



Jongen Werkzeugtechnik



# Jongen UNI-MILL Solid Carbide Drills VHB 55505 DR20

5xD



## The Tools

The tool programme has been especially developed for drilling different steels, high grade steels and cast iron materials.

The tools are available in diameter range from 2,0 mm up to 20,0 mm, in the length 5xD.

The front surface geometry allow precise pre-drilling, the great chip spaces provide an optimal chip flow even for drilling depths of 5xD.

All tools are equipped with cooling channels.

Up to shank diameter 6mm the drills are equipped with 2 cooling channels, starting with shank diameter 8 mm the drills have 4 cooling channels. Thus also for bigger diameters an optimal cooling at the chisel edge can be granted during the drilling process.



The tools in diameter 2,0 up to 10 mm are available in 1/10 gradations.

## Product Characteristics

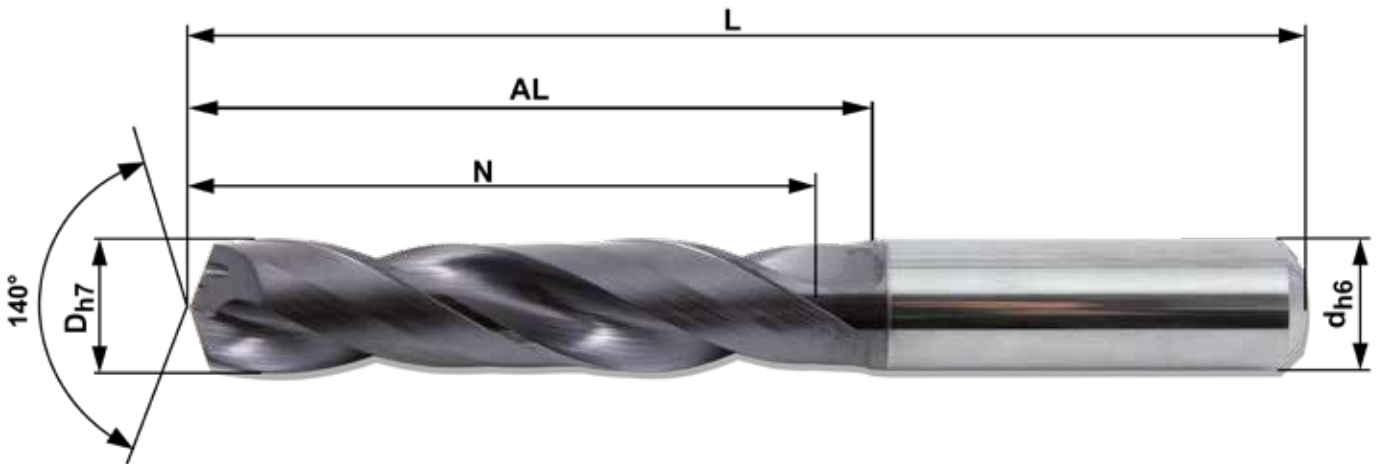
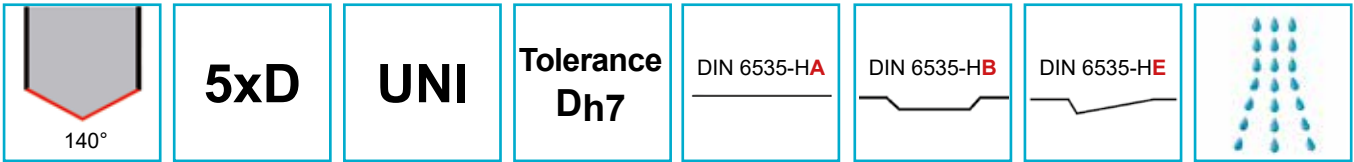
Characteristic	Your advantage
Drilling Tools	Universal programme for milling and for turning machines
Front surface geometry	Drill with 2 cutting edges
Optimized macro geometry	<ul style="list-style-type: none"><li>- Cutting pressure reduction</li><li>- Excellent removal rates</li><li>- Extremely high tool lives</li></ul>
Deeply ground flutes	<ul style="list-style-type: none"><li>- Better chip flow</li><li>- Avoid bird nesting</li><li>- Chipping force reduction</li></ul>
Lange gerade Hauptschneide	<ul style="list-style-type: none"><li>- High productivity and very good drill hole quality also for high feed rates and cutting speeds</li><li>- Reduced cutting forces</li><li>- Improved tool lives</li><li>- The tool enters cleanly in the material and leaves no feathering</li></ul>
Point angle of 140°	Excellent centering capability

## Product Characteristics

Characteristic	Your advantage
Optimized micro geometry	<ul style="list-style-type: none"> <li>- Smooth running process</li> <li>- Maximal working performance with minimized feathering</li> <li>- Allow precise drilling holes</li> <li>- High surface quality</li> </ul>
Honed surface	<ul style="list-style-type: none"> <li>- Reduces scragginesses and feathering</li> <li>- Supports the chip flow</li> </ul>
Optimized groove shape with outlet radius	<p>Forms the chip in the groove surface and not along the wall of the drill hole</p> <ul style="list-style-type: none"> <li>→ avoid bucklings and adherences</li> <li>→ higher surface quality</li> <li>→ lower friction</li> <li>→ very high operational security</li> </ul>
Mounting shank	<p>Up to shank diameter &lt;6mm shank made to DIN 6535-HA. Starting by shank diameter 6mm there are 3 different shank-variations available:</p> <p>VHB 55505A =&gt; Shank made to DIN 6535-HA            VHB 55505B =&gt; Shank made to DIN 6535-HB            VHB 55505E =&gt; Shank made to DIN 6535-HE</p>
Internal cooling channels - up to ø6,0mm - 2 channels - starting with ø6,1mm - 4 channels	<ul style="list-style-type: none"> <li>- Optimized chip flow</li> <li>- Longer tool lives by low temperatures</li> <li>- The heat input in the working material is minimized</li> </ul>
Universal tool programme	<ul style="list-style-type: none"> <li>- Can be adopted for almost all drilling operations</li> <li>- Less necessity of tools ensure a reduction of storage costs</li> </ul>
Carbide and Coating = Quality DR20	<ul style="list-style-type: none"> <li>- Finest grain carbide, DIN ISO field K20-40</li> <li>- Very even AlTiN-supernitride coating</li> <li>→ high stability and reliability</li> <li>→ low fracture susceptibility</li> <li>→ universally applicable</li> <li>→ very good drill hole quality</li> </ul>
Tools can be reground by Jongen	High cost-benefit ratio



## Technical Data VHB 55505 DR20



Up to shank diameter  $d=5\text{mm}$  all solid carbide drills have a shank made to DIN 6535-HA (cylindrical).

Starting by shank diameter 6mm there are 3 different shank-variations available:

- Shank DIN 6535-HA (cylindrical)      => Order-No. VHB 55505**A**-... DR20
- Shank DIN 6535-HB (Weldon)        => Order-No. VHB 55505**B**-... DR20
- Shank DIN 6535-HE (Whistle-Notch) => Order-No. VHB 55505**E**-... DR20

Order-No.: **VHB 55505\*-...**

(Please instead of \* indicate the shank type and complete the remaining part of the article code by below stated chart)

VHB 55505*-	D	AL	N	L	d	Z	IK	VHB 55505*-	D	AL	N	L	d	Z	IK
...0200 DR20	2,00	21	15	57	3	2	2	...0320 DR20	3,20	28	24	66	6	2	2
...0210 DR20	2,10	21	15	57	3	2	2	...0330 DR20	3,30	28	24	66	6	2	2
...0220 DR20	2,20	21	16	57	3	2	2	...0340 DR20	3,40	28	25	66	6	2	2
...0230 DR20	2,30	21	17	57	3	2	2	...0350 DR20	3,50	28	26	66	6	2	2
...0240 DR20	2,40	21	18	57	3	2	2	...0360 DR20	3,60	28	26	66	6	2	2
...0250 DR20	2,50	21	18	57	3	2	2	...0370 DR20	3,70	28	27	66	6	2	2
...0260 DR20	2,60	21	19	57	4	2	2	...0380 DR20	3,80	36	28	82	6	2	2
...0270 DR20	2,70	21	20	57	4	2	2	...0390 DR20	3,90	36	29	82	6	2	2
...0280 DR20	2,80	21	20	57	4	2	2	...0400 DR20	4,00	36	29	82	6	2	2
...0290 DR20	2,90	21	20	57	4	2	2	...0410 DR20	4,10	36	30	82	6	2	2
...0300 DR20	3,00	28	22	66	6	2	2	...0420 DR20	4,20	36	31	82	6	2	2
...0310 DR20	3,10	28	23	66	6	2	2	...0430 DR20	4,30	36	31	82	6	2	2

Order-No.: **VHB 55505\*-...**

(Please instead of \* indicate the shank type and complete the remaining part of the article code by below stated chart)

VHB 55505*-	D	AL	N	L	d	Z	IK
...0440 DR20	4,40	36	32	82	6	2	2
...0450 DR20	4,50	36	33	82	6	2	2
...0460 DR20	4,60	36	34	82	6	2	2
...0465 DR20	4,65	36	34	82	6	2	2
...0470 DR20	4,70	36	34	82	6	2	2
...0480 DR20	4,80	44	35	82	6	2	2
...0490 DR20	4,90	44	36	82	6	2	2
...0500 DR20	5,00	44	36	82	6	2	2
...0510 DR20	5,10	44	37	82	6	2	2
...0520 DR20	5,20	44	38	82	6	2	2
...0530 DR20	5,30	44	39	82	6	2	2
...0540 DR20	5,40	44	39	82	6	2	2
...0550 DR20	5,50	44	40	82	6	2	2
...0555 DR20	5,55	44	40	82	6	2	2
...0560 DR20	5,60	44	41	82	6	2	2
...0570 DR20	5,70	44	41	82	6	2	2
...0580 DR20	5,80	44	41	82	6	2	2
...0590 DR20	5,90	44	41	82	6	2	2
...0600 DR20	6,00	44	41	82	6	2	2
...0610 DR20	6,10	53	41	91	8	2	4
...0620 DR20	6,20	53	41	91	8	2	4
...0630 DR20	6,30	53	42	91	8	2	4
...0640 DR20	6,40	53	43	91	8	2	4
...0650 DR20	6,50	53	43	91	8	2	4
...0660 DR20	6,60	53	44	91	8	2	4
...0670 DR20	6,70	53	45	91	8	2	4
...0680 DR20	6,80	53	45	91	8	2	4
...0690 DR20	6,90	53	46	91	8	2	4
...0700 DR20	7,00	53	47	91	8	2	4
...0710 DR20	7,10	53	47	91	8	2	4
...0720 DR20	7,20	53	48	91	8	2	4
...0730 DR20	7,30	53	49	91	8	2	4
...0740 DR20	7,40	53	49	91	8	2	4
...0745 DR20	7,45	53	49	91	8	2	4
...0750 DR20	7,50	53	50	91	8	2	4
...0760 DR20	7,60	53	50	91	8	2	4
...0770 DR20	7,70	53	50	91	8	2	4
...0780 DR20	7,80	53	50	91	8	2	4
...0790 DR20	7,90	53	50	91	8	2	4
...0800 DR20	8,00	53	50	91	8	2	4
...0810 DR20	8,10	61	50	103	10	2	4
...0820 DR20	8,20	61	51	103	10	2	4
...0830 DR20	8,30	61	51	103	10	2	4
...0840 DR20	8,40	61	52	103	10	2	4
...0850 DR20	8,50	61	52	103	10	2	4
...0860 DR20	8,60	61	53	103	10	2	4
...0870 DR20	8,70	61	54	103	10	2	4
...0880 DR20	8,80	61	54	103	10	2	4
...0890 DR20	8,90	61	55	103	10	2	4
...0900 DR20	9,00	61	55	103	10	2	4
...0910 DR20	9,10	61	56	103	10	2	4
...0920 DR20	9,20	61	57	103	10	2	4
...0930 DR20	9,30	61	57	103	10	2	4
...0935 DR20	9,35	61	57	103	10	2	4

VHB 55505*-	D	AL	N	L	d	Z	IK
...0940 DR20	9,40	61	58	103	10	2	4
...0950 DR20	9,50	61	58	103	10	2	4
...0960 DR20	9,60	61	59	103	10	2	4
...0970 DR20	9,70	61	60	103	10	2	4
...0980 DR20	9,80	61	60	103	10	2	4
...0990 DR20	9,90	61	60	103	10	2	4
...1000 DR20	10,00	61	60	103	10	2	4
...1020 DR20	10,20	71	61	118	12	2	4
...1030 DR20	10,30	71	61	118	12	2	4
...1050 DR20	10,50	71	62	118	12	2	4
...1060 DR20	10,60	71	63	118	12	2	4
...1080 DR20	10,80	71	64	118	12	2	4
...1100 DR20	11,00	71	65	118	12	2	4
...1120 DR20	11,20	71	67	118	12	2	4
...1130 DR20	11,30	71	67	118	12	2	4
...1150 DR20	11,50	71	67	118	12	2	4
...1180 DR20	11,80	71	67	118	12	2	4
...1200 DR20	12,00	71	67	118	12	2	4
...1210 DR20	12,10	71	67	124	14	2	4
...1220 DR20	12,20	77	68	124	14	2	4
...1250 DR20	12,50	77	69	124	14	2	4
...1280 DR20	12,80	77	71	124	14	2	4
...1300 DR20	13,00	77	72	124	14	2	4
...1310 DR20	13,10	77	72	124	14	2	4
...1320 DR20	13,20	77	73	124	14	2	4
...1350 DR20	13,50	77	74	124	14	2	4
...1380 DR20	13,80	77	74	124	14	2	4
...1400 DR20	14,00	77	74	124	14	2	4
...1410 DR20	14,10	77	74	133	16	2	4
...1420 DR20	14,20	83	74	133	16	2	4
...1450 DR20	14,50	83	76	133	16	2	4
...1480 DR20	14,80	83	77	133	16	2	4
...1500 DR20	15,00	83	78	133	16	2	4
...1510 DR20	15,10	83	79	133	16	2	4
...1520 DR20	15,20	83	80	133	16	2	4
...1550 DR20	15,50	83	81	133	16	2	4
...1560 DR20	15,60	83	82	133	16	2	4
...1580 DR20	15,80	83	82	133	16	2	4
...1600 DR20	16,00	83	82	133	16	2	4
...1650 DR20	16,50	93	86	143	18	2	4
...1680 DR20	16,80	93	88	143	18	2	4
...1690 DR20	16,90	93	88	143	18	2	4
...1700 DR20	17,00	93	89	143	18	2	4
...1750 DR20	17,50	93	91	143	18	2	4
...1760 DR20	17,60	93	91	143	18	2	4
...1780 DR20	17,80	93	92	143	18	2	4
...1800 DR20	18,00	93	92	143	18	2	4
...1850 DR20	18,50	101	95	153	20	2	4
...1880 DR20	18,80	101	96	153	20	2	4
...1890 DR20	18,90	101	96	153	20	2	4
...1900 DR20	19,00	101	97	153	20	2	4
...1950 DR20	19,50	101	100	153	20	2	4
...1980 DR20	19,80	101	100	153	20	2	4
...2000 DR20	20,00	101	100	153	20	2	4

AL=Settle length

IK = No. of internal cooling channels

## Parameters Recommendation

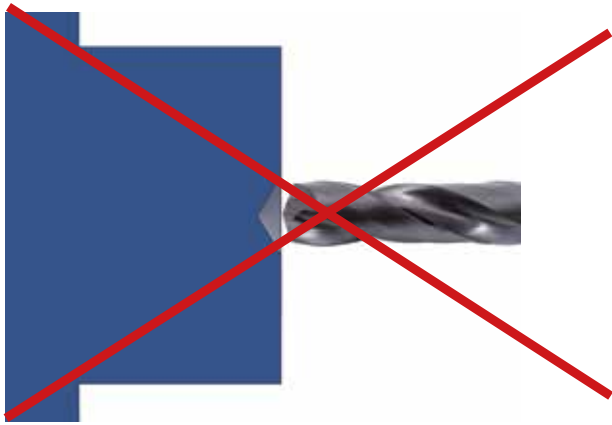
Material	D [mm]	Vc [m/min]	f [mm/U]	n [min <sup>-1</sup> ]	Vf [mm/min]
Structural steel Unalloyed steel  <800 N/mm <sup>2</sup>	2	120 (80 - 140)	0,070 (0,040 - 0,090)	19.100	1.335
	3	120 (80 - 140)	0,120 (0,090 - 0,140)	12.730	1.530
	4	120 (80 - 140)	0,130 (0,100 - 0,150)	9.550	1.240
	5	120 (80 - 140)	0,150 (0,120 - 0,170)	7.640	1.145
	6	120 (80 - 140)	0,160 (0,130 - 0,180)	6.370	1.020
	7	120 (80 - 140)	0,180 (0,150 - 0,200)	5.460	985
	8	120 (80 - 140)	0,200 (0,170 - 0,220)	4.770	955
	9	120 (80 - 140)	0,220 (0,190 - 0,240)	4.240	935
	10	120 (80 - 140)	0,240 (0,210 - 0,260)	3.820	915
	12	120 (80 - 140)	0,260 (0,230 - 0,280)	3.180	825
	14	120 (80 - 140)	0,290 (0,260 - 0,310)	2.730	790
	16	120 (80 - 140)	0,320 (0,290 - 0,340)	2.390	765
	Tool steel Heat-treatable steel Alloyed steel  800-1.200 N/mm <sup>2</sup>	2	100 (80 - 120)	0,050 (0,020 - 0,070)	15.920
3		100 (80 - 120)	0,100 (0,070 - 0,120)	10.610	1.060
4		100 (80 - 120)	0,110 (0,080 - 0,130)	7.960	875
5		100 (80 - 120)	0,130 (0,100 - 0,150)	6.370	830
6		100 (80 - 120)	0,140 (0,110 - 0,160)	5.310	745
7		100 (80 - 120)	0,150 (0,120 - 0,170)	4.550	685
8		100 (80 - 120)	0,180 (0,150 - 0,200)	3.980	715
9		100 (80 - 120)	0,190 (0,160 - 0,210)	3.540	675
10		100 (80 - 120)	0,200 (0,170 - 0,220)	3.180	635
12		100 (80 - 120)	0,200 (0,170 - 0,220)	2.650	530
14		100 (80 - 120)	0,220 (0,190 - 0,240)	2.270	500
16		100 (80 - 120)	0,250 (0,220 - 0,270)	1.990	500
18		100 (80 - 120)	0,270 (0,240 - 0,290)	1.770	480
High grade steel High alloyed steel	2	55 (35 - 75)	0,040 (0,010 - 0,060)	8.750	350
	3	55 (35 - 75)	0,060 (0,030 - 0,080)	5.840	350
	4	55 (35 - 75)	0,080 (0,050 - 0,100)	4.380	350
	5	55 (35 - 75)	0,090 (0,060 - 0,110)	3.500	315
	6	55 (35 - 75)	0,100 (0,070 - 0,120)	2.920	290
	7	55 (35 - 75)	0,110 (0,080 - 0,130)	2.500	275
	8	55 (35 - 75)	0,110 (0,080 - 0,130)	2.190	240
	9	55 (35 - 75)	0,120 (0,090 - 0,140)	1.950	235
	10	55 (35 - 75)	0,130 (0,100 - 0,150)	1.750	230
	12	55 (35 - 75)	0,150 (0,120 - 0,170)	1.460	220
	14	55 (35 - 75)	0,160 (0,130 - 0,180)	1.250	200
	16	55 (35 - 75)	0,170 (0,140 - 0,190)	1.090	185
	18	55 (35 - 75)	0,180 (0,150 - 0,200)	970	175
Cast iron GG(G)	2	120 (100 - 140)	0,100 (0,070 - 0,120)	19.100	1.910
	3	120 (100 - 140)	0,140 (0,110 - 0,160)	12.730	1.780
	4	120 (100 - 140)	0,160 (0,130 - 0,180)	9.550	1.530
	5	120 (100 - 140)	0,200 (0,170 - 0,220)	7.640	1.530
	6	120 (100 - 140)	0,230 (0,200 - 0,250)	6.370	1.465
	7	120 (100 - 140)	0,250 (0,220 - 0,270)	5.460	1.365
	8	120 (100 - 140)	0,270 (0,240 - 0,290)	4.770	1.290
	9	120 (100 - 140)	0,280 (0,250 - 0,300)	4.240	1.185
	10	120 (100 - 140)	0,300 (0,270 - 0,320)	3.820	1.145
	12	120 (100 - 140)	0,320 (0,290 - 0,340)	3.180	1.020
	14	120 (100 - 140)	0,350 (0,320 - 0,370)	2.730	955
	16	120 (100 - 140)	0,370 (0,340 - 0,390)	2.390	885
	18	120 (100 - 140)	0,400 (0,370 - 0,420)	2.120	850
20	120 (100 - 140)	0,450 (0,420 - 0,470)	1.910	860	

For the intermediate sizes the parameters are to be adjusted consequently. The indicated cutting data are standard values that can change depending on type of processing, machine type and material.

## Application Instructions

Spot-Drilling – always without centering bore!

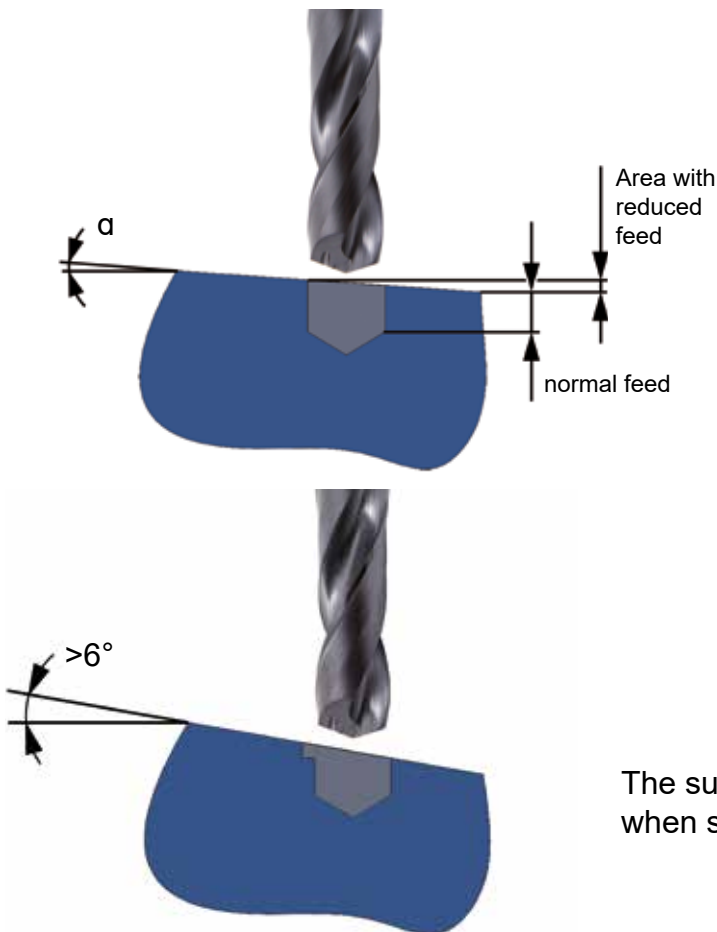
Incorrect!



Correct!



Reduced feed when working piece-surface is inclined



Reduced feed (in % from standard value) for spot-drilling of inclined surfaces	
Inclination of working piece $\alpha$	feed
1°	100%
2°	80%
3°	65%
4°	50%
6°	30%

The surface must be pre-machined with another tool when stronger inclined working angles are given!

Jongen UNI-MILL solid carbide drills must be adequately cooled for an optimal performance. Only in this way a maximal exhaustion of the tools can be granted. The correct cooling allows longer tool lives and higher cutting speeds. The higher the coolant pressure, the better the drill results.

Caused by the high stability of the solid carbide drills, associated with the possibility to produce bore holes with tight tolerances and high positional accuracy, the adoption of most stable machines is preferred.

