

KUKA

cell4_arc compact

powered by **ABICOR
BINZEL**

The easy entry into robot welding
for small and medium-sized businesses

KUKA cell4_arc compact powered by ABICOR BINZEL

While there is a continuing decline in qualified welders and increasing cost pressure, production companies need well thought-out concepts in order to meet the rising demand and prevail over competitors.

KUKA cell4_arc compact powered by ABICOR BINZEL is a reliable and at the same time simple system solution, particularly suitable for small to medium-sized companies:

- Without high investment
- Easy to operate
- Solves production bottlenecks
- Reduces production costs

Having respect for the investment in a welding robot or a robotic welding cell is good – but KUKA cell4_arc compact powered by ABICOR BINZEL as a smart solution with an economic long-term advantage is better.



**ABICOR
BINZEL**

Small and medium-sized manufacturing companies in a quandary

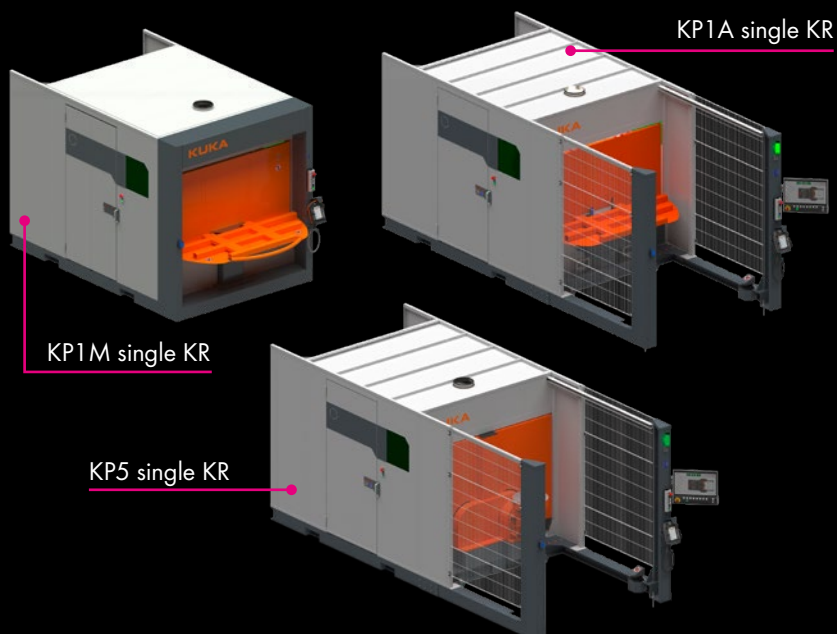


SHORTAGE OF QUALIFIED WELDERS AND COST PRESSURE REQUIRES SIMPLE SOLUTIONS

Welding orders for small series of parts, increasing order volumes and no welders available – such conditions practically make it impossible to meet delivery deadlines. In the worst case, orders cannot be accepted. Small and medium-sized companies are increasingly facing a dilemma and know: »We have to start thinking about automation«.

SMART SOLUTION WITH LONG-TERM ECONOMIC BENEFITS

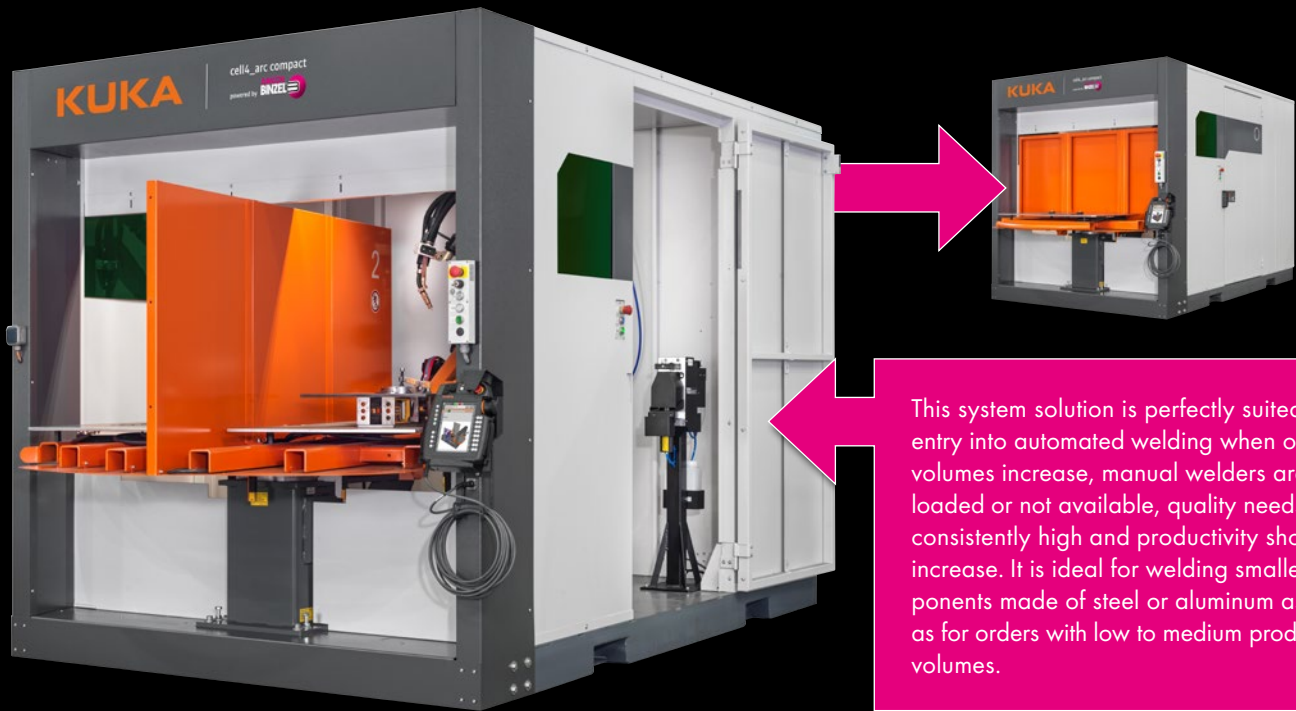
KUKA cell4_arc compact powered by ABICOR BINZEL is a cost-effective automation solution with high-quality equipment and only a small footprint. All components of this all-in-one compact system are tried and tested, work reliably and are based on the decades of joint experience of ABICOR BINZEL and KUKA in automated arc welding.



The compact cell, fully equipped with welding technology from ABICOR BINZEL, is available in three versions:

- **KP1M single KR**
Standard 2-station rotary table, manual
- **KP1A single KR**
Standard 2-station rotary table, automated
- **KP5 single KR**
Standard with 5-axis positioner

Application fields of the KUKA cell4_arc compact powered by ABICOR BINZEL



This system solution is perfectly suited for entry into automated welding when order volumes increase, manual welders are overloaded or not available, quality needs to be consistently high and productivity should increase. It is ideal for welding smaller components made of steel or aluminum as well as for orders with low to medium production volumes.

Cell configuration & dimensions

KUKA cell4_arc compact	KP1M single KR	KP1A single KR	KP5 single KR
Length	3,980 mm	5,285 mm	5,285 mm
Width	2,365 mm	2,365 mm	2,365 mm
Height	2,445 mm	2,445 mm	2,445 mm
Total weight	approx. 2,600 kg	approx. 3,200 kg	approx. 4,000 kg

WHAT IS REMOTE SERVICE?



Secure online support for your production system:

- Error detection
- Troubleshooting
- Maintenance support
- Key to service industry 4.0

Software packages and remote service – assured quality

Process monitoring and documentation are top priorities for the KUKA cell4_arc compact powered by ABICOR BINZEL. Whenever safety-relevant components have to be welded, the KP1A and KP5 welding cell solutions optionally offer complete documentation of the welding parameters.

During operation, up to 40 specific parameters are monitored and logged. Limit values can be set for each parameter with warning when exceeded. Therefore, the process quality is ensured and defective production and rejects are significantly reduced. If proof is required for quality assurance, reports are available as needed.

The remote service provides assistance for error detection, troubleshooting and serves as support for maintenance. Secure and reliable online support ensures that the productivity of your facility is guaranteed, as it is possible to remotely connect to the cell at any time.

Programming with KUKA ready2_pilot – just as if you were welding yourself



Robot control can also be easy – using intuitive, time-saving programming: the wireless KUKA controller ready2_pilot enables user-friendly, intuitive teaching of the welding robot and is ready for use within seconds. This system consists of a navigator in the form of a so-called 6D mouse, which can be plugged into different positions through adapter plates attached to the robot mount. The robot can be moved to the desired positions with just one hand and thus the operator can save process and path points simply by pressing a button on the navigator. The KUKA smartPAD manual control unit converts the movements into commands. The welding robot can now use this »learned« sequence to follow its precise welding paths.

Programming with KUKA ready2_pilot is done by manual start-up and then pressing a button – just as if you were welding yourself. Adjustments and fine-tuning are also possible at any time.



CELL 4 ar

Cell equipment KUKA cell4_arc compact powered by ABICOR BINZEL in detail

KUKA WELDING ROBOT

The KUKA process robot of the KR CYBERTECH nano product range is specially designed for the production of small components and guarantees the best performance. Its repeatability is 0.04 mm, providing its strength in precision even at high working speeds. The slim design of the KR10 R1440-2 CYBERTECH nano installed in this welding cell solution turns it into an ideal industrial robot for compact welding cells.

The basic axes of this welding robot feature complete protection against contact according to protection class IP65 and are resistant to the ingress of dust and water from a jet. The manual axes even have protection class IP67.



Technical data

CYBERTECH nano KR10 R1440-2

Installed in:	KP1M single KR, KP1A single KR and KP5 single KR
Rated payload:	10 kg
Maximum reach:	1,440 mm
Weight:	153 kg
Application software:	■ KUKA.SafeSingleBreak (not for KP1M) ■ KUKA.WorkVisual ■ KUKA.UserTech ■ KUKA.ArcTech Basic ■ KUKA.TraccTCP

cell4_arc compact

Cell equipment KUKA cell4_arc compact powered by ABICOR BINZEL in detail

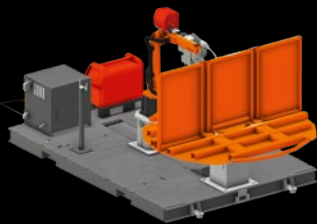


KUKA POSITIONER

Positioners simplify the automated welding of workpieces, because they pick up the component and hold it in an optimal position for the welding process. Depending on the version of the KUKA cell4_arc compact powered by ABICOR BINZEL, a manual or an automated rotary table or a 5-axis positioner are used. The positioners are loaded manually, KP1A and KP5 offer the corresponding interfaces for automated clamps (see media supply in the technical data).

The KUKA positioners guarantee the highest precision and positioning accuracy as well as top quality of the welded components. Their components ensure high availability and reliability as well as consistent quality even after long periods of use. The control technology from KUKA provides easy programming and operation of the automated positioners.

Technical data



KP1-V2T250 M

KP1M single KR

Installed in
KUKA cell4_arc compact:

Rated payload (per side):

250 kg

Worktop dimensions:

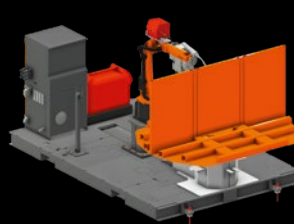
1,200 mm x 800 mm

Distance between face
plates/tool radius:

-

Fixture interface:
(per positioner side)
(open cable ends)

Media supply:
- Welding current return
(500 A)



KP1-V2T500

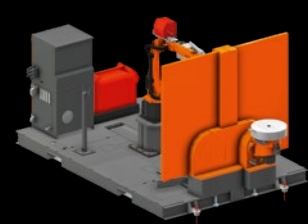
KP1A single KR

500 kg

1,200 mm x 800 mm

-

Media supply:
- Welding current return
(500 A)
- Compressed air (1/2", 6 bar)
- Profinet
- 24 V + US1/US2



KP5-V2H2V400

KP5 single KR

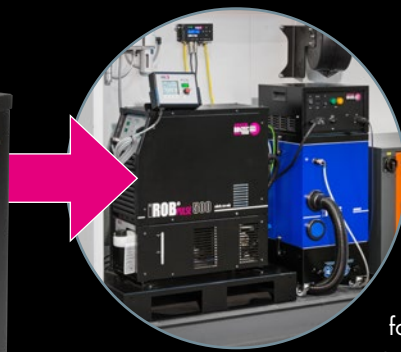
400 kg

-

350 mm

Media supply:
- Welding current return
(500 A)
- Compressed air (1/2", 6 bar)
- Profinet
- 24 V + US1/US2

Cell equipment KUKA cell4_arc compact powered by ABICOR BINZEL in detail



ROBOT POWER SOURCE iROB®

The iROB® robot power source from ABICOR BINZEL expresses once again the claim of easy operation of this robot cell system solution. In addition to many other features, it offers, for example, extremely robust pulse technology for continuous use, intuitive operation and a complete package of characteristic curves for all common materials. This robot power source guarantees stable communication with the welding robot and is perfectly matched to the KUKA cell4_arc compact powered by ABICOR BINZEL.

Technical data

iROB® Pulse 500

Power supply voltage:	3 x 400 V AC
Main voltage tolerance:	± 1.5 %
Main voltage frequency:	50/60 Hz
Main fuse:	30 A (400 V)
Communication bus:	digital
Max. power input (kVA):	22.9 kVA (400 V)
Max. power input (kW):	21.95 kW (400 V)
Power factor (PF):	0.95
Efficiency:	88 % (400 V)
Cos (Ø):	0.99
Primary continuous current (100 % duty cycle):	32.9 A (400 V)
Effective current consumption I_{eff} :	23.2 A (400 V)

Max. welding current at 40 °C:

- X = 60 %	500 A
- X = 100 %	420 A

Max. welding current at 25 °C:

- X = 60 %	500 A
- X = 100 %	470 A

Welding current range:

	3 - 500 A
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Open-circuit voltage:

	73 V DC
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Protection:

	IP23
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Insulation class:

	H
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Cooling:

	AF/Fan
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Dimensions (L x W x H):

	624 x 282 x 474 mm
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Weight:

	30.9 kg
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ROBOT WELDING TORCH ABIROB® W 500 – LIQUID COOLED

This robust, stable and process-safe torch neck has an excellent cooling capacity and ensures a long service life with its screwed gas nozzle and exchangeable tip holder. It is a reliable quality product from ABICOR BINZEL tried and tested for over 10 years and also satisfies all requirements in terms of accessibility to the component. If the standard torch neck length and the bending angle do not fit well, ABICOR BINZEL offers other torch neck geometries and different lengths as standard products for this torch system.

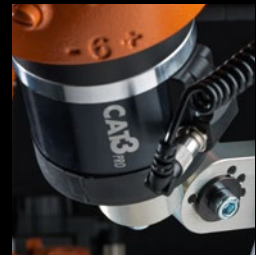
Technical data

ABIROB® W 500 – liquid cooled according to EN 60 974-7

Cooling:	liquid cooled
Rating:	550 A CO ₂ 500 A mixed gases M 21 (DIN EN ISO 14175)
Duty cycle:	100 %
Wire Ø:	0.8-1.6 mm



Cell equipment KUKA cell4_arc compact powered by ABICOR BINZEL in detail



ROBOT MOUNT CAT3 PRO

With the CAT3 PRO automatic switch-off protection from ABICOR BINZEL, collisions during robot welding and the associated costly repairs and premature torch replacement are reliably avoided. The CAT3 PRO is robust in design, easy to install and furthermore excellently protected against dirt. It also guarantees excellent reset accuracy after a collision and reliably holds the TCP.

Technical data

CAT3 PRO

Dimensions:	Ø 77 mm, height 106 mm
Weight:	960 g (without holder and flange)
Release force:	Deflection CAT3 PRO CR/CAT3 PRO TR
Switch point:	- Deflection in X and Y direction: 1.2°–1.5°
	- Deflection in Z direction: 1.3–1.6 mm
Max. deflection:	- Deflection in X and Y axis: approx. 7°
	- Deflection in Z axis: 5 mm
Resetting accuracy:	X, Y and Z direction: ± 0.04 mm (at 400 mm distance to the robot flange)
IP protection class:	IP21
Load capacity of safety switch-off:	max. 30 V DC/100 mA
Ambient temperature:	- in operation: -10 °C up to +55 °C
	- during storage and transportation: -10 °C up to +55 °C
Relative humidity:	- in operation: up to 70% at 20 °C
	- during storage and transportation: up to 70% at 20 °C



Cell equipment KUKA cell4_arc compact powered by ABICOR BINZEL in detail

TORCH CLEANING STATION TCS COMPACT

When a welding robot is in operation, even for several hours without a break, it is important that the wear parts such as gas nozzle and others on the robot welding torch are cleaned at set intervals. This task is performed by the TCS Compact torch cleaning station from ABICOR BINZEL. It ensures a reliable welding process and increases the system availability through optimal and time-saving cleaning of the gas nozzle. Pre-treatment of the wear parts with anti-spatter spray as well as an integrated wire cutting device. In general, the TCS Compact is a perfectly suitable cleaning station for a concept solution.



Technical data

Torch cleaning station TCS Compact

Total weight:	approx. 30 kg (long stand version)
Ambient temperature:	+5 °C up to +50 °C
Air consumption:	approx. 400 l/min.
Nominal speed with lubricated air:	approx. 650 U/min. at 6 bar
Connection OD:	min. Ø 6 mm
Nominal pressure:	6 bar
Operating pressure:	6–8 bar
Compressed air quality (ISO 8573-1:2010):	at least class 4
Input:	3 inputs for triggering the 5/2 directional control valves
Control voltage:	24 V DC
Power consumption:	2.8 W
Output:	2 outputs from inductive proximity switch
Operating voltage:	10–30 V DC
Continuous current:	max. 100 mA
Current consumption:	approx. 14 mA (24 V)
Max. wire diameter at 6 bar:	1.6 mm, solid wire

Optional equipment KUKA cell4_arc compact PRO powered by ABICOR BINZEL in detail



GAS MANAGEMENT SYSTEM EWR 2/EWR 2 NET

The EWR 2 and EWR 2 Net gas management system from ABICOR BINZEL regulates the gas volume flow synchronously with the welding current and ensures consistently optimal shielding gas coverage – and should be part of every robot welding cell.

This optional system reduces gas consumption by up to 60%, thus lowering operating costs and CO₂ emissions and supporting every manufacturing company on the way to becoming a »green factory«. The EWR 2 Net enables digital real-time data exchange and access via local networks. A big advantage is that the welder is no longer able to control the shielding gas flow independently.

Technical data

EWR 2/EWR 2 Net

Operating voltage:	24 V DC ±20%
Media temperature:	10–40 °C
Ambient temperature:	–10 up to +50 °C
Relative humidity:	20–90%
Flow rate range:	2–30 l/min
Gas inlet pressure:	1–6 bar
Tolerance flow rate:	±1 l/min
Shunt types:	150 A/300 A/500 A

Additional interfaces at EWR 2 Net

- Ethernet interface
- CANopen interface



Optional equipment KUKA cell4_arc compact PRO powered by ABICOR BINZEL in detail

SEAM TRACKING SENSOR TH6D/TH6i

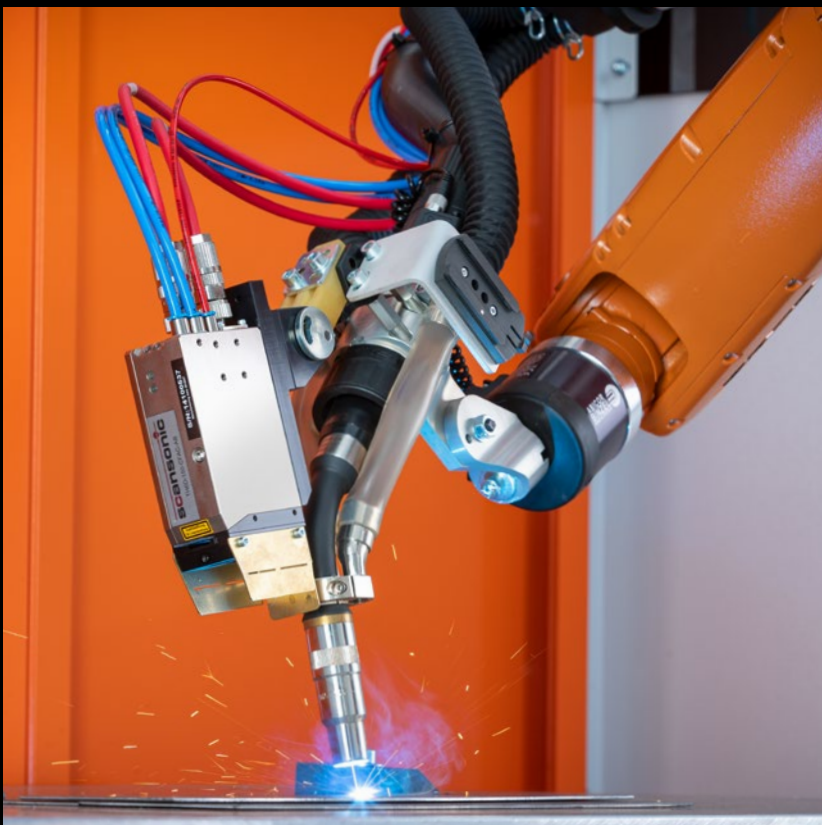
With the TH6D and TH6i seam tracking sensors from ABICOR BINZEL, every production facility is able to meet the increasing demands on weld seam quality, because they pave the way to the perfect weld seam – and are practically the eye of the robot. Components and weld joints are reliably detected in order to correct the course of the weld seam in real time in case, for example, components shift or preparatory work shows tolerances. These sensors ensure that exact weld seams are set and rejects are avoided.

With these seam tracking sensors, you get the optimum quality out of every welding task. Manual, expensive reworking belongs to the past and the investment in the seam tracking sensor amortises within a short time.



Technical data

TH6D/TH6i	
Measuring lines:	3
Working distance:	150 mm
Measuring rate:	60-240 Hz
Dimensions (WxHxD):	70x40x100 mm
Operating temperature:	10°C up to 45°C



Optional equipment KUKA cell4_arc compact PRO powered by ABICOR BINZEL in detail

FUME EXTRACTION SYSTEM

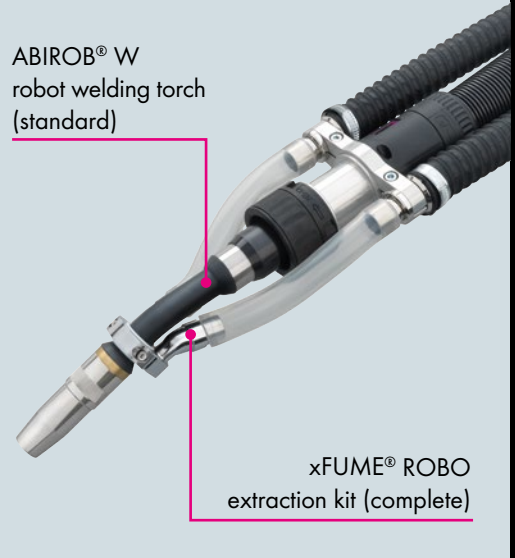
xFUME® ADVANCED & xFUME® ROBO EXTRACTION KIT

Efficient welding fume extraction is made easy with the xFUME® ROBO extraction kit mounted on the torch neck and the xFUME® ADVANCED fume extraction system from ABICOR BINZEL. Easily installed on the torch neck, this extraction system uses extraction at the source to capture harmful welding fumes directly at the process and supports the strict requirements for health and safety at work. The DGUV (German Social Accident Insurance) clearly recommends extraction at the source. With this option, you actively contribute to the health and safety of all employees in production. Compared to an extraction bonnet above the robot welding cell, this solution is also significantly cheaper, as an extraction system with much lower power can be used.



xFUME® ROBO extraction kit

ABIROB® W
robot welding torch
(standard)



xFUME® ROBO
extraction kit (complete)

Technical data

xFUME® ADVANCED

Max. air flow:	~ 340 m ³ /h
Connections:	2
Connection diameter:	60 mm
Max. vacuum:	~ 16,000 Pa
Noise level:	≤ 68 dB (A)
Voltage:	115 V, 50/60 Hz; 230 V, 50/60 Hz
Motor power:	2 x 0.8 kW
Filter efficiency:	≥ 99.95 %
Cleaning:	automatic
Automatic start/stop:	yes
Adjustable air flow:	yes
Weight:	40.0 kg
Dimensions (W x H x D):	370 x 370 x 940 mm

xFUME® ROBO extraction kit

Hose length:	for 3 m and 6 m
Complete sets:	- xFUME® ROBO W 500 22° - xFUME® ROBO W 500 45°



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