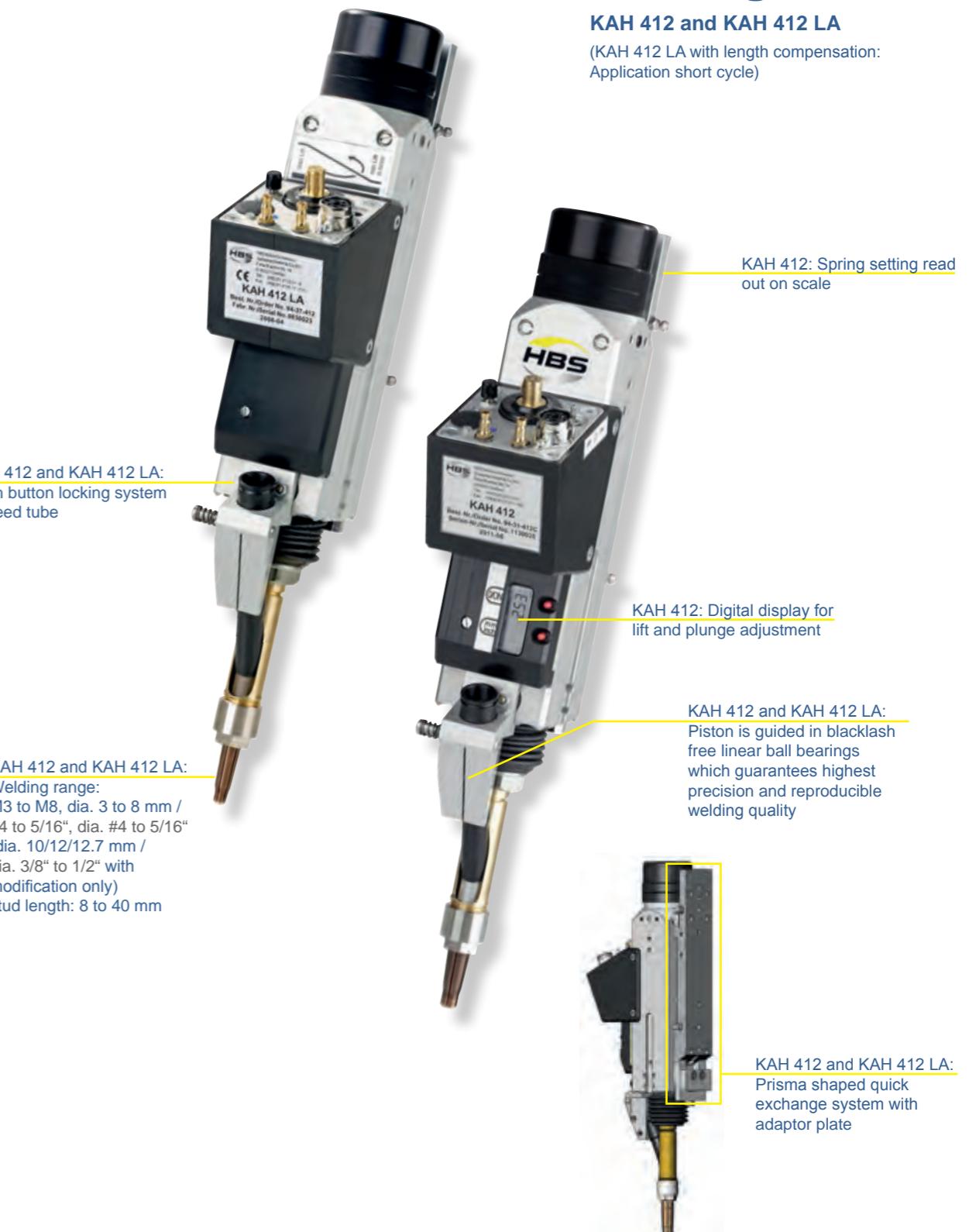
Assortment box
(Pin stop, guide bushing, mounting tool, feed tube, socket wrench, plunger, pin)

84-41-312A (Ø 3 - 8 mm, length 6 - 40 mm - for manual stud feeding by hand)
84-42-312A (Ø 3 - 8 mm, length 6 - 40 mm - for automatic stud feeding by VBZ-3)

Legend

Welding process: CD = Capacitor discharge stud welding, SC = Short cycle stud welding

Mild steel Stainless steel Aluminium Brass



PC-S



- High-quality solid work table with stationary welding head
- For stud welding with manual (by hand) or fully automatic stud feeding (by VBZ-3)
- Anti wear protection on work plate
- Rugged working stroke of stud welding head

M3 to M8 (dia. 10/12/12.7 mm only possible with modification)
#4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)



T-slot work plate	500 x 375 mm / 19.69" x 14.76"
Welding range	M3 to M8, dia. 3 to 8 mm (dia. 10/12/12.7 mm only possible with modification) #4 to 5/16", dia. #4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)
Stud length	8 to 40 mm / 0.31" to 1.57" (other dimensions on request)
Stud feeding	Manual or automatic stud feeding (not included in delivery)
Positioning accuracy of welded stud	± 0.2 mm / ± 0.008"
Working stroke of welding head	Z-max. = 125 mm, z-adjustable = 4 to 45 mm (bottom end stop) Z-max. = 4.92", z-adjustable = 0.16" to 1.77" (bottom end stop)
Welding head	KAH 412, alternative KAH 412 LA (not included in delivery)
Max. number of stud welding heads	1
Connections	Electrical: 230 V/115 V, 16 A, 50 Hz; Pneumatic: 6 bar min./10 bar max./inner hose dia. 6 mm / 1/4"
Dimension LxWxH	1200 x 1000 x 2000 mm (without machine protection cover), 1400 x 1000 x 2200 mm (with machine protection cover) 47.24" x 39.37" x 78.74" (without machine protection cover), 55.12" x 39.37" x 86.61" (with machine protection cover)
Weight	Approx. 150 kg / 330.69 lbs (without machine protection cover)
Order No.	
90-70-5028D	
88-16-446 (Machine protection cover)	



CPW Series



- Entry-level CNC stud welding machine with 1 welding head
- High speed with highest positioning accuracy by robust machine base frame
- Working with different work piece heights on a working range of 600 x 420 x 120 mm

M3 to M8 (dia. 10/12/12.7 mm only possible with modification)
#4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)



Working range	600 x 420 x 120 mm / 23.6" x 16.5" x 4.7" (maximum working range for 1 welding head)
T-slot work plate	800 x 490 mm / 31.5" x 19.3"
Welding range	M3 to M8, dia. 3 to 8 mm (dia. 10/12/12.7 mm only possible with modification) #4 to 5/16", dia. #4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)
Stud length	8 to 40 mm / 0.31" to 1.57" (other lengths on request)
Welding capacity	Up to 30 studs/min (depending on configuration)
Traverse speed	25 m/min (X-Y), 20 m/min (Z) / 82'/min X-Y, 65.6'/min Z
Stud feeding	Automatic stud feeding (up to 3 different stud length per welding head)
Positioning accuracy of welded stud	± 0.2 mm / ± 0.008"
Positioning and repeat accuracy	± 0.05 mm / ± 0.002"
Stud welding head	KAH 412 Optional: KAH 412 LA (mechanical length compensation - gap)
Max. number of stud welding heads	1
Connections	Electrical: 400 V*, 16 A, 50 Hz; Pneumatic: 6 bar min./10 bar max./inner hose dia. 6 mm *alternative primary power see „Order No.“
Motor-driven Z-axis	Z = 0 to 120 mm / 0 to 4.7" (free programmable because of servo drive technology)
Controller	High performance PLC IEC 61131-3
Display	9" Touchscreen
Keyboard	Touch
Dimension LxWxH	1600 x 950 x 1900 mm / 63" x 37.4" x 74.8"
Weight	Approx. 640 kg / 1.411 lbs
Order No.	
88-19-644 (400 V)	
88-21-381 (480 V)	
(associated components, stud welding head, stud welding unit, automatic stud feeding and accessories)	



MPW Series



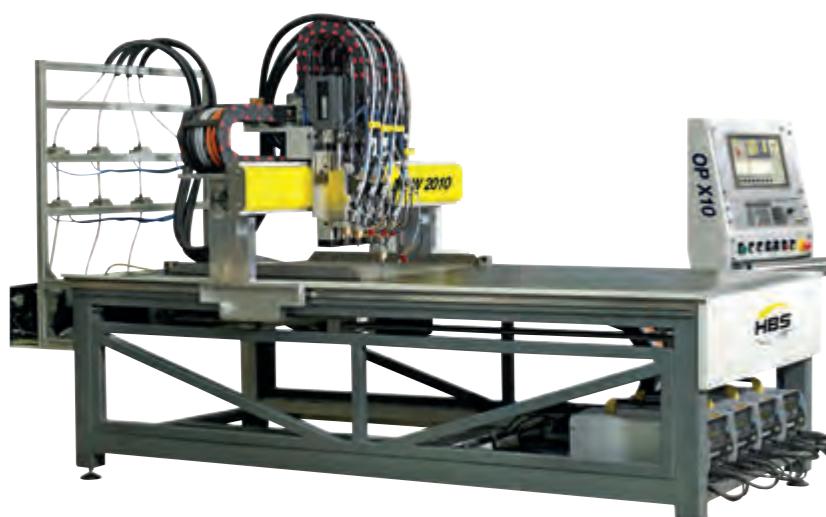
- High performance CNC stud welding machine (with up to 4 welding heads)
- Highest speed possible with high positioning accuracy through rugged design
- Very short set-up time (a.e. automatic calibration of Z-axes)
- Network connection

M3 to M8 (dia. 10/12/12.7 mm only possible with modification)
#4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)

Working range	1250 x 1050 mm / 49,21" x 41,34" (MPW 1010); 1250 x 2250 mm / 49,21" x 88,58" (MPW 2010); 3000 x 1500 mm / 118,11" x 59,06" (MPW 3015) (maximum working range for up to 3 welding heads)
Welding range	M3 to M8, dia. 3 to 8 mm (dia. 10/12/12.7 mm only possible with modification) #4 to 5/16", dia. #4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)
Stud length	8 to 40 mm / 0.31" to 1.57" (other lengths on request)
Welding capacity	Up to 40 studs/min ((depending on configuration))
Traverse speed	Up to 60 m/min / 196.85"/min (max. 48 m/min / 157.48"/min per axis)
Stud feeding	Automatic stud feeding (up to 3 different stud length per welding head)
Positioning accuracy of welded stud	± 0.15 mm / ± 0.0059" for steel and ± 0.2 mm / ± 0.008" for aluminium (depending on work piece and stud geometry)
Positioning and repeat accuracy	± 0.05 mm / ± 0.002"
Stud welding head	KAH 412 Optional: KAH 412 LA (mechanical length compensation - gap)
Max. number of stud welding heads	4 (up to 3 stud lengths per welding head possible)
Connections	Electrical: 400 V, 32 A, 50 Hz Pneumatic: 6 bar min./10 bar max./inner hose dia. 6 mm / 1/4"
Motor-driven Z-axis	Z = 0 to 200 mm / 0 to 7.87" (free programmable because of servo drive technology)
Dimension LxWxH	2300 x 2350 x 2200 mm / 90,55" x 92,52" x 86,61" (MPW 1010); 3500 x 2350 x 2200 mm / 137,80" x 92,52" x 86,61" (MPW 2010); 3500 x 4550 x 2200 mm / 120,08" x 179,13" x 86,61" (MPW 3015)

Order No.

According to project



MPW Accessories

Code Reader



Calling up welding programs made easy

Customer benefits

Time-savings

The code reader reduces your search and startup times for welding programs.

Error prevention

The code reader ensures the clear-cut assignment of your welding programs to the workpieces.

Order No. 88-21-127

Adjustment set for welding head



Ensuring the accuracy of the stud welding machine

Customer benefits

Independent testing and, if necessary, realignment of the position of the welding heads of the MPW series after changing welding heads.

Ensure the accuracy of the stud welding machine through periodic inspection of the welding head position.

Detection of hidden flaws or damage with regard to the welding head position.

Order No. 88-22-301B

CAD Software



HBS CAD converts a DXF-file into a CNC program

Customer benefits

Enables external programming by using a DXF file.

Time saving.

Error prevention.

Order No. 80-50-0660

	Pneum. single feed unit PBZ	for: KAH 412 for: installation in systems of the MPW series
M3	94-43-133	
M4	94-43-134	
M5	94-43-135	
M6	94-43-136	
M8	94-43-138	

	Pneum. single feed unit PBZ	for: KAH 412 for: installation in systems of the CPW series (Basic kit 88-20-206 necessary)
M3	88-18-163	
M4	88-18-164	
M5	88-18-165	
M6	88-18-166	
M8	88-18-168	

	Pneum. single feed unit PBZ	for: KAH 412 for: installation in automatic systems and systems of type PC-S
M3	94-43-033	
M4	94-43-034	
M5	94-43-035	
M6	94-43-036	
M8	94-43-038	

	Pneumatic stud feeding switch PBW complete	for: Feeding studs with the same diameter but different lengths into one automatic welding head for: installation in automatic systems
M3	80-08-0471B	
M4	80-08-0472B	
M5	80-08-0473B	
M6	80-08-0474B	
M8	80-08-0475B	

	PMB-S (vertical movement)	Pneumatic ground clamp including clamp, swivelling, single acting for: installation in systems of the MPW series, in automatic systems and systems of type PC-S
		90-60-011

	PMB-S (vertical movement)	Pneumatic ground clamp including clamp, swivelling, single acting incl. sliding block for: installation in systems of the CPW series
		90-61-011

	PMB-LS2 (horizontal and vertical movement)	Pneumatic ground clamp including clamp (double clamp = extra charge), linear swivelling, double acting for: installation in systems of the MPW series, in automatic systems and systems of type PC-S
		90-60-120

	PMB-LS2 (horizontal and vertical movement)	Pneumatic ground clamp including clamp (double clamp = extra charge), linear swivelling, double acting incl. sliding block for: installation in systems of the CPW series
		90-61-120

	SSS Welding current sensor	for: Signal output - welding current was active incl. connection cable (5 m)
		90-70-020

	Solenoid valve	for: switching the compressed air for manual stud feeding or for closing/opening the ground clamp
		80-10-188

	Utensil socket	for: Solenoid valve 80-10-188
		80-10-189

	Ring initiator	to: See if stud has been fed
hole-Ø		
10 mm	80-50-0083	
20 mm	80-50-491	

	Coupling ring initiator	for: Connection between ring initiator and CNC control
		80-10-375

	ESS External weld start	for: HBS power units with 7-pin-plug
		90-70-016

	Connecting line complete for welding head KAH 412 continuously	for: CDMi 2402, CDMi 3202, ARC 800 AT, ARC 1550 AT, IT 1002 AT
3 m, 25 mm²	92-40-131	
5 m, 35 mm²	92-40-130	

	Working stroke complete, with height adjustment (125/45 mm) with-out ring initiator	for: KAH 412
		80-09-760

	Working stroke complete, with height adjustment (125/45 mm) with ring initiator	for: KAH 412
		80-09-750

	Device for pneumatic fixture workpiece	for: KAH 412 to hold down the workpiece
Stroke 100 mm	80-08-702	

	Adjustment set for welding head position	for: KAH 412 for setting the welding head after a welding head change or as a quality measure to ensure the accuracy of the stud welding machines type MPW and TKM 2
		88-22-301B

	Code Reader	incl. software package for: calling up welding programs via barcode in the control system of stud welding machines type MPW and TKM 2
		88-21-127

	CAD Software	for: MPW 1010/2010/3015 for: creating welding programs for MPW control
		80-50-0660

	RDS Software	for: MPW 1010/2010/3015 for: Error analysis in the MPW control
		80-50-2011

Welding technique	Type of stud ¹⁾	Symbol for stud	Symbol for ceramic ferrule
Stud welding with tip ignition - CD	Threaded stud (pitch) ²⁾		—
	Unthreaded stud (pin) ²⁾		—
	Stud with internal thread ²⁾		—
	Ground clip single style		—
	Ground clip double style		—
Drawn arc stud welding with ceramic ferrule or shielding gas - ARC	Threaded stud with reduced shaft ²⁾		RF
	Virtually fully threaded stud		UF (MF)
	Partially threaded stud (pitch) ²⁾		PF
	Unthreaded stud (pin) ²⁾		UF
	Stud with internal thread ²⁾		UF
	Shear connector ²⁾		UF/DF
Short cycle drawn arc stud welding - SC	Threaded stud with flange (pitch) ²⁾		—
	Unthreaded stud (pin) with flange ²⁾		—
	Stud with internal thread and flange ²⁾		—

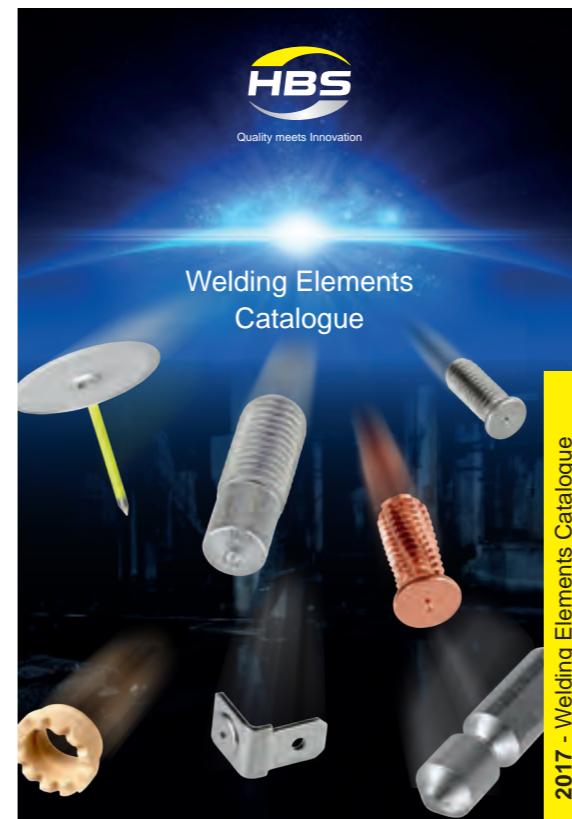
¹⁾ Further types of stud and ceramic ferrules can be specified as required for special applications.

²⁾ according to standard DIN EN ISO 13918

HBS – The Best Solutions

Our products are made and based on over 40 years of development experience and know how in stud welding technology. HBS welding elements encompass this technology. Use of HBS welding elements guarantees a continuous high quality weld.

The five major welding processes of capacitor discharge, drawn arc, short cycle, insulation and MARC have been designed to cover a wide range of applications. They are most commonly utilised for: vehicle construction, automotive supply industry, steel construction, mechanical engineering, electrical engineering, apparatus / casing



construction, control panel, cabinet construction, commercial kitchens, laboratory and health techniques, food industry, household appliances, information technology, metal fittings, curtain walling, steel construction, ventilation construction, insulating techniques, fire-proof insulation of power and combustion plants, vessel construction, shipbuilding etc.

With HBS stud and equipment products and technology, major benefits are realised from finding every thing from one source. As a complete system provider you have one supplier, cost effective, fast delivery along with sustained high quality. This also applies to a variation in studs e.g. threaded studs, pins, studs with internal threads, ground clips, pads. Additionally we supply customised welding elements.

Welding Elements Catalogue





Leading through Technology, Quality and Service

Stud Welding Systems Catalogue

2017