



WELDING  
TOGETHER

GENERAL  
CATALOGUE  
2 0 1 4



SINCE 1950



CEA Spa, founded by Ezio Annettoni in 1950, is one of the worldwide leaders for the design and manufacture of Arc and Resistance welding machines and Plasma cutting equipment conceived for the industrial market.

### INNOVATION AND TECHNOLOGY

Unique for its extensive range, CEA is always ahead in technological innovation, being large resources constantly invested in research and development. Excellent welding characteristics, continuous innovation, reliability, design, strict adherence to the international standards are the secret of CEA's growing worldwide success.



### PRODUCT CARE

Severe controls in the entire manufacturing process, from incoming material reception to the final strict computerized quality checks on the finished product, ensure the maximum care in the production, fully satisfying the Total Quality criteria; as a matter of facts CEA, first among the Italian welding companies, reached the prestigious ISO 9001 certification since early 1994.



### PEOPLE

People are no doubt number one resource for CEA and a strong team spirit – easily detectable at all levels in the entire organization - characterizes anybody working in CEA. All customers, dealers and after sale service centers become real partners for CEA. "Welding together", CEA's play off, well emphasizes the company philosophy committed to establish a solid and long lasting relationship, as in a partnership, with all dealers and users of CEA products.

### WORLDWIDE PRESENCE

Thanks to its worldwide experience, CEA works together with its worldwide distributors and service centres scattered in over 70 countries in order to satisfy, as main objective, all the various needs of all markets.

CEA's service centres, highly qualified and constantly updated by means of a meticulous on-line communication network, ensure a prompt and efficient after sale intervention, with the primary goal of immediately solving any problem and providing the final user best possible service.





## ... USER FRIENDLY WEB SITE

Take advantage of the growing opportunities offered by the network, in order to build a closer dialogue with the customers. With this objective in mind, all contents, images and CEA web surfing criteria have been redefined.

For more detailed information and stay up-to-date pls. visit [www.ceaweld.com](http://www.ceaweld.com) in order to find latest news, upcoming events, an innovative product selector, images, videos and many other details.

The web reserved area is particularly rich of substantial contents: an intranet with dedicated customized services for all CEA partners.



## A LOW-ENERGY IMPACT FIRM

Care for the environment has always been a fundamental value in the CEA corporate philosophy.

This is proven by a keen attention towards an eco-sustainable production process, care in the selection of components, use of paints with low environmental impact and so on. The evolution of CEA's manufacturing trend, focusing towards inverter technology, has allowed to greatly improve the energy efficiency of the products.

CEA GOES GREEN is the hallmark of this approach and is reflected into latest generation inverter power sources which, versus traditional equipment, ensure a considerable energy saving:

- Low energy consumption
- Compliance with "green" environment-friendly norms (es. RoHS)
- Reduced weight and dimensions for lower shipping costs, disposal and recycling (WEEE)

An additional investment in the pursuit of "eco-sustainability" is represented by an important 200 kWp photovoltaic plant which has made the company virtually self-sufficient from an energetic perspective. praticamente autosufficiente dal punto di vista energetico.





## ISO 9001

Always concerned about quality, CEA has its quality management system ISO 9001 certified since 1994. This is a guarantee of an ongoing commitment of the entire company for a continuous improvement in its products and business processes, leading to the full satisfaction of its customers.

## CE MARKING

All CEA products are CE marked, therefore compliant with all EU Directives and Standards imposing such utilization from design, manufacture and installation of the equipment up to its final disposal.

In particular CE marking implies the conformity to the following main Directives:

### 2006/95/EEC (LVD)

The Low Voltage Directive (LVD) defines the compliance with numerous regulations to safeguard health and safety for the operator and also regarding the electrical dimensioning of the equipment.

### 2004/108/EEC (EMC)

The Directive on Electromagnetic compatibility (EMC) defines the effects of electromagnetic emissions and the immunity degree. This means that the equipment shall not emit any electromagnetic disturbances and , in turn, must be immune to any interference from other equipment or from the mains supply.

CEA power sources are designed for use in industrial environments: **EMC (CISPR 11) A Class.**

### 2006/42/EEC (MD – Machine Directive)

Machine Directive (MD) defines the essential requirements related to design, manufacture and installation in order to improve safety of the products placed on the market.

**MD is applicable only to electric or pneumatic operated resistance welding equipment.**

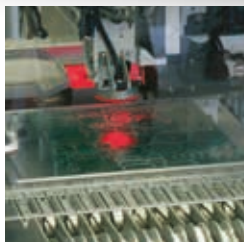
CEA products have been designed and built according to the following harmonised standards:

## ARC WELDING

- IEC 60974-1 EN 60974-1 – Welding power sources.
- IEC 60974-2 EN 60974-2 – Liquid cooling systems.
- IEC 60974-3 EN 60974-3 – Arc striking and stabilising devices.
- IEC 60974-5 EN 60974-5 – Wire feeders.
- IEC 60974-7 EN 60974-7 – Torches.
- IEC 60974-10 EN 60974-10 – Electromagnetic compatibility (EMC).

## RESISTANCE

- IEC 62135-1 EN 62135-1 - Safety requirements for design, manufacture and installation
- IEC 62135-2 EN 62135-2 - Electromagnetic compatibility (EMC)



## ARC WELDING

<b>MMA</b>	<b>.7</b>	<b>MIG/MAG</b>	<b>.21</b>	<b>TIG</b>	<b>.71</b>
PROJECT	.8	SMARTMIG	.22	RAINBOW 170 HF - 200 HF	.72
RAINBOW	.10	COMPACT - COMPACT SYN	.24	RAINBOW 201 HF - 202 HF PRO	.74
MATRIX 2200 E	.12	MAXI	.28	MATRIX 2200 HF	.76
MATRIX E	.14	ECHO	.32	MATRIX HF	.80
ARCTRONIC	.16	<b>MIG/MAG - MULTIPROCESS</b>		MATRIX 2200 AC/DC	.84
TM - ARC - TRIARC	.18	TREO 1650 SYNERGIC	.36	MATRIX AC/DC	.88
		TREO 1800 SYNERGIC	.38		
		STEP INTO THE FUTURE	.40		
		vision.PIPe	.42		
		vision.COLD	.43		
		vision.ULTRASPEED	.44		
		vision.POWER	.45		
		CONVEX BASIC	.46		
		CONVEX 420 YARD	.50		
		CONVEX VISION	.54		
		<b>MIG PULSE - MULTIPROCESS</b>			
		DIGISTAR	.60		
		DIGITECH VISION PULSE	.64		

## PLASMA CUTTING

<b>PLASMA</b>	<b>.93</b>				
PLASMA CUT (1PH)	.94	PLASMA CUT (3PH)	.96	PLASMA PLUS	.98

## AUTOMATION

<b>AUTOMATION AND ROBOTICS</b>	<b>.99</b>				
MIG/MAG - MIG PULSE	.100	TIG	.103	PLASMA	.103

## RESISTANCE WELDING

<b>RESISTANCE WELDING</b>	<b>.105</b>				
DUAL	.106	MF	.124	SRT - SQ/A	.142
X-GUN / C-GUN	.108	PPN 3F CC	.130	SQ/AS	.143
Z - NKL	.112	VOYAGER	.134	SPECIAL VERSIONS	.144
BSW	.116	RT - RL	.138		
PPN	.120	TR - N - SQ	.140		

Technical features might change without notice.

# PROJECT 1600



**PROJECT  
RAINBOW  
MATRIX 2200 E**

**MATRIX E  
ARCTRONIC  
ARC - TRIARC - TM**

	 Ø 6,0 mm Ø 5,0 mm Ø 4,0 mm Ø 3,2 mm Ø 2,5 mm Ø 2,0 mm	MAX MIN I <sub>2</sub>				DC + -	AC ~	 Rutile	Low Hydrogen	Cellulosic	CrNi
<b>PROJECT</b>											
PROJECT 1300	130 A 25%		■		■	■		●	●		▲
PROJECT 1600	160 A 25%		■		■	■		●	●		▲
PROJECT 2100	210 A 30%		■		■	■		●	●		▲
PROJECT 1650	160 A 30%		■		■	■		●	●		▲
<b>RAINBOW</b>											
RAINBOW 150	150 A 30%		■		■	■		●	●		●
RAINBOW 153 Cell	150 A 20%		■		■	■		●	●	●	●
RAINBOW 180	180 A 20%		■		■	■		●	●		●
RAINBOW 183 Cell	180 A 20%		■		■	■		●	●	●	●
<b>MATRIX 2200 E</b>											
MATRIX 2200 E	180 A 30%		■		■	■		●	●	●	●
<b>MATRIX E</b>											
MATRIX 2700 E	270 A 40%			■	■	■		●	●	●	●
MATRIX 2700 E SV (400 V)	270 A 30%			■	■	■		●	●	●	●
MATRIX 420 E	420 A 40%			■	■	■		●	●	●	●
<b>ARCTRONIC</b>											
ARCTRONIC 426	400 A 35%			■		■		●	●	●	●
ARCTRONIC 626	600 A 35%			■		■		●	●	●	●
<b>ARC - TRIARC</b>											
ARC 253	220 A 35%			■		■		●	▲		▲
ARC 303	260 A 35%			■		■		●	▲		▲
ARC 403	350 A 35%			■		■		●	▲		▲
ARC 503	400 A 35%			■		■		●	▲		▲
TRIARC 306/L	260 A 35%			■		■		●	●	●	●
TRIARC 406/L	400 A 35%			■		■		●	●	▲	●
TRIARC 506/L	500 A 35%			■		■		●	●	▲	●
<b>TM</b>											
TM 401	350 A 35%		■				■	●			

I<sub>2</sub> @ 100%
  I<sub>2</sub> @ 60%
  I<sub>2</sub> @ X%
  excellent
  good



## INVERTER POWER SOURCE FOR ELECTRODE WELDING

PROJECT 1300, 1600, 2100, 1650 are DC latest generation 100 kHz inverter power sources, built in an innovative, ergonomic and robust chassis standard equipped with a carrying belt for easy transportation. Their very compact structure, lightness and user friendly feature make them ideal for any professional use with any type of basic and rutile electrodes for maintenance and light fabrication works.

The excellent welding characteristics in MMA and TIG welding with "Lift" mode arc striking, coupled with IP 23 protection class, enable their use in any work environment.



CC

Inverter

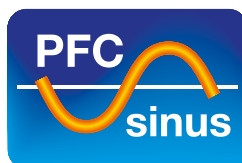
DC  
+ -

- ▶ Excellent welding characteristics with any type of electrode
- ▶ Low energy consumption and high electrical efficiency
- ▶ 2 available welding processes: MMA -TIG
- ▶ Possibility to work with adequate size power generator sets
- ▶ Shock-proof fibre compound main structure
- ▶ Control panel protected against accidental impact
- ▶ Carrying belt for easy transportation
- ▶ Reduced weight and size and easy-to-carry
- ▶ Automatic Hot Start to improve the arc striking with the most difficult electrodes
- ▶ Built-in Arc Force to automatically select the best welding arc dynamics
- ▶ Electrode Antisticking function

### PFC - POWER FACTOR CORRECTION

(Project 1650)

The wave shape of the current drawn from the mains is made sinusoidal by the PFC device with a consequent total lack of harmonic disturbances in the mains and consumption optimization, which enables to utilize the power source at full range on a 16 A fuse. The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets.



## CONTROL PANEL



1. Welding current electronic adjustment
2. Mains voltage LED
3. Thermostatic protection LED
4. Welding process selector switch
  - MMA: welding of coated electrodes: rutile, basic and stainless steel
  - TIG: by the innovative "Lift" mode system, quick and precise striking is achieved, by minimising any tungsten inclusion and avoiding any incision onto the workpiece



## ACCESSORIES

- Fibre carry case with accessories
- Bag for power source and accessories



TECHNICAL DATA		PROJECT			
		1300	1600	2100	1650 
Single phase input 50/60 Hz	V $\begin{smallmatrix} +10\% \\ -10\% \end{smallmatrix}$	230	230	230	230
Input Power @ I <sub>2</sub> Max	kVA	7,3	9,8	9,9	5,5
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	16	25	16
Power Factor / cos $\varphi$		0,67/0,99	0,67/0,99	0,68/0,99	0,99/0,99
Efficiency Degree		0,81	0,82	0,86	0,81
Open circuit voltage	V	60	60	60	68
Current range	A	5 - 130	5 - 160	5 - 210	5 - 160
Duty cycle at (40°C)	A 100%	80	90	120	100
	A 60%	100	105	145	115
	A X%	130 (25%)	160 (25%)	210 (30%)	160 (30%)
Standards		EN 60974-1 • EN 60974-10			
					
Protection Class	IP	23 S	23 S	23 S	23 S
Dimensions	↗ mm	315	315	365	400
	→ mm	135	135	135	135
	↑ mm	230	230	230	230
Weight	kg	6,1	6,3	7,6	8,9

Other voltages available on request



## INVERTER POWER SOURCES FOR ELECTRODE WELDING

RAINBOW's represent the latest evolution in inverter technology DC welding equipment. These powerful 100 KHz power sources are based on latest generation IGBT's and fitted with a flat transformer. RAINBOW's, with their lightness, reduced size and their excellent characteristics in electrode MMA and TIG welding with "Lift" mode arc striking, are the most suitable solution for maintenance and light fabrication works. RAINBOW 153 CELL and 183 CELL VRD are special versions for cellulosic electrodes.



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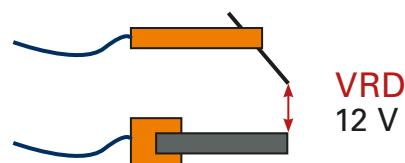


- ▶ Superior exceptionally high welding characteristics with any type of electrode
- ▶ Three available welding processes
- ▶ Possibility to work with adequate size power generator sets.
- ▶ Low energy consumption and high electrical efficiency
- ▶ All the data are referred to 40° C environment temperature
- ▶ Suitable to be used with 100 m length cable without power loss
- ▶ Shock-proof fibre compound main structure with protected control panel
- ▶ Dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow its use in the toughest work environments
- ▶ Sloping front control panel, easy to read and adjust and highly visible from any direction
- ▶ Built-in Arc Force to automatically select the best welding arc dynamics
- ▶ Automatic Hot Start to improve the arc striking with the most difficult electrodes
- ▶ Electrode Antisticking function



## VRD - VOLTAGE REDUCTION DEVICE

RAINBOW 150 VRD and 183 CELL VRD, fitted with Voltage Reduction Device to make the maximum open circuit voltage less than 12 V, grants additional safety protection in all highly hazardous environments



## CONTROL PANEL

1. Welding current electronic adjustment
2. Mains voltage LED
3. Thermostatic protection LED
4. Welding process selector switch
  - MMA: welding of coated electrodes: rutile, basic, cast iron and aluminium (Hot Start and Arc-Force functions are on)
  - MMA CrNi: welding of stainless steel with a smooth and very stable arc for high quality welding
  - TIG: by the innovative "Lift" mode arc striking with thermic control (TCS), quick and precise striking is achieved, by minimising any tungsten inclusion and avoiding any incision onto the workpiece



## ACCESSORIES

- Carrying belt
- RAINBOW bag
- RAINBOW 150 fiber carry case kit

TECHNICAL DATA		RAINBOW				
		150	150 VRD	153 CELL	180	183 CELL VRD
Single phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	230	230	230	230	230
Input Power @ I <sub>2</sub> Max	kVA	7,6	7,6	7,9	11,3	11,3
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	16	16	20	20
Power Factor / cos $\phi$		0,64/0,99	0,64/0,99	0,64/0,99	0,67/0,99	0,67/0,99
Efficiency Degree		0,84	0,84	0,82	0,82	0,82
Open circuit voltage	V	88	12	103	88	12
Current range	A	5 - 150	5 - 150	5 - 150	5 - 180	5 - 180
Duty cycle at (40°C)	A 100%	100	100	90	110	100
	A 60%	120	120	110	130	120
	A X%	150 (30%)	150 (30%)	150 (20%)	180 (20%)	180 (20%)
Standards		EN 60974-1 • EN 60974-10				
		S				
Protection Class	IP	21 S	21 S	21 S	23 S	23 S
Dimensions	↗ mm	340	340	340	390	390
	→ mm	115	115	115	135	135
	↑ mm	260	260	260	300	300
Weight	kg	4,2	4,2	4,2	6	6,5

Other voltages available on request



## SINGLE PHASE INVERTER POWER SOURCE FOR ELECTRODE WELDING

Powerful, compact and lightweight MATRIX 2200 E is the most innovative, high-performing and technologically ahead single phase power source ever developed for electrode welding.

Its PFC Power Factor Correction device optimizes the amount of energy consumption by allowing its use with 16 A fuse mains, thus becoming the ideal choice for all qualified welding applications and maintenance jobs, whenever power and portability are needed.

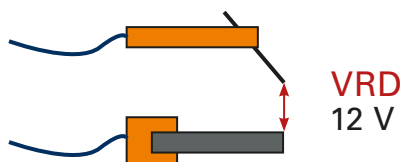
Designed according to the very latest IGBT based inverter technology, thanks to its digital welding control, MATRIX 2200 E ensures an extraordinary perfect stability of the welding parameters to obtain high quality joints with all types of electrodes, cellulosic included, and in TIG with lift" mode arc striking.



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- ▶ Built-in innovative PFC Power Factor Correction
- ▶ Digital control of all the welding parameters
- ▶ High duty cycle (40°C) 150 A @ 60% in MMA, 140 A @ 100% in TIG
- ▶ Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value
- ▶ Low current consumption (-30%)
- ▶ High reliability when used with generator sets
- ▶ Suitable to be used with mains cable lengths over 10.0m
- ▶ Excellent welding characteristics in MMA with any kind of electrodes, and in TIG with "Lift" mode
- ▶ Possibility of activating the VRD Function
- ▶ ENERGY SAVING function to operate the power source cooling fan only when necessary
- ▶ Possibility of memorizing welding parameters (99 JOBS)
- ▶ STAND BY function on the remote Control
- ▶ Auto-diagnostic feature for trouble shooting
- ▶ Reduced weight and size, easy-to-carry
- ▶ Control rack protection cover
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments
- ▶ Electrode Antisticking function



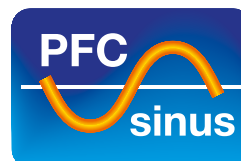
### VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.

## PFC POWER FACTOR CORRECTION

The wave shape of the current drawn from the mains is made sinusoidal by the PFC device with a consequent total lack of harmonic disturbances in the mains and consumption optimization, which enables to utilize the power

source at full range on a 16 A fuse. The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets.



## CONTROL PANEL

1. Welding current electronic adjustment
2. Digital adjustable ARC FORCE and HOT START
3. Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value
4. Welding process selector switch:
  - MMA: welding of coated electrodes: rutile, basic, cast iron and aluminium
  - MMA Cell: welding cellulosic electrodes
  - MMA CrNi: welding stainless steel
  - TIG: by the innovative "Lift" mode arc striking with thermic control (TCS), quick and precise striking is achieved, by minimising any tungsten inclusion and avoiding any incision onto the workpiece. The SWS (Smart Welding Stop) synergic system reduces the electrode wearing and avoids any oxidation on the welded joint.



TECHNICAL DATA		MATRIX 2200 E	
		MMA	TIG
Single phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	230	230
Input Power @ I <sub>2</sub> Max	kVA	6,6	6,0
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	16
Power Factor / cos $\phi$		0,99/0,99	0,99/0,99
Efficiency Degree		0,80	0,80
Open circuit voltage	V	100	100
Current range	A	5 - 180	5 - 220
Duty cycle at (40°C)	A 100%	120	140
	A 60%	150	180
	A 30%	180	220
Standards		EN 60974 - 1 • EN 60974 - 10	
Protection Class	IP	23 S	
Dimensions	↗ mm	430	
	→ mm	185	
	↑ mm	390	
Weight	kg	12	

Other voltages available on request

## ACCESSORIES

- CD 6 remote control with cable from 8 to 25m
- Carrying belt
- Polarity changeover





## THREE PHASE INVERTER POWER SOURCES FOR ELECTRODE WELDING

Powerful, compact and lightweight MATRIX 2800 E and 420 E thanks to their innovative digital control of the welding process are the most high performing and technologically advanced products ever manufactured.

Built according to the very latest IGBT based inverter technology, these DC power sources thanks to their excellent arc characteristics, are recommended for highest standard applications with any electrode. Suitable to be used in shipyards, steel construction, pipe welding and maintenance, MATRIX E's ensure an extraordinary stability of the welding parameters and their "fast dynamic characteristic" enables to achieve quality results even with the most difficult cellulosic and basic electrodes, and also in TIG with "Lift" mode arc striking.

MATRIX 2700 E SV is standard supplied with 230 /400 V three phase input voltage.



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DC  
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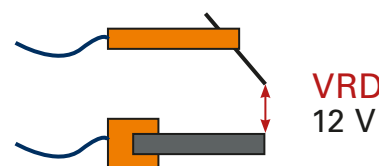
- ▶ Digital control of all the welding parameters
- ▶ Excellent welding characteristics in MMA with any kind of electrodes, including cellulosic, and in TIG with "Lift" mode
- ▶ Low energy consumption
- ▶ High reliability when used with generator sets
- ▶ Suitable to be used with mains cable lengths over 100 m
- ▶ Digital Ammeter and Voltmeter
- ▶ ENERGY SAVING function to operate the power source cooling fan only when necessary
- ▶ Possibility of activating the VRD function.
- ▶ Possibility of memorizing welding parameters (99 JOBS)
- ▶ STAND BY function on the remote control
- ▶ Auto-diagnostic feature for trouble shooting
- ▶ Reduced weight and size, easy-to-carry
- ▶ Control panel protected against accidental impact
- ▶ Control rack protection cover (Matrix 2800 E)
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments
- ▶ Electrode Antisticking function

### ENERGY SAVING

The built-in "Energy Saving" function activates the machine fan motor only when necessary, not only obtaining a significant energy saving, but also ensuring less maintenance for the power source, thanks to reduced dust and airborne contaminants.

### VRD VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.



## CONTROL PANEL

1. Welding current electronic adjustment
2. Digital adjustable ARC FORCE and HOT START
3. Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value
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  - MMA Cell: for welding of cellulosic electrodes
  - MMA CrNi: for welding of stainless steel
  - TIG: by the innovative "Lift" mode arc striking with thermic control (TCS), quick and precise striking is achieved, by minimising any tungsten inclusion and avoiding any incision onto the workpiece. The SWS (Smart Welding Stop) synergic system reduces the electrode wearing and avoids any oxidation on the welded joint.



## ACCESSORIES

- Trolley (MATRIX 420 E)
- Roll bar protection (MATRIX 420 E)
- CD 6 remote control with cable from 8 to 25m
- Polarity changeover



TECHNICAL DATA		MATRIX			
		2800 E	2700 E SV		420 E
Three phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	400	230	400	400
Input Power @ I <sub>2</sub> Max	kVA	10,5	8,0	10,5	17,4
Delayed Fuse (I <sub>2</sub> @ 100%)	A	10	16	10	16
Power Factor / cos $\phi$		0,95/0,99	0,98/0,99		0,95/0,99
Efficiency Degree		0,83	0,82	0,84	0,88
Open circuit voltage	V	100	100		100
Current range	A	5 - 270	5 - 220	5 - 270	5 - 420
Duty cycle at (40°C)	A 100%	190	150	180	270
	A 60%	210	180	220	340
	A X%	270 (30%)	220 (30%)	270 (30%)	420 (40%)
Standards		EN 60974-1 • EN 60974-10			
		[S]			
Protection Class	IP	23 S	23 S		23 S
Insulation Class		F	F		F
Dimensions	↗ mm	465	465		500
	→ mm	185	185		220
	↑ mm	390	390		425
Weight	kg	15	16,5		20

Other voltages available on request



CC

DC  
+ -

## DC THREE-PHASE ELECTRODE WELDING EQUIPMENT WITH ELECTRONIC CURRENT ADJUSTMENT

Sturdy, reliable, with excellent arc characteristics and recommended for highest standard applications with any electrode, they are suitable to be used in shipyards, steel construction and pipe welding.

ARCTRONIC's ensure an extraordinary stability of the welding parameters and their "fast dynamic characteristic" allows to obtain quality results also with the most difficult cellulosic and basic electrodes.



- ▶ Adjustable Arc Force for choosing the best welding arc dynamic characteristic
- ▶ Adjustable Hot Start to improve the arc striking with difficult electrodes
- ▶ Electrode Antisticking Function
- ▶ Lift arc mode TIG welding striking
- ▶ Gouging facility with carbon electrodes (special version)
- ▶ Low noise highly efficient fan motor
- ▶ "Stand by" function switching off the power source also from distance when not in use
- ▶ PCB in an isolated rack for protection against dust and dirt
- ▶ Standard equipped with large wheels and robust handles for easy manoeuvrability
- ▶ External door for easy supply voltage changeover





## CONTROL PANNELS

1. Electronic Welding Current Adjustment through easy-to-set calibrated output knob
2. Adjustable Arc Force
3. Adjustable Hot Start
4. CD 3 remote control connector
5. Thermostatic protection LED
6. MMA / TIG / Gouging Process switch (special version)

TECHNICAL DATA		ARCTRONIC	
		426	626
Three phase input 50/60 Hz	V $\begin{smallmatrix} +10\% \\ -10\% \end{smallmatrix}$	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	32,5	47,4
Delayed Fuse (I <sub>2</sub> @ 100%)	A	50/32	80/45
Power Factor / cos $\varphi$		0,70/0,80	0,75/0,80
Open circuit voltage	V	64	64
Current range	A	5 - 400	5 - 600
Duty cycle at (40°C)	A 100%	220	330
	A 60%	290	430
	A 35%	400	600
Electrodes	Ø mm	1,6 - 8	1,6 - 8
Standards		EN 60974-1 • EN 60974-10	
Protection Class	IP	23 S	23 S
Insulation Class		H	H
Dimensions	↗ mm	1260	1260
	→ mm	730	730
	↑ mm	615	615
Weight	kg	147	196

Other voltages available on request



## OPTIONALS

- Thermostatic protection LED
- MMA / TIG / Gouging Process switch (special version)

## ACCESSORIES

- CD 3 remote control with cable from 8 up to 50m
- Polarity changeover





CC		TM	1~	AC
		ARC - TRIARC	3~	DC

## DC THREE PHASE ELECTRODE WELDERS WITH ADJUSTMENT BY MAGNETIC SHUNT

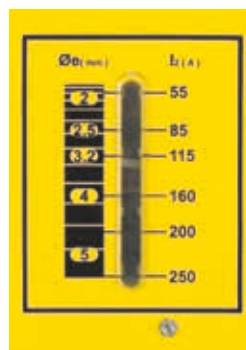
Excellent arc characteristic, product sturdiness and reliability are the main features of TM, ARC and TRIARC models. Suitable for heavy duty application in maintenance, fabrication works, shipyards and steel construction, these machines ensure a great welding arc stability.

TRIARC's, fitted with smoothing inductance, grant more stable and soft arc and are also suitable for welding cellulosic electrodes. Single phase TM's, thanks to a higher open circuit voltage, are useful to weld basic electrodes in AC.

- ▶ Continuous welding current adjustment by magnetic shunt
- ▶ Suitable for welding any electrode (cellulosic electrodes only with TRIARC models)
- ▶ Sturdy and reliable
- ▶ Standard delivered with large wheels and strong handles for easy manoeuvrability
- ▶ Easy change over of mains supply voltage by switch
- ▶ Welding current and electrode indicator



TECHNICAL DATA		TM 401
Single phase input 50/60 Hz	V	220/380
Input Power @ I <sub>2</sub> Max	kVA	25,5
Delayed Fuse (I <sub>2</sub> @ 100%)	A	80/50
Power Factor / cos φ		0,62
Open circuit voltage	V	70
Current range	A	60 - 350
Duty cycle at (40°C)	A 100%	200
	A 60%	250
	A 35%	350
Electrodes	Ø mm	2 - 6
Standards		EN 60974-1 • EN 60974-10
Protection Class	IP	23 S
Insulation Class		H
Dimensions	↗ mm	1000
	→ mm	560
	↑ mm	730
Weight	kg	79



TECHNICAL DATA		ARC				TRIARC		
		253	303	403	503	306/L	406/L	506/L
Three phase input 50/60 Hz	V	230/400	230/400	230/400	230/400	230/400	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	16,8	20,5	26,8	32,5	19,7	29,8	38,2
Delayed Fuse (I <sub>2</sub> @ 100%)	A	32/20	40/25	50/32	63/35	40/25	50/32	63/40
Power Factor / cos φ		0,73	0,75	0,71	0,71	0,75	0,75	0,79
Open circuit voltage	V	65	65	71	75	65	75	75
Current range	A	55 - 250	70 - 300	60 - 370	70 - 450	45 - 270	60 - 400	80 - 500
Duty cycle at (40°C)	A 100%	135	145	200	230	145	230	290
	A 60%	170	180	260	300	180	300	380
	A 35%	230	260	350	400	260	400	500
Electrodes	Ø mm	2 - 5	2 - 5	2 - 6	2,5 - 8	1,6 - 5	2 - 8	2,5 - 8
Standards		EN 60974-1 • EN 60974-10				EN 60974-1 • EN 60974-10		
		<b>[S]</b>	<b>[S]</b>	---	---	<b>[S]</b>	---	---
Protection Class	IP	23 S	23 S	23 S	23 S	23 S	23 S	23 S
Insulation Class		H	H	H	H	H	H	H
Dimensions	↗ mm	880	880	1120	1120	880	1120	1120
	→ mm	425	425	570	570	425	570	570
	↑ mm	690	690	725	725	690	725	725
Weight	kg	53	64	95	117	82	122	139

Other voltages available on request

**A** **V**

**237 22.1**

MIG SYNERGIC CRATER 2T

PROGRAM 0033

Fe G3 Si-1 Ø 1.2 Ar 8-10% CO2

PROCESS PROGRAM MODE SETUP

PRG	MATERIAL	Ø	GAS
2412	Al Mg5 S Al 5356	1.0	Ar 99.9%
2413	Al Mg5 S Al 5356	1.2	Ar 99.9%
2414	Al Mg5 S Al 5356	1.6	Ar 99.9%
2422	Al Si5 S Al 4043A	1.0	Ar 99.9%
2423	Al Si5 S Al 4043A	1.2	Ar 99.9%

33/48 DUAL PULSED 2T

2413 Al Mg5 S Al 5356 Ø 1.2 Ar 99.9%

PROCESS PROGRAM MODE SETUP

INITIAL ARC LENGTH

0

MIG SYNERGIC CYCLE 4T DEFAULT

0033 Fe G3 Si-1 Ø 1.2 Ar 8-10% CO2



## SMARTMIG COMPACT COMPACT SYNERGIC MAXI

## ECHO TREO CONVEX Basic CONVEX Yard

## CONVEX Vision DIGISTAR DIGITECH Vision Pulse

<b>SMARTMIG</b>									
SMARTMIG M 20	180 A 15%								
SMARTMIG T 21	200 A 25%								
SMARTMIG T 25	250 A 25%								
<b>COMPACT</b>									
COMPACT 240 M	250 A 20%								
COMPACT 270	250 A 35%								
COMPACT 310	300 A 35%								
COMPACT 364	350 A 35%								
COMPACT 410	400 A 35%								
<b>COMPACT SYNERGIC</b>									
COMPACT 3100 Synergic	300 A 35%								
COMPACT 3600 Synergic	350 A 35%								
COMPACT 4100 Synergic	400 A 35%								
<b>MAXI</b>									
MAXI 255 M	250 A 20%								
MAXI 315	300 A 35%								
MAXI 405	400 A 35%								
MAXI 505	500 A 35%								
MAXI 4005	400 A 35%								
MAXI 5005	500 A 35%								
<b>ECHO</b>									
ECHO 4000 CV	400 A 40%								
ECHO 5000 CV	500 A 40%								
ECHO 6000 CV	600 A 40%								
ECHO 7000 CC/CV	700 A 40%								
<b>TREO</b>									
TREO 1650 Synergic	160 A 35%								
TREO 1800 Synergic	175 A 20%								
<b>CONVEX Basic</b>									
CONVEX 320 Basic	320 A 40%								
CONVEX 400 Basic	400 A 50%								
CONVEX 500 Basic	500 A 50%								
<b>CONVEX Yard</b>									
CONVEX 420 Yard (400 V)	400 A 40%								
<b>CONVEX Vision</b>									
CONVEX 3200 Vision	320 A 40%								
CONVEX 4000 Vision	400 A 50%								
CONVEX 5000 Vision	500 A 50%								
<b>DIGISTAR</b>									
DIGISTAR 250	250 A 35%								
<b>DIGITECH Vision Pulse</b>									
DIGITECH 3200 Vision Pulse	330 A 40%								
DIGITECH 3300 Vision Pulse	330 A 40%								
DIGITECH 4000 Vision Pulse	400 A 50%								
DIGITECH 5000 Vision Pulse	500 A 50%								

I2 @ 100% 
  I2 @ 60% 
  I2 @ X% 
  optional

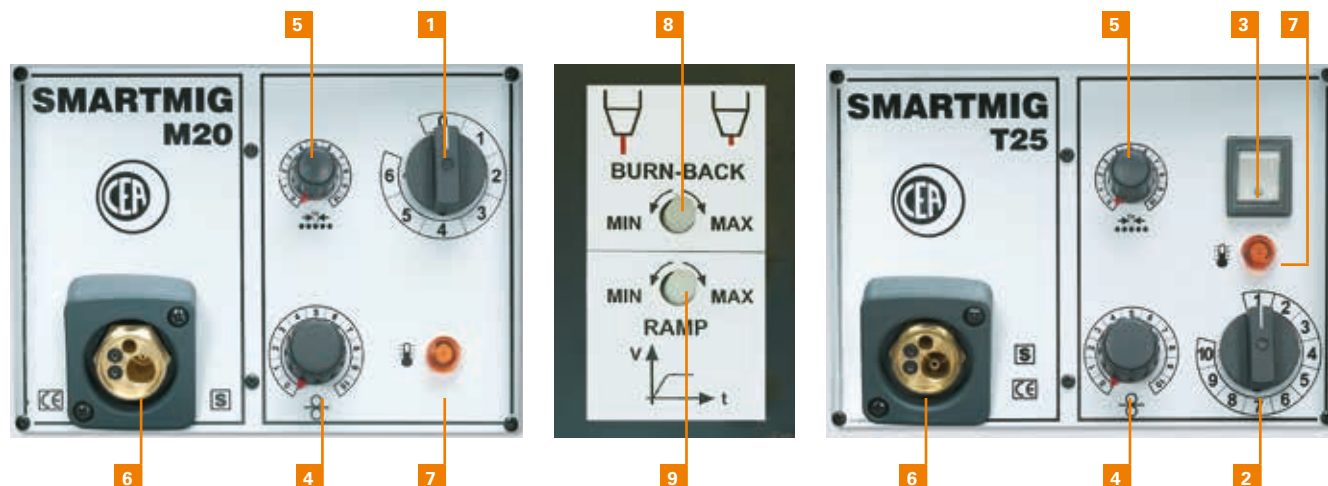


## STEP ADJUSTMENT SEMIAUTOMATIC COMPACT WELDING EQUIPMENT

Semi-automatic welding machines with undergear and built-in professional wire feeder, suitable to be used with CO<sub>2</sub> gas and mixture. SMARTMIG's are recommended for light fabrication work, car body repairs, agriculture and maintenance. Robust, easy to use and with innovative design, SMARTMIG M's (single phase) and SMARTMIG T's (three phase) provide excellent welding performance also with aluminium and stainless steel wires.



- ▶ Excellent welding performance on any metal and thin lamination sheets
- ▶ QBS feeding motor Quick Brake System for constant and repeated arc striking
- ▶ Burn Back and motor ramp are integrated on "M" series and externally adjustable on "T" series only
- ▶ Control panel protected against accidental hits
- ▶ Sloping front panel easy to read and adjust, highly visible from any direction
- ▶ Standard supplied with cylinder carriage and robust wheels for an easy manoeuvrability
- ▶ Quick connection for the ground cable (SMARTMIG T25)
- ▶ Large inner lodging to easily accommodate also metallic coils (up to 300 Ø mm)
- ▶ Professional double hook spool support and adjustable brake spindle to provide steady and trouble free wire feeding

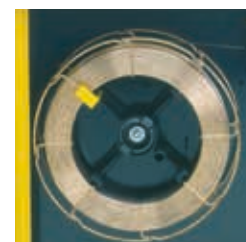


## CONTROL PANELS

1. Mains and voltage adjustment switch (M series).
2. Voltage adjustment switch (T series).
3. Mains switch (T series).
4. Electronic wire speed adjustment.
5. Spot timer on all models.
6. EURO central connection for the torch.
7. Thermostatic protection pilot light.
8. External burn back adjustment (T series).
9. External motor ramp adjustment for a precise arc striking (T series)

TECHNICAL DATA		SMARTMIG		
		M20	T21	T25
Single phase input 50/60 Hz	V	230	---	---
Three phase input 50/60 Hz	V	---	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	11,5	7,6	9,7
Delayed Fuse (I <sub>2</sub> @ 60%)	A	25	16/10	16/10
Power Factor / cos $\varphi$		0,63	0,75	0,75
Efficiency Degree		0,66	0,76	0,76
Open circuit voltage	V	19,5 - 40	17 - 36	17 - 38
Adjustment positions	N°	6	7	10
Current range	A	30 - 180	25 - 200	25 - 250
Duty cycle at (40°C)	A 100%	70	100	120
	A 60%	95	130	160
	A 35%	125	170	210
	A X%	180 (15%)	200 (25%)	250 (25%)
Wires	Ø mm	0,6 - 1,0	0,6 - 1,0	0,6 - 1,2
Standards		EN 60974 - 1 • EN 60974 - 5 • EN 60974 - 10		
Protection Class	IP	23 S	23 S	23 S
Dimensions	↗ mm	830	830	830
	→ mm	400	400	400
	↑ mm	615	615	615
Weight	kg	42	47	53

Other voltages available on request



M20 - T21



T25



## SEMIAUTOMATIC COMPACT WELDING MACHINES WITH STEP ADJUSTMENT

A series of industrial semiautomatic welding equipment with built-in wire feeder, suitable for professional and industrial applications.

COMPACT power sources, in their innovative and user friendly design, ensure excellent welding characteristics on any material, aluminium and stainless steel included, by granting a very stable arc in any welding position. Robust and easy-to-use, COMPACT power sources are suitable to be used in industry, fabrication work, car body repair, agriculture and maintenance.

### COMPACT SYN

COMPACT SYN power sources represent an evolution towards the simplification process of the welding operations by allowing, in a user

friendly way, also non expert users to very easily adjust the welding parameters. Equipped with an innovative synergic control, based on the most modern microprocessor digital technology, this series of machines has got several pre-set welding programs which, depending on used material, gas and wire diameter, will automatically select the best parameters according to the preset welding voltage.

The synergic function may be easily excluded by changing the way of setting of the welding parameters like in traditional MIG's. Depending on used material thickness, an easy-to-read table shows in which position to set both commutator switches to automatically obtain the best welding result.

- QBS Feeding Motor Quick Brake System for constant and repeated arc striking
- Arc striking always precise thanks to the digital control
- Excellent MIG/MAG welding characteristics on any material and with any gas
- Metallic main structure with shockproof fibre compound front panel
- Control panel protected against accidental hits
- Robust handle integrated into the chassis for easy manoeuvrability
- Integrated cylinder carriage and robust wheels for an easy manoeuvrability
- Double inductance connection for a better welding pool in any position (COMPACT 364 - 410 and COMPACT 3600 - 4100 SYN)



COMPACT 240M - 270 - 310



COMPACT 364 - 410  
COMPACT SYN 3100 - 3600 - 4100



- Large inner lodging to easily accommodate also metallic coils (300mm Ø max.)
- Professional feeding system to ensure a precise and constant wire feeding

## COMPACT

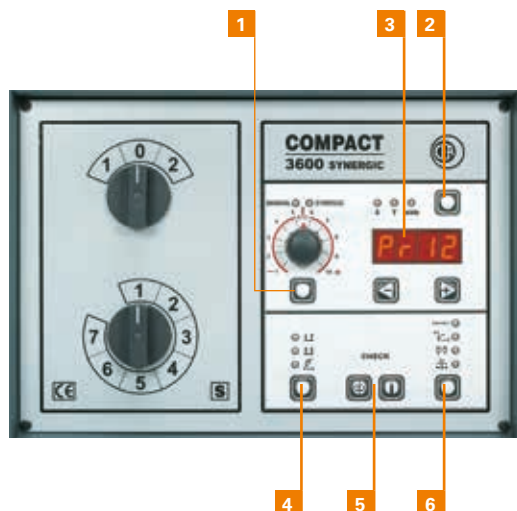


- Mains switch and welding voltage range switch (COMPACT 364 - 410 and COMPACT 3600 SYN COMPACT 4100 SYN)
- Voltage adjustment commutator switch
- Voltage fine adjustment switch (COMPACT 364 - 410 and COMPACT 3600 SYN COMPACT 4100 SYN)
- 2 - 4 time mode selector switch
- Spot timer
- Welding wire burnback adjustment
- Motor ramp adjustment for a precise arc striking





## COMPACT SYN



### CONTROL PANEL

1. Welding "process" selector: Manual / Synergic:

- Synergic - best welding parameters are adjusted in a synergic way according to the chosen program
- Manual - the panel potentiometer adjusts the wire speed like in the traditional equipment

2. "Display" selector Voltmeter/Ammeter • Wire speed

3. Digital display to show preset welding programs and also acting as a Voltmeter/Ammeter with wire speed display and Hold Function of the last read value

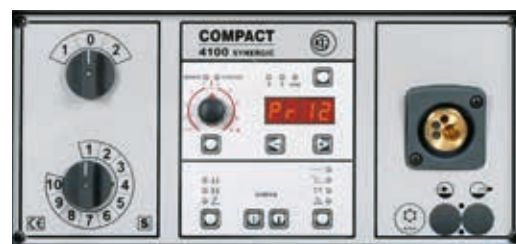
4. Welding "mode" selector: 2/4 Stroke • Spotting

5. Selector: Gas Purge • Wire Inch

6. Adjustment" selector: Motor Ramp • Burn-back • Spot Timer

### ENERGY SAVING (COMPACT 4100 SYN)

The built-in Energy Saving function, integrated in COMPACT 4100 SYN, activates both the power source fan motor and the torch water cooling only when necessary, thus obtaining a significant energy saving, and ensuring less maintenance for the power source, thanks to reduced airborne contaminants.



TECHNICAL DATA		COMPACT				
		240M	270	310	364	410
Single phase input 50/60 Hz	V	230	---	---	---	---
Three phase input 50/60 Hz	V	---	230/400	230/400	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	11,9	12,0	13,3	17,3	18,5
Delayed Fuse (I <sub>2</sub> @ 60%)	A	25	16/10	25/16	25/20	35/20
Power Factor / cos $\varphi$		0,96	0,96	0,96	0,96	0,96
Efficiency Degree		0,58	0,67	0,70	0,68	0,77
Open circuit voltage	V	22 - 50	17 - 38	18 - 43,5	18,5 - 45	20 - 44
Adjustment positions	N°	7	10	10	14	20
Current range	A	50 - 250	25 - 250	30 - 300	45 - 350	60 - 400
Duty cycle at (40°C)	A 100%	110	140	170	200	240
	A 60%	150	180	225	260	300
	A 35%	200	250	300	350	400
	A 20%	250	---	---	---	---
Wires	Ø mm	0,6 - 1,2	0,6 - 1,2	0,6 - 1,2	0,6 - 1,2	0,6 - 1,6
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10 •				
Protection Class	IP	23 S	23 S	23 S	23 S	23 S
Dimensions	↗ mm	860	860	860	860	1060
	→ mm	540	540	540	540	600
	↑ mm	790	790	790	790	780
Weight	kg	59	67	70	83	109

TECHNICAL DATA		COMPACT		
		3100 SYN	3600 SYN	4100 SYN
Three phase input 50/60 Hz	V	230/400	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	13,3	17,3	18,5
Delayed Fuse (I <sub>2</sub> @ 60%)	A	25/16	25/20	35/20
Power Factor / cos $\varphi$		0,96	0,96	0,96
Efficiency Degree		0,70	0,68	0,77
Open circuit voltage	V	18 - 43,5	18,5 - 45	20 - 44
Adjustment positions	N°	10	14	20
Current range	A	30 - 300	45 - 350	60 - 400
Duty cycle at (40°C)	A 100%	170	200	240
	A 60%	225	260	300
	A 35%	300	350	400
Wires	Ø mm	0,6 - 1,2	0,6 - 1,2	0,6 - 1,6
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10 •		
Protection Class	IP	23 S	23 S	23 S
Dimensions	↗ mm	860	860	1060
	→ mm	540	540	600
	↑ mm	790	790	780
Weight	kg	71	83	110



#### ACCESSORIES

- IR 14 water cooling equipment (COMPACT 410 and COMPACT 4100 SYN)

Other voltages available on request



CV



DC  
+ -

## STEP ADJUSTMENT SEMI-AUTOMATIC WELDING MACHINES WITH SEPARATE WIRE FEEDER

Semi-automatic welding equipment, with separate wire feeder, recommended for industrial applications, medium and large fabrication work. MAXI power sources, usable with a wide selection of wire feeders and different length interconnecting cables, are the most complete solution for any job and ensure excellent welding performances on any thickness by granting a very stable arc in any welding position.

### MAXI SYNERGIC

The range is completed by MAXI 4005 and 5005 synergic machines equipped with ES 5 digital feeder with preset welding programs, which allow, in a user friendly way, also non expert users

to very easily adjust the welding parameters. The ES 5 feeder, thanks to latest and innovative microprocessor based digital technology, chooses, within preset programs, the best welding parameters according to used material, gas and wire diameter, thus enabling high quality MIG/MAG welding on any material.

Depending on used material thickness, an easy-to-read table shows in which position to set both commutator switches to automatically obtain the best welding result.

Technologically advanced, robust and easy-to-use, MAXI 4005 and 5005 with ES 5 provide the additional synergic feature on top of the already excellent characteristics of the MAXI power sources.



- ▶ Excellent welding characteristics on any material and with any gas type
- ▶ Ideal for welding any metal in any industrial application
- ▶ Metallic main structure with shockproof fibre compound front frames
- ▶ Standard version supplied with cylinder carriage and robust wheels
- ▶ Control panel protected against accidental impact
- ▶ Large ergonomic handle for an easy manoeuvrability



#### CONTROL PANEL

1. Mains switch and welding voltage range switch
2. Voltage fine adjustment switch
3. Optional digital ammeter/voltmeter with hold function of the last welding parameters
4. Double inductance connection for a better welding pool in any position

## MAXI SYNERGIC - ES 5



- ▶ Welding parameters synergic adjustment
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Arc striking always precise thanks to the digital control
- ▶ Excellent MIG/MAG welding characteristics on any material and with any gas
- ▶ Four large diameter roll and cast aluminium wire feeding mechanism to provide steady and trouble free wire feeding



#### ENERGY SAVING

The built-in Energy Saving function activates both the power source fan motor and the torch water cooling only when necessary, thus obtaining a significant energy saving, and ensuring less maintenance for the power source, thanks to reduced airborne contaminants.

- ▶ External Burn-Back and motor ramp adjustments for a precise arc striking
- ▶ 2/4 stroke selector switch
- ▶ QBS motor braking system for repeated and constant arc striking
- ▶ Sloping lodging for wire spools (up to 300 mm Ø maximum)
- ▶ Water and gas quick connections
- ▶ Professional wire feeding mechanism for a precise and constant wire driving
- ▶ Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing
- ▶ Double groove rolls replaceable without any tool
- ▶ Robust handle and lifting eyebolt
- ▶ Metallic main structure with shockproof plastic front panels protecting all connections and adjustment controls



## SWF STRONG FEEDER

SWF feeders, with robust polypropylene suitcase, ideal for site jobs and harshest environments. They can be used for wires spools up to 300 mm Ø. (V/Ameter available on request).



## ES 5

1. Welding "process" selector  
Manual / Synergic:
  - Synergic - best welding parameters are adjusted according to the chosen program
  - Manual - the panel potentiometer adjusts the wire speed like in the traditional equipment
2. "Display" selector:  
Voltmeter/Ammeter • Wire speed
3. Welding "mode" selector:  
2/4 stroke • Spotting
4. Digital display to show preset welding programs and also acting as a Voltmeter/Ammeter with wire speed display and Hold Function of the last read value
5. Selector:  
Gas Purge • Wire Inch
6. "Adjustment" selector:  
Motor ramp • Burn-Back  
• Spot timer

## ACCESSORIES

- Wheel kit for TR feeders
- Spool cover for TR feeders
- Wheel kit for WF and ES 5 feeders
- IR 14 water cooling equipment (MAXI 405 - 505 - 4005 - 5005)



## 2 RULLI



## 4 RULLI



TR 1

TR 2

TR 4

SWF - WF 5

WF 4 - ES 5

TECHNICAL DATA		TR 1	TR 2	TR 4	SWF	WF 4 - WF 5	ES 5
Single phase input 50/60 Hz	V	48	48	48	48	48	48
Motor power	W	50	100	100	100	100	100
Rolls	N°	2	2	4	4	4	4
Feeding speed	m/min	0,5 - 24	0,5 - 24	0,5 - 24	0,5 - 20	0,5 - 20	0,5 - 20
Solid wire (steel)	Ø mm	0,6 - 1,6	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4
Dimensions	↗ mm	450	450	450	540	570	570
	→ mm	230	230	230	235	275	275
	↑ mm	315	315	315	485	400	400
Weight	kg	10,5	11,5	11,5	14	17	17

TECHNICAL DATA		MAXI				MAXI SINERGIC	
		255 M	315	405	505	4005 ES 5	5005 ES 5
Single phase input 50/60 Hz	V	230	---	---	---	---	---
Three phase input 50/60 Hz	V	---	230/400	230/400	230/400	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	11,8	13,8	19	24,2	19	24,2
Delayed Fuse (I <sub>2</sub> @ 60%)	A	25	16/10	35/20	40/25	35/20	40/25
Power Factor / cos φ		0,80	0,95	0,96	0,97	0,96	0,97
Efficiency Degree		0,58	0,70	0,77	0,78	0,77	0,78
Open circuit voltage	V	23 - 50	18 - 43,5	20 - 44	19 - 51	20 - 44	19 - 51
Adjustment positions	N°	7	10	20	30	20	30
Current range	A	50 - 250	30 - 300	60 - 400	60 - 500	60 - 400	60 - 500
Duty cycle at (40°C)	A 100%	110	170	230	300	230	300
	A 60%	150	225	300	370	300	370
	A 35%	200	300	400	500	400	500
	A 20%	250	---	---	---	---	---
Wires	Ø mm	0,6 - 1,2	0,6 - 1,2	0,6 - 1,6	0,8 - 2,0	0,6 - 1,6	0,8 - 2,0
Standards		EN 606974-1 • EN 606974-10					
		S					
Protection Class	IP	23 S	23 S	23 S	23 S	23 S	23 S
Insulation Class		H	H	H	H	H	H
Dimensions	↗ mm	1020	1020	1060	1060	1060	1060
	→ mm	540	540	600	600	600	600
	↑ mm	790	790	780	780	780	780
Weight	kg	62	70	99	113	102	116

Other voltages available on request



CV

DC  
+ -

## MIG/MAG SEMI-AUTOMATIC EQUIPMENT WITH ELECTRONIC ADJUSTMENT

Three phase MIG/MAG semi-automatic equipment suitable for any industrial application, such as medium and large fabrication work, shipyard and steel construction. ECHO series, thanks to its modularity, grants the maximum versatility in any welding application. ECHO 4000 CV - 5000 CV and 6000 CV power sources, usable with a wide selection of wire feeders and different length interconnecting cables, allow the remote control facility of all welding parameters directly from the feeder.

ECHO 4000 CV - 5000 CV and 6000 CV, when equipped with digital ES 5 feeder, thanks to preset welding programs, really become an intelligent and user friendly synergic equipment enabling, even non expert operators, to easily adjust welding parameters in any circumstance according to material, gas and wire diameter being used.



### ENERGY SAVING

In ECHO 4000 CV - 5000 CV, 6000 CV, and 7000 CC/CV the built-in Energy Saving function activates both the power source fan motor and the torch water cooling only when necessary, not only obtaining a significant energy saving, but also ensuring less maintenance for the power source, thanks to reduced airborne contaminants.

- ▶ Voltage electronic adjustment
- ▶ Remote voltage control facility directly from the WF and DF feeders used with interconnecting cables up to 50 meters
- ▶ Superior welding performance with any material and different gases
- ▶ Innovative design with shock-proof fibre compound front panel and robust ergonomic handle for easy manoeuvrability
- ▶ Lower energy consumption in respect of step adjustment power sources
- ▶ High reliability and reduced maintenance costs, lacking any electromechanical adjustment components
- ▶ QBS motor braking system for repeated and constant arc striking
- ▶ Automatic "Hot Start" to always get a precise arc striking
- ▶ PCB in an isolated rack for protection against dust and dirt
- ▶ Standard equipped with cylinder holder undercarriage fitted with large wheels for easy handling
- ▶ Two inductance positions, in a protected lodging, for an excellent welding pool in any situation



WF 4 - DF 4 - ES 5



MINI 4 - DTR 4 A/V



SWF

## ECHO 7000 CC/CV MULTIPROCESS



The multiprocess ECHO 7000 CC/CV is able to perform multiple processes, i.e. MIG, MMA and TIG

- ▶ Process selector: MIG/MAG - MMA - TIG.

### MIG/MAG

- Voltage electronic adjustment
- External Burn-Back and motor ramp adjustment for a precise arc striking
- 2/4 stroke selector switch



### MMA - TIG

- Electronic welding current adjustment
- Low-high current range switch
- Adjustable Hot Start to improve arc striking with difficult electrodes
- Adjustable Arc Force control to select the best dynamic characteristic of the welding arc
- Overcurrent protection
- Electrode Antisticking function

## WF - DF - DTR FEEDERS

- ▶ Robust handle and lifting eyebolt
- ▶ Metallic main structure with shockproof fibre compound front panels protecting all connections and adjustment controls
- ▶ Voltage electronic adjustment
- ▶ External Burn-Back and motor ramp adjustment for a precise arc striking
- ▶ 2/4 stroke selector switch
- ▶ Digital ammeter/voltmeter with hold function of the last welding parameters (DF 4 - DTR 4 A/V)
- ▶ QBS motor braking system for repeated and constant arc striking
- ▶ Sloping lodging for wire spools (up to 300 mm Ø maximum)
- ▶ Water and gas quick connections
- ▶ Double groove rolls replaceable without any tool

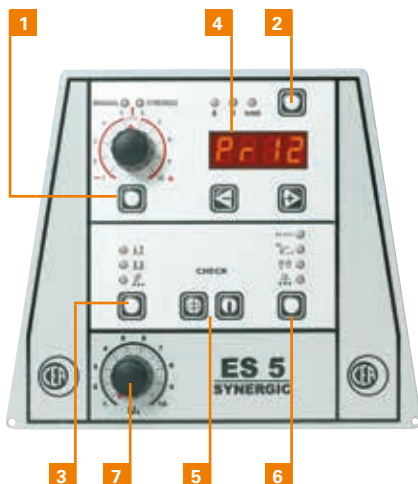


- ▶ Professional wire feeding mechanism for a precise and constant wire driving
- ▶ Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing

## ES 5

ES 5 feeder, developed thanks to the most modern microprocessor based digital technology, allows, by means of one knob only, to choose the best welding parameters within the range of preset programs, depending on used material, gas and wire diameter, in order to obtain excellent quality results in MIG/MAG welding on any material. An easy-to-read table, in relation to the material thickness being welded, shows in which position to set the synergic adjustment potentiometer to automatically obtain the best welding parameter in any circumstance.

- ▶ Welding parameter synergic adjustment
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Arc striking always precise thanks to the digital control
- ▶ Excellent MIG/MAG welding characteristics on any material and with any gas.



1. Welding process selector:  
Manual/ Synergic
  - Synergic – best parameters are adjusted in a synergic mode depending on selected program
  - Manual – wire speed can be adjusted like in traditional equipment by the panel potentiometer
2. Display selector:  
Voltmeter/Ammeter • Wire speed
3. Welding “mode” selector:  
2/4 stroke • Spotting
4. Digital display to show preset welding programs and also acting as a voltmeter/ammeter with wire speed display and hold function of the last read value
5. Selector: Gas purge • Wire inch
6. “Adjustment” selector:  
Motor ramp • Burn-back • Spot timer
7. Potentiometer for voltage and synergy adjustment

## MINI 4

Easy-to-carry lightweight compact feeder suitable for all sites and shipyards, usable for wire spools up to 200 mm diameter (5 kg), which, in addition to the main technical features of the WF feeders, is fitted with:

- Gas adjustment flowmeter
- Digital ammeter/voltmeter with hold function of the last welding parameters
- Shock-proof fibre compound protection frames



## SWF STRONG FEEDER

These feeders, having a robust polypropylene suitcase, are the ideal solution for shipyards and all harshest applications. Developed for use with solid and flux cored wires, they can lodge wire spools up to 300 mm Ø. V/A meters upon request.



TECHNICAL DATA		WF 4	DF 4	DTR 4 A/V	ES 5	MINI 4	SWF
Single phase input 50/60 Hz	V	48	48	48	48	48	48
Motor power	W	100	100	100	100	100	100
Rolls	N°	4	4	4	4	4	4
Feeding speed	m/min	0,5 - 20	0,5 - 20	0,5 - 20	0,5 - 20	0,5 - 20	0,5 - 20
Solid wire (steel)	Ø mm	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4	0,6 - 2,4
Dimensions	↗ mm	570	570	450	570	500	540
	→ mm	275	275	230	275	235	235
	↑ mm	400	400	315	400	320	485
Weight	kg	17	17	11,5	17,5	11	14

TECHNICAL DATA		ECHO			
		4000 CV	5000 CV	6000 CV	7000 CC/CV
Three phase input 50/60 Hz	V	230/400	230/400	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	20,1	29,2	40	46
Delayed Fuse (I <sub>2</sub> @ 60%)	A	45/25	63/35	80/45	85/50
Power Factor / cos φ		0,92 - 0,95	0,91 - 0,94	0,90 - 0,92	0,88 - 0,90
Efficiency Degree		0,76	0,76	0,76	0,76
Open circuit voltage	V	16,5 - 44	17 - 51	17,5 - 58	22 - 56
Current range	A	25 - 400	25 - 500	30 - 600	25 - 700
Duty cycle at (40°C)	A 100%	230	310	390	460
	A 60%	310	400	500	600
	A 40%	400	500	600	700
Wires	Ø mm	0,6 - 1,6	0,6 - 1,6	0,8 - 2,0	0,8 - 2,4
Standards		EN 60974-1 • EN 60974-10			
		[S]			
Protection Class	IP	23 S	23 S	23 S	23 S
Insulation Class		H	H	H	H
Dimensions	↗ mm	1060	1060	1060	1060
	→ mm	600	600	600	600
	↑ mm	780	780	780	780
Weight	kg	104	116	146	180

Other voltages available on request



### ACCESSORIES

- IR 14 water cooling equipment
- Adjustable torch support



## MULTIFUNCTION SYNERGIC INVERTER EQUIPMENT FOR MIG/MAG, MMA AND TIG

Wide versatility and portability are the main features of single-phase multifunction synergic power source TREO 1650 Synergic.

Based on the most modern IGBT inverter digital technology, TREO 1650 Synergic allows high quality MIG/MAG welding on all materials, by also granting optimal performances both in TIG by "Lift" mode and in MMA welding. Innovative, versatile, light, easy-to-carry, user friendly, TREO 1650 Synergic, thanks to its very high technological conception, is absolutely unique for all external or internal maintenance jobs, car body repairs, agriculture and light fabrication works.



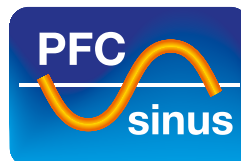
- ▶ Multifunction power source with optimal welding characteristics in MIG/MAG, MMA and TIG
- ▶ Digital control of all welding parameters with preset synergic curves according to used material, gas and wire diameter
- ▶ Built-in polarity changeover facility for most common gas and gasless wires
- ▶ Central Euro connection for the torch
- ▶ Metallic main structure with shockproof fibre compound front frames
- ▶ Control panel protected against accidental impact
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow use in the toughest work environments
- ▶ Professional 2-roll wire feeding mechanism for a precise and constant wire driving
- ▶ Double groove rolls replaceable without any tool
- ▶ Wire spool lodging up to 200 mm Ø max.
- ▶ Possibility of utilizing 300 mm Ø coils by means of the Retrofit Kit (Optional).



## PFC POWER FACTOR CORRECTION

The wave shape of the current drawn from the mains is made sinusoidal by the PFC device with a consequent total lack of harmonic disturbances in the mains and consumption optimization, which enables to utilize the power source at full range on a 16 A fuse.

The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets.



## CONTROL PANEL

- ▶ Digital Voltmeter and Ammeter
- ▶ Digital display to preset and read both welding parameters and synergic programs
- ▶ Selector: workpiece thickness, current, wire speed and programs
- ▶ Fine adjustment: arc length and electronic inductance
- ▶ Possible welding modes: 2T/4T • Crater • Spot timer • Stitch timer
- ▶ Special function key

## MMA WELDING

- ▶ Adjustable Arc Force to select the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with the most difficult electrodes
- ▶ Electrode Antisticking function

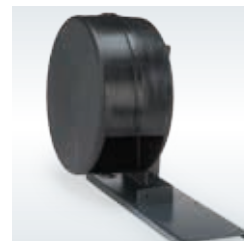
## TIG WELDING

- ▶ DC TIG welding by "Lift" mode striking to minimize tungsten inclusion.



TECHNICAL DATA		TREO 1650 SYNERGIC		
		MIG/MAG	TIG	MMA
Single phase input 50/60 Hz	V $\begin{smallmatrix} +15\% \\ -15\% \end{smallmatrix}$	230		
Input Power @ I <sub>2</sub> Max	kVA	4,5	2,8	4,0
Delayed Fuse (I <sub>2</sub> @ 60%)	A	16	12	16
Power Factor / cos $\phi$		0,99/0,99	0,99/0,99	0,99/0,99
Efficiency Degree		0,78	0,77	0,82
Open circuit voltage	V	72	72	72
Current range	A	5 - 160	5 - 160	10 - 130
Duty cycle at (40°C)	A 100%	120	120	120
	A 60%	130	130	130
	A 35%	160	160	---
Wires	Ø mm	0,6 - 1,0	---	---
Coil	Ø mm	200 max (300 opt.)	---	---
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10		
Protection Class	IP	23 S		
Insulation class		H		
Dimensions	↗ mm	500		
	→ mm	220		
	↑ mm	425		
Weight	kg	17,5		

Other voltages available on request



## ACCESSORIES

- Retrofit Kit to enable use of 300mm Ø coils
- Gas cylinder trolley



# TREO 1800 SYNERGIC



## MULTIFUNCTION SYNERGIC INVERTER EQUIPMENT FOR MIG/MAG, MMA AND TIG

Wide versatility and portability are the main features of single-phase multifunction synergic power source TREO 1800 Synergic.

Based on the most modern IGBT inverter technology and fitted with a professional fully digital control, TREO 1800 Synergic allows high quality MIG/MAG welding on all materials with possibility of storing up to 99 JOBS, by also granting optimal performances both in TIG by "Lift" mode and in MMA welding. Innovative, versatile, light, easy-to-carry and user friendly, TREO 1800 Synergic, thanks to its very high technological conception, is absolutely unique for all external or internal maintenance jobs, car body repairs, agriculture and light fabrication works.



CC  
CV

DC  
+ -



DIGITAL  
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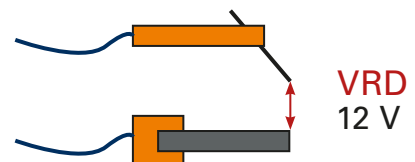


- ▶ Multifunction power source with optimal welding characteristics in MIG/MAG, MMA and TIG
- ▶ Digital control of all welding parameters with preset synergic curves according to used material, gas and wire diameter
- ▶ Ability to store personalized welding parameters up to 99 JOBS
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs (JOBS)
- ▶ Built-in polarity changeover facility for most common gas and gasless wires
- ▶ Central Euro connection for the torch
- ▶ Metallic main structure with shockproof fibre compound front frames
- ▶ Control panel protected against accidental impact
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow use in the toughest work environments
- ▶ Professional 2-roll wire feeding mechanism for a precise and constant wire driving
- ▶ Double groove rolls replaceable without any tool
- ▶ Wire spool lodging up to 200 mm Ø max
- ▶ Possibility of utilizing 300 mm Ø coils by means of the Retrofit Kit (Optional).



### VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces open circuit voltage below 12 V and grants additional safety protection for the operator in all highly hazardous environments.





### CONTROL PANEL

- ▶ Digital adjustments of all the welding parameters
- ▶ Digital Voltmeter and Ammeter with Hold Function of the last parameter
- ▶ Digital display to preset and read the welding parameters and synergic programs
- ▶ Selector: Current, Wire Speed, Thickness, Program
- ▶ Selector: Arc Length, Voltage, Electronic Inductance
- ▶ Welding "Process" selector:
  - MIG/MAG Synergic
  - MIG/MAG Manual
  - MMA • TIG DC • Job
- ▶ Welding "mode" selector:
  - 2T/4T • "Initial & Crater"
  - Spot Timer • Stitch Timer
- ▶ Initial and final crater control
- ▶ Gas purge and wire inch
- ▶ Special function key

### MMA WELDING

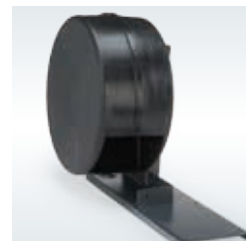
- ▶ Adjustable Arc Force to select the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with most difficult electrodes
- ▶ Electrode Antisticking function

### TIG WELDING

- ▶ DC TIG welding by "Lift" mode striking to minimize tungsten inclusion.

TECHNICAL DATA		TREO 1800 SYNERGIC		
		MIG/MAG	TIG	MMA
Single phase input 50/60 Hz	V $\begin{smallmatrix} +15\% \\ -15\% \end{smallmatrix}$	230		
Input Power @ I <sub>2</sub> Max	kVA	7,8	5,9	7,4
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	16	16
Power Factor / cos $\phi$		0,68/0,99	0,67/0,99	0,68/0,99
Efficiency Degree		0,79	0,77	0,81
Open circuit voltage	V	59	59	59
Current range	A	10 - 175	5 - 175	10 - 150
Duty cycle at (40°C)	A 100%	100	100	90
	A 60%	115	115	110
	A X%	175 (20%)	175 (20%)	150 (25%)
Wires	Ø mm	0,6 - 1,0	---	---
Coil	Ø mm	200 max (300 opt.)	---	---
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10		
Protection Class	IP	23 S		
Insulation class		H		
Dimensions	↗ mm	500		
	→ mm	220		
	↑ mm	425		
Weight	kg	16		

Other voltages available on request



### ACCESSORIES

- Retrofit Kit to enable use of 300mm Ø coils
- Gas cylinder trolley

Enter the future of MIG/MAG welding with CONVEX, DIGISTAR and DIGITECH vision PULSE: perfect arc striking and a welding puddle always continuously optimized, thanks to the steady perfect control of the welding arc in any condition, the product of years of research and more than 60 years of experience.

Extremely precise welding with repeated results in time, flexibility and the user-friendly simplicity combined with an exceptionally stable welding arc are the basic goals of the philosophy which have led to the development of such high tech products.

Five series of multiprocess equipment to satisfy all needs:

- ▶ CONVEX BASIC
- ▶ CONVEX YARD
- ▶ CONVEX VISION
- ▶ DIGISTAR PULSE
- ▶ DIGITECH VISION PULSE

These power sources enable to weld in MIG/MAG, in MMA and in TIG with a "Lift" type striking; for even easier use, all machines have been provided with the possibility of memorizing up to 99 personalized JOBS, saving the welding parameters as wished.

Their operating facility makes them suitable for numerous applications from civil and naval constructions, petrochemical and automotive industries, to heating and air conditioner systems, as well as all small, medium and large metal work, whenever precision and quality welding are required.

But there is more: these equipment have been designed to keep up with the evolution of welding technology over time: both firmware and software are designed to be always updatable.

Particular care has been given to energy savings: very high energy efficiency and a high power factor level ensure lower annual energy expenses, at the same utilization levels of conventional machines. The special "Energy Saving" function helps prevent waste, activating auxiliary power supplies, fan motor and torch cooling only when necessary. Besides these equipment comply with the latest regulations on electromagnetic pollution and are in line with the RoHS directive environmental standards.



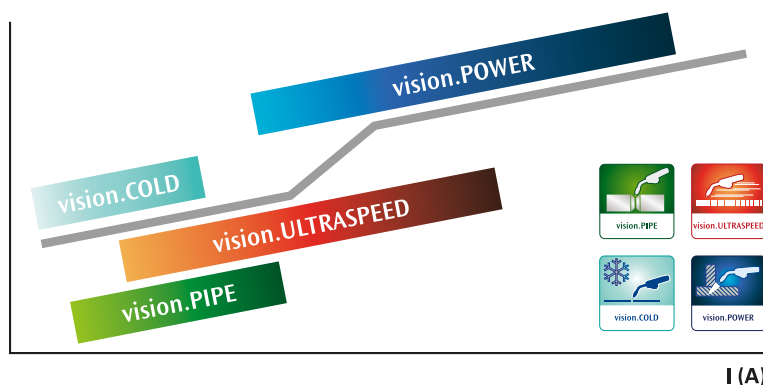
## VISION ARC

CONVEX VISION, DIGISTAR and DIGITECH VISION PULSE power sources distinguish themselves by their VISION ARC, the innovative arc control which ensures outstanding welding performances with greater wire deposit, higher speed and reduced thermal dilatation. 60 years' experience in welding technology allowed CEA to develop a new digital system for controlling arc dynamics, VISION.ARC which guarantees excellent performances in all MIG/MAG and MIG PULSE situations.

The electric arc is monitored continuously by the microprocessor which manages the welding process in real time: all the parameters are processed and modified immediately, in a few microseconds, by the control that digitally manages the short circuits that are typical of MIG/MAG welding, keeping the arc stable and precise in spite of any change of the external conditions. This way, torch movement, irregularities of parts to be welded and other factors do not influence the final result at all. Welding process is always under control from arc striking, by Wire Start Control (WSC), to when the arc is interrupted by Burnback Control.

Vision.ARC is the support basis for special welding software such as:

- ▶ vision.PIPE for more accurate welding in pipe first root pass
- ▶ vision.COLD for low heat transfer MIG/MAG welding
- ▶ vision.ULTRASPEED to weld small and medium thickness at a far higher speed
- ▶ vision.POWER to obtain deeper penetration on medium and large thickness material



## CONVEX BASIC

Multiprocess MIG/MAG power sources with user friendly and intuitive adjustments of the parameters like in the traditional machines.



## CONVEX YARD

Multivoltage CONVEX YARD equipment, combining the features and the digital control of CONVEX BASIC with the possibility of being connected to mains voltage supplies ranging from 200V up to 460V and with the ability of MMA welding all electrodes (cellulosic included) and performing gouging too.



## CONVEX VISION

Multiprocess Synergic MIG/MAG power sources with colour and graphics display for programming and monitoring the full welding process in a personalized way.

CONVEX VISION equipment can operate by means of special MIG/MAG welding processes, i.e.

- vision.PIPE
- vision.ULTRASPEED
- vision.COLD
- vision.POWER



## DIGISTAR PULSE

Compact Multiprocess Synergic MIG/MAG PULSE equipment. Ideal for all applications in the automotive sector and light fabrication works.



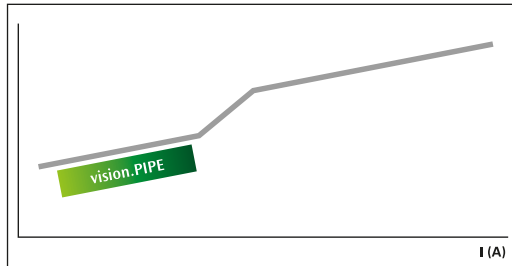
## DIGITECH VISION PULSE

Multiprocess Synergic MIG/MAG PULSE power sources. They combine all the features and the control of CONVEX VISION with the ability of MIG PULSE and DUAL PULSE.

DIGITECH VISION PULSE equipment can operate by means of special MIG/MAG welding processes, i.e.:

- vision.PIPE
- vision.ULTRASPEED
- vision.COLD
- vision.POWER





## PIPE FIRST ROOT PASS AND OPEN GAP MIG/MAG WELDING

vision.PiPE is the innovative MIG/MAG process developed by CEA for first root pass whenever butt-joining pipes in all positions.

The supplied vision.PiPE synergic programs grant extremely high quality performance with an optimized arc for welding pipes in a precise and safe way also whenever having to deal with larger size open gap joints.

vision.PiPE process enables to replace MMA and TIG processes with a far shorter welding time.

vision.PiPE package is also an ideal solution for welding laminations with open gap joints.

### ADVANTAGES

- ▶ Perfect and safe welding in first root pass
- ▶ Far higher welding performance speed versus TIG & MMA processes
- ▶ Precise arc control in welding pipes and laminations with any thickness and in all positions
- ▶ Significant reduction of heat input in welding joints
- ▶ Possibility of first root pass welding without any backing
- ▶ Less care in edge bevelling preparation prior to welding
- ▶ Easy welding process, easy to learn and use
- ▶ No longer obligation of employing highly qualified personnel as imposed by TIG and MMA processes
- ▶ Welding process continuity
- ▶ Vertical up or vertical down welding with perfect edge joints

### APPLICATIONS

- ▶ Pipe first root pass
- ▶ Welding open gap laminations on all positions.



## LOW HEAT TRANSFER MIG/MAG WELDING

vision.COLD is an innovative low heat transfer MIG/MAG process, developed by CEA for welding thin thickness lamination sheets and for MIG brazing in all welding positions.

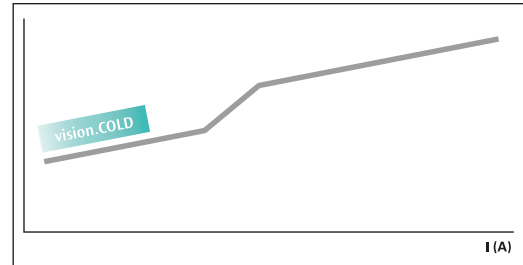
Thanks to supplied synergic programs, vision.COLD allows very high quality welding of thin sheets and its optimized arc ensures no deformation with minimal modification of the metallurgical characteristics of the joints.

vision.COLD software is also an excellent solution for welding open gap joints.



### ADVANTAGES

- ▶ Welding of high carbon and highly alloyed steel thin sheets
- ▶ High speed in welding joints versus traditional short arc MIG/MAG
- ▶ Very contained damage to zinc coated layer in Mig Brazing
- ▶ Significant reduction of heat input in welding joints with minimal deformation of the workpieces
- ▶ Lack of spatters and projections during the short circuit phase
- ▶ Vertical up or vertical down welding with perfect edge joints



### APPLICATIONS

- ▶ Welding of thin thickness laminations with low heat transfer
- ▶ Open gap joints in all positions
- ▶ MIG brazing with low heat transfer
- ▶ Welding of stainless steel
- ▶ Welding of thin aluminium sheets

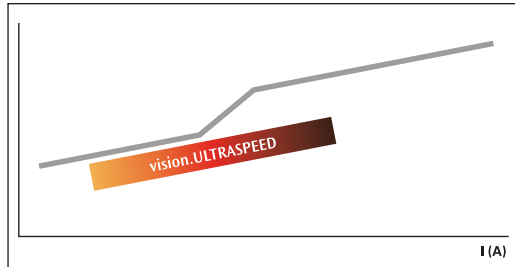
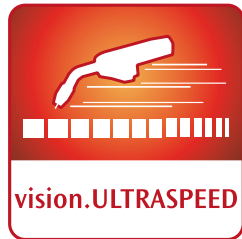


FRONT



BACK





UP TO  
**30%**  
FASTER

## HIGH SPEED MIG/MAG WELDING

vision.ULTRASPEED is an innovative MIG/MAG process developed by CEA for welding steel and non ferrous materials which, thanks to the arc increased magnetic strength and a narrower arc cone, allows a remarkable increase in welding speed.

This process grants an inferior overheating of the base material with less shrinkage tension and consequently less workpiece reworking and finishing job.

vision.ULTRASPEED allows to replace short-arc and mixed-arc MIG/MAG with a remarkable increase in the welding job completion.

### ADVANTAGES

- ▶ Very high welding speed
- ▶ Welding of medium thickness carbon steel, stainless and aluminium
- ▶ Narrower welding beads with less filler material and shielding gas
- ▶ Reduction of heat input in the welding puddle
- ▶ Lack of spatters and projections in wire deposition

### APPLICATIONS

- ▶ Light and medium fabrication work
- ▶ Manufacture of mild and stainless steel and aluminium
- ▶ Automotive industry
- ▶ Petrochemical industry
- ▶ Food industry
- ▶ Railway wagon manufacturing
- ▶ Small medium size tank and container construction



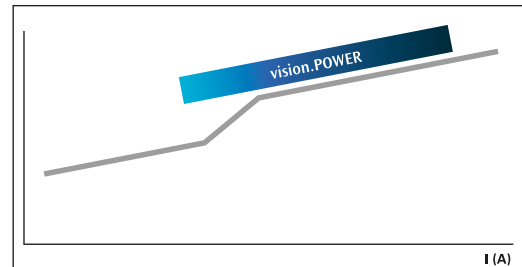
## HIGH PENETRATION MIG/MAG WELDING

vision.POWER is the innovative MIG/MAG process developed by CEA for welding medium large thickness steel and non ferrous materials (aluminium, copper, etc.), whenever high penetration is required.

By means of this special welding process, the arc cone becomes narrower, therefore its pressure is concentrated on a smaller area of the workpiece, thus heavily increasing the penetration.

vision.POWER more concentrated arc is ideal for fillet welding and to enter into very narrow joints requiring a very long stick-out.

vision.POWER enables to replace MIG/MAG spray arc welding with a remarkable increase in penetration and faster welding execution too.

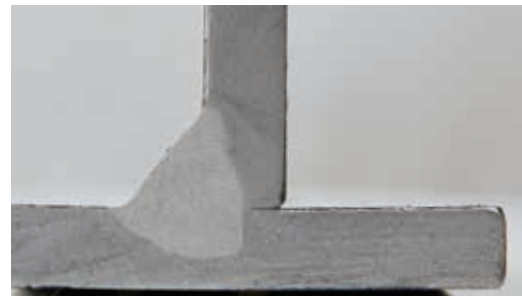


### ADVANTAGES

- ▶ Deeper penetration at same welding current being used
- ▶ Far higher welding speed versus spray-arc MIG/MAG process
- ▶ Less consumption of filler material and shielded gas
- ▶ Heat transfer heavy reduction to eliminate hot cracking in the workpiece material
- ▶ Less welding passes thanks to reduced angle sizes in the edge bevelling
- ▶ Far less risk of different solid material inclusion into the welding bead
- ▶ Lack of porosity and blow holes
- ▶ No filler material overdepositing in butt joints
- ▶ Total lack of spatters and metallic projections

### APPLICATIONS

- ▶ Medium and heavy fabrication work
- ▶ Mild steel, stainless and aluminium large erection works
- ▶ Ideal for welding in narrow gaps, where longer stick out is necessary
- ▶ "T" fillet welding
- ▶ Manufacture of heavy duty trucks and vehicles
- ▶ Shipyards
- ▶ Railway wagon manufacture
- ▶ Fabrication of large size tanks and containers





CC  
CV



DC  
+ -

DIGITAL  
888



## MULTIFUNCTION INVERTER POWER SOURCES FOR MIG/MAG, MMA AND TIG WELDING

Latest generation inverter technology with digital control is the main feature of the multifunction CONVEX BASIC series. Innovative, technologically ahead, robust and easy-to-use, they offer premium quality welding in MIG/MAG, MMA and TIG with "Lift" mode and represent the best solution for the most qualified welding applications in any industrial field requiring high precision and repeatability of the achieved results. CONVEX BASIC's are ideal for anybody looking for an innovative, modern and, at the same time, user friendly equipment, more similar in the adjustments of the parameters to a traditional power source. CONVEX BASIC 400 e 500 are supplied with a separate wire feeder, whilst CONVEX BASIC 320 is designed with a built-in one.

### WHY TO CHOOSE CONVEX BASIC?

- ▶ Excellent welding quality
- ▶ Welding process always under control thanks to the digital adjustment of all parameters
- ▶ Multiprocess equipment with exceptional welding characteristics in MIG/MAG, MMA and TIG.
- ▶ Excellent arc striking always precise and efficient
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Ability to store personalized welding parameters up to 99 JOBS
- ▶ Ability of presetting welding parameters
- ▶ Initial and final crater control
- ▶ Monitoring and repeatability of the welding parameters
- ▶ Low energy consumption
- ▶ "Energy Saving" function to operate the power source cooling fan and torch water cooling only when necessary
- ▶ Mains voltage fluctuation automatic compensation within +20% -20%



- ▶ Metallic main structure with shockproof fibre compound front frames.
- ▶ Control rack protection cover.
- ▶ Easy to read and adjust sloping front control panel, highly visible from any direction.
- ▶ IP 23 S protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments.



## POWER SOURCE

- ▶ Digital adjustments of all the welding parameters
- ▶ Digital Voltmeter and Ammeter with Hold Function of the last parameter and presetting of the welding current
- ▶ Digital display to preset and read the welding parameters
- ▶ Selector: Current • Wire speed
- ▶ Selector: Voltage • Electronic inductance
- ▶ Welding "Process" selector:
  - MIG/MAG
  - MMA
  - TIG DC
  - JOB
- ▶ Welding "Cycle" selector:
  - 2T/4T
  - "Initial & Crater"
  - Spot timer
  - Stitch timer
- ▶ Arc voltage and electronic inductance adjustment
- ▶ Gas purge and wire inch
- ▶ Special function key

## MMA WELDING

- ▶ Adjustable Arc Force to select the best welding arc dynamic characteristic
- ▶ Adjustable Hot Start to improve the arc striking with the most difficult electrodes
- ▶ Electrode Antisticking function

## TIG WELDING

- ▶ DC TIG welding by "Lift" mode striking to minimize tungsten inclusion





CONVEX BASIC 400 and 500 equipment offer the possibility of using interconnecting cables up to 50 m in order to control the parameters directly from the feeder

#### HS 5 WIRE FEEDER

- ▶ Wire speed adjustment
- ▶ Welding voltage adjustment
- ▶ Gas purge and wire inch



- ▶ Professional wire feeding mechanism with 4 rolls of large diameter for a precise and constant wire driving
- ▶ Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing
- ▶ Double groove rolls replaceable without any tool
- ▶ Lodging for wire spools up to 300 mm Ø maximum

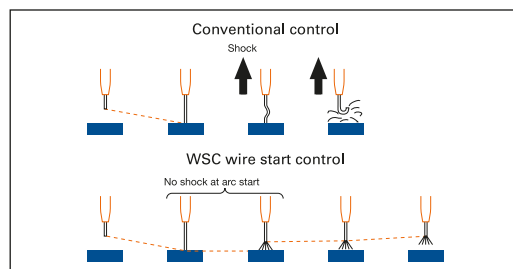


#### SHS AND MINI SHS STRONG FEEDERS

These wire feeders, fitted with a robust polypropylene suitcase, are the ideal solution for site jobs and harshest environments. Developed for use with solid and flux cored wires, SHS can lodge spools up to 300 mm Ø, whilst more compact and lighter mini SHS (8 kg only) can only take spools up to 200 mm Ø. V/Ameter available on request only with a special equipment version.

#### WSC - WIRE START CONTROL

This new arc striking control device prevents any possible wire sticking to the workpiece or torch nozzle, by ensuring a prompt and precise arc striking.



#### BURN BACK CONTROL

At the end of each weld, in any condition and with any material, the digital control ensures a perfect wire cut, thus avoiding the formation of the typical "wire globule" so ensuring the subsequent best arc restriking.



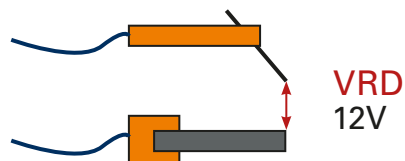
#### OPEN TO THE FUTURE

CONVEX BASIC equipment are systems open to evolving technology: both control firmware and software are designed to be always updatable.



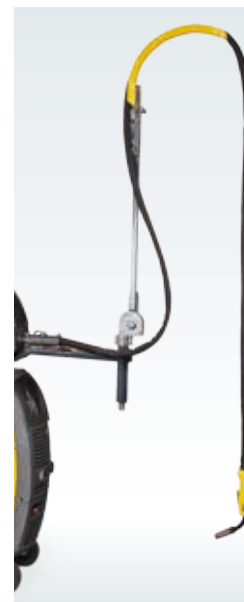
## VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces open circuit voltage below 12V and grants additional safety protection for the operator in all highly hazardous environments.



## ACCESSORIES

- Water cooling and gas cylinder trolley
- Wire feeder castors kit
- RC 176 remote control
- HR 30 water cooling equipment
- Autotransformer
- Water cooling trolley suitable for two gas cylinders and /or autotransformer



TECHNICAL DATA		CONVEX BASIC			
		320	330	400	500
Three phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	400	400	400	400
Input Power @ I <sub>2</sub> Max	kVA	14,3	18,8	18,6	25,6
Delayed Fuse (I <sub>2</sub> @ 60%)	A	20	25	25	35
Power Factor / cos $\varphi$		0,86/0,99	0,86/0,99	0,90/0,99	0,94/0,99
Efficiency Degree		0,85	0,82	0,88	0,89
Open circuit voltage	V	63	63	70	70
Current range	A	10 - 320	10 - 330	10 - 400	10 - 500
Duty cycle at (40°C)	A 100%	240	280	310	380
	A 60%	270	300	370	460
	A X%	320 (40%)	330 (40%)	400 (50%)	500 (50%)
Wires	Ø mm	0,6 - 1,2	0,6 - 1,2	0,6 - 1,6	0,6 - 2,0
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10			
		[S]			
Protection Class	IP	23 S	23 S	23 S	23 S
Insulation Class		H	H	H	H
Dimensions	↗ mm	660	660	660	660
	→ mm	290	290	290	290
	↑ mm	515	515	515	515
Weight	kg	39	35	39	43

Other voltages available on request



## MULTIVOLTAGE MULTIFUNCTION INVERTER POWER SOURCES

Multivoltage CONVEX YARD equipment, thanks to their highly electrical efficient inverter with digital control of all the parameters, can be connected to mains voltage supply ranging from 200V to 460V.

These multiprocess power sources have been optimized in MMA welding to be suitable with any kind of electrodes, cellulosic included, enable TIG welding with "Lift" mode and can be utilized in gouging jobs too. Combined with HS 5 or SHS feeders, they offer premium welding quality in MIG/MAG.

CONVEX YARD power sources, innovative, robust and easy-to-use, are the ideal solution whenever looking for a modern welding equipment for site or other harsh applications.



CC  
CV

Inverter

DC  
+ -

DIGITAL  
888



### WHY TO CHOOSE CONVEX YARD?

- ▶ Multivoltage equipment for 220/230/240 V 3ph 50/60 Hz 380/400/440 V 3ph 50/60 Hz
- ▶ Mains voltage fluctuation automatic compensation within +20% -20%
- ▶ Optimized in MMA welding with all electrodes, cellulosic included
- ▶ Inverter with high electrical efficiency ( $\eta=0.86$ ) and elevated Power Factor ( $PF=0.95$ )
- ▶ Particularly designed to be operated by power generator sets
- ▶ Excellent welding quality
- ▶ Welding process always under control thanks to the digital adjustment of all parameters
- ▶ Multiprocess equipment with exceptional welding characteristics in MIG/MAG, MMA, GOUGING and TIG
- ▶ Excellent arc striking always precise and efficient thanks to WSC – Wire Start Control
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Ability to store personalized welding parameters up to 99 JOBS
- ▶ Ability of presetting welding parameters
- ▶ Initial and final crater control
- ▶ Monitoring and repeatability of the welding parameters
- ▶ Low energy consumption
- ▶ "Energy Saving" function to operate the power source cooling fan and torch water cooling when necessary

- ▶ Digital adjustments of all the welding parameters
- ▶ Digital Voltmeter and Ammeter with Hold Function of the last parameter and presetting of the welding current
- ▶ Digital display to preset and read the welding parameters
- ▶ Selector: current, wire speed
- ▶ Selector: voltage, electronic inductance
- ▶ Welding "process" selector: • MIG/MAG • MMA • GOUGING • TIG DC • JOB
- ▶ Welding "Cycle" selector: • 2T / 4T • "Initial & Crater" • Spot Timer • Stitch Timer
- ▶ Gas purge and wire inch
- ▶ Special function key



#### MMA WELDING

- ▶ Adjustable Arc Force to select the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with the most difficult electrodes
- ▶ Electrode Antisticking function

#### TIG WELDING

- ▶ DC TIG welding by "Lift" mode striking to minimize tungsten inclusion



- ▶ Metallic main structure with shock-proof fibre compound front frames
- ▶ Control rack protection cover
- ▶ Easy to read and adjust sloping front control panel, highly visible from any direction
- ▶ IP 23 S protection class and dust-proof electronic components thanks to the innovative "tunnel" fan cooling system, allow operation in the toughest work environment



CONVEX 420 YARD equipment offer the possibility of using interconnecting cables up to 50 m in order to control the parameters directly from the feeder

#### HS 5 - SHS WIRE FEEDER

- ▶ Wire speed adjustment
- ▶ Welding voltage adjustment
- ▶ Gas purge and wire inch



- ▶ Professional wire feeding mechanism with 4 rolls of large diameter for a precise and constant wire driving
- ▶ Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing
- ▶ Double groove rolls replaceable without any tool
- ▶ Lodging for wire spools up to 300 mm Ø maximum



SHS



MINI SHS



### SHS AND MINI SHS STRONG FEEDERS

These wire feeders, fitted with a robust polypropylene suitcase, are the ideal solution for site jobs and harshest environments. Developed for use with solid and flux cored wires, SHS can lodge spools up to 300 mm Ø, whilst more compact and lighter mini SHS (8,6 kg only) can only take spools up to 200 mm Ø. V/Ameter available on request only with a special equipment version.

### FACTORY CONFIGURATION

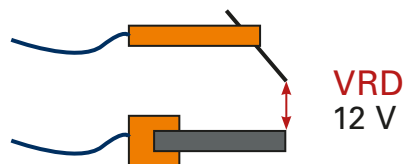


### ON SITE CONFIGURATION



## VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces open circuit voltage below 12 V and grants additional safety protection for the operator in all highly hazardous environments



## ACCESSORIES

- Water cooling and gas cylinder trolley
- Wire feeder castors kit
- RC 166 remote control
- Water cooling trolley suitable for two gas cylinders and/or autotransformer
- Polarity changeover



TECHNICAL DATA		CONVEX 420 YARD	
Three phase input 50/60 Hz	V $\begin{matrix} +20\% \\ -20\% \end{matrix}$	220/230/240	380/400/440
Input Power @ $I_2$ Max	kVA	14,3	17,0
Delayed Fuse ( $I_2$ @ 60%)	A	30	20
Power Factor / $\cos \varphi$		0,95/0,99	0,95/0,99
Efficiency Degree		0,84	0,86
Open circuit voltage	V	72	72
Current range	A	10 - 350	10 - 400
Duty cycle at (40°C)	A 100%	270	330
	A 60%	310	360
	A 40%	350	400
Wires	Ø mm	0,6 - 1,2	0,6 - 1,6
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10	
Protection Class	IP	23 S	23 S
Insulation Class		H	H
Dimensions	↗ mm	660	660
	→ mm	290	290
	↑ mm	515	515
Weight	kg	42	42

Other voltages available on request



CC  
CV



DC  
+ -



DIGITAL  
888



## SYNERGIC MULTIFUNCTION INVERTER POWER SOURCES FOR MIG/MAG, MMA AND TIG WELDING.

Futuristic design combined with latest generation inverter technology with synergic digital control to automatically determine best welding parameters based on the used type of material, wire diameter and gas, are main features of these synergic multiprocess power sources of CONVEX VISION series. Thanks to their innovative digital control, with colour display and the extraordinary VISION.ARC, with its special welding processes, CONVEX VISION equipment fully meet the needs of combining synergy with the total control of all the welding parameters.

Innovative, technologically ahead, robust and easy-to-use, they offer premium welding quality at high speed, in MIG/MAG, MMA and TIG with "Lift" arc striking and represent the best solution for the most qualified welding applications in any industrial field requiring high precision and repeatability of the achieved results. CONVEX VISION 4000 and 5000 are supplied with a separate welding wire feeder, whilst CONVEX VISION 3200 is designed with a built-in feeder.

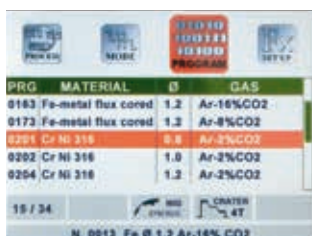
## WHY TO CHOOSE CONVEX VISION?

- ▶ Digital control of the welding parameters with preset synergic curves according to the type of material, gas and wire diameter being used
- ▶ VISION.ARC with its excellent welding performances, more wire deposit, higher welding speed and reduced thermal dilatations
- ▶ Interface with LCD colour display to keep under control the whole welding process
- ▶ Multiprocess equipment with exceptional performance in MIG/MAG, MMA and TIG
- ▶ Special WELDING PROCESSES on request
- ▶ Welding process always under control by means of digital adjustments of all parameters
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Ability to store personalized welding parameters up to 99 JOBS
- ▶ Ability of presetting welding parameters
- ▶ Excellent arc striking always precise and efficient
- ▶ Initial and final crater control
- ▶ Ability to partially or totally lock the equipment with access key by password
- ▶ Monitoring and repeatability of the welding parameters
- ▶ "Energy Saving" function to operate the power source cooling fan and torch water cooling only when necessary
- ▶ Welding parameter adjustments directly from up/down MIG torch
- ▶ Data storing and data printing ability (Optional)



## CONVEX VISION SYNERGIC CONTROL

CONVEX VISION synergic digital control, fitted with the innovative colour display with icons and easily-read graphics, allows even less expert welders to very easily adjust all the welding parameters in an intuitive way with extreme simplicity. After choosing the program type according to used material, wire diameter and gas, the control automatically selects the best welding parameters fruit of CEA's know-how acquired in over 60 years' experience. At the same type CONVEX VISION's offer also most expert welders the possibility of fine tuning and customizing the welding process control, thanks to the ability to access clear, simple and complete under menus for the best possible configuration and optimization of the equipment.



## VISION ARC

VISION.ARC is the innovative welding arc performed by CONVEX VISION's: a powerful microprocessor manages in real time the welding process, by elaborated and adjusting, in a very few microseconds, over 100 welding parameters.

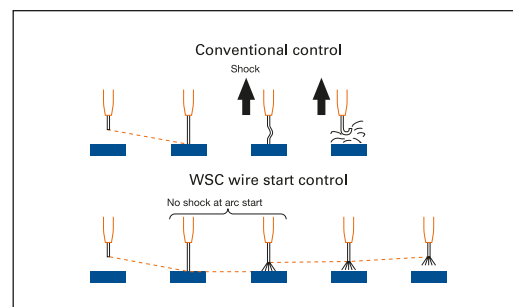
The entire welding process is under total control by keeping the arc extremely stable and precise in spite of any change in external conditions, while also compensating for the torch movement and workpiece irregularity.

VISION.ARC grants premium performances with an exceptionally high quality impossible to be obtained by traditional power sources, thus resulting into much faster welding speed, higher welding wire deposition and remarkable reduction in spatters and workpiece thermal dilatations.



## WSC - WIRE START CONTROL

This new arc striking control device prevents any possible wire sticking to the workpiece or torch nozzle, by always ensuring a prompt and precise arc striking.



## BURN BACK CONTROL

At the end of each weld, in any condition and with any material, the digital control ensures a perfect wire cut, thus avoiding the formation of the typical "wire globule" so ensuring the subsequent best arc restriking.



## SPECIAL PROCESSES (Optional)

VISION.ARC available on CONVEX VISION equipment is the support basis for MIG/MAG welding software of Special Processes, i.e. :



**vision.PIPE** for a more accurate welding in pipe first root pass



**vision.ULTRASPEED** for high speed welding



**vision.COLD** to weld thin thickness laminations with low heat transfer



**vision.POWER** for a more concentrated arc and deeper penetration on medium and thick thickness



- Metallic main structure with shock-proof fibre compound front frames
- Control rack protection cover
- Easy to read and adjust sloping front control panel, highly visible from any direction
- IP 23 S protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments



CONVEX VISION 4000 e 5000 equipment offer the possibility of using interconnecting cables up to 50 m in order to control the parameters directly from the feeder

#### HT 5 WIRE FEEDER

Also HT 5 duplicates main selection and control keys as given in the main power source. The available 4 independent displays in the whole equipment provide the possibility of contemporarily visualizing and monitoring 4 different parameters at the same time.



- Professional wire feeding mechanism with 4 rolls of large diameter for a precise and constant wire driving
- Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing
- Double groove rolls replaceable without any tool
- Lodging for wire spools up to 300 mm Ø maximum



#### DOUBLE FEEDER

CONVEX Vision's in the version with double feeder represent the ideal solution whenever a greater flexibility is needed in all applications using two different types of material.

Thanks to the double feeder it is possible to greatly reduce process change time with a consequent large increase in productivity.

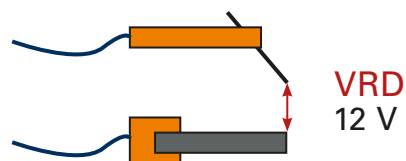
## DIGITORCH

DIGITORCH's allow the operator readily see and adjust main welding parameters on the wide torch display, i.e. welding current, material thickness, wire speed, arc length, electronic inductance and memorized program number. Besides, depending on the selected welding mode, it is possible to switch from one program to the other or increase/decrease the parameters of the synergic curve in use.



## VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces open circuit voltage below 12 V and grants additional safety protection for the operator in all highly hazardous environments.



## SIMPLE AUTOMATION

Standard equipped with analogic-digital I/O, CONVEX VISION can be easily integrated into automated welding equipment without any expensive and sophisticated external interfaces usually necessarily supplied for robotics.



## ROBOT INTERFACE

CONVEX Vision power sources can be easily connected to any Robot by means of a CEA Robot interface which can handle several analogic/digital and DeviceNet protocols depending on the features of the Robot to be used.



## OPEN TO THE FUTURE

CONVEX Vision equipment are systems open to evolving technology: both control firmware and software are designed to be always updatable.



## ACCESSORIES

- Water cooling and gas cylinder trolley
- Up/Down Torches
- Wire feeder castors kit
- Adjustable torch support
- RC 178 remote control
- Autotransformer
- Water cooling trolley suitable for two gas cylinders and /or autotransformer
- HR 30 water cooling equipment



TECHNICAL DATA		CONVEX VISION		
		3200	4000	5000
Three phase input 50/60 Hz	V $\begin{matrix} +20\% \\ -20\% \end{matrix}$	400	400	400
Input Power @ I <sub>2</sub> Max	kVA	14,3	18,6	25,6
Delayed Fuse (I <sub>2</sub> @ 60%)	A	20	25	35
Power Factor / cos $\varphi$		0,86/0,99	0,90/0,99	0,94/0,99
Efficiency Degree		0,85	0,88	0,89
Open circuit voltage	V	63	70	70
Current range	A	10 - 320	10 - 400	10 - 500
Duty cycle at (40°C)	A 100%	240	310	380
	A 60%	270	370	460
	A X%	320 (40%)	400 (50%)	500 (50%)
Wires	Ø mm	0,6 - 1,2	0,6 - 1,6	0,6 - 2,0
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10		
		<b>S</b>		
Protection Class	IP	23 S	23 S	23 S
Insulation Class		H	H	H
Dimensions	↗ mm	660	660	660
	→ mm	290	290	290
	↑ mm	515	515	515
Weight	kg	40	39	43

Other voltages available on request



## MULTIFUNCTION INVERTER POWER SOURCES FOR DUAL-PULSED MIG, PULSED MIG, MIG/MAG, MMA AND TIG.

The synergic multifunction DIGISTAR 250 power sources, based on the most modern IGBT inverter technology and fully digital controlled, allow premium welding quality in MIG/MAG, Pulsed and Dual-Pulsed MIG on all materials and particularly on stainless steel, aluminium and galvanized steel, by minimizing any reworking job thanks to their spatter free welding.

Innovative, robust and easy-to-use, DIGISTAR's represent the ideal solution for any application requiring high precision and repeatability of the achieved results, by making these power sources perfectly suitable for the most qualified industrial and professional jobs, particularly in qualified maintenance and automotive sector.

Their lightweight and reduced size provide the portability and their very high technological content makes them "star" performers even in toughest working conditions.

DIGISTAR's versatility allows the operator achieve optimal results both in TIG by "Lift" mode striking and in MMA welding.



- ▶ Synergic digital control of all the welding parameters
- ▶ Spatter free exceptional welding characteristics in MIG, MIG Pulsed and Dual-Pulsed MIG on any material and different gas type
- ▶ High welding performances both in MMA and TIG by "Lift" mode striking
- ▶ Ability to store personalized welding programs
- ▶ "Energy Saving" function to switch off the power source cooling fan when no longer necessary
- ▶ Monitoring and repeatability of the welding parameters which can be printed
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Low energy consumption
- ▶ Auto-diagnostic feature for trouble shooting
- ▶ Initial and crater welding cycle control
- ▶ Total or partial equipment access locking key by password
- ▶ Use of special MIG torches enables the remote adjustment of the welding parameters from the torch
- ▶ Control panel protected against accidental impact
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow use in the toughest work environments

- ▶ Digital adjustment of all the welding parameters
- ▶ Digital Voltmeter and Ammeter with Hold Function of the last parameter and presetting of the welding current
- ▶ Digital display to preset and read the welding parameters
- ▶ Digital display to read the preset welding programs
- ▶ Selector: workpiece thickness, current, wire speed
- ▶ Selector: arc length, voltage, electronic inductance
- ▶ Welding "Process" selector:  
MIG Pulsed • MIG Dual Pulsed • MIG/MAG • MMA • TIG DC
- ▶ Welding "Cycle" selector:  
2T/4T • "Initial & Crater" • Spot Timer
- ▶ "Mode" selector:
  - SYN (Synergic): optimum welding parameters are synergically adjusted depending on the preset welding program
  - AUT (Auto): to retrieve personalized welding parameters
  - MAN (Manual): digital potentiometers allow manual adjustment of welding current and voltage as in a traditional machine
- ▶ Arc length and electronic inductance fine adjustment
- ▶ Gas purge and wire inch
- ▶ Special function key

#### MMA WELDING

- ▶ Adjustable Arc Force to select best welding arc dynamics
- ▶ Adjustable Hot Start to improve arc striking with most difficult electrodes
- ▶ Electrode Antisticking function

#### TIG WELDING

- ▶ DC TIG welding by "Lift" mode striking to minimize tungsten inclusion



Professional wire feeding mechanism with 4 large diameter rolls for a precise and constant wire driving

- ▶ Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing
- ▶ Double groove rolls replaceable without any tool
- ▶ Lodging for wire spools up to 300 mm Ø max.



#### DIGITORCH

DIGITORCH's allows the operator readily see on the large display and adjust main welding parameters: welding current, material thickness, wire speed, arc length, electronic inductance and memorized program number. Using the up/down button, depending on the selected welding mode, it is possible to switch from one program to the other or increase/decrease the parameters of the synergic curve in use.



## VISION.ARC

VISION.ARC is the innovative welding arc performed by DIGISTAR's: a powerful microprocessor manages in real time the welding process, by elaborated and adjusting, in a very few microseconds, over 100 welding parameters.

The entire welding process is under total control by keeping the arc extremely stable and precise in spite of any change in external conditions, while also compensating for the torch movement and workpiece irregularity.

VISION.ARC grants premium performances with an exceptionally high quality impossible to be obtained by traditional power sources, thus resulting into much faster welding speed, higher welding wire deposition and remarkable reduction in spatters and workpiece thermal dilatations.

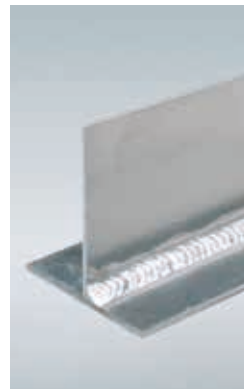
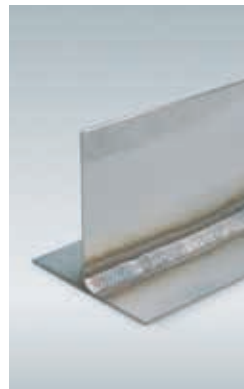


## VISION.PULSE

The new VISION.PULSE optimizes the results of traditional pulsed welding, allowing to obtain the classical "one pulse one droplet" deposition by using an even shorter arc.

Thanks to the very fast dynamic response of the control, VISION.PULSE modifies in real time the parameters, while maintaining a constantly monitored short arc.

This allows to reduce the high heat input, typical in pulse welding, with a consequent reduction in distortion, an improvement in the puddle and considerable increase in welding speed too.

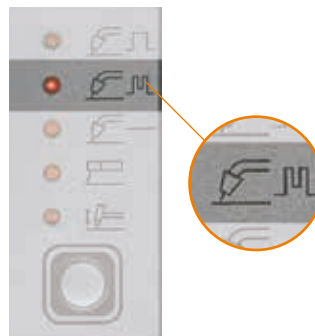


## DUAL-PULSED

This Pulsed Mig innovative system couples existing pulse peaks with a second level of variable frequency pulses.

Dual pulse favours a reduction in the heat transfer to the workpiece by minimizing its deformation and produces premium quality aesthetic beads similar to TIG finishing.

Dual Pulsed welding is extremely useful when welding aluminium and stainless steel.



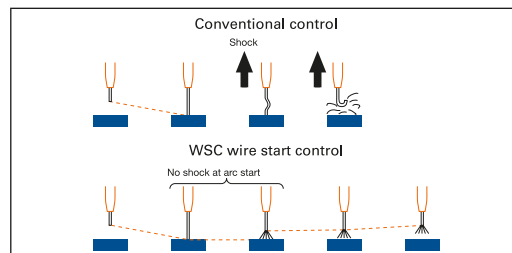
## DIGITAL CONTROL

An easy-to-use and user friendly control panel helps the inexperienced user to easily operate DIGISTAR's in MIG, Pulsed MIG and Dual Pulsed MIG. After choosing the preset welding program according to material, wire diameter and gas to be used, it is then sufficient to select the material thickness: the microprocessor automatically chooses the most correct parameters while compensating for any changes that occur during welding.



## WSC - WIRE START CONTROL

This new arc striking control device prevents any possible wire sticking to the workpiece or torch nozzle, by ensuring a precise and "soft" arc striking, particularly while welding aluminium.



## WFC – WAVE FORM CONTROL

Both welding parameters and pulse wave form, digitally controlled by the micro-processor, are monitored and modified in microseconds in order to keep the arc precise and stable while compensating for continuous changes in welding conditions caused by the torch movement and workpiece irregularity.



## BURN BACK CONTROL

At the end of each weld, in any condition and with any material, the digital control ensures a perfect wire cut thus avoiding the formation of the typical “wire globule” by ensuring the subsequent best arc restriking.



## OPEN TO THE FUTURE

DIGISTAR equipment are systems open to evolving technology: both control firmware and software are designed to be always updatable.



TECHNICAL DATA		DIGISTAR
		250
Three phase input 50/60 Hz	V $\begin{matrix} +15\% \\ -20\% \end{matrix}$	400
Input Power @ I <sub>2</sub> Max	kVA	12,6
Delayed Fuse (I <sub>2</sub> @ 60%)	A	16
Power Factor / cos $\varphi$		0,65/0,99
Efficiency Degree		0,81
Open circuit voltage	V	63
Current range	A	10 - 250
Duty cycle at (40°C)	A 100%	160
	A 60%	200
	A 35%	250
Wires	Ø mm	0,6 - 1,2
Standards		EN 60974-1 • EN 60974-5 • EN 60974-10
Protection Class	IP	23 S
Insulation Class		H
Dimensions	↗ mm	615
	→ mm	290
	↑ mm	525
Weight	kg	29

Other voltages available on request

## ACCESSORIES

- Up/Down torches
- Gas cylinder trolley
- Autotransformer





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DIGITAL  
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## SYNERGIC PULSED MULTIPROCESS INVERTER POWER SOURCES.

Latest generation inverter technology with synergic digital control to automatically determine best welding parameters, based on the used type of material, wire diameter and gas, are the main characteristics of these synergic multiprocess pulsed equipment of the DIGITECH VISION PULSE series.

Thanks to their innovative digital control with colour display and the extraordinary VISION.ARC with its special welding processes, DIGITECH VISION PULSE equipment fully meet the needs of combining synergy with the total control of all the welding parameters.

Technologically ahead, robust and easy-to-use, they offer premium welding quality at high speed, in PULSED MIG, DUAL PULSED, MIG/MAG, MMA and TIG with "Lift" arc striking and represent the best solution in any industrial field requiring high precision and repeatability of the achieved results.

DIGITECH VISION PULSE VISION 3300, 4000 and 5000 are supplied with a separate wire feeder, whilst DIGITECH 3200 VISION PULSE is designed with a built-in feeder.

## WHY TO CHOOSE DIGITECH VISION PULSE?

- ▶ Multiprocess equipment with exceptional performance in Pulsed MIG, Dual Pulsed, MIG/MAG, MMA e TIG.
- ▶ Digital control of the welding parameters with preset synergic curves according to the type of material, gas and wire diameter being used
- ▶ VISION.ARC with its excellent welding performances, more wire deposit, higher welding speed and reduced thermal dilatations
- ▶ Interface with LCD colour display to keep under control the whole welding process
- ▶ Special welding processes on request: vision.COLD, vision.PIPE, vision.POWER and vision.ULTRASPEED
- ▶ Welding process always under control by means of digital adjustments of all parameters
- ▶ User friendly and easy-to-use selection and recalling of the parameters and welding programs
- ▶ Ability to store personalized welding parameters up to 99 JOBS
- ▶ Ability of presetting welding parameters
- ▶ Excellent arc striking always precise and efficient
- ▶ Initial and final crater control
- ▶ Ability to partially or totally lock the equipment with access key by password
- ▶ Monitoring and repeatability of the welding parameters
- ▶ Low energy consumption
- ▶ "Energy Saving" function to operate the power source cooling fan and torch water cooling when necessary
- ▶ Welding parameter adjustments directly from up/down MIG torch
- ▶ Mains voltage fluctuation automatic compensation within +20% -20%
- ▶ Data storing and data printing ability (Optional)

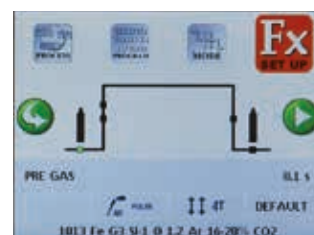


## DIGITECH VISION PULSE SYNERGIC CONTROL

DIGITECH VISION PULSE synergic digital control, fitted with the innovative colour display with icons and easily-read graphics, allows even less expert welders to very easily adjust all the welding parameters in an intuitive way with extreme simplicity.

After choosing the program type according to used material, wire diameter and gas, the control automatically selects the best welding parameters fruit of CEA's know-how acquired in over 60 years' experience.

At the same type DIGITECH VISION PULSE equipment offer also most expert welders the possibility of fine tuning and customizing the welding process control, thanks to the ability to access clear, simple and complete under menus for the best possible configuration and optimization of the equipment.



## VISION.ARC

VISION.ARC is the innovative welding arc performed by DIGITECH VISION PULSE's: a powerful microprocessor manages in real time the welding process, by elaborated and adjusting, in a very few microseconds, over 100 welding parameters.

The entire welding process is under total control by keeping the arc extremely stable and precise in spite of any change in external conditions, while also compensating for the torch movement and workpiece irregularity.

VISION.ARC grants premium performances with an exceptionally high quality impossible to be obtained by traditional power sources, thus resulting into much faster welding speed, higher welding wire deposition and remarkable reduction in spatters and workpiece thermal dilatations.

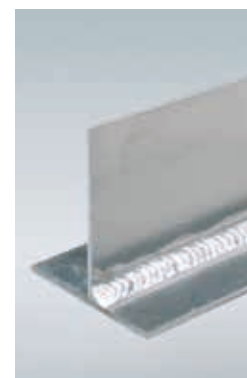
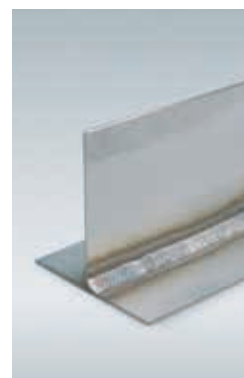


## VISION.PULSE

The new VISION.PULSE optimizes the results of traditional pulsed welding, allowing to obtain the classical "one pulse one droplet" deposition by using an even shorter arc.

Thanks to the very fast dynamic response of the control, VISION.PULSE modifies in real time the parameters, while maintaining a constantly monitored short arc.

This allows to reduce the high heat input, typical in pulse welding, with a consequent reduction in distortion, an improvement in the puddle and considerable increase in welding speed too.



## DUAL-PULSED

This Pulsed Mig innovative system couples existing pulse peaks with a second level of variable frequency pulses.

Dual pulse favours a reduction in the heat transfer to the workpiece by minimizing its deformation and produces premium quality aesthetic beads similar to TIG finishing.

Dual Pulsed welding is extremely useful when welding aluminium and stainless steel.



## SPECIAL PROCESSES (OPTIONAL)

VISION.ARC available on DIGITECH VISION PULSE equipment is the support basis for MIG/MAG welding software of special processes, i.e. :



**vision.PIPE** for a more accurate welding in pipe first root pass



**vision.ULTRASPEED** for high speed welding



**vision.COLD** to weld thin thickness laminations with low heat transfer



**vision.POWER** for a more concentrated arc and deeper penetration on medium and thick thickness

- Metallic main structure with shock-proof fibre compound front frames
- Control rack protection cover
- Easy to read and adjust sloping front control panel, highly visible from any direction
- IP 23 S protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments



DIGITECH VISION PULSE 3300, 4000 and 5000 equipment offer the possibility of using interconnecting cables up to 50 m in order to control the parameters directly from the feeder

#### HT 5 WIRE FEEDER

Also HT 5 duplicates main selection and control keys as given in the main power source. The available 4 independent displays, feeder plus power source, provide the possibility of contemporarily visualizing and monitoring 4 different parameters at the same time.



- Professional wire feeding mechanism with 4 rolls of large diameter for a precise and constant wire driving
- Graduated knob to achieve the most correct value of the wire pressure, which remains unchanged also after any arm opening and closing
- Double groove rolls replaceable without any tool
- Lodging for wire spools up to 300 mm Ø maximum

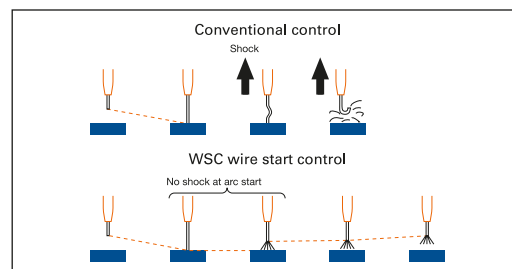


#### DOUBLE FEEDER

DIGITECH VISION PULSE's in the version with double feeder represent the ideal solution whenever a greater flexibility is needed in all applications using two different types of material. Thanks to the double feeder it is possible to greatly reduce process change time with a consequent large increase in productivity.

### WSC - WIRE START CONTROL

This new arc striking control device prevents any possible wire sticking to the workpiece or torch nozzle, by always ensuring a prompt and precise arc striking.



### BURN BACK CONTROL

At the end of each weld, in any condition and with any material, the digital control ensures a perfect wire cut, thus avoiding the formation of the typical "wire globule", so ensuring the subsequent best arc restriking.



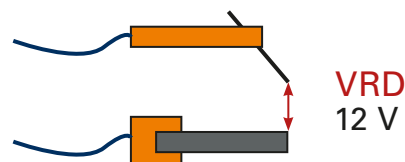
### DIGITORCH

DIGITORCH's allow the operator readily see on the wide torch display and adjust main welding parameters, i.e. welding current, material thickness, wire speed, arc length, electronic inductance and memorized program number. Besides, depending on the selected welding mode, it is possible to switch from one program to the other or increase/decrease the parameters of the synergic curve in use.



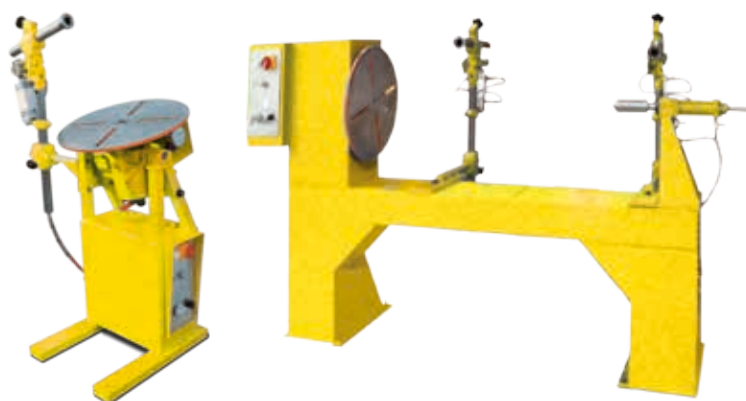
### VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces open circuit voltage below 12 V and grants additional safety protection for the operator in all highly hazardous environments.



### SIMPLE AUTOMATION

Standard equipped with analogic-digital I/O, DIGITECH VISION PULSE can be easily integrated into automated welding equipment without any expensive and sophisticated external interfaces usually necessarily supplied for robotics.



### ROBOT INTERFACE

DIGITECH VISION PULSE power sources can be easily connected to any Robot by means of a CEA Robot interface which can handle several analogic/digital and DeviceNet protocols depending on the features of the Robot to be used.



## OPEN TO THE FUTURE

DIGITECH VISION PULSE equipment are systems open to evolving technology: both control firmware and software are designed to be always updatable.



## ACCESSORIES

- Up/Down torches
- Water cooling and gas cylinder trolley
- Wire feeder castors kit
- Adjustable torch support
- RC 178 remote control
- Autotransformer
- Water cooling trolley suitable for two gas cylinders and/or autotransformer
- HR 30 water cooling equipment



TECHNICAL DATA		DIGITECH VISION PULSE			
		3200	3300	4000	5000
Three phase input 50/60 Hz	V $\begin{matrix} +20\% \\ -20\% \end{matrix}$	400	400	400	400
Input Power @ I <sub>2</sub> Max	kVA	18,8	18,8	25,5	32
Delayed Fuse (I <sub>2</sub> @ 60%)	A	25	25	30	40
Power Factor / cos $\varphi$		0,64/0,99	0,64/0,99	0,66/0,99	0,66/0,99
Efficiency Degree		0,83	0,83	0,86	0,89
Open circuit voltage	V	63	63	70	70
Current range	A	10 - 320	10 - 330	10 - 400	10 - 500
Duty cycle at (40°C)	A 100%	240	280	330	380
	A 60%	270	300	370	460
	A X%	320 (40%)	330 (40%)	400 (50%)	500 (50%)
Wires	Ø mm	0,6 - 1,2	0,6 - 1,2	0,6 - 1,6	0,6 - 1,6
Standards		EN 60974-1 • EN 60974-10			
Protection Class	IP	23 S	23 S	23 S	23 S
Insulation Class		H	H	H	H
Dimensions	↗ mm	660	660	660	660
	→ mm	290	290	290	290
	↑ mm	515	515	515	515
Weight	kg	41	35	40	44

Other voltages available on request

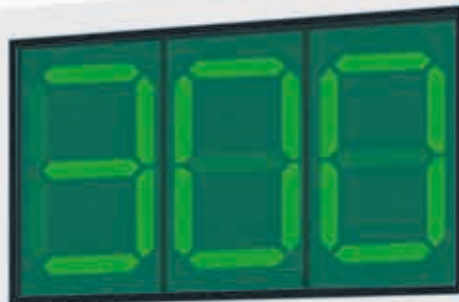
# MATRIX 3000 AC/DC

VRD

- ☒ HF/AC
- ☒ HF/DC
- ☒ I/DC
- ☒ [Symbol]



- ☒ [Symbol]
- ☒ [Symbol]
- ☒ CYCLE
- ☒ [Symbol]

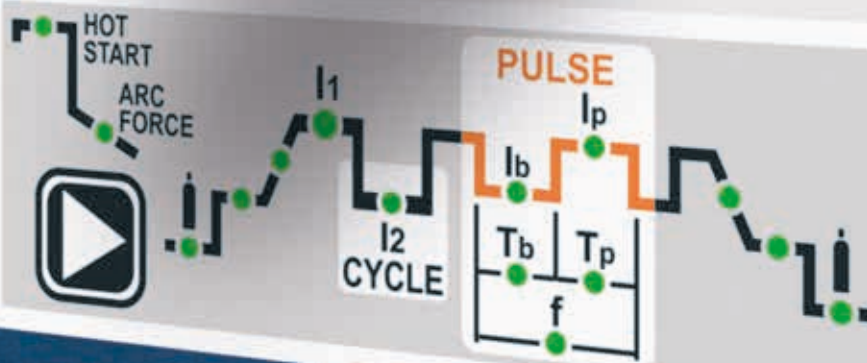


☒ A

☒ V

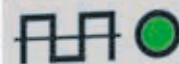


+



MEM

PRG



WAVE



SYN ☒

FAST ☒ ULTRA FAST

SLOW ☒

PULSE



RAINBOW 170 HF - 200 HF  
 RAINBOW 201 HF - 202 HF PRO  
 MATRIX 2200 HF  
 MATRIX HF  
 MATRIX 2200 AC/DC  
 MATRIX AC/DC

<b>RAINBOW HF</b>										
RAINBOW 170 HF	170 A 20%	■		■	■					
RAINBOW 200 HF	200 A 20%	■		■	■		■	■	■	■
RAINBOW 201 HF	200 A 25%	■		■	■					
RAINBOW 202 HF PRO	200 A 25%	■		■	■		■	■	■	■
<b>MATRIX HF</b>										
MATRIX 2200 HF	220 A 30%	■		■	■		■	■	■	■
MATRIX 250 HF	250 A 35%		■	■	■		■	■	■	■
MATRIX 3000 HF	300 A 35%		■	■	■		■	■	■	■
MATRIX 400 HF	400 A 35%		■	■	■		■	■	■	■
<b>MATRIX AC/DC</b>										
MATRIX 2200 AC/DC	220 A 30%	■		■	■	■	■	■	■	■
MATRIX 250 AC/DC	250 A 35%		■	■	■	■	■	■	■	■
MATRIX 3000 AC/DC	300 A 35%		■	■	■	■	■	■	■	■
MATRIX 400 AC/DC	400 A 35%		■	■	■	■	■	■	■	■
MATRIX 500 AC/DC	500 A 35%		■	■	■	■	■	■	■	■

I2 @ 100%
  I2 @ 60%
  I2 @ X%
  excellent
  good



## SINGLE PHASE TIG DC INVERTER WELDING EQUIPMENT

RAINBOW 170 HF and digital control RAINBOW 200 HF represent the latest evolution of inverter DC welding machines. These powerful 100 kHz power sources, based on the very latest IGBT technology and fitted with flat transformer, can be used for TIG welding of any metal, excluding aluminium and its alloys. RAINBOW 170 and 200 HF, also very well performing in MMA welding, thanks to their light and compact size and excellent welding characteristics, are the ideal solution for maintenance, assembly and light fabrication works.



CC

DC  
+ -

- Precise and efficient TIG arc striking by high frequency
- High performance on thin metal sheets
- Standard equipped with pulse mode integrated into the control with "EASY PULSE" facility (RAINBOW 200 HF)
- Digital control of all the welding parameters with the possibility of storing 9 personalised programs (RAINBOW 200 HF)
- Low energy consumption and high efficiency Shock-proof fibre compound main structure
- Control panel protected against accidental impact
- Sloping front control panel, easy to read and adjust and highly visible from any direction
- IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow their use in the toughest work environments



### "EASY PULSE"

"EASY PULSE" feature, in function of the chosen peak current, in a simple and automatic way will synergically generate an adequate pulse frequency (between 0.5 and 500 Hz) and a base current, both readjustable in a synergic way.

Pulse parameter values preselected in the control will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.



## RAINBOW 170 HF

- Welding current electronic adjustment
- Welding process selector:  
TIG DC • TIG DC "Lift" • MMA
- Welding mode selector: 2T/4T

## RAINBOW 200 HF

- Digital adjustment of all welding parameters
- Welding process selector:  
TIG DC • TIG DC "Lift" • MMA
- Welding mode selector:  
2T/4T • Cycle • Spot timer
- Digital ammeter with welding current presetting and Hold function of the last welding parameter
- Digital display for presetting all the welding parameters
- Full monitoring of the welding parameters
- Pulse TIG welding adjustable from 0,5 to 500 Hz with available "EASY PULSE" facility
- Personalized welding program storing and recalling



RAINBOW FUNCTION		170 HF		200 HF	
		TIG DC	MMA	TIG DC	MMA
Pre Gas				•	
Initial current				•	
Up Slope				•	
Welding current		•	•	•	•
2nd welding current	"CYCLE"			•	
Pulse cycle	"PULSE"			•	
Down Slope		•		•	
Final current				•	
Post gas		•		•	
Spot time				•	
Automatic Hot Start			•		•
Automatic Arc Force			•		•
Automatic Antisticking			•		•

TECHNICAL DATA		RAINBOW 170 HF		RAINBOW 200 HF	
		TIG DC	MMA	TIG DC	MMA
Single phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	230	230	230	230
Input Power @ I <sub>2</sub> Max	kVA	7,2	7,9	8,5	9,0
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	16	20	20
Power Factor / cos $\phi$		0,66/0,99	0,66/0,99	0,67/0,99	0,67/0,99
Efficiency Degree		0,82	0,84	0,82	0,84
Open circuit voltage	V	88	88	88	88
Current range	A	5 - 170	5 - 150	5 - 200	5 - 160
Duty cycle at (40°C)	A 100%	95	95	110	105
	A 60%	115	115	130	125
	A X%	170 (20%)	150 (25%)	200 (20%)	160 (30%)
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10			
Protection Class	IP	23 S		23 S	
Insulation Class		H		H	
Dimensions	↗ mm	390		390	
	→ mm	135		135	
	↑ mm	300		300	
Weight	kg	7		7,5	

Other voltages available on request



## ACCESSORIES

- CD 6 remote control (RAINBOW 200HF)
- PSR 7 foot remote control (RAINBOW 200HF)
- Carrying belt



## SINGLE PHASE TIG DC INVERTER WELDING EQUIPMENT

RAINBOW 201 HF and RAINBOW 200 HF PRO represent the latest evolution of inverter technology DC welding machines for professional applications. Equipped with a digital control, these powerful 100 kHz power sources, based on the very latest IGBT technology and fitted with flat transformer, can be used for TIG welding of any metal, excluding aluminium and its alloys.

RAINBOW 201 HF and 202 HF PRO, also very well performing in MMA welding, due to their lightness and portability, are the ideal solution for excellent quality welding in maintenance, assembly and light fabrication works.



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DC  
+ -DIGITAL  
888

- ▶ Digital control of all the parameters
- ▶ TIG arc striking by high frequency or "Lift" mode
- ▶ High performance on thin metal sheets
- ▶ Low energy consumption and high efficiency
- ▶ Shock-proof fibre compound main structure
- ▶ Control panel protected against accidental impact
- ▶ Sloping front control panel, easy to read and adjust and highly visible from any direction
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow their use in the toughest work environments
- ▶ Use of TIG Up/Down torches will enable the remote control of the welding parameters directly from the torch



### "EASY PULSE" - SYN (RAINBOW 202 HF PRO)

"EASY PULSE"-SYN feature, in function of the chosen peak current, will synergically generate, in a simple and automatic way, an adequate pulse frequency (between 0.5 and 500 Hz) and also a base current, both of them readjustable in a synergic way. Pulse parameter values preselected in the control will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.

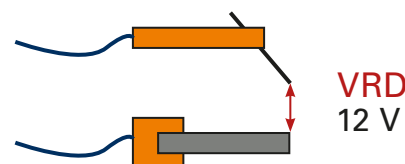


### FUNZIONE "CYCLE" (RAINBOW 202 HF PRO)

"CYCLE" function allows, by simply pressing the torch trigger, to continuously switch between two current values, previously preselected. This function is most suitable for welding different thickness profiles, requiring a continuous current adjustment change.

### VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.



## RAINBOW 201 HF

- Digital control of all the welding parameters
- Welding process selector:  
TIG DC • TIG DC "Lift" • MMA
- Welding Mode Selector:  
2T/4T • Spotting
- Digital ammeter with welding current presetting and hold function of the last read welding parameter
- Digital display for presetting all the welding parameters



## RAINBOW 202 HF PRO

- Welding "Mode" CYCLE
- TIG pulse welding from 0,5 to 500 Hz with possibility of activating the EASY PULSE™ - SYN facility
- Storing and recalling up to 20 personalized welding programs
- Monitoring of all welding parameters.

RAINBOW FUNCTION		201 HF		202 HF PRO	
		TIG DC	MMA	TIG DC	MMA
Pre Gas		•		•	
Initial current				•	
Up Slope		•		•	
Welding current		•	•	•	•
2nd welding current	"CYCLE"			•	
Pulse cycle	"PULSE"			•	
Down Slope		•		•	
Final current				•	
Post gas		•		•	
Spot time		•		•	
Automatic Hot Start			•		•
Automatic Arc Force			•		•
Automatic Antisticking			•		•

TECHNICAL DATA		RAINBOW 201 HF		RAINBOW 202 HF PRO	
		TIG DC	MMA	TIG DC	MMA
Single phase input 50/60 Hz	V <sup>+20%</sup> <sub>-20%</sub>	230	230	230	230
Input Power @ I <sub>2</sub> Max	kVA	8,5	9	8,5	9
Delayed Fuse (I <sub>2</sub> @ 100%)	A	20	20	20	20
Power Factor / cos φ		0,67/0,99	0,67/0,99	0,67/ 0,99	0,67/0,99
Efficiency Degree		0,82	0,84	0,82	0,84
Open circuit voltage	V	88	88	88	88
Current range	A	5 - 200	5 - 160	5 - 200	5 - 160
Duty cycle at (40°C)	A 100%	120	110	120	110
	A 60%	140	130	140	130
	A X%	200 (25%)	160 (30%)	200 (25%)	160 (30%)
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10			
Protection Class	IP	23 S		23 S	
Insulation Class		H		H	
Dimensions	↗ mm	390		390	
	→ mm	135		135	
	↑ mm	300		300	
Weight	kg	7,5		7,5	

Other voltages available on request



## ACCESSORIES

- CD6 remote control
- PSR 7 foot remote control
- Up/Down torches
- Carrying belt



# MATRIX 2200 HF



CC

Inverter

DC  
+ -

DIGITAL  
888

PULSED  
WAVEFORM



## TIG INVERTER WELDING EQUIPMENT

Powerful, handy, compact and lightweight MATRIX 2200 HF's are the most innovative, high-performing and technologically ahead single phase power sources ever developed for TIG welding.

Their PFC Power Factor Correction device optimizes the amount of energy consumption by allowing the use of these powerful power sources, without problems, with 16 A fuse mains and with power generator sets.

The user-friendly and advanced function digital control ensures an extraordinary perfect stability of the welding parameters thus granting very high quality welding both in TIG and MMA with any electrodes.

MATRIX 2200 HF's are the ideal choice for all qualified welding applications and maintenance jobs, whenever power and portability are needed.

MATRIX 2200 HF's allow TIG DC welding of mild and stainless steel, copper and its alloys.



- ▶ Built-in innovative PFC Power Factor Correction
- ▶ Digital adjustment of all the welding parameters
- ▶ High duty cycle (40°C) 220 A @ 30%
- ▶ Low current consumption (-30%)
- ▶ High reliability when used with generator sets
- ▶ Suitable to be used with mains cable lengths over 100 m
- ▶ Automatic compensation for mains voltage fluctuations within +/- 20%
- ▶ Excellent welding characteristics in TIG and MMA with any type of electrodes, cellulosic included
- ▶ High frequency arc striking, precise and efficient even from long distance
- ▶ Energy Saving function to operate the power source cooling fan and the torch water cooling only when necessary
- ▶ Possibility of activating the VRD function
- ▶ Possibility of memorizing welding parameters (7 JOBS)
- ▶ Use of up/down TIG torches will enable to adjust directly from the torch both welding parameters and memorized JOBS
- ▶ Auto-diagnostic feature for trouble shooting
- ▶ Control rack protection cover
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow operation in the toughest work environments
- ▶ Compact water cooling equipment integrable with the power source (optional)



- ▶ Digital control of all the welding parameters
- ▶ Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value
- ▶ Digital display for the presetting of the welding parameters
- ▶ Full monitoring of the welding parameters
- ▶ Welding process selector:  
TIG DC • TIG DC "Lift" • MMA
- ▶ Welding mode selector:  
2 Stroke • 4 Stroke • Cycle • Spot Timer
- ▶ Personalised welding program storing and recalling
- ▶ Pulse TIG welding adjustable from 0,5 up to 2000 Hz with available "SYN PULSE" facility

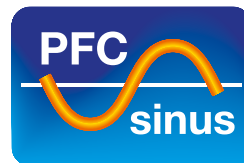
#### MMA FUNCTIONS

- ▶ Adjustable Arc Force for choosing the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with difficult electrodes
- ▶ Electrode Antisticking function

## PFC POWER FACTOR CORRECTION

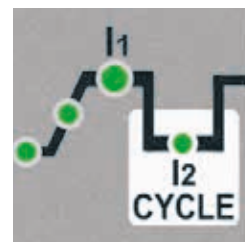
The wave shape of the current drawn from the mains is made sinusoidal by the PFC device with a consequent total lack of harmonic disturbances in the mains and consumption optimization, which enables to utilize the power source at full range on a 16A fuse.

The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets.



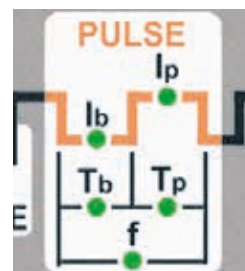
## FUNZIONE "CYCLE"

"CYCLE" function allows, by simply pressing the torch trigger, to continuously switch between two current values, previously preselected. This function is most suitable for welding different thickness profiles, requiring a continuous current adjustment change.



## "SYN PULSE"

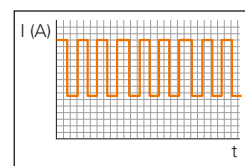
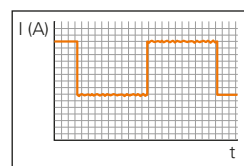
"SYN PULSE" facility, in function of the chosen peak current, in a simple and automatic way will synergically generate both an adequate pulse frequency and a base current, both readjustable in a synergic way. Pulse parameter values, preselected in the control, will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.



## ULTRA FAST - HIGH PULSE FREQUENCY IN DC

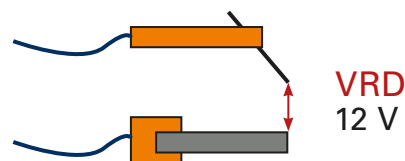
Pulse TIG welding grants better control of the arc and less material deformation.

Possibility of utilizing high pulse frequency, up to 2000 Hz ideal for thin thickness, allows greater reduction of both arc cone and thermally altered area with an arc more stable and concentrated, thus favoring an increase in welding penetration and speed.



## VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.



## ACCESSORIES

- Up/Down torches
- VT 100 trolley for lodging gas cylinder and water cooling equipment
- HR 22 water cooling equipment
- PSR 7 foot remote control
- CD 6 remote control
- Carrying belt



TECHNICAL DATA		MATRIX 2200 HF	
		TIG	MMA
Single phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	230	
Input Power @ I <sub>2</sub> Max	kVA	6,0	6,6
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	
Power Factor / cos $\varphi$		0,99	0,99
Efficiency Degree		0,77	0,80
Open circuit voltage	V	100	100
Current range	A	5 - 220	5 - 180
Duty cycle at (40°C)	A 100%	160	120
	A 60%	190	150
	A 30%	220	180
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10	
Protection Class	IP	23 S	
Insulation Class		F	
Dimensions	↗ mm	465	
	→ mm	185	
	↑ mm	390	
Weight	kg	14	

Other voltages available on request



CC

Inverter

DC  
+ -DIGITAL  
888PULSED  
M

## TIG INVERTER WELDING EQUIPMENT

Based on the very latest IGBT inverter technology, TIG power sources with high frequency arc striking of the MATRIX series are equipped with an innovative digital panel for the complete control of all the welding parameters. The excellent technical characteristics of these welding machines, coupled with the high technology of their digital control, allow high quality TIG welding, suitable for the toughest industrial applications and maintenance.

These highly advanced technology power sources are robust and user friendly: MATRIX HF's, DC output only, enable TIG welding of mild and stainless steel, copper and its alloys.

MATRIX series power sources also offer excellent performance in MMA welding with the most difficult basic and cellulosic electrodes.



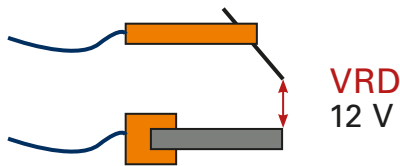
- Digital control of all the welding parameters
- Standard equipped with pulse mode integrated into the control with available "Easy Pulse" facility
- Excellent TIG welding characteristics
- High frequency Arc Striking, precise and efficient even from long distance
- "Energy Saving" function to operate the power source cooling fan and the torch water cooling only when necessary
- Low energy consumption
- Ability of storing and recalling personalised welding program
- Electromagnetic disturbance reduction because of high frequency used at arc striking only
- Use of special TIG torches will enable the remote control of the welding parameters directly from the torch
- Overheating thermostatic protection
- Metallic main structure with shock-proof fibre compound front panel
- Control panel protected against accidental impact
- Robust handle integrated into the chassis
- Sloping front panel easy to read and adjust and highly visible from any direction
- Reduced weight and size, easy-to-carry
- IP 23 protection class and dust proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow their use in the toughest environments

- Digital adjustment of all the welding parameters
- Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value (MATRIX 3000 HF - 420 HF)
- Digital ammeter with welding current presetting (MATRIX 250 HF)
- Digital display for the presetting of the welding parameters
- Full monitoring of the welding parameters
- Welding process selector switch: TIG DC • TIG DC "Lift" • MMA
- Welding mode selector switch: 2T/ 4T • Cycle • Spot Timer
- Personalised welding program storing and recalling
- Pulse TIG welding adjustable from
- 0,5 up to 500 Hz (MATRIX 250 HF) and from 0,5 to 2000 Hz with possibility of activating the "Easy Pulse" facility

#### MMA FUNCTIONS

- Adjustable Arc Force for choosing the best welding arc dynamics
- Adjustable Hot Start to improve the arc striking with difficult electrodes
- Electrode Antisticking function





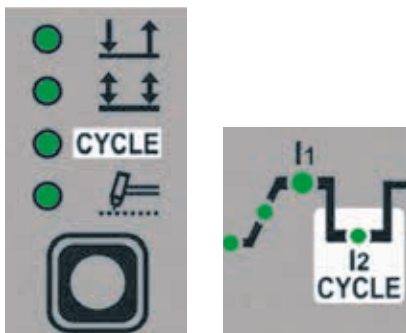
### VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.

FUNCTIONS		TIG DC	MMA
High Frequency striking		•	
"Lift" mode striking		•	
Pre Gas		•	
Initial Current		•	
Up Slope		•	
Welding current		•	
2nd welding current	"CYCLE"	•	
Base current	"PULSE"	•	
Base current time	"PULSE"	•	
Peak current	"PULSE"	•	
Peak current time	"PULSE"	•	
Pulse frequency	"PULSE"	•	
Down Slope		•	
Final current		•	
Post gas		•	
Spot time		•	
Hot Start			•
Arc Force			•

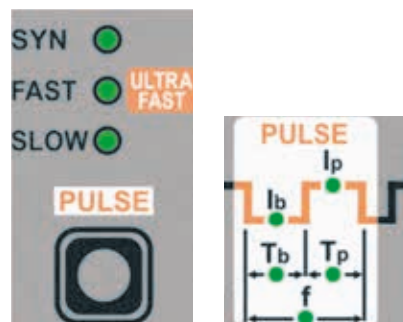
### "CYCLE" FUNCTION

"CYCLE" function allows, by simply pressing the torch trigger, to continuously switch between two current values, previously preselected. This function is most suitable for welding different thickness profiles, requiring a continuous current adjustment change.



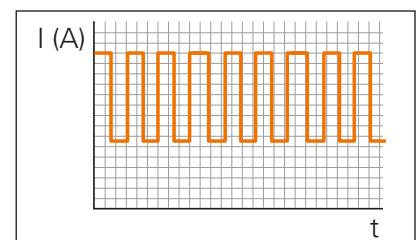
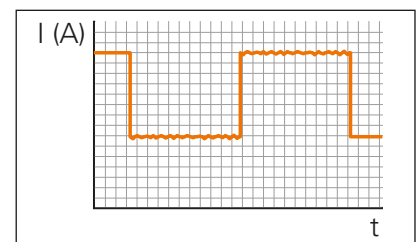
### "EASY PULSE" - SYN FUNCTION

"EASY PULSE-SYN" facility, in function of the chosen peak current, generates, in a simple and automatic way, an adequate pulse frequency and base current, both readjustable in a synergic way. Pulse parameter values preselected in the control will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.



### ULTRA FAST HIGH PULSE FREQUENCY - MATRIX 3000HF - MATRIX 420 HF

Pulse TIG welding allows a better arc control and less deformation of the workpiece. The possibility of utilizing very high pulse frequency, up to 2000 Hz, ideal for welding thin thickness, enables to obtain a remarkable reduction in the arc cone and in the thermally altered area, by also having a more stable and concentrated arc together with an increase in both penetration and speed too.





## ACCESSORI

- Trolley for lodging gas cylinder and water cooling equipment
- HR 23 and HR 26 water cooling equipment
- PSR 7 foot remote control
- CD 6 remote control
- Up/Down torches



HR 23



HR 26

TECHNICAL DATA		MATRIX 250 HF		MATRIX 3000 HF		MATRIX 420 HF	
		TIG	MMA	TIG	MMA	TIG	MMA
Three phase input 50/60 Hz	V $\begin{smallmatrix} +20\% \\ -20\% \end{smallmatrix}$	400		400		400	
Input Power @ I <sub>2</sub> Max	kVA	6,8	9,8	9,1	9,8	13,3	17,4
Delayed Fuse (I <sub>2</sub> @ 100%)	A	10	10	10	10	16	16
Power Factor / cos $\varphi$		0,98/0,99	0,97/0,99	0,96/0,99	0,95/0,99	0,95/0,99	0,95/0,99
Efficiency Degree		0,75	0,79	0,78	0,83	0,85	0,88
Open circuit voltage	V	95	95	100	100	100	100
Current range	A	5 - 250	5 - 250	5 - 300	10 - 270	5 - 420	10 - 400
Duty cycle at (40°C)	A 100%	170	160	210	200	270	270
	A 60%	200	200	250	230	340	340
	A X%	250 (35%)	250 (35%)	300 (35%)	270 (35%)	420 (40%)	400 (40%)
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10					
Protection Class	IP	23 S		23 S		23 S	
Insulation Class		H		F		F	
Dimensions	↗ mm	500		465		560	
	→ mm	220		185		220	
	↑ mm	425		390		425	
Weight	kg	22		17,5		25	

Other voltages available on request



# MATRIX 2200 AC/DC



CC



AC  
DC

DIGITAL  
888



## TIG INVERTER WELDING EQUIPMENT

Powerful, handy, compact and lightweight MATRIX 2200 AC/DC's are the most innovative, high-performing and technologically ahead single phase power sources ever developed for TIG welding.

Their PFC Power Factor Correction device optimizes the amount of energy consumption by allowing the use of these powerful power sources, without problems, with 16 A fuse mains and with power generator sets.

The user-friendly and advanced function digital control ensures an extraordinary perfect stability of the welding parameters, thus granting very high quality welding both in TIG and MMA with any electrodes.

MATRIX 2200 AC/DC's are the ideal choice for all qualified welding applications and maintenance jobs, whenever power and portability are needed.

MATRIX 2200 AC/DC's are suitable for TIG welding all metals, aluminium and its alloys included.



- ▶ Built-in innovative PFC Power Factor Correction
- ▶ Digital control of all the welding parameters
- ▶ Possibility of memorizing personalized welding parameters (7 JOBS)
- ▶ High duty cycle (40°C) 220 A @ 30%
- ▶ Low current consumption (-30%)
- ▶ High reliability when used with generator sets
- ▶ Suitable to be used with mains cable lengths over 100 m
- ▶ Automatic compensation for mains voltage fluctuations within +/- 20%
- ▶ Excellent welding characteristics in TIG and MMA with any type of electrodes, cellulosic included
- ▶ High frequency TIG arc striking, precise and efficient even from long distance
- ▶ “Energy Saving” function to operate the power source cooling fan and the torch water cooling only when necessary
- ▶ Use of up/down TIG torches will enable to adjust directly from the torch both welding parameters and memorized JOBS
- ▶ Auto-diagnostic feature for trouble shooting
- ▶ Control rack protection cover
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative “tunnel” fan cooling system, allow operation in the toughest work environments
- ▶ Compact water cooling equipment integrable with the power source (optional)
- ▶ Possibility of activating the VRD function



- ▶ Digital adjustment of all the welding parameters
- ▶ Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value
- ▶ Digital display for the presetting of the welding parameters
- ▶ Full monitoring of the welding parameters
- ▶ Welding process selector: TIG AC • TIG DC • TIG DC “Lift” • MMA Welding
- ▶ Mode selector: 2 Stroke • 4 Stroke • Cycle • Spot Timer
- ▶ Personalised welding program storing and recalling
- ▶ Pulse TIG welding adjustable from 0,5 up to 2000 Hz with available “SYN PULSE” facility

#### ACTIG FUNCTIONS

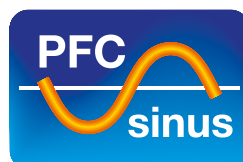
- ▶ AC square wave balance
- ▶ AC square wave frequency adjustment to concentrate the arc cone and reduce the electrode wearing
- ▶ Tungsten electrode diameter presetting for a better control of the arc striking and dynamics
- ▶ Wave selector: Square • Mixed • Sinusoidal • Triangular

#### MMA FUNCTIONS

- ▶ Adjustable Arc Force for choosing the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with difficult electrodes
- ▶ Electrode Antisticking function

### PFC POWER FACTOR CORRECTION

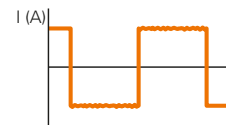
The wave shape of the current drawn from the mains is made sinusoidal by the PFC device with a consequent total lack of harmonic disturbances in the mains and consumption optimization, which enables to utilize the power source at full range on a 16 A fuse. The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets.



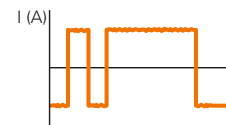
## WAVE SHAPES SPECIAL TIG FUNCTIONS

### WAVE SHAPE CONTROL IN AC

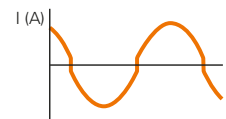
- **DYNAMIC TIG** – Square wave: high arc dynamics for all applications
- **SOFT TIG** – Sinusoidal wave: smoother and softer arc with a reduced noise, ideal for medium thickness
- **SPEED TIG** – Mixed wave: optimal penetration at high welding speed and low consumption of the electrode
- **COLD TIG** – Triangular wave: low heat transfer with reduced deformation, ideal for small thickness



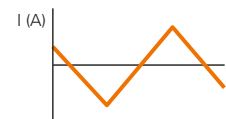
DYNAMIC TIG



SPEED TIG



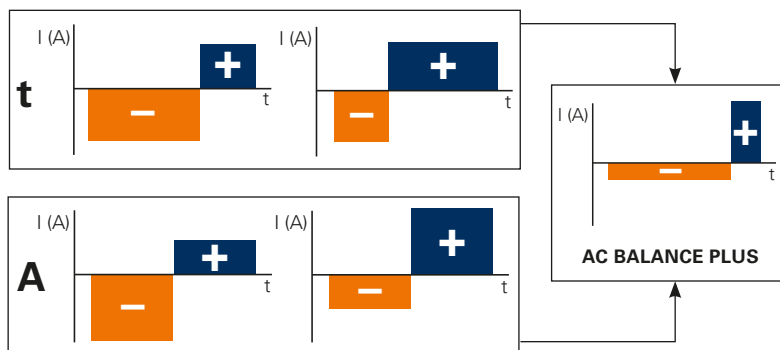
SOFT TIG



COLD TIG

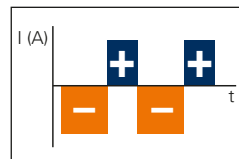
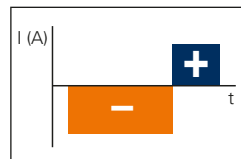
### BALANCE PLUS

- Possibility of independently adjust both **current time (t)** and **its amplitude (A)** while staying in either positive or negative polarity, by offering a perfect control of penetration and arc cleaning with a drastic reduction in lateral undercuts.



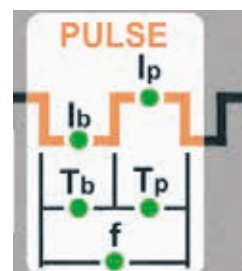
### FREQUENCY CONTROL IN AC

Frequency adjustment of the various AC wave shapes for better directional control, reduction of the thermally altered area, deeper penetration and electrode lower wearing out. High level frequency enables to weld very thin material with excellent results. Low frequency is ideal for medium thickness or whenever edge preparation is not accurate.



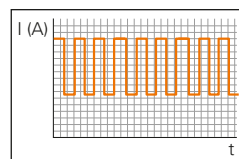
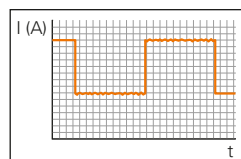
### “SYN PULSE”

“SYN PULSE” facility, in function of the chosen peak current, in a simple and automatic way will synergically generate both an adequate pulse frequency and a base current, both readjustable in a synergic way. Pulse parameter values, preselected in the control, will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.



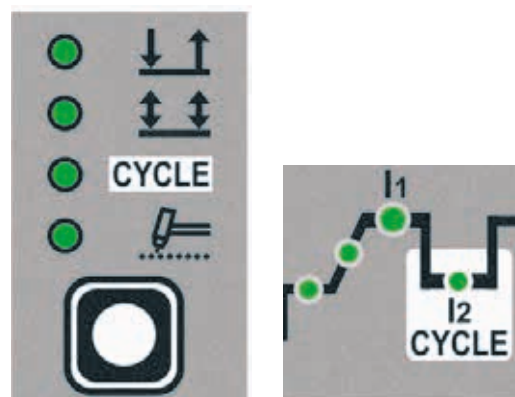
### ULTRA FAST - HIGH PULSE FREQUENCY IN DC

Pulse TIG welding grants better control of the arc and less material deformation. Possibility of utilizing high pulse frequency, up to 2000 Hz ideal for thin thickness, allows greater reduction of both arc cone and thermally altered area with an arc more stable and concentrated, thus favoring an increase in welding penetration and speed.



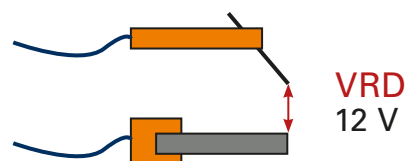
## "CYCLE" FUNCTION

"CYCLE" function allows, by simply pressing the torch trigger, to continuously switch between two current values, previously preselected. This function is most suitable for welding different thickness profiles, requiring a continuous current adjustment change. In welding aluminium, the ability of using a higher start current favors the workpiece preheating



## VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.



TECHNICAL DATA		MATRIX 2200 AC/DC	
		TIG	MMA
Single phase input 50/60 Hz	V $\begin{matrix} +20\% \\ -20\% \end{matrix}$	230	
Input Power @ I <sub>2</sub> Max	kVA	6,5	7,0
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	
Power Factor / cos $\phi$		0,99	0,99
Efficiency Degree		0,77	0,77
Open circuit voltage	V	100	100
Current range	A	5 - 220	5 - 180
Duty cycle at (40°C)	A 100%	140	120
	A 60%	180	150
	A 30%	220	180
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10	
Protection Class	IP	23 S	
Insulation Class		F	
Dimensions	↗ mm	465	
	→ mm	185	
	↑ mm	390	
Weight	kg	15,5	

Other voltages available on request

## ACCESSORIES

- VT 100 trolley for lodging gas cylinder and water cooling equipment
- HR 22 water cooling equipment
- PSR 7 foot remote control
- CD 6 remote control
- Up/Down torches





## TIG INVERTER WELDING EQUIPMENT

Based on the very latest IGBT inverter technology, TIG power sources with high frequency arc striking of the MATRIX series are equipped with an innovative digital panel for the complete control of all the welding parameters.

The excellent technical characteristics of these welding machines, coupled with the high technology of their digital control, allow high quality TIG welding, suitable for the toughest industrial applications and maintenance.

Highly technologically advanced, robust and user friendly, MATRIX AC/DC's can be used for TIG welding of all metals, including aluminium and its alloys.

MATRIX series power sources also offer excellent performance in MMA welding with the most difficult basic and cellulosic electrodes.



CC



AC  
DC



- ▶ Digital control of all the welding parameters
- ▶ Standard equipped with pulse mode integrated into the control with available "EASY PULSE" facility
- ▶ Excellent TIG welding characteristics
- ▶ High frequency Arc Striking, precise and efficient even from long distance
- ▶ "Energy Saving" function to operate the power source cooling fan and the torch water cooling only when necessary
- ▶ Low energy consumption
- ▶ Ability of storing and recalling personalised welding programs
- ▶ Electromagnetic disturbance reduction being high frequency used at arc striking only
- ▶ Use of special TIG torches will enable the remote control of the welding parameters directly from the torch
- ▶ Overheating thermostatic protection
- ▶ Metallic main structure with shockproof fibre compound front panel
- ▶ Control panel protected against accidental impact
- ▶ Robust handle integrated into the chassis
- ▶ Sloping front panel easy to read and adjust and highly visible from any direction
- ▶ Reduced weight and size, easy-to-carry
- ▶ IP 23 protection class and dust proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow their use in the toughest environments.



- ▶ Digital adjustment of all the welding parameters
- ▶ Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value (MATRIX 3000 AC/DC)
- ▶ Digital ammeter with welding current presetting
- ▶ Digital display for the presetting of the welding parameters
- ▶ Full monitoring of the welding parameters
- ▶ Welding process selector: TIG AC • TIG DC • TIG DC “Lift” • MMA
- ▶ Welding mode selector: 2 Stroke • 4 Stroke • Cycle • Spot Timer
- ▶ Personalised welding program storing and recalling
- ▶ Pulse TIG welding adjustable from 0,5 up to 500 Hz and from 0.5 up to 2000 Hz (MATRIX 3000 AC/DC) with available “EASY PULSE” facility
- ▶ AC square wave balance and Balance Plus (MATRIX 3000 AC/DC)
- ▶ AC square wave frequency adjustment
- ▶ Tungsten electrode diameter presetting for a better control of the arc striking and arc dynamics
- ▶ Wave Selector: Square • Mixed • Sinusoidal • Triangular (MATRIX 3000 AC/DC)



#### MMA FUNCTIONS

- ▶ Adjustable Arc Force for choosing the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with difficult electrodes
- ▶ Electrode Antisticking function

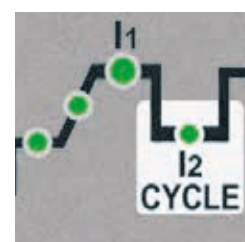


FUNCTION		TIG AC	TIG DC	MMA
High Frequency striking		•	•	
“Lift” mode striking			•	
Pre Gas		•	•	
Initial Current		•	•	
Up Slope		•	•	•
Welding current		•	•	
2nd welding current	“CYCLE”	•	•	
Base current	“PULSE”	•	•	
Peak current	“PULSE”	•	•	
Pulse frequency	“PULSE”	•	•	
Down Slope		•	•	
Final current		•	•	
Post gas		•	•	
Spot time		•	•	
Square wave balance		•		
Square wave frequency		•		
Hot Start				•
Arc Force				•

#### “CYCLE” FUNCTION

“CYCLE” function allows, by simply pressing the torch trigger, to continuously switch between two current values, previously preselected. This function is most suitable for welding different thickness profiles, requiring a continuous current adjustment change.

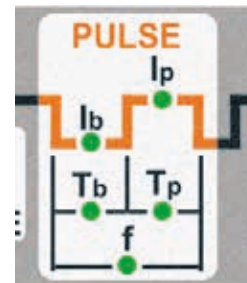
In welding aluminium, the ability of using a higher start current favours the workpiece preheating.



## "EASY PULSE" - SYN

"EASY PULSE"- SYN facility, in function of the chosen peak current, generates, in a simple and automatic way, an adequate pulse frequency and base current, both readjustable in a synergic way.

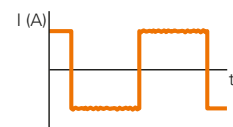
Pulse parameter values preselected in the control will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.



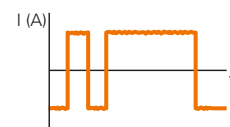
## WAVE SHAPES SPECIAL TIG FUNCTIONS

### WAVE SHAPE CONTROL IN AC

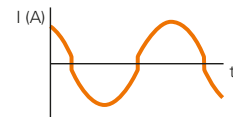
- **DYNAMIC TIG** – Square wave: high arc dynamics for all applications
- **SOFT TIG** – Sinusoidal wave: smoother and softer arc with a reduced noise, ideal for medium thickness
- **SPEED TIG** – Mixed wave: optimal penetration at high welding speed with electrode low consumption
- **COLD TIG** – Triangular wave: low heat transfer with reduced deformation, ideal for small thickness.



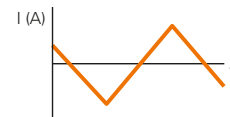
DYNAMIC TIG



SPEED TIG



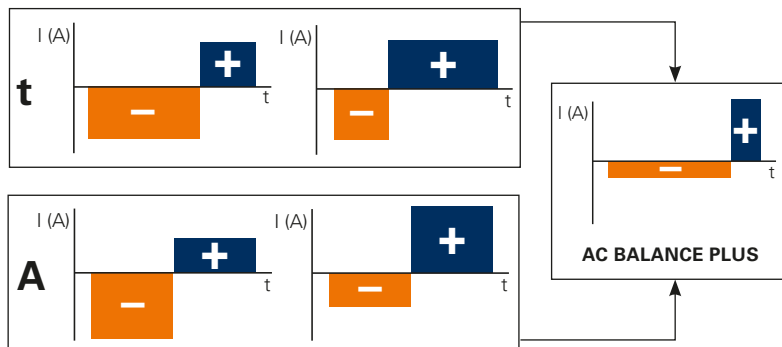
SOFT TIG



COLD TIG

### BALANCE PLUS

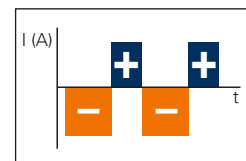
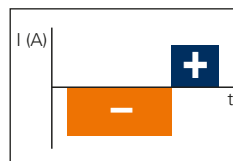
- Possibility of independently adjust both **current time (t)** and **its amplitude (A)** while staying in either positive or negative polarity, by offering a perfect control of penetration and arc cleaning with a drastic reduction in lateral undercuts.



### FREQUENCY CONTROL IN AC

Frequency adjustment of the various AC wave shapes for better directional control, reduction of the thermally altered area, deeper penetration and electrode lower wearing out.

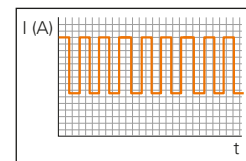
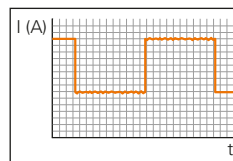
High level frequency enables to weld very thin material with excellent results. Low frequency is ideal for medium thickness or whenever edge preparation is not accurate.



### ULTRA FAST - HIGH PULSE FREQUENCY IN DC (MATRIX 3000 AC/DC)

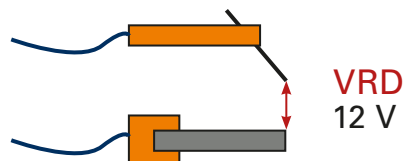
Pulse TIG welding grants better control of the arc and less material deformation.

Possibility of utilizing high pulse frequency, up to 2000 Hz ideal for thin thickness, allows greater reduction of both arc cone and thermally altered area with an arc more stable and concentrated, thus favoring an increase in welding penetration and speed.



## VRD - VOLTAGE REDUCTION DEVICE (MATRIX 3000 AC/DC)

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.



## ACCESSORIES

- CT trolley for lodging gas cylinder and water cooling equipment
- HR 26 water cooling equipment
- VT trolley for lodging gas cylinder and water cooling equipment
- HR 23 water cooling equipment
- PSR 7 foot remote control
- CD 6 remote control
- Up/Down torch








TECHNICAL DATA		MATRIX			
		250 AC/DC	3000 AC/DC	400 AC/DC	500 AC/DC
Three phase input 50/60 Hz	V	400 + 20% - 20%	400 + 20% - 20%	400 + 15% - 20%	400 + 15% - 20%
Input Power @ I <sub>2</sub> Max	kVA	7	9,6	15,3	17,9
Delayed Fuse (I <sub>2</sub> @ 100%)	A	10	10	16	20
Power Factor / cos φ		0,98/0,99	0,95/0,99	0,97/0,99	0,95/0,99
Efficiency Degree		0,74	0,76	0,76	0,76
Open circuit voltage	V	95	100	65	70
Current range	A	5 - 250	5 - 300	5 - 400	10 - 500
Duty cycle at (40°C)	A 100%	170	210	250	310
	A 60%	200	250	320	400
	A 35%	250	300	400	500
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10			
		S			
Protection Class	IP	23 S	23 S	23 S	23 S
Insulation Class		H	F	F	H
Dimensions	↗ mm	500	465	670	715
	→ mm	220	185	290	290
	↑ mm	425	390	525	525
Weight	kg	28	19	49	53


Other voltages available on request



# PLASMA

PLASMA CUT (1PH)  
PLASMA CUT (3PH)  
PLASMA PLUS

	 mm										1~	3~			DIGITAL 888	HF		888 A
	6	8	10	12	15	18	20	25	30	40	50							
PLASMA CUT (1PH)																		
PLASMA CUT 26i Compressor																		
PLASMA CUT 40i																		
PLASMA CUT (3PH)																		
PLASMA CUT 61i																		
PLASMA CUT 100i (400 V)																		
PLASMA CUT 150i																		
PLASMA PLUS																		
PLASMA PLUS 56																		
PLASMA PLUS 91																		

 quality cutting       severance cutting



## INVERTER PLASMA CUTTING EQUIPMENT

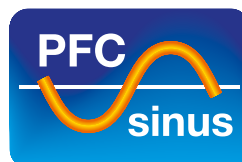
These powerful power sources, built according to the very latest INVERTER technology, represent the most efficient solution for the manual cutting of any metal and perforated lamination sheet. The electronic control, coupled with inverter precision and flexibility, allows to determine the most correct parameters to obtain high quality cutting in function of material and thickness. Lightweight and handy single phase PLASMA CUT 40i with PFC and PLASMA CUT 26i Compressor are the ideal choice in car body repairs, agriculture and maintenance.

- ▶ Arc parameter electronic control for an excellent cutting quality
- ▶ Pilot arc torch
- ▶ Mains overvoltage protection
- ▶ Control panel protected against accidental impact

### PFC: POWER FACTOR CORRECTION - PLASMA CUT 40i

The wave shape of the current drawn from the mains is made sinusoidal by the PFC device with a consequent total lack of harmonic disturbances in the mains and consumption optimization, which enables to utilize the power source at full range on a 16 A fuse.

The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets

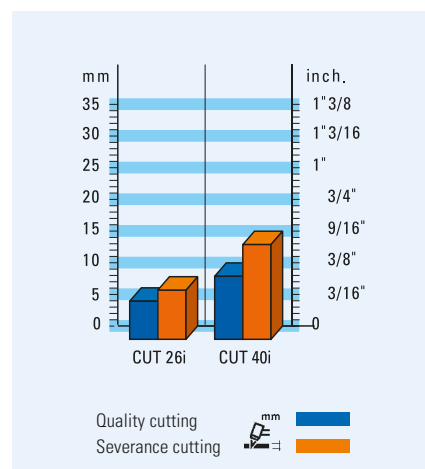


- ▶ Less energy consumption
- ▶ High efficiency
- ▶ High Power Factor
- ▶ Energy Saving function



TECHNICAL DATA		PLASMA CUT	
		26i COMPRESSOR	40i
Single phase input 50/60 Hz	V $\begin{smallmatrix} +15\% \\ -15\% \end{smallmatrix}$	230	230
Input Power @ I <sub>2</sub> Max	kVA	5,6	5,4
Delayed Fuse (I <sub>2</sub> @ 100%)	A	16	16
Power Factor / cos $\varphi$		0,57/0,99	0,99/0,99
Efficiency Degree		0,78	0,83
Current range	A	10 - 25	20 - 40
Duty cycle at (40°C)	A 100%	15	20
	A 60%	20	30
	A X%	25 (35%)	40 (40%)
Cutting capacity:	quality	mm	10
	severance	mm	15
Standards		EN 60974-1 • EN 60974-7 • EN 60974-10	
Protection Class	IP	23 S	23 S
Insulation Class		H	H
Dimensions	↗ mm	540	490
	→ mm	220	185
	↑ mm	425	390
Weight	kg	18,5	16

Other voltages available on request





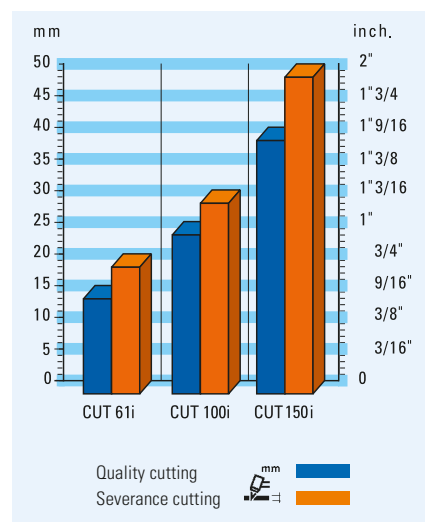
## INVERTER PLASMA CUTTING EQUIPMENT

These powerful power sources, built according to the very latest INVERTER technology, represent the most efficient solution for the manual cutting of any metal and perforated lamination sheet. The electronic control, coupled with inverter precision and flexibility, allows to determine the most correct parameters to obtain high quality cutting in function of material and thickness. PLASMA CUT 150i, standard equipped with a display for digitally controlling all cutting parameters and automatically identifying the used torch, is suitable to be utilized for robotized applications by means of ROBOMAT 1 interface.



- ▶ Arc parameter electronic control for an excellent cutting quality
- ▶ Energy Saving function to activate the power source cooling fan only when necessary
- ▶ Cutting parameters stability within  $\pm 10\%$  mains voltage fluctuations
- ▶ Long lasting consumable parts
- ▶ Metallic main structure with shockproof fibre compound front frame
- ▶ IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow their use in the toughest work environment
- ▶ Regulator group with built-in filter and air impurity automatic expulsion
- ▶ Easy to read and adjust sloping front control panel, highly visible from any direction
- ▶ Control panel protected against accidental impact
- ▶ Electrode wearing and improper operation signalling
- ▶ Safety protections on the torch to safeguard the operator
- ▶ Central connector for the torch
- ▶ Possibility of cutting grids and perforated lamination sheets
- ▶ Contact cutting possibility with currents below 50 A, without sliding blocks or other spacers

- ▶ Less energy consumption
- ▶ High efficiency
- ▶ High Power Factor
- ▶ Energy saving function



TECHNICAL DATA		PLASMA CUT					
		61i		100i		150i	
Three phase input 50/60 Hz	V	400	+15% -20%	230	+20% -20%	400	+20% -20%
Input Power @ I <sub>2</sub> Max	kVA	7,5		10,2		14,1	
Delayed Fuse (I <sub>2</sub> @ 100%)	A	10		25		16	
Power Factor / cos φ		0,94/0,99		0,95/0,99		0,95/0,99	
Efficiency Degree		0,89		0,90		0,91	
Current range	A	20 - 60		20 - 80		20 - 100	
Duty cycle at (40°C)	A 100%	40		50		70	
	A 60%	50		60		85	
	A X%	60 (40%)		80 (30%)		100 (40%)	
Cutting capacity:	quality	mm	15	20	25	40	
	severance	mm	20	25	30	50	
Standards		EN 60974-1 • EN 60974-3 • EN 60974-7 • EN 60974-10					
Protection Class	IP	23 S		23 S		23 S	
Insulation Class		H		H		H	
Dimensions	↗ mm	540		600		670	
	→ mm	220		220		290	
	↑ mm	425		425		520	
Weight	kg	23		32		48	



Other voltages available on request



## PLASMA CUTTING EQUIPMENT

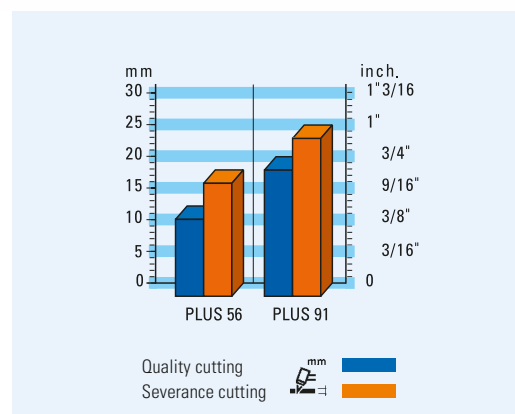
PLASMA PLUS series provide a simple and efficient system for compressed air Plasma Cutting for any metal.

PLASMA PLUS 56 and 91, fitted with a dual current range, are most suitable solution for car body repairs, small and medium fabrication work and industry.

- Easy operation and high cutting capacity
- Air pressure manometer on the front panel
- Cutting, safety and protection cycles fully displayed by LEDs
- Safety protections on the torch to safeguard the operator
- Filter and regulator group with air impurity automatic expulsion
- Electrode wearing and improper operation signalling
- Contact cutting possibility

TECHNICAL DATA		PLASMA PLUS	
		56	91
Three phase input 50/60 Hz	V	230/400	230/400
Input Power @ I <sub>2</sub> Max	kVA	13,8	23,9
Delayed Fuse (I <sub>2</sub> @ 100%)	A	25/16	40/25
Power Factor / cos φ		0,67	0,65
Efficiency Degree		0,55	0,61
Adjustment positions	N°	2	2
Current range	A	30 - 55	50 - 90
Duty cycle at (40°C)	A 100%	30	50
	A 60%	---	---
	A 35%	55	90
Cutting capacity:	quality	mm	20
	severance	mm	25
Standards		EN 60974-1 • EN 60974-3 EN 60974-7 • EN 60974-10 • <b>S</b>	
Protection Class	IP	23 S	23 S
Insulation Class		H	H
Dimensions	↗ mm	625	625
	→ mm	350	350
	↑ mm	790	790
Weight	kg	68	95

Other voltages available on request



MIG/MAG - MIG PULSE  
TIG  
PLASMA

CEA has developed several products and interfaces for automation and robotics for MIG/MAG, pulsed MIG, TIG and PLASMA processes, by using its power sources.

A team of experts is always able to suggest and propose the solutions better suiting different applications in line with the customer's needs.



## MIG/MAG - MIG PULSE

### ROBOT

CONVEX VISION and DIGITECH VISION equipment allow a flexible and economic integration with all major welding robots available on the market; thanks to the availability of feeders and versatile interfaces - digital and analogic/digital – these power sources can be either connected to new robotized equipment or utilized as a retrofit to existing robots.

#### RBS 15

Wire feeder to be fitted on both hollow wrist robots and traditional ones with external device. Compact and light (only 6.2 kg) RBS 15 represents the ideal solution for any robotized application, being equipped with a 4 roll feeding mechanism, easily accessible also for roll replacements without any tooling, and having a double solenoid valve for gas and air.



#### MCB 2

Control box for the wire feeder and auxiliary functions purpose-designed to be fitted either inside the power source, or inside the external robot control or even on the robot structure depending on the integrator's needs.





#### RI-A 1

Analogic/Digital interface.  
Usable on robots with analogic/digital control.



#### RI-D 2

DeviceNet interface.  
Usable on robots with field bus controller.

## SIMPLE AUTOMATION

While conceiving CONVEX VISION and DIGITECH VISION PULSE equipment, CEA has also taken into account the needs of small and medium industry where, to reduce costs, it is a must to automate the welding process without necessarily resorting to robots.

CONVEX VISION's and DIGITECH VISION's, being all standard equipped with analogic-digital I/O, can manage the essential signals for simple automation solutions, such as positioners and rotating tables, and can be easily integrated into automated welding equipment, without the addition of more sophisticated external interfaces usually indispensable for robotics.



## SPECIAL PROCESSES

The specific use of special welding processes:

vision.PIPE - vision.COLD - vision.POWER - vision.ULTRASPEED

is an ideal choice for automation and allows to optimize specific welding applications, by granting far better performances in terms of quality and welding speed.



**vision.PIPE** for a more accurate welding in pipe first root pass



**vision.COLD** to weld thin thickness laminations with low heat transfer



**vision.ULTRASPEED** for high speed welding



**vision.POWER** for a more concentrated arc and deeper penetration on medium and thick thickness



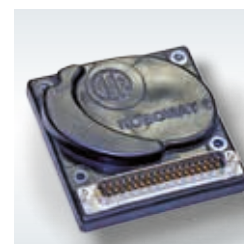
## TIG

MATRIX series three-phase power sources, in the special “R” version, can be easily integrated in TIG welding automated equipment by means of ROBOMAT 1 interface which handles both all the start/stop signals of the process and main welding parameter adjustments.

ROBOMAT 1 represents a flexible and efficient interface system that fully meets all Analogic/Digital connections.



ROBOMAT 1



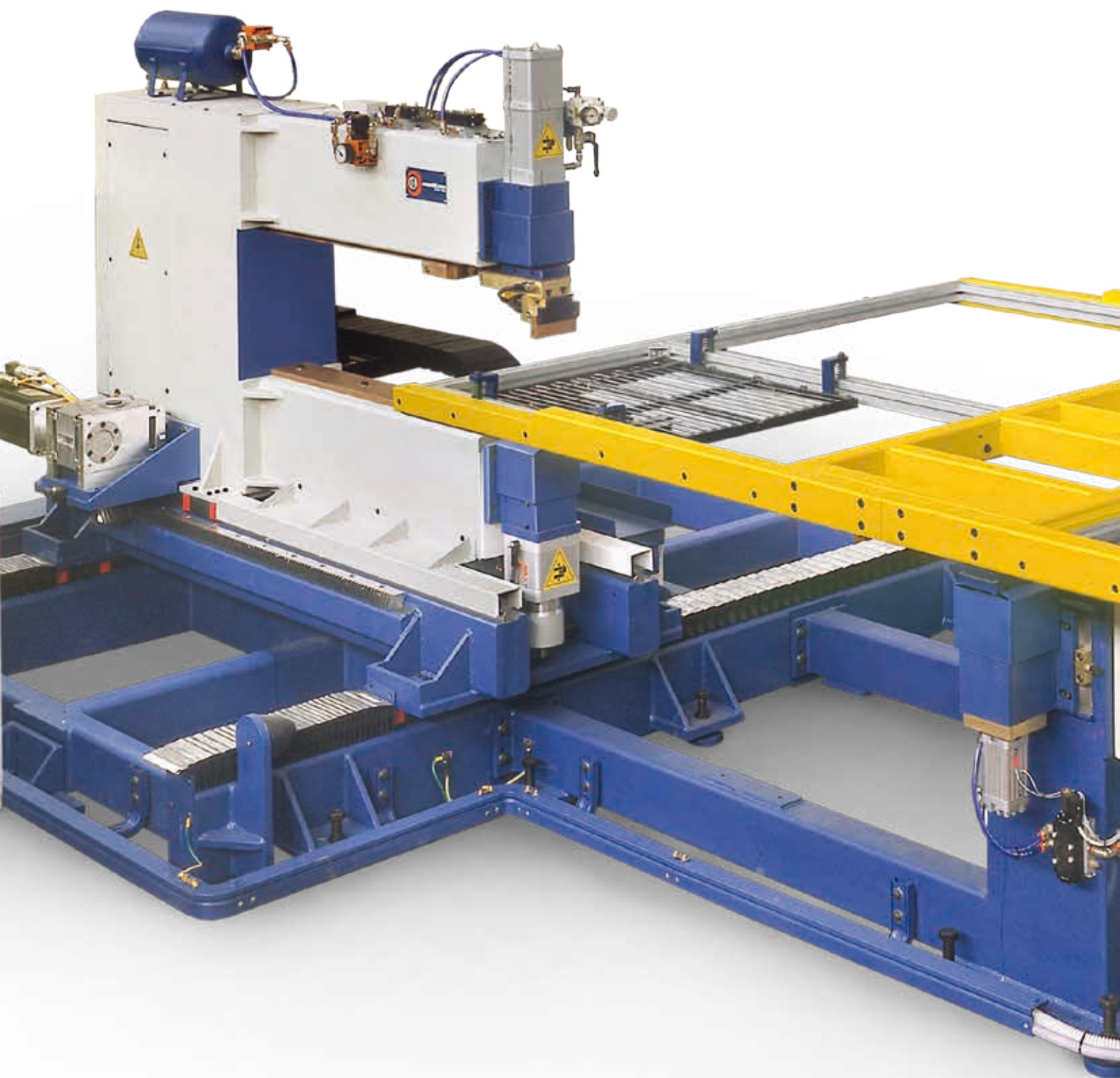
## PLASMA

PLASMA CUT 150i is designed to be integrated by ROBOMAT 1 interface and therefore can be easily used with pantographs and any automated cutting systems.

ROBOMAT 1 interface allows to handle all analogic-digital I/O signals usually required for such applications.

PLASMA CUT 150i, represents an efficient solution for automated cutting of any metal, including grids and perforated lamination sheets.





# RESISTANCE WELDING

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DUAL

X-GUN / C-GUN

Z / NKL

PPN

BSW

MF

PPN 3F CC

VOYAGER

RT - RL

BUTT WELDERS

AUTOMATIC BUTT WELDERS

FLASHING BUTT WELDERS

SPECIAL VERSIONS



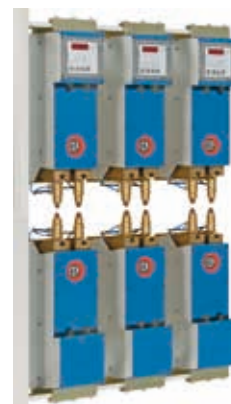
## TWIN SPOT WELDING UNIT

The twin spot welding units are the most suitable solution for single side welding and they ensure the possibility to realise multi spot welding equipment in a simple and cheap way. Each twin spot unit is fitted with its own welding control, thus allowing independent operation or, by connecting more units together, the operator can weld either in electric or pneumatic cascade or simultaneously.



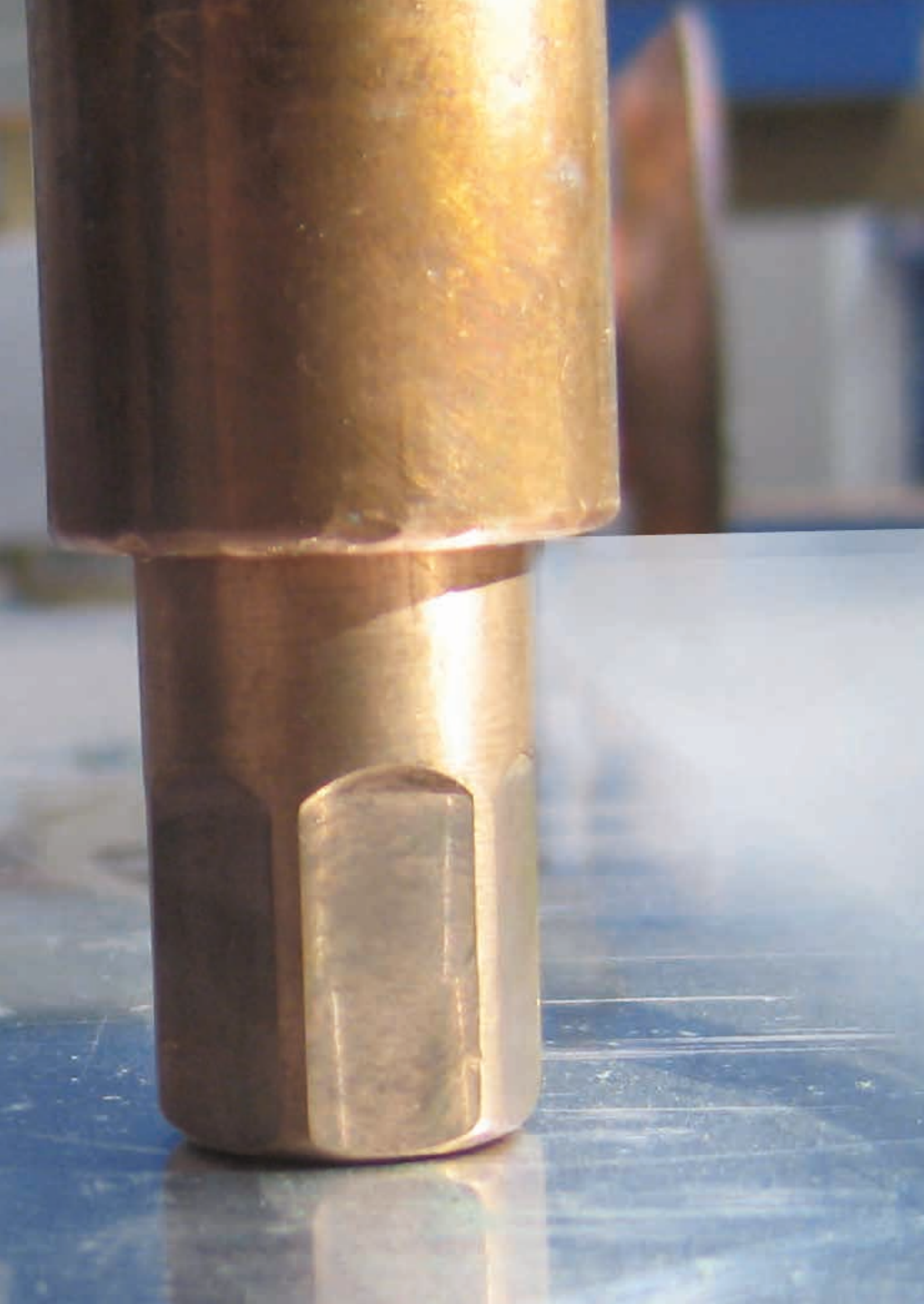
TECHNICAL DATA		DUAL 30
Single phase input 50/60 Hz	V	400
Rated power at 50%	kVA	30
Max. welding power	kVA	96
Installed power	kVA	20
Delayed Fuse	A	63
Open Circuit Voltage	V	6
Short circuit current	kA	20
Max. welding current	kA	16
Work stroke	mm	60
Distance between electrodes	mm	40 - 180
Electrode force max (6 bar)	daN	2 x 180
Water consumption a 300 kPa (3 bar)	l/min	4
Dimensions	↗ mm	380
	→ mm	162
	↑ mm	630
Weight	kg	68

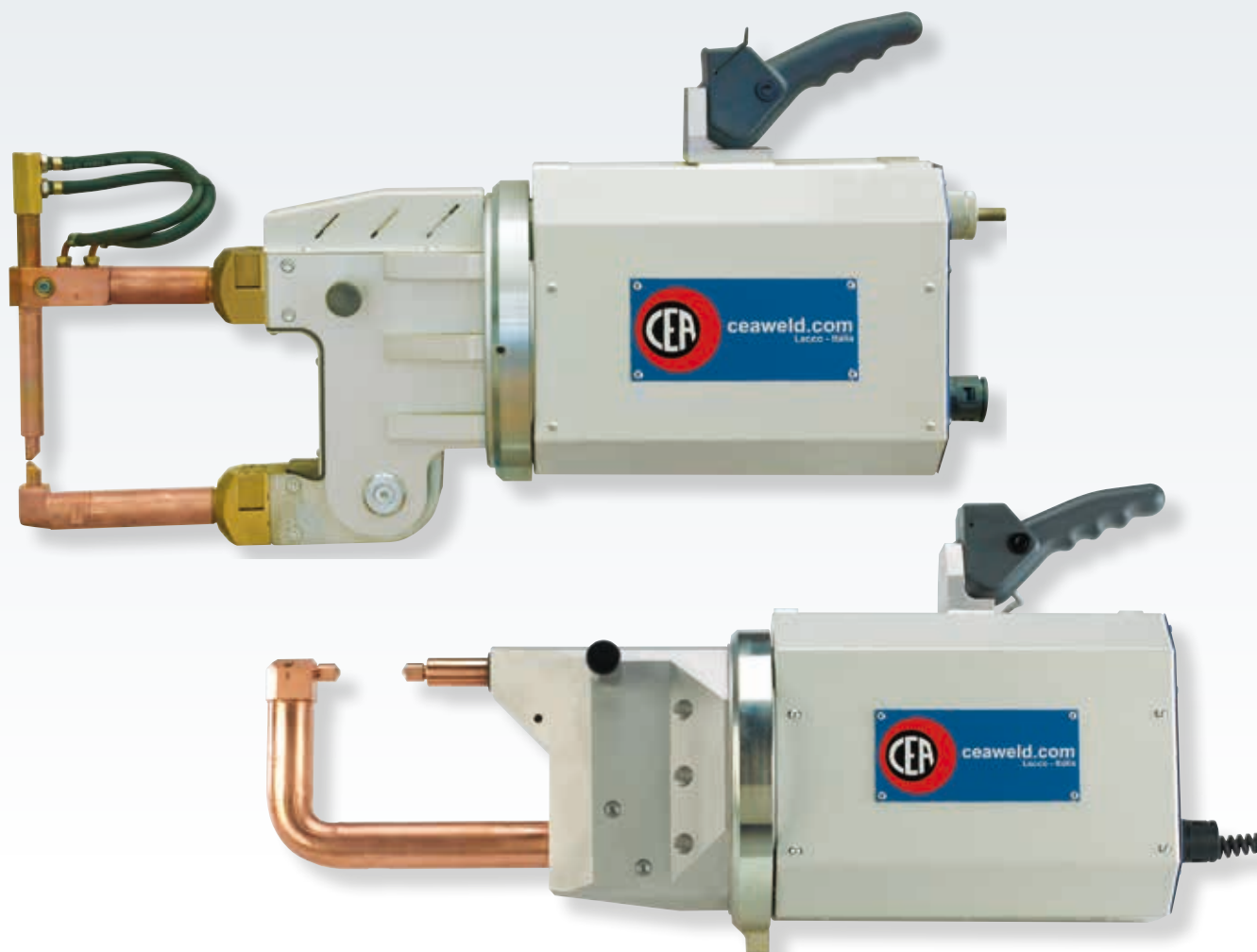
Other voltages available on request



## PUSH PULL

The "push-pull" system allows to operate on thicker thickness; it's obtained by connecting a special version of DUAL 30 to another unit without any control.



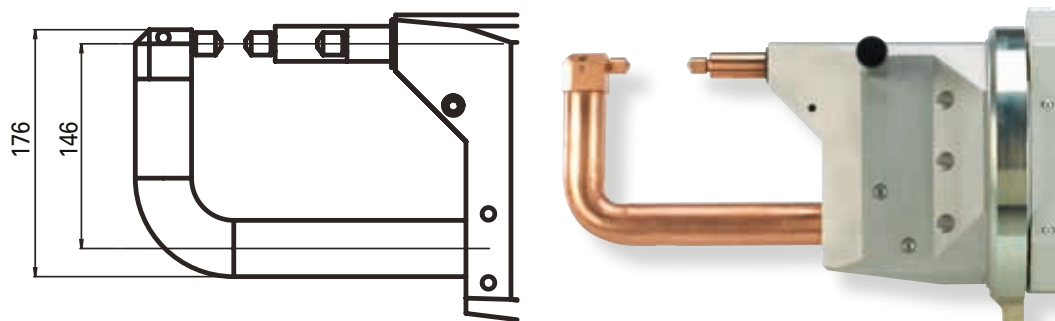


## SPOT WELDING GUNS WITH BUILT-IN TRANSFORMER

The X-GUN and C-GUN series pneumatic operated suspended guns, versatile, robust and easy-to-use, ensure best welding results on any weldable metal and are the most ideal solution for any spotwelding job.

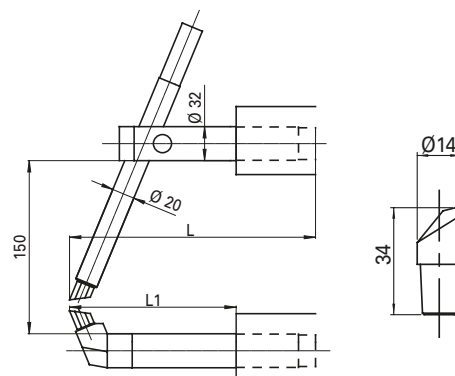
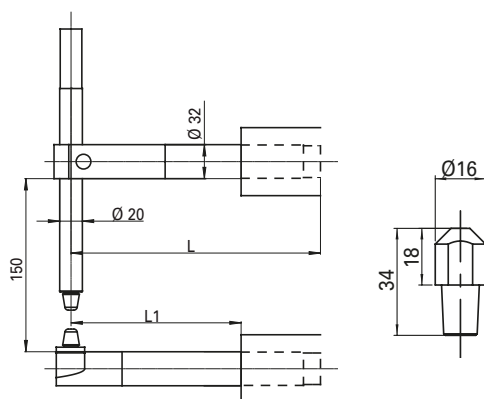
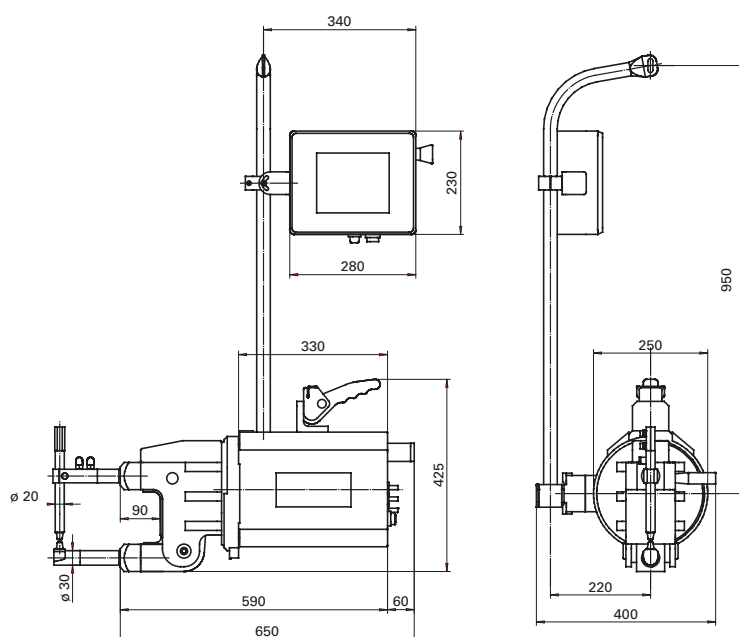
- ▶ Welding control in a separate cabinet with circuit breaker with residual current device and cycle stop emergency button
- ▶ Synchronous ignition SCR group with phase shift to eliminate any current transient
- ▶ Reduced consumption
- ▶ Water cooled transformer
- ▶ Water cooled arms, electrode holders and electrodes
- ▶ Gyroscope suspension on sealed bearings for easy gun rotation and manoeuvrability in any position
- ▶ Adjustable working stroke
- ▶ Temporary extra stroke to easily reach workpiece areas also getting over obstacles
- ▶ High versatility in all applications thanks to all possible machine configurations
- ▶ Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants

## C-GUN



## X-GUN

Both straight (version 1) and angled (version 2) arms are available in a large variety and different lengths from 200 up to 600 mm.



### X-GUN VERSION 1

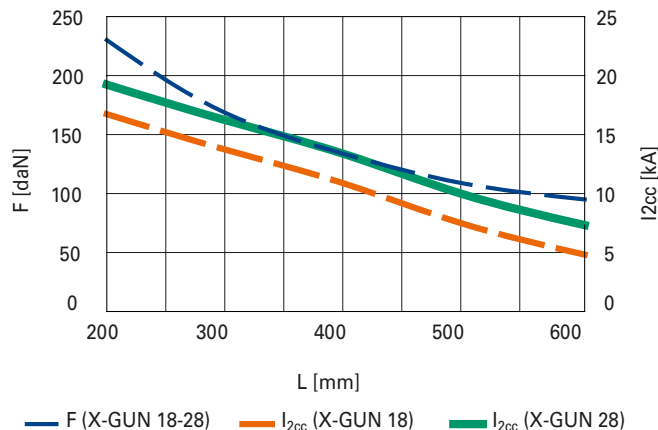
L (mm)	220	300	400	500	600
L1 (mm)	155	235	335	435	535
(1) F (daN)	230	170	135	110	95
(2) P (kg)	2,7	3,5	4,6	5,7	6,7
(3) Cs (mm)	0-24	0-30	0-38	0-46	0-55
(4) Cl (mm)	57	73	93	112	131

1. Electrode force at 600 kPa (6 bar)
2. Arm set weight
3. Welding stroke
4. Temporary extra stroke

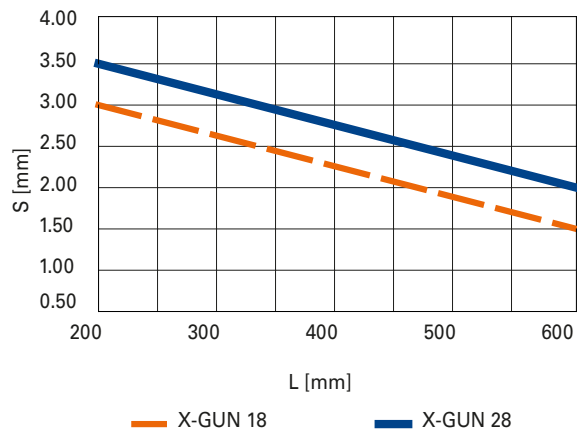
### X-GUN VERSION 2

L (mm)	220	300	400	500	600
L1 (mm)	155	235	335	435	535
(1) F (daN)	230	170	135	110	95
(2) P (kg)	2,7	3,5	4,6	5,7	6,7
(3) Cs (mm)	0-24	0-30	0-38	0-46	0-55
(4) Cl (mm)	57	73	93	112	131

## FORCE - SHORT CIRCUIT CURRENT

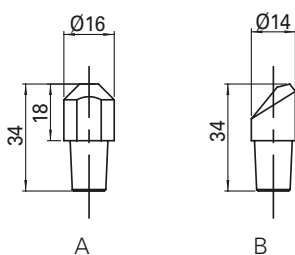


## WELDING CAPACITY (MILD STEEL)

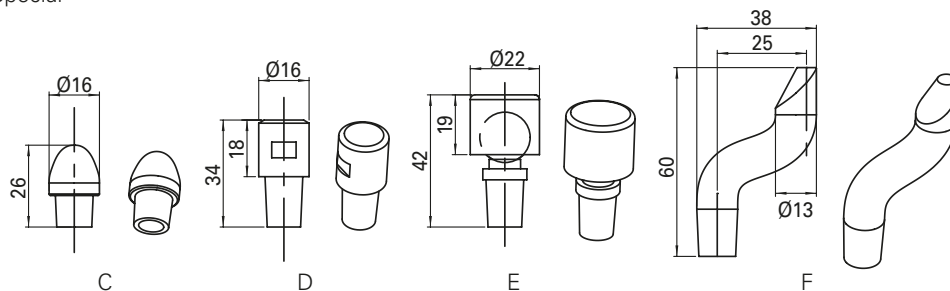


## X-GUN ELECTRODES

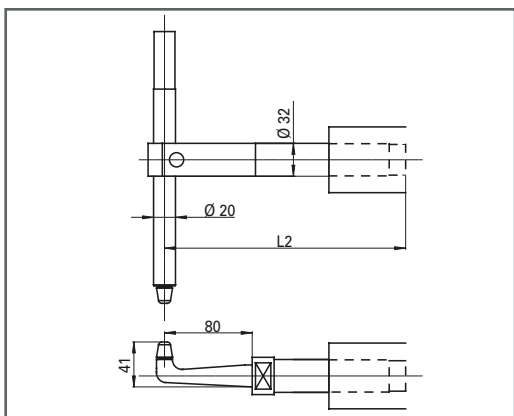
Standard



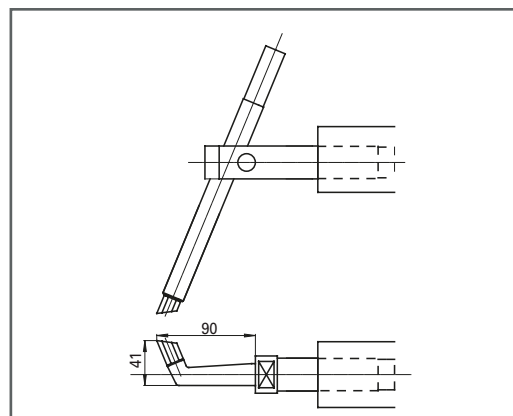
Special



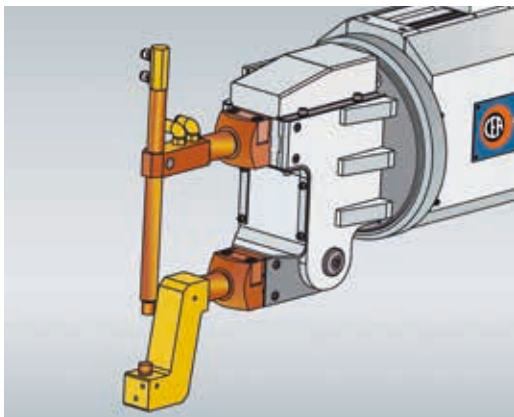
## X-GUN SPECIAL VERSIONS



Version 3

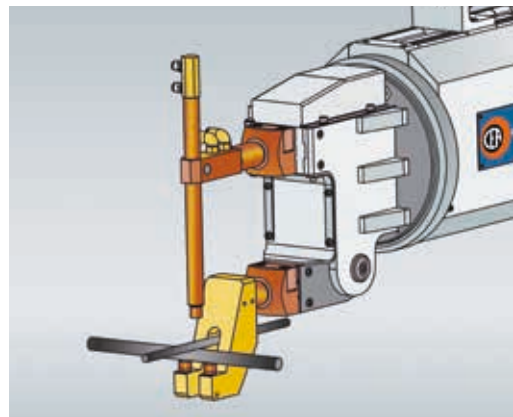


Version 4



Version 5

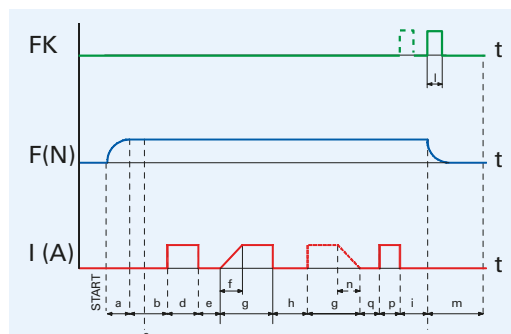
Suitable for rod welding in building industry (8mm Ø max.)



Version 6

## WS 708

- ▶ Half period welding time
- ▶ Single or multi spot
- ▶ Mains voltage automatic compensation
- ▶ 2 programs retrievable from the handle switch selector (external mode)
- ▶ 8 programs to be activated and used from the control keyboard
- ▶ Error messages
- ▶ Weld/no weld switch
- ▶ 24V DC solenoid valve
- ▶ 50/60 Hz frequency
- ▶ 24V AC mains supply for the control



FUNCTIONS		WS 708
a	Pre-squeeze time	•
b	Squeeze time	•
c	Pressure contact	•
d	Preheating time	•
e	Cooling time	•
f	Slope up time	•
g	Welding time	•
	Welding current	•
h	Pulse interval time	•
i	Holding time	•
l	Cycle end contact	•
m	Pause time	•

TECHNICAL DATA		X-GUN		C-GUN
		18	28	28
Single phase input 50/60 Hz	V	400	400	400
Rated power at 50%	kVA	18	28	28
Max. welding power	kVA	58	88	98
Installed power	kVA	15	25	25
Delayed Fuse	A	32	40	40
Open Circuit Voltage	V	4,8	5,8	5,8
Short circuit current	kA	15	19	21
Max. welding current	kA	12	15,2	16,8
Work stroke	mm	50	50	50 + 20
Electrode force max (6 bar)	daN	230	230	300
Water consumption a 300 kPa (3 bar)	l/min	4	4	4
Dimensions	↗ mm	650	650	800
	→ mm	250	250	250
	↑ mm	425	425	425
Weight	kg	47	53	58

Other voltages available on request



## ACCESSORIES

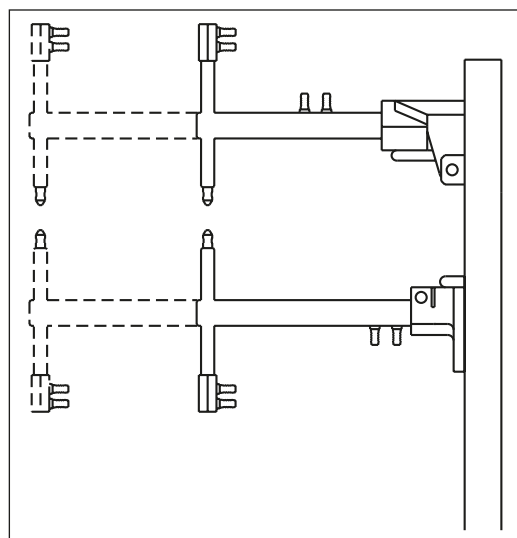
- Gun spring balancer
- Reducer with filter and manometer



## ROCKER ARM SPOT WELDERS

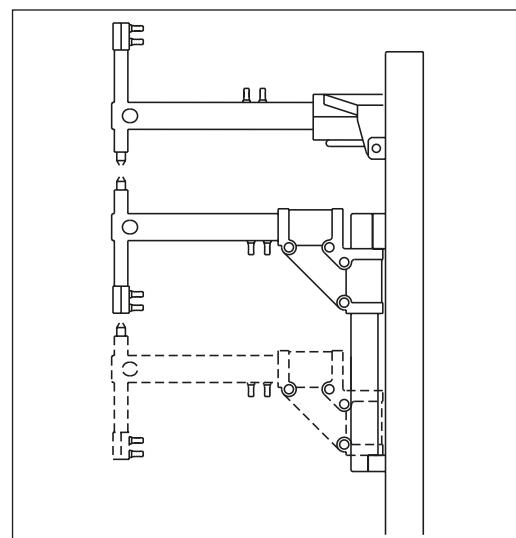
The Z and NKL series resistance spot welders, versatile, robust and easy-to-use, ensure best welding results on any weldable metal and are the most ideal solution for all spot welding applications.

Z and NKL models are supplied either mechanical or air operated.  
ZT's - NKLT's: mechanically operated pedal.  
ZP's - NKLP's: pneumatically operated by electric pedal.



### Z SERIES

Arms with adjustable length

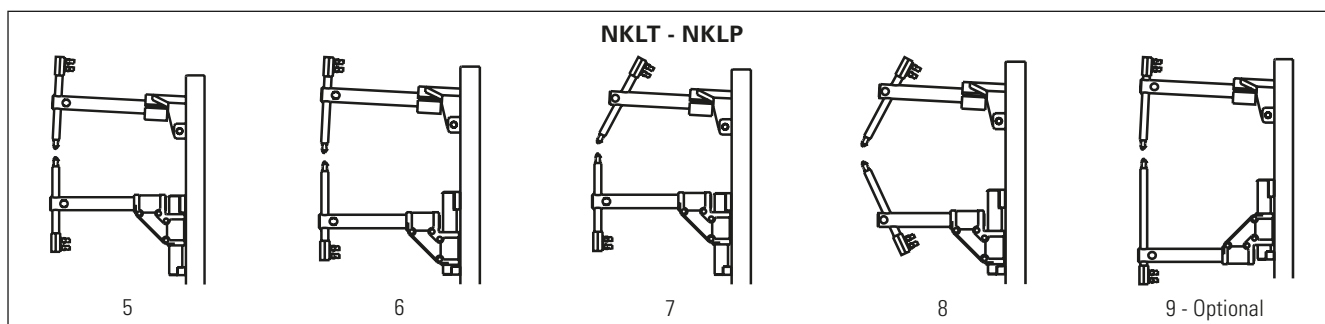
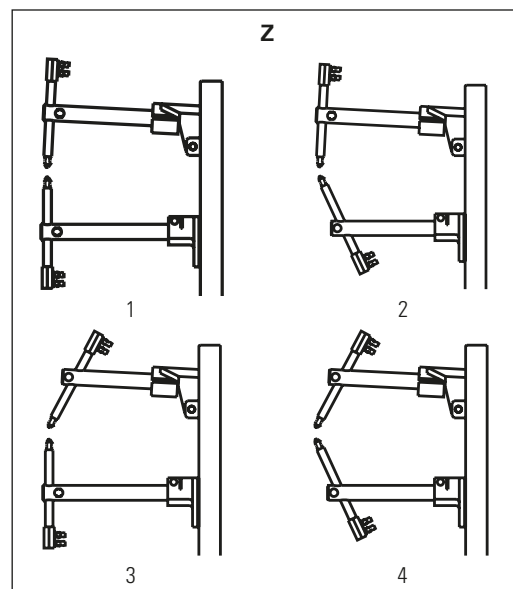


### NKL SERIES

Lower arm lateral adjustment

Lower arm with adjustable height

- Excellent welding on all weldable metals
- Electronic adjustment of the welding current and time
- Synchronous ignition SCR group with phase shift welding current adjustment to eliminate initial transient
- Reduced consumption
- Water cooled arms
- Water cooled copper electrodeholders with adjustable height
- Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants (ZP-NKLP)
- High versatility thanks to all different possible work configurations
- Lower arm with adjustable height which can be rotated for use with a longer electrodeholder (Optional NKL - fig.9)



- Electrode force adjustable by spring nut and, for ZP's and NKLP's, also by air pressure regulation manometer
- Easy electrode gap adjustment without moving the electrodeholders
- Laterally adjustable lower arm (NKL)



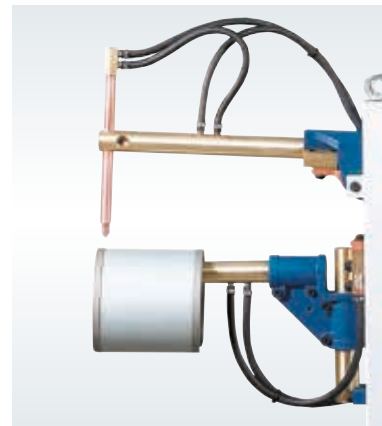
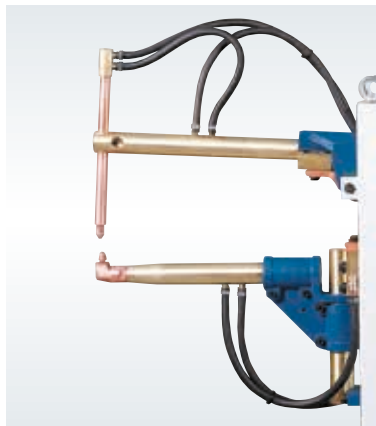
## ACCESSORIES

- IR 14 cooling equipment (only for Z 18 – 28 series and NKL 22)
- Special electrodes (on request)
- 65 mm depth pipe tips set
- Long electrodeholder
- Barholders with 100 mm bars
- Possibility of a two step pedal: squeeze and welding only after workpiece position checking
- Possibility of a double pedal for a quick selection and use of two different welding programs



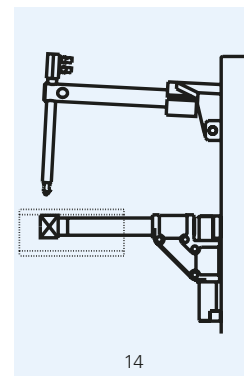
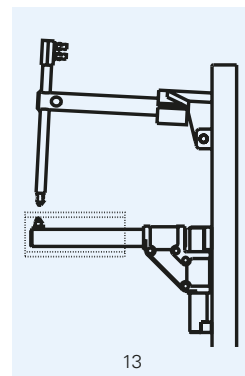
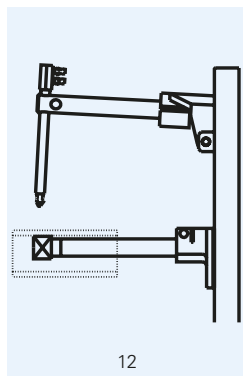
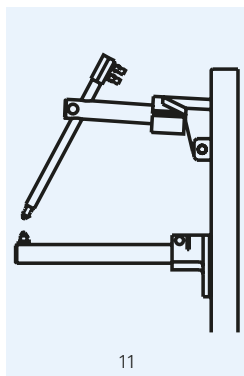
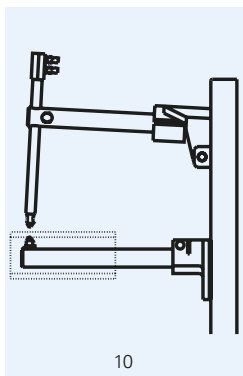
## SPECIAL VERSION

Lower arm with pressed-in electrode and long electrodeholder on the upper arm (Optional).  
The usable arms depth is given by the difference between A and C (see below table).



ZT - ZP OPTIONAL

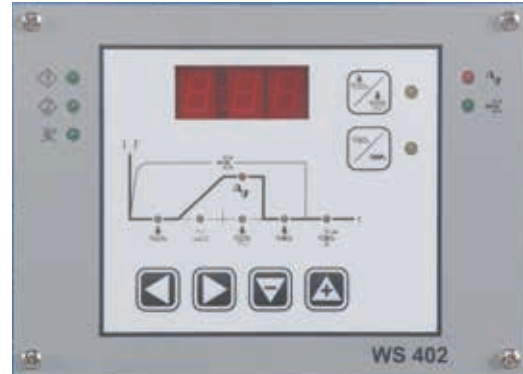
NKLT - NKLP OPTIONAL



ZT - ZP	NKLT - NKLP				Z		NKL		
					ZT 18 ZP 18	ZT 28 ZP 28	NKLT 22 NKLP 22	NKLT 28 NKLP 28	NKLT 48 NKLP 48
		A	MIN.	mm	250	250	---	---	---
			MAX.	mm	600	600	455	455	490
		A (Optional)		mm	---	---	600	600	700
				mm	---	---	800	800	1000
		B	MIN.	mm	215	215	173	168	163
			MAX.	mm	---	---	410	443	438
		C		mm	135	135	255	255	285
				Ø mm	40	40	40	45	50
				Ø mm	21	21	21	21	25
				Ø mm	16	16	16	16	16
					10%	10%	10%	10%	10%

## WS 402

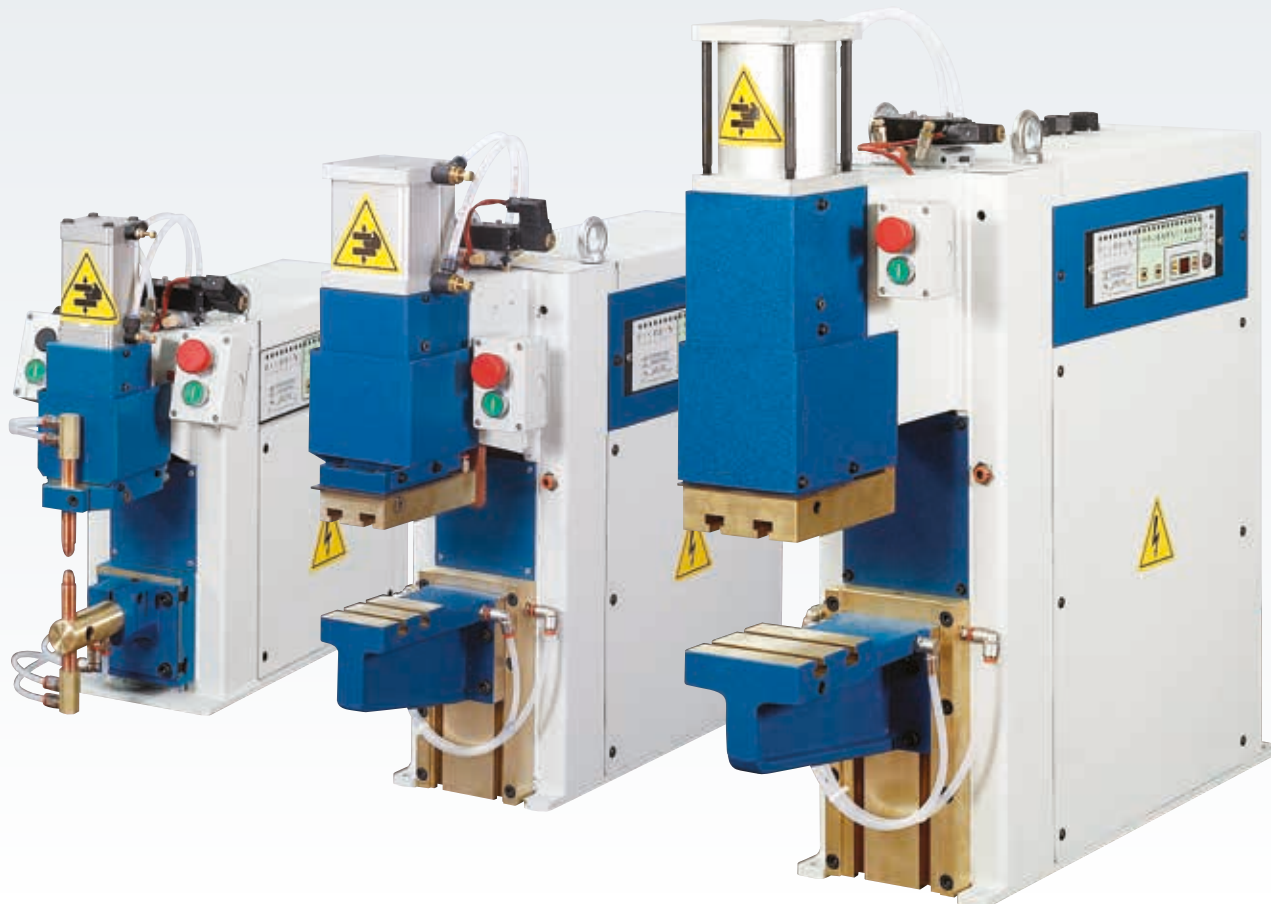
- Welding time adjustable by periods
- Single and repeated spotting facility
- Automatic compensation of mains voltage fluctuation
- Error display during the welding cycle
- Weld/no weld selector key
- 24 V DC supply solenoid valve
- 50/60 Hz frequency automatic identification
- 24 V AC supply electronic control
- 2 welding programs (2 times and 2 currents) by using a double pedal (optional)



ZT - ZP		FUNCTIONS	WS 402
	a	Squeeze time	•
		Pressure contact	•
	b	Slope up time	•
	$c_1 - c_2^*$	Welding time	•
	$i_1 - i_2^*$	Welding current	•
	d	Holding time	•
	e	Pause time	•
* $i_2 - c_2$ available with double pedal only			

TECHNICAL DATA		Z		NKL		
		ZT 18 ZP 18	ZT 28 ZP 28	NKLT 22 NKLP 22	NKLT 28 NKLP 28	NKLT 48 NKLP 48
Single phase input 50/60 Hz	V	400	400	400	400	400
Rated power at 50%	kVA	15	25	20	25	45
Max. welding power	kVA	23	41,6	36,5	54,7	75
Installed power	kVA	11	14	12	14	24
Cross section connecting cables	mm <sup>2</sup>	10	10	10	16	25
Delayed Fuse	A	32	40	25	36	63
Open Circuit Voltage	V	2,6	3,5	3,5	4,2	5,2
Short circuit current	kA	10,2	13,8	11,6	14	17,8
Max. welding current	kA	8,2	11	9,3	11,2	14,2
Electrode force max (6 bar)	daN	220	220	180	220	260
Water consumption a 300 kPa (3 bar)	l/min	3,8	3,8	3,8	3,8	3,8
Dimensions	↗ mm	760	760	980	980	1020
	→ mm	330	330	330	390	390
	↑ mm	1200	1200	1200	1250	1250
Weight	kg	104	118	120	167	194

Other voltages available on request



## VERTICAL STROKE SPOT AND PROJECTION BENCH WELDERS

BSW bench welders, thanks to their reduced dimensions, are suitable to build customised multispot welding equipment.

BSW 25 is particularly suitable for precision spot welding and, fitted with special accessories, can be used to weld small size parts.

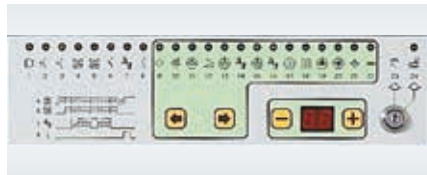
BSW 50 and 100, thanks to their rigid structure, allow high quality projection welding.

- Upper head low friction driving system for very precise welding
- Secondary circuit low impedance to grant high welding currents with low consumption
- BSW 50 and 100, with a platens adjustable in height and fitted with T-slots, enable the quick assembly of barholders, electrodeholders and any dedicated tooling for a specific application



## ELECTRONIC CONTROLS

### DIGIT 8



- Single or multi spot
- Two 24 V DC solenoid valves
- 50/60 Hz frequency
- Mains voltage compensation
- Weld/no weld switch

### WS 708

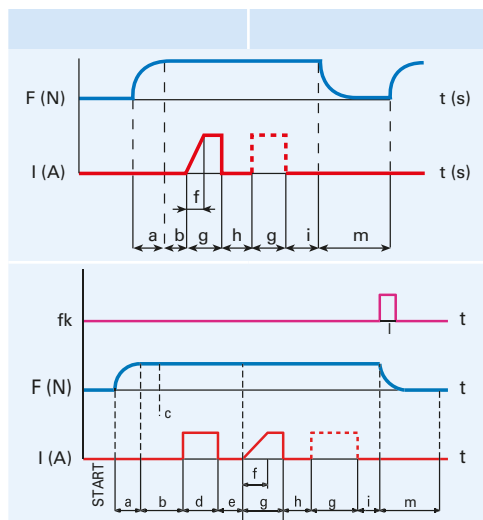


- 8 programs
- Half period welding time
- Pre-heating current
- Two 24 V DC solenoid valves
- 50/60 Hz frequency
- Mains voltage compensation
- Error message
- Weld/no weld switch
- Single or multi spot

### MPS 300 R1



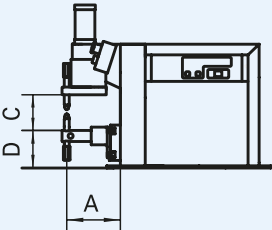
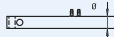


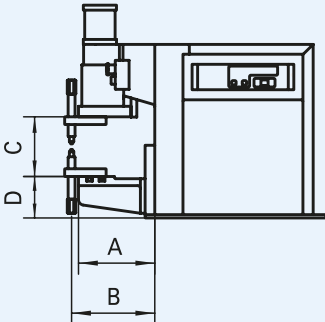
- Constant current facility
- Limit current monitoring
- 8 programs
- Half period welding time
- Spot counter
- Pre-heating current
- Two 24 V DC solenoid valves
- 50/60 Hz frequency
- Mains voltage compensation
- Error message
- Weld/no weld switch
- Single or multi spot



	FUNCTIONS	DIGIT 8	WS 708	MPS 300 R1
a	Pre-squeeze time	•	•	•
b	Squeeze time	•	•	•
c	Pressure contact	•	•	•
d	Preheating time	---	•	•
e	Cooling time	---	•	•
f	Slope up	•	•	•
g	Welding time	•	•	•
	Welding current	•	•	•
h	Pulse interval time	•	•	•
i	Holding time	•	•	•
l	Cycle end contact	•	•	•
m	Pause time	•	•	•

### OPTIONALS

- Double pedal for the 2 time 2 current feature on the same workpiece
- Adjustable double stroke cylinder
- Barholder set with bars
- Double pedal for squeeze and welding after workpiece position Checking
- 0,5 bar low pressure solenoid valve for applications requiring same

BSW 25		BSW		25	50	100
	A		mm	200	400	335
	B		mm	---	305	370
	C	MIN.	mm	---	100	140
		MAX.	mm	135	225	290
	D	MIN.	mm	---	140	175
		MAX.	mm	135	265	325
		Ø mm	40	---	---	
		Ø mm	18	25	30	
		Ø mm	16	16	19	
	E	F	E mm	---	90	150
		F mm	---	130	150	
	G	G mm	---	45	63	
	T	T	---	2	2	

TECHNICAL DATA		BSW		
		25	50	100
Single phase input 50/60 Hz	V	400	400	400
Rated power at 50%	kVA	25	50	100
Short circuit power	kVA	65	160	414
Max. welding power	kVA	52	128	331
Installed power	kVA	14	38	78
Cross section connecting cables	mm <sup>2</sup>	16	25	50
Delayed Fuse	A	40	100	200
Open Circuit Voltage	V	3,7	5,5	9,4
Short circuit current	kA	18	29	45
Max. welding current	kA	14,4	23,2	36
Thermal secondary current at 100%	kA	4,8	6,4	7,5
Work stroke	mm	50	75	100
Electrode force max 600 kPa (6 bar)	daN	187	470	900
Water consumption a 300 kPa (3 bar)	l/min	4	7	7
Dimensions	↗ mm	800	900	1080
	→ mm	300	300	325
	↑ mm	590	770	1015
Weight	kg	96	210	380

Other voltages available on request

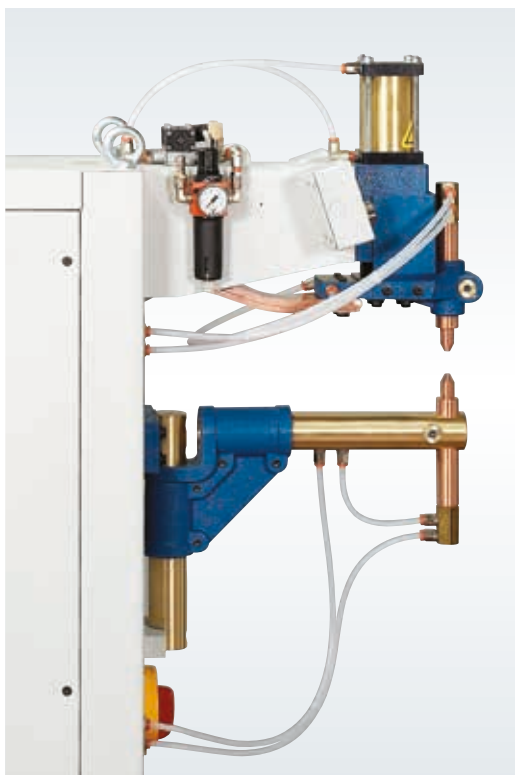
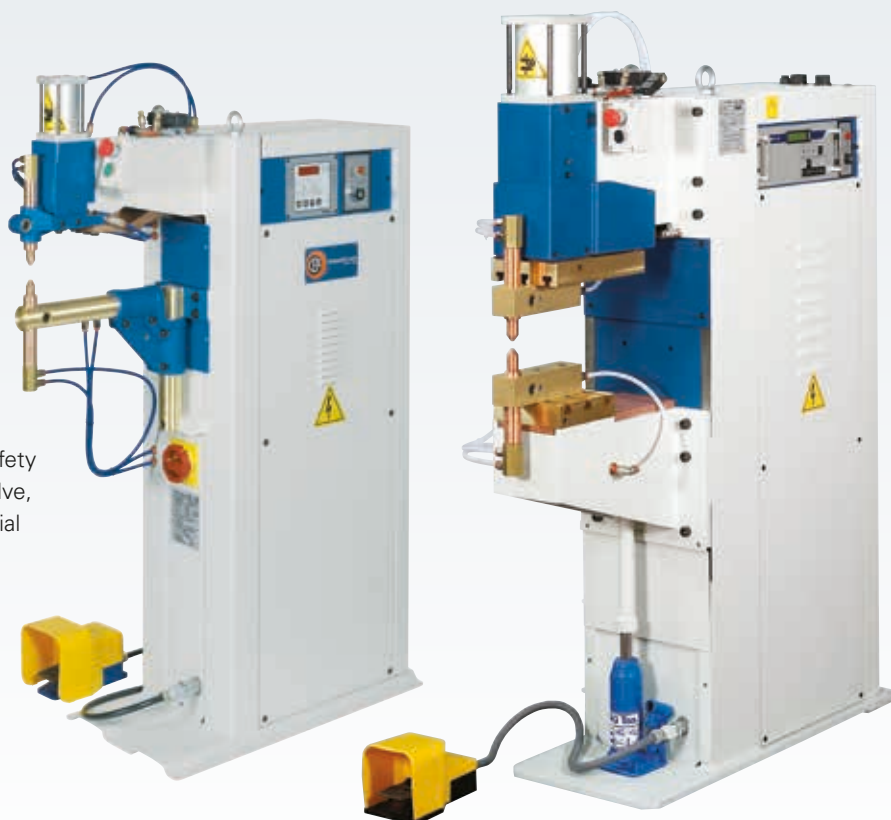






## VERTICAL STROKE SPOT AND PROJECTION WELDERS

Suitable for both spot and projection welding, PPN models fully satisfy a wide range of the heaviest large production industrial applications. Equipped with microprocessor control, safety concomitant side buttons and solenoid valve, upon request they can be fitted with special controls to suit any special configurations.



- ▶ Excellent welding on all weldable metals
- ▶ Synchronous ignition SCR group with phase shift welding current adjustment to eliminate switching transistors
- ▶ Thermostatic protection on the SCR group
- ▶ High welding currents with low consumption
- ▶ Set up time reduction thanks to quick and easy modification of electrodeholders platens opening without any intervention on the secondary circuit (patent pending)
- ▶ Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants
- ▶ Water cooled secondary circuit, i.e. electrodes, electrodeholders, platens and transformer, to avoid any overheating
- ▶ Water cooled copper electrodeholders with adjustable height
- ▶ Electrode force adjustable by pressure reducer group equipped with a manometer and filter for automatic air impurity expulsion
- ▶ Upper electrode movement by self-lubricated double effect pneumatic cylinder fitted with speed regulator, end stroke shock-absorber and silencer for compressed air discharge
- ▶ Solenoid valve to control welding cylinder
- ▶ Safety cycle start by means of the concomitant side buttons or, as alternative only if the operator can work in safe conditions, by electric pedal. Either option can be chosen by a selector with removable key
- ▶ Cycle stop emergency button.

## PPN 28 - 53

### ARE EQUIPPED WITH:

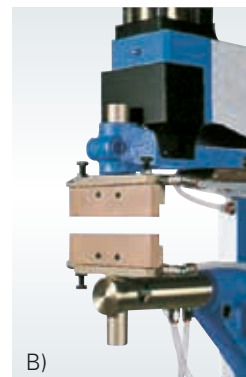
- ▶ Lower round arm with adjustable height and lateral adjustment
- ▶ Electrodeholders with electrodes for spot welding and ability to easily fit barholders for projection welding
- ▶ Lower arm holder can be adjusted for use with larger arm gap
- ▶ Spot welding
- ▶ Projection welding with bars for mesh

### UPON REQUEST ALSO AVAILABLE WITH:

- ▶ Different length arms (Optional)
- ▶ Lower arms with pressed-in electrode (for welding pipes or similar) and longer electrodeholder on the upper arm (Optional)
- ▶ Special version with platens only for projection welding (PPN 53)



A)



B)

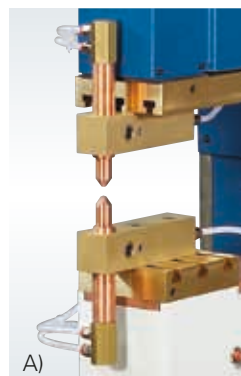
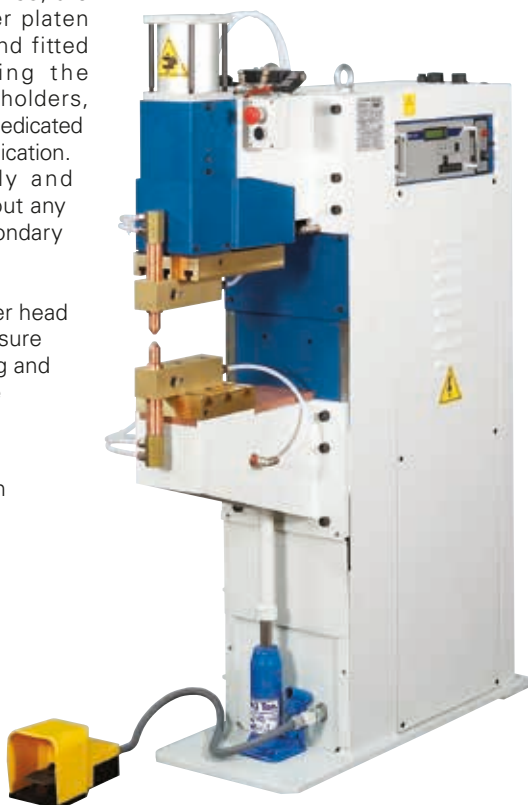


C)

## PPN 83 - 103 - 153 - 253

PPN 83, 103, 153 and 253, are all supplied with lower platen adjustable in height and fitted with T-slots, enabling the quick assembly of barholders, electrodeholders or any dedicated tooling for a specific application. Platens gap is easily and quickly adjustable without any intervention on the secondary circuit (patent pending).

- ▶ Manual valve for upper head descent without pressure for cleaning, centering and ordinary maintenance of the electrodes
- ▶ Upper head low friction driving system for precision welding (except PPN 83).



A)



B)



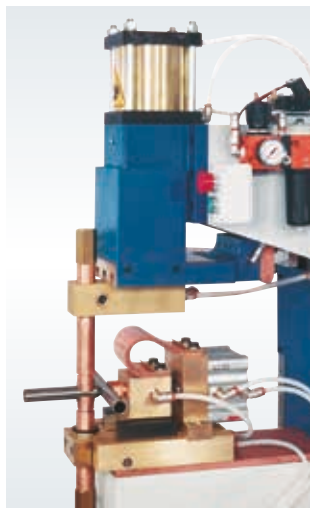
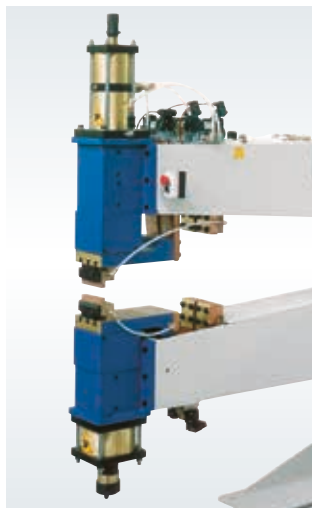
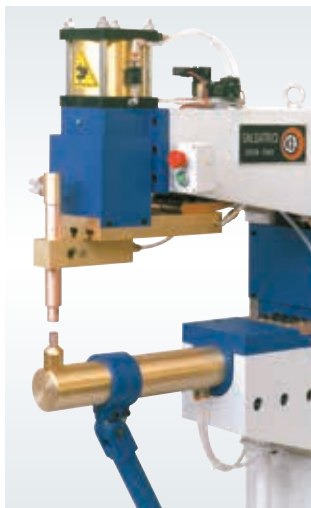
C)

A) Spot welding

B) Barholders welding for mesh

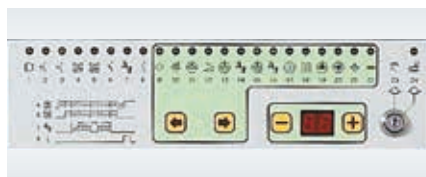
C) Projection welding

## SPECIAL VERSIONS



## ELECTRONIC CONTROLS

### DIGIT 8



- Single or multi spot
- Two 24 V DC solenoid valves
- 50/60 Hz frequency
- Mains voltage compensation
- Weld/no weld switch

### WS 708



- 8 programs
- Half period welding time
- Pre-heating current
- Two 24 V DC solenoid valves
- 50/60 Hz frequency
- Mains voltage compensation
- Error message
- Weld/no weld switch
- Single or multi spot

### MPS 300 R1



- Constant current facility
- Limit current monitoring
- 8 programs
- Half period welding time
- Spot counter
- Pre-heating current
- Two 24 V DC solenoid valves
- 50/60 Hz frequency
- Mains voltage compensation
- Error message
- Weld/no weld switch
- Single or multi spot

		FUNCTIONS			
		DIGIT 8	WS 708	MPS 300 R1	
	a	Pre-squeeze time	•	•	•
	b	Squeeze time	•	•	•
	c	Pressure contact	•	•	•
	d	Preheating time	---	•	•
	e	Cooling time	---	•	•
	f	Slope up	•	•	•
	g	Welding time	•	•	•
	h	Welding current	•	•	•
	i	Pulse interval time	•	•	•
	l	Holding time	•	•	•
	l	Cycle end contact	•	•	•
	m	Pause time	•	•	•

PPN 28 - 53		PPN		28	53	83	103	153	253
	A	mm		395	435	400	400	400	445
	A (Optional)	MIN.	mm	650	650	650	650	650	650
		MAX.	mm	---	750	---	---	---	---
	B	mm		---	---	445	445	445	490
	C	MIN.	mm	140	180	145	145	145	200
		MAX.	mm	400	510	300	300	300	330
	D	MIN.		690	615	800	800	800	865
		MAX.		950	945	955	955	955	995
		Ø mm		50	60	---	---	---	---
		Ø mm		30	35	30	35	35	35
PPN 83 - 103 - 153 - 253									
		Ø mm		19*	19*	19*	25*	25*	25*
		E mm		---	---	150	180	180	200
		F mm		---	---	150	180	180	200
		G mm		---	---	63	63	63	63
		T		---	---	2	3	3	3

TECHNICAL DATA		PPN					
		28	53	83	103	153	253
Single phase input 50/60 Hz	V	400	400	400	400	400	400
Rated power at 50%	kVA	25	50	80	100	150	250
Short circuit power	kVA	86	142	266	366	575	763
Max. welding power	kVA	69	113	210	293	460	610
Installed power	kVA	20	38	65	78	120	195
Cross section connecting cables	mm <sup>2</sup>	25	35	50	50	95	120
Delayed Fuse	A	63	100	150	200	300	500
Open Circuit Voltage	V	4,5	5,9	8,3	9,4	11,5	12,5
Short circuit current	kA	19	24	32	39	50	61
Max. welding current	kA	15,2	19	25	31,2	40	49
Thermal secondary current at 100%	kA	3,9	6	6,8	7,5	10,1	14,2
Work stroke	mm	60	65	100	100	100	100
Electrode force max 600 kPa (6 bar)	daN	230	470	736	900	1200	1884
Water consumption a 300 kPa (3 bar)	l/min	6	7	8	8	8	8
Dimensions	↗ mm	1005	1070	1115	1115	1170	1210
	→ mm	410	430	400	400	400	460
	↑ mm	1425	1520	1650	1650	1800	1800
Weight	kg	200	335	560	580	610	900

Other voltages available on request



## RESISTANCE MEDIUM FREQUENCY THREE PHASE SPOT/PROJECTION WELDERS

The MF range of medium-frequency inverter resistance welders is the ultimate answer to increasing demand for quality in resistance welding applications.

Constant current control, fast millisecond current regulation, high quality and perfect control of the energy transferred to the weld nugget are the main advantages versus traditional 50 Hz equipment.

MF models fully meet the mass production toughest industrial applications.

Thanks to their features, they represent the ideal solution for resistance spot welding of thin thickness and of hardly weldable material, such as copper, brass, aluminium alloys, zinc plated and other coated steel.



- ▶ All MF equipment can be converted into bench version types (BSW) or utilized in seamwelding applications too.
- ▶ High welding quality and process reliability
- ▶ Direct current welding
- ▶ Large power for welding with increased arm lengths
- ▶ Possibility of monitoring the welding process each 1 ms (1000 Hz) or even each 0,2 ms with MF 5040 versus 20 ms of traditional 50 Hz equipment.
- ▶ The presence of magnetic materials between the arms does not affect welding
- ▶ Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants
- ▶ Water cooled secondary circuit
- ▶ Low tendency for welding spatters
- ▶ Less imprint and deformation
- ▶ Very long electrode life



► High power factor and efficiency

► Balanced power absorption on the three mains phases

► Low primary consumption

► Lower energy consumption costs



CEA MFI

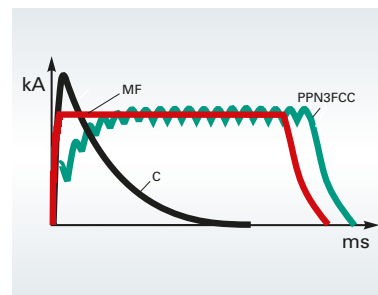
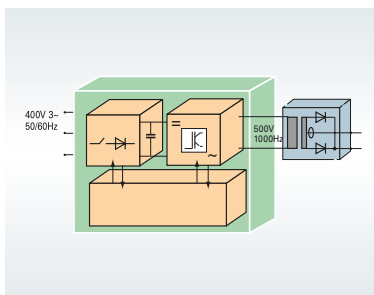


H+W MF

► Ability to produce quality joints on hardly weldable materials

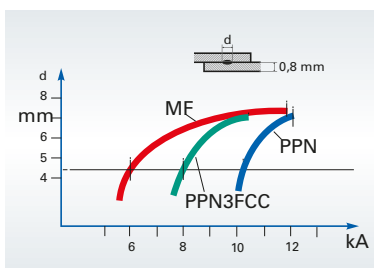
► Ability to reduce welding time to a few milliseconds with a consequent saving in welding time

► Welding tasks previously solved by capacitor discharge welding are now possible by MF range in a more economic way



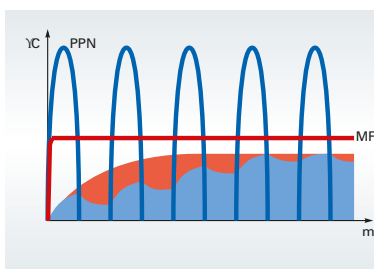
► Quick upslowing to the preset welding current

► The energy converts mostly in the weld nugget



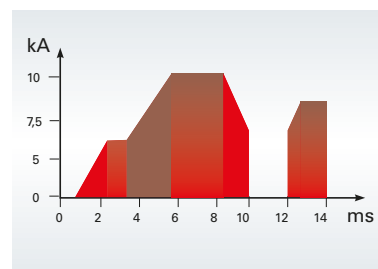
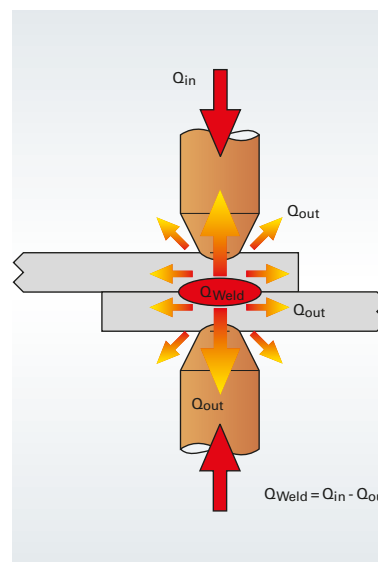
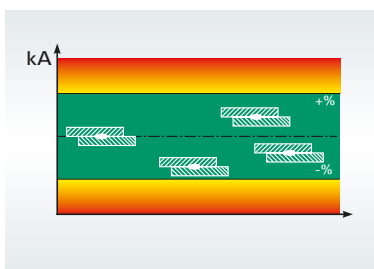
► Nugget temperature comparison between single phase machines (PPN's) and MF equipment

► Less thermal loss through the workpiece and the electrodes



► Weld nugget quality indirect control

► Ability to modify the current waveform with dedicated inverter controls



## MF 1040 – MF 1041 – MF 5020

The most enhanced inverter technology for medium frequency spotwelding available for everyone. These equipment – fitted with new inverters with WSI 100 and FILIUS COMPACT controls – represent a valid solution for anybody looking for all Medium Frequency benefits in both spotwelding applications and nut projection welding too.

MF 1040 and 1041 models allow to monitor the whole welding process every 1 ms (1000 Hz). The far faster MF 5020's, whose inverter operates at 5000 Hz, are able to even control the process every 0.2 ms.

- ▶ Lower round arm with adjustable height and lateral adjustment
- ▶ Electrodeholders with electrodes for spotwelding
- ▶ Lower arm can be lowered and adjusted for use with larger arm gap

### UPON REQUEST ALSO AVAILABLE WITH:

- ▶ Different length arms (Optional)
- ▶ Lower arm with pressed-in electrode and a longer upper electrode holder (Optional) for welding pipes or similar items



### WSI 100 CONTROL PANEL (MF 1040 - MF 5020)

The new WSI100 control panel with backlit graphical LCD display is very easy to use and to adjust.

- ▶ Preheating, welding and post-heating currents, up and down slope
- ▶ 64 welding programs
- ▶ Control up to 4 solenoid valves
- ▶ Current adjustment in percentage or constant current
- ▶ Limit value monitoring
- ▶ Weld counter



### FILIUS COMPACT CONTROL PANEL (MF 1041)

- ▶ heating currents, up and down slope
- ▶ Start 1 and Start 2
- ▶ 2 solenoid valves and pre-stroke solenoid valve
- ▶ 32 welding programs
- ▶ Proportional valve output 0 – 10 V with pressure program
- ▶ Current adjustment in percentage or constant current
- ▶ Limit value monitoring
- ▶ Weld counter
- ▶ Program copy function via USB-stick

## MF 140 – MF 180

Medium frequency (1000 Hz) MF 140 and 180 are particularly suitable for projection welding applications requiring high welding current and force and also for spotwelding special material and alloys to be joined with elevated currents and short welding time.

- ▶ High power spot and projection welding
- ▶ Lower platen adjustable in height and fitted, like the upper one, with T-slots, enabling the quick assembly of barholders, electrodeholders or any dedicated tooling for specific applications
- ▶ Platens gap is easily and quickly adjustable without any intervention on the secondary circuit
- ▶ Safety cycle start by means of the concomitant side buttons or, as alternative only if the operator can work in safe conditions, by electric pedal. Either option can be chosen by a selector with removable key
- ▶ Upper head linear low friction driving system for very precise welding
- ▶ Manual valve for upper head descent without pressure for cleaning, centering and ordinary maintenance of the electrodes
- ▶ Solenoid valve to stop water circulation whenever the machine is switched off from the mains supply



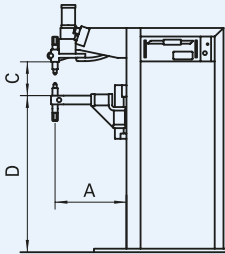
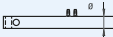
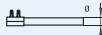

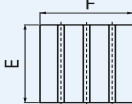

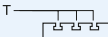
### INTEGRATED CONTROL PANEL (A)

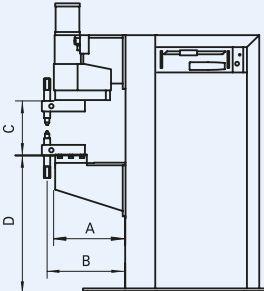
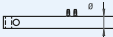
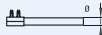

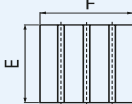

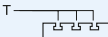
- ▶ 32 / 64 programs
- ▶ Constant current facility
- ▶ Limit current monitoring
- ▶ Preheating current
- ▶ Annealing current
- ▶ Linearized stepper function
- ▶ Two 24 V DC solenoid valves
- ▶ Proportional valve
- ▶ Weld/no weld switch
- ▶ Error message logbook
- ▶ Weld counter
- ▶ Main voltage compensation
- ▶ Single or multi spot
- ▶ Liquid crystal display



### REMOTE CONTROL BY PERSONAL COMPUTER (B)

- |                               |                              |
|-------------------------------|------------------------------|
| ▶ Network up to 56 machines   | ▶ Production monitoring      |
| ▶ 64 programs                 | ▶ Error message logbook      |
| ▶ Constant current facility   | ▶ Weld counter               |
| ▶ Limit current monitoring    | ▶ Mains voltage compensation |
| ▶ Preheating current          | ▶ Single or multi spot       |
| ▶ Annealing current           | ▶ Stored data files          |
| ▶ Linearized stepper function | ▶ Back up file               |
| ▶ Two 24 V DC solenoid valves | ▶ Software                   |
| ▶ Proportional valve          |                              |

MF 1040 - 1041 - 5020			MF					
			1040	1041	5020	140	180	
	A	mm	435	435	435	400	445	
	A (Optional)	mm	650	650	650	650	650	
		mm	750	750	750	---	---	
	B	mm	---	---	---	445	490	
	C	MIN.	mm	180	180	180	145	200
		MAX.	mm	510	510	510	300	330
D	MIN.	mm	615	615	615	800	865	
	MAX.	mm	945	945	945	955	995	
		Ø mm	60	60	60	---	---	
		Ø mm	35	35	35	35	35	
		Ø mm	19	19	19	25	25	
	E mm	---	---	---	---	180	200	
	F mm	---	---	---	---	180	200	
		G mm	---	---	---	63	63	
		T	---	---	---	3	3	

MF 140 - 180				
	A	mm	435	
	A (Optional)	mm	650	
		mm	750	
	B	mm	---	
	C	MIN.	mm	180
		MAX.	mm	510
D	MIN.	mm	615	
	MAX.	mm	945	
		Ø mm	60	
		Ø mm	35	
		Ø mm	19	
	E mm	---	---	
	F mm	---	---	
		G mm	---	
		T	---	

TECHNICAL DATA		MF				
		1040	1041	5020	140	180
Three phase input 50/60 Hz	V	400	400	400	400	400
Rated power at 50%	kVA	40	40	20	140	180
Installed power	kVA	40	40	40	60	80
Cross section connecting cables	mm <sup>2</sup>	35	35	35	50	70
Delayed Fuse	A	63	63	63	100	160
Open Circuit Voltage	V	5,0	5,0	11,5	9,0	12,5
Short circuit current	kA	22	22	16	40	55
Max. welding current	kA	20	20	14	35	50
Thermal secondary current at 100%	kA	5,4	5,4	---	7,0	9,5
Work stroke	mm	65	65	65	100	100
Electrode force max 600 kPa (6 bar)	daN	470	470	470	900	1200
Water consumption a 300 kPa (3 bar)	l/min	6	6	6	20	20
Dimensions	↗ mm	1070	1070	1070	1115	1210
	→ mm	430	430	430	400	460
	↑ mm	1520	1520	1520	1650	1800
Weight	kg	260	260	255	530	850

Other voltages available on request





## DIRECT CURRENT THREE PHASE RESISTANCE SPOT/PROJECTION WELDERS

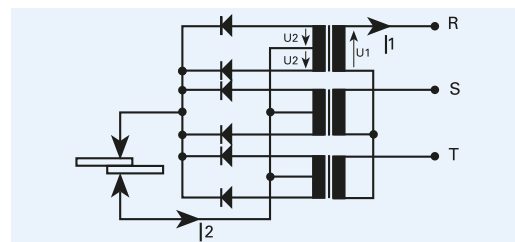
Suitable for both spot and projection welding, PPN 3F CC models fully meet the most sophisticated and toughest mass production industrial applications. Thanks to their features, they represent the ideal solution for resistance spot welding of aluminium and other material not easily weldable by conventional resistance equipment. Equipped with microprocessor control, concomitant safety side buttons and solenoid valve, upon request, they can be supplied with special controls and configurations.



### DIRECT CURRENT

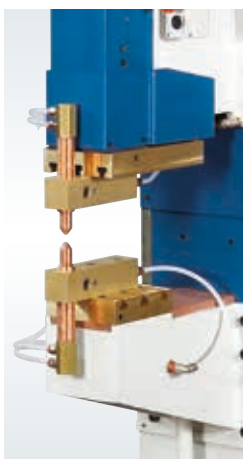
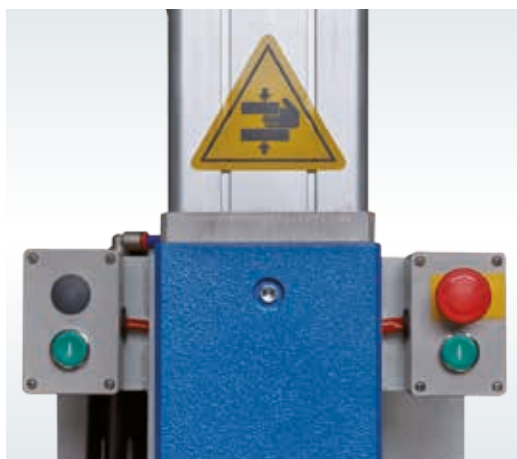
- ▶ High quality joints
- ▶ Large power for projection welding
- ▶ Large power for welding with increased arm lengths
- ▶ The presence of magnetic materials between the arms does not affect welding
- ▶ Long electrode life
- ▶ Highest efficiency
- ▶ Reduced welding time

### 3-PHASE MAINS SUPPLY



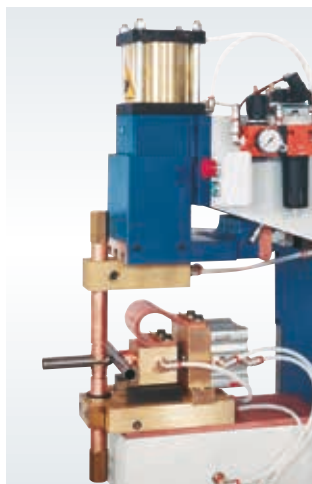
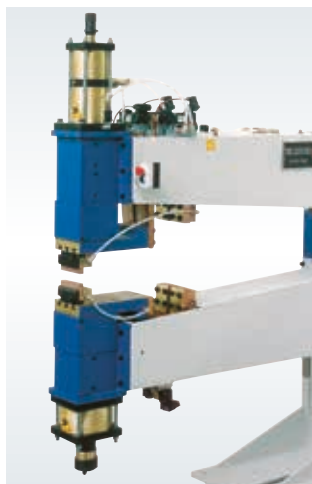
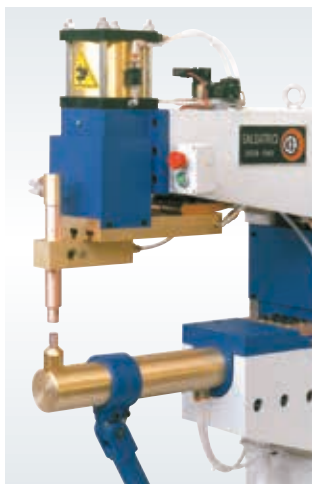
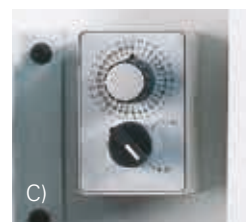
- ▶ Balanced power absorption on the three mains phases
- ▶ Low primary consumption
- ▶ High power factor and output
- ▶ Lower cost for electric power
- ▶ Water cooled secondary circuit to avoid electrical parts overheating
- ▶ Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants
- ▶ Safety cycle start by means of the concomitant side buttons or, as alternative only if the operator can work in safe conditions, by electric pedal. Either option can be chosen by a selector key
- ▶ Cycle stop emergency button
- ▶ All the machines are supplied with lower platen adjustable in height and fitted with T-slots, enabling the quick assembly of barholders, electrodeholders or any dedicated tooling for each application
- ▶ Proportional valve to select and control two pressure levels

- ▶ Platens gap is easily and quickly adjustable without any intervention on the secondary circuit (patent pending)
- ▶ Upper head linear low friction driving system for very precise welding
- ▶ Manual valve for upper head descent without pressure for cleaning, centering and ordinary maintenance of the electrodes
- ▶ Solenoid valve to stop water circulation whenever the machine is switched off from the mains supply
- ▶ Suitable for applications requiring high welding power, such as mesh welding
- ▶ High welding quality and process reliability
- ▶ Synchronous ignition SCR group with phase shift welding current adjustment to eliminate switching transistors
- ▶ Thermostatic protection on the SCR group
- ▶ Six phase rectifier bridge with diodes protected against overheating and overvoltage



## OPTIONAL AND SPECIAL VERSIONS

- A.** Adjustable double stroke cylinder
- B.** Double set of concomitant side buttons and double pedal for 2 program welding cycles
- C.** Welding program quick selector (only with controls allowing such function)
- ▶ Flowmeter stopping the welding process in case of insufficient water flow
- ▶ Double pedal for squeeze and welding after workpiece position checking
- ▶ 0,5 bar low pressure solenoid valve for applications requiring same
- ▶ Proportional valve to select and control two pressure levels

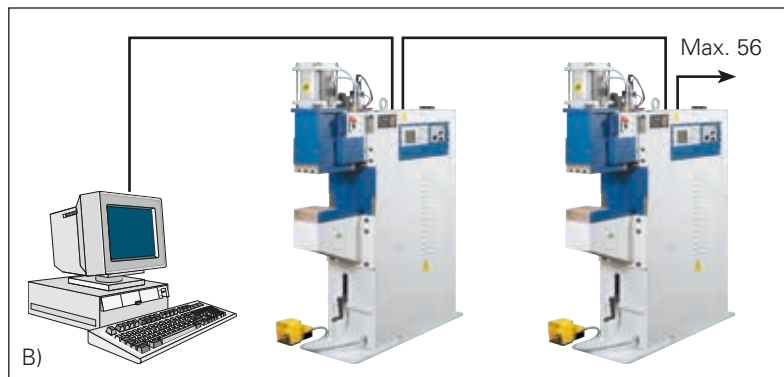




A)

### INTEGRATED CONTROL PANEL (A)

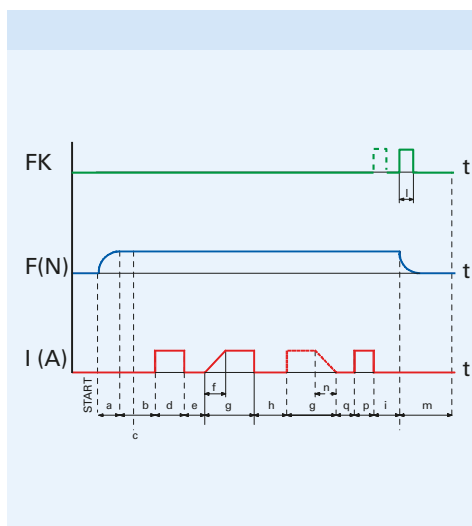
- ▶ 64 programs
- ▶ Constant current facility
- ▶ Limit current monitoring
- ▶ Preheating current
- ▶ Annealing current
- ▶ Linearized stepper function
- ▶ Two 24 V DC solenoid valves
- ▶ Proportional valve
- ▶ Weld/no weld switch
- ▶ Error message
- ▶ Weld counter
- ▶ Mains voltage compensation
- ▶ Single or multi spot
- ▶ Liquid crystal display



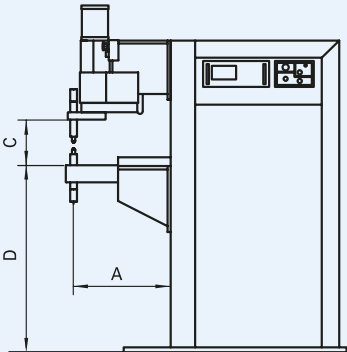
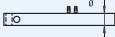


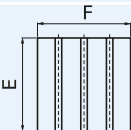

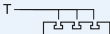
B)

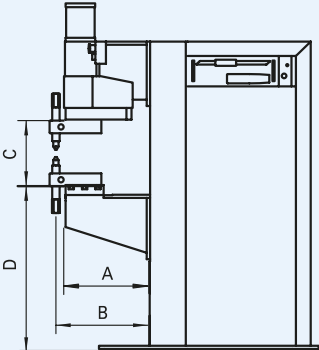
### REMOTE CONTROL WITH PERSONAL COMPUTER (B)

- ▶ Network up to 56 machines
- ▶ 64 programs
- ▶ Constant current facility
- ▶ Limit current monitoring
- ▶ Preheating current
- ▶ Annealing current
- ▶ Linearized stepper function
- ▶ Two 24 V DC solenoid valves
- ▶ Proportional valve
- ▶ Production monitoring
- ▶ Error message documentation
- ▶ Weld counter
- ▶ Mains voltage compensation
- ▶ Single or multi spot
- ▶ Stored data files
- ▶ Back up file
- ▶ Software



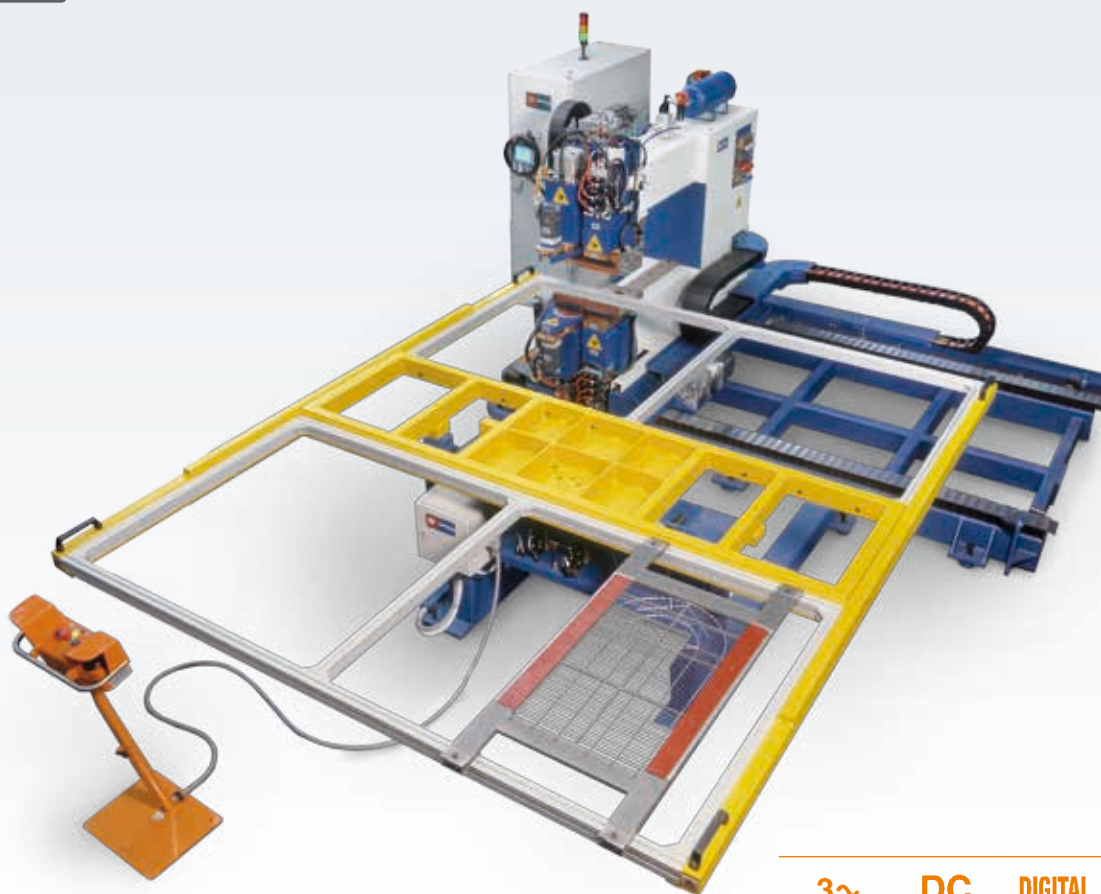
FUNCTIONS		A - B
a	Pre-squeeze time	•
b	Squeeze time	•
c	Pressure contact	•
d	Preheating time	•
e	Cooling time	•
f	Slope up time	•
g	Welding time	•
h	Pulse interval time	•
n	Slope down time	•
q	Cooling time	•
p	Annealing time	•
i	Holding time	•
l	Cycle end contact	•
m	Pause time	•

PPN 100 3F CC		PPN 3F CC		100	160	260	360	460
	A	mm	500	445	445	445	445	445
	A (Optional)	mm	700	650	650	650	650	650
	B	mm	---	490	490	490	490	490
	C	MIN.	mm	235	200	200	200	250
		MAX.	mm	390	330	332	350	400
D	MIN.	mm	900	852	852	900	942	
	MAX.	mm	1055	982	982	1050	1092	
			Ø mm	88	---	---	---	---
			Ø mm	35	---	---	---	---
			Ø mm	25	---	---	---	---
			E mm	---	200	200	250	250
			F mm	---	200	200	250	250
			G mm	---	63	63	63	63
			T	---	3	3	4	4

PPN 160 - 260 - 360 - 460 3F CC	
	A
	B
	C
	D

TECHNICAL DATA		PPN 3F CC				
		100	160	260	360	460
Three phase input 50/60 Hz	V	400	400	400	400	400
Rated power at 50%	kVA	100	160	250	350	450
Power at 100%	kVA	71	113	177	247	318
Short circuit power	kVA	560	716	878	1350	2200
Max. welding power	kVA	448	572	702	1080	1760
Cross section connecting cables	mm <sup>2</sup>	50	75	95	120	2 x 120
Delayed Fuse	A	125	200	250	300	400
Open Circuit Voltage	V	6,3	6,8	8	8,8	10
Short circuit current	kA	60	72	90	106	140
Max. welding current	kA	48	58	72	85	112
Work stroke	mm	100	100	100	100	100
Electrode force max 600 kPa (6 bar)	daN	900	1200	1880	2400	3600
Water consumption a 300 kPa (3 bar)	l/min	20	20	20	20	25
Dimensions	↗ mm	1480	1540	1540	1610	1610
	→ mm	430	480	480	530	530
	↑ mm	1800	1890	1890	2170	2300
Weight	kg	1100	1210	1300	1410	1800

Other voltages available on request



## RESISTANCE WELDING EQUIPMENT

VOYAGER equipment is a robotized system working on more axes for resistance spot or projection welding of workpieces placed in proper jigs.

Flexibility, productivity and easy programming are the main features of VOYAGER equipment, suitable not only for small series mesh applications but also for lamination spotwelding of all materials.

- ▶ Flexible programmable CNC system for positioning and welding at high and constant productivity.
- ▶ Easy programming thanks to the teach-in function of the CNC control.
- ▶ Programmable independent welding parameter for each single spot.
- ▶ Possibility of welding on different heights thanks to programmable axes:  
Z1 (pre-stroke of upper electrodes)  
Z2 (stroke of the lower counterelectrode).

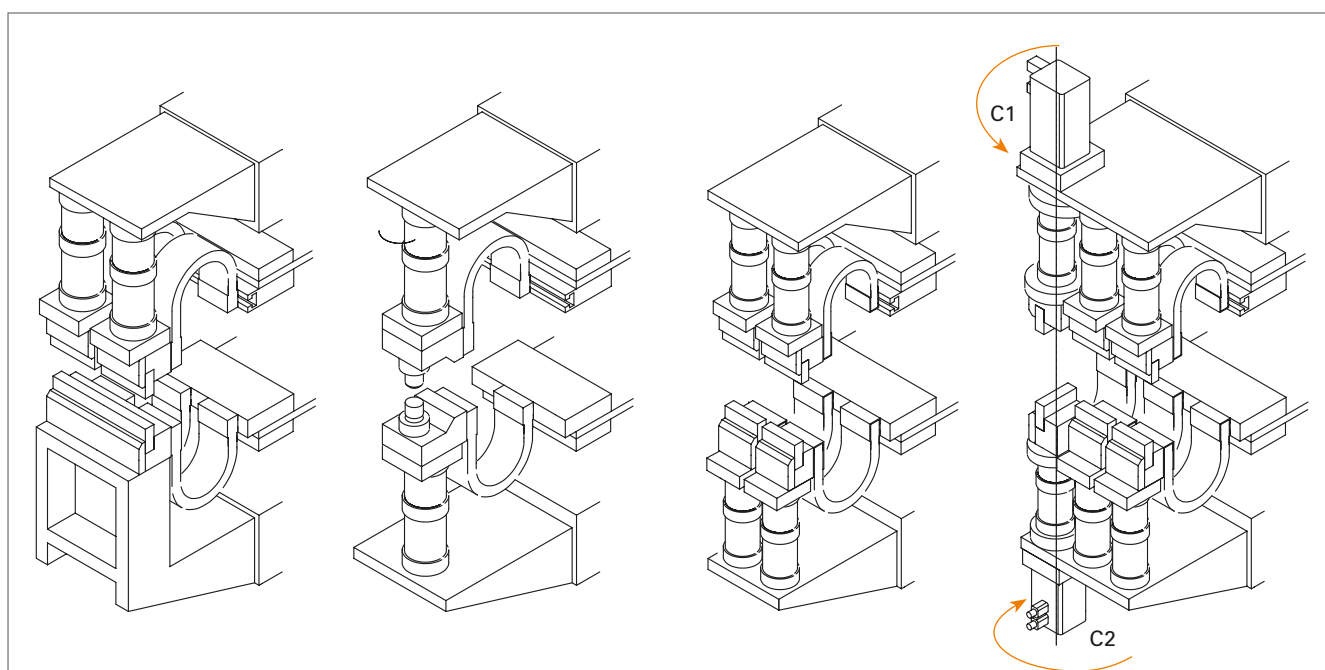
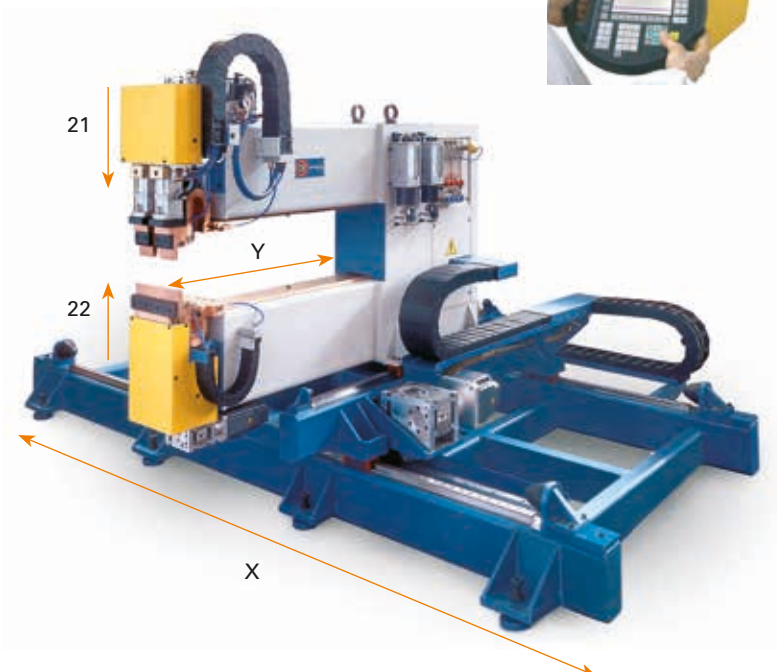


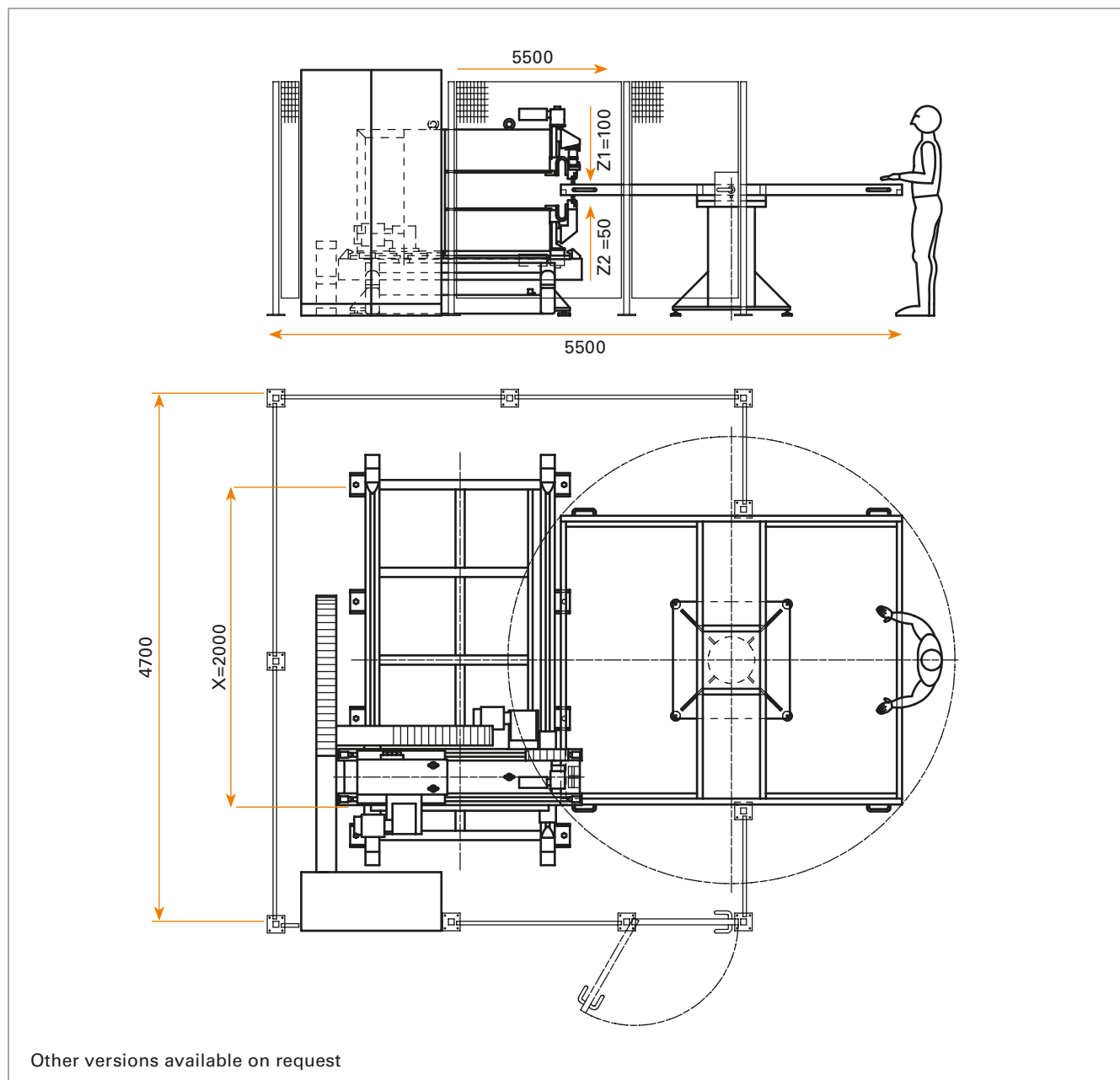
- Easy-to-operate and quick production shifting
- Shorter work cycle: workpiece loading/offloading during hidden time, by means of two station rotating table
- Working by servo operated brushless motors
- Robust and silent operation equipment

## EQUIPMENT CONFIGURATION

The equipment can be customized on customer's needs: several options.

- Welding mode:
  - Spotwelding
  - Projection welding
- Welding technology:
  - Medium Frequency inverter
  - Traditional 50 Hz
- Axis number
- Axis stroke length
- Welding head number
- Turnable electrodes (C1 – C2)
- Welding gun





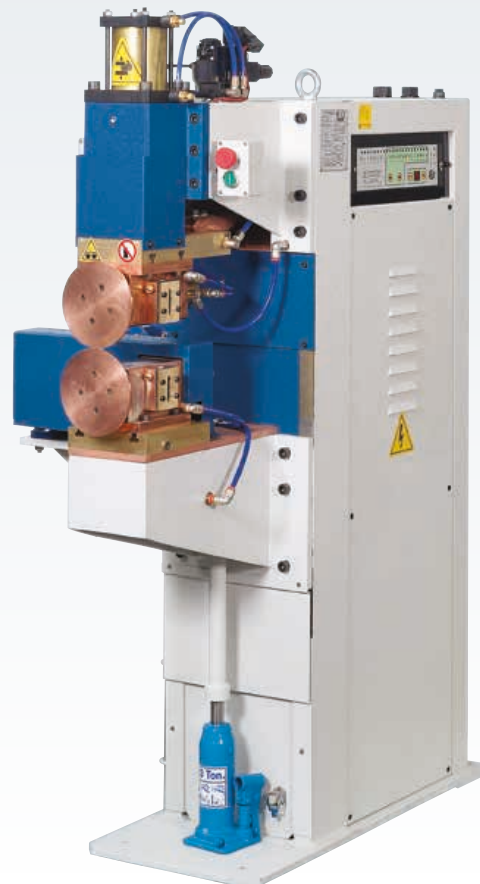
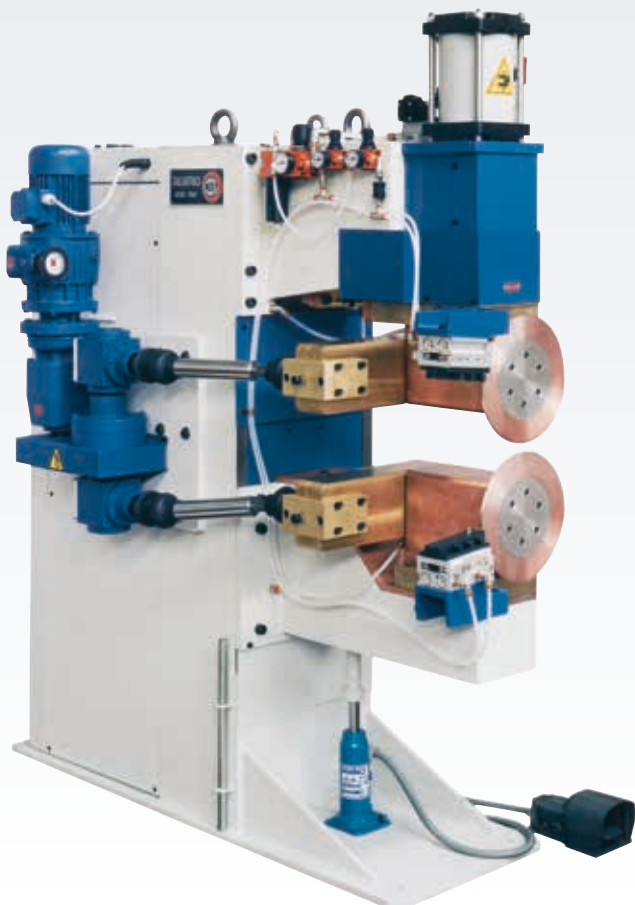
► Handheld remote control unit



#### OPTIONAL

Operator panel for program monitoring and JOB storing





## SEAM WELDERS

This range of resistance machines permits the joining of metals by a sequence of seams achieved by the rotation of copper alloy circular electrodes. These seam welders allow longitudinal and/or transversal seam welding, also water tight, of cylindrical containers, fire extinguishers, radiators, tanks, filters and similar items with excellent quality results.

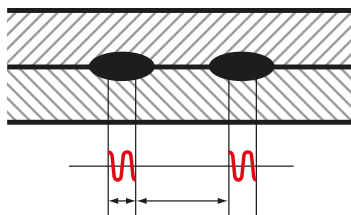
To meet specific welding needs, upon request special customised versions are built also with direct current three phase supply or with Medium Frequency (1000 Hz) inverter.

Medium Frequency seam welders enable high quality welds at greatly increased welding speeds and represent the ideal solution for joining thin sheets and filter nets with reduced deformations.

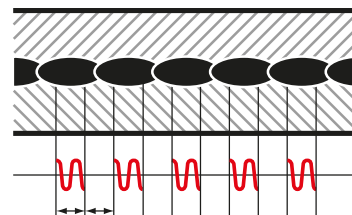
Seam welding is a welding process by electric resistance. In such joining process overlapped metals are welded under pressure by a sequence of spots made by copper alloy rotating discs. Depending on the choice of the parameters, such as spot frequency and rotation speed of the electrodes, two typical joints are usually achieved.

► Fig. A represents the welding pattern made by choosing a short welding time with a long pause time. This is not water tight welding.

► Fig. B shows the welding pattern made by adjusting welding and pause times in a way that each spot is overlapped by the next one. This is a typical water tight welding

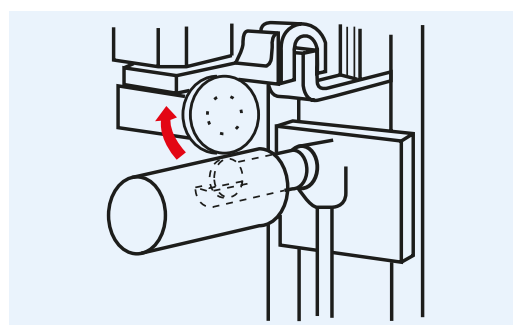
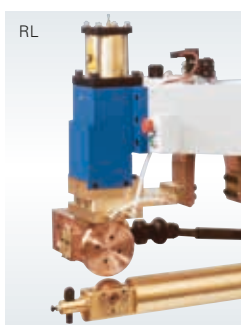
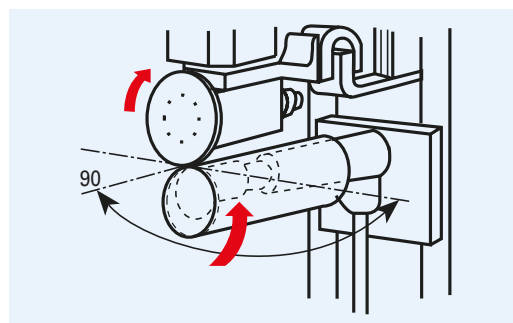


A



B

- RT version for transversal welding only
- RL version for longitudinal welding only
- Water cooled seam heads with sliding contacts, ensuring a good current transmission from the static part to the shaft.
- Reduced maintenance Costs
- Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants
- Frequency converter to adjust the welding speed of the seam discs



TECHNICAL DATA		RT		RL	RT	
		80	81	81	100	150 2 T
Single phase input 50/60 Hz	V	400	400	400	400	400
Rated power at 50%	kVA	60	80	80	100	150
Installed power	kVA	60	80	80	100	150
Delayed Fuse	A	150	200	200	250	400
Open Circuit Voltage	V	5,1	6,7	6,7	7,9	9,5
Arm lenght	mm	450	800	800	700	700
Work stroke	mm	80	80	80	100	100
Electrode force max at 600 kPa (6 bar)	daN	470	470	470	900	1200
Water consumption at 300 kPa (3 bar)	l/min	6	6	6	7	7
Welding speed	m/min	0,6 - 4,2	0,6 - 4,2	0,6 - 4,2	0,8 - 5	0,8 + 5
Max. welding capacity on mild steel	mm	1,2 + 1,2	1,2 + 1,2	1,2 + 1,2	1,5 + 1,5	2 + 2 **
Max. welding capacity on stainless steel	mm	1,5 + 1,5	1,5 + 1,5	1,5 + 1,5	2 + 2	3 + 3
Dimensions	↗ mm	1150	1450	1450	1450	1450
	→ mm	800	800	800	800	800
	↑ mm	2020	2100	2100	2100	2100
Weight	kg	800	900	900	1470	1540
Drive head	m	A	B	B	B	A + B
Driving system		C	D	D	D	E

#### Drive head

A = lower  
B = upper

#### Driving system

C = toothed belt  
D = direct with Hooke's joint  
E = differential

Other voltages available on request



## BUTT WELDERS FOR WIRE DRAWING MILLS

N 3, TR9, N 12 and SQ 121 butt welders have been particularly designed for wire drawing mills for joining steel, brass, aluminium and copper rods.

N 3, TR 9 and N 12 models are standard supplied with the annealing function and four wheel trolley, whilst SQ 121, equipped with an electronic welding control, can be also provided upon request with annealing function and trolley for easy manoeuvrability. Jaws opening and closing is by means of foot pedals in TR 9 only, whilst it is operated by manual levers in N 3, N 12 and SQ 121.

Upon request all models of this series can be supplied with a grinding wheel (A), whilst lighted magnifying glass is additionally available for N 3 only (C).

- ▶ Manually operated
- ▶ Welding upset adjustment
- ▶ Welding power adjustment
- ▶ Movable jaw by bearing guides
- ▶ Graduated scale to easily set the opening of the jaws (N 3, TR 9 and N 12)
- ▶ Electronic control for welding parameters adjustment (SQ 121)

### OPTIONS

- ▶ Grinding wheel with magnetothermal switch and blackout safety protection device (A and B)
- ▶ Four wheel trolley (SQ 121) (B)
- ▶ Version with annealing facility and suitable jaws (SQ 121) (B)
- ▶ Lighted magnifying glass (N 3) (C)

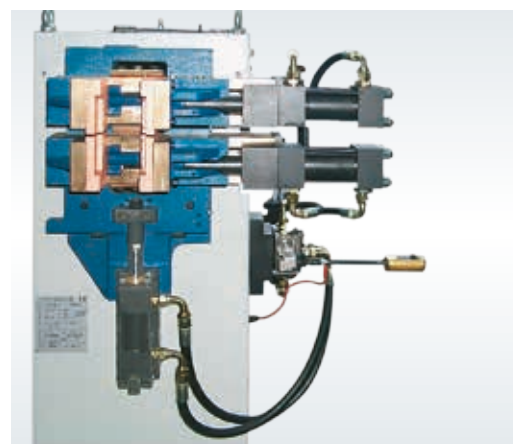




		N 3		TR 9		N 12		SQ 121	
		min	max	min	max	min	max	min	max
Fe	● ø mm	0,5	2,5	0,8	8	2	14	3	18
	■ mm <sup>2</sup>		4,9		50		150		250
CrNi	● ø mm	0,5	1,2	0,8	6	2	9	3	16
	■ mm <sup>2</sup>		1,1		28		65		200
Al	● ø mm	0,8	2	2	5	2	8	4	12
	■ mm <sup>2</sup>		3,1		20		50		110
Cu	● ø mm	0,5	1,8	1,5	3,5	2	6	4	8
	■ mm <sup>2</sup>		2,5		10		28		50
CuZn	● ø mm	0,5	1,8	1,5	3,5	2	6	4	14
	■ mm <sup>2</sup>		2,5		10		28		150

### SPECIAL VERSIONS

- Vertical up wire welding (SQ/I 121 Vert)



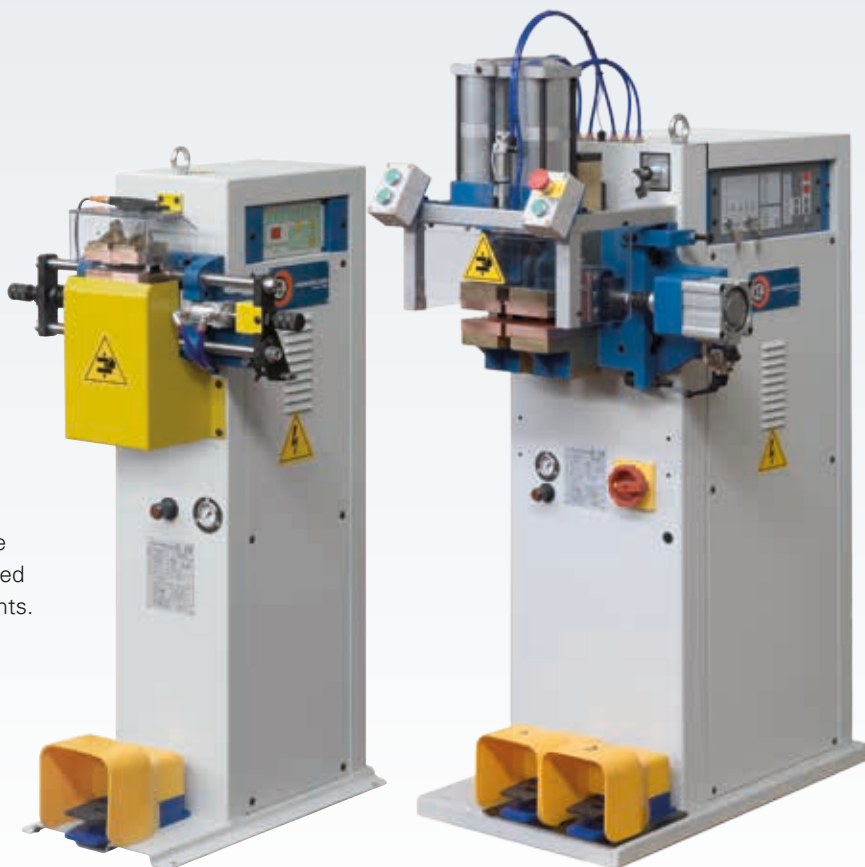
TECHNICAL DATA		N 3	TR 9	N 12	SQ 121
Single phase input 50/60 Hz	V	400	400	400	400
Rated power at 50%	kVA	0,8	3	4	20
Max. welding power	kVA	2	9,6	18	93
Installed power	kVA	1	3	4	15
Cross section connecting cables	mm <sup>2</sup>	2,5	2,5	2,5	16
Delayed Fuse	A	10	10	10	40
Open Circuit Voltage	V	2	2,6	2,4	4,2
Short circuit current	kA	1,2	4,4	10	28
Driving system	daN	10	80	200	1000
Clamping force	daN	1,3	20	80	300
Max. welding capacity on mild steel	mm <sup>2</sup>	4,9	50	150	250
Wire diameter	mm	0,5	0,8	2	3
	mm	2,5	8	14	18
Dimensions	↗ mm	518	565	770	800
	→ mm	515	565	660	600
	↑ mm	1145	1100	1120	1550
Weight	kg	52	80	80	280

Other voltages available on request



## MASS PRODUCTION BUTT WELDERS

SRT and SQ/A butt welders, air operated with completely automatic cycle, allow high productivity and are suitable for welding wire manufactured goods. SRT 11, due to its welding speed, is particularly recommended for mass production. Upon request, both SRT and SQ/A can be supplied with the pulse facility control (pulse version) to obtain reduced burr, good looking and slightly expanded joints.



TECHNICAL DATA		SRT 11	SQ/A 121	SQ/A 62
Single phase input 50/60 Hz	V	400	400	400
Rated power at 50%	kVA	4	25	60
Max. welding power	kVA	18	122	160
Installed power	kVA	4	15	45
Cross section connecting cables	mm <sup>2</sup>	2,5	16	50
Delayed Fuse	A	10	40	100
Open Circuit Voltage	V	2,2	5,1	6
Short circuit current	kA	10	30	35
Driving system	daN	150	900	3000
Clamping force	daN	58	350	1800
Max. welding capacity on mild steel	mm <sup>2</sup>	50	200	700
Wire diameter	mm	1,5	3	6
	mm	8	16	30
Dimensions	↗ mm	620	830	620
	→ mm	600	640	1450
	↑ mm	1100	1460	2000
Weight	kg	84	280	970

Other voltages available on request

- Air operated
- Electronic control for welding parameters adjustment
- Movable jaw by guides bearing





## FLASH BUTT WELDERS

SQ/AS models are suitable for flash butt welding solid material, pipes, profiles and hollow sections by obtaining high quality joints. They are particularly suitable for mass production with fully automatic controls aiding speed and efficiency.

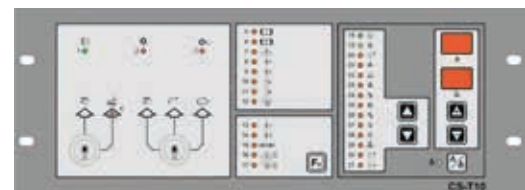
SQ/AS machines start the welding operation by slowly approaching, without pressure, the two parts to be joined; when these two ends come into contact, an electric arc strikes between them and in a very short time they are brought to a pre-melting condition; at this point the two ends, in a semi-solid status, are heavily pressed one against the other by the upsetting force, which results in a totally impurity free high quality joint.



TECHNICAL DATA		SQ/AS 121	SQ/AS 62	SQ/AS 100
Single phase input 50/60 Hz	V	400	400	400
Rated power at 50%	kVA	25	60	100
Max. welding power	kVA	122	160	350
Installed power	kVA	15	45	60
Cross section connecting cables	mm <sup>2</sup>	16	50	95
Delayed Fuse	A	40	100	250
Open Circuit Voltage	V	5,1	6	8,7 - 10,8
Short circuit current	kA	30	35	40
Driving system	daN	1350	1400	5150
Clamping force	daN	450	900	2400
Max. welding capacity on mild steel	mm <sup>2</sup>	250	350	550
Wire diameter	mm	5	8	8
	mm	16	20	26
Dimensions	↗ mm	830	850	850
	→ mm	920	1700	1850
	↑ mm	1600	2000	2100
Weight	kg	300	970	1100

Other voltages available on request

- Easy-to-use
- Air operated
- Electronic control for the welding parameters adjustment
- Movable jaw by guides bearing



CEA also designs and manufactures special resistance machines, either fully automated or developed as purpose-built fully customized.

According to a specific requirement from the clients and depending on parts to be welded, CEA resistance engineers are able to propose the best solutions most suiting any needs of resistance application or automation.





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