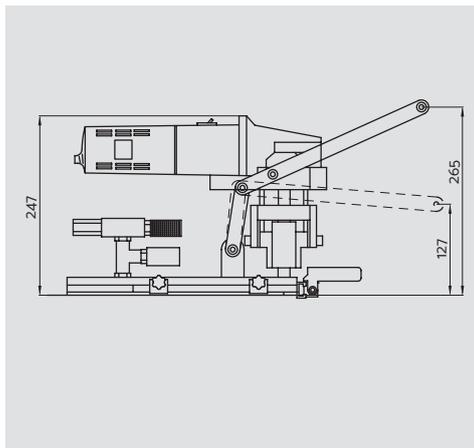




The comprehensive KEIL drilling technique consists of a full range of machinery for all kinds of application purposes, from handheld drilling machines up to industrial drilling and from drilling tables with roller conveyors to automatic drilling, machines, warranting an optimum and fast application of the KEIL system.





## Product information

- ▶ KEIL portable drilling machines are used for professional and mobile drilling and undercutting of small batches, infill and special size panels.
- ▶ The portable drilling machine is placed in an optional position on the façade panel and firmly connected via the vacuum base.
- ▶ Exact positioning can also be achieved via stop rails.
- ▶ The KSDV portable drilling machine has been developed for **water cooled** drilling with KEIL diamond tipped façade drills.
- ▶ The simple handling is supported by the low weight of this handheld machine and allows for its use on the building site.
- ▶ Panels of any size or weight can be drilled efficiently and undercut precisely.

Volt	Hertz	PRCD	plug	article no.
230 V	50 Hz	yes	D	532 500 000
115 V	50–60 Hz	yes	EU	532 500 002

### Applications

- ▶ For drilling and undercutting.

### Possible usage

- ▶ With KEIL diamond tipped façade drills.

### Fitting drilling tools

- ▶ Diamond tipped façade drill bit (p. 28, 32)
- ▶ Diamond tipped façade drill bit with countersink (p. 29, 33)
- ▶ Drilling table with roller conveyor KRT (p. 44)

### Spare parts

- ▶ Chuck for portable drilling machines (p. 52)
- ▶ Flushing chuck for KSDV, KRDV (p. 52)
- ▶ Grooved ball bearing (p. 52)
- ▶ Silencer (p. 52)
- ▶ Fastener set 1 (p. 53)
- ▶ Gasket for vacuum base (p. 53)
- ▶ Carbon brush set (p. 53)

### Design



Portable undercut drilling machine with vacuum base

- ▶ Professional design
- ▶ Flushing chuck
- ▶ Drilling chuck
- ▶ Vacuum base
- ▶ Venturi nozzle
- ▶ PRCD
- ▶ Electrical water locking
- ▶ Stop rail

### Instructions for use

- ▶ Rotational speed approx. 10,000 rpm.
- ▶ Usage of the cooling lubricant 532 500 035 (p. 49) will prolong the life time of the diamond tipped façade drill bit significantly and protect the parts covered in cooling water from corrosion.





## Water pressure tank

Mobile stainless steel pressure tank 10 l with manual pump and connection for pneumatic line (p. 48).



## Circulation water supply

Circulation water supply for one / several KEIL undercut drilling machines (p. 48).



## Cooling lubricant

Anticorrosive additive for cooling water (p. 49).



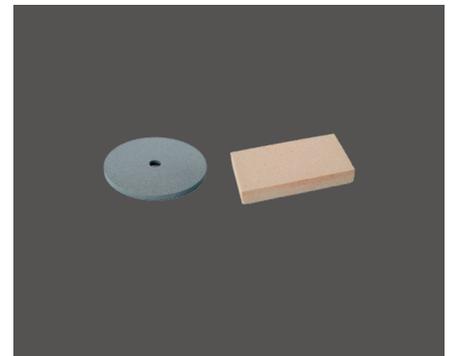
## Transport case

Sturdy wooden case for transport and storage (p. 51).



## Air connection

Connecting hose (T-piece) for the simultaneous connection of the water tank and the machine to a compressed air supply (p. 49).

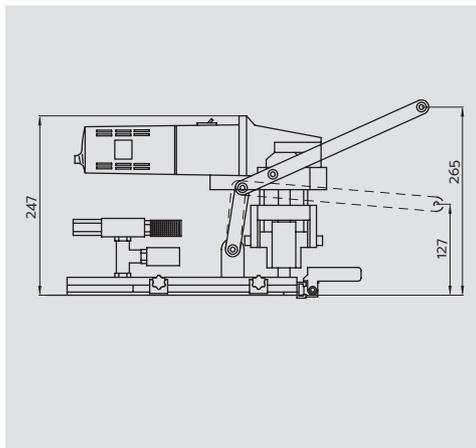


## Whetstones

For whetting diamond tipped façade drill bits (p. 51).

Porcelanosa Showroom, Lyon, FR © Butech (Porcelanosa Group)





## Product information

- ▶ KEIL portable drilling machines are used for mobile drilling and undercutting of small batches, infill and special size panels.
- ▶ The portable drilling machine is placed in an optional position on the façade panel and firmly connected via the vacuum base.
- ▶ Exact positioning can also be achieved via stop rails.
- ▶ The KSDV portable drilling machine has been developed for **water cooled** drilling with KEIL diamond tipped façade drills.
- ▶ The simple handling is supported by the low weight of this handheld machine and allows for its use on the building site.
- ▶ Panels of any size or weight can be drilled efficiently and undercut precisely.

Volt	Hertz	PRCD	plug	article no.
230 V	50 Hz	yes	D	532 600 000
120 V	60 Hz	yes	USA	532 600 025

### Applications

- ▶ For drilling and undercutting.

### Possible usage

- ▶ With KEIL diamond tipped façade drills.

### Fitting drilling tools

- ▶ Diamond tipped façade drill bit (p. 28, 32)
- ▶ Diamond tipped façade drill bit with countersink (p. 29, 33)
- ▶ Drilling table with roller conveyor KRT (p. 44)

### Spare parts

- ▶ Chuck for portable drilling machines (p. 52)
- ▶ Flushing chuck for KSDV, KRDV (p. 52)
- ▶ Grooved ball bearing (p. 52)
- ▶ Silencer (p. 52)
- ▶ Fastener set 1 (p. 53)
- ▶ Gasket for vacuum base (p. 53)
- ▶ Carbon brush set (p. 53)

### Design



Portable undercut drilling machine with vacuum base

- ▶ Flushing chuck
- ▶ Drilling chuck
- ▶ Vacuum base
- ▶ Venturi nozzle
- ▶ PRCD
- ▶ Electrical water locking
- ▶ Stop rail

### Instructions for use

- ▶ Rotational speed adjustable up to approx. 6,500 rpm.
- ▶ Usage of the cooling lubricant 532 500 035 (p. 49) will prolong the life time of the diamond tipped façade drill bit significantly and protect the parts covered in cooling water from corrosion.





## Water pressure tank

Mobile stainless steel pressure tank 10 l with manual pump and connection for pneumatic line (p. 48).



## Circulation water supply

Circulation water supply for one / several KEIL undercut drilling machines (p. 48).



## Cooling lubricant

Anticorrosive additive for cooling water (p. 49).



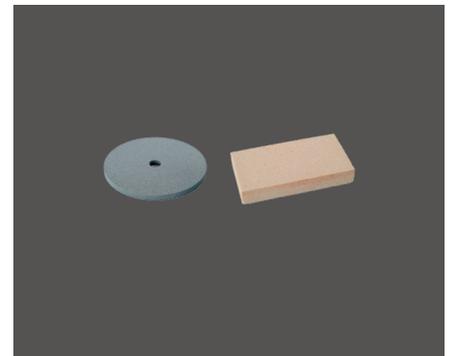
## Transport case

Sturdy wooden case for transport and storage (p. 51).



## Air connection

Connecting hose (T-piece) for the simultaneous connection of the water tank and the machine to a compressed air supply (p. 49).

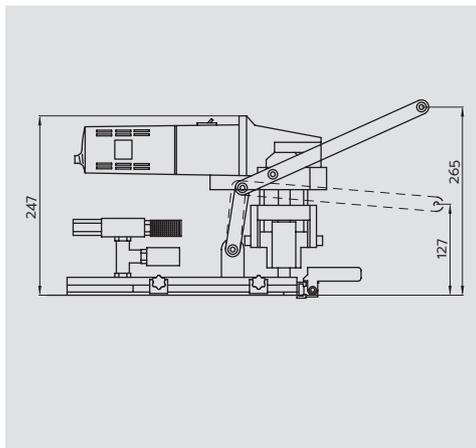


## Whetstones

For whetting diamond tipped façade drill bits (p. 51).

Villa Wiese, Berlin, DE © Dirk Wilhelmy, Material: HI-MACS® - Design: Dipl.-Ing. Volker Wiese - Engineering: Kaden Klingbeil Architects - Fabrication: Kiebitzberg GmbH & Co.KG, Germany





## Product information

- ▶ KEIL portable drilling machines are used for professional and mobile drilling and undercutting of small batches, infill and special size panels.
- ▶ The portable drilling machine is placed in an optional position on the façade panel and firmly connected via the vacuum base.
- ▶ Exact positioning can also be achieved via stop rails.
- ▶ The KSDV portable drilling machine has been developed for dry drilling with KEIL carbide tipped façade drills.
- ▶ The simple handling is supported by the low weight of this handheld machine and allows for its use on the building site.
- ▶ Panels of any size or weight can be drilled efficiently and undercut precisely.

Volt	Hertz	plug	article no.
230 V	50 Hz	D	532 550 000
115 V	50–60 Hz	–	532 550 002

### Application

- ▶ For drilling and undercutting

### Possible usage

- ▶ With KEIL carbide tipped façade drill bits.

### Fitting drilling tools

- ▶ Carbide tipped façade drill bit (p. 34)
- ▶ Drilling table with roller conveyor (p. 44)

### Spare parts

- ▶ Chuck for portable drilling machines (p. 52)
- ▶ Grooved ball bearing (p. 52)
- ▶ Silencer (p. 52)
- ▶ Fastener set 1 (p. 53)
- ▶ Gasket for vacuum base (p. 53)
- ▶ Carbon brush set (p. 53)

### Design



Portable undercut drill with vacuum base

- ▶ Professional design
- ▶ Chuck for dry drilling
- ▶ Vacuum base
- ▶ Venturi nozzle
- ▶ Stop rail

### Instruction for use

- ▶ Rotational speed  
230 V: 1,400–4,200 rpm.  
115 V: 1,700–6,800 rpm.





## Transport case

Sturdy wooden case for transport and storage (p. 51).

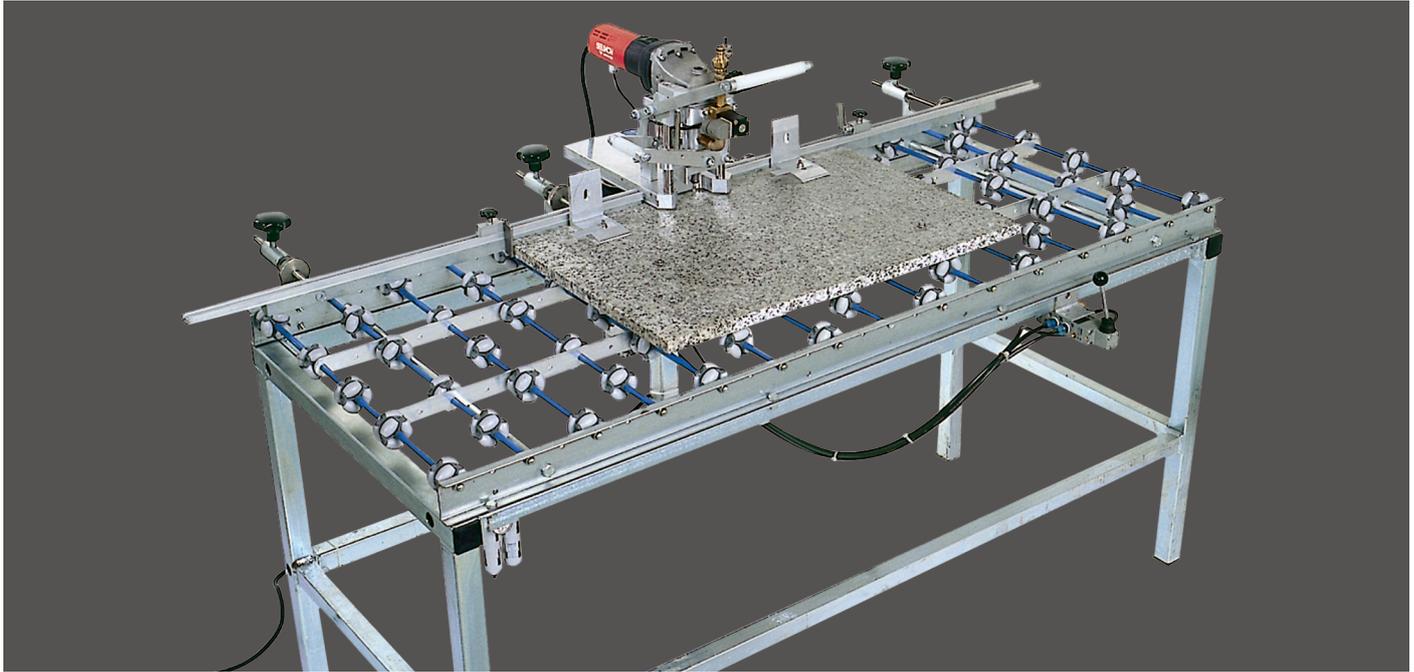


## Blow out nozzle

Nozzle for air ejection with cooling effect during drilling (p. 49).

Porta Europa, Bologna, IT © KEIL





## Product information

- ▶ Drilling machine for efficient drilling of KEIL undercut drill holes for use in the workshop or on the building site (total weight approx 90 kg). The multidirectional roller conveyor (1,500 mm x 600 mm) with pneumatic panel fixing equipment warrants very good handling, simple operation and fast conversion to another hole distance.
- ▶ Once the insertion depth  $h_s$  has been set, panels of different thicknesses can be drilled without further adjustments.
- ▶ The depth position of the undercut hole can be chosen in consistence with either the front or the back side of the panel. For undercut drillings in consistence with the front side of the panel the conversion set for front face related must be fitted.
- ▶ The portable undercut drilling machine can be disassembled and used with the vacuum base (without roller conveyor).
- ▶ Feet adjustable in height
- ▶ Machine can be used separately
- ▶ Max. panel format 1,200 x 600 mm

Volt	Hertz	PRCD	plug	article no.
230 V	50 Hz	yes	D	532 500 201
115 V	50–60 Hz		on demand	

### Application

- ▶ For drilling and undercutting.

### Possible usage

- ▶ With KEIL diamond tipped façade drill bits.

### Fitting drilling tools

- ▶ Diamond tipped façade drill bit (p. 28, 32)
- ▶ Diamond tipped façade drill bit with countersink (p. 29, 33)
- ▶ Carbide tipped façade drill bit HM (p. 34)
- ▶ Portable drilling machine KRDV (p. 40)
- ▶ Portable drilling machine KSHV (p. 42)

### Spare parts

- ▶ Chuck for portable drilling machines (p. 52)
- ▶ Flushing chuck for KSDV, KRDV (p. 52)
- ▶ Grooved ball bearing (p. 52)
- ▶ Fastener set 1 (p. 53)
- ▶ Carbon brush set (p. 53)

### Design



Drilling table with multidirectional roller conveyor 1,500 mm x 600 mm incl. portable undercut drilling machine KSDV

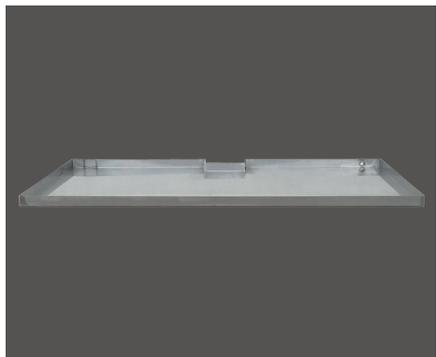
- ▶ Stainless steel
- ▶ With pneumatic panel fixing (manual control)
- ▶ 2 stop rails
- ▶ 4 swivelling stops
- ▶ Service unit
- ▶ Max. edge distance of drill hole in  $y = 150$  mm
- ▶ Wooden crate

### Instructions for use

- ▶ Rotational speed approx. 10,000 rpm.
- ▶ Usage of the cooling lubricant 532 500 035 (p. 49) will prolong the life time of the diamond tipped façade drill bit significantly and protect the parts covered in cooling water from corrosion.

INTERESTING FACTS  
 ASSEMBLY INSTRUCTIONS  
 UNDERCUT ANCHORS  
 FIXING DEVICES  
 DRILLING TOOLS  
 DRILLING TECHNIQUE  
 ASSEMBLY AIDS  
 GENERAL INFORMATION

# ACCESSORIES DRILLING TABLE WITH ROLLER CONVEYOR KRT



## Collection basin

Basin for collecting the cooling water (p. 48).



## Circulation water supply

Circulation water supply for one / several KEIL undercut drilling machines (p. 48).



## Cooling lubricant

Anticorrosive additive for cooling water (p. 49).



## Water pressure tank

Mobile stainless steel pressure tank 10 l with manual pump and connection for pneumatic line (p. 48).



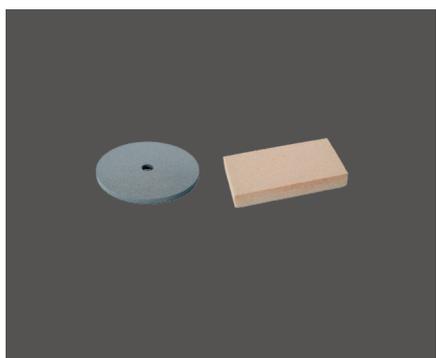
## Air connection

Connecting hose (T-piece) for the simultaneous connection of the water tank and the machine to a compressed air supply (p. 49).



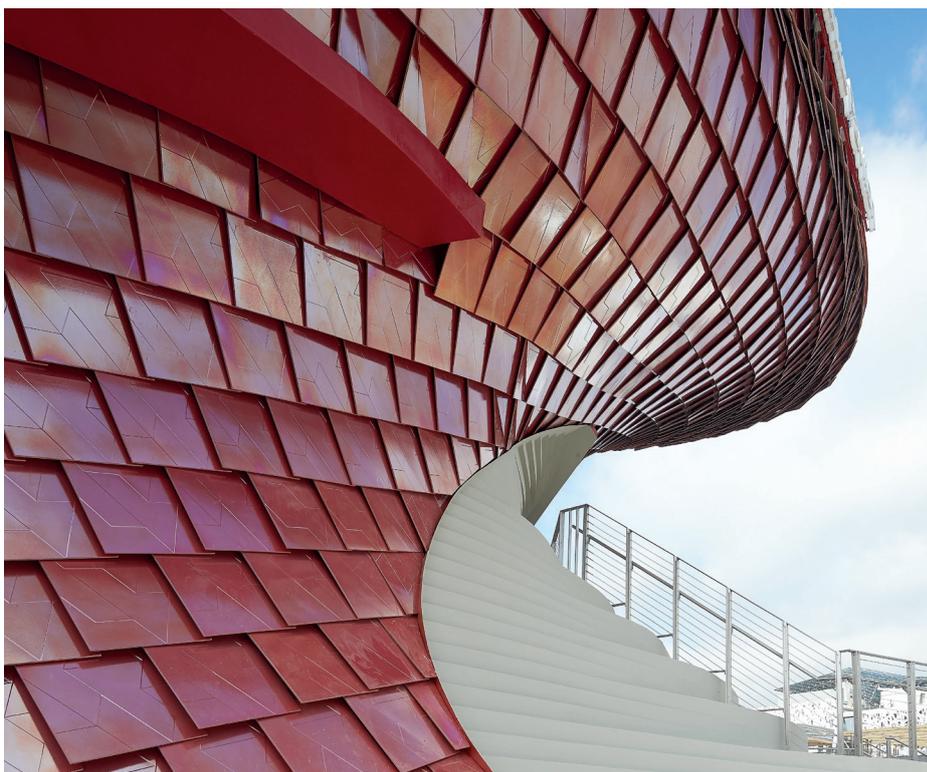
## Conversion set KRT "Front face related drilling"

(p. 49).



## Whetstones

For whetting diamond tipped façade drill bits (p. 51).





## Product information

- ▶ KEIL offers automated drilling machines for automated drilling and undercutting with KEIL undercut technique in cooperation with renowned machine manufacturers.
- ▶ The individual customer request regarding computer assistance, panel size, automatic panel transport and so on forms the basis of the design of your machine.
- ▶ Best handling of the panels to be worked.
- ▶ Materials like natural stone, ceramics, laminate (HPL), fibre cement, glass etc. can be worked (max. panel size e.g. 3,500 mm x 1,800 mm).
- ▶ The simultaneous processing of two panels warrants efficient working conditions. While the drillings are being carried out all-automatically in panel 1, panel 2 can be checked and re-edited. Simple programming of the drilling patterns.

article no.

532 200 050

Design by arrangement.

### Application

- ▶ For drilling and undercutting.

### Possible usage

- ▶ With KEIL diamond tipped façade drill bits.

### Fitting drilling tools

- ▶ Diamond tipped façade drill bit (p. 28, 32)
- ▶ Diamond tipped façade drill bit with countersink (p. 29, 33)

### Spare parts

- ▶ Fastener set 1 (p. 53)

### Design



Automatic drilling machine for undercut drilling.

- ▶ Customized table size / panel size.
- ▶ Incl. rack.
- ▶ Incl. bridge.
- ▶ Available with one or two KEIL undercut units.
- ▶ Programmable logic controller (SPS)
- ▶ Positioning accuracy approx. +/- 0.2 mm
- ▶ Consistant distance from front or back side of the panel.



## Drilling unit KG

For Drilling plants incl. water supply and pneumatic drill feed (p. 50).



## Control drill unit KG

SPS control incl. touchpanel and frequency converter for drilling unit KG (p. 50).



## Circulation water supply

Circulation water supply for one / several KEIL undercut drilling machines (p. 48).



## Cooling lubricant

Anticorrosive additive for cooling water (p. 49).



## Water pressure tank

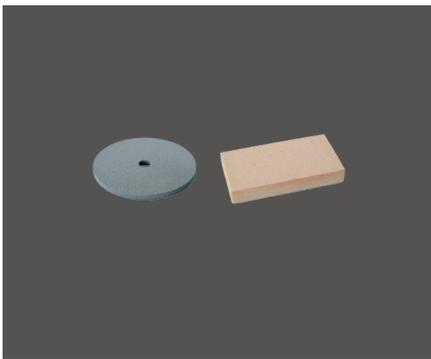
Mobile stainless steel pressure tank 10 l with manual pump and connection for pneumatic line (p. 48).



## Air connection

Connecting hose (T-piece) for the simultaneous connection of the water tank and the machine to a compressed air supply (p. 49).

Photos: Ice Loft, Hamburg, DE © see p. 63



## Whetstones

For whetting diamond tipped façade drill bits (p. 51).



## Circulation water supply



### Product information

The stainless steel water container with two chambers collects the cooling water and returns it to the system with steady pressure ready for drilling and undercutting with diamond tipped façade drill bits.

- ▶ The bore dust will settle due to the two chamber system. The filter makes clean cooling water available at all times. The filter control will indicate, if the filter needs cleaning resp. changing.
- ▶ The strong, industrial pump will ensure a constant supply pressure, even if several drilling machines are connected.
- ▶ Usage of the cooling lubricant 532 500 035 will prolong the life time of the diamond tipped façade drill bit significantly and protect the metal parts covered in cooling water from corrosion.

Volt	Hertz	article no.
400 V, 3~	50 Hz	532 800 010

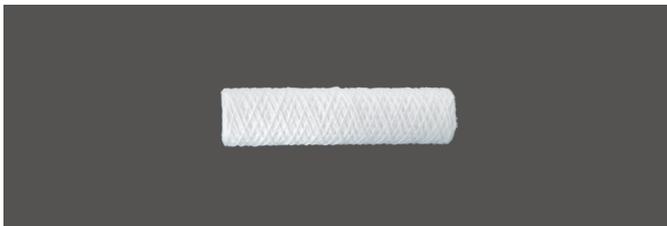
#### Usage

- ▶ Circulation water supply for one / several KEIL undercut drilling machines.

#### Design

- ▶ Stainless steel two-chamber water container
- ▶ Strong industrial pump
- ▶ Filter control
- ▶ incl. Fu switch and Y connector

## Filter cartridge



suitable for	article no.
circulation water supply	532 870 020

#### Possible applications

- ▶ Filter for the circulation water supply

## Water pressure tank



### Product information

- ▶ Portable stainless steel pressure tank for the cooling water supply during drilling and undercutting with diamond tipped façade drill bits.
- ▶ The tank can not only be connected to the manual pump, but also to a compressed air supply, keeping the water pressure constant from the first up to the last drop.
- ▶ Water pressure should be set to more than 4 bar.

suitable for	article no.
KSDV / KRDV / KRT	532 500 032

#### Usage

- ▶ Circulation water supply for one KEIL undercut drilling machine.

#### Design

- ▶ Portable stainless steel pressure tank 10 l
- ▶ With manual pump and connector for pneumatic line.

## Collecting tray for KRT



suitable for	article no.
KRT	532 800 027

#### Design

- ▶ Tray for collecting the cooling water.
- ▶ Stainless steel.
- ▶ Dimensions: 1,420 x 655 x 40 mm
- ▶ With hose connector.

## Air connector



suitable for	article no.
1 x 532 500 032	532 800 023

### Usage

- ▶ Connecting hose (T-piece) for simultaneously connecting a water tank and a machine to a compressed air supply.

### Design

- ▶ Compressed air hoses with T-piece, 2 clutches and one plug

## Blow out nozzle for KSHV



suitable for	article no.
KSHV	532 500 106

### Usage

- ▶ Nozzle for air ejection with cooling effect during drilling

### Design

- ▶ Flexibly adjustable nozzle head.
- ▶ Control for discharge pressure.

## Cooling lubricant



### Product information

- ▶ KEIL recommend usage of cooling lubricant in addition to the cooling water. This is an anticorrosive additive, which is added to the cooling water (approx. 2 %)

### Advantages:

- ▶ The machine parts covered in cooling water are protected from corrosion, which can significantly prolong the lifetime of the diamond tipped façade drill bits, especially when used for very hard and dense panel materials (e.g. fine porcelain stoneware).

variant	article no.
5l	532 500 035

### Usage

- ▶ Anticorrosive additive for cooling water.

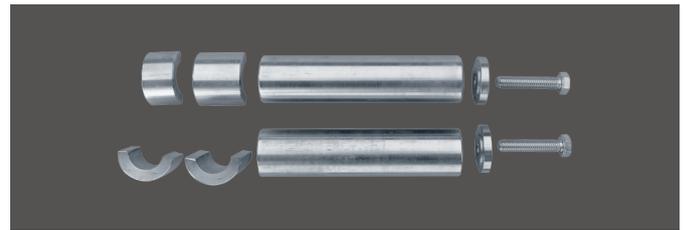
### Design

- ▶ SK 88

### Instructions for use

- ▶ Check the tolerance of the cooling lubricant to the panel material before use.

## Conversion set KRT "Front face related drilling"



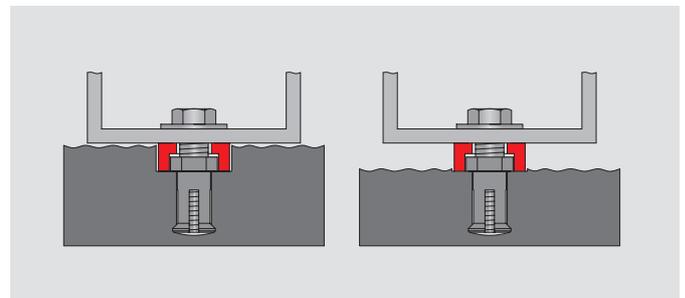
suitable for	article no.
KRT	532 500 135

### Design

- ▶ For panel thicknesses 20 and 30 mm.

### Note

- ▶ Necessary for front face related drilling for balancing tolerances in panel thickness with the KEIL drilling table with roller conveyor KRT.



## Drilling unit KG



Volt	Hertz	article no.
230 V, 3~	37.5–150 Hz	532 200 055

### Usage

- ▶ For drilling and undercutting.

### Possible applications

- ▶ With KEIL diamond tipped façade drill bits.

### Instructions for use

- ▶ Usage of the cooling lubricant 532 500 035 (p. 49) will prolong the life time of the diamond tipped façade drill bit significantly and protect the metal parts covered in cooling water from corrosion.

### Design

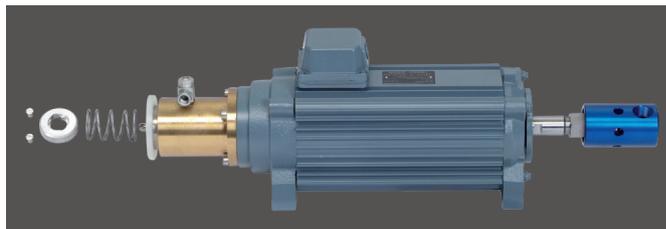


- ▶ For automatic drilling machines incl. water supply and pneumatic drill feed.
- ▶ Dimensions: 220 x 690 x 400 mm

### Notes

- ▶ 2,100–8,730 rpm. (HM approx. 2,100 rpm; Dia approx. 7,000 rpm.)
- ▶ Driven via frequency converter (not included in delivery).

## Undercut unit HSE



### Product information

- ▶ The KEIL undercut unit for drilling plants is the optimal automated unit for drilling and undercutting.
- ▶ Nearly all available drilling and milling systems can be retrofitted with this unit.
- ▶ The undercut unit will receive the diamond or carbide tipped façade drill bit, depending on the panel material.
- ▶ As soon as the preselected drilling depth has been reached, the drill head will be pneumatically deflected for undercutting. When the diamond tipped façade drill bit is in use, water will be supplied centrally through the shaft.
- ▶ The KEIL undercut unit is carried by the carriage of the machine with frequency controlled engine, allowing for the engine's rotational speed to be adjusted to drilling with the carbide tipped façade drill bit (approx. 2,000 rpm) or with the diamond tipped façade drill bit (approx. 7,000 rpm).

Volt	Hertz	article no.
230 V, 3~	37.5–150 Hz	532 200 023

### Usage

- ▶ For drilling and undercutting

### Possible applications

- ▶ With KEIL diamond tipped façade drill bits.

### Suitable drilling tools

- ▶ Diamond tipped façade drill bit (p. 28, 32)
- ▶ Diamond tipped façade drill bit with countersink (p. 29, 33)

### Spare parts

- ▶ Chuck HSE
- ▶ Flushing head HSE
- ▶ Fastener set 2
- ▶ Fastener set 3

### Design



- ▶ For drilling plants with flushing chuck
- ▶ Dimensions: 500 x 110 x 170 mm

### Notes

- ▶ 2,100–8,730 rpm.
- ▶ Driven by frequency converter (not included in delivery)

## Control for drilling unit KG



suitable for	article no.
1 x 532 200 055	532 200 051
2 x 532 200 055	532 200 052

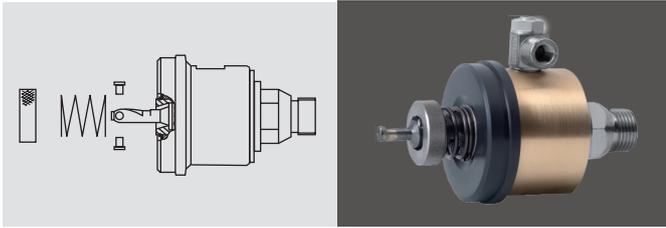
### Usage

- ▶ SPS control incl. touch panel and frequency converter for drilling unit KG.

### Design

- ▶ For controlling the drilling unit KG.

## Chuck P



### Product information

- ▶ The chuck can be attached to any available drilling or milling plant (mount according to customer's demand).
- ▶ Several connection requirements have to be fulfilled for the KEIL chuck P with pneumatic deflection to be mounted to existing machines.
- ▶ The rotational speed of the shaft must be approx. 6,000–7,000 rpm. for water cooled drilling with the diamond tipped façade drill bit and approx. 2,000 rpm for drilling with the carbide tipped façade drill bit. Bearing at zero clearance and flawless running of the drill shaft are requirements for a precise undercut and a long lifetime of the façade drill bits. Locking in the different feed directions is required as well.
- ▶ For drilling with the diamond tipped façade drill bit, water is supplied through the drill shaft (water pressure > 4 bar). We recommend the use of a water filter in order to avoid possible water outages, which may lead to unsoldering of the diamond surface.

#### To be carried out by the customer:

- ▶ Screwing chuck in or inserting it into the collet chuck.
- ▶ Mounting spin-lock for chuck.
- ▶ The chuck can be controlled either mechanically or programme controlled, depending on the machine. For the mechanical control, a KEIL pneumatic unit has to be mounted, which is controlled by an end switch for starting the undercutting process.

variant	article no.
R 1/2"	581 000 023

#### Usage

- ▶ For drilling and undercutting.

#### Possible applications

- ▶ With diamond tipped KEIL façade drill bits.

#### Instructions for use

- ▶ Usage of the cooling lubricant 532 500 035 (p. 49) will prolong the life time of the diamond tipped façade drill bit significantly and protect the metal parts covered in cooling water from corrosion.

#### Accessories

- ▶ Fastener set 2 (p. 53)
- ▶ Fastener set 3 (p. 53)

#### Design

- ▶ Chuck for mounting to suitable drilling / milling / CNC machines.
- ▶ Pneumatic deflection of the façade drill bit.
- ▶ Drive R 1/2"
- ▶ Water supply through shaft
- ▶ For drilling plants
- ▶ With integrated support and throttle check valve.
- ▶ Façade drill bit not included.

## Transport case for KSDV, KSHV, KR DV

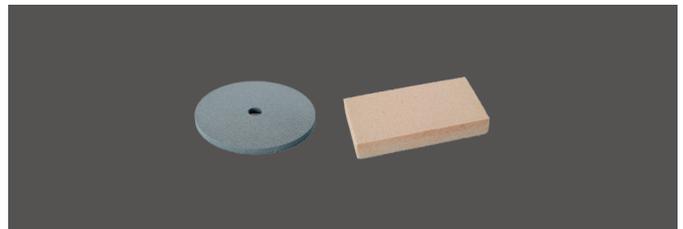


suitable for	article no.
KSDV / KSHV / KR DV	532 500 120

#### Application

- ▶ Sturdy wooden case for transport and storage.

## Whetstones



variant	suitable for	article no.
Ø 175 x 10	e.g. fine porcelain stoneware	532 110 351
155 x 82 x 25	e.g. natural stone	532 110 352

#### Application

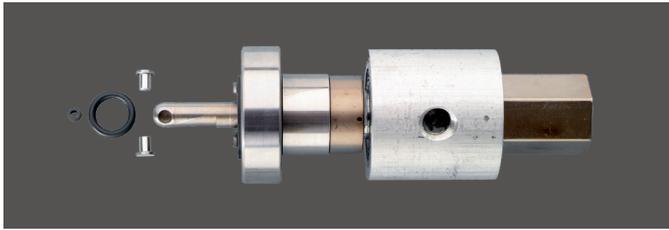
- ▶ For whetting diamond tipped façaded drill bits.

Main Point Karlin, Prag, CZ, Ditz Fejer © Rieder Group



# SPARE PARTS

## Chuck for portable drilling machines



suitable for	variant	thread/ connection	article no.
KSDV		M14	581 000 017
KSHV		M14	581 000 018
KSDV	replacement chuck	M14	581 000 028
KRDV	replacement chuck	M14	581 600 028

### Possible applications

- ▶ Chuck with / without flushing chuck for use in KEIL portable drilling machines.

## Flushing chuck for KSDV, KRDV

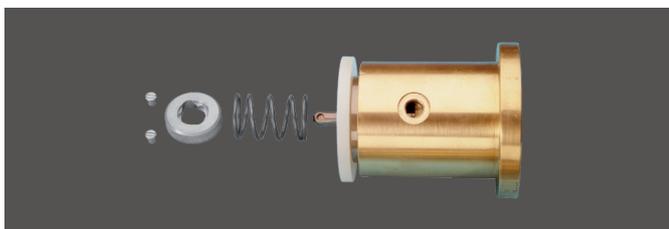


suitable for	article no.
chuck KSDV / KRDV	581 000 012

### Possible applications

- ▶ Flushing chuck for undercut units

## Chuck for undercut unit HSE

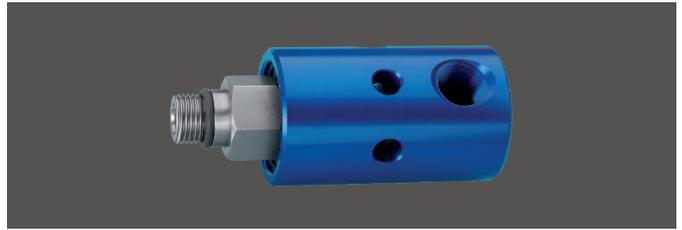


suitable for	thread/ connection	article no.
undercut unit HSE	cone MK1	581 000 020

### Possible applications

- ▶ Pneumatic chuck for use in KEIL undercut unit.

## Flushing chuck for undercut unit HSE



suitable for	article no.
undercut unit HSE	581 000 026

### Possible applications

- ▶ Flushing chuck for undercut unit

## Grooved ball bearing

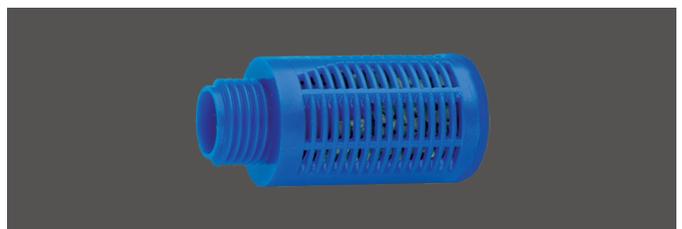


article no.
581 001 320

### Possible application

- ▶ Undercut bearing for chuck unit

## Silencer



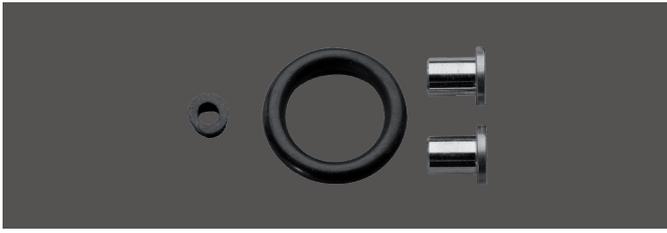
suitable for	article no.
KSDV	532 500 059

### Possible applications

- ▶ For venturi nozzles.

INTERESTING FACTS  
 ASSEMBLY INSTRUCTIONS  
 UNDERCUT ANCHORS  
 FIXING DEVICES  
 DRILLING TOOLS  
 DRILLING TECHNIQUE  
 ASSEMBLY AIDS  
 GENERAL INFORMATION

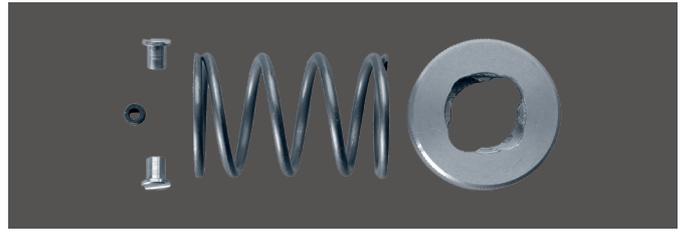
## Fastener set 1



article no.  
585 900 001

**Possible applications**  
▶ For KEIL façade drill bits.

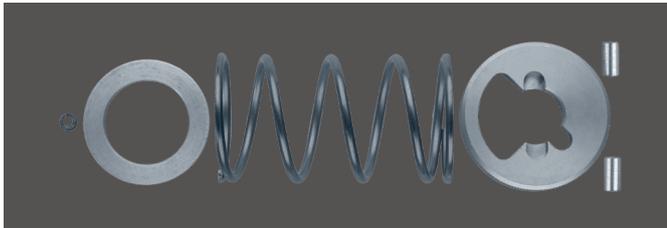
## Fastener set 2



article no.  
585 900 002

**Possible applications**  
▶ For KEIL façade drill bits  
without countersink in chuck  
P for HSE.

## Fastener set 3



article no.  
585 900 003

**Possible applicatons**  
▶ For KEIL façade drill bits with  
countersink in chuck P for  
HSE.

## Gasket for vacuum base



suitable for	variant	article no.
KSDV / KSHV / KRDV	735	532 500 108
KSDV / KSHV	600	532 500 110

**Possible applications**  
▶ Portable machines with  
vacuum base.

**Note**  
▶ 735 = default  
▶ 600 = inner groove

## Carbon brush set

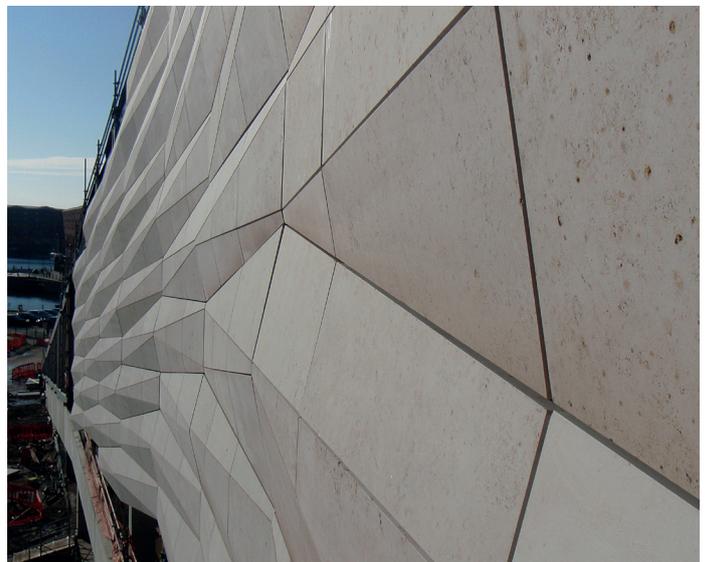


suitable for	Volt	Hertz	article no.
KSDV	230 V	50 Hz	532 500 040
KRDV	230 V	50–60 Hz	532 600 040
KRDV	120 V	60 Hz	532 600 042

**Possible applications**  
▶ Replacement carbon brushes  
for portable drilling machines

**Note**  
▶ Please always state machine  
type with order.

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Motel One, London, GB © Nick Kane 2015

