

Drilling and countersink tools

The universal product range for industry and professional trade



TRUST BLUE

- Drilling and countersink tools from a single source
 - Drills and countersinks for nearly all materials and applications
 - Highest degree of quality for precise and neat results
-

Drilling and countersink tools

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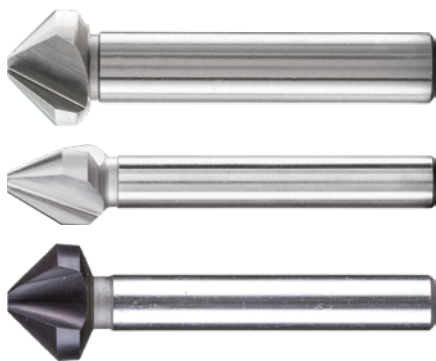


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Drilling tools

HSS spiral drills

Drilling tools with cross grinding for industrial uses. Fully ground, right-hand turning versions that produce precise drill holes thanks to their high concentricity and exact centring. PFERD offers spiral drills in the STEEL (118° point angle) and INOX (135° point angle) types.

Advantages:

- Very good chip removal.
- High concentricity.
- Exact centring and low feed force thanks to cross grinding.

Applications:

- Drilling

Recommendations for use:

- Observe the recommended rotational speed.
- When drilling metals, use a high-quality cutting oil or cooling lubricant, if possible. This facilitates smooth running and extends the drill tool life. Exception: when working on aluminium, use kerosene instead of cutting oil.
- In order to avoid corrosion, remove any particles which develop when working on stainless steel (INOX) from the workpiece. Clean the workpiece chemically or mechanically (etching/polishing, etc.).

Safety notes:



= Wear eye protection!



= Follow the safety instructions!

Matching tool drives:

- Power drills
- Column drills
- Machine tools
- Robot

HSSG (M2) STEEL 118° type



- Suitable for universal use on steel, cast steel, grey cast iron, annealed cast iron, bronze, brass, aluminium.
- Easy centring.
- Long tool life.
- Good chip removal.

HSSE Co5 (M35) INOX 135° type



- Particularly well suited for tough and hard materials, such as alloyed and high-strength steel, stainless steel (INOX).
- Robust tip profile.
- Very long tool life.
- Good chip removal.
- Very good temperature resistance due to Co content.

Example applications for STEEL/INOX HSS spiral drills

Dia. [mm]	Applications
1.6	Core hole for M2 thread
2.5	Drilled hole dia. for blind and special blind rivets dia. 2.4 mm
3.1	Drilled hole dia. for blind and special blind rivets dia. 3.0 mm
3.3	Core hole for M4 thread and drilled hole dia. for blind and special blind rivets dia. 3.2 mm
3.5	Core hole for metric fine thread MF 4 x 0.5 mm
4.0	Core hole for metric fine thread MF 4.5 x 0.5 mm
4.1	Drilled hole dia. for blind and special blind rivets dia. 4.0 mm
4.2	Core hole for M5 thread
4.5	Core hole for metric fine thread MF 5 x 0.5 mm
5.0	Core hole for M6 thread and metric fine thread MF 5.5 x 0.5 mm
5.1	Drilled hole dia. for blind and special blind rivets dia. 5.0 mm

Dia. [mm]	Applications
5.2	Drilled hole dia. for blind and special blind rivets dia. 5.1 mm
5.3	Drilled hole dia. for blind and special blind rivets dia. 5.2 mm
5.5	Core hole for metric fine thread MF 6 x 0.5 mm
6.0	Core hole for M7 thread
6.5	Core hole for metric fine thread MF 7 x 0.5 and drilled hole dia. for blind and special blind rivets dia. 6.4 mm
6.8	Core hole for M8 thread
7.0	Core hole for metric fine thread MF 8 x 1 mm
7.5	Core hole for metric fine thread MF 8 x 0.5 mm
8.0	Core hole for metric fine thread MF 9 x 1 mm
8.5	Core hole for M10 thread and metric fine thread MF 9 x 0.5 mm

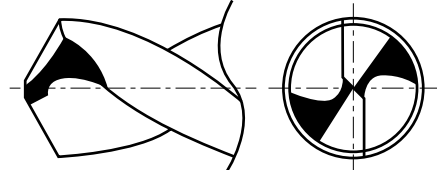
Dia. [mm]	Applications
9.0	Core hole for metric fine thread MF 10 x 1 mm
9.5	Core hole for metric fine thread MF 10 x 0.5 mm
10.0	Core hole for metric fine thread MF 11 x 1 mm
10.2	Core hole for M12 thread
10.5	Core hole for metric fine thread MF 12 x 1.5 mm
11.0	Core hole for metric fine thread MF 12 x 1 mm
11.5	Core hole for metric fine thread MF 12 x 0.5 mm and metric fine thread 13 x 1.5 mm
12.0	Core hole for M14 thread and metric fine thread MF 13 x 1 mm
12.5	Core hole for metric fine thread MF 13 x 0.5 mm and metric fine thread MF 14 x 1.5 mm
13.0	Core hole for metric fine thread MF 14 x 1 mm

Drilling tools

HSS spiral drills

Fully ground spiral drill with cross grinding

PFERD drills are completely ground spiral drills: they are precision ground both in the chip flute and the guide chamfer as well as at the drill tip. They also have cross grinding. This drill is suitable for highly precise positioning on the workpiece and supports centring during drilling. This grinding finish even cuts at the centre of the drill tip and reduces the feed forces during use. Spiral drills with cross grinding are suitable for purposes including machining of difficult-to-machine materials like chromium-nickel steel.



Recommended rotational speed range [RPM]

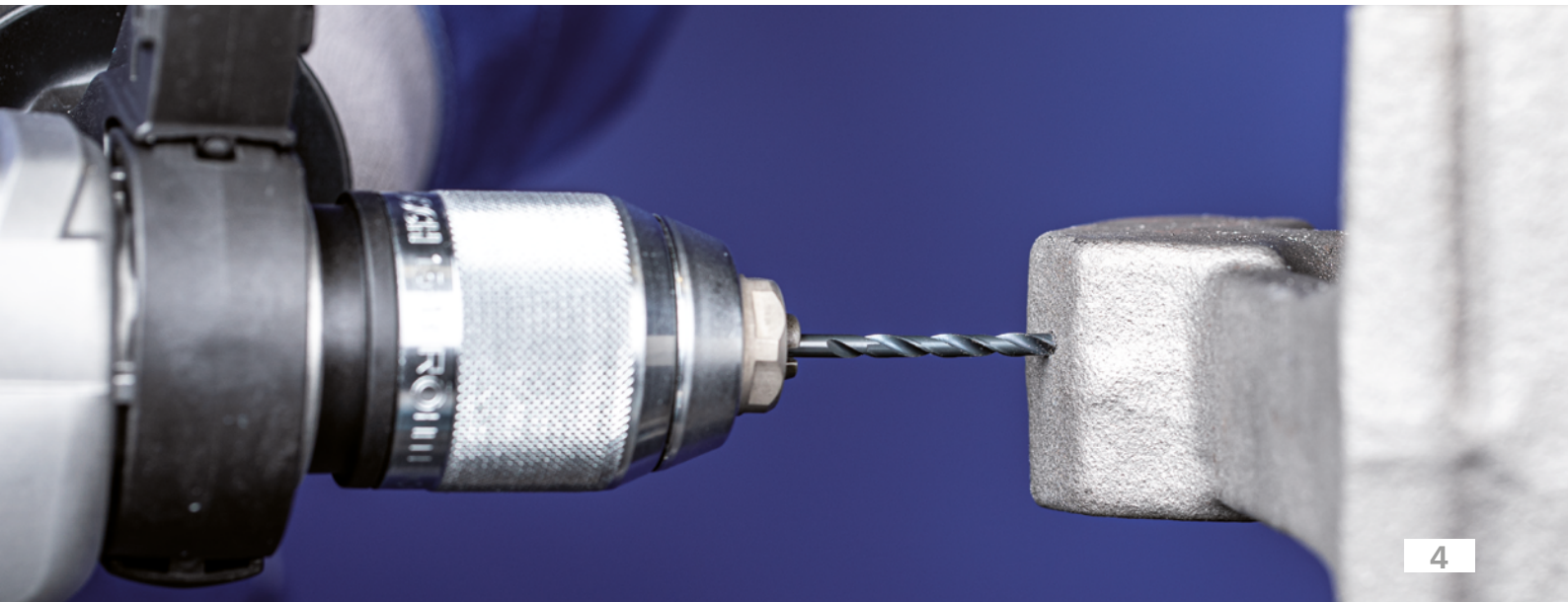
To determine the recommended cutting speed range [m/min], please proceed as follows:

- 1 Select the material group to be machined.
- 2 Select the type.
- 3 Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:

- 4 Select the required diameter.
- 5 The cutting speed range and the diameter determine the recommended rotational speed range.

1 Material group		2 Type	3 Cutting speed	
Steel, cast steel	Steels up to 700 N/mm ² (< 220 HB)	STEEL	25–35 m/min	
	Steels over 700 N/mm ² (> 220 HB)	STEEL INOX	20–25 m/min	
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	INOX	10–20 m/min
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys Brass, copper, zinc	STEEL INOX	30–60 m/min
	Hard non-ferrous metals	Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	STEEL INOX	25–50 m/min
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black cast iron EN-GJMB (GTS)	STEEL INOX	10–25 m/min
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood	STEEL	15–40 m/min	
		INOX		



Drilling tools

HSS spiral drills

Example:

Spiral drill,
SPB DIN 338 HSSG N 12,0 STEEL,
Tool dia. 12 mm.
Steels up to 700 N/mm²
Cutting speed: 25–35 m/min.

Rotational speed range: 650–950 RPM

④ Tool dia. [mm]	⑤ Cutting speeds [m/min]								
	10	15	20	25	30	35	40	50	60
	Rotational speeds [RPM]								
1.00	3,200	4,800	6,350	7,950	9,550	11,150	12,750	15,900	19,100
1.50	2,100	3,200	4,250	5,300	6,350	7,450	8,500	10,600	12,750
1.60	2,000	3,000	4,000	5,000	6,000	7,000	8,000	10,000	12,000
2.00	1,600	2,400	3,200	4,000	4,800	5,550	6,350	7,950	9,550
2.50	1,250	1,900	2,550	3,200	3,800	4,450	5,100	6,350	7,650
3.00	1,050	1,600	2,100	2,650	3,200	3,700	4,250	5,300	6,350
3.10	1,000	1,550	2,050	2,600	3,100	3,600	4,100	5,150	6,200
3.30	950	1,450	1,950	2,400	2,900	3,400	3,850	4,850	5,800
3.40	900	1,400	1,900	2,350	2,800	3,300	3,750	4,700	5,600
3.50	900	1,350	1,800	2,300	2,750	3,200	3,650	4,550	5,450
3.60	900	1,350	1,800	2,250	2,650	3,100	3,550	4,450	5,300
4.00	800	1,200	1,600	2,000	2,400	2,800	3,200	4,000	4,800
4.10	800	1,150	1,550	1,950	2,350	2,750	3,100	3,900	4,650
4.20	800	1,150	1,550	1,900	2,300	2,650	3,050	3,800	4,550
4.40	750	1,100	1,450	1,800	2,200	2,550	2,900	3,600	4,350
4.50	700	1,050	1,400	1,750	2,100	2,500	2,850	3,550	4,250
5.00	650	950	1,250	1,600	1,900	2,250	2,550	3,200	3,800
5.10	650	950	1,250	1,550	1,900	2,200	2,500	3,150	3,750
5.20	650	950	1,250	1,550	1,850	2,150	2,450	3,050	3,700
5.30	600	900	1,200	1,500	1,800	2,100	2,400	3,000	3,600
5.50	600	850	1,150	1,450	1,750	2,050	2,300	2,900	3,450
6.00	550	800	1,050	1,350	1,600	1,850	2,100	2,650	3,200
6.50	500	750	1,000	1,250	1,450	1,700	1,950	2,450	2,950
6.80	450	700	950	1,200	1,400	1,650	1,900	2,350	2,800
7.00	450	700	900	1,150	1,350	1,600	1,800	2,300	2,750
7.50	450	650	850	1,050	1,250	1,500	1,700	2,100	2,550
8.00	400	600	800	1,000	1,200	1,400	1,600	2,000	2,400
8.50	400	550	750	950	1,100	1,300	1,500	1,850	2,250
9.00	350	550	700	900	1,050	1,250	1,400	1,750	2,100
9.50	350	500	650	850	1,000	1,150	1,350	1,700	2,000
10.00	300	500	650	800	950	1,100	1,250	1,600	1,900
10.20	300	500	650	800	950	1,100	1,250	1,600	1,900
10.50	300	450	600	750	900	1,050	1,200	1,500	1,800
11.00	300	450	600	700	850	1,000	1,150	1,450	1,750
11.50	300	400	550	700	850	1,000	1,100	1,400	1,700
12.00	250	400	550	650	800	950	1,050	1,350	1,600
12.50	250	400	500	650	800	900	1,000	1,300	1,550
13.00	250	350	500	600	750	850	1,000	1,250	1,450

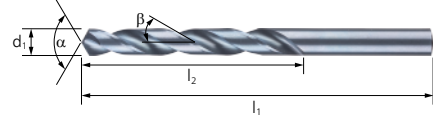


Drilling tools

HSS spiral drills



DIN 338 HSSG N STEEL spiral drills

High-performance drilling tools in the STEEL in HSSG (M2) type for industrial uses. Fully ground, right-hand turning version with cross grinding.



Materials that can be worked:

- steel, aluminium, brass, bronze, cast, plastics

d ₁ [mm]	l ₂ [mm]	l ₁ [mm]	α	Helix angles β	Type		Description
					STEEL		
					 EAN 4007220		
1.00	12	34	118°	25-30°	164570	10	SPB DIN 338 HSSG N 1,0 STEEL
1.50	18	40	118°	25-30°	166345	10	SPB DIN 338 HSSG N 1,5 STEEL
1.60	20	43	118°	25-30°	169315	10	SPB DIN 338 HSSG N 1,6 STEEL
2.00	24	49	118°	25-30°	166383	10	SPB DIN 338 HSSG N 2,0 STEEL
2.50	30	57	118°	25-30°	166413	10	SPB DIN 338 HSSG N 2,5 STEEL
3.00	33	61	118°	25-30°	166536	10	SPB DIN 338 HSSG N 3,0 STEEL
3.10	36	65	118°	25-30°	166550	10	SPB DIN 338 HSSG N 3,1 STEEL
3.30	36	65	118°	25-30°	166581	10	SPB DIN 338 HSSG N 3,3 STEEL
3.40	39	70	118°	25-30°	166888	10	SPB DIN 338 HSSG N 3,4 STEEL
3.50	39	70	118°	25-30°	166895	10	SPB DIN 338 HSSG N 3,5 STEEL
3.60	39	70	118°	25-30°	166901	10	SPB DIN 338 HSSG N 3,6 STEEL
4.00	43	75	118°	25-30°	166949	10	SPB DIN 338 HSSG N 4,0 STEEL
4.10	43	75	118°	25-30°	166956	10	SPB DIN 338 HSSG N 4,1 STEEL
4.20	43	75	118°	25-30°	166994	10	SPB DIN 338 HSSG N 4,2 STEEL
4.40	47	80	118°	25-30°	167007	10	SPB DIN 338 HSSG N 4,4 STEEL
4.50	47	80	118°	25-30°	167014	10	SPB DIN 338 HSSG N 4,5 STEEL
5.00	52	86	118°	25-30°	167021	10	SPB DIN 338 HSSG N 5,0 STEEL
5.10	52	86	118°	25-30°	167038	10	SPB DIN 338 HSSG N 5,1 STEEL
5.20	52	86	118°	25-30°	167045	10	SPB DIN 338 HSSG N 5,2 STEEL
5.30	52	86	118°	25-30°	167052	10	SPB DIN 338 HSSG N 5,3 STEEL
5.50	57	93	118°	25-30°	167069	10	SPB DIN 338 HSSG N 5,5 STEEL
6.00	57	93	118°	25-30°	167076	10	SPB DIN 338 HSSG N 6,0 STEEL
6.50	63	101	118°	25-30°	167083	10	SPB DIN 338 HSSG N 6,5 STEEL
6.80	69	109	118°	25-30°	167090	10	SPB DIN 338 HSSG N 6,8 STEEL
7.00	69	109	118°	25-30°	167106	10	SPB DIN 338 HSSG N 7,0 STEEL
7.50	69	109	118°	25-30°	167113	10	SPB DIN 338 HSSG N 7,5 STEEL
8.00	75	117	118°	25-30°	167120	10	SPB DIN 338 HSSG N 8,0 STEEL
8.50	75	117	118°	25-30°	167137	10	SPB DIN 338 HSSG N 8,5 STEEL
9.00	75	125	118°	25-30°	167151	10	SPB DIN 338 HSSG N 9,0 STEEL
9.50	81	125	118°	25-30°	167168	10	SPB DIN 338 HSSG N 9,5 STEEL
10.00	87	133	118°	25-30°	167175	10	SPB DIN 338 HSSG N 10,0 STEEL
10.20	87	133	118°	25-30°	167182	5	SPB DIN 338 HSSG N 10,2 STEEL
10.50	87	133	118°	25-30°	167199	5	SPB DIN 338 HSSG N 10,5 STEEL
11.00	94	142	118°	25-30°	167205	5	SPB DIN 338 HSSG N 11,0 STEEL
11.50	94	142	118°	25-30°	167212	5	SPB DIN 338 HSSG N 11,5 STEEL
12.00	101	151	118°	25-30°	167229	5	SPB DIN 338 HSSG N 12,0 STEEL
12.50	101	151	118°	25-30°	167236	5	SPB DIN 338 HSSG N 12,5 STEEL
13.00	101	151	118°	25-30°	167243	5	SPB DIN 338 HSSG N 13,0 STEEL

Drilling tools

HSS spiral drills

DIN 338 HSSG N STEEL spiral drills, 19-piece set

The set contains 19 HSS spiral drills in the STEEL in HSSG (M2) type for industrial uses. The sturdy plastic box protects the tools from dirt and damage. The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.



Contents:

19 HSS spiral drills,
STEEL in HSSG (M2) type,
dia. 1.0 to 10.0 mm, graduations in 0.5 mm

Materials that can be worked:

- steel, aluminium, brass, bronze, cast, plastics



Type		Description
 STEEL		
EAN 4007220		
168172	1	SET SPB DIN 338 HSSG N 1-10 STEEL 19

DIN 338 HSSG N STEEL spiral drills, 25-piece set

The set contains 25 HSS spiral drills in the STEEL in HSSG (M2) type for industrial uses. The sturdy plastic box protects the tools from dirt and damage. The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.



Contents:

25 HSS spiral drills,
STEEL in HSSG (M2) type
dia. 1.0 to 13.0 mm, graduations in 0.5 mm

Materials that can be worked:

- steel, aluminium, brass, bronze, cast, plastics



Type		Description
 STEEL		
EAN 4007220		
168189	1	SET SPB DIN 338 HSSG N 1-13 STEEL 25

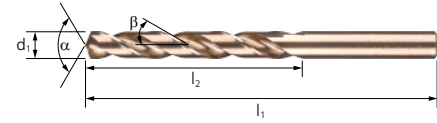


Drilling tools

HSS spiral drills



DIN 338 HSSE N INOX spiral drills

High-performance drilling tools in the INOX in HSSE-Co5 (M35) type for industrial uses. Fully ground, right-hand turning version with cross grinding.



Materials that can be worked:

- steel, stainless steel (INOX), aluminium, brass, bronze, cast, titanium, plastics

d ₁ [mm]	l ₂ [mm]	l ₁ [mm]	α	Helix angles β	Type		Description
					INOX  EAN 4007220		
1.00	12	34	135°	36°	167267	10	SPB DIN 338 HSSE N 1,0 INOX
1.50	18	40	135°	36°	167274	10	SPB DIN 338 HSSE N 1,5 INOX
1.60	20	43	135°	36°	167281	10	SPB DIN 338 HSSE N 1,6 INOX
2.00	24	49	135°	36°	167298	10	SPB DIN 338 HSSE N 2,0 INOX
2.50	30	57	135°	36°	167304	10	SPB DIN 338 HSSE N 2,5 INOX
3.00	33	61	135°	36°	167311	10	SPB DIN 338 HSSE N 3,0 INOX
3.10	36	65	135°	36°	167328	10	SPB DIN 338 HSSE N 3,1 INOX
3.30	36	65	135°	36°	167342	10	SPB DIN 338 HSSE N 3,3 INOX
3.40	39	70	135°	36°	167366	10	SPB DIN 338 HSSE N 3,4 INOX
3.50	39	70	135°	36°	167380	10	SPB DIN 338 HSSE N 3,5 INOX
3.60	39	70	135°	36°	167403	10	SPB DIN 338 HSSE N 3,6 INOX
4.00	43	75	135°	36°	167410	10	SPB DIN 338 HSSE N 4,0 INOX
4.10	43	75	135°	36°	167441	10	SPB DIN 338 HSSE N 4,1 INOX
4.20	43	75	135°	36°	167465	10	SPB DIN 338 HSSE N 4,2 INOX
4.40	47	80	135°	36°	167670	10	SPB DIN 338 HSSE N 4,4 INOX
4.50	47	80	135°	36°	167694	10	SPB DIN 338 HSSE N 4,5 INOX
5.00	52	86	135°	36°	167717	10	SPB DIN 338 HSSE N 5,0 INOX
5.10	52	86	135°	36°	167724	10	SPB DIN 338 HSSE N 5,1 INOX
5.20	52	86	135°	36°	167731	10	SPB DIN 338 HSSE N 5,2 INOX
5.30	52	86	135°	36°	167748	10	SPB DIN 338 HSSE N 5,3 INOX
5.50	57	93	135°	36°	167755	10	SPB DIN 338 HSSE N 5,5 INOX
6.00	57	93	135°	36°	167762	10	SPB DIN 338 HSSE N 6,0 INOX
6.50	63	101	135°	36°	167779	10	SPB DIN 338 HSSE N 6,5 INOX
6.80	69	109	135°	36°	167786	10	SPB DIN 338 HSSE N 6,8 INOX
7.00	69	109	135°	36°	167984	10	SPB DIN 338 HSSE N 7,0 INOX
7.50	69	109	135°	36°	167991	10	SPB DIN 338 HSSE N 7,5 INOX
8.00	75	117	135°	36°	168028	10	SPB DIN 338 HSSE N 8,0 INOX
8.50	75	117	135°	36°	168035	10	SPB DIN 338 HSSE N 8,5 INOX
9.00	75	125	135°	36°	168042	10	SPB DIN 338 HSSE N 9,0 INOX
9.50	81	125	135°	36°	168059	10	SPB DIN 338 HSSE N 9,5 INOX
10.00	87	133	135°	36°	168073	10	SPB DIN 338 HSSE N 10,0 INOX
10.20	87	133	135°	36°	168080	5	SPB DIN 338 HSSE N 10,2 INOX
10.50	87	133	135°	36°	168097	5	SPB DIN 338 HSSE N 10,5 INOX
11.00	94	142	135°	36°	168103	5	SPB DIN 338 HSSE N 11,0 INOX
11.50	94	142	135°	36°	168110	5	SPB DIN 338 HSSE N 11,5 INOX
12.00	101	151	135°	36°	168127	5	SPB DIN 338 HSSE N 12,0 INOX
12.50	101	151	135°	36°	168141	5	SPB DIN 338 HSSE N 12,5 INOX
13.00	101	151	135°	36°	168165	5	SPB DIN 338 HSSE N 13,0 INOX

Drilling tools

HSS spiral drills

DIN 338 HSSE N INOX spiral drills, 19-piece set

The set contains 19 HSS spiral drills in the INOX in HSSE-Co5 (M35) type for industrial uses. The sturdy plastic box protects the tools from dirt and damage. The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.



Contents:

19 HSS spiral drills,
INOX in HSSE-Co5 (M35) type,
dia. 1.0 to 10.0 mm, graduations in 0.5 mm

Materials that can be worked:

- steel, stainless steel (INOX), aluminium, brass, bronze, cast, titanium, plastics



Type		Description
INOX		
		
EAN 4007220		
168196	1	SET SPB DIN 338 HSSE N 1-10 INOX 19

DIN 338 HSSE N INOX spiral drills, 25-piece set

The set contains 25 HSS spiral drills in the INOX in HSSE-Co5 (M35) type for industrial uses. The sturdy plastic box protects the tools from dirt and damage. The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.



Contents:

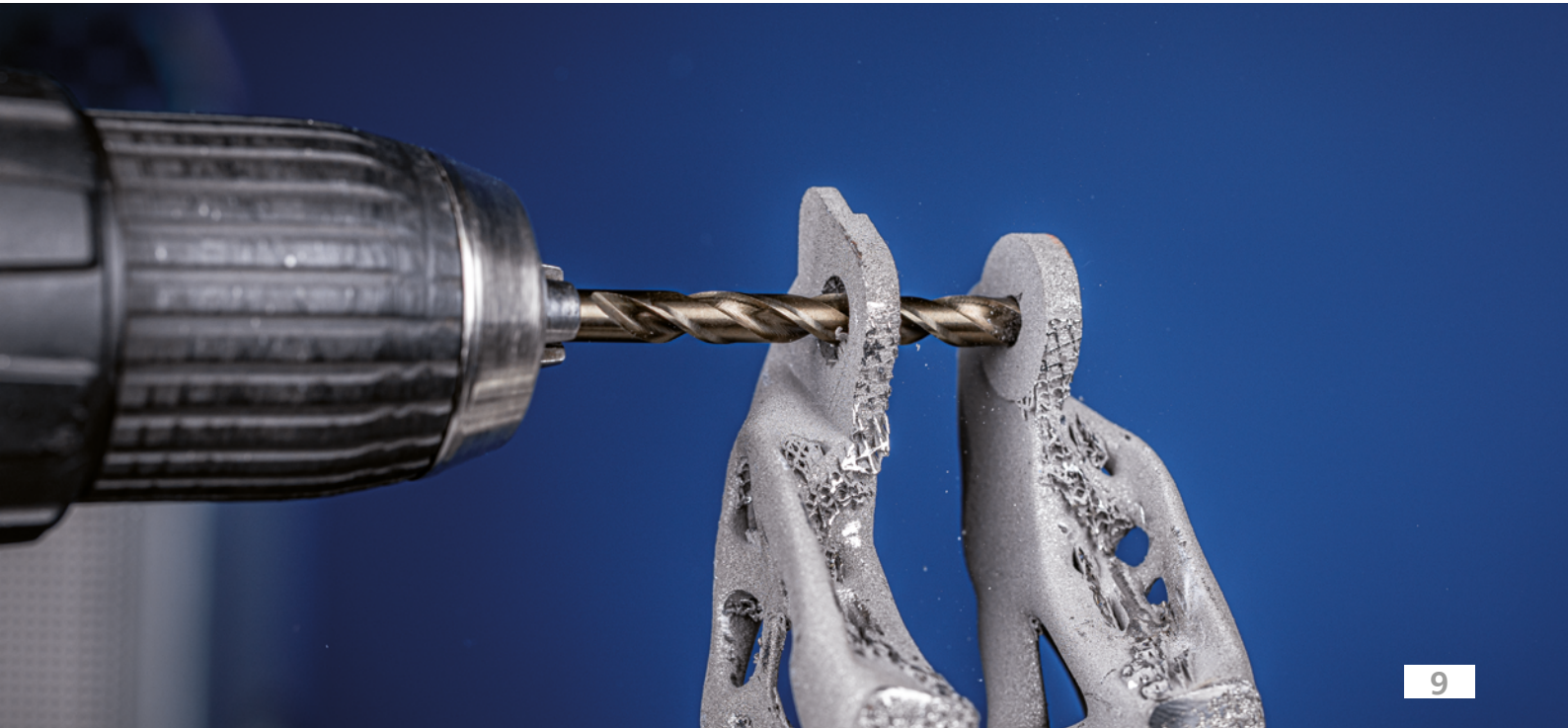
25 HSS spiral drills,
INOX in HSSE-Co5 (M35) type
dia. 1.0 to 13.0 mm, graduations in 0.5 mm

Materials that can be worked:

- steel, stainless steel (INOX), aluminium, brass, bronze, cast, titanium, plastics



Type		Description
INOX		
		
EAN 4007220		
168202	1	SET SPB DIN 338 HSSE N 1-13 INOX 25



Drilling tools

HSS step drills

Sturdy high-performance tools for burr-free drilling and deburring of sheet metal, pipes and profiles. Materials up to 4 mm thick can be drilled and deburred easily in a single step. PFERD also offers step drills with a high-quality HICOAT coating. To ensure reliable torque transmission, all step drills have a three-surface shaft.

Advantages:

- Drilling and deburring in a single step.
- Completely smooth running and a high cutting performance.
- The high-quality drill tip ensures effortless centring and drilling.
- The tool taper makes it easier to pull back from drilled plates.
- Chips which do not break are neatly removed as with a spiral drill.
- Built-up edges and cold welding on the blades are prevented.

Materials that can be worked:

- Steel
- Cast steel
- Stainless steel (INOX)
- Non-ferrous metals
- Plastics
- Other materials

Applications:

- Drilling
- Deburring

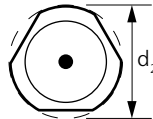
Recommendations for use:

- Use HSS step drills on sheets, pipes and profiles with a maximum thickness of 4 mm.
- Please refer to the table for the recommended rotational speeds.

Matching tool drives:

- Power drills
- Column drills

Safety note:



To ensure reliable torque transmission, step drills have a three-surface shaft.

HSS type



- Use cutting oil/compressed air as a coolant and lubricant in the case of step drills without a coating.

HSS HICOAT HC-FEP type



- Step drills with a HICOAT coating can also be used without the addition of coolants.
- Particularly suitable for work on stainless steel (INOX).



Drilling tools

HSS step drills

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:

- 1 Select the material group to be machined.
- 2 Select the type.
- 3 Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:

- 4 Select the required diameter.
- 5 The cutting speed range and the diameter determine the recommended rotational speed range.

1 Material group		2 Type	3 Cutting speed
Steel, cast steel	Steels up to 700 N/mm ²	HSS	20–30 m/min
	Steels over 700 N/mm ²	HICOAT HC-FEP	
Stainless steel (INOX)	Rust and acid-resistant steels	Construction steels, carbon steels, tool steels, alloyed and non-alloyed steels, case-hardened steels, cast steel	10–20 m/min
		Austenitic and ferritic stainless steels	10–20 m/min
Non-ferrous metals	Soft non-ferrous metals	HSS	20–30 m/min
	Hard non-ferrous metals	HICOAT HC-FEP	
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood	Aluminium alloys Brass, copper, zinc	10–20 m/min
		Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	10–20 m/min
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood	HSS	10–20 m/min
		HICOAT HC-FEP	

Example:

HSS step drills

STB HSS 04-30/10,

Step dia. 4–30 mm.

Steels up to 700 N/mm².

Cutting speed: 20–30 m/min

Rotational speed range: 2,400–200 RPM

4 Step dia. [mm]	5 Cutting speeds [m/min]		
	10	20	30
Rotational speeds [RPM]			
4.00	800	1,600	2,400
5.00	640	1,280	1,920
6.00	530	1,060	1,600
7.00	460	920	1,400
8.00	400	800	1,200
9.00	350	700	1,060
10.00	320	640	960
11.00	290	580	880
12.00	270	540	820
14.00	230	460	700
15.00	210	420	640
16.00	200	400	600
18.00	180	360	540
20.00	160	320	480
21.00	150	300	460
22.00	140	280	420
24.00	130	260	400
26.00	120	240	360
27.00	120	240	360
28.00	110	220	340
30.00	100	200	300
33.00	90	180	280
34.00	90	180	280
36.00	90	180	280
37.00	90	180	280
39.00	80	160	240



Drilling tools

HSS step drills

HSS step drills

HSS step drills for drilling and deburring thin sheets, pipes and profiles made from various materials. To ensure reliable torque transmission, all step drills have a three-surface shaft.





Drill bit dia. range [mm]	No. of drill steps	d ₂ [mm]	l ₁ [mm]	Type		Description
				HSS		
				 EAN 4007220		
4-12	9	6	65	165867	1	STB HSS 04-12/6
4-20	9	8	75	165874	1	STB HSS 04-20/8
4-30	14	10	100	165881	1	STB HSS 04-30/10
4-39	13	10	107	165898	1	STB HSS 04-39/10
6-37	12	10	100	165904	1	STB HSS 06-37/10

HSS step drills, 3-piece set

The set includes three HSS step drills in the versions 4-12 mm (9 steps), 4-20 mm (9 steps), 4-30 mm (14 steps) for industrial uses. To ensure reliable torque transmission, all step drills have a three-surface shaft.

The sturdy plastic box protects the tools from dirt and damage. The securing of the HSS step drills facilitates the selection and withdrawal of the tools.



Contents [pcs.]	Type		Description
	HSS		
	 EAN 4007220		
3	166109	1	SET STB HSS 3



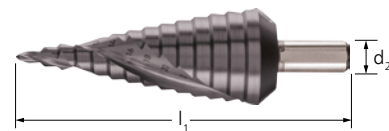
Drilling tools



HSS step drills with HICOAT coating HC-FEP

HSS step drills with HICOAT coating HC-FEP

HSS step drills with premium HICOAT coating HC-FEP are wear resistant and versatile as they can be used to process steel, stainless steel (INOX), non-ferrous metals, thermoplastics and duroplastics. To ensure reliable torque transmission, all step drills have a three-surface shaft.

Step drills with a HICOAT coating HC-FEP provide good high-temperature hardness and resistance to oxidation. They can therefore also be used on hard materials without the addition of coolants.





Drill bit dia. range [mm]	No. of drill steps	d ₂ [mm]	l ₁ [mm]	Type		Description
				HC-FEP		
				 EAN 4007220		
4-12	9	6	65	166031	1	STB HSS 04-12/6 HC-FEP
4-20	9	8	75	802755	1	STB HSS 04-20/8 HC-FEP
4-30	14	10	100	802762	1	STB HSS 04-30/10 HC-FEP
4-39	13	10	107	166079	1	STB HSS 04-39/10 HC-FEP
6-37	12	10	100	166086	1	STB HSS 06-37/10 HC-FEP

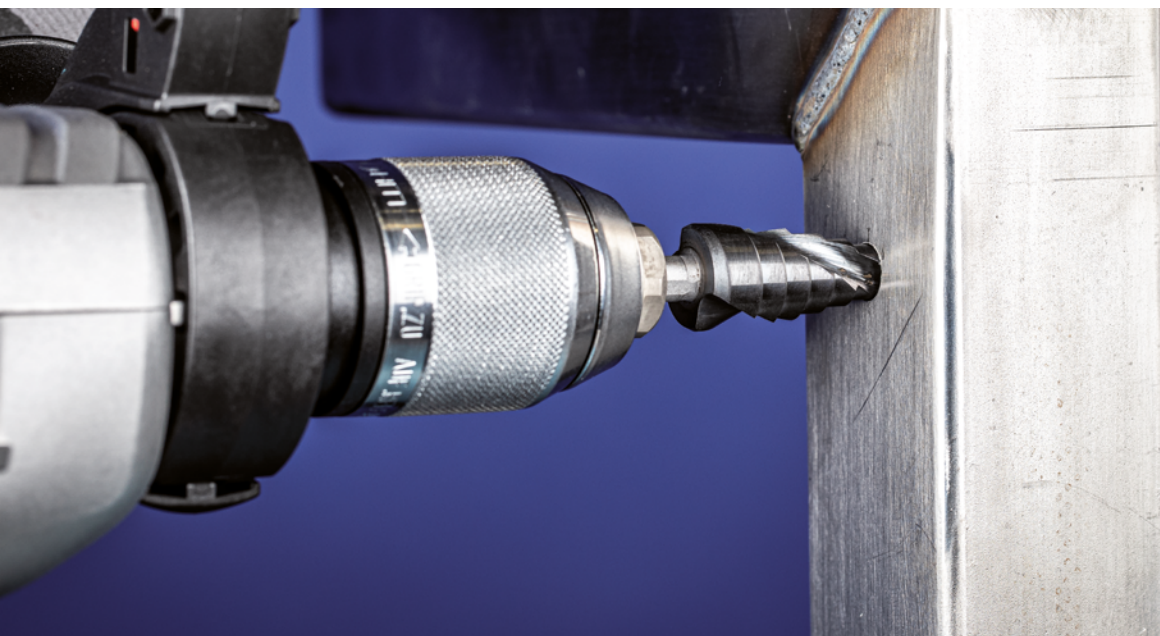
HSS step drills with HICOAT coating HC-FEP, 3-piece set

The set includes three HSS step drills in the versions 4-12 mm (9 steps), 4-20 mm (9 steps), 4-30 mm (14 steps) with a premium HICOAT coating HC-FEP for industrial uses. To ensure reliable torque transmission, all step drills have a three-surface shaft.

The sturdy plastic box protects the tools from dirt and damage. The securing of the HSS step drills facilitates the selection and withdrawal of the tools.



Contents [pcs.]	Type		Description
	HC-FEP		
	 EAN 4007220		
3	166123	1	SET STB HSS HC-FEP 3



Countersink tools

HSS conical countersinks

Conical countersinks from PFERD are characterized by their particularly sharp right-hand blades that are able to achieve very good results, even at low cutting speeds. The various types allow for countersinking and deburring when machining various types of materials, even in industrial environments. To ensure reliable torque transmission, conical countersinks have a three-surface shaft from a countersink diameter of 28 mm.

PFERD also offers conical countersinks with a premium HICOAT coating. Tapered countersinks with a HICOAT coating provide good high-temperature hardness and resistance to oxidation. They can therefore also be used on hard materials without the addition of coolants.

Advantages:

- Very high stock removal rate and optimum chip removal.
- Burr-free results, even with low cutting speeds.
- Long tool life.
- High surface quality of the workpiece.

Materials that can be worked:

- Steel
- Cast steel
- Stainless steel (INOX)
- Non-ferrous metals
- Cast iron
- Plastics
- Other materials

Applications:

- Chamfering
- Deburring
- Countersinking

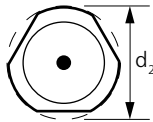
Recommendations for use:

- Select the appropriate type depending on the countersink angle required and the material to be machined.
- Use cutting oil or compressed air as a coolant and lubricant.
- Please refer to the table for the recommended rotational speeds.

Matching tool drives:

- Power drills
- Column drills
- Machine tools
- Robot

Safety note:



To ensure reliable torque transmission, conical countersinks have a three-surface shaft from a countersink diameter of 28 mm.

HSS countersinks 90°



- Particularly well suited for producing countersinks for 90° screws.

HSS countersinks 60°



- Particularly well suited for countersinking and deburring.

HSS type



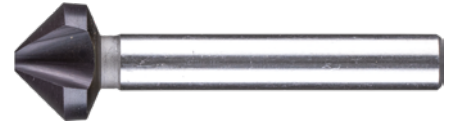
- HSS countersink that is suitable for universal use on almost all materials.

HSS E Co5 (M35) type

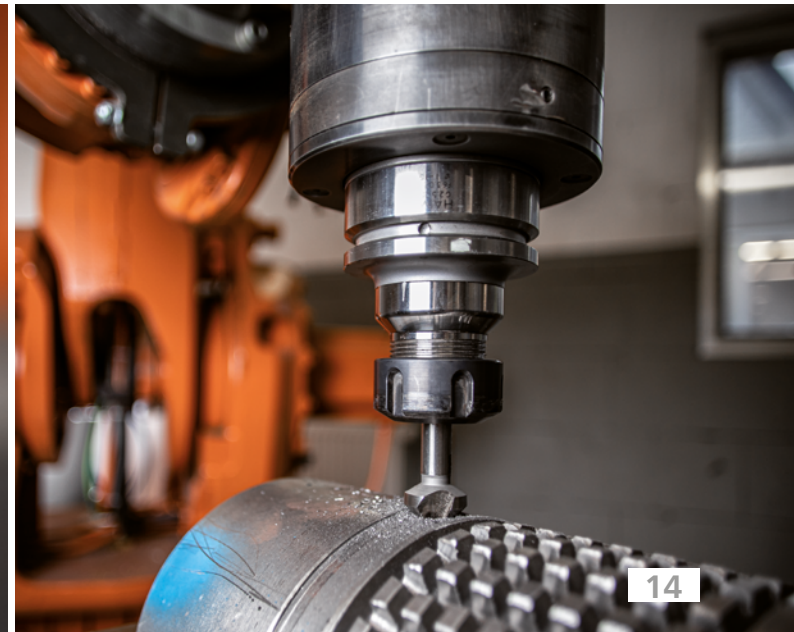


- HSS countersink that is suitable for universal use on almost all materials.
- Long tool life.
- Very good temperature resistance due to Co content.

HSS HICOAT HC-FEP type



- HSS countersink that is suitable for universal use on almost all materials.
- Very long tool life thanks to premium HICOAT coating.
- Can also be used without coolants and lubricants.



Countersink tools

HSS conical countersinks

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:

- ❶ Select the material group to be machined.
- ❷ Select the type.
- ❸ Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:

- ❹ Select the required diameter.
- ❺ The cutting speed range and the diameter determine the recommended rotational speed range.

❶ Material group		❷ Type	❸ Cutting speed
Steel, cast steel	Non-alloyed construction steels up to 700 N/mm ²	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, alloyed steels	15–20 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	
Stainless steel (INOX)	Alloyed construction steels over 700 N/mm ²	Tool steels, tempering steels, alloyed steels, cast steel	10–15 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	
Non-ferrous metals	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	10–15 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	
Cast iron	Soft non-ferrous metals	Aluminium alloys, brass, copper, zinc	15–20 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	
Plastics, other materials	Hard non-ferrous metals	Bronze, titaniumum/titanium alloys, hard aluminium alloys (high Si content)	10–20 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black cast iron EN-GJMB (GTS)	10 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood		10–15 m/min
		HSS	
		HSSE Co5 HICOAT HC-FEP	

Example:

Conical countersink
KES HSS DIN 335 90°,
countersink dia. 28.0 mm.
Steels up to 700 N/mm².
Cutting speed: 15–20 m/min

Rotational speed range: 170–220 RPM

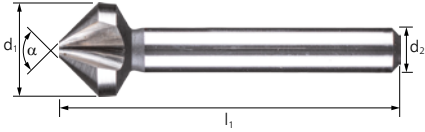
❹ Countersink dia. [mm]	❺ Cutting speeds [m/min]		
	10	15	20
	Rotational speeds [RPM]		
4.30	800	1,200	1,600
5.00	640	960	1,280
5.30	640	960	1,280
6.00	530	800	1,060
6.30	530	800	1,060
7.00	460	680	920
8.00	400	600	800
8.30	400	600	800
10.00	320	470	640
10.40	320	470	640
11.50	280	420	560
12.40	260	390	520
12.50	260	390	520
15.00	210	320	420
16.00	200	300	390
16.50	190	290	380
19.00	170	260	340
20.00	160	240	320
20.50	150	230	300
23.00	140	210	280
25.00	130	200	260
28.00	110	170	220
31.00	100	150	200
37.00	90	140	180
40.00	80	120	160

Countersink tools

HSS conical countersinks



HSS DIN 335 C 90° conical countersinks

High-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for all common materials such as steel, cast steel and non-ferrous metals. To ensure reliable torque transmission, conical countersinks have a three-surface shaft from a countersink diameter of 28 mm.



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

d ₁ [mm]	d ₂ [mm]	l ₁ [mm]	α	Type HSS		Description
				 EAN 4007220		
4.30	4.00	40	90°	164617	1	KES HSS DIN 335 C90° 4,3
5.00	4.00	40	90°	166352	1	KES HSS DIN 335 C90° 5,0
5.30	4.00	40	90°	166369	1	KES HSS DIN 335 C90° 5,3
6.00	5.00	45	90°	166376	1	KES HSS DIN 335 C90° 6,0
6.30	5.00	45	90°	166390	1	KES HSS DIN 335 C90° 6,3
7.00	6.00	50	90°	166406	1	KES HSS DIN 335 C90° 7,0
8.00	6.00	50	90°	166468	1	KES HSS DIN 335 C90° 8,0
8.30	6.00	50	90°	166475	1	KES HSS DIN 335 C90° 8,3
10.00	6.00	50	90°	166505	1	KES HSS DIN 335 C90° 10,0
10.40	6.00	50	90°	166598	1	KES HSS DIN 335 C90° 10,4
11.50	8.00	56	90°	166666	1	KES HSS DIN 335 C90° 11,5
12.40	8.00	56	90°	166673	1	KES HSS DIN 335 C90° 12,4
15.00	10.00	60	90°	166703	1	KES HSS DIN 335 C90° 15,0
16.50	10.00	60	90°	166765	1	KES HSS DIN 335 C90° 16,5
19.00	10.00	63	90°	166772	1	KES HSS DIN 335 C90° 19,0
20.50	10.00	63	90°	166789	1	KES HSS DIN 335 C90° 20,5
23.00	10.00	67	90°	166833	1	KES HSS DIN 335 C90° 23,0
25.00	10.00	67	90°	166840	1	KES HSS DIN 335 C90° 25,0
28.00	12.00	71	90°	166857	1	KES HSS DIN 335 C90° 28,0
31.00	12.00	71	90°	166864	1	KES HSS DIN 335 C90° 31,0
37.00	12.00	90	90°	166871	1	KES HSS DIN 335 C90° 37,0
40.00	15.00	80	90°	166918	1	KES HSS DIN 335 C90° 40,0

HSS DIN 335 C 90° conical countersink sets

The sets include high-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for all common materials such as steel, cast steel and non-ferrous metals. The sturdy plastic box protects the tools from dirt and damage.



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

Ordering notes:

- Select the set depending on the number of types required.



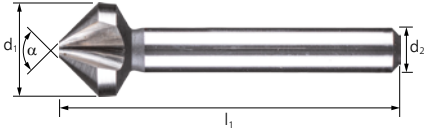
Contents [pcs.]	Contents tool dia. [mm]	Type HSS		Description
		 EAN 4007220		
3	6.3 / 10.4 / 16.5	168523	1	SET KES HSS DIN 335 C90° 3
5	6.3 / 10.4 / 16.5 / 20.5 / 25.0	168585	1	SET KES HSS DIN 335 C90° 5
6	6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5	168691	1	SET KES HSS DIN 335 C90° 6

Countersink tools

HSS conical countersinks



HSSE DIN 335 C 90° conical countersinks, Co5 type

High-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for particularly tough and hard materials such as alloyed and high-strength steel and stainless steel (INOX). To ensure reliable torque transmission, conical countersinks have a three-surface shaft from a countersink diameter of 28 mm. Long tool life and temperature-resistant type due to Co content.



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

d ₁ [mm]	d ₂ [mm]	l ₁ [mm]	α	Type		Description
				HSSE		
						
				EAN 4007220		
4.30	4.00	40	90°	167250	1	KES HSSE DIN 335 C90° 4,3
5.00	4.00	40	90°	167335	1	KES HSSE DIN 335 C90° 5,0
5.30	4.00	40	90°	167359	1	KES HSSE DIN 335 C90° 5,3
6.00	5.00	45	90°	167373	1	KES HSSE DIN 335 C90° 6,0
6.30	5.00	45	90°	167397	1	KES HSSE DIN 335 C90° 6,3
8.00	6.00	50	90°	167427	1	KES HSSE DIN 335 C90° 8,0
8.30	6.00	50	90°	167434	1	KES HSSE DIN 335 C90° 8,3
10.00	6.00	50	90°	167458	1	KES HSSE DIN 335 C90° 10,0
10.40	6.00	50	90°	167472	1	KES HSSE DIN 335 C90° 10,4
11.50	8.00	56	90°	167687	1	KES HSSE DIN 335 C90° 11,5
12.40	8.00	56	90°	168004	1	KES HSSE DIN 335 C90° 12,4
15.00	10.00	60	90°	168035	1	KES HSSE DIN 335 C90° 15,0
16.50	10.00	60	90°	168134	1	KES HSSE DIN 335 C90° 16,5
19.00	10.00	63	90°	168219	1	KES HSSE DIN 335 C90° 19,0
20.50	10.00	63	90°	168226	1	KES HSSE DIN 335 C90° 20,5
23.00	10.00	67	90°	168233	1	KES HSSE DIN 335 C90° 23,0
25.00	10.00	67	90°	168240	1	KES HSSE DIN 335 C90° 25,0
28.00	12.00	71	90°	168257	1	KES HSSE DIN 335 C90° 28,0
31.00	12.00	71	90°	168264	1	KES HSSE DIN 335 C90° 31,0

HSSE DIN 335 C 90° conical countersink sets, Co5 type

The sets include high-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for particularly tough and hard materials such as alloyed and high-strength steel and stainless steel (INOX). Long tool life and temperature-resistant type due to Co content. The sturdy plastic box protects the tools from dirt and damage.





Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

Ordering notes:

- Select the set depending on the number of types required.

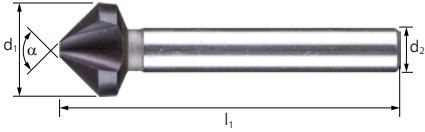
Contents [pcs.]	Contents tool dia. [mm]	Type		Description
		HSSE		
				
		EAN 4007220		
3	6.3 / 10.4 / 16.5	168714	1	SET KES HSSE DIN 335 C90° 3
5	6.3 / 10.4 / 16.5 / 20.5 / 25.0	168738	1	SET KES HSSE DIN 335 C90° 5
6	6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5	168745	1	SET KES HSSE DIN 335 C90° 6

Countersink tools

HSS conical countersinks with HICOAT coating HC-FEP



HSS DIN 335 C 90° conical countersinks with HICOAT coating HC-FEP

High-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for particularly tough and hard materials such as alloyed and high-strength steel and stainless steel. To ensure reliable torque transmission, conical countersinks have a three-surface shaft from a countersink diameter of 28 mm. Thanks to the HICOAT coating HC-FEP, they have high hardness and wear resistance. They are very temperature resistant and have a particularly long tool life. They can also be used in a higher cutting speed range and without coolants and lubricants.



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

d ₁ [mm]	d ₂ [mm]	l ₁ [mm]	α	Type		Description
				HC-FEP  EAN 4007220		
6.30	5.00	45	90°	073728	1	KES HSS DIN 335 C90° HC-FEP 6,3
8.30	6.00	50	90°	168295	1	KES HSS DIN 335 C90° HC-FEP 8,3
10.40	6.00	50	90°	168301	1	KES HSS DIN 335 C90° HC-FEP 10,4
12.40	8.00	56	90°	168318	1	KES HSS DIN 335 C90° HC-FEP 12,4
15.00	10.00	60	90°	168325	1	KES HSS DIN 335 C90° HC-FEP 15,0
16.50	10.00	60	90°	168356	1	KES HSS DIN 335 C90° HC-FEP 16,5
19.00	10.00	63	90°	168387	1	KES HSS DIN 335 C90° HC-FEP 19,0
20.50	10.00	63	90°	168417	1	KES HSS DIN 335 C90° HC-FEP 20,5
23.00	10.00	67	90°	168455	1	KES HSS DIN 335 C90° HC-FEP 23,0
25.00	10.00	67	90°	168462	1	KES HSS DIN 335 C90° HC-FEP 25,0
31.00	12.00	71	90°	168479	1	KES HSS DIN 335 C90° HC-FEP 31,0

HSS DIN 335 C 90° conical countersink sets with HICOAT coating HC-FEP

The sets include high-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for particularly tough and hard materials such as alloyed and high-strength steel and stainless steel (INOX). Thanks to the HICOAT coating HC-FEP, they have high hardness and wear resistance. They are very temperature resistant and have a particularly long tool life. They can also be used in a higher cutting speed range and without coolants and lubricants. The sturdy plastic box protects the tools from dirt and damage.





Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

Ordering notes:

- Select the set depending on the number of types required.

Contents [pcs.]	Contents tool dia. [mm]	Type		Description
		HC-FEP  EAN 4007220		
3	6.3 / 10.4 / 16.5	168752	1	SET KES HSS DIN 335 C90° 3 HC-FEP
5	6.3 / 10.4 / 16.5 / 20.5 / 25.0	168769	1	SET KES HSS DIN 335 C90° 5 HC-FEP
6	6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5	168776	1	SET KES HSS DIN 335 C90° 6 HC-FEP

Countersink tools

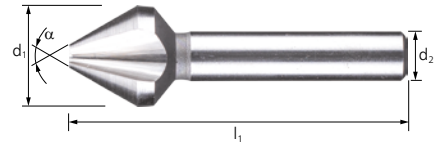
HSS conical countersinks



HSS DIN 334 C 60° conical countersinks

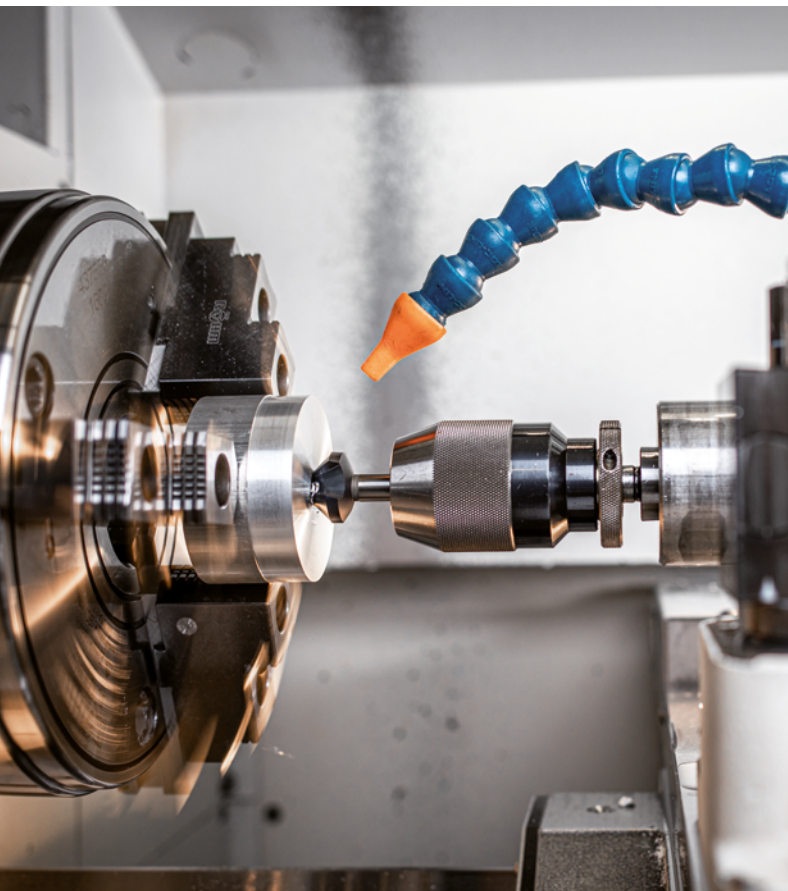
High-performance countersink tools with a countersink angle of 60° for deburring all common materials such as steel, cast steel and non-ferrous metals.

Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials



d ₁ [mm]	d ₂ [mm]	l ₁ [mm]	α	Type		Description
				HSS		
						
				EAN 4007220		
6.30	5.00	45	60°	168783	1	KES HSS DIN 334 C60° 6,3
8.00	6.00	50	60°	168790	1	KES HSS DIN 334 C60° 8,0
10.00	6.00	50	60°	168806	1	KES HSS DIN 334 C60° 10,0
12.50	8.00	56	60°	168813	1	KES HSS DIN 334 C60° 12,5
16.00	10.00	63	60°	168837	1	KES HSS DIN 334 C60° 16,0
20.00	10.00	67	60°	168844	1	KES HSS DIN 334 C60° 20,0
25.00	10.00	71	60°	168851	1	KES HSS DIN 334 C60° 25,0



Countersink tools

HSS flat countersinks

High-performance flat countersinks made from HSS according to DIN 373 for countersinking cylinder head and hexagon screws as well as nuts. Flat countersinks have a cylindrical design. The cylindrical pilot in the relevant quality grades of fine, medium or tapping hole ensures coaxial alignment of the countersink to the bore.

Advantages:

- Very high stock removal rate.
- Optimum chip removal.
- Burr-free results.
- Long tool life.
- Smooth operation.
- Good surface quality.

Materials that can be worked:

- Steel
- Cast steel
- Stainless steel (INOX)
- Non-ferrous metals
- Cast iron
- Plastics
- Other materials

Recommendations for use:

- Please observe the recommended rotational speed.

Matching tool drives:

- Power drills
- Column drills
- Machine tools
- Robot

Applications:

- Produce flat countersinks in the quality grades fine (F), medium (M) and tapping hole (GKL).

Quality grade fine (F)



- Flat countersinks with the quality grade of fine are suitable for producing flat countersinks at through holes or blind holes in the tolerance range of fine with high mounting accuracy.

Quality grade medium (M)



- Flat countersinks with the quality grade medium are suitable for producing flat countersinks at through holes or blind holes in the tolerance range of medium with extended mounting accuracy.

For tapping hole (GKL)



- Flat countersinks for the tapping hole are suitable for producing flat countersinks at core holes for female threads.



Countersink tools

HSS flat countersinks

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:

- ❶ Select the material group to be machined.
- ❷ Select the type.
- ❸ Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:

- ❹ Select the required diameter.
- ❺ The cutting speed range and the diameter determine the recommended rotational speed range.

❶ Material group		❷ Type		❸ Cutting speed	
Steel, cast steel	Steels up to 700 N/mm ²	Construction steels, carbon steels, tool steels, alloyed and non-alloyed steels, case-hardened steels, cast steel	fine (F)	10–20 m/min	
			medium (M)		
			tapping hole (GKL)		
	Steels over 700 N/mm ²		fine (F)	10–15 m/min	
			medium (M)		
			tapping hole (GKL)		
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	fine (F)	10–15 m/min	
			medium (M)		
			tapping hole (GKL)		
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys, brass, copper, zinc	fine (F)	15–20 m/min	
			medium (M)		
			tapping hole (GKL)		
	Hard non-ferrous metals		Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	fine (F)	10–20 m/min
				medium (M)	
				tapping hole (GKL)	
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black cast iron EN-GJMB (GTS)	fine (F)	10 m/min	
			medium (M)		
			tapping hole (GKL)		
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood		fine (F)	10–15 m/min	
			medium (M)		
			tapping hole (GKL)		

Example:

Flat countersink
FLS HSS DIN 373 15,0 F,
Flat countersink dia. 15 mm.
Steels up to 700 N/mm².
Cutting speed: 10–20 m/min

Rotational speed range: 220–440 RPM

❹ Countersink dia. [mm]	❺ Cutting speeds [m/min]		
	10	15	20
	Rotational speeds [RPM]		
6.00	530	795	1,060
8.00	400	600	800
10.00	320	480	640
11.00	290	435	580
15.00	220	330	440
18.00	180	270	360
20.00	160	240	320

Countersink tools

HSS flat countersinks



HSS DIN 373 flat countersink quality grade fine for through hole

High-performance countersink tools for through holes with the quality grade fine (F) according to ISO 273.



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

d ₁ [mm]	d ₂ [mm]	d ₃ [mm]	l ₁ [mm]	Type		Description
				F		
						
				EAN 4007220		
6	5	3.2	71	168868	1	FLS HSS DIN 373 6,0 F
8	5	4.3	71	168912	1	FLS HSS DIN 373 8,0 F
10	8	5.3	80	168929	1	FLS HSS DIN 373 10,0 F
11	8	6.4	80	168936	1	FLS HSS DIN 373 11,0 F
15	12.5	8.4	100	168943	1	FLS HSS DIN 373 15,0 F
18	12.5	10.5	100	168950	1	FLS HSS DIN 373 18,0 F
20	12.5	13.0	100	168981	1	FLS HSS DIN 373 20,0 F



HSS DIN 373 flat countersink quality grade medium for through hole

High-performance countersink tools for through holes with the quality grade medium (M) according to ISO 273.



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

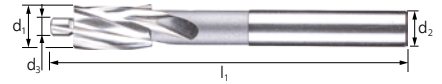
d ₁ [mm]	d ₂ [mm]	d ₃ [mm]	l ₁ [mm]	Type		Description
				M		
						
				EAN 4007220		
6	5	3.4	71	169025	1	FLS HSS DIN 373 6,0 M
8	5	4.5	71	169087	1	FLS HSS DIN 373 8,0 M
10	8	5.5	80	169100	1	FLS HSS DIN 373 10,0 M
11	8	6.6	80	169124	1	FLS HSS DIN 373 11,0 M
15	12.5	9.0	100	169155	1	FLS HSS DIN 373 15,0 M
18	12.5	11.0	100	169162	1	FLS HSS DIN 373 18,0 M
20	12.5	13.5	100	169179	1	FLS HSS DIN 373 20,0 M

Countersink tools

HSS flat countersinks



HSS DIN 373 flat countersinks for tapping hole

High performance countersink tools with guide pilots for the tapping hole (GKL).



Materials that can be worked:

- steel, cast steel, stainless steel (INOX), non-ferrous metals, cast iron, plastics, other materials

d ₁ [mm]	d ₂ [mm]	d ₃ [mm]	l ₁ [mm]	Type		Description
				GKL		
						
				EAN 4007220		
6	5.0	2.5	71	169186	1	FLS HSS DIN 373 6,0 GKL
8	5.0	3.3	71	169193	1	FLS HSS DIN 373 8,0 GKL
10	8.0	4.2	80	169209	1	FLS HSS DIN 373 10,0 GKL
11	8.0	5.0	80	169216	1	FLS HSS DIN 373 11,0 GKL
15	12.5	6.8	100	169223	1	FLS HSS DIN 373 15,0 GKL
18	12.5	8.5	100	169278	1	FLS HSS DIN 373 18,0 GKL
20	12.5	10.2	100	169308	1	FLS HSS DIN 373 20,0 GKL



Countersink tools

TC ground contact countersinks

PFERD produces TC ground contact countersinks flexibly and precisely according to the customer's specifications. They are used to produce precisely circular ground contact points. Compared to the use of brushes, not only are precise ground contact points achieved, but also high surface qualities for optimum conductivity. Thanks to their depth gauge, the stock removal is predefined extremely precisely. The tools meet the guidelines from well-known manufacturers from aircraft construction since they were developed together with aircraft manufacturers in order to be used in the manufacture and maintenance of airplanes and helicopters.

Contact us in order to develop your individual tool solution together with us. Our worldwide sales addresses and contact details can be found at www.pferd.com.



Advantages:

- Special solution for producing precisely defined circular ground contact points.
- Low contact resistance/top conductivity due to milled surface instead of brushed surface and chips instead of dust.
- Precisely defined stock removal thanks to depth gauge.
- Good dimensional accuracy compared to the brush.
- Extremely high tool life with consistent quality from the first to the last use.
- Flexible tool design according to the customer's wishes with close tolerances.
- Coordinated drive and tool from a single source.

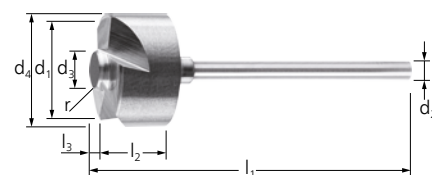
Materials that can be worked:

- Aluminium
- Painted or otherwise treated surfaces

Recommendations for use:

- Use the TC ground contact countersinks with a rotational speed of 400 RPM.

Abbreviation	Description	Value
Freely selectable parameters		
d_1	Ground point dia.	8 mm to 20 mm
d_3	Pilot dia.	> 2.5 mm
Fixed parameters		
d_2	Shank dia.	3 mm
d_4	Outer dia.	$d_1 + 2$ mm
r	Radius	0.5 mm
l_1	Total length	50 mm
l_2	Countersink length	10 mm
l_3	Pilot length	1.5 mm



Matching tool drives:

① TM-B DEB 1/004 45° S3

Rotational speed: max. 400 RPM
Power: 2 watts



② TM-B DEB 1/004 90° S3

Rotational speed: max. 400 RPM
Power: 2 watts



③ TM-B DEB 1/004 SP3

Rotational speed: max. 400 RPM
Power: 2 watts



SP = keyless fast clamping system
S = changing tools with 2 keys

Description	Art. no.	EAN 4007220	Rotational speed [RPM]	Set/ Hand- piece	Power output [watts]	Secondary voltage [Volt]	Collet group	Net weight [kg]
TM-B DEB 1/004 SET 45° S3	87501526	140963	400	①	2	3.7	18	1.65
TM-B DEB 1/004 SET 90° S3	87501527	141106	400	②	2	3.7	18	1.65
TM-B DEB 1/004 SET SP3	87501528	141441	400	③	2	3.7	20	1.65

Contact us for further information on these special tool drives.
Our worldwide sales addresses and contact data can be found at www.pferd.com.