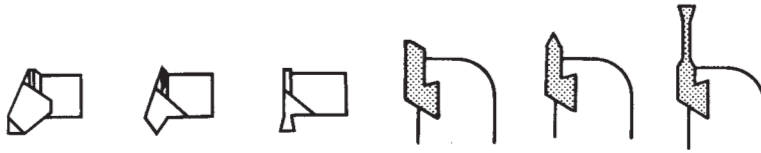


General Information on IFANGER Tools

Customary terms

Righthand:



Lefthand:



- Head:** Cutting part of an assembled boring tool.
- Cutter:** Cutting part of an assembled boring, turning tool or counterbore/countersink tool.
- Shank:** Part carrying the head of a boring tool or the cutter of a counterbore/countersink tool, made of ECN case-hardened.
- Toolholder:** Part carrying the cutter of a turning tool, made of case-hardened steel.
- Tool:** Completely assembled boring, turning tool or counterbore/countersink tool.
- HSS-CO (Kob):** Cobalt and Molybdenum alloyed high speed steel with first class cutting abilities for high cutting speeds. IFANGER boring and turning tools of cobalt steel are produced of steel equal to US standard M44 or M42 (boring tools marked with a ring).
- HSS (Rap):** Molybdenum alloyed high speed steel of high tenacity. All boring tools up to size 2 as well as cutter no. 1 of turning tools and all counterbore/countersink cutters are produced of steel equal to US standard M2. All remaining IFANGER cutters and heads are produced of steel equal to US standard M35.
- TiN-coated (TiN):** A thin, extremely hard titanium nitrid coating with excellent sliding quality is being applied in vacuo on turning tools of HSS-CO and counterbore cutters of HSS. This permits to increase cutting speed tremendously, to prolongate tool life considerably and to improve quality of the surface on the workpiece.
The use of TiN-coated tools is particularly recommended for machining:
– soft materials like steel up to 500 N/mm², aluminum, copper, a.s.o.
– materials with abrasive qualities
– high-temperature resisting alloys and stainless steel
– internal turning of small diameters and grooving tools
– in many cases where results with carbide tools are not satisfactory
- Carbide:** The body of a carbide tipped tool is made of constructional steel of high tensile strength. The carbide tip is always brazed on the body. All counterbore cutters and boring tools of sizes 00, 0 and 0/1 are only available with carbide tips of grade K10. All other tools are available with carbide tips grade ISO as per below table.

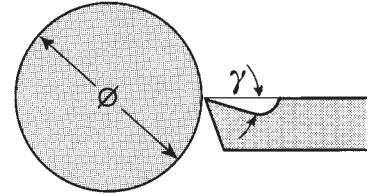
Grades of carbide and their applications

Grade	Features	Use for
P 10	High hardness, limited shock resistance	steel, cast steel, high cutting speed, small or medium chip section
P 30	Medium hardness, high shock resistance	steel, cast steel, long chipping malleable iron, medium cutting speeds, medium to large chip section, unfavourable cutting conditions, interrupted cut (large range grade P 20/P 30)
K 10	High wear resistance, very high hardness	grey cast iron, short chipping malleable iron, hardened steel, aluminum, brass, copper, synthetic material, glass, ebonite, hard paper

Packing Most of the cutting parts are packed in boxes of five pieces. However, they are also sold individually.



Recommendations regarding cutting speeds, number of revolutions and rake angles when turning



Material to be machined	Cross section of chip (feed "s" × depth of chip "t")		Cutting speed m/min (tool life approx. 1 h.) for cutting tool					Rake angle γ for cutting tool		
	Section mm ²	Example for "s" × "t"	HSS-CO (Kob)	HSS (Rap)	TiN	Carbide P30 K10		HSS-CO/HSS/TiN	Carbide P30 K10	
Steel up to 50 kg/mm ² tensile strength	0.3	0.1×3/0.2×1.5	60	40	100	200		25	18	
	0.6	0.3×2/0.2×3	50	35	90	200				
	1.5	0.3×5/0.5×3	40	30	75	150				
	3	0.3×10/0.5×6	35	25	60	150				
	6	0.6×10/0.8×7.5	30	20		100				
Steel of more than 60 kg/mm ² tensile strength	0.3	0.1×3/0.2×1.5	50	35	90	150		20	12	
	0.6	0.2×3/0.3×2	40	30	75	150				
	1.5	0.3×5/0.5×3	35	25	60	100				
	3	0.3×10/0.5×6	30	20	50	100				
	6	0.6×10/0.8×7.5	25	20		70				
Grey cast iron	0.3	0.1×3/0.2×1.5	35	25	60		150	15		10
	0.6	0.2×3/0.3×2	30	25	50		100			
	1.5	0.3×5/0.5×3	25	20	45		100			
	3	0.3×10/0.5×6	20	15	35		70			
	6	0.6×10/0.8×7.5	15	10			50			
Aluminum	0.3	0.1×3/0.2×1.5	200	150	270		500	30		20
	1	0.2×5/0.4×2.5	150	100	240		400			
Copper	2	0.4×5/0.2×10	100	70	180		400			
	5	0.4×12/0.6×8	70	50	125		300			
	10	0.6×17/1×10	50	40			200			
Brass	0.3	0.1×3/0.2×1.5	150	100	250		400	5		5
	1	0.2×5/0.4×2.5	100	70	180		300			
	2	0.4×5/0.2×10	70	50	125		300			
	5	0.4×12/0.6×8	50	35	90		200			
	10	0.6×17/1×10	35	25			150			

Piece to be machined \varnothing mm	Number of revolutions at cutting speed (m/min) of														
	10	15	20	25	30	35	40	50	70	100	150	200	300	400	500
5	640	950	1270	1590	1910	2250	2550	3200	4450	6350	9550				
6	530	800	1060	1330	1590	1860	2100	2650	3700	5300	7950				
8	400	600	800	990	1190	1390	1590	1990	2800	4000	5950	7950			
10	320	480	640	800	950	1110	1270	1590	2250	3200	4750	6350	9550		
12	265	400	530	660	800	930	1060	1330	1860	2650	4000	5300	7950		
15	210	320	420	530	640	740	850	1060	1490	2100	3200	4250	6350	8500	
20	160	240	320	400	480	560	640	800	1110	1590	2400	3200	4750	6350	7950
25	127	190	255	320	380	450	510	640	890	1270	1910	2550	3800	5100	6350
30	106	160	210	265	320	370	420	530	740	1060	1590	2100	3200	4250	5300
35	91	136	180	225	275	320	360	450	640	910	1360	1820	2750	3650	4550
40	80	119	160	200	240	280	320	400	560	800	1190	1590	2400	3200	4000
50	64	95	127	160	190	225	255	320	450	640	950	1270	1910	2550	3200
60	53	80	106	133	160	185	210	265	370	530	800	1060	1590	2100	2650
80	40	60	80	99	119	140	160	200	280	400	600	800	1190	1590	1990
100	32	48	64	80	95	111	127	160	225	320	480	640	950	1270	1590
120	27	40	53	66	80	93	106	133	185	265	400	530	800	1060	1330
150	21	32	42	53	64	74	85	106	149	210	320	420	640	850	1060
200	16	24	32	40	48	56	64	80	111	160	240	320	480	640	800
250	13	19	25	32	38	45	51	64	89	127	190	255	380	510	640
300	11	16	21	27	32	37	42	53	74	106	159	210	320	420	530
400	8	12	16	20	24	28	32	40	56	80	119	160	240	320	400
500	6	10	13	16	19	22	25	32	45	64	95	127	190	255	320

