Quality meets Innovation

Stud Welding Systems Catalogue

Stud Welding Systems Catalogue

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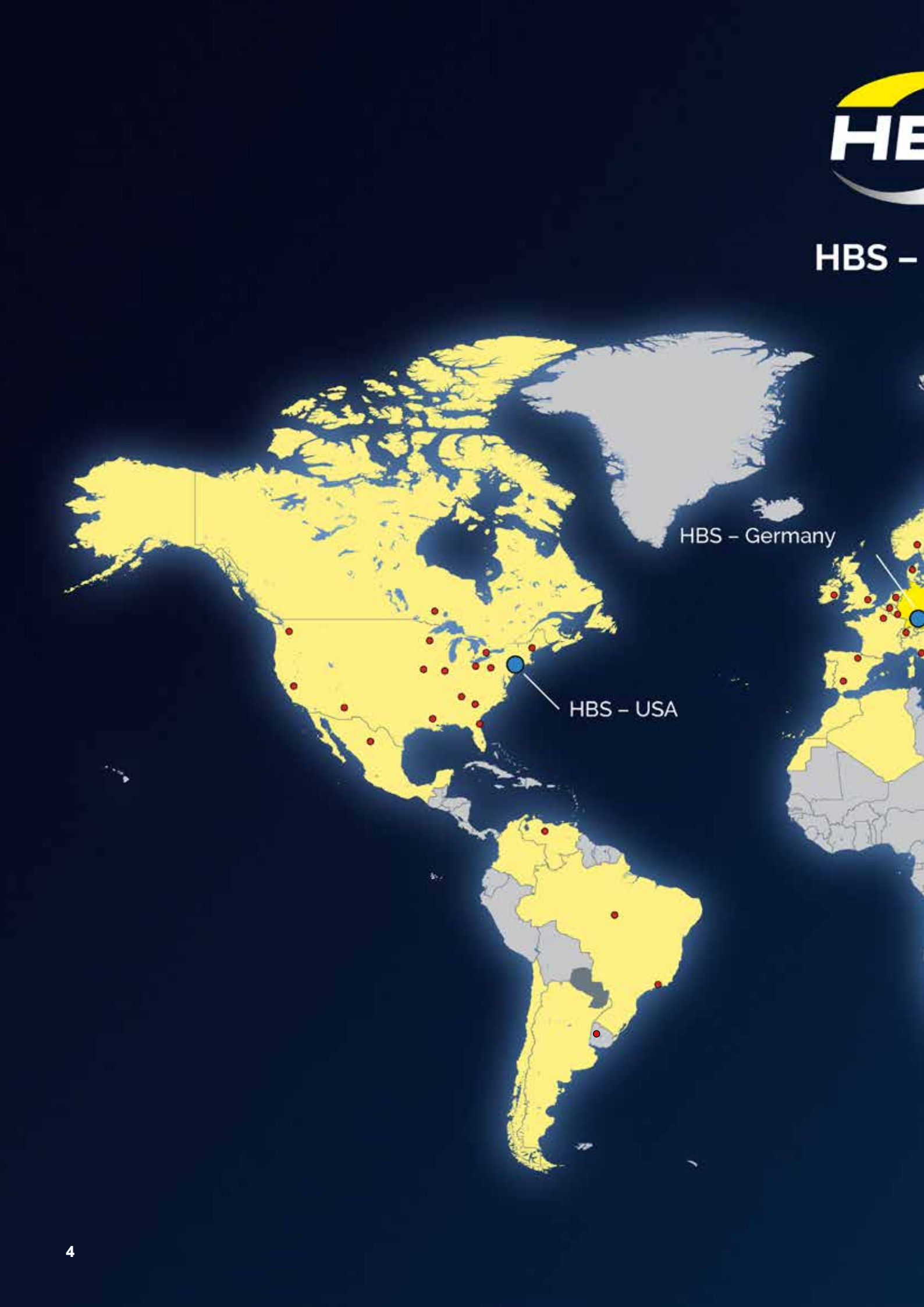
Stud Welding Systems Catalogue Issue 2019-02

reddot award
winner

Presented with the Red Dot Design Award, one of the most prestigious design competitions, which is considered to be the yardstick for the highest design quality at international level. This seal of quality confirms the innovative design excellence of HBS.


HBS –
HBS – Germany
HBS – USA

BS

World

Table of Contents

Manual Systems

Automatic Systems

Welding elements / Accessories

Quality alive

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that

HBS Bolzenschweiss-Systeme GmbH & Co. KG
Felix-Wankel-Straße 18
85221 Dachau
Germany

has established and applies
a Quality Management System for

Rotating Arc-, Stud welding systems and welding elements

development – production – consultation - marketing.

An audit was performed, Order No. **70009047**.

Proof has been furnished that the requirements according to

ISO 9001:2015

are fulfilled.

The certificate is valid from **2019-03-09** until **2022-03-08**.

Certificate Registration No.: **12 100 4457 TMS**.

Product Compliance Management
Munich, 2019-02-26

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

TÜV®

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

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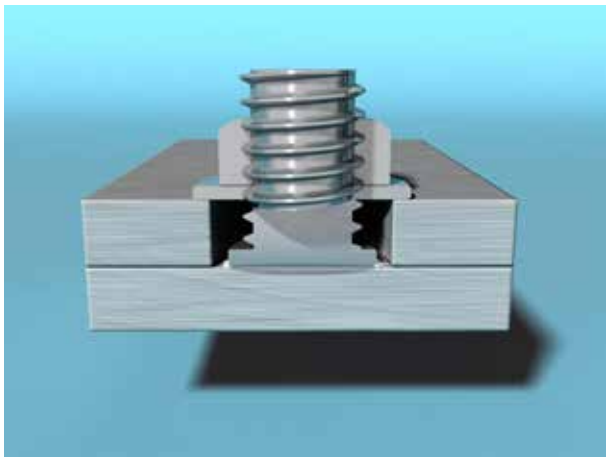
Stud Welding – Advantages

Saves time. Saves money. Unchallenged.

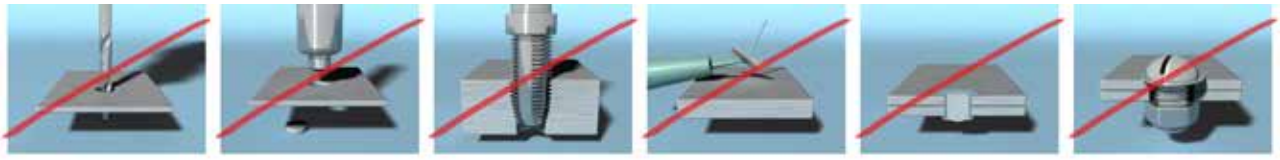


No reworking!

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 potential

- 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

Capacitor discharge stud welding

CD

Capacitor Discharge (CD) stud welding with tip ignition

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

The recipe for success:

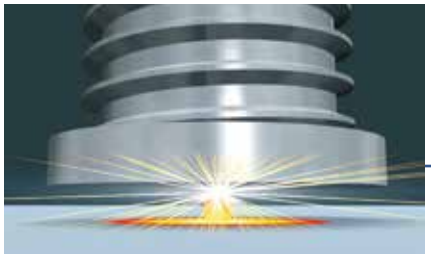
Extremely short welding time! (1 to 3 ms). No additional welding products are needed.

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.

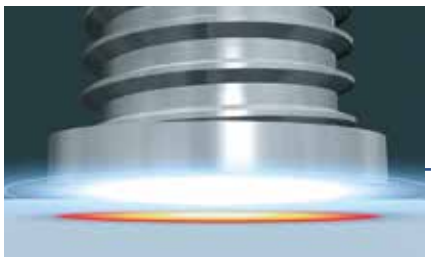
Contact or gap

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.

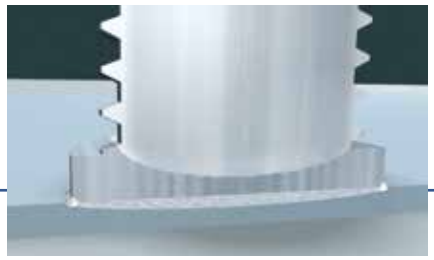


An arc is ignited between the face of stud and the surface of a work piece.



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.

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

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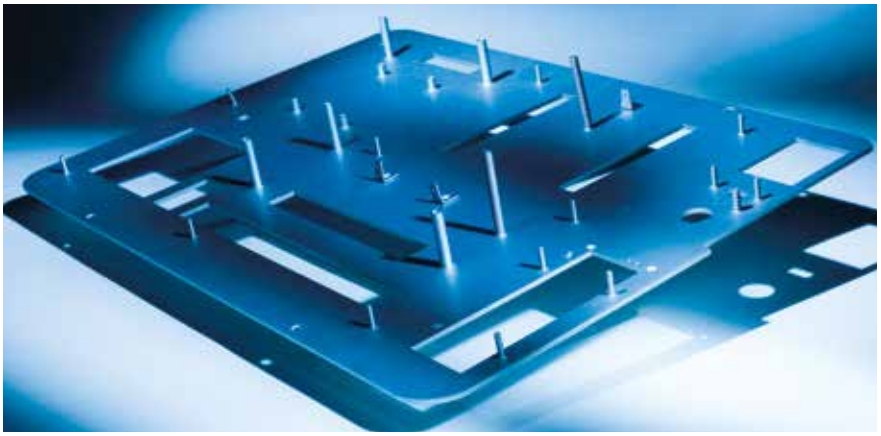
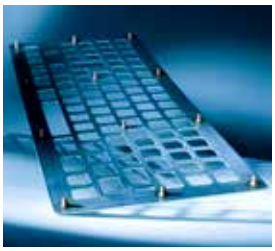
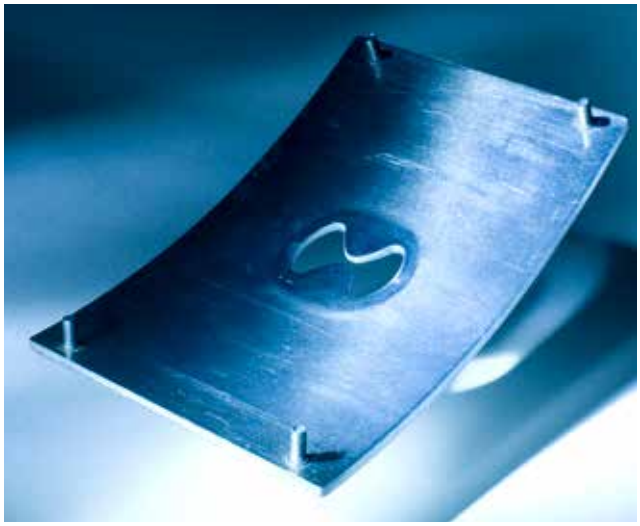


CD

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.





CD

Cutting edge technology is combined with time proven stud welding 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.

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international@hbs-info.com

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 power source for outstanding results.

CA 08

High-performance stud welding gun for tip ignition process of gap welding. High accuracy 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

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. 5 mm - M5/dia. 7.1 mm	Welding elements

Type IT

Stud (pin) with internal thread

Material	Diameter	Catalogue
	6.3 mm	Welding elements

Type Ground clips

Material	Welding range	Page
	M3 to M6 #4 to 1/4“	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	Page
	M3 to M8 #4 to 5/16“	18

CDi 1502

For construction sites and workshops (IP 23).
Welds to M8 (5/16“) on thin sheet.

Material	Welding range	Page
	M3 to M8 (M10) #4 to 5/16“ (7/16“)	18

CDi 2302

Allrounder für Baustelle und Werkstatt (IP 23).
Für Bolzen bis M10 (7/16“) auf dünnen Blechen

Ground cable
92-40-095

Material	Welding range	Page
	M3 to M10 #4 to 7/16“	18

CDi 3102

All-rounder for construction sites and workshops (IP 23).
Welds limited to M10 (7/16“) on thin sheets.

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Material	Welding range	Page
	M3 to M6 (Aluminium up to M4) #4 to 1/4“ (Aluminium up to #8)	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	Page
	M3 to M6 (Aluminium up to M4) #4 to 1/4“ (Aluminium up to #8)	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	Page
	M3 to M8 (M10) #4 to 5/16“	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	Page
	M3 to M8 (M10) #4 to 5/16“	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	Page
	M3 to M8 (M10) #4 to 5/16“ (7/16“)	19

CA 08 with foot ring

Universal design for use on flat surfaces;
Gap gun used to avoid rear side marking on thin sheets. Aluminium to M6 (1/4“).
Brass to M4 (#8)

Material	Welding range	Page
	M3 to M8 (M10) #4 to 5/16“ (7/16“)	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. Aluminium to M6 (1/4“).
Brass to M4 (#8).

Accessories
Page 19

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

Battery powered
Systems for capacitor discharge

Pegasar 500 accu

Battery powered

- Mobile, light and robust battery powered for const-ruction 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 Insulation

Battery powered

- Mobile, light and robust battery powered for const-ruction 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 nails: dia. 2 and 3 mm

Welding process	CD	CD
Welding material	● ● (●)	● ● (●)
Technology	Inverter-Capacitor Charging Technology	Inverter-Capacitor Charging Technology
Welding range	Studs (steel) M3 to M6 / #4 to 1/4" Studs (aluminium) M3 to M4 / #4 to #8	Cupped head pins dia. 2 and 2.7 mm CD ISO nails dia. 2 and 3 mm
Welding rate	M3 / #4 = 40 studs/min. (voltage 55 V), M6 / 1/4" = 20 studs/min. (voltage 95 V)	Cupped head pin: dia. 2.7 mm = 20 pins/min. (voltage 85 V) CD ISO nail: dia. 3 mm = 20 nails/min. (voltage 90 V)
Count of weldings per battery	400 welds (M6 / 1/4")	400 welds (cupped head pin 2.7 mm)
Capacitance	100 000 µF	100 000 µF
Welding time	1 to 3 ms	1 to 3 ms
Energy	500 Ws	500 Ws
Charging voltage	50 to 100 V (stepless voltage regulation)	50 to 100 V (stepless voltage regulation)
Power source	Capacitor	Capacitor
Battery *)	25.55 V / 5.7 Ah / 145.64 Wh (LiNiCoAlO2)	25.55 V / 5.7 Ah / 145.64 Wh (LiNiCoAlO2)
Battery charging time	Max. 2.5 h	Max. 2.5 h
Battery life	At least 400 charging cycles (at 800 charging cycles still approx. 60 % of the initial capacity)	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)	475 x 300 x 355 mm /18.70" x 11.81" x 13.98" (with handle)
Weight	12.0 kg / 26.46 lbs incl. battery, 10.7 kg / 23.59 lbs without battery	12.0 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	100 V to 240 V, 50/60 Hz, 10 AT (slow blow); in battery operation: 25.55 V
Connected load	500 W	500 W
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP Code	With inserted battery: IP 44, without battery: IP 23	With inserted battery: IP 44, without battery: IP 23
Suitable guns	C 06-3	CI 03, C 06-3

Displays

Pegasar 500 accu (metric)

Pegasar 500 accu (imperial)

Pegasar 500 accu Insulation

Order No.	Order No.
92-10-0500 (Plug E+F; Europe + China), diameter buttons „metric“ *) **92-12-0500** (Plug B; USA + Canada), diameter buttons „imperial“ *) **92-13-0500** (Plug B; Japan), diameter buttons „metric“ *)	**92-10-0510** (Plug E+F; Europe + China), diameter buttons „metric“ *) **92-12-0510** (Plug B; USA + Canada), diameter buttons „imperial“ *)
92-40-154 (Ground cable)	**92-40-091** (Ground cable for cupped head pins; CI 03) **92-40-154** (Ground cable for CD ISO nails; C 06-3)
88-23-484 (Accu 150 - battery; Lithium-Ion-battery) **88-23-661** (ACCU CHARGER 150 - charging unit for battery type Accu 150 - Plug E+F) **88-24-066** (ACCU CHARGER 150 - charging unit for battery type Accu 150 - Plug B)	**88-23-484** (Accu 150 - battery; Lithium-Ion-battery) **88-23-661** (ACCU CHARGER 150 - charging unit for battery type Accu 150 - Plug E+F) **88-24-066** (ACCU CHARGER 150 - charging unit for battery type Accu 150 - Plug B)
88-24-466 (Toolbag)	**88-24-466** (Toolbag)

*) Battery is not included in delivery.

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

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Phone +49 8131 511-0
www.hbs-info.com
international@hbs-info.com

Quick battery change

Toolbag

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

For welding gun, ground cable, accessories, etc.

Secure quickly, thanks to velcro straps

Strong elastic bands to secure accessories

(accessories and welding gun are not included)

Just 2 steps! To the perfect weld

Simply the best – **C 06-3**

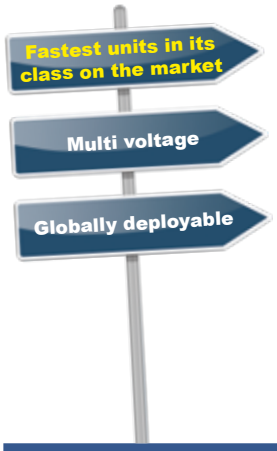
1.

Select diameter

2.

Push trigger

CDi series
Systems for capacitor discharge



	CDi 1502	CDi 2302	CDi 3102
			
	• For construction sites and work-shops (IP 23) • Welds to M8 (5/16“) on thin sheets	• All-rounder for construction sites and workshops (IP 23) • Welds limited to M10 (7/16“) on thin sheets	• Energy package for construction sites and workshops (IP 23) • For larger studs with energy reserve for coated surfaces
	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
Display	Digital	Digital	Digital
Welding range	M3 to M8, dia. 2 to 8 mm / #4 to 5/16", dia. 14 ga to 5/16" Cupped 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", #4 to 3/8"
Welding rate	M3 / #4 = 40 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) **92-12-1502B** (115 V) **92-13-1502B** (100 V)	**92-10-2302B** (230 V) **92-12-2302B** (115 V) **92-13-2302B** (100 V)	**92-10-3102B** (230 V) **92-12-3102B** (115 V) **92-13-3102B** (100 V)
	**92-40-095** (ground cable, 2.5 m, 25 mm², 2 vice grips 10“)	**92-40-095** (ground cable, 2.5 m, 25 mm², 2 vice grips 10“)	**92-40-095** (ground cable, 2.5 m, 25 mm², 2 vice grips 10“)
	For CI 03: **92-40-091** (ground cable, 6.7 m, 16 mm², 1 vice grip 10“)		

Legend: Welding process: CD = Capacitor discharge stud welding

Mild steel · Stainless steel · Aluminium · Brass

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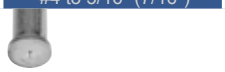
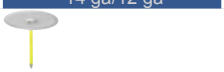
	C 06-3	C 08	CA 08	CI 03
	1) 2) 	3) 4) 	5) 6) 	
	• Easy handling • No setting for lift and spring pressure • Aluminium to M4 (#8)	• All-rounder also used for welding galvanised base material • Aluminium to M4 (#8)	• Used to avoid rear side marking on thin sheets • Aluminium to M6 (1/4") • Brass to M4 (#8)	• Especially suitable for welding of cupped head pins (HVAC)
	M3 to M6 #4 to 1/4"	M3 to M8 (M10) #4 to 5/16" (7/16")	M3 to M8 (M10) #4 to 5/16" (7/16")	Dia. 2/2.7 mm 14 ga/12 ga
				
Suitable stud welding unit	Pegasar 500 accu, Pegasar 500 accu Insulation	CDi series, CDMi series	CDi series, CDMi series	CDi 1502, Pegasar 500 accu Insulation
Welding process	CD (contact)	CD (contact)	CD (gap)	CD (contact)
Stud material	● ● (●)	● ● (●) ●	● ● ● (●)	● ●
Welding range	M3 to M6, dia. 2 to 6 mm / #4 to 1/4", dia. 14 ga 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 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"	Cupped head pins dia. 2/2.7 mm / 14 ga/12 ga
Stud length	6 to 40 mm / 0.24" to 1.57"; longer studs (> 40 mm / 1.57") with optional accessories	6 to 40 mm / 0.24" to 1.57", longer studs with optional accessories	6 to 40 mm / 0.24" to 1.57", longer studs with optional accessories	9.5 to 152.4 mm / 0.37" to 6.00"
Stud type	Any type or shape (special chucks if required)	Any type or shape (special chucks if required)	Any type or shape (special chucks if required)	Cupped head pins
Lift	--	--	Adjustment range 4.5 mm / 0.18", lockable	--
Spring pressure	--	Adjustable, arresting	Adjustable, arresting	Adjustable, arresting
Welding cable	3 m / 9.84'; 25 mm², SK 50	6.5 m / 21.33'; 25 mm², SK 50	3 m / 9.84'; 25 mm², SK 50	9.3 m / 30.51'; 6 mm², SK 50
IP Code	IP 20	IP 20	IP 20	IP 20
Workplace noise level	> 90 dB (A) may occur during welding	> 90 dB (A) may occur during welding	> 90 dB (A) may occur during welding	> 90 dB (A) may occur during welding
Dimension LxWxH (without cable)	170 x 40 x 140 mm / 6.70" x 1.57" x 5.51"	170 x 40 x 140 mm / 6.70" x 1.57" x 5.51"	190 x 40 x 140 mm / 7.48" x 1.57" x 5.51"	175 x 50 x 145 mm / 6.89" x 1.97" x 5.71" (without leg assembly)
Weight (without cable)	0.5 kg / 1.10 lbs	0.5 kg / 1.10 lbs	0.7 kg / 1.54 lbs	0.7 kg / 1.54 lbs
	Order No.	**Order No.**	**Order No.**	**Order No.**
	1) **92-20-275** (Tripod) 2) **92-20-288** (PPR-2/CD)	3) **92-20-256** (Tripod) 4) **92-20-286** (PPR-2/CD)	5) **92-20-255** (Tripod) 6) **92-20-285** (PPR-2/CD)	**92-20-254**
	**92-40-050** (Accessories up to 6 mm – chucks M3 to M6, socket wrench) **92-40-118** (Accessories up to 1/4“ – chucks #4, #6, #8, #10, 1/4“, socket wrench)	**92-40-018** (Accessories CD M3 to M8)	**92-40-018** (Accessories CD M3 to M8)	**92-40-063A** (Accessories for cupped head pins)  Application: Cupped head pins Welded with gun CI 03

Legend

Welding process: CD = Capacitor discharge stud welding

● Mild steel ● Stainless steel ● Aluminium ● Brass

CDi 1502

CDi 1502 with C 08	Order No.: CDi1502C+ includes:
	CDi 1502 230 V Order No. 92-10-1502B
	C 08 Order No. 92-20-256
	Ground cable Order No. 92-40-095
	Gun accessories 3 to 8 mm Order No. 92-40-018

CDi 1502 with CA 08	Order No.: CDi1502CA+ includes:
	CDi 1502 230 V Order No. 92-10-1502B
	CA 08 Order No. 92-20-255
	Ground cable Order No. 92-40-095
	Gun accessories 3 to 8 mm Order No. 92-40-018

CDi 2302

CDi 2302 with C 08	Order No.: CDi2302C+ includes:
	CDi 2302 230 V Order No. 92-10-2302B
	C 08 Order No. 92-20-256
	Ground cable Order No. 92-40-095
	Gun accessories 3 to 8 mm Order No. 92-40-018

CDi 2302 with CA 08	Order No.: CDi2302CA+ includes:
	CDi 2302 230 V Order No. 92-10-2302B
	CA 08 Order No. 92-20-255
	Ground cable Order No. 92-40-095
	Gun accessories 3 to 8 mm Order No. 92-40-018

CDi 3102

CDi 3102 with C 08	Order No.: CDi3102C+ includes:
	CDi 3102 230 V Order No. 92-10-3102B
	C 08 Order No. 92-20-256
	Ground cable Order No. 92-40-095
	Gun accessories 3 to 8 mm Order No. 92-40-018

CDi 3102 with CA 08	Order No.: CDi3102CA+ includes:
	CDi 3102 230 V Order No. 92-10-3102B
	CA 08 Order No. 92-20-255
	Ground cable Order No. 92-40-095
	Gun accessories 3 to 8 mm Order No. 92-40-018

CDi 1502 Insulation

CDi 1502 with CI 03	Order No.: CDi1502CI+ includes:
	CDi 1502 230 V Order No. 92-10-1502B
	CI 03 Order No. 92-20-254
	Ground cable Order No. 92-40-091
	Gun accessories CI 03 Order No. 92-40-063A

Pegasar 500 accu

Pegasar 500 accu with C 06-3	Order No.: P500accu+ includes:
	Pegasar 500 accu Order No. 92-10-0500
	C 06-3 Order No. 92-20-275
	Ground cable Order No. 92-40-154
	Accu 150 Order No. 88-23-484
	Toolbag Order No. 88-24-466
	Gun accessories 3 to 6 mm Order No. 92-40-050

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
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
Capacitance	80 000 µF
Energy	325 Ws
Charging voltage	Max. 90 V
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 interchangable

Order No.
92-10-2380A (including toolbag, grinder, power supply cable, cable for 12 V car connection and assortment box)

Legend

Welding process: CD = Capacitor discharge stud welding

Mild steel Stainless steel

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Grinding equipment to remove paint on the radiator

Two charging options: power supply cable and cable for 12 V car connection

Assortment box for accessories in tool pocket

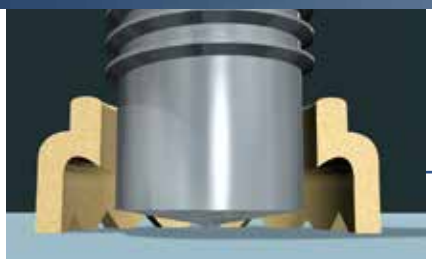
Magnetic storage box for quick access to studs

ARC

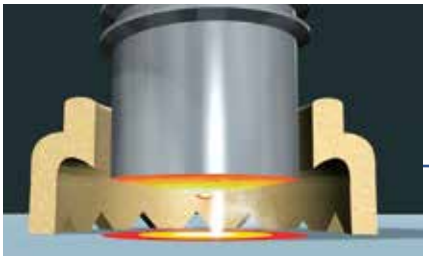
**Drawn arc (ARC)
stud welding with ceramic ferrule or shielding gas**

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.

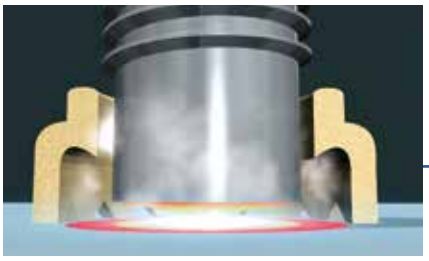
Drawn arc stud welding with ceramic ferrule is recommended for studs with diameter of more than 12 mm. If it is required to protect the weld pool from atmosphere, shielding gas should be used. This process variant is also used with automated applications.



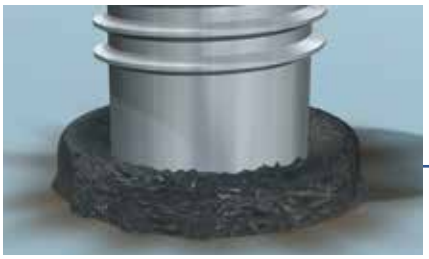
Welding process with ceramic ferrule: Joining of stud-type welding elements with a diameter 2 to 25 mm (M24) onto thicker sheets of about 2 mm or higher. Mild steel and stainless steel



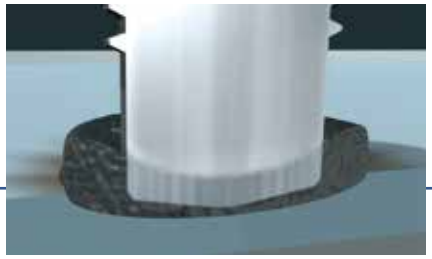
The welding stud is lifted and a secondary arc (pilot arc) of low current is ignited between stud tip and workpiece.



Then the ignition of the main arc is carried out. Stud and workpiece are melted. The stud is moved to the workpiece, 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 strenght is achieved which is above the stud and base material.

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

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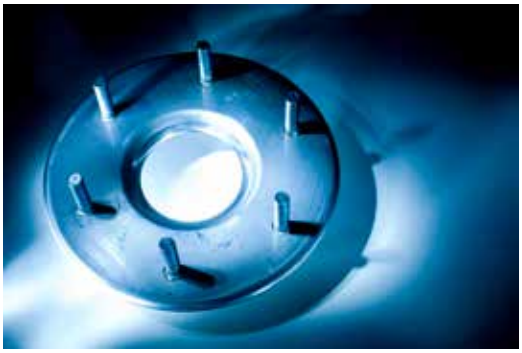
ARC

Best Solution
Best Results

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 weld pool protection.



Short cycle stud welding

SC

Short Cycle (SC) drawn arc stud welding

High current, shorter duration of welding time

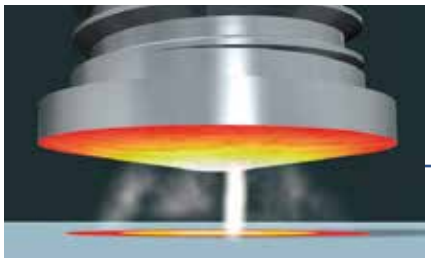
The welding sequence is the same as the sequence of drawn arc welding (ARC), however, with relatively higher currents and shorter welding times (max. 100 ms). The short cycle drawn arc stud welding is very suitable for stud diameters up to 12 mm on thin metal sheets.

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.

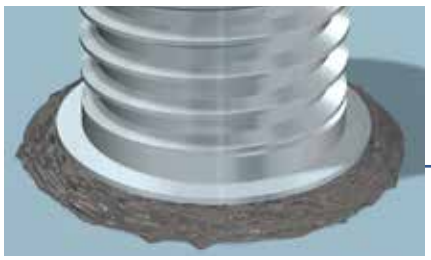
The short cycle process is especially suitable for welding of material combinations like steel (base material), stainless steel (stud) as well as aluminium. To achieve a high welding quality, use of shielding gas is recommended.

Joining of stud-type welding elements with a diameter 2 to 12 mm onto thin sheets, min. 0.5 mm. Mild steel, stainless steel and aluminium.

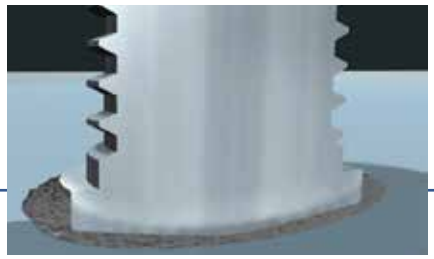


The welding stud is lifted and a secondary arc (pilot arc) of low current is ignited between stud tip and workpiece.

Then the ignition of the main arc is carried out. Stud and workpiece are melted. The stud is moved to the workpiece, 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

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SC

Best Solution
Best Results

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

With ARC and IT stud welding 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

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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 welding units 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 welding units with transformer technology.

Weight

Minimized weight – inverter technology reduces the weight by 50 % compared to welding 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)

Material	Diameter	Catalogue
	M6 to M24	Welding elements

Type RD

Threaded stud
with reduced shaft

Material	Diameter	Catalogue
	M6 to M16	Welding elements

Type MD (DD)

Virtually fully-threaded stud

Material	Diameter	Catalogue
	M6 to M20	Welding elements

Type PD

Partially threaded stud

Material	Diameter	Catalogue
	6 to 16 mm	Welding elements

Type UD

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M6/dia. 10 mm to M10/dia. 16 mm	Welding elements

Type ID

Stud (pin)
with internal thread

Material	Diameter	Catalogue
	10 to 25 mm	Welding elements

Type SD

Shear connector

Material	Welding range	Page
	M3 to M10 (Type RD) #4 - 7/16“ (Type RD)	38

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.

Ground cable
93-40-020

Material	Welding range	Page
	M3 to M12 (Type RD) #4 to 1/2“ (Type RD)	40

ARC 800

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

Ground cable
93-40-020

Material	Welding range	Page
	M3 to M16 (Type RD) #4 to 5/8“ (Type RD)	39

IT 1002

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

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Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

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

Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

A 12-FL
All-rounder for workshop use.
Compact gun with very easy set-up without length compensation.

Ceramic leg assembly PSC-1
93-40-022

Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

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

Accessories ARC ceramic
Page 42 - 45

Material	Welding range	Page
	M3 to M12 mm #4 - 1/2“	46

A 12-FL
All-rounder for workshop use.
Compact gun with very easy set-up without length compensation.

Ceramic leg assembly PSC-1
93-40-022

Material	Welding range	Page
	Dia. 3 - 16 mm #4 - 5/8“	48

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

Ceramic leg assembly PSC-2
Page 42 - 45

Legend	
Material	Stud-/Welding material Mild steel Stainless steel

Configuration

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

Material	Diameter	Catalogue
	M6 to M24	Welding elements

Type RD

Threaded stud
with reduced shaft

Material	Diameter	Catalogue
	M6 to M16	Welding elements

Type MD (DD)

Virtually fully threaded stud

Material	Diameter	Catalogue
	M6 to M20	Welding elements

Type PD

Partially threaded stud

Material	Diameter	Catalogue
	6 to 16 mm	Welding elements

Type UD

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M6/Dia. 10 mm to M10/Dia. 16 mm	Welding elements

Type ID

Stud (pin) with internal thread

Material	Diameter	Catalogue
	10 to 25 mm	Welding elements

Type SD

Shear connector

Material	Welding range	Page
	M3 to M24 #4 to 1“	39

IT 2002

Energy package for larger studs, used on construction sites and workshops (IP 23).

Ground cable
for welding elements
to M20
(2 pcs.)
93-40-019

Ground cable
for welding elements
to M22
(2 pcs.)
93-40-072

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Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

A 12 with ceramic leg assembly PSC-1

All-rounder for workshop use.

Compact gun with easy set-up and length compensation for stable welding results.

Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

A 12-FL

All-rounder for workshop use.

Compact gun with very easy set-up without length compensation.

Material	Welding range	Page
	Dia. 3 to 16 mm #4 to 5/8“	48

A 16

All-rounder for construction sites.

Robust gun with plunge damper and length compensation. Level on rear of gun to line studs level.

Material	Welding range	Page
	Dia. 14 to 22 mm (25 mm) Dia. 9/16“ to 7/8“ (1“)	48

A 22

Heavy duty gun for construction sites.

Robust gun with plunge damper and length compensation.

Ceramic leg assembly PSC-1
93-40-022

Ceramic leg assembly PSC-2
Page 42 - 45

Accessories ARC ceramic
Page 42 - 45

Legend	
Material	Stud-/Welding material Mild steel Stainless steel

Configuration
Drawn arc stud welding with shielding gas

Material	Diameter	Catalogue
	M6 to M16	Welding elements

Type RD

Threaded stud with reduced shaft

Material	Diameter	Catalogue
	M6 to M16	Welding elements

Type MD (DD)

Virtually fully-threaded stud

Material	Diameter	Catalogue
	M6 to M20	Welding elements

Type PD

Partially threaded stud

Material	Diameter	Catalogue
	6 to 16 mm	Welding elements

Type UD

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M6/Dia. 10 mm to M10/Dia. 16 mm	Welding elements

Type ID

Stud (pin) with internal thread

Material	Welding range	Page
	M3 to M10 (Type RD) #4 to 7/16“ (Type RD)	38

Visar 650 with shielding gas

Tough! **Single phase** inverter (supply voltage range 100 to 240 V).
Compact, lightweight with high protection class (IP 44) for welding with shielding gas.

Ground cable
93-40-020

Material	Welding range	Page
	M4 to M12 (Type RD) #8 to 1/2“ (Type RD)	40

ARC 800

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

Ground cable
93-40-020

Material	Welding range	Page
	M3 to M16 (Type RD) #4 to 5/8“ (Type RD)	39

IT 1002

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

Material	Welding range	Page
	M3 to M24 #4 to 1“	39

IT 2002

Energy package for larger studs, used on construction sites and workshops (IP 23)

Ground cable
for welding elements to M20
(2 pcs.)
93-40-019

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Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

A 12 with shielding gas leg assembly PSS-2
All-rounder for workshop use.
Small, compact gun with easy set-up.
Length compensation for stable welding results.

Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

A 12-FL
All-rounder for workshop use.
Compact gun with very easy set-up without length compensation.

Shielding gas leg assembly PSS-2
93-40-021

Material	Welding range	Page
	M3 to M12 #4 to 1/2“	46

A 12 with shielding gas leg assembly PSS-2
All-rounder for workshop use.
Small, compact gun with easy set-up.
Length compensation for stable welding results.

Accessories shielding gas
Page 46 / 48

Material	Welding range	Page
	M3 to M12 mm #4 to 1/2“	46

A 12-FL
All-rounder for workshop use.
Compact gun with very easy set-up without length compensation.

Shielding gas leg assembly PSS-2
93-40-021

Material	Welding range	Page
	Dia. 3 to 16 mm #4 to 5/8“	48

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

Shielding gas leg assembly PSS-3
93-40-017

Legend	
Material	Stud-/Welding material Mild steel Stainless steel

Configuration
Short cycle stud welding

Material	Diameter	Catalogue
	M5 to M8	Welding elements

Type PS

Threaded stud with flange

Material	Diameter	Catalogue
	M6 to M8	Welding elements

Type SC

Paint clearing stud with flange

Material	Diameter	Catalogue
	5 mm	Welding elements

Type SC

Fir tree stud with flange

Material	Diameter	Catalogue
	3 to 8 mm	Welding elements

Type US

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M3/Dia. 5 mm - M6/Dia. 8 mm	Welding elements

Type IS

Stud (pin) with internal thread

Material	Welding range	Page
	M3 to M6 (for SC) #4 to 1/4“ (for SC)	38

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
	M3 to M6 (for SC) #4 to 1/4“ (for SC)	38

Visar 650 mit Schutzgas

Tough! **Single phase** inverter (supply voltage range 100 to 240 V).
Compact, lightweight with high protection class (IP 44) for welding with shielding gas.

Material	Welding range	Page
	M4 to M8 (for SC) #8 to 5/16“ (for SC)	40

ARC 800

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

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16“ (for SC)	39

IT 1002

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

Material	Welding range	Page
	M3 to M12 (for SC) #4 to 7/16“ (for SC)	39

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“).

Ground cable
93-40-020

Ground cable
93-40-020

Ground cable
93-40-020

Ground cable
for welding elements to M20
(2 pcs.)
93-40-019

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Material	Welding range	Page
	M3 to M6 (for SC) #4 to 1/4“ (for SC)	46

A 12 with centering tube PPR-2/SC

All-rounder for workshop use for short cycle with templates. Length compensation for stable welding results. No shielding gas protection.

Accessories
Page 46

Material	Welding range	Page
	M3 to M8 (M10) (for SC) #4 to 5/16“ (7/16“) (for SC)	46

A 12 with gas shroud PSS-1/SC

All-rounder for workshop use for short cycle with templates. Length compensation for stable welding results. With shielding gas protection.

Accessories
Page 46

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16“ (for SC)	46

A 12 with shielding gas leg assembly PSS-2

All-rounder for workshop use. Small, compact gun with easy set-up. Length compensation for stable welding results. Preferably stud length from 40 mm (1 1/2“) with diameter greater than 8 mm (5/16“).

Material	Welding range	Page
	M3 to M8 (M10) (for SC) #4 to 5/16“ (7/16“) (for SC)	46

CA 08 with centering tube PPR-2/SC

Low cost entry-level version used for Short Cycle welding with templates. Without length compensation and without shielding gas protection.

Accessories
Page 46

Material	Welding range	Page
	M3 to M8 (M10) (for SC) #4 to 5/16“ (7/16“) (for SC)	46

A 12 with centering tube PPR-2/SC

All-rounder for workshop use for short cycle with templates. Length compensation for stable welding results. No shielding gas protection.

Material	Welding range	Page
	M3 to M8 (M10) (for SC) #4 to 5/16“ (7/16“) (for SC)	46

CA 08 with gas shroud PSS-1/SC

Low cost entry-level version used for Short Cycle welding with templates. Without length compensation. With shielding gas protection.

Material	Welding range	Page
	M3 to M8 (M10) (for SC) #4 to 5/16“ (7/16“) (for SC)	46

A 12 with gas shroud PSS-1/SC

All-rounder for workshop use for short cycle with templates. Length compensation for stable welding results. With shielding gas protection.

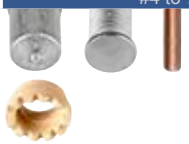
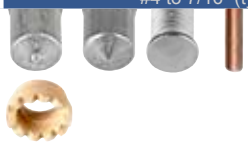
Accessories
Page 46

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16“ (for SC)	46

A 12 with shielding gas leg assembly PSS-2

All-rounder for workshop use. Small, compact gun with easy set-up. Length compensation for stable welding results. Preferably stud length from 40 mm (1 1/2“) with diameter greater than 8 mm (5/16“).

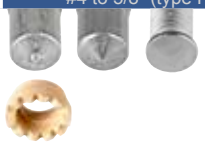
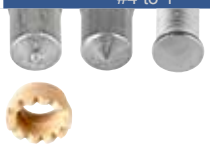
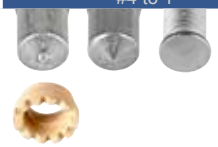
Legend	
Material	Stud-/Welding material Mild steel Stainless steel Aluminium

	Visar 650	Visar 650 shielding gas version
		 NEW
	• Tough! Single phase inverter (supply voltage range 100 to 240 V) • Compact, lightweight with high protection class (IP 44)	• 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)	M3 to M10 (type RD) #4 to 7/16“ (type RD)
		
Welding process	ARC, SC	ARC, SC
Welding material	● ●	● ● ●
Technology	Inverter	Inverter
Equipment		
Welding with ceramic ferrule	X	X
Welding with shielding gas	--	X
Process control	--	--
Display	--	LCD
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”	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.	M3 / #4 = 40 studs/min M8 / 5/16" = 12 studs/min
Welding current	650 A (max.)	650 A (max.)
Current adjustment range	100 to 650 A	100 to 650 A
Welding time	5 to 200 ms (stepless)	5 to 200 ms (stepless)
Primary power	100 to 240 V, 1 phase, 50/60 Hz, 16 AT (slow blow)	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)	16 A, 2-pin grounded safety plug (plug type F; CEE 7/4)
Connected load	3 kVA	3 kVA
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP Code	IP 44	IP 44
Dimension LxWxH (without handle)	474 x 337 x 351 mm / 18.66" x 13.27" x 13.82"	474 x 337 x 351 mm / 18.66" x 13.27" x 13.82"
Weight	18 kg / 39.68 lbs	18 kg / 39.68 lbs
Suitable guns	A 12, A 12-FL (welding cable not possible to extend)	A 12, A 12-FL (welding cable not possible to extend)

Order No.	Order No.
93-60-0650 (Plug E+F; Europe + China), **93-66-0650** (Plug B; USA, Canada + China)	**93-60-0652** (plug E+F; Europe + China, available from 2018)
93-40-020 (Ground cable, 5 m, 25 mm², 2 vice grips 10“)	**93-40-020** (Ground cable, 5 m, 25 mm², 2 vice grips 10“)
88-24-466 (Toolbag) (accessories and welding gun not included)	**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	IT 2002	IT 90
			
	• All-rounder for construction sites and workshops (IP 23) • Precise results through advanced inverter technology	• Energy Package for larger studs, used on construction sites and workshops	• Inverter (2 000 A) with options for 4 outputs, process monitoring and shielding gas
	M3 to M16 (type RD) #4 to 5/8“ (type RD)	M3 to M24 #4 to 1“	M3 to M24 #4 to 1“
			
Welding process	ARC, SC	ARC, SC	ARC, SC
Welding material	● ● ●	● ● ●	● ● ●
Technology	Inverter	Inverter	Inverter
Equipment			
Welding with ceramic ferrule	X	X	X
Welding with shielding gas	X	X	X
Process control	(optional)	--	X
Automation	(optional)	--	X
4 gun/head connections	--	--	(optional)
Display	Digital	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“	M3 to M24, dia. 2 to 22 mm / #4 to 1“, dia. 14 ga to 1"	M3 to M24, dia. 2 to 22 mm / #4 to 1“, dia. 14 ga to 7/8“
Welding rate	M12 / 1/2" = 25 studs/min	Dia. 22 / 7/8" = 6 studs/min	Dia. 22 / 7/8" = 6 studs/min
Welding current	1 000 A (max.)	2 000 A (max.)	2 000 A (max.)
Current adjustment range	100 to 1 000 A, electrode 50 to 400 A (stepless)	300 to 2 000 A (stepless)	300 to 2 000 A (stepless)
Welding time	5 to 1 000 ms (stepless)	5 to 1 500 ms (stepless)	5 to 1 500 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.“	400 V, 3 phases, 50/60 Hz, 63 AT (slow blow)
Primary plug	32 A (with 400 V mains)	63 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)	100 kVA (with 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 21
Dimension LxWxH (without handle)	660 x 280 x 340 mm / 26" x 11" x 13.4"	600 x 500 x 830 mm / 23.6" x 19.7" x 32.7"	650 x 560 x 1 290 mm / 25.6" x 22" x 50.8"
Weight	31 kg / 68.343 lbs	95 kg / 209.4 lbs	145 kg / 319.67 lbs (1 gun conn.) 165 kg / 363,76 lbs (4 gun conn.)
Suitable guns	A 12, A 12-FL, A 16, CA 08	A 12, A 12-FL, A 16, A 22	A 12, A 12-FL, A 16, A 22
	Order No.	**Order No.**	**Order No.**
	93-60-1202 (400 V) **93-66-1202** (480/460 V)	**93-60-2202** (Gas, 400 V) **93-66-2202** (Gas, 480/460 V)	**93-60-12096** (400 V - 1 gun connection) **93-60-42096** (400 V - 4 gun connection)
	**93-40-020** (Ground cable, 5 m, 25 mm², 2 vice grips 10“)	**93-40-019** (Ground cable for welding elements to M20, 2 pcs., 5 m, 70 mm², 1 vice grip 10“) **93-40-072** (Ground cable for welding elements to M22, 2 pcs., 5 m, 70 mm², 1 vice grip 10“)	**93-40-019** (Ground cable for welding elements to M20, 2 pcs., 5 m, 70 mm², 1 vice grip 10“) **93-40-072** (Ground cable for welding elements to M22, 2 pcs., 5 m, 70 mm², 1 vice grip 10“)

Legend

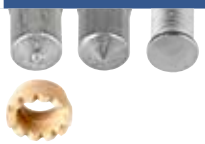
Welding process: ARC = Drawn arc stud welding, SC = Short cycle stud welding

● Mild steel ● Stainless steel ● Aluminium

ARC 800

- Robust transformer for workshops and construction sites (IP 23)
- Automation (optional)

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 (optional)
Display	Digital
Welding range	M3 to M12 (type RD), dia. 2 to 10 mm / #4 to 1/2“ (type RD), dia. 14 ga to 3/8“
Welding rate	7 to 17 studs/min (depending on application and stud dia.)
Welding current	800 A
Current adjustment range	--
Welding time	5 to 1 000 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	I_{1max} = 31 A
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	A 12, A 12-FL, A 16, CA 08

Order No.
93-10-0702A (400 V)
93-16-0702A (230/460 V)
93-15-0702A (575 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

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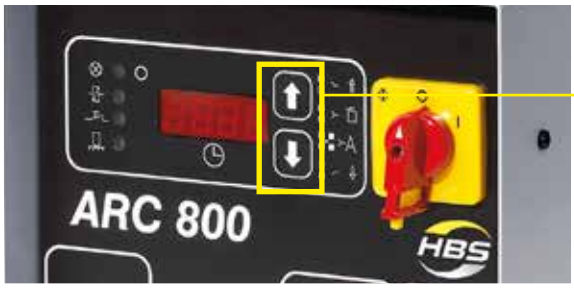
ARC 800

Simple operation



Two-button operation

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

High cycle sequence

Cooling channel

High cycle sequence through optimum cooling of the electrical components.

Overview Ceramic Application
Drawn arc stud welding

Suitable for		Chuck	Ceramic ferrule grip				
Stud type	Stud diameter	Order No.	Order No.	Ø Diameter	Included in accessories:		
RD 	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
MD (DD) 	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
PD 	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
UD 	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
ID 	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	80-31-262	Ø = 28 mm		93-41-016	

* Ceramic ferrule not standardised

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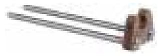
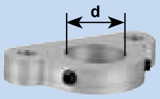
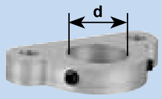
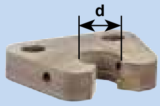
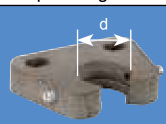
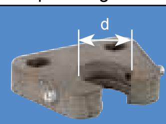
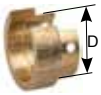
	 A 12 93-20-275 incl. leg assembly 93-40-022 (studs up to length 150 mm)	 A 12-FL 93-20-260  with leg assembly 93-40-022 (studs up to length 150 mm)	 A 16 93-20-280C  with leg assembly 93-40-028 (studs up to length 170 mm)	 A 16 93-20-280C  with leg assembly 93-40-040 (studs up to length 150 mm)	 A 22 93-20-290C  with leg assembly 93-40-040 (studs up to length 150 mm)
	 Ø = 22 mm	 Ø = 22 mm	 Ø = 22 mm	 Ø = 28 mm	 Ø = 28 mm

Overview Ceramic Application
Drawn arc stud welding

Suitable for		 **Chuck**	 **Ceramic ferrule grip**		
Stud type	Stud diameter	Order No.	Order No.	 Diameter	Included in accessories:
SD 	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
	22 mm / 7/8“	83-53-022	80-30-222	D = 29 mm	93-40-011

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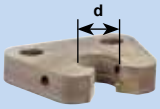
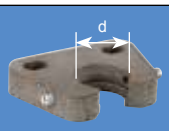
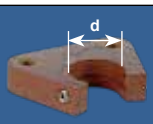
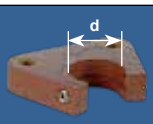
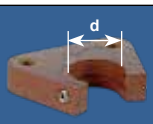
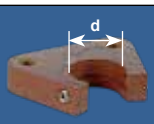
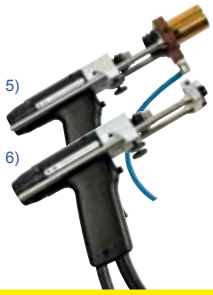
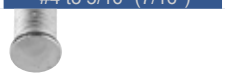
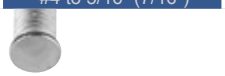
 A 16 93-20-280C  with leg assembly 93-40-028 (Studs up to length 170 mm)	 A 16 93-20-280C  with leg assembly 93-40-040 (Studs up to length 150 mm)	 A 16 93-20-280C  with leg assembly 93-40-041 (Studs up to length 150 mm)	 A 16 93-20-280C  with leg assembly 93-40-074 (Studs up to length 300 mm)	 A 22 93-20-290C  with leg assembly 93-40-041 (Studs up to length 150 mm)	 A 22 93-20-290C  with leg assembly 93-40-074 (Studs up to length 300 mm)
 d = 22 mm	 d = 28 mm	 d = 29 mm	 d = 29 mm	 d = 29 mm	 d = 29 mm
		only Ø 16	only Ø 16		

ARC Stud welding guns
Systems for drawn arc

	CA 08	A 12	A 12	A 12-FL
				
	• Entry-level version used for SC welding without length compensation	• Small gun with easy set-up for SC welding • Length compensation (stable welding results)	• Compact gun with easy set-up • Length compensation (stable welding results)	• Simple set-up of the gun without length compensation
	M3 to M8 (M10) #4 to 5/16" (7/16")	M3 to M8 (M10) #4 to 5/16“ (7/16“)	M3 to M12 #4 to 1/2"	Dia. 3 to 12 mm #4 to 1/2"
				
				
Suitable stud welding unit	ARC 800, Visar 650, IT 1002	ARC 800, Visar 650, IT 1002, IT 2002, IT 90	ARC 800, Visar 650, IT 1002, IT 2002, IT 90	ARC 800, Visar 650, IT 1002, IT 2002, IT 90
Welding process	SC	SC	ARC (ceramic, gas), SC	ARC (ceramic, gas)
Stud material	● ● (●)	● ● (●)	● ● (●)	● ●
Welding range	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 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"	M3 to M12 / dia. 2 to 12 mm #4 to 1/2“, dia. 14 ga to 1/2“ ARC ISO pins dia. 3 to 6 mm / dia. #4 to 1/4"
Stud length	6 to 40 mm / 0.24" to 1.57", (longer studs with optional accessories)	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)	10 to 400 mm / 0.39" to 15.74" (depending on leg assembly)
Stud type	Any type or shape (special chucks if required)	Any type or shape (special chucks if required)	Any type or shape (special chucks if required)	ARC insulation pin, ARC fiberfix pin, ARC threaded stud, ARC pin
Length compensation	--	3 mm / 0.12" automatic	3 mm / 0.12" automatic	--
Lift	Adjustment range 4.5 mm / 0.18", lockable	Adjustment range 3 mm / 0.12", lockable	Adjustment range 3 mm / 0.12", lockable	Fixed 6 mm / 0.24"
Spring force	Adjustable, arresting	Adjustable, arresting	Adjustable, arresting	Fixed
Welding cable	3 m / 9.84'; 25 mm², SK 50	4.8 m / 15.75', 35 mm², SK 50	4.8 m / 15.75', 35 mm², SK 50	5 or 10 m / 16.40' or 32.81‘, 35 mm², 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)	190 x 40 x 140 mm / 7.48" x 1.57" 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"	200 x 65 x 140 mm / 7.87" x 2.56" x 5.51"
Weight (without cable)	0.7 kg / 1.54 lbs	0.8 kg / 1.76 lbs	0.8 kg / 1.76 lbs	0.8 kg / 1.76 lbs
	Order No.	**Order No.**	**Order No.**	**Order No.**
	1) **92-20-281** (PPR-2/SC) 2) **92-20-283** (PSS-1/SC) **92-40-018** (Accessories CD M3 to M8)	3) **93-20-276** (PPR-2/SC) 4) **93-20-277** (PSS-1/SC) **92-40-018** (Accessories CD M3 to M8)	5) **93-20-274** (Gas) 6) **93-20-275** (Keramik) **93-40-114** (Accessories for shielding gas; M6 to M12) **93-41-012** (Accessories for ceramic; M6 to M12)	7) **93-20-260** (excluding leg assembly, 5 m cable length) **93-40-022** (leg assembly ceramic) **93-40-021** (leg assembly shielding gas) 8) **93-20-26010** (excluding leg assembly, 10 m cable length) **93-40-066** (leg assembly PSI-3, from l = 75 mm up to l = 280 mm)

Legend

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

● Mild steel ● Stainless steel (● Aluminium) *) *) only with shielding gas

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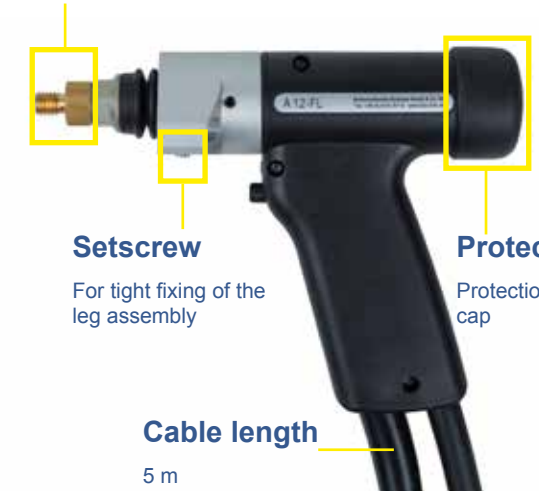
A 12-FL (Art-No. 93-20-260, excl. leg assembly)

Simple set-up of lift and protrusion by adjusting the leg assembly without length compensation

Including ARC-Adaptor

for use of ARC ceramic and ARC shielding gas chucks



Applications

Welding with ceramic ferrule

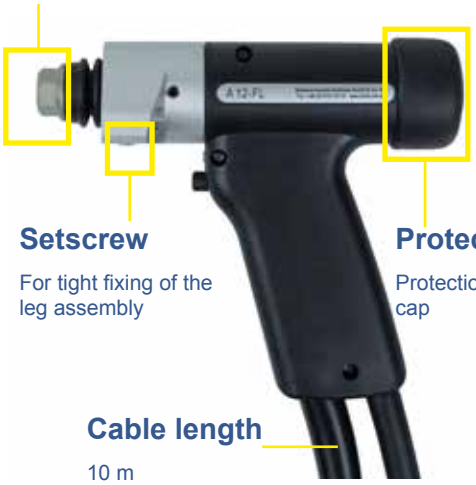
Welding with shielding gas

A 12-FL ISO (Art-No. 93-20-26010, excl. leg assembly)

Simple set-up of lift and protrusion by adjusting the leg assembly without length compensation

Excluding ARC-Adaptor

for use of ISO chucks



Application

Welding of ARC ISO pins

	A 16	A 22
		
	• All-rounder for construction sites • Now with new leg guidance • Robust gun with plunge damper and length compensation	• Heavy duty gun for construction sites • Now with new leg guidance • Robust gun with plunge damper and length compensation
	Dia. 3 to 16 mm #4 to 5/8"	Dia. 14 to 22 mm (25 mm) dia. 9/16" to 7/8" (1")
		
		
Suitable stud welding unit	ARC 800, IT 1002, IT 2002, IT 90	IT 2002, IT 90
Welding process	ARC (ceramic, gas), SC	ARC (ceramic)
Stud material	● ●	● ●
Welding range	Dia. 3 to 16 mm / #4 to 5/8"	Dia. 16 to 22 mm (dia. 25 mm) / dia. 5/8" to 7/8" (dia. 1")
Stud length	10 to 240 mm / 0.39" - 9.45" (depending on leg assembly)	20 to 300 mm / 0.79" - 11.81" (depending on leg assembly)
Stud type	Any type or shape (special chucks if required)	Any type or shape (special chucks if required)
Length compensation	6 mm / 0.24" automatic	9 mm / 0.35" automatic
Lift	Adjustment range 4 mm / 0.16", (0.25 mm / 0,01" steps, arresting)	Adjustment range 6 mm / 0.24", (0.25 mm / 0,01" steps, arresting)
Spring force	Oildamper	Adjustable oildamper
Welding cable	4.8 m / 15.75'; 50 mm² / 1/0, SK 50	4.8 m / 15.75'; 95 mm² / 3/0, SKK 95
IP Code	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
Dimension LxWxH (without cable, with foot piece)	260 x 74 x 220 mm / 10.24" x 2.91" x 8.66"	260 x 74 x 220 mm / 10.24" x 2.91" x 8.66"
Weight (without cable)	2 kg / 4.41 lbs	2 kg / 4.41 lbs

	Order No.	Order No.
	93-20-280C (excluding leg assembly)	**93-20-290C** (excluding leg assembly) **93-21-290C** (US version, excluding leg assembly)
	**Ceramic** Accessories and leg assemblies for ceramic see page 42 to 45	**Ceramic** Accessories and leg assemblies for ceramic see page 42 to 45
	**Shielding gas** **93-40-084** (Accessories for shielding gas; M12) **93-40-017** (Shielding gas leg assembly)	

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

● Mild steel ● Stainless steel

A 16 (Art-No. 93-20-280C, excl. leg assembly)

New unique leg assembly clamping, no tools needed
100 % of test customers were impressed

Level

On rear of gun to line studs level

Tool-free clamping

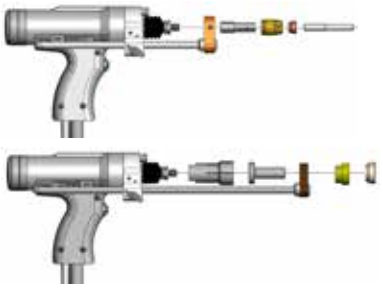
Simply tighten by hand and thus achieve an excellent holding force

Cable length

4.8 m

Applications

Welding of studs / shear connectors with ceramic ferrule



Welding with shielding gas

A 22 (Art.-No. 93-20-290C, excl. leg assembly)

New unique leg assembly clamping, no tools needed
100 % of test customers were impressed

Tool-free clamping

Simply tighten by hand and thus achieve an excellent holding force

Level

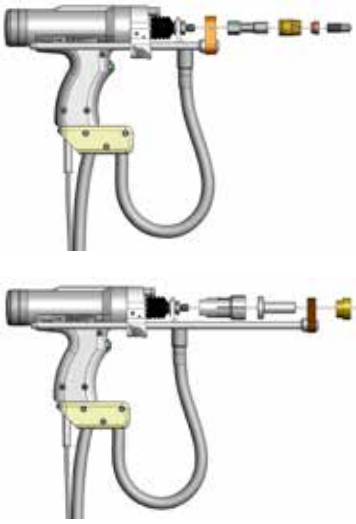
On rear of gun to line studs level

Cable length

4.8 m

Applications

Welding of studs / shear connectors with ceramic ferrule



ARC 800

ARC 800 with A 12 (Gas)	Order No.: ARC800AG+ includes:
	ARC 800 (Gas version) 400 V Order No. 93-10-0702A
	A 12 with shielding gas leg assembly PSS-2 Order No. 93-20-274
	Protective hose for A 12 / A 12-FL (5 m cable) Order No. 80-11-430
	Ground cable Order No. 93-40-020
	Gun accessories ARC Gas 6 mm to 12 mm Order No. 93-40-114

ARC 800 with A 12 (Ceramic)	Order No.: ARC800AK+ includes:
	ARC 800 (Gas version) 400 V Order No. 93-10-0702A
	A 12 with ceramic leg assembly PSC-1 Order No. 93-20-275
	Protective hose for A 12 / A 12-FL (5 m cable) Order No. 80-11-430
	Ground cable Order No. 93-40-020
	Gun accessories ARC Ceramic 6 mm to 12 mm Order No. 93-41-012

IT 1002

IT 1002 with A12 (Gas)	Order No.: IT1002A12G+ includes:
	IT 1002 / Gas version 400 V Order No. 93-60-1202
	A 12 with shielding gas leg assembly PSS-2 Order No. 93-20-274
	Protective hose for A 12 / A 12-FL (5 m cable) Order No. 80-11-430
	Ground cable Order No. 93-40-020
	Gun accessories ARC Gas 6 to 12 mm Order No. 93-40-114

IT 1002 with A 12 (Ceramic)	Order No.: IT1002A12K+ includes:
	IT 1002 / Gas version 400 V Order No. 93-60-1202
	A 12 with ceramic leg assembly PSC-1 Order No. 93-20-275
	Protective hose for A 12 / A 12-FL (5 m cable) Order No. 80-11-430
	Ground cable Order No. 93-40-020
	Gun accessories ARC Ceramic 6 mm to 12 mm Order No. 93-41-012

Visar 650

Visar 650 with A 12 (Gas)	Available in 2018 Order No.: VISAR650AG+ includes:
	Visar 650 (Gas version) Order No. 93-60-0652
	A 12 with shielding gas leg assembly PSS-2 Order No. 93-20-274
	Protective hose for A 12 / A 12-FL (5 m cable) Order No. 80-11-430
	Ground cable Order No. 93-40-020
	Toolbag Order No. 88-24-466
	Gun accessories ARC Gas 6 mm to 10 mm Order No. 93-40-128

Visar 650 with A 12 (Ceramic)	Order No.: VISAR650AK+ includes:
	Visar 650 (without shielding gas connection) Order No. 93-60-0650
	A 12 with ceramic leg assembly PSC-1 Order No. 93-20-275
	Protective hose for A 12 / A 12-FL (5 m cable) Order No. 80-11-430
	Ground cable Order No. 93-40-020
	Toolbag Order No. 88-24-466
	Gun accessories ARC Ceramic 6 mm to 10 mm Order No. 93-41-010

IT 2002

(Please order the gun accessories separately)

IT 2002 with A 22	Order No.: IT2002A22GK includes:
	IT 2002 400 V Order No. 93-60-2202
	A 22 Order No. 93-20-290C
	2 Ground cables Order No. 93-40-019
	Ceramic leg assembly PSC-2, leg 10 x 240 mm, d=29 mm Order No. 93-40-041

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.

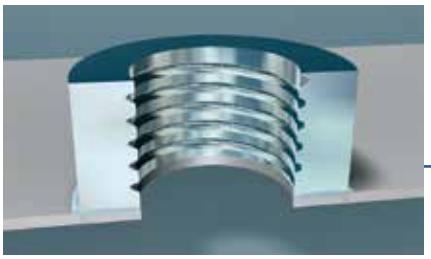
Regardless of whether only static stability is required or if additional, customerspecific connection properties (e.g., pressure tight) need to be fulfilled, you always achieve the best results − with considerable time and cost savings.

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.

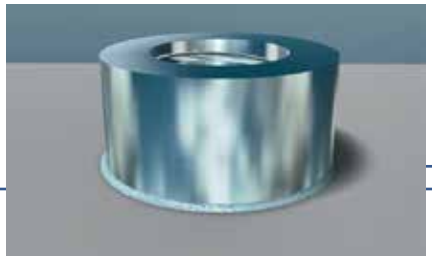
MARC provides the access to a new future to international trusts, medium-sized companies as well as to crafts enterprise.

Joining of welding elements

A burning arc is put into rotation in a controlled way. A ringshaped 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 workpiece or welding element (e.g. caused by distortion or welding spatters at the thread).



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

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.

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

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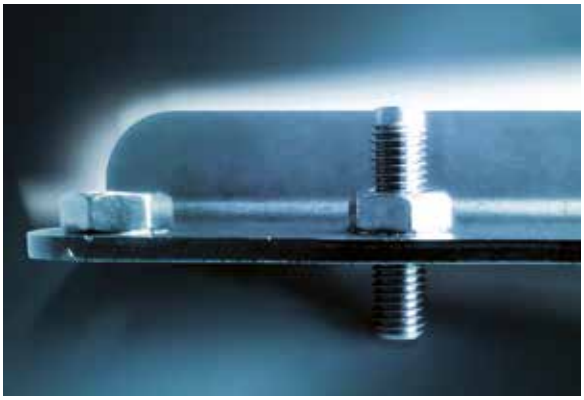
MARC

Best Solution for Best Results

Welding of pads and nuts on punched and unpunched metal sheets.

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



Technical Data
Nut welding systems for welding with magnetic rotating arc

MARC 1 A

Nut welding gun
AM 12 A

Welding unit
IT 1002

- For welding of welding nuts of type Hex^{Nut}
- For welding on perforated and unperforated metal sheets
- Especially suitable for workshop and assembly area
- Up to 4 welding nuts/min

Hex^{Nut}
M6 to M12

AM 12 A

Suitable stud welding unit	IT 1002 (see page 39)
Welding process	Magnetic rotating arc
Welding range	Welding nuts of type Hex^{Nut} M6 to M12
Wall thickness	1 to 3 mm / 0.04" to 0.12" (other sheet thicknesses on request)
Welding element material	A2-50
Welding element type	MARC welding nut - type Hex^{Nut}
Welding rate	Up to 4 welding nuts/min. The maximum welding sequence is limited by a number of parameters.
Length compensation	3 mm / 0.12", automatic
Lift	Adjustment range 3 mm / 0.12", lockable
Spring pressure	Adjustable, arresting
Welding cable	5 m / 16.40'
IP Code	IP 20
Workplace noise level	Up to 90 dB (A) may occur during welding
Dimension LxWxH	320 x 70 x 200 mm / 12.60" x 2.76" x 7.87" (without cable, with leg assembly)
Weight	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} M6
93-40-003008 for Hex^{Nut} M8
93-40-003010 for Hex^{Nut} M10
93-40-003012 for Hex^{Nut} M12

Dimension of welding element					
	Dimension	**M6**	**M8**	**M10**	**M12**
	Height Hex^{Nut}	8	8	9	11
	Widt across flats	AF14	AF14	AF17	AF19
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	Tightening torque in Nm (μ = 0,18)	3.8	9.5	19.0	33.0

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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 mm 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 1 000 A stepless remote controllable
Welding time	5 to 2 000 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 lift	120 mm, 4.72"
Height adjustment	250 mm, 9.84"

Order No.

According to project

Best Solution for Best Results

Automatically,

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faster, better

Configuration
Semi-automatic gun

Material	Diameter	Catalogue
	M3 to M10	Welding elements

Type PT

Threaded stud

Material	Diameter	Catalogue
	M4 to M8	Welding elements

CD Paint clearing threaded stud

Material	Diameter	Catalogue
	5 mm	Welding elements

CD Fir tree stud

Material	Diameter	Catalogue
	3 to 7.1 mm	Welding elements

Type UT

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M3/dia. 5 mm to M5/dia. 7.1 mm	Welding elements

Type IT

Stud (pin) with internal thread

Material	Welding range	Page
	M3 to M8 #4 to 5/16“	69

CDi 1502 AT

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

Material	Welding range	Page
	M3 to M8 (M10) #4 to 5/16“ (7/16“)	69

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“	69

CDMi 3202

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

Ground cable
92-40-095

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VBZ-3
Page 64

Material	Welding range	Page
	M3 to M8 #4 to 5/16“	65

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
	M3 to M8 #4 to 5/16“	65

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.

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

Configuration
Capacitor discharge stud welding - Components

Material	Diameter	Catalogue
	M3 to M10	Welding elements

Type PT

Threaded stud

Material	Diameter	Catalogue
	M4 to M8	Welding elements

CD Paint clearing threaded stud

Material	Diameter	Catalogue
	5 mm	Welding elements

CD Fir tree stud

Material	Diameter	Catalogue
	3 to 7.1 mm	Welding elements

Type UT

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M3/dia. 5 mm to M5/dia. 7.1 mm	Welding elements

Type IT

Stud (pin) with internal thread

Material	Welding range	Page
	M3 to M8 (M10) #4 to 5/16“ (7/16“)	69

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“	69

CDMi 3202

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

Ground cable
92-40-095

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Connecting line
Page 77

VBZ-3
Page 64

Ring initiator and coupling
Page 77

Working stroke with ring initiator
Page 77

Material	Welding range	Page
	M3 to M8 #4 to 5/16“	66

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

Material	Welding range	Page
	M3 to M8 #4 to 5/16“	66

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

Further accessories
Page 76-77

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

Configuration
Short cycle – Components

Material	Diameter	Catalogue
	M5 to M8	Welding elements

Type PS

Threaded stud with reduced shaft

Material	Diameter	Catalogue
	M6 to M8	Welding elements

SC Paint clearing threaded stud

Material	Diameter	Catalogue
	5 mm	Welding elements

SC Fir tree stud

Material	Diameter	Catalogue
	3 to 8 mm	Welding elements

Type US

Unthreaded stud (pin)

Material	Diameter	Catalogue
	M3/dia. 5 mm to M6/dia. 8 mm	Welding elements

Type IS

Stud (pin) with internal thread

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16“ (for SC)	71

IT 1002

All-rounder for workshops (IP 23). Precise welding results through advanced inverter technology.

Material	Welding range	Page
	M3 to M10 (for SC) #4 to 7/16“ (for SC)	71

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“).

Welding current sensor
Page 77

Ground cable
93-40-020

Ground cable
(2 pcs.)
93-40-072

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Connecting line
Page 77

VBZ-3
Page 64

Ring initiator and coupling
Page 77

Working stroke with ring initiator
Page 77

Material	Welding range	Page
	M3 to M8 #4 to 5/16“	66

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

Material	Welding range	Page
	M3 to M8 #4 to 5/16“	66

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

Further accessories
Page 76-77

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

VBZ-3

- 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, dia. #4 to 5/16" (other diameter on request)
Stud length	8 to 50 mm / 0.31" - 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)	**94-66-103B** (for dia. 3 mm)
94-63-104B (for dia. 4 mm)	**94-66-104B** (for dia. 4 mm)
94-63-105B (for dia. 5 mm)	**94-66-105B** (for dia. 5 mm)
94-63-106B (for dia. 6 mm)	**94-66-106B** (for dia. 6 mm)
94-63-171B (for dia. 7,1 mm)	**94-66-171B** (for dia. 7,1 mm)
94-63-108B (for dia. 8 mm)	**94-66-108B** (for dia. 8 mm)
94-63-153B (for fir tree stud dia. 5)	**94-66-153B** (for fir tree stud dia. 5)
94-63-163B (for fir tree stud dia. 6)	**94-66-163B** (for fir tree stud dia. 6)

Change over kit (for 230 V and 115 V)

94-43-203B (dia. 3)
94-43-204B (dia. 4)
94-43-205B (dia. 5)
94-43-206B (dia. 6)
94-43-271B (dia. 7,1)
94-43-208B (dia. 8)
94-43-253B (dia. 5 fir tree stud)
94-43-263B (dia. 6 fir tree stud)

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PAH-1

- 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 AT, CDMi 2402, CDMi 3202, ARC 800, IT 1002, IT 90	CDi 1502 AT, CDMi 2402, CDMi 3202, ARC 800, IT 1002, IT 90
Welding process	CD, SC	CD, SC
Stud material		
Welding range	M3 to M8, dia. 3 to 8 mm / #4 to 5/16", dia. #4 to 5/16"	M3 to M8, dia. 3 to 8 mm / #4 to 5/16", dia. #4 to 5/16"
Stud length	8 to 30 mm / 0.31" to 1.18"	8 to 30 mm / 0.31" to 1.18"
Stud type	Welding elements with flange according to current standards (other studs on request)	Welding elements with flange according to current standards (other studs on request)
Lift	Adjustment range 5 mm / 0.20"	Adjustment range 5 mm / 0.20"
Welding cable	3 m / 9.84'	3 m / 9.84'
IP Code	IP 20	IP 20
Workplace noise level	> 90 dB (A) may occur during welding	> 90 dB (A) may occur during welding
Dimension LxWxH	295 x 60 x 170 mm / 11.61" x 2.36" x 6.70" (without cable)	295 x 60 x 170 mm / 11.61" x 2.36" x 6.70" (without cable)
Weight	1.4 kg / 3.09 lbs (without cable)	1.4 kg / 3.09 lbs (without cable)

Order No.	Order No.
94-20-025 (Tripod) Equipped for one standard stud dimension according to customer request (possible equipment see accessories catalogue)	**94-20-028** (Centering device dia. 30 mm) Equipped for one standard stud dimension according to customer request (possible equipment see accessories catalogue)
Sets **CDi1504PAH+** (CDi 1502 AT, 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)	**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)	**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**	**Quick-Boy**
92-40-140 for PAH-1	**92-40-140** for PAH-1

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

Mild steel · Stainless steel · Aluminium · Brass

	KAH 412	KAH 412 LA
		
	• Setting the lift and plunge via digital display (selection mm/inch) • No length compensation	• Setting the lift via adjustment screw (increments 0.1 mm) • Length compensation of length variances in studs height and variances of the workpiece
	M3 to M8 (10 to 12.7 mm) #4 to 5/16" (3/8" to 1/2")	M3 to M8 (10 to 12.7 mm) #4 to 5/16" (3/8" to 1/2")
		
Welding process	CD - Contact welding (optional) CD - Gap welding SC, ARC (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)	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)	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)	Welding elements with flange according to current standards (other studs on request)
Stroke/Length compensation	--	5/2 mm, 4/3 mm / 0.2"/0.08", 0.16"/0.12"
Spring pressure	Arresting	Arresting
IP Code	IP 20	IP 20
Workplace noise level	> 90 dB (A) may occur during welding	> 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	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	3.4 kg / 7.50 lbs
	Order No.	**Order No.**
	94-31-412C Equipped for one standard stud dimension according to customer request (possible equipment see accessories catalogue page 98-105)	**94-37-412** (with length compensation) Equipped for one standard stud dimension according to customer request (possible equipment see accessories catalogue page 98-105)
	**Assortment box** (Pin stop, guide bushing, mounting tool, feed tube, socket wrench, plunger, pin)	**Assortment box** (Pin stop, guide bushing, mounting tool, feed tube, socket wrench, plunger, pin)
	84-41-312A (dia. 3 to 8 mm, length 6 to 40 mm, for manual stud feeding by hand) **84-42-312A** (dia. 3 to 8 mm, length 6 to 40 mm, for automatic stud feeding by VBZ-3)	**84-41-312A** (dia. 3 to 8 mm, length 6 to 40 mm, for manual stud feeding by hand) **84-42-312A** (dia. 3 to 8 mm, length 6 to 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

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HBS precision welding head

KAH 412 and KAH 412 LA

(KAH 412 LA with length compensation: Application short cycle)

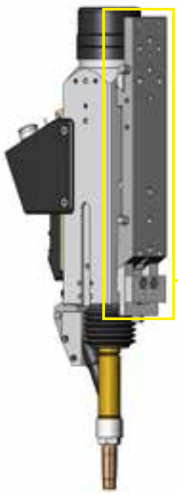
KAH 412:
Spring setting read out on scale

KAH 412 and KAH 412 LA:
Push button locking system for feed tube

KAH 412:
Digital display for lift and plunge adjustment

KAH 412 and KAH 412 LA:
Piston is guided in blacklash free linear ball bearings which guarantees highest precision and reproducible welding quality

KAH 412 and KAH 412 LA:
Welding range:
M3 to M8, dia. 3 to 8 mm /
#4 to 5/16", dia. #4 to 5/16"
(dia. 10/12/12.7 mm / dia. 3/8" to 1/2" with modification only)
stud length: 8 to 40 mm



KAH 412 and KAH 412 LA:
Prisma shaped quick exchange system with adaptor plate

Automatic components

	Stud welding machines	Welding process	Order No.	Primary power	Automatic	Charging units	Gas	Welding gun or head connection	Process control	Emergency stop function
	**CDi 1502 AT** M3 to M8 #4 to 5/16“	CD	**92-10-1504B**	230 V	X	1	--	1*)	--	--
	**CDMi 2402** M3 to M8 (M10 limited) #4 to 5/16“ (7/16“ limited)	CD	**92-10-22412B** **92-12-22412B**	230 V 115 V	X	2	--	1	X	--
	**CDMi 3202** M3 to M10 #4 to 7/16“	CD	**92-10-23212B** **92-12-23212B**	230 V 115 V	X	3	--	1	X	--
	**ARC 800** Dia. 2 - 10 mm 14 ga - 3/8“	ARC SC	**93-10-0704A**	400 V	X	--	X	1	--	--
	**IT 1002** Dia. 2 mm to M16 (Type RD) 14 ga - 5/8“ (Type RD)	ARC SC	**93-60-1206** **93-66-1206**	400 V 480/460 V	X	--	X	1	X	--
			93-60-1208	400 V	X	--	X	1	X	X
	**IT 90** Dia. 2 - 22 mm 14 ga - 7/8“	ARC SC	**93-60-12096**	400 V	X	--	X	1	X	--
			93-60-12097	400 V	X	--	X	1	X	X
			93-60-42096	400 V	X	--	X	4	X	--
			93-60-42097	400 V	X	--	X	4	X	X

*) only welding gun possible

Welding unit sets

CDi 1502 AT with PAH-1	Order No.: CDi1504PAH+ includes:
	CDi 1502 AT 230 V Order No. 92-10-1504B
	PAH-1 Order No. 94-20-025
	Ground cable Order No. 92-40-095

CDMi 2402 with PAH-1	Order No.: CDMi242AT+ includes:
	CDMi 2402 230 V Order No. 92-10-22412B
	PAH-1 Order No. 94-20-025
	Ground cable Order No. 92-40-095

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international@hbs-info.com

	CDi 1502 AT	CDMi 2402	CDMi 3202
			
	• 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", dia. 14 ga to 5/16"	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. 2 to 10 mm #4 to 7/16", dia. 14 ga to 3/8"
Welding rate	M3 / #4 = 40 studs/min (voltage 60 V) M8 / 5/16“ = 14 studs/min (voltage 200 V) M8 / 5/16“ = 12 studs/min (voltage 220 V)	M3 / #4 = 40 studs/min (voltage 60 V) M8 / 5/16" = 21 studs/min (voltage 170 V) (M10 / 7/16" = 17 studs/min (voltage 210 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)
Capacitance	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
Welding time	1 to 3 ms	1 to 3 ms	1 to 3 ms
Energy	1 600 Ws	2 400 Ws/800 Ws*	3 200 Ws/1 600 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, 50/60 Hz, 10 AT (slow blow)	230 V**, 50/60 Hz, 10 AT (slow blow) **alternative primary power see „Order No.“	230 V**, 50/60 Hz, 10 AT (slow blow) **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 21	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.	**Order No.**	**Order No.**
	92-10-1504B (230 V)	**92-10-22412B** (230 V) **92-12-22412B** (115 V)	**92-10-23212B** (230 V) **92-12-23212B** (115 V)

Legend

Welding process: CD = Capacitor discharge stud welding

Mild steel · Stainless steel · Aluminium · Brass

ARC 800

- Robust transformer with automatic function

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

(Ceramic ferrule only for manual application)

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	M3 to M12 (type RD), dia. 2 to 10 mm / #4 to 1/2” (type RD), dia. 14 ga to 3/8”
Welding rate	7 to 17 studs/min (depending on application and stud dia.)
Welding rate	800 A
Current adjustment range	--
Welding time	5 to 1 000 ms (stepless)
Primary power	400 V, 3 phases, 50/60 Hz, 35 AT (slow blow)
Primary plug	32 A (at 400 V mains)
Connected load	I_{1max} = 31 A
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)

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

Mild steel Stainless steel

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international@hbs-info.com

	IT 1002	IT 90
		
	• All-rounder for automation • Precise welding results through advanced inverter technology	• 4 outputs (optional), process monitoring and shielding gas • For critical surfaces (e.g. galvanised)
	M3 to M16 (type RD) #4 to 5/8“ (type RD)	M3 to M24 #4 to 1“
		
	 (Ceramic ferrule only for manual application)	 (Ceramic ferrule only for manual application)
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	--	(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“	M3 to M24, dia. 2 to 22 mm / #4 to 1“, dia. 14 ga to 7/8“
Welding rate	M12 / 1/2" = 25 studs/min	Dia. 22 / 7/8" = 6 studs/min
Welding current	1 000 A (max.)	2 000 A (max.)
Current adjustment range	100 to 1 000 A, electrode 50 to 400 A (stepless)	300 to 2 000 A (stepless)
Welding time	5 to 1 000 ms (stepless)	5 to 1 500 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)
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 23	IP 21
Dimension LxWxH (without handle)	660 x 280 x 340 mm / 26" x 11" x 13.4"	650 x 560 x 1 290 mm / 25.6" x 22" x 50.8"
Weight	31 kg / 68.343 lbs	145 kg / 319.67 lbs (1 gun conn.) 165 kg / 363.76 lbs (4 gun conn.)
Suitable guns/heads	PAH-1, KAH 412, KAH 412 LA	PAH-1, KAH 412, KAH 412 LA
	Order No.	**Order No.**
	93-60-1206 (400 V – process control) **93-66-1206** (480/460 V – process control)	**93-60-12096** (400 V – 1 gun connection) **93-60-42096** (400 V – 4 gun connection)

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

Mild steel | Stainless steel | Aluminium

IPC 90

- System integrators for integration into production lines
- Stud welding process self-sufficiently controlled by HBS components
- Parametermonitoring for optimal welding results
- For control of up to 5 welding heads

	M3 to M8 #4 to 5/16"

Welding process	SC, PARC
Welding material	
Welding range	M3 to M8, dia. 3 to 8 mm #4 to 5/16", dia. #4 to 5/16"
Stud length	8 to 40 mm / 0.31" - 1.57"
Welding capacity	Up to 20 studs/min
Welding current / Short Cycle	300 to 2 000 A (stepless)
Welding time / Short Cycle	5 to 1 000 ms (stepless)
Welding current / PARC	50 to 2 000 A (stepless)
Welding time / PARC	5 - 150 ms (stepless)
Stud feeding	Automatic stud feeding
Display	Coloured
Pneumatic working stroke	Max. Z = 120 mm Max. Z = 4.92"
Welding head	**KAH 612**
Max. number of stud welding heads	5
Connections	Electrical: 400 V, 3 phases, 50/60 Hz; 35 AT (32 AT), Pneumatic: 6 bar
Cooling type	F (temperature controlled cooling fan)
Primary plug	32 A
IP Code	IP 21
Dimension LxWxH	Approx. 950 x 780 x 1 150 mm Approx. 37.40" x 30.71" x 45.28"
Weight	Approx. 220 kg / 485 lbs

Order No.
According to project

KAH 612

Legend: Welding process: SC = Short cycle stud welding, PARC = Welding with adjustable welding curve

Mild steel Stainless steel Aluminium

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CPW Series

- Entry-level CNC stud welding machine with one 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"
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 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
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	1 600 x 950 x 1 900 mm / 63” x 37.4” x 74.8”
Weight	Approx. 640 kg / 1410,96 lbs

Order No.
According to project

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); (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 30 studs/min (depending on configuration)
Traverse speed	Up to 48 m/min / 157.48'/min
Stud feeding	Automatic stud feeding (up to 3 different stud lengths per welding head)
Positioning accuracy of welded stud	± 0,2 mm / ± 0,008" (depending on work piece and stud geometry)
Positioning and repeat accuracy	± 0,05 mm / ± 0,002"
Stud welding head	KAH 412 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	2400 x 2700 x 3100 mm / 94.49" x 106.30" x 122.05" (MPW 1010); 3600 x 2700 x 3100 mm / 141.73" x 106.30“ x 122.05“ (MPW 2010)

Order No.
According to project

HBS Bolzenschweiss-Systeme GmbH & Co. KG
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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

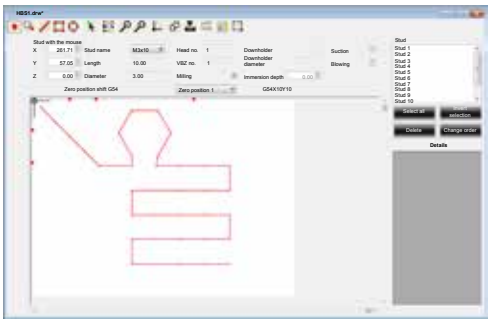
Independent testing and, if necessary, realignment of the position of the welding heads of the MPW series after changing welding heads.

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

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

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

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

Working stroke complete, with height adjustment (125/45 mm) **without** 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

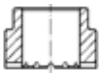
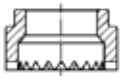
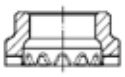
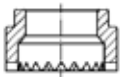
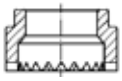
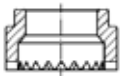
Device for pneumatic fixture workpiece	for:	KAH 412 to hold down the workpiece
Stroke 100 mm		80-08-702

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
		88-22-301B

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

CAD-Software	for:	MPW series creating welding programs for MPW control
		80-50-0660

RDS Software	for:	MPW series 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]	 PT	—
	Unthreaded stud (pin) [2]	 UT	—
	Stud with internal thread [2]	 IT	—
	Ground clip single style	 F1	—
	Ground clip double style	 F2	—
Drawn arc stud welding with ceramic ferrule or shielding gas - ARC	Threaded stud with reduced shaft [2]	 RD	 RF
	Virtually fully-threaded stud	 MD (DD)	 MF (UF)
	Partially threaded stud (pitch) [2]	 PD	 PF
	Unthreaded stud (pin) [2]	 UD	 UF
	Stud with internal thread [2]	 ID	 UF
	Shear connector [2]	 SD	 UF/DF
Short cycle drawn arc stud welding - SC	Threaded stud (pitch) with flange [2]	 PS	—
	Unthreaded stud (pin) with flange [2]	 US	—
	Stud with internal thread and flange [2]	 IS	—

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

[2] according to standard DIN EN ISO 13918

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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.
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