

Kjellberg[®]
FINSTERWALDE

the
FINE FOCUS[™]
company

Fine Focus Plasma Cutting Units

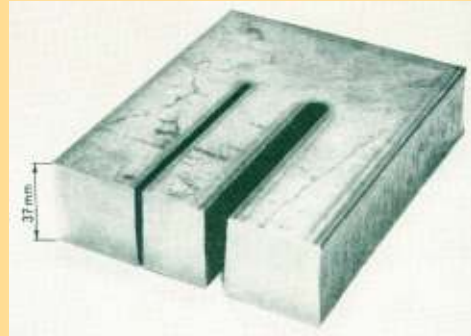
PA-S25 W
PA-S45 W
PA-S70 W



**For cutting and gouging operations
of all electrically conductive materials
with machine and hand torches
also with technical gases**

Approved technology - basis for success of the PA series

More than 45 years ago Kjellberg Finsterwalde as the first and most competent producer in Europe has developed and manufactured plasma cutting technologies and equipment. Since that time the enterprise pioneer work is directed to the constant improvement of the cutting results, the productivity and the variety of application of the products. The introduction of the Plasma Fine Focus Principle was one of the most important milestones. This technology got global approval, and is the basis for the successful application of the plasma cutting in the industries and workshops.



Cutting example from 1964:
Comparison of a kerf with
conventional torch and a kerf
with the first Fine Focus torch (left)

Advantages for the technological application

- Outstanding price-performance-ratio
- Suitable for cutting and gouging processes on electrically conductive materials, like mild and stainless steels, aluminium and brass, using different plasma gases and gas mixtures
PA-S25 W and PA-S45 W: Ar/H₂/N₂, Ar/H₂, Ar/N₂, Air or O₂
PA-S70 W: Air or H35 (65% Ar / 35% H₂)
- Best suitability for mechanised cutting jobs (machine torch), as well as for manual cutting (hand torch) at repair shops, construction sites, training schools; PA-S25 W and PA-S45 W available with compressor (optional)
- Adaptable to CNC controls
- Running cutting start and running piercing possible
- Straight and profile cutting, interrupted cutting
- Bevel cutting up to 60°; suitable for 2D and 3D applications
- Cutting on coated, oily and wet surfaces possible

Top cutting results with Fine Focus Plasma Torches

The Fine Focus Plasma Torches are granting an excellent cutting quality at both cutting surfaces (Double-Straight-Effect). Small cutting kerfs reduce loss of material and minimize therefore the pollution. Decreased secondary costs because of low rework demand.

Cost reduction because of high availability

- Long life of cathode and nozzle due to the high effective direct liquid cooling of those parts, soft-start circuit for cutting start and piercing, high-voltage ignition
- Plasma gas O₂ minimizes rework when cutting mild steels and prevents nitration
- Fast plasma torch adaptation for gouging or change of plasma gases by changeable cathode-nozzle system

Excellent application variability

- Standard length for hose parcels 6 m, 10 m or 25 m (hand torches), resp. 15 m (machine torch)
- Enlarged operation radius up to 55 m by Hose Parcel Extension and Plasma Ignition Box
- Trouble-free operation with CNC control because of screened hose parcels
- Inclined torch heads and special torch shafts ensure optimum cutting of 3-D shaped parts



Various accessories enable flexible hand torch applications

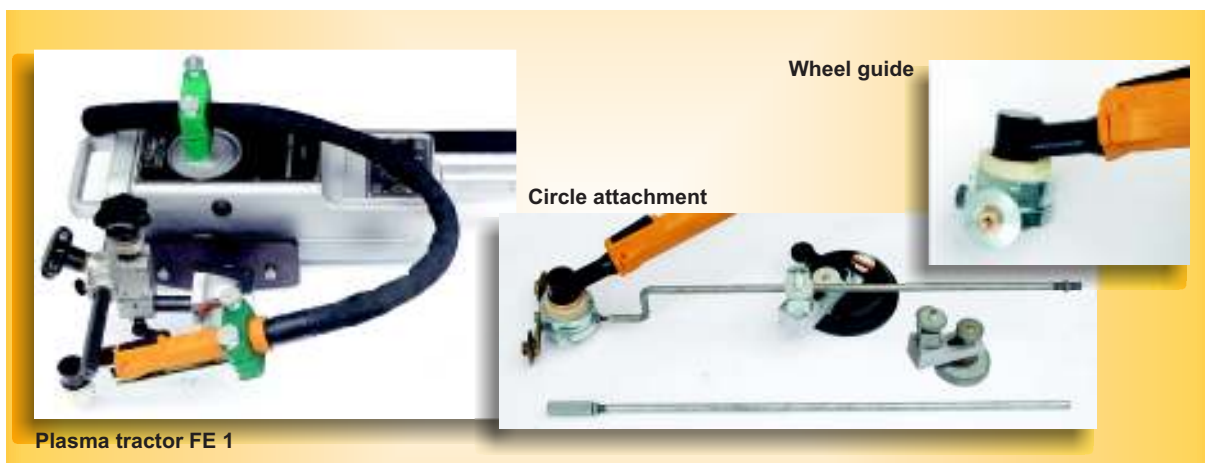
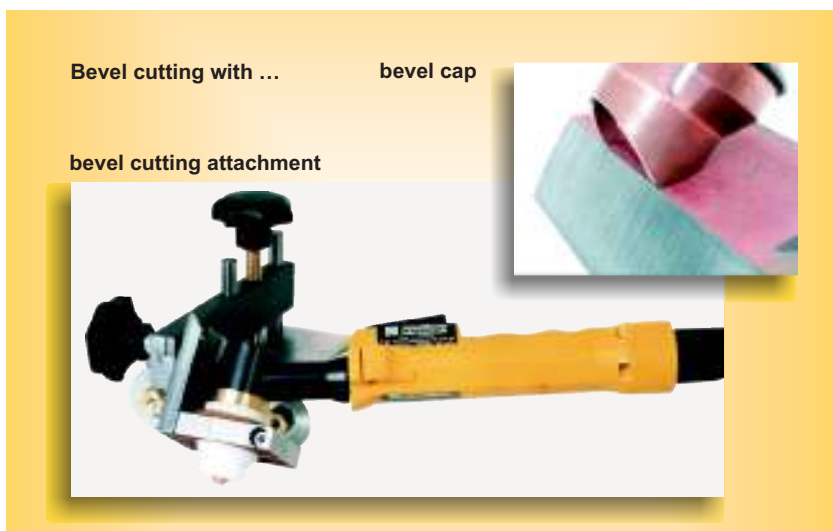
Kjellberg Finsterwalde provides the customers with a wide range of accessories for the plasma hand torches PB-S25 WH and PB-S45 WH. There are nozzles, distance holders and caps for **template cutting**, special cathodes for cutting difficult to reach positions, and accessories for **gouging** applications as well. For the plasma gouging only a special nozzle, a ceramic cap and a shock and heat protector are necessary.

For **bevel cutting**, as required for preparing welding seams, bevel caps for approx. 30° und 40° bevels are at disposal, and also a bevel cutting attachment with free adjustable bevel angle.

When **cutting along marking lines** a wheel guide could be very helpful. For larger parts the electric driven Plasma Tractor FE 1 can be used for guiding the plasma torch. Circle cutting can be performed easily and comfortable without interruptions by using the circle attachment, having a magnetic or suction holder.

For the PB-S70 WH also a wheel guide and a circle cutting device are available.

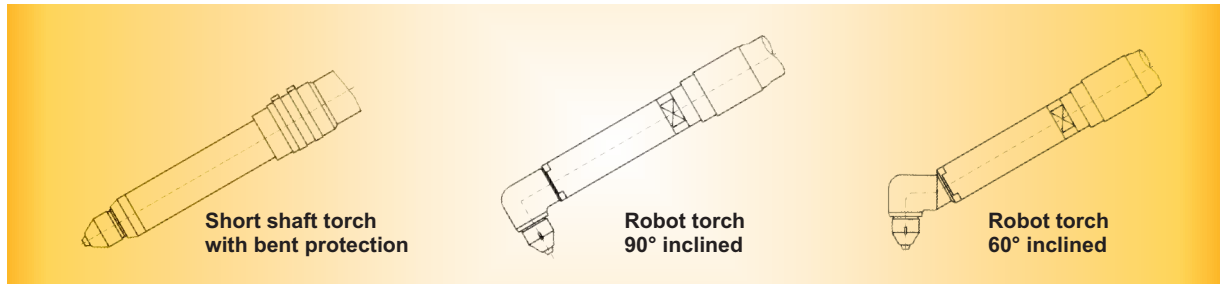
A variety of cutting applications can be solved by using our extensive and easy to handle accessories. For your individual application we like to give you full assistance.



Versatility even for mechanised plasma cutting

Cutting with guiding systems

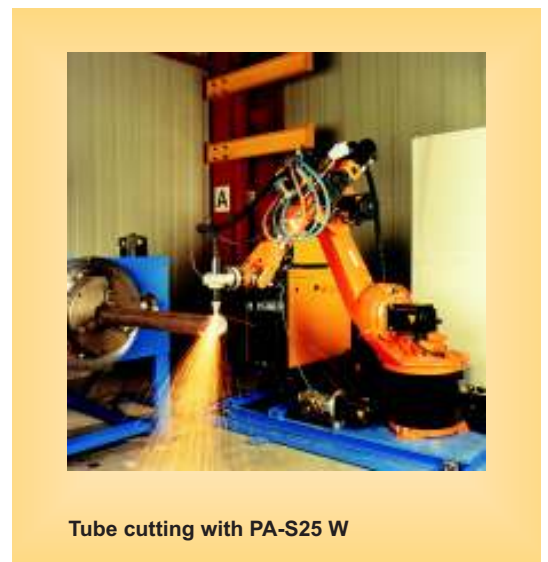
Besides the combination with 2-D guiding systems for standard applications the plasma cutting units PA-S25 W, PA-S45 W and PA-S70 W are suitable as well for 3-D cutting operations, which requires an optimum adaptation of the plasma torches. Additional to the standard torches and torches with a short shaft, special torches with inclined heads - 60° and 90° - are available. They enable the inside and bevel cutting of hollow profiles. For operation with a robot the torches are provided with bent protection to avoid



cable breaks and to ensure a stable gas supply. A high-frequency screening protects the sensitive electronic controls.

For extending the operation area, as usually necessary for large cutting tables, hose parcel extensions PBL with lengths 10, 20, 30 or 40 m can be offered. For those applications the Plasma Ignition Box PZ ensures a safe ignition at a maximum distance of 55 m.

For an optimum cutting result the selection and quality of the plasma gas is of decisive meaning. The Plasmagas Mixing Unit PM-S45 W ensures an accurate adjustment of the gas mixture during the cutting process with the PA-S25 W and PA-S45 W in connection with the plasma gases Ar, H₂ und N₂.



Gouging

Machine and hand torches easily can be prepared for plasma gouging within a few minutes. Only the nozzle has to be changed, and a ceramic cap (on demand with protector) placed. That increases the availability of the unit

The plasma gouging technology favourably is used for the removal of weld defects, cracks, blow holes and other inclusions in the material, and cast iron cleaning as well. Towards the carbon arc gouging following technological advantages are given:

- No carburization of the material
- No rework like grinding, even with alloyed steels
- Low heat input, therefore very small distortion
- Full process observation
- Reduction of noise level and smoke development
- Higher gouging speed



**For each cutting range the suitable equipment:
Data for the mechanized plasma cutting**

PA-S25 W

	Mild steel		Stainless steel		Aluminium	
Gas	Air*		Air*		Air*	
Material thickness (mm)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)
1	25	5400	25	1700	25	5400
3	45	2500	45	1500	45	3200
5	45	1600	70	2400	70	4500
10	70	1200	70	700	70	1700
15	70	500	70	400	70	1100
20	70	400	70	200	70	800
25	70	250	70	100	70	650

PA-S45 W

Material	Mild steel		Stainless steel		Aluminium	
Gas	O ₂ *		Ar/H ₂ *		Ar/H ₂ *	
Material thickness (mm)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)
3	45	2000				
5	85	2500	85	1800	130	5600
10	130	1800	130	1450	130	3000
15	130	1250	130	1200	130	1850
20	130	800	130	700	130	1100
25	130	600	130	400	130	950
40	130	200	130	250	130	350
45	130	150	130	200	130	250

PA-S70 W

Material	Mild steel		Stainless steel		Aluminium	
Gas	Air*		H35*		H35*	
Material thickness (mm)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)
4	160	3000	160	2630		
6	160	3150	160	2200	160	3500
8	160	2500	160	1750	160	3000
10	240	2600	160	1500	160	2000
15	240	1300	160	1000	160	1700
20	240	1100	240	1050	240	1750
30	240	800	240	530	240	1250
40	240	500	240	500	240	1000
50	240	230	240	350	240	600
60	240	200	240	200	240	350
70	240	125			240	250

*) These gases are for example, other gases or gas mixtures possible.

The above charts are showing the values for an optimum cut quality. The cutting speed depends on quality of material, the plasma gas and pressure, the correct torch-to-workpiece distance and the used nozzle-cathode-system. Considerably faster cutting speeds can be obtained if a lower quality is acceptable.

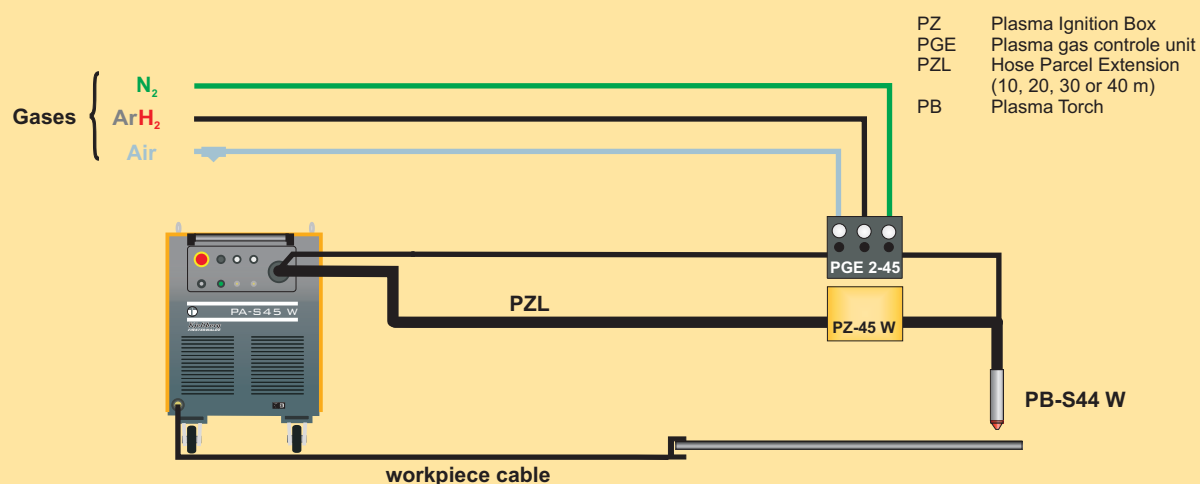
Technical data

Power source	PA-S25 W	PA-S45 W	PA-S70 W
Mains voltage ¹⁾	3x 400 V, 50 Hz	3x 400 V, 50 Hz	3x 400 V, 50 Hz
Connected load, max.	21 kVA	38 kVA	76 kVA
Fuse, slow	32 A	63 A	125 A
Cross section mains cable, Cu	4 x 6 mm ²	4 x 16 mm ²	4 x 35 mm ²
Open circuit voltage	370 V	370 V	370 V
Cutting current at 100% d.c.	25 A; 45 A	45 A; 85 A	80 A; 160 A
Max. cutting current	70 A at 75% d.c.	130 A at 60% d.c.	240 A at 80% d.c.
Protection class	IP 22	IP 22	IP 22
Dimensions (L x W x H)	920 x 630 x 960 mm	950 X 710 X 1020 mm	1380 x 870 x 1080 mm
Weight	168 kg	240 kg	460 kg
Plasma torch (machine torch)	PB-S25 W, PB-S45 W	PB-S45 W, PB-S44W	PB-S70 W
Plasma torch (hand torch)	PB-S25 WH	PB-S45 WH	PB-S70 WH

1) other voltages and frequencies on request

Plasma torch	PB-S25 W	PB-S45 W	PB-S44 W	PB-S70 W
Max. cutting current	70 A	130 A	130 A	250 A
Duty cycle	100%	100%	100%	100%
Max. cutting range	up to 25 mm	up to 45 mm	up to 45 mm	up to 70 mm
Plasma gas	Air, O ₂ , Ar, N ₂ , H ₂	Air, O ₂ , Ar, N ₂ , H ₂	Air, Ar/H ₂ -mixture	Air, Ar/H ₂ -mixture
Swirl gas	-	-	Air, N ₂	-
Torch cooling	Coolant „Kjellfrost“	Coolant „Kjellfrost“	Coolant „Kjellfrost“	Coolant „Kjellfrost“

Example: Configuration of a PA-S45 W with hose parcel extension for cutting with the plasma gases Air or Ar/H₂



Kjellberg-plasma cutting systems are CE-conform and correspond with the valid guidelines and instructions of the European Union. They are developed and fabricated on basis of following standards and instructions: EN 60974 (VDE 0544). The plasma cutting systems are labelled with the S-sign and therefore applicable to environments with increased hazard of electric shock. The fabrication takes place according to DIN EN ISO 9001. The factory-owned quality assurance comprises piece and cutting performance tests, documented by test certificate.

Our products represent a high level of quality and reliability. We reserve the rights to change design and/or technical specification during the series fabrication. Claims of any kind can not be derived from this prospectus.

09-08-16

Kjellberg®

FINSTERWALDE

Kjellberg Finsterwalde Plasma und Maschinen GmbH
 Germany D - 03238 Finsterwalde Leipziger Str. 82
 Phone: +49 3531 500-0 Fax: +49 3531 500-227
 Email: plasma@kjellberg.de
 Web: www.kjellberg.de

Kjellberg FINSTERWALDE, FINE FOCUS, HiFocus, PGC, XL and YellowXLife are trademarks of the Kjellberg-Foundation/Kjellberg Finsterwalde and may be registered in Germany and/or other countries.

Copyright © 2009
 Kjellberg Finsterwalde Plasma und Maschinen GmbH
 All rights reserved.