

Vitesse™ High Security

Service Manual



TABLE OF CONTENTS

About Vitesse™	4
Terminology and Formats of Delivery.....	5
Rim Cylinders	6
Mortise Cylinders	7
Key-N-Knob/Lever Cylinders	8
Deadbolts.....	8
83 Series Cylinder.....	9
Key Bitting Specification	10
Calculation Rules	11
Master Key System Management.....	11
Assembly Instructions - Rim	12
Assembly Instructions - Mortise.....	13
Assembly Instructions - KNK/KIL.....	14
Assembly Instructions - 83 Insert.....	15
Special Pin Instructions - KNK/KIL and 83 Insert	16
Refill of Housings.....	17
Notes	18



ABUS PFAFFENHAIN™

LOCKING SYSTEMS



OUR STANDARD: QUALITY

High-quality raw materials, highly skilled staff and consistent development and manufacture of our locking cylinders from start to finish in Germany guarantee you the highest quality and a long product life. For us, quality means discipline, teamwork and continuously striving to make improvements in all business areas. We impress our customers with first-class products, expert advice, easily accessible service, fast processing times and a strong representation of our services in the market.

ABUS PFAFFENHAIN™

ABUS Pfaffenhain™ is part of the international ABUS group and specializes in mechanical locking systems. The company has over 70 years of experience in the development and manufacturing of high-quality security products. The locking systems are constructed and manufactured in Germany, ensuring that consumers receive precision products that maintain their high level of performance after many years.

LOCKING SYSTEMS FOR BUILDING SECURITY

A locking system is a decisive element in ensuring a building has the highest levels of security, comfort and flexibility. It regulates who has access to a building, and specifies each person's access rights. ABUS doesn't offer an off-the-peg solution, but rather a complete, well-designed modular system. This means you can select the exact equipment you need.

QUALITY MADE IN GERMANY

ABUS locking systems are manufactured under consistent conditions in Germany – from the cylinder housing to the core pins – and they guarantee both private and industrial users the highest level of protection against manipulation of the locking cylinder and illegal key copying. This is ensured primarily by using patented technologies and high-quality, precision products with the "Made in Germany" stamp of quality.

ABUS LOCKING SYSTEMS

ABUS LOCKING SYSTEMS

ABUS locking systems are ideal for programs of various sizes, from small to large master key systems. The range covers keyed alike cylinders, small and medium master key systems, as well as large grand master key systems. If requested, the planning and calculation of the grand master key system can be done by ABUS Pfaffenhain™.

All cylinders of ABUS Pfaffenhain™ have a core diameter of 14mm (0.55"). This increased diameter enables a very large number of combinations inside of the cylinder, making very large and complex grand master key systems with ABUS possible. These locking systems offer 1.5 million true key differs!



STRONG DRILL PROTECTION

- ABUS locking systems offer superior drilling protection compared to competitors
- 4 additional hardened steel pins are inserted into the cylinder (two per cylinder core and housing) and an additional carbide pin is inserted into the front of both housing sides

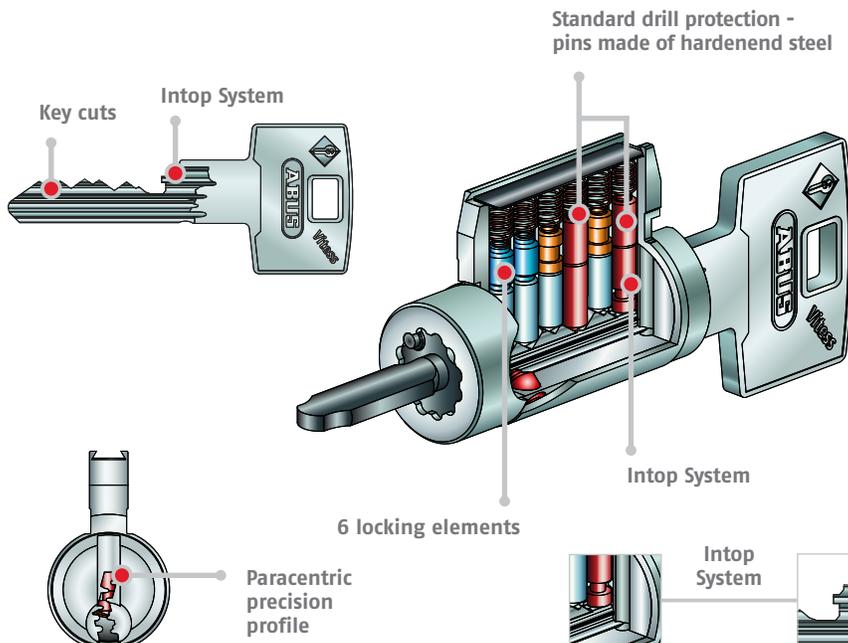
GRAND MASTER KEY SYSTEMS WITH A GUARANTEED SUPPLY FOR THE NEXT 20 YEARS

A grand master key system is a long-lasting investment in security. ABUS guarantees to supply needed cylinders or single parts up to 20 years after the creation of the grand master key system. Of course, the system can also be extended - mechanically or electronically - at any time. For this ABUS plans 20% extension reserve in advance.

14mm
0.55"

*Patent pending, max. patent term 2034

VITESSTM LOCKING SYSTEM



HIGHLIGHTS OF VITESSTM

- When patent is granted, patented key control through 2034
- Trademark Intop System restricts unauthorized key duplication even after patent expires
- Available in Mortise, Rim, Key-in-Knob/Lever, Deadbolt and 83 Series™ Locking Insert

TECHNICAL DETAILS

- Patent pending
- 6 locking elements
- 14mm (0.55") core diameter



TERMINOLOGY

Vitess™ Terms

Throughout this manual, we use specific terms to define the components of the Vitess™ program. Images and descriptions of these terms are provided below. As a sample we have chosen a KnK/KiL cylinder, but the concept of formats is similar for Rim, Mortise etc.

Parts

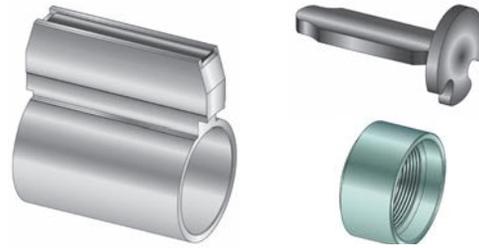


Top springs, top pins
(hardened steel pins,
mushroom pins, center pins)



Empty housing (not for sale)

Pre-Load Housings



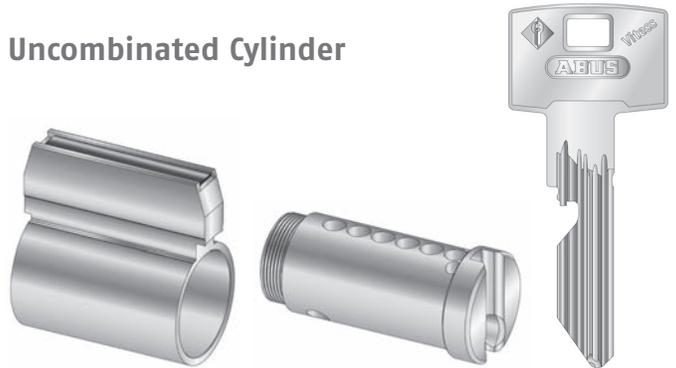
Housing + top springs + top pins + accessories
(only available for level 2, 3, 4, 5)

Uncombined Core



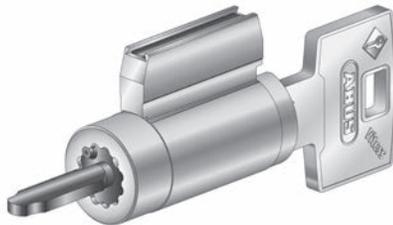
Core without bottom pins
(only available for level 2, 3, 4, 5)

Uncombined Cylinder



Pre-load housing + uncombined core + key blanks
(only available for level 2, 3, 4, 5)

Combined Cylinder



Combined (bitted) cylinder includes everything
Ready to go. Available KD/KA/MK
(available for level 1, 2, 3, 4, 5)

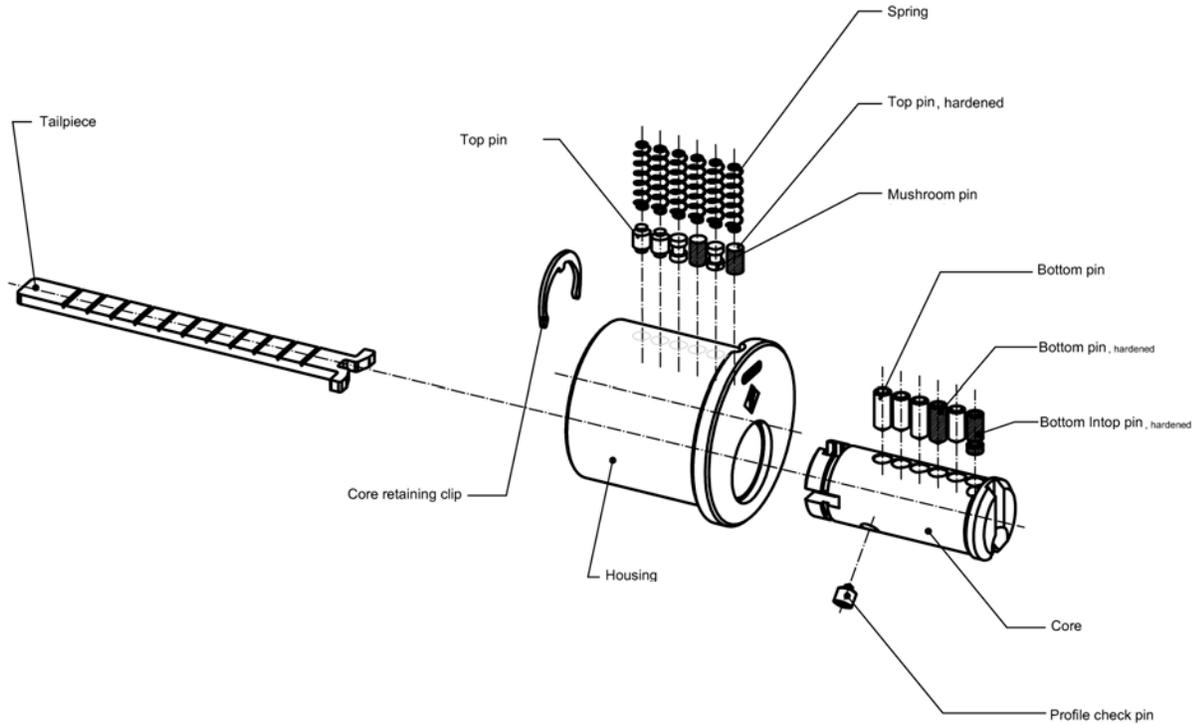
Key Blanks/Cut Keys



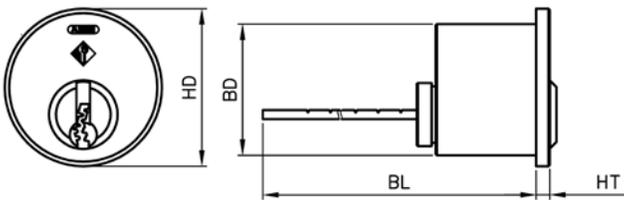
Key blanks always include
InTop cut on first position
(only available for level 2, 3,
4, 5)

Cut keys always include InTop
cut on first position and
further cuts

CONVENTIONAL RIM CYLINDERS



Specifications

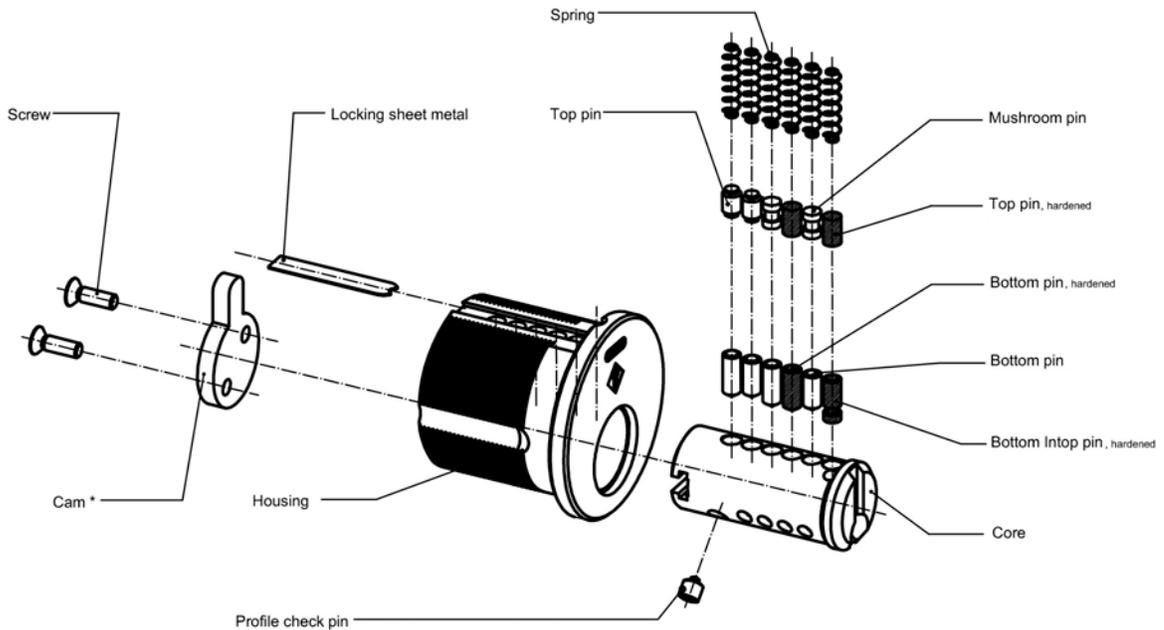


HD: Head Diameter
 HT: Head Thickness
 BL: Body Length
 BD: Body Diameter

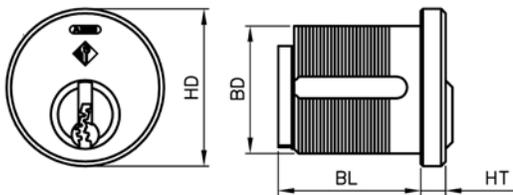


Item	HD - Head Diameter	HT - Head Thickness	BL - Body Length w/cam	BD - Body Diameter
Rim Cylinder	1.337" (33.95mm)	0.118" (3mm)	1.075" (27.3mm)	1.146" (29.1mm)

CONVENTIONAL MORTISE CYLINDERS



Specifications

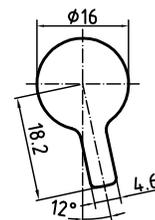
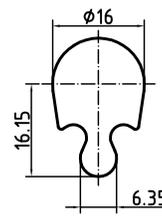
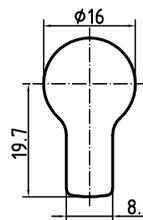
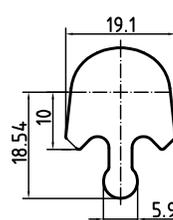
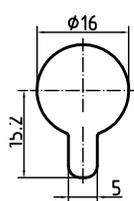


HD: Head Diameter
 HT: Head Thickness
 BL: Body Length
 BD: Body Diameter



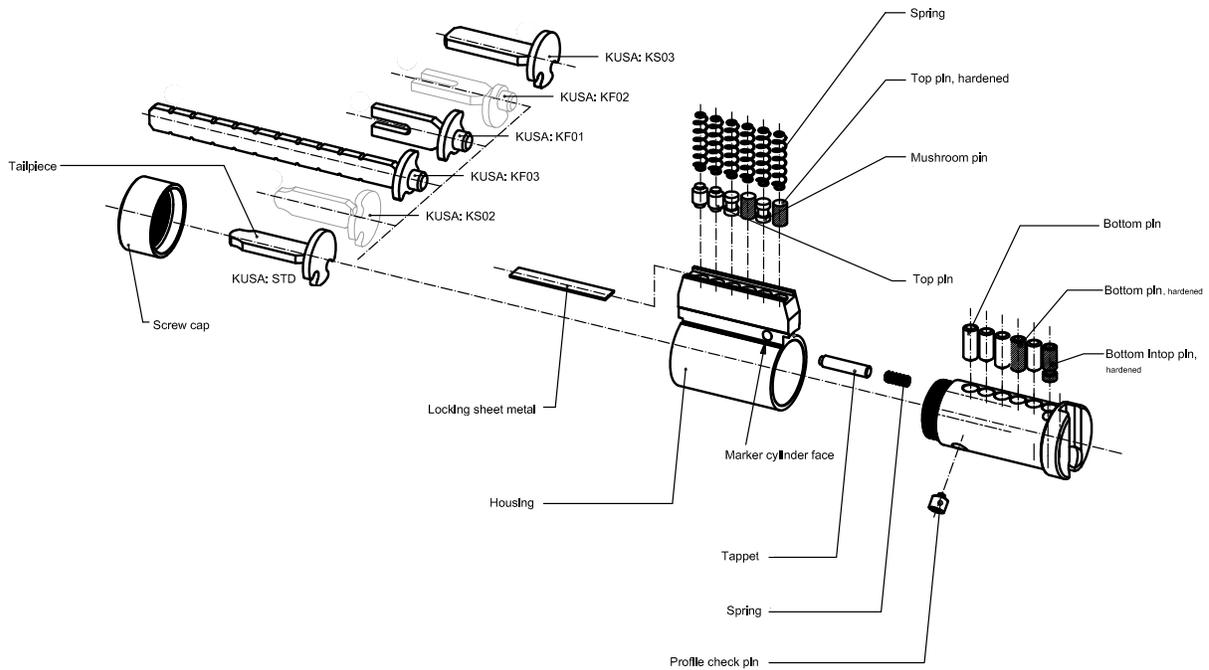
Item	HD - Head Diameter	HT - Head Thickness	BL - Body Length w/cam	BD - Body Diameter
1-1/8" Mortise Cylinder	1.370" (34.8mm)	0.138" (3.5mm)	1.042" (26.47mm)	1.150" (29.2mm)
1-1/4" Mortise Cylinder	1.370" (34.8mm)	0.138" (3.5mm)	1.200" (30.47mm)	1.150" (29.2mm)

Cams for Conventional Mortise Cylinders

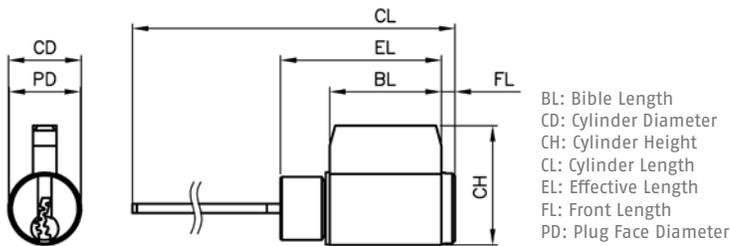


Order Code	SZ01	SZ06	SZ09	SZ11	SZ12
Description	Mortise Cam (Adams Rite®)	Mortise Cam (Schlage® L)	Mortise Cam (Sargent®)	Mortise Cam (Corbin Russwin®)	Mortise Cam (Yale®)

KEY- IN- KNOB/LEVER, DEADBOLT CYLINDERS

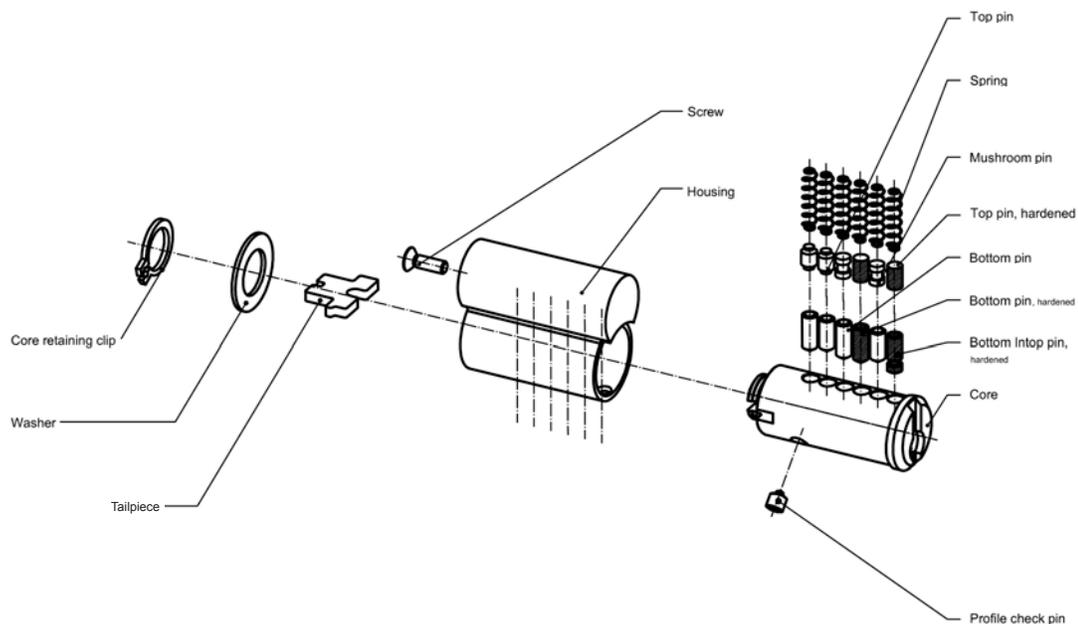


Specifications

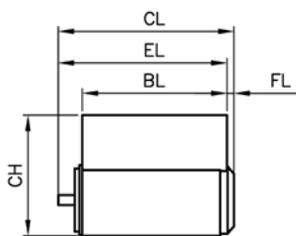
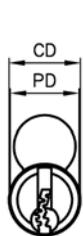


Item	BL - Bible Length	CD - Cylinder Diameter	CH - Cylinder Height	CL - Cylinder length	EL - Effective Length	FL - Front Length	PD - Plug Face Diameter
KiK/KiL Cylinder	1.024" (26mm)	0.634" (16.1mm)	1.039" (26.4mm)	*see below	1.290" (32.76mm)	0.110" (2.8mm)	0.622" (15.8mm)
Tailpieces (*Cylinder length depends on tailpiece)			STD	KF03	KF01	KS03	
		Cylinder Length	2.15" (54.66mm)	3.62" (91.91mm)	2.07" (52.66mm)	2.21" (56.06mm)	

83 SERIES™ CYLINDER INSERT



Specifications

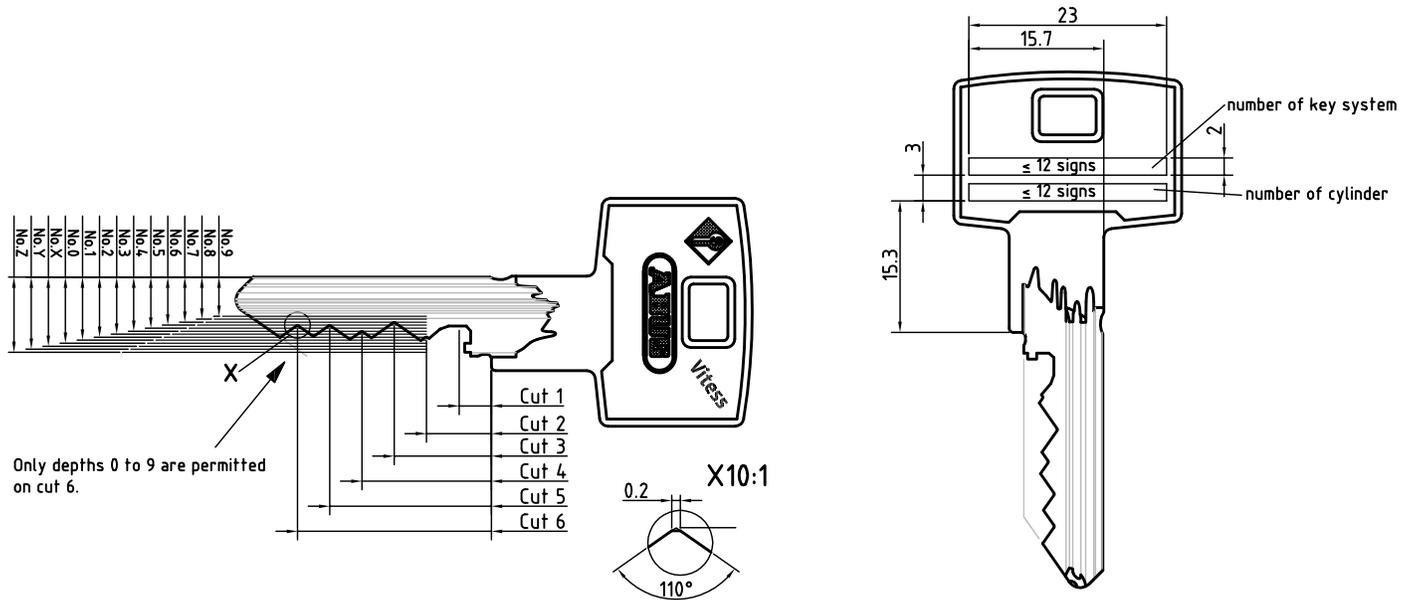


BL: Bible Length
 CD: Cylinder Diameter
 CH: Cylinder Height
 CL: Cylinder Length
 EL: Effective Length
 FL: Front Length
 PD: Plug Face Diameter



Item	BL - Bible Length	CD - Cylinder Diameter	CH - Cylinder Height	CL - Cylinder length	EL - Effective Length	FL - Front Length	PD - Plug Face Diameter
83 Insert	1.283" (32.6mm)	0.632" (16.05mm)	1.053" (26.75mm)	1.526" (38.75mm)	1.490" (37.85mm)	0.035" (0.9mm)	0.587" (14.9mm)

KEY BITTING SPECIFICATION



Root Depths	mm	inch
9	4.55	0.1791
8	4.90	0.1929
7	5.25	0.2067
6	5.60	0.2205
5	5.95	0.2343
4	6.30	0.2480
3	6.65	0.2618
2	7.00	0.2756
1	7.35	0.2894
0	7.70	0.3031
X	8.05	0.3169
Y	8.40	0.3307
Z	8.75	0.3445

Top Pins	mm	inch
9	9.23	0.3634
8	8.88	0.3496
7	8.53	0.3358
6	8.18	0.3220
5	7.83	0.3083
4	7.48	0.2945
3	7.13	0.2807
2	6.78	0.2669
1	6.43	0.2531
0	6.08	0.2394
X	5.73	0.2256
Y	5.38	0.2118
Z	5.03	0.1980

Master Wafer	mm	inch
13	4.55	0.179
12	4.20	0.165
11	3.85	0.152
10	3.50	0.138
9	3.15	0.124
8	2.80	0.110
7	2.45	0.096
6	2.10	0.083
5	1.75	0.069
4	1.40	0.055
3	1.05	0.041
2	0.70	0.041

Cut Distance	mm	inch
1	3.75	0.148
2	7.55	0.297
3	11.30	0.445
4	15.05	0.593
5	18.80	0.740
6	22.55	0.888

CALCULATION RULES

Recommended according to German standards.

- When using one key-way for KD/KA and MKS calculate with 2-step-progression (code groups, even, odd)
- Maximum repeated depths/cuts per key: 3
525226 525525
- Maximum consecutive repeated depths/cuts per key: 2
535226 533342
- No stair-step depths/cuts
543210
- At least 1 minimum jump of 4 steps
546243 543454

Calculation Rules Specific to Vites™

- First chamber is fixed: Intop pin no. 5
- No master pins on chamber 1
- 2nd pin can only “jump” 4 heights upwards or downwards.
513624 503624
- Remaining chambers max jump is 6
517174 518184
- Due to the profile check pin we recommend not to use master pins no. 2 (only 4 or larger), however 2 can be used in case of “emergency” (no more codes available)

MASTER KEY SYSTEM MANAGEMENT

2-Step Progression (Even/Odd)

- 2-step progression allows us to manage all codes/pins/cuts that our system can use to generate codes for our master key systems or simply KD/KA cylinders; this way no keys would be repeated
- Odd/even codes management: B = odd A = even
- 6 pins generate 64 groups (Even/Odd) from AAAAAA to BBBBBB
- Depending on the size/complexity one group might be used for more then just one master key system

Even A	Odd B
	Z
Y	
	X
0	
	1
2	
	3
4	
	5
6	
	7
8	
	9

ASSEMBLY INSTRUCTIONS - RIM

Delivery of the pre-loaded housing

- Our pre-loaded housing includes all parts that are necessary to assemble a functional cylinder
- Inside the cylinder there is a black plastic plug which has to be exchanged by a pinned core
- The housing is filled corresponding to the factory standard with steel springs and housing pins
- Additionally the following parts are included: tailpiece, core retaining clip



Step 1

- Insert the cut key into the cylinder core
- Place the profile check pin in the core



Step 2

- Insert the hardened InTop pin into the 1st chamber
- Attention: Pull the key a little and insert it again



Step 3

- Insert the bottom pins made of hardened steel into the 3rd chamber
 - Insert the bottom pins made of nickel silver into the 2nd and 4th to 6th chamber
- Only for master keyed systems: Insert master wafers**
- Check with cut key – no pin should be positioned too low or above the shear line of the core – control with assembly tool possible



Step 4

- Position the pinned core with the inserted cut key and rotate the core to the 2 o'clock position



Step 5

- Push the core inside until the plastic plug has been pushed through completely
- Rotate the core forward clockwise until the key is at the 12 o'clock position



Step 6

- Remove the key by holding the core with your thumb
- The core isn't fixed yet and could be pulled out with key inside



Step 7

- Insert the tailpiece into the core and push on the core retaining clip

ASSEMBLY INSTRUCTIONS - MORTISE

Delivery of the pre-loaded housing

- Our pre-loaded housing includes all parts that are necessary to assemble a functional cylinder
- Inside the cylinder there is a black plastic plug which has to be exchanged by a pinned core
- The housing is filled corresponding to the factory standard with steel springs and housing pins
- When ordered, additionally the following parts are included: cam, screws



Step 1

- Insert the cut key into the cylinder core
- Place the profile check pin in the core



Step 2

- Insert the hardened InTop pin into the 1st chamber
- Attention: Pull the key a little and insert it again



Step 3

- Insert the bottom pins made of hardened steel into the 3rd chamber
 - Insert the bottom pins made of nickel silver into the 2nd and 4th to 6th chamber
- Only for master keyed systems: Insert master wafers**
- Check with cut key – no pin should be positioned too low or above the shear line of the core – control with assembly tool possible



Step 4

- 1 1/4 mortise cylinder: Remove the key slowly from the core and stick extension piece onto the t-groove



Step 5

- Position the pinned core with the inserted cut key and rotate the core to the 2 o'clock position



Step 6

- Push the core inside until the plastic plug has been pushed through completely.
- Rotate the core forward clockwise until the key is at the 12 o'clock position



Step 7

- Remove the key by holding the core with your thumb
- The core isn't fixed yet and could be pulled out with key inside



Step 8

- Fix the cam with 2 screws on the backside of the core

ASSEMBLY INSTRUCTIONS - KNK/KIL

Delivery of the pre-loaded housing

- Our pre-loaded housing includes all parts that are necessary to assemble a functional cylinder. Inside the cylinder there is a black plastic plug which has to be exchanged by a pinned core.
- The housing is filled corresponding to the factory standard with steel springs and housing pin
- In addition, the following parts are included: tailpiece package, screw cap, tappet and spring



Step 1

- Insert the cut key into the cylinder core
- Place the profile check pin in the core



Step 2

- Insert the hardened InTop pin into the 1st chamber
- Attention: Pull the key a little and insert it again



Step 3

- Insert the bottom pins made of hardened steel into the 3rd chamber
 - Insert the bottom pins made of nickel silver into the 2nd and 4th to 6th chamber
- Only for master keyed systems: Insert master wafers**
- Check with cut key – no pin should be positioned too low or above the shear line of the core – control with assembly tool possible



Step 4

- Position the pinned core with the inserted cut key and rotate the core to the 2 o'clock position



Step 5

- Push the core inside until the plastic plug has been pushed through completely.
- Rotate the core forward clockwise until the key is at the 12 o'clock position



Step 6

- Remove the key by holding the core with your thumb
- The core isn't fixed yet and could be pulled out with key inside



Step 7

- Insert the spring and the tappet into the drill hole on the backside of the core (flat side of the tappet goes into the core)



Step 8

- Push the tappet down and insert the tailpiece and screw together with screw cap on the backside of the core

ASSEMBLY INSTRUCTIONS - 83 INSERT

Delivery of the pre-loaded housing

- Our pre-loaded housing includes all parts that are necessary to assemble a functional cylinder. Inside the cylinder there is a black plastic plug which has to be exchanged by a pinned core.
- The housing is filled corresponding to the factory standard with steel springs and housing pin.
- In addition, the following parts are included: core retaining clip, washer, tailpiece and screw.



Step 1

- Insert the cut key into the cylinder core
- Place the profile check pin in the core



Step 2

- Insert the hardened InTop pin into the 1st chamber
- Attention: Pull the key a little and insert it again



Step 3

- Insert the bottom pins made of hardened steel into the 3rd chamber
 - Insert the bottom pins made of nickel silver into the 2nd and 4th to 6th chamber
- Only for master keyed systems: Insert master wafers**
- Check with cut key – no pin should be positioned too low or above the shear line of the core – control with assembly tool possible



Step 4

- Position the pinned core with the inserted cut key and rotate the core to the 2 o'clock position



Step 5

- Push the core inside until the plastic plug has been pushed through completely
- Rotate the core forward clockwise until the key is at the 12 o'clock position



Step 6

- Remove the key by holding the core with your thumb
- The core isn't fixed yet and could be pulled out with key inside



Step 7

- Fix the protruding side of the tailpiece into the cutout on the cylinder housing



Step 8

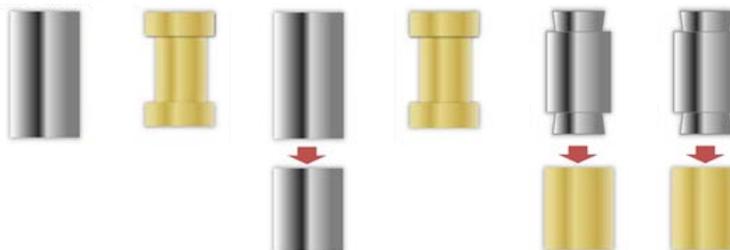
- Add the washer to the back of the cylinder core and fasten the retaining clip

ASSEMBLY INSTRUCTIONS - KNK/KIL

Attention: If your pin cut is a 9 in the 3rd, 5th or 6th chamber the top pins need to be changed according to the following table:

Pin/Cut	1 (intop)	2	3	4	5	6	<- Pin Chamber
Z	10609	10608	10609	10608	10610	10610	Standard Top Pins
Y							
X							
0							
1							
2							
3							
4							
5							
6							
7	10611	10612	10612	Special Top Pins			
8							
9							

Fixed Chamber

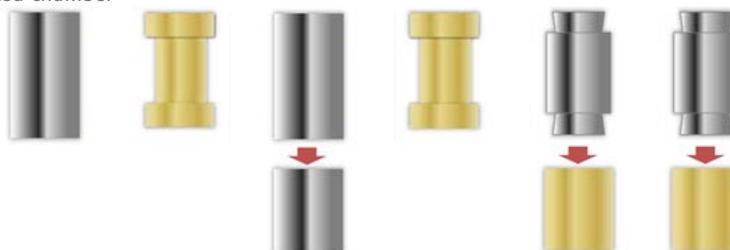


ASSEMBLY INSTRUCTIONS - 83 INSERT

Attention: If your pin cut is an 8 or 9 in the 3rd, 5th or 6th chamber the top pins need to be changed according to the following table:

Pin/Cut	1 (intop)	2	3	4	5	6	<- Pin Chamber
Z	10609	10608	10609	10608	10610	10610	Standard Top Pins
Y							
X							
0							
1							
2							
3							
4							
5							
6							
7	10611	10612	10612	Special Top Pins			
8							
9							

Fixed Chamber



REFILL OF HOUSINGS

- Insert the top pins
- 1st and 3rd chamber: hardened steel;
- 2nd and 4th chamber: anti-pick mushroom pins
- 5th and 6th chamber: stainless steel "centering" pins



1st	2nd	3rd	4th	5th	6th
Top-Pin: Hardened	Mushroom: Brass	Top-Pin: Hardened	Mushroom: Brass	Top-Pin: Nickel Silver	Top-Pin: Nickel Silver



Step 1

- Insert the springs, introduce the s-shaped lever from below into the slot of the charging thorn and push the springs with the lever into the thorn



Step 2

- Insert the charging thorn into the housing and remove the lever



Step 3

- Turn the thorn until the springs drop audibly into the cylinder housing



Step 4

- Insert the lever from above into the slot and push the pins completely into the housing



Step 5

- Turn the charging device with the lever about 45° and remove the lever
- Push the plastic plug or follower into the housing until the thorn has been pushed through completely



Step 6

- Make sure the plug goes into the housing with about an angle of 15°. Housing pins should not be «snap» into the groove of plug

Proven: Globally and in every dimension



Burj Al Arab, UAE



Al Zeina, UAE



Emirates Palace Hotel, UAE



German Aerospace Centre,
Germany



Ozeaneum, Germany



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Centre Hospitalier Universitaire,
France



Elbe Office, Germany



Collège Paul Langevin,
France



Herdecke Power Station,
Germany



Magdeburg Campus Tower,
Germany



Donauwörth Volkshochschule,
Germany



German Clock Museum,
Germany



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