

## Power-Phoenix Hochleistungsbohrer

Power-Phoenix foret à grand rendement

Power-Phoenix punta ad alto rendimento

Power-Phoenix high performance drill

**SPHINX**

 **Swissmade tools**

**Your partner**





# Bohrerauswahl

Selection des forets

Scelta delle punte

Drill selection

- ✓ hervorragend/ outstanding
- geeignet/ able
- ✗ nicht geeignet/ unable

	Artikel / Article	Durchmesser-Bereich / Dia range	Abstufung / Increments	Merkmale / Characteristics	Nutzlänge / Cutting length	Schneidenzahl / No. of cutting edges Führungsfasen / margins	VHM / SC	Kühlmittelzufuhr / coolant supply	P	M	K	S	N	H	Seite / Page
									Stahl / Steel	Rostfreier Stahl / Stainless Steel	Gusseisen / Cast iron	Superlegierungen / Ni / Ti alloys	Nichteisenmetalle / Nonferrous metals	Gehärteter Stahl / Hardened steel	
<b>Power-Phoenix Hochleistungsbohrer / Power-Phoenix high performance drill</b>															
	50909	1.00 – 12.70	0.10	Polish	9xD	2	X	Int.	✓	✓	✓	✗	•	✗	4
	50912	1.00 – 12.70	0.10	Polish	12xD	2+2	X	Int.	✓	✓	✓	✗	•	✗	5
	50916	1.00 – 12.70	0.10	Polish	16xD	2+2	X	Int.	✓	✓	✓	✗	•	✗	6
	50920	3.00 – 10.00		Polish	20xD	2+2	X	Int.	✓	✓	✓	✗	•	✗	7
	50925	3.00 – 10.00		Polish	25xD	2+2	X	Int.	✓	✓	✓	✗	•	✗	8
	50930	3.00 – 10.00		Polish	30xD	2+2	X	Int.	✓	✓	✓	✗	•	✗	9

## Materialgruppen

Groupe des matériaux

Gruppi di materiali

Materialgroups

13

## Bearbeitungsverfahren Tieflochbohren, Schritt für Schritt

Procédures d'usinage pour perçage profond, pas à pas

Metodo di lavorazione per foratura profonda, passo per passo

Machining process for deep-hole drilling, step by step

14

## Sonderwerkzeuge, Bohrer Extra-Long und Pilotbohrer

Outils spéciaux, foret Extra-Long et Foret de préperçage

Utensili speciali, punta Extra-Long e Punta per perforo

Special tools, drill Extra-Long and Pilot drill

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# Power-Phoenix Hochleistungsbohrer 9xd Art. 50909

Power-Phoenix foret à grand rendement 9xd  
 Power-Phoenix punta ad alto rendimento 9xd  
 Power-Phoenix high performance drill 9xd

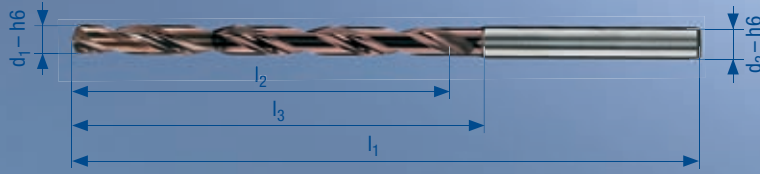
St

EN-GJL  
EN-GJS

Inox

Al

Ti



VHM  
MD/SC

SPHINX  
NORM



Typ  
N

Z  
2



Helica

Vc → S./p. 11

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	9.00	11.00	51	3.00
1.10	9.90	12.00	51	3.00
1.20	10.80	13.00	51	3.00
1.30	11.70	14.00	51	3.00
1.40	12.60	15.00	51	3.00
1.50	13.50	16.50	51	3.00
1.60	14.40	17.50	51	3.00
1.70	15.30	18.50	51	3.00
1.80	16.20	19.00	51	3.00
1.90	17.10	20.00	51	3.00
2.00	18.00	21.00	51	3.00
2.10	18.90	22.00	61	3.00
2.20	19.80	23.00	61	3.00
2.30	20.70	24.00	61	3.00
2.40	21.60	24.50	61	3.00
2.50	22.50	25.50	61	3.00
2.60	23.40	26.50	61	3.00
2.70	24.30	27.50	61	3.00
2.80	25.20	28.00	61	3.00
2.90	26.10	29.00	61	3.00
3.00	27.00	31.00	61	3.00
3.10	27.90	32.00	79	6.00
3.20	28.80	33.00	79	6.00
3.30	29.70	34.00	79	6.00
3.40	30.60	35.00	79	6.00
3.50	31.50	36.50	79	6.00
3.60	32.40	37.50	79	6.00
3.70	33.30	38.50	79	6.00
3.80	34.20	39.00	79	6.00
3.90	35.10	40.00	79	6.00
4.00	36.00	41.00	79	6.00
4.10	36.90	43.00	91	6.00
4.20	37.80	44.00	91	6.00
4.30	38.70	45.00	91	6.00
4.40	39.60	45.50	91	6.00
4.50	40.50	46.50	91	6.00
4.60	41.40	49.50	91	6.00
4.70	42.30	50.50	91	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	43.20	51.00	91	6.00
4.90	44.10	52.00	91	6.00
5.00	45.00	53.00	91	6.00
5.10	45.90	54.00	100	6.00
5.20	46.80	55.00	100	6.00
5.30	47.70	56.00	100	6.00
5.40	48.60	57.00	100	6.00
5.50	49.50	57.50	100	6.00
5.60	50.40	58.50	100	6.00
5.70	51.30	59.50	100	6.00
5.80	52.20	60.00	100	6.00
5.90	53.10	61.00	100	6.00
6.00	54.00	62.00	100	6.00
6.10	54.90	64.00	111	8.00
6.20	55.80	65.00	111	8.00
6.30	56.70	66.00	111	8.00
6.40	57.60	66.50	111	8.00
6.50	58.50	67.50	111	8.00
6.60	59.40	68.50	111	8.00
6.70	60.30	69.50	111	8.00
6.80	61.20	70.00	111	8.00
6.90	62.10	71.00	111	8.00
7.00	63.00	73.00	111	8.00
7.10	63.90	74.00	120	8.00
7.20	64.80	75.00	120	8.00
7.30	65.70	76.00	120	8.00
7.40	66.60	76.50	120	8.00
7.50	67.50	77.50	120	8.00
7.60	68.40	78.50	120	8.00
7.70	69.30	79.50	120	8.00
7.80	70.20	80.00	120	8.00
7.90	82.00	81.00	120	8.00
8.00	72.00	82.00	120	8.00
8.10	72.90	84.00	134	10.00
8.20	73.80	85.00	134	10.00
8.30	74.70	86.00	134	10.00
8.40	75.60	86.50	134	10.00
8.50	76.50	87.50	134	10.00

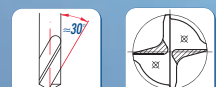
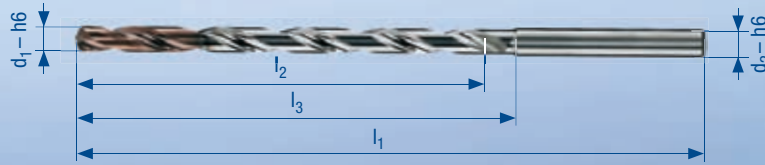
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
8.60	77.40	88.50	134	10.00
8.70	78.30	89.50	134	10.00
8.80	79.20	90.00	134	10.00
8.90	80.10	91.00	134	10.00
9.00	81.00	92.00	134	10.00
9.10	81.90	93.00	144	10.00
9.20	82.80	94.00	144	10.00
9.30	83.70	95.00	144	10.00
9.40	84.60	95.50	144	10.00
9.50	85.50	96.50	144	10.00
9.60	86.40	97.50	144	10.00
9.70	87.30	98.50	144	10.00
9.80	88.20	99.00	144	10.00
9.90	89.10	100.00	144	10.00
10.00	90.00	102.00	144	10.00
10.10	90.90	103.00	159	12.00
10.20	91.80	104.00	159	12.00
10.30	92.70	105.00	159	12.00
10.40	93.60	105.50	159	12.00
10.50	94.50	106.50	159	12.00
10.60	95.40	107.50	159	12.00
10.70	96.30	108.50	159	12.00
10.80	97.20	109.00	159	12.00
10.90	98.10	110.00	159	12.00
11.00	99.00	112.00	159	12.00
11.10	99.90	113.00	169	12.00
11.20	100.80	114.00	169	12.00
11.30	101.70	115.00	169	12.00
11.40	102.60	115.50	169	12.00
11.50	103.50	116.50	169	12.00
11.60	104.40	117.50	169	12.00
11.70	105.30	118.50	169	12.00
11.80	106.20	119.00	169	12.00
11.90	107.10	120.00	169	12.00
12.00	108.00	122.00	169	12.00
12.50	112.50	126.50	179	14.00
12.70	114.30	128.50	179	14.00

# Power-Phoenix Hochleistungsbohrer 12xd Art. 50912

## Power-Phoenix foret à grand rendement 12xd

### Power-Phoenix punta ad alto rendimento 12xd

### Power-Phoenix high performance drill 12xd



Ab  $\varnothing$  2.00 mm mit 4-Führungsfasen  
 A partir de  $\varnothing$  2.00 mm avec 4 listel  
 A partire da  $\varnothing$  2.00 mm con 4 pattini  
 From  $\varnothing$  2.00 mm with 4 margin

Vc  $\rightarrow$  S./p. 11

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	12.00	14.00	50	3.00
1.10	13.20	15.50	50	3.00
1.20	14.40	16.50	50	3.00
1.30	15.60	17.50	50	3.00
1.40	16.80	19.00	50	3.00
1.50	18.00	21.00	50	3.00
1.60	19.20	22.50	50	3.00
1.70	20.40	23.50	50	3.00
1.80	21.60	24.50	50	3.00
1.90	22.80	26.00	55	3.00
2.00	24.00	27.00	55	3.00
2.10	25.20	28.50	55	3.00
2.20	26.40	29.50	55	3.00
2.30	27.60	30.50	55	3.00
2.40	28.80	32.00	55	3.00
2.50	30.00	33.00	60	3.00
2.60	31.20	34.40	60	3.00
2.70	32.40	35.50	60	3.00
2.80	33.60	36.50	60	3.00
2.90	34.80	38.00	60	3.00
3.00	36.00	40.00	60	3.00
3.10	37.20	41.50	80	6.00
3.20	38.40	42.50	80	6.00
3.30	39.60	43.50	80	6.00
3.40	40.80	45.00	85	6.00
3.50	42.00	47.00	85	6.00
3.60	43.20	48.50	85	6.00
3.70	44.40	49.50	90	6.00
3.80	45.60	50.50	90	6.00
3.90	46.80	52.00	90	6.00
4.00	48.00	53.00	90	6.00
4.10	49.20	55.50	105	6.00
4.20	50.40	56.50	105	6.00
4.30	51.60	57.50	105	6.00
4.40	52.80	59.00	105	6.00
4.50	54.00	60.00	105	6.00
4.60	55.20	63.50	105	6.00
4.70	56.40	64.50	105	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.10	97.20	108.50	162	10.00
8.20	98.40	109.50	162	10.00
8.30	99.60	110.50	162	10.00
8.40	100.80	112.00	162	10.00
8.50	102.00	113.00	162	10.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
8.60	103.20	114.50	162	10.00
8.70	104.40	115.50	162	10.00
8.80	105.60	116.50	162	10.00
8.90	106.80	118.00	162	10.00
9.00	108.00	119.00	162	10.00
9.10	109.20	120.50	175	10.00
9.20	110.40	121.50	175	10.00
9.30	111.60	122.50	175	10.00
9.40	112.80	124.00	175	10.00
9.50	114.00	125.00	175	10.00
9.60	115.20	126.50	175	10.00
9.70	116.40	127.50	175	10.00
9.80	117.60	128.50	175	10.00
9.90	118.80	130.00	175	10.00
10.00	120.00	132.00	175	10.00
10.10	121.20	133.50	193	12.00
10.20	122.40	134.50	193	12.00
10.30	123.60	135.50	193	12.00
10.40	124.80	137.00	193	12.00
10.50	126.00	138.00	193	12.00
10.60	127.20	139.50	193	12.00
10.70	128.40	140.50	193	12.00
10.80	129.60	141.50	193	12.00
10.90	130.80	143.00	193	12.00
11.00	132.00	145.00	193	12.00
11.10	133.20	146.50	205	12.00
11.20	134.40	147.50	205	12.00
11.30	135.60	148.50	205	12.00
11.40	136.80	150.00	205	12.00
11.50	138.00	151.00	205	12.00
11.60	139.20	152.50	205	12.00
11.70	140.40	153.50	205	12.00
11.80	141.60	154.50	205	12.00
11.90	142.80	156.00	205	12.00
12.00	144.00	158.00	205	12.00
12.50	150.00	164.00	218	14.00
12.70	152.40	166.50	218	14.00

# Power-Phoenix Hochleistungsbohrer 16xd Art. 50916

## Power-Phoenix foret à grand rendement 16xd

## Power-Phoenix punta ad alto rendimento 16xd

## Power-Phoenix high performance drill 16xd

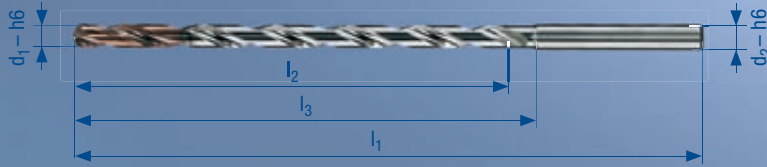
St

EN-GJL  
EN-GJS

Inox

Al

Ti



VHM  
MD/SC

SPHINX  
NORM



Typ  
N

Z  
2



Helica

Ab  $\varnothing$  2.00 mm mit 4-Führungsfasen  
A partir de  $\varnothing$  2.00 mm avec 4 listel  
A partire da  $\varnothing$  2.00 mm con 4 pattini  
From  $\varnothing$  2.00 mm with 4 margin

Vc  $\rightarrow$  S./p. 11

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.00	16.00	18.00	65	3.00
1.10	17.60	19.50	65	3.00
1.20	19.20	21.00	65	3.00
1.30	20.80	23.00	65	3.00
1.40	22.40	24.50	65	3.00
1.50	24.00	27.00	65	3.00
1.60	25.60	28.50	65	3.00
1.70	27.20	30.00	65	3.00
1.80	28.80	32.00	65	3.00
1.90	30.40	33.50	65	3.00
2.00	32.00	35.00	65	3.00
2.10	33.60	36.50	82	3.00
2.20	35.20	38.00	82	3.00
2.30	36.80	40.00	82	3.00
2.40	38.40	41.50	82	3.00
2.50	40.00	43.00	82	3.00
2.60	41.60	44.50	82	3.00
2.70	43.20	46.00	82	3.00
2.80	44.80	48.00	82	3.00
2.90	46.40	49.50	82	3.00
3.00	48.00	52.00	82	3.00
3.10	49.60	53.50	107	6.00
3.20	51.20	55.00	107	6.00
3.30	52.80	57.00	107	6.00
3.40	54.40	58.50	107	6.00
3.50	56.00	61.00	107	6.00
3.60	57.60	62.50	107	6.00
3.70	59.20	64.00	107	6.00
3.80	60.80	66.00	107	6.00
3.90	62.40	67.50	107	6.00
4.00	64.00	69.00	107	6.00
4.10	65.60	71.50	126	6.00
4.20	67.20	73.00	126	6.00
4.30	68.80	75.00	126	6.00
4.40	70.40	76.50	126	6.00
4.50	72.00	78.00	126	6.00
4.60	73.60	81.50	126	6.00
4.70	75.20	83.00	126	6.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00
5.80	92.80	101.00	142	6.00
5.90	94.40	102.50	142	6.00
6.00	96.00	104.00	142	6.00
6.10	97.60	106.50	160	8.00
6.20	99.20	108.00	160	8.00
6.30	100.80	110.00	160	8.00
6.40	102.40	111.50	160	8.00
6.50	104.00	113.00	160	8.00
6.60	105.60	114.50	160	8.00
6.70	107.20	116.00	160	8.00
6.80	108.80	118.00	160	8.00
6.90	110.40	119.50	160	8.00
7.00	112.00	122.00	160	8.00
7.10	113.60	123.50	176	8.00
7.20	115.20	125.00	176	8.00
7.30	116.80	127.00	176	8.00
7.40	118.40	128.50	176	8.00
7.50	120.00	130.00	176	8.00
7.60	121.60	131.50	176	8.00
7.70	123.20	133.00	176	8.00
7.80	124.80	135.00	176	8.00
7.90	126.40	136.50	176	8.00
8.00	128.00	138.00	176	8.00
8.10	129.60	140.50	197	10.00
8.20	131.20	142.00	197	10.00
8.30	132.80	144.00	197	10.00
8.40	134.40	145.50	197	10.00
8.50	136.00	147.00	197	10.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
8.60	137.60	148.50	197	10.00
8.70	139.20	150.00	197	10.00
8.80	140.80	152.00	197	10.00
8.90	142.40	153.50	197	10.00
9.00	144.00	155.00	197	10.00
9.10	145.60	156.50	214	10.00
9.20	147.20	158.00	214	10.00
9.30	148.80	160.00	214	10.00
9.40	150.40	161.50	214	10.00
9.50	152.00	163.00	214	10.00
9.60	153.60	164.50	214	10.00
9.70	155.20	166.00	214	10.00
9.80	156.80	168.00	214	10.00
9.90	158.40	169.50	214	10.00
10.00	160.00	172.00	214	10.00
10.10	161.60	173.50	236	12.00
10.20	163.20	175.00	236	12.00
10.30	164.80	177.00	236	12.00
10.40	166.40	178.50	236	12.00
10.50	168.00	180.00	236	12.00
10.60	169.60	181.50	236	12.00
10.70	171.20	183.00	236	12.00
10.80	172.80	185.00	236	12.00
10.90	174.40	186.50	236	12.00
11.00	176.00	189.00	236	12.00
11.10	177.60	190.50	253	12.00
11.20	179.20	192.00	253	12.00
11.30	180.80	194.00	253	12.00
11.40	182.40	195.50	253	12.00
11.50	184.00	197.00	253	12.00
11.60	185.60	198.50	253	12.00
11.70	187.20	200.00	253	12.00
11.80	188.80	202.00	253	12.00
11.90	190.40	203.50	253	12.00
12.00	192.00	206.00	253	12.00
12.50	200.00	214.00	270	14.00
12.70	203.20	217.00	270	14.00

# Power-Phoenix Hochleistungsbohrer 20xd Art. 50920

Power-Phoenix foret à grand rendement 20xd  
 Power-Phoenix punta ad alto rendimento 20xd  
 Power-Phoenix high performance drill 20xd

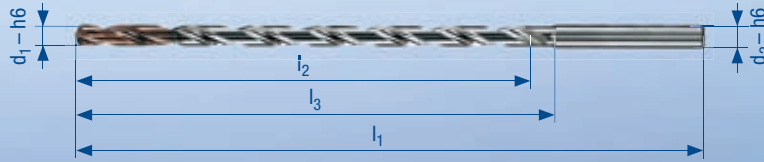
St

EN-GJL  
EN-GJS

Inox

Al

Ti



VHM  
MD/SC

SPHINX  
NORM



Typ  
N

Z  
2



Helica

Anwendung }  
 Application } S./p. 13  
 Applicazione }  
 Application }

Vc → S./p. 12

$d_1$	$l_2$	$l_3$	$l_1$	$d_2$
mm	mm	mm	mm	mm
3.00	60.00	66.00	105	6.00
3.30	66.00	72.00	110	6.00
4.00	80.00	90.00	128	6.00
4.20	84.00	94.00	132	6.00
5.00	100.00	102.00	140	6.00
6.00	120.00	133.00	171	6.00
6.80	136.00	150.00	190	8.00
7.00	140.00	155.00	195	8.00
8.00	160.00	176.00	216	8.00
8.50	170.00	188.00	233	10.00
9.00	180.00	200.00	245	10.00
10.00	200.00	222.00	267	10.00



# Power-Phoenix Hochleistungsbohrer 25xd Art. 50925

Power-Phoenix foret à grand rendement 25xd  
 Power-Phoenix punta ad alto rendimento 25xd  
 Power-Phoenix high performance drill 25xd

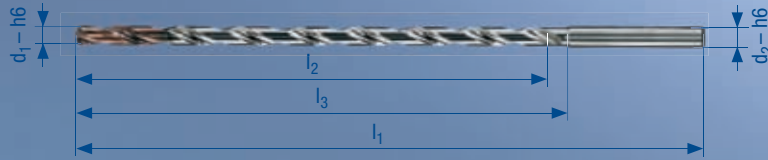
St

EN-GJL  
EN-GJS

Inox

Al

Ti



VHM  
MD/SC

SPHINX  
NORM



Typ  
N

Z  
2



Helica

Anwendung  
Application  
Applicazione  
Application } S./p. 13

Vc → S./p. 12

$d_1$ mm	$l_2$ mm	$l_3$ mm	$l_1$ mm	$d_2$ mm
3.00	75.00	81.00	120	6.00
3.30	83.00	89.00	125	6.00
4.00	100.00	110.00	148	6.00
4.20	105.00	115.00	153	6.00
5.00	125.00	127.00	165	6.00
6.00	150.00	163.00	201	6.00
6.80	170.00	184.00	224	8.00
7.00	175.00	190.00	230	8.00
8.00	200.00	216.00	256	8.00
8.50	213.00	231.00	276	10.00
9.00	225.00	245.00	290	10.00
10.00	250.00	272.00	317	10.00



# Power-Phoenix Hochleistungsbohrer 30xd Art. 50930

Power-Phoenix foret à grand rendement 30xd  
 Power-Phoenix punta ad alto rendimento 30xd  
 Power-Phoenix high performance drill 30xd

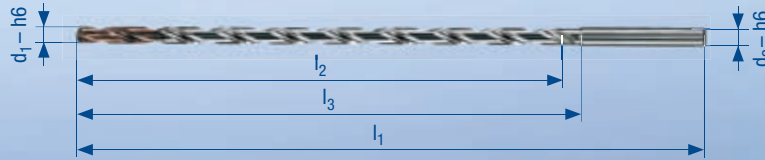
St

EN-GJL  
EN-GJS

Inox

Al

Ti



VHM  
MD/SC

SPHINX  
NORM



Typ  
N

Z  
2



Helica

Anwendung }  
 Application } S./p. 13  
 Applicazione }  
 Application }

Vc → S./p. 12

$d_1$	$l_2$	$l_3$	$l_1$	$d_2$
mm	mm	mm	mm	mm
3.00	90.00	96.00	135	6.00
3.30	99.00	105.00	143	6.00
4.00	120.00	130.00	168	6.00
4.20	126.00	136.00	174	6.00
5.00	150.00	162.00	200	6.00
6.00	180.00	193.00	231	6.00
6.80	204.00	218.00	258	8.00
7.00	210.00	225.00	265	8.00
8.00	240.00	256.00	296	8.00
8.50	255.00	273.00	318	10.00
9.00	270.00	290.00	335	10.00
10.00	285.00	300.00	345	10.00



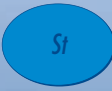
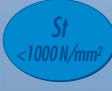
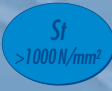




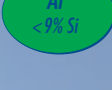
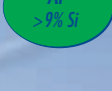

# Schnittdaten

## Données de coupe


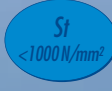
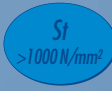




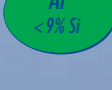
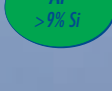

## Parametri di lavoro

## Cutting data

### Art. 50909/50912

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.4	120 – 160	0.04 – 0.08
	2.5 – 5.0	120 – 160	0.06 – 0.15
	5.1 – 8.0	120 – 160	0.13 – 0.22
	8.1 – 12.7	120 – 160	0.18 – 0.30
	1.0 – 2.4	110 – 150	0.04 – 0.08
	2.5 – 5.0	110 – 150	0.06 – 0.15
	5.1 – 8.0	110 – 150	0.13 – 0.22
	8.1 – 12.7	110 – 150	0.20 – 0.30
	1.0 – 2.4	100 – 140	0.03 – 0.07
	2.5 – 5.0	100 – 140	0.05 – 0.13
	5.1 – 8.0	100 – 140	0.12 – 0.19
	8.1 – 12.7	100 – 140	0.17 – 0.26
	1.0 – 2.4	80 – 120	0.01 – 0.05
	2.5 – 5.0	80 – 120	0.05 – 0.12
	5.1 – 8.0	80 – 120	0.08 – 0.16
	8.1 – 12.7	80 – 120	0.14 – 0.22
	1.0 – 2.4	70 – 110	0.01 – 0.05
	2.5 – 5.0	70 – 110	0.05 – 0.12
	5.1 – 8.0	70 – 110	0.08 – 0.16
	8.1 – 12.7	70 – 110	0.14 – 0.22
	1.0 – 2.4	150 – 190	0.05 – 0.10
	2.5 – 5.0	150 – 190	0.08 – 0.23
	5.1 – 8.0	150 – 190	0.21 – 0.32
	8.1 – 12.7	150 – 190	0.30 – 0.40
	1.0 – 2.4	130 – 190	0.04 – 0.08
	2.5 – 5.0	130 – 190	0.08 – 0.18
	5.1 – 8.0	130 – 190	0.18 – 0.28
	8.1 – 12.7	130 – 190	0.28 – 0.35
	1.0 – 2.4	150 – 190	0.04 – 0.13
	2.5 – 5.0	150 – 190	0.11 – 0.26
	5.1 – 8.0	150 – 190	0.23 – 0.36
	8.1 – 12.7	150 – 190	0.30 – 0.45
	1.0 – 2.4	200 – 240	0.04 – 0.14
	2.5 – 5.0	200 – 240	0.13 – 0.28
	5.1 – 8.0	200 – 240	0.26 – 0.38
	8.1 – 12.7	200 – 240	0.30 – 0.48
	1.0 – 2.4	40 – 70	0.005 – 0.03
	2.5 – 5.0	40 – 70	0.025 – 0.04
	5.1 – 8.0	40 – 70	0.035 – 0.06
	8.1 – 12.7	40 – 70	0.050 – 0.07

### Art. 50916

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.4	70 – 130	0.04 – 0.06
	2.5 – 5.0	70 – 130	0.06 – 0.12
	5.1 – 8.0	70 – 130	0.12 – 0.25
	8.1 – 12.7	70 – 130	0.25 – 0.40
	1.0 – 2.4	60 – 120	0.03 – 0.05
	2.5 – 5.0	60 – 120	0.05 – 0.10
	5.1 – 8.0	60 – 120	0.10 – 0.22
	8.1 – 12.7	60 – 120	0.22 – 0.35
	1.0 – 2.4	60 – 100	0.03 – 0.05
	2.5 – 5.0	60 – 100	0.05 – 0.09
	5.1 – 8.0	60 – 100	0.09 – 0.20
	8.1 – 12.7	60 – 100	0.20 – 0.30
	1.0 – 2.4	50 – 70	0.03 – 0.05
	2.5 – 5.0	50 – 70	0.05 – 0.09
	5.1 – 8.0	50 – 70	0.09 – 0.20
	8.1 – 12.7	50 – 70	0.20 – 0.30
	1.0 – 2.4	35 – 60	0.03 – 0.05
	2.5 – 5.0	35 – 60	0.05 – 0.08
	5.1 – 8.0	35 – 60	0.08 – 0.18
	8.1 – 12.7	35 – 60	0.18 – 0.28
	1.0 – 2.4	80 – 120	0.05 – 0.08
	2.5 – 5.0	80 – 120	0.08 – 0.15
	5.1 – 8.0	80 – 120	0.15 – 0.30
	8.1 – 12.7	80 – 120	0.30 – 0.50
	1.0 – 2.4	60 – 100	0.04 – 0.07
	2.5 – 5.0	60 – 100	0.07 – 0.13
	5.1 – 8.0	60 – 100	0.13 – 0.26
	8.1 – 12.7	60 – 100	0.26 – 0.45
	1.0 – 2.4	100 – 160	0.04 – 0.07
	2.5 – 5.0	100 – 160	0.07 – 0.13
	5.1 – 8.0	100 – 160	0.13 – 0.28
	8.1 – 12.7	100 – 160	0.28 – 0.46
	1.0 – 2.4	110 – 180	0.05 – 0.08
	2.5 – 5.0	110 – 180	0.08 – 0.15
	5.1 – 8.0	110 – 180	0.15 – 0.30
	8.1 – 12.7	110 – 180	0.30 – 0.50
	1.0 – 2.4	30 – 60	0.005 – 0.03
	2.5 – 5.0	30 – 60	0.03 – 0.07
	5.1 – 8.0	30 – 60	0.07 – 0.11
	8.1 – 12.7	30 – 60	0.11 – 0.18

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc. and them may have to be adapted yet.



# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 50920 / 50925 / 50930

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	2.5 – 5.0	70 – 120	0.05 – 0.15
	5.1 – 8.0	70 – 120	0.15 – 0.25
	8.1 – 10.0	70 – 120	0.25 – 0.38
St <1000 N/mm <sup>2</sup>	2.5 – 5.0	70 – 110	0.04 – 0.13
	5.1 – 8.0	70 – 110	0.13 – 0.23
	8.1 – 10.0	70 – 110	0.23 – 0.36
St >1000 N/mm <sup>2</sup>	2.5 – 5.0	60 – 100	0.03 – 0.12
	5.1 – 8.0	60 – 100	0.12 – 0.22
	8.1 – 10.0	60 – 100	0.22 – 0.35
Inox austenit	2.5 – 5.0	40 – 70	0.03 – 0.09
	5.1 – 8.0	40 – 70	0.09 – 0.15
	8.1 – 10.0	40 – 70	0.15 – 0.25
Inox martensit	2.5 – 5.0	35 – 55	0.03 – 0.07
	5.1 – 8.0	35 – 55	0.07 – 0.13
	8.1 – 10.0	35 – 55	0.13 – 0.22
EN-GJL	2.5 – 5.0	70 – 110	0.05 – 0.17
	5.1 – 8.0	70 – 110	0.17 – 0.28
	8.1 – 10.0	70 – 110	0.28 – 0.45
EN-GJS	2.5 – 5.0	60 – 100	0.05 – 0.14
	5.1 – 8.0	60 – 100	0.14 – 0.25
	8.1 – 10.0	60 – 100	0.25 – 0.40
Al <9% Si	2.5 – 5.0	80 – 140	0.05 – 0.15
	5.1 – 8.0	80 – 140	0.15 – 0.25
	8.1 – 10.0	80 – 140	0.25 – 0.35
Al >9% Si	2.5 – 5.0	90 – 150	0.05 – 0.17
	5.1 – 8.0	90 – 150	0.17 – 0.29
	8.1 – 10.0	90 – 150	0.29 – 0.45
Ti	2.5 – 5.0	30 – 50	0.01 – 0.05
	5.1 – 8.0	30 – 50	0.05 – 0.09
	8.1 – 10.0	30 – 50	0.09 – 0.15

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc. and they may have to be adapted yet.



# Materialgruppen

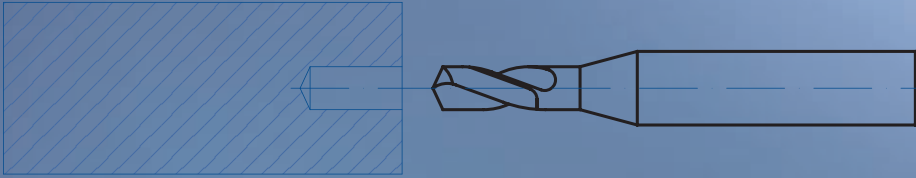
## Material groups

	Material Material	Festigkeit (N/mm <sup>2</sup> ) Härte hardness	Beispiel example
P	<b>unlegierte Stähle, Stahlguss</b> unalloyed steels, steel casting	bis up to <b>700 N/mm<sup>2</sup></b>	St37, St42, C22, GS38, St50, St60, C35, GS52
	<b>legierte Stähle</b> alloyed steels	bis up to <b>700–1000 N/mm<sup>2</sup></b>	St70, C45, GS62, 16MnCr5, 42CrMo4, 90MnCrV8, 100Cr6
		bis / up to <b>1400 N/mm<sup>2</sup></b>	S210Cr12, 34CrAlNi7
M	<b>Inox</b> Stainless steels	bis up to <b>800 N/mm<sup>2</sup></b>	X5CrNi189 (V2A), X10CrNiMoTi 1810
	<b>rost- und säurebeständige Stähle (CR-Ni-legiert)</b> corrosion- and acid-proof steels (Cr-Ni-alloys)	über over <b>800 N/mm<sup>2</sup></b>	G-X40CrNi274
K	<b>Grauguss, legierter Grauguss</b> grey cast iron, alloyed grey cast iron	bis up to <b>200 HB</b>	GG20, GG25, GTS45, GG30, GTW40
		über over <b>250 HB</b>	GG40, GTS70
	<b>Sphäroguss, Temperguss</b> spheroidal graphite, malleable cast iron	bis up to <b>600 N/mm<sup>2</sup></b>	GGG40, GGG50
		bis up to <b>600 N/mm<sup>2</sup></b>	GGG60, GGG70, GGV
N	<b>Alu-Knetlegierungen</b> malleable alu alloy	bis up to <b>350 N/mm<sup>2</sup></b>	Al99.5, AlMg1, AlCuSiPb, G-AlCu5Ni1,5, AlZnMgCu0,5
	<b>Alu-Gusslegierung &lt;10% Si</b> cast alu alloy <10% Si	bis up to <b>300 N/mm<sup>2</sup></b>	G-AlCu4TiMg, G-AlSi7Mg, G-AlSi9Mg, G-AlSi10Mg, G-AlSi12
	<b>Alu-Gusslegierung &gt;10% Si</b> cast alu alloy >10% Si	bis up to <b>450 N/mm<sup>2</sup></b>	G-AlSi17Cu4, G-AlSi21CuNiMg
	<b>Kupfer langspanend</b> copper long chipping		
	<b>Kupfer, Bronze, Messing, kurzspanend</b> copper, bronze, brass, short-chipping		CuZn15, CuZn30, G-CuZn2Al2, CuCrZr, G-CuPb20Sn
	<b>Kupfer, bleifreies Kupfer, Elektrolytkupfer (kurzsp.)</b> copper, lead-free copper, electrolytic copper (short-chip.)		CuAl10Ni5Fe4, G-CuAl10Ni, G-CuSn10, G-CuSn12
	<b>Duroplaste, Thermoplaste</b> duroplastics, thermoplastics		Bakelit, Responal, Novodur, Pertinax
	<b>Faserverstärkte Kunststoffe</b> fiber-reinforced plastic, composites		CFK, GFK, AFK
	<b>Graphit</b> graphite		EDM36
	<b>Gold</b> gold		
	<b>Silber</b> silver		
S	<b>Titanlegierungen</b> titanium alloys	über over <b>700 N/mm<sup>2</sup></b>	Ti6Al4V, Ti-4Al-4Mo-2Sn
	<b>Nickellegierungen</b> nickel alloys	über over <b>600 N/mm<sup>2</sup></b>	Inconel, Monel, Hasteloy
H	<b>gehärtete Stähle</b> hardened steels	<b>40–48 HRC</b>	
		<b>48–56 HRC</b>	
		<b>56–64 HRC</b>	
		über over <b>64 HRC</b>	

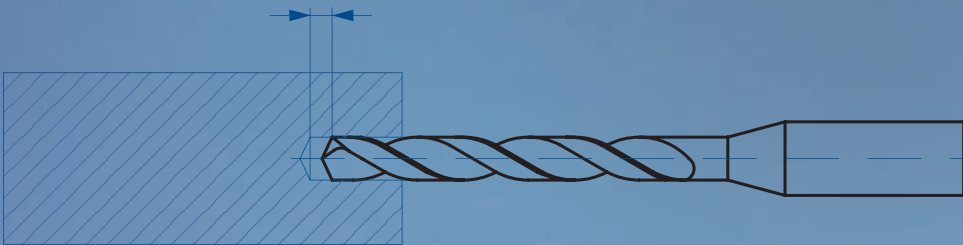
# Bearbeitungsverfahren Tieflochbohren

## Schritt für Schritt

Machining process deep-hole drilling, step by step



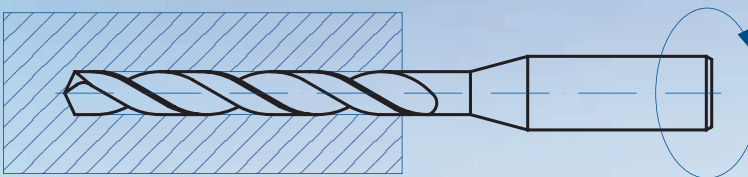
1. Pilotlochbohren
1. Pilothole drilling



2. Bohrer bei langsamdrehender Spindel einführen.
2. Insert the drill with reduced rpm into the pilot hole.



3. Spindel und Kühlmittel in Betrieb setzen.
3. Increase the rpm to the nominal value and switch on the coolant.



4. Nach Erreichen der gewünschten Tiefe, Spindel und Kühlmittel ausschalten und Bohrer herausziehen.
4. After reaching the required drilling depth, switch off the spindle and coolant, retract the drill.

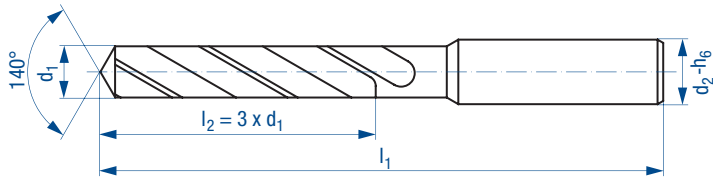
# Bohrer Extra-Long und Pilotbohrer

## Foret Extra-Long et Foret de préperçage

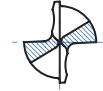
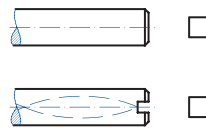
### Punta Extra-Long e Punta per perforo

#### Drill Extra-Long and Pilot drill

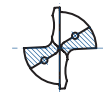
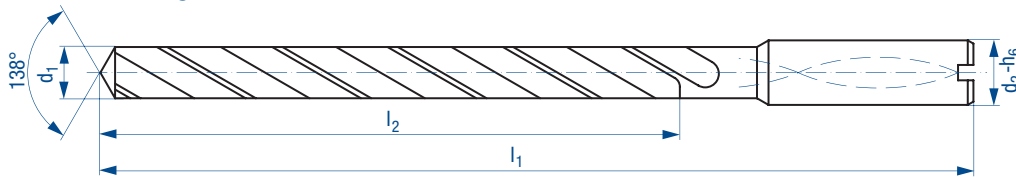
Pilotbohrer  
Pilot drill



Kühlmittelzuführung:  
Coolant supply:



Bohrer Extra-Long  
Drill Extra-Long



**Pilotbohrer**  
**Pilot drill**

d<sub>1</sub> = \_\_\_\_\_

d<sub>2</sub> = \_\_\_\_\_

l<sub>1</sub> = \_\_\_\_\_

l<sub>2</sub> = 3 x d<sub>1</sub>

**Bohrer Extra-Long**  
**Drill Extra-Long**

d<sub>1</sub> = \_\_\_\_\_ Tol. = \_\_\_\_\_

d<sub>2</sub> = \_\_\_\_\_

l<sub>1</sub> = \_\_\_\_\_

l<sub>2</sub> = \_\_\_\_\_

Zu bearbeitender Werkstoff:  
Material to be cut: \_\_\_\_\_

Stückzahl:  
Quantity: \_\_\_\_\_

Anfrage

Bestellung

Enquiry

Order

Bemerkung:  
Remarks: \_\_\_\_\_  
\_\_\_\_\_

Firma  
Company \_\_\_\_\_

Strasse/Nr.  
Street/No. \_\_\_\_\_

Postleitzahl/Ort  
ZIP-Code/City \_\_\_\_\_

Phone \_\_\_\_\_

Kontaktperson  
Contact \_\_\_\_\_

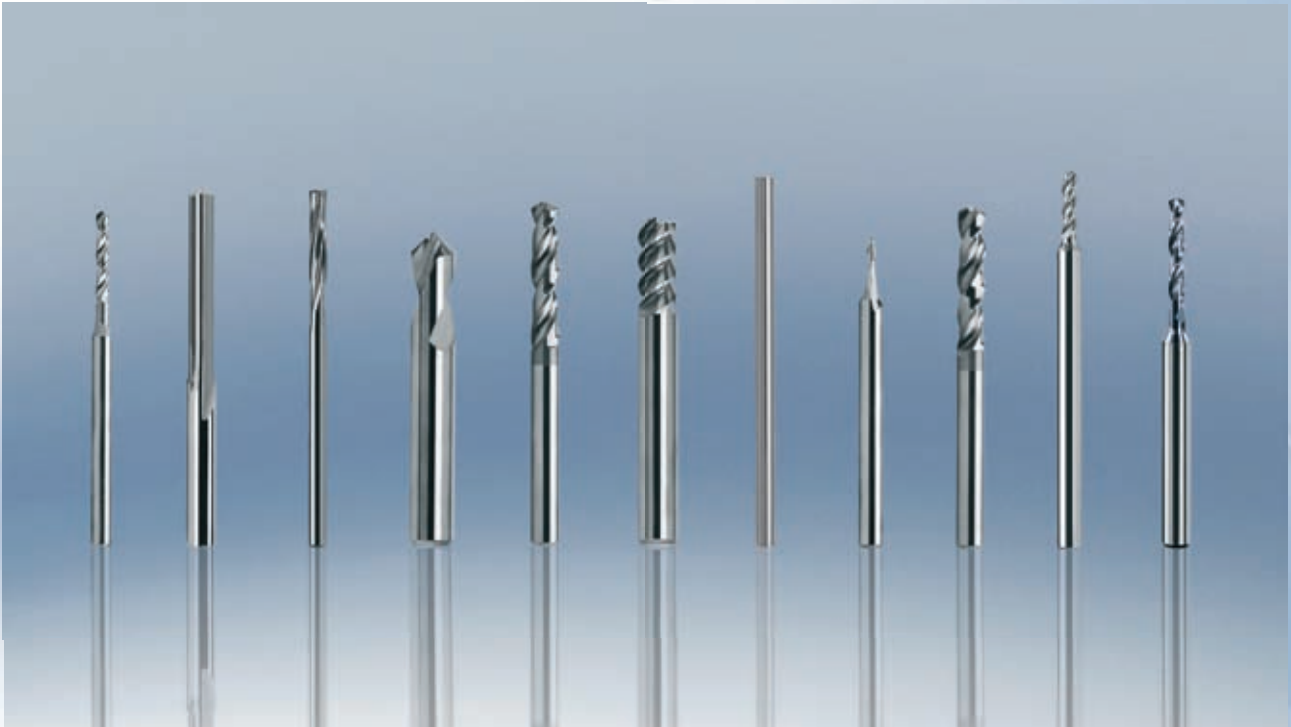
Fax \_\_\_\_\_

Datum/Unterschrift  
Date/Signature \_\_\_\_\_

E-Mail \_\_\_\_\_

# Produkteübersicht

Gamme d'outils  
Programma di fabbricazione  
Product overview



Die Fertigungsstätten in Derendingen und Porrentruy, eine Referenz für «Made in Switzerland».  
Les ateliers de fabrication à Derendingen et Porrentruy, une référence «Made in Switzerland».  
Gli stabilimenti di produzione a Derendingen e Porrentruy, una referenza di «Made in Switzerland».  
Production facilities in Derendingen and Porrentruy, a reference for «Made in Switzerland».

Sphinx Werkzeuge AG  
Gewerbestrasse 1  
CH-4552 Derendingen

Phone +41 32 671 21 00  
Fax +41 32 671 21 11  
[www.sphinx-tools.ch](http://www.sphinx-tools.ch)