

Kjellberg[®]
FINSTERWALDE

the
FINE FOCUS[™]
company

Plasma Cutting System

HiFocus 130

HiFOCUS^{PLUS} - technology
= outstanding results at minimised costs

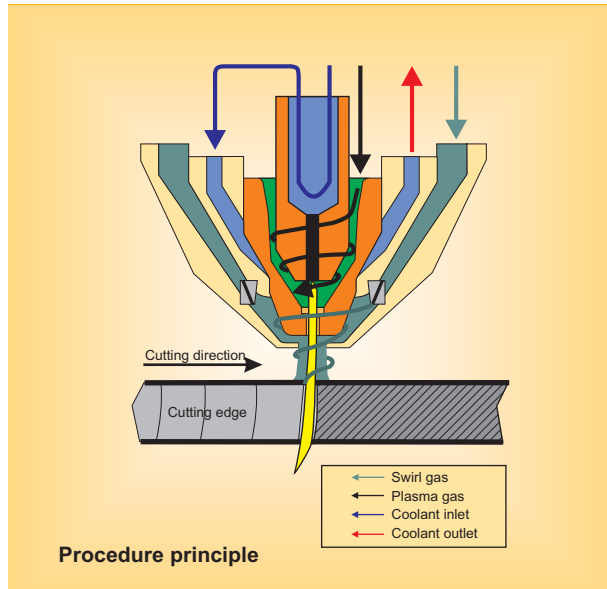


**Cutting of electrically conductive
materials from 0.5 to 40 mm**

made in Germany

The HiFocus-technology with PLUS for highest demands

Cutting results with high precision



The production of smooth, square and dross-free cutting surfaces, which can be used for further operations without post-processing, is the basis content of the Kjellberg philosophy regarding plasma cutting.

Nearly straight cuts at materials 0.5 to 32 (40) mm thick can be produced with the plasma cutting unit HiFocus 130. This will be achieved by an increased constriction and stabilization of the plasma arc.

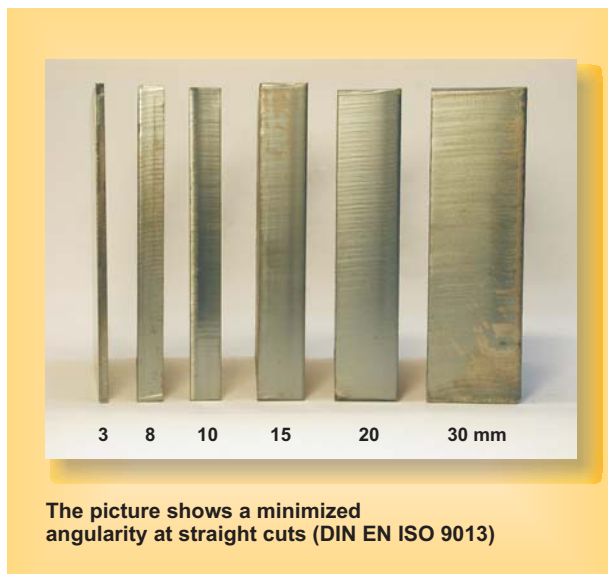
The insulated swirl-gas nozzle, which is protecting the cutting nozzle against upcoming hot material and double arcing during piercing as well, ensures permanent cutting quality, high life time of consumables, and therefore lowest operational costs.

HiFocus^{PLUS} - extends the range of application

The HiFocus^{PLUS}-technology is based on a computer-optimised development of plasma torch components and control sequences. The result is a **laserlike cutting quality** with extremely low squareness tolerances acc. to DIN EN ISO 9013 for a very wide thickness range up to 32 (40) mm.

An up to 100 % higher cutting speed compared with conventional systems in connection with the increased **longevity of the YellowXLife™ consumables** are the result of considerably minimised cutting costs for mild steels.

The outstanding features of the new HiFocus^{PLUS}-technology are highest quality capabilities at a substantially improved productivity and cost reduction in an extended range of application.



With the plasma cutting unit HiFocus 130 four optimised cutting ranges are disposable, ensuring superb cutting results at destined dimension limits for mild steels, stainless steels and aluminium. Those are characterised by:

- metallically clean, laser-like cutting surfaces, also with thicker materials and stainless steels,
- narrow cutting kerfs with lowest squareness tolerances,
- very small heat effected zones, therefore nearly no distortions, also at thin plates,
- dross-free cutting in a wide range of thickness,
- running cutting start and running piercing,
- direct corner cutting and cutting of inside contours;

and ensure a wide technological field of application as well as excellent economical parameters.

Process stability and reliability at automated operation

High availability of the plasma cutting units and the HiFocus-plasma torches

Due to their outstanding features the Kjellberg plasma cutting units are offering versatile possibilities of application to the customer. In principle all electrically conductive materials can be cut. Critical conditions, like coated or dirty material surfaces, plate inclusions, air gaps or silicon and sulphur containing mild steels will not create any problems.

The HiFocus 130 is destined for cutting operations in connection with guiding systems, provided with a conventional and a serial interface, and therefore compatible to various control systems.

Availability and performance capabilities of the cutting unit itself and particularly of the sophisticated plasma torches of the PerCut series are of decisive meaning for application in automated processes. For the cutting with the plasma gas oxygen the specially developed **YellowXLife™ system** will be used. The cathode

is furnished with a high-quality Hafnium pin, which is imbedded in a special alloy and directly water cooled.

A difficult to fabricate cooling channel system is granting an extremely effective heat transfer from the water cooled nozzle. Due to the swirl-gas technology piercing is a nozzle saving operation now. In connection with the powerful **plasma torches PerCut 160 and PerCut 170**, the plasma cutting unit offers high-economical and cost-saving solutions to the customer.

Cutting quality and lifetime of consumables depend widely from the guiding system. Generally, it is recommended to integrate an arc voltage depending torch height and distance control system into the cutting complex.

Robot guided cutting of 3D-parts

Besides the application with 2D-guiding systems more and more the use of the plasma cutting technology in the automotive industry for the preparation of 3D-parts grows rapidly, a field, where the laser cutting was dominant so far.

The high technical level of the HiFocus-technology, which is fulfilling the high quality and fabrication requirements in that sector, is the reason that the number of our partners in the automotive sector and their suppliers, using the HiFocus 130, worldwide is growing.

Features at the cutting of 3D-parts with Kjellberg cutting systems are the high process stability and the relative insensitiveness to process-related tolerances (e.g. at IHU-profiles) compared with the laser cutting and products from competitors.



HiFocus plasma
approved in
various sectors of the
automotive fabrication

Superior cutting results by optimal gas mixture



A substantial contribution to the achievement of optimal cutting results at the cutting of metallic materials with the plasma arc have the material-specific composition and the flow rate of the plasma gases.

For mixing the plasma and swirl gases the manually adjustable gas mixing units **PGE-H** and **PGE3-HM** are at disposal. These conventional units however do not have the possibility to control the flow parameters during the cutting process, and a

data storage is not provided. However, for many applications at standard qualities like medium and thicker sized plates they fully are acceptable.

Optimum gas mixtures for higher quality demands will be achievable through the latest development of Kjellberg Finsterwalde, the automatic gas console **FlowControl**. This **worldwide novelty** consists of the plasmagas valve unit PGV and the plasmagas control unit PGC, and is characterised by following advantages:

- Safe dosage of smallest gas quantities and **control of flow rate** through five separate control paths
- Optimum cutting quality through tailored gas mixtures and compensation of pressure fluctuations
- Highest reproducibility by microprocessor control and monitoring
- Independence from the operational state of the plasma torch (gas preflow, pilot arc, main arc)
- Use of gas parameters for standard materials from a data base, established by the supplier, easy storage of gas parameters for further materials possible

Versatile torch technology

Especially for the **HiFocus**-technology a new generation of plasma torches was developed, covering the growing demands on this technology. Increased arc constriction due to smaller nozzle orifices, intensified gas rotation and use of swirl gas are the main features of those torches. For the three-dimensional cutting particular 3D-consumables are available.

Modifications of the plasma torches PerCut 160 and PerCut 170 enlarge the range of application considerably. Therefore, torches with inclined torch heads (60° and 90°) and stronger clamping shafts will be offered for the robot aided cutting. Best prerequisites for the cutting of three-dimensional parts are made with that.

To simplify the handling, the plasma torch **PerCut 170** is provided with a **quick-change head with bayonet lock**.

Downtimes will be reduced by

- Rapid technology conversion when changing cutting jobs
- Fast power adaption when cutting different thicknesses
- Quick replacement of consumables with prepared torch head



Extended possibilities of application through PLUS-technology

Range of application

Thickness of material	10 mm	20 mm	30 mm	40 mm
Maximum values, material depending.	Piercing with hole sequence			
	Recommended range for fabrication			
	Maximum cutting range			

Cutting parameters (extract) ¹⁾

Material thickness (mm)	Mild steel		Stainless steel		Aluminium	
	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)	Cutting current (A)	Cutting speed (mm/min)
0,5	20	5400				
1	20	3700	30	5000	35	3800
2	120	7000	55	4000	35	2600
3	130	6000	55	2600	35	2300
4	60	2600	55	2200	50	1500
5	60	2400	55	2000	50	1400
6	130	3200	130	2200	130	3200
8	130	2700	130	1600	130	2200
10	130	2600	130	1300	130	1600
12	130	2200	130	1200	130	1400
15	130	1800	130	950	130	1000
20	130	1100	130	550	130	800
25	130	700	130	400	130	600
30	130	500				

1) Listed cutting speeds are depending on material characteristics, gas parameters, guiding system as well as proper consumables. According to quality requirements cutting speeds may differ.

Technical data

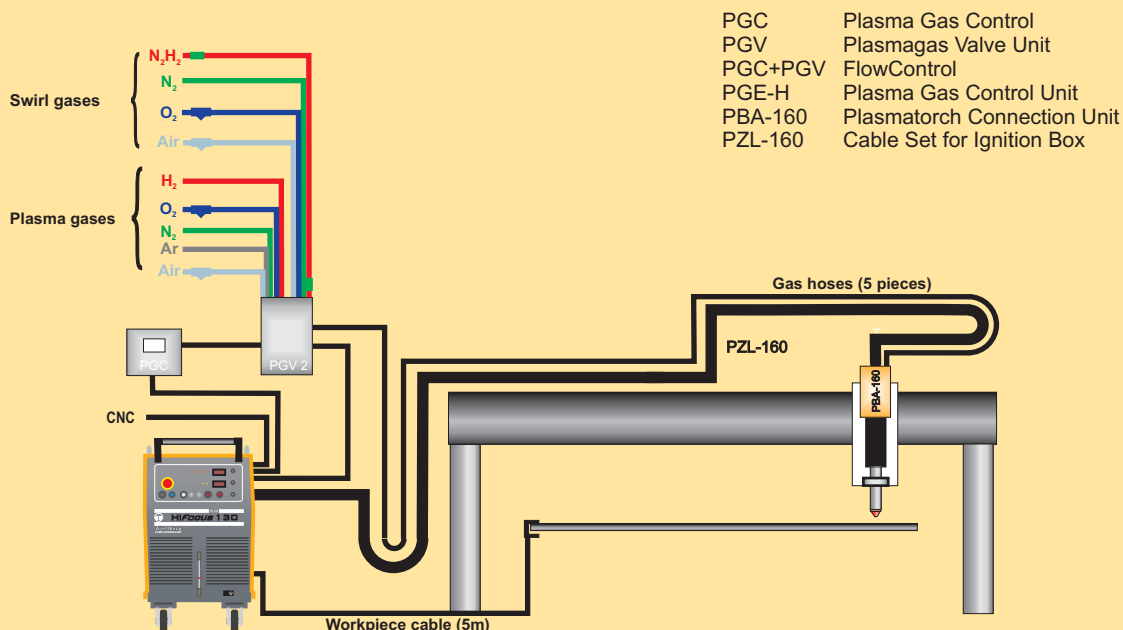
Power source	HiFocus 130
Mains voltage ¹⁾	3x 400 V, 50 Hz
Connected load, max.	32 kVA
Cross section, Cu	4 x 10 mm ²
Fuse, slow	T50A
Open circuit voltage	400 V
Cutting current at 100% d.c.	20 - 130A
Cutting voltage	150 V
Cutting Power	20 kW
Protection class	IP 22
Dimensions (L x B x H)	960 x 540 x 1050 mm
Weight	251 kg
Plasma torch	PerCut 160/ PerCut 170

Plasma torch	PerCut 160/ PerCut 170
Max. cutting current	max. 160 A
Duty cycle	100%
Plasma gases	O ₂ , Air, Ar, N ₂ , H ₂
Swirl gases	Air, O ₂ , N ₂ , Purging gas F5
Torch Cooling	Coolant "Kjellfrost"

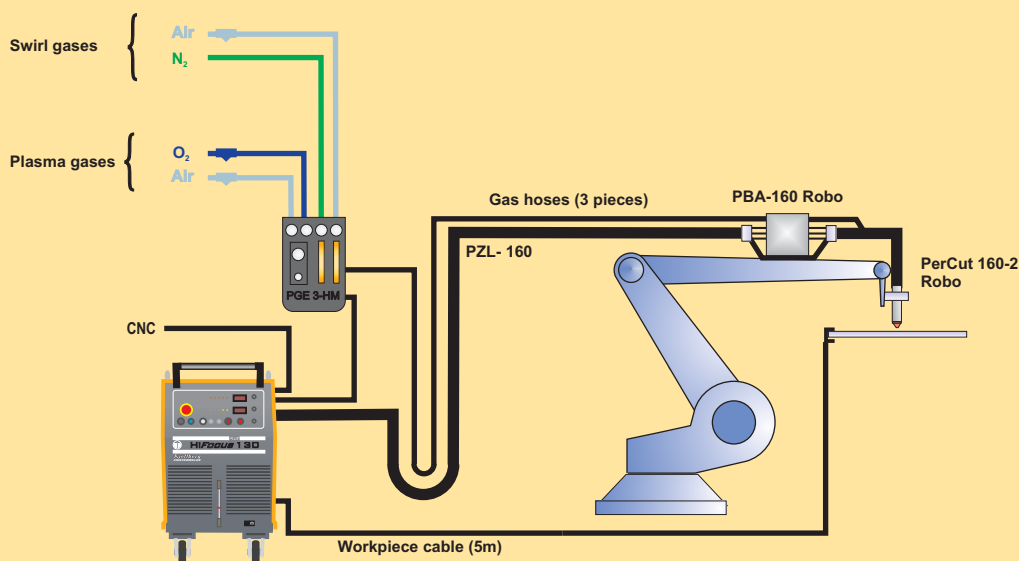
1) other voltages and frequencies on request

Equipment examples for HiFocus 130

Plasma cutting of mild steel, stainless steel and aluminium with FlowControl (maximum configuration)



Plasma cutting of mild steel with robot (with PGE3-HM)



The plasma cutting systems possess CE-conformity and comply with the valid regulations and instructions of the European Union. They are developed on basis of following standards: EN 60974 (VDE 0544).


All Kjellberg plasma cutting systems possess the S-mark and therefore are applicable at environments with increased hazard of electric shock. The fabrication takes place according to DIN EN ISO 9001. The company quality assurance is carried out in form of piece and cutting performance check, proofed by product-related 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.

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