miniTURN™ *Solid Carbide*

Wirtschaftliche Zerspanung von kleinen Bauteilen



- EN -

ZCC Cutting Tools Europe GmbH

your Partner \ your Value

miniTurn

Product overview	**A430**
Grade Overview	**A431**
System code – inserts (T1–T4, C1, B1)	**A432**
Boring and copying	**A433-A437**
Boring and chamfering 45°	**A438**
Reverse rotation	**A439**
System code – inserts (G1–G2, F1–F3)	**A440**
Grooving and turning	**A441-A444**
Axial grooving	**A445-A447**
System code – inserts (P1–P4)	**A448**
Threading	**A449-A453**
System code – tool holders	**A454**
Tool holder	**A455-A460**
Recommended cutting data	**A462-A463**
Special tools	**A461**

Inserts

Series	Insert	Application		Page
T1		Turning Profiling		A433
T2				A435
T3				A436
T4				A437
C1		Turning Chamfering		A438
B1		Back turning		A439
G1		Grooving Turning		A441
G2				A444
F1		Face grooving		A445
F2				A446
F3				A447
P1		Threading		A449
P2				A450
P3				A451
P4				A452

miniTURN

Grade	ISO	Micro structure	Grade description
YPG202	P10 - P30 M10 - M25		PVD coated P10–P30/M10–M25 carbide substrate for finishing to medium application of stainless steel and steel. Good wear resistance in a wide application field.

Inserts (T1–T4, C1, B1)

T1	6	60	21	020	L/R	YPG202
1	2	3	4	5	6	7

1	2	3
Series	Shank square section D (h6) [mm]	Min. bore diameter D_{min} [mm]

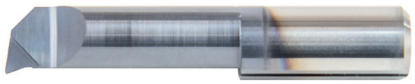
4	5	6
Effective length L_1 [mm]	Radius R [µm]	Type

7
Grade

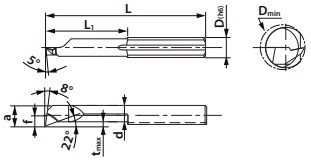
Boring and copying

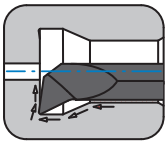
T1

– 8° front side
– 22° clearance angle



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	
T1.4.10.04.008L		4	1	4	20	0,08	0.1	0.9	0.45	0,7	○
T1.4.10.04.008R		4	1	4	20	0,08	0.1	0.9	0.45	0,7	●
T1.4.10.06.008L		4	1	6	22	0,08	0.1	0.9	0.45	0,7	○
T1.4.10.06.008R		4	1	6	22	0,08	0.1	0.9	0.45	0,7	●
T1.4.10.08.008L		4	1	8	24	0,08	0.1	0.9	0.45	0,7	○
T1.4.10.08.008R		4	1	8	24	0,08	0.1	0.9	0.45	0,7	●
T1.4.20.06.010L		4	2	6	22	0,1	0.2	1.7	0.85	1,4	○
T1.4.20.06.010R		4	2	6	22	0,1	0.2	1.7	0.85	1,4	●
T1.4.20.11.005R		4	2	11	27	0,05	0.2	1.7	0.85	1,4	○
T1.4.20.11.010L		4	2	11	27	0,1	0.2	1.7	0.85	1,4	●
T1.4.20.11.010R		4	2	11	27	0,1	0.2	1.7	0.85	1,4	●
T1.4.30.11.015L		4	3	11	27	0,15	0.25	2.75	1.375	2,4	○
T1.4.30.11.015R		4	3	11	27	0,15	0.25	2.75	1.375	2,4	●
T1.4.30.16.005R		4	3	16	32	0,05	0.25	2.75	1.375	2,4	○
T1.4.30.16.015L		4	3	16	32	0,15	0.25	2.75	1.375	2,4	○
T1.4.30.16.015R		4	3	16	32	0,15	0.25	2.75	1.375	2,4	●
T1.4.30.21.015L		4	3	21	37	0,15	0.25	2.75	1.375	2,4	○
T1.4.30.21.015R		4	3	21	37	0,15	0.25	2.75	1.375	2,4	●
T1.4.40.11.005L		4	4	11	27	0,05	0.3	3.7	1.85	3,3	○
T1.4.40.11.005R		4	4	11	27	0,05	0.3	3.7	1.85	3,3	○
T1.4.40.11.020L		4	4	11	27	0,2	0.3	3.7	1.85	3,3	○
T1.4.40.11.020R		4	4	11	27	0,2	0.3	3.7	1.85	3,3	●
T1.4.40.16.005L		4	4	16	32	0,05	0.3	3.7	1.85	3,3	○
T1.4.40.16.005R		4	4	16	32	0,05	0.3	3.7	1.85	3,3	●
T1.4.40.16.020L		4	4	16	32	0,2	0.3	3.7	1.85	3,3	○
T1.4.40.16.020R		4	4	16	32	0,2	0.3	3.7	1.85	3,3	●
T1.4.40.21.005L		4	4	21	37	0,05	0.3	3.7	1.85	3,3	○
T1.4.40.21.005R		4	4	21	37	0,05	0.3	3.7	1.85	3,3	●
T1.4.40.21.020L		4	4	21	37	0,2	0.3	3.7	1.85	3,3	●
T1.4.40.21.020R		4	4	21	37	0,2	0.3	3.7	1.85	3,3	●
T1.4.40.26.020R		4	4	26	37	0,2	0.3	3.7	1.85	3,3	●
T1.5.50.11.020L		5	5	11	27	0,2	0.5	4.6	2.3	4	○
T1.5.50.11.020R		5	5	11	27	0,2	0.5	4.6	2.3	4	●
T1.5.50.16.020L		5	5	16	32	0,2	0.5	4.6	2.3	4	○
T1.5.50.16.020R		5	5	16	32	0,2	0.5	4.6	2.3	4	●
T1.5.50.21.005R		5	5	21	37	0,05	0.5	4.6	2.3	4	○
T1.5.50.21.020L		5	5	21	37	0.2	0.5	4.6	2.3	4	●
T1.5.50.21.020R		5	5	21	37	0.2	0.5	4.6	2.3	4	●
T1.5.50.26.020R		5	5	26	37	0,2	0.5	4.6	2.3	4	●

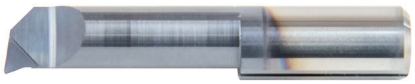
● Ex stock ○ On demand
✻ With internal cooling

System code A432 | Tool Holder A454 | Cutting data A462 | Nonstandard order A461

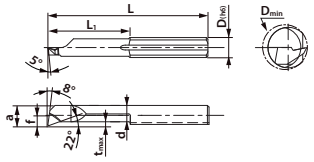
Boring and copying

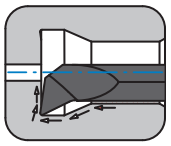
T1

– 8° front side
– 22° clearance angle



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	
T1.5.50.31.020L		5	5	31	47	0,2	0.5	4.6	2.3	4	○
T1.5.50.31.020R		5	5	31	47	0,2	0.5	4.6	2.3	4	●
T1.6.60.16.015L		6	6	16	32	0,15	0.5	5.6	2.8	5	○
T1.6.60.16.020L		6	6	16	32	0,2	0.5	5.6	2.8	5	○
T1.6.60.16.020R		6	6	16	32	0,2	0.5	5.6	2.8	5	●
T1.6.60.21.015L		6	6	21	37	0,15	0.5	5.6	2.8	5	○
T1.6.60.21.020L		6	6	21	37	0,2	0.5	5.6	2.8	5	○
T1.6.60.21.020R		6	6	21	37	0,2	0.5	5.6	2.8	5	●
T1.6.60.26.020L		6	6	26	42	0,2	0.5	5.6	2.8	5	●
T1.6.60.26.020R		6	6	26	42	0,2	0.5	5.6	2.8	5	●
T1.6.60.36.020L		6	6	36	52	0,2	0.5	5.6	2.8	5	●
T1.6.60.36.020R		6	6	36	52	0,2	0.5	5.6	2.8	5	●
T1.7.68.21.020L		7	6.8	21	37	0,2	0.5	6.3	3.15	5,7	○
T1.7.68.21.020R		7	6.8	21	37	0,2	0.5	6.3	3.15	5,7	●
T1.7.68.26.020L		7	6.8	26	42	0,2	0.5	6.3	3.15	5,7	○
T1.7.68.26.020R		7	6.8	26	42	0,2	0.5	6.3	3.15	5,7	●
T1.7.68.31.020L		7	6.8	31	47	0,2	0.5	6.3	3.15	5,7	○
T1.7.68.31.020R		7	6.8	31	47	0,2	0.5	6.3	3.15	5,7	●
T1.7.68.41.020L		7	6.8	41	57	0,2	0.5	6.3	3.15	5,7	○
T1.7.68.41.020R		7	6.8	41	57	0,2	0.5	6.3	3.15	5,7	●

● Ex stock ○ On demand
✻ With internal cooling

System code > A432 Tool Holder > A454 Cutting data > A462 Nonstandard order > A461

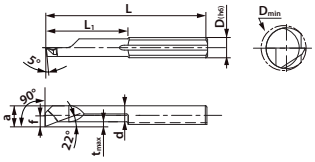
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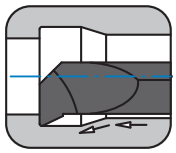
T2

– 0° front side
– 22° clearance angle



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	
T2.4.30.11.015R		4	3	11	27	0,15	0.4	2.5	1.25	2	○
T2.4.30.16.015R		4	3	11	27	0,15	0.4	2.5	1.25	2	○
T2.4.40.11.015L		4	4	11	27	0,15	0.5	3.5	1.75	2,9	○
T2.4.40.11.015R		4	4	11	27	0,15	0.5	3.5	1.75	2,9	●
T2.4.40.16.015R		4	4	16	32	0,15	0.5	3.5	1.75	2,9	●
T2.5.50.11.015L		5	5	11	27	0,15	0.7	4.4	2.2	3,6	○
T2.5.50.11.015R		5	5	11	27	0,15	0.7	4.4	2.2	3,6	○
T2.5.50.16.015L		5	5	16	32	0,15	0.7	4.4	2.2	3,6	○
T2.5.50.16.015R		5	5	16	32	0,15	0.7	4.4	2.2	3,6	●
T2.5.50.21.015L		5	5	21	37	0,15	0.7	4.4	2.2	3,6	○
T2.5.50.21.015R		5	5	21	37	0,15	0.7	4.4	2.2	3,6	●
T2.6.60.16.015L		6	6	16	32	0,15	0.9	5.4	2.7	4,4	○
T2.6.60.16.015R		6	6	16	32	0,15	0.9	5.4	2.7	4,4	○
T2.6.60.21.015L		6	6	21	37	0,15	0.9	5.4	2.7	4,4	○
T2.6.60.21.015R		6	6	21	37	0,15	0.9	5.4	2.7	4,4	●

● Ex stock ○ On demand
✻ With internal cooling

System code A432 Tool Holder A454 Cutting data A462 Nonstandard order A461

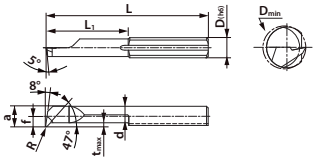
Boring and copying

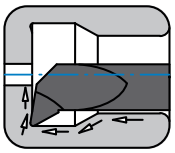
T3

– 8° front side
– 47° clearance angle



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	
T3.4.22.11.010L		4	2.2	11	27	0,1	0.4	1.95	0.975	1,45	○
T3.4.22.11.010R		4	2.2	11	27	0,1	0.4	1.95	0.975	1,45	●
T3.4.27.16.010L		4	2.7	16	32	0,1	0.5	2.45	1.225	1,85	○
T3.4.27.16.010R		4	2.7	16	32	0,1	0.5	2.45	1.225	1,85	●
T3.4.32.16.010L		4	3.2	16	32	0,1	0.6	2.95	1.475	2,25	○
T3.4.32.16.010R		4	3.2	16	32	0,1	0.6	2.95	1.475	2,25	●
T3.4.40.11.015L		4	4	11	27	0,15	0.8	3.5	1.75	2,6	○
T3.4.40.11.015R		4	4	11	27	0,15	0.8	3.5	1.75	2,6	○
T3.4.40.16.015L		4	4	16	32	0,15	0.8	3.5	1.75	2,6	○
T3.4.40.16.015R		4	4	16	32	0,15	0.8	3.5	1.75	2,6	○
T3.4.40.21.015L		4	4	21	37	0,15	0.8	3.5	1.75	2,6	○
T3.4.40.21.015R		4	4	21	37	0,15	0.8	3.5	1.75	2,6	●
T3.5.50.16.015L		5	5	16	27	0,15	1	4.4	2.2	3,3	○
T3.5.50.16.015R		5	5	16	27	0,15	1	4.4	2.2	3,3	●
T3.5.50.26.015L		5	5	26	42	0,15	1	4.4	2.2	3,3	○
T3.5.50.26.015R		5	5	26	42	0,15	1	4.4	2.2	3,3	●
T3.6.60.21.015L		6	6	21	37	0,15	1.8	5.3	2.65	3,4	○
T3.6.60.21.015R		6	6	21	37	0,15	1.8	5.3	2.65	3,4	●
T3.6.60.31.015L		6	6	31	47	0,15	1.8	5.3	2.65	3,4	○
T3.6.60.31.015R		6	6	31	47	0,15	1.8	5.3	2.65	3,4	●

● Ex stock ○ On demand
✻ With internal cooling

System code A432 | Tool Holder A454 | Cutting data A462 | Nonstandard order A461

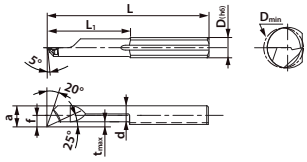
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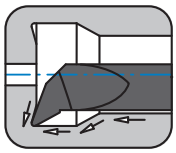
T4

– 20° front side
– 25° clearance angle



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	
T4.4.27.06.010L		4	2.7	6	22	0,1	0.3	2.45	1.225	2,05	○
T4.4.27.06.010R		4	2.7	6	22	0,1	0.3	2.45	1.225	2,05	●
T4.4.27.11.010L		4	2.7	11	27	0,1	0.3	2.45	1.225	2,05	○
T4.4.27.11.010R		4	2.7	11	27	0,1	0.3	2.45	1.225	2,05	○
T4.4.27.16.010L		4	2.7	16	32	0,1	0.3	2.45	1.225	2,05	○
T4.4.27.16.010R		4	2.7	16	32	0,1	0.3	2.45	1.225	2,05	●
T4.4.40.11.015L		4	4	11	27	0,15	0.8	3.5	1.75	2,6	○
T4.4.40.11.015R		4	4	11	27	0,15	0.8	3.5	1.75	2,6	○
T4.4.40.16.015L		4	4	16	32	0,15	0.8	3.5	1.75	2,6	○
T4.4.40.16.015R		4	4	16	32	0,15	0.8	3.5	1.75	2,6	●
T4.4.40.21.015L		4	4	21	37	0,15	0.8	3.5	1.75	2,6	○
T4.4.40.21.015R		4	4	21	37	0,15	0.8	3.5	1.75	2,6	○
T4.5.50.11.020L		5	5	11	27	0,2	1	4.4	2.2	3,3	○
T4.5.50.11.020R		5	5	11	27	0,2	1	4.4	2.2	3,3	●
T4.5.50.26.020L		5	5	26	42	0,2	1	4.4	2.2	3,3	○
T4.5.50.26.020R		5	5	26	42	0,2	1	4.4	2.2	3,3	○
T4.6.60.21.020L		6	6	21	37	0,2	1.8	5.3	2.65	3,4	○
T4.6.60.21.020R		6	6	21	37	0,2	1.8	5.3	2.65	3,4	●
T4.6.60.31.020L		6	6	31	47	0,2	1.8	5.3	2.65	3,4	○
T4.6.60.31.020R		6	6	31	47	0,2	1.8	5.3	2.65	3,4	●

● Ex stock ○ On demand
✻ With internal cooling

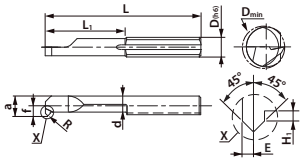
System code A432 | Tool Holder A454 | Cutting data A462 | Nonstandard order A461

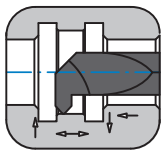
Boring and chamfering

C1



Right hand style





Article	✲	Dimensions [mm]											YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	E	H_1	
C1.4.40.16.005L		4	4	16	32	0,5	0.8	3.7	1.85	2,8	0.4	0.23	○
C1.4.40.16.005R		4	4	16	32	0,5	0.8	3.7	1.85	2,8	0.4	0.23	●
C1.5.50.21.010L		5	5	21	37	0,1	1.2	4.4	2.2	3,1	0.7	0.5	○
C1.5.50.21.010R		5	5	21	37	0,1	1.2	4.4	2.2	3,1	0.7	0.5	●
C1.6.60.26.015L		6	6	26	42	0,15	1.4	5.3	2.65	3,8	0.7	0.5	○
C1.6.60.26.015R		6	6	26	42	0,15	1.4	5.3	2.65	3,8	0.7	0.5	●
C1.7.68.41.020L		7	6.8	41	57	0,2	1.8	6.3	3.15	4,4	1	0.7	○
C1.7.68.41.020R		7	6.8	41	57	0,2	1.8	6.3	3.15	4,4	1	0.7	○

● Ex stock ○ On demand

✲ With internal cooling

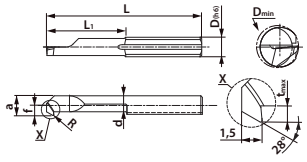
System code > A432 | Tool Holder > A454 | Cutting data > A462 | Nonstandard order > A461

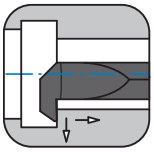
Reverse rotation

B1



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	R	t_{max}	a	f	d	
B1.4.30.16.005L		4	3	16	32	0,05	0.5	2.6	1.3	2	○
B1.4.30.16.005R		4	3	16	32	0,05	0.5	2.6	1.3	2	●
B1.4.40.21.010L		4	4	21	37	0,1	0.8	3.5	1.75	2,6	○
B1.4.40.21.010R		4	4	21	37	0,1	0.8	3.5	1.75	2,6	○
B1.5.50.31.015L		5	5	31	47	0,15	1	4.4	2.2	3,3	○
B1.5.50.31.015R		5	5	31	47	0,15	1	4.4	2.2	3,3	●
B1.6.60.31.015L		6	6	31	47	0,15	1.8	5.3	2.65	3,4	○
B1.6.60.31.015R		6	6	31	47	0,15	1.8	5.3	2.65	3,4	●
B1.7.70.31.015L		7	7	31	47	0,15	2.5	6.3	3.15	3,7	○
B1.7.70.31.015R		7	7	31	47	0,15	2.5	6.3	3.15	3,7	●

● Ex stock ○ On demand

✻ With internal cooling

System code A432 Tool Holder A454 Cutting data A462 Nonstandard order A461

Inserts (G1–G2, F1–F3)

G1	6	60	21	20	L/R	YPG202
1	2	3	4	5	6	7

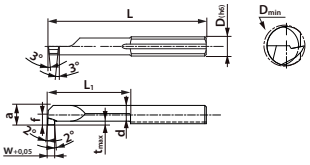
Series	Shank square section D (h6) [mm]	Min. bore diameter D_{min} [mm]
1	2	3
Effective length L_1 [mm]	Grooving width [in 0,1 mm]	Type
4	5	6
Grade		
7		

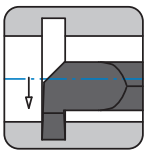
Grooving and turning

G1



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	w+0.06	t_{max}	a	f	d	
G1.4.20.06.05L		4	2	6	22	0,5	0.4	1.75	0.875	1,15	○
G1.4.20.06.05R		4	2	6	22	0,5	0.4	1.75	0.875	1,15	●
G1.4.20.11.05L		4	2	11	27	0,5	0.4	1.75	0.875	1,15	○
G1.4.20.11.05R		4	2	11	27	0,5	0.4	1.75	0.875	1,15	●
G1.4.30.06.07L		4	3	6	22	0,75	0.6	2.7	1.35	1,9	○
G1.4.30.06.07R		4	3	6	22	0,75	0.6	2.7	1.35	1,9	●
G1.4.30.11.07L		4	3	11	27	0,75	0.6	2.7	1.35	1,9	○
G1.4.30.11.07R		4	3	11	27	0,75	0.6	2.7	1.35	1,9	●
G1.4.40.11.10L		4	4	11	27	1	0.8	3.5	1.75	2,4	○
G1.4.40.11.10R		4	4	11	27	1	0.8	3.5	1.75	2,4	●
G1.4.40.16.10L		4	4	16	32	1	0.8	3.5	1.75	2,4	○
G1.4.40.16.10R		4	4	16	32	1	0.8	3.5	1.75	2,4	●
G1.5.50.16.10L		5	5	16	32	1	1	4.4	2.2	3,2	○
G1.5.50.16.10R		5	5	16	32	1	1	4.4	2.2	3,2	●
G1.5.50.16.15L		5	5	16	32	1,5	1	4.4	2.2	3,2	○
G1.5.50.16.15R		5	5	16	32	1,5	1	4.4	2.2	3,2	●
G1.5.50.16.20L		5	5	16	32	2	1	4.4	2.2	3,2	○
G1.5.50.16.20R		5	5	16	32	2	1	4.4	2.2	3,2	●
G1.5.50.21.10L		5	5	21	37	1	1	4.4	2.2	3,2	○
G1.5.50.21.10R		5	5	21	37	1	1	4.4	2.2	3,2	●
G1.5.50.21.15L		5	5	21	37	1,5	1	4.4	2.2	3,2	○
G1.5.50.21.15R		5	5	21	37	1,5	1	4.4	2.2	3,2	●
G1.5.50.21.20L		5	5	21	37	2	1	4.4	2.2	3,2	○
G1.5.50.21.20R		5	5	21	37	2	1	4.4	2.2	3,2	●
G1.5.50.26.10L		5	5	26	42	1	1	4.4	2.2	3,2	○
G1.5.50.26.10R		5	5	26	42	1	1	4.4	2.2	3,2	○
G1.5.50.26.15L		5	5	26	42	1,5	1	4.4	2.2	3,2	○
G1.5.50.26.15R		5	5	26	42	1,5	1	4.4	2.2	3,2	○
G1.5.50.26.20L		5	5	26	42	2	1	4.4	2.2	3,2	○
G1.5.50.26.20R		5	5	26	42	2	1	4.4	2.2	3,2	○
G1.5.50.31.10L		5	5	31	47	1	1	4.4	2.2	3,2	○
G1.5.50.31.10R		5	5	31	47	1	1	4.4	2.2	3,2	●
G1.5.50.31.15L		5	5	31	47	1,5	1	4.4	2.2	3,2	○
G1.5.50.31.15R		5	5	31	47	1,5	1	4.4	2.2	3,2	○
G1.5.50.31.20L		5	5	31	47	2	1	4.4	2.2	3,2	○
G1.5.50.31.20R		5	5	31	47	2	1	4.4	2.2	3,2	○
G1.6.60.16.10L		6	6	16	32	1	1.8	5.3	2.65	3,3	○
G1.6.60.16.10R		6	6	16	32	1	1.8	5.3	2.65	3,3	●
G1.6.60.16.15L		6	6	16	32	1,5	1.8	5.3	2.65	3,3	○
G1.6.60.16.15R		6	6	16	32	1,5	1.8	5.3	2.65	3,3	●

● Ex stock ○ On demand

✻ With internal cooling

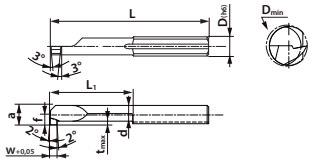
System code A440 | Tool Holder A454 | Cutting data A462 | Nonstandard order A461

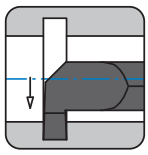
Grooving and turning

G1



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	w+0.06	t_{max}	a	f	d	
G1.6.60.16.20L		6	6	16	32	2	1.8	5.3	2.65	3,3	○
G1.6.60.16.20R		6	6	16	32	2	1.8	5.3	2.65	3,3	●
G1.6.60.21.10L		6	6	21	37	1	1.8	5.3	2.65	3,3	○
G1.6.60.21.10R		6	6	21	37	1	1.8	5.3	2.65	3,3	●
G1.6.60.21.15L		6	6	21	37	1,5	1.8	5.3	2.65	3,3	○
G1.6.60.21.15R		6	6	21	37	1,5	1.8	5.3	2.65	3,3	●
G1.6.60.21.20L		6	6	21	37	2	1.8	5.3	2.65	3,3	○
G1.6.60.21.20R		6	6	21	37	2	1.8	5.3	2.65	3,3	●
G1.6.60.26.10L		6	6	26	42	1	1.8	5.3	2.65	3,3	○
G1.6.60.26.10R		6	6	26	42	1	1.8	5.3	2.65	3,3	○
G1.6.60.26.15L		6	6	26	42	1,5	1.8	5.3	2.65	3,3	○
G1.6.60.26.15R		6	6	26	42	1,5	1.8	5.3	2.65	3,3	○
G1.6.60.26.20L		6	6	26	42	2	1.8	5.3	2.65	3,3	○
G1.6.60.26.20R		6	6	26	42	2	1.8	5.3	2.65	3,3	○
G1.6.60.31.20L		6	6	31	47	2	1.8	5.3	2.65	3,3	○
G1.6.60.31.20R		6	6	31	47	2	1.8	5.3	2.65	3,3	○
G1.6.60.36.10L		6	6	36	52	1	1.8	5.3	2.65	3,3	○
G1.6.60.36.10R		6	6	36	52	1	1.8	5.3	2.65	3,3	○
G1.6.60.36.15L		6	6	36	52	1,5	1.8	5.3	2.65	3,3	○
G1.6.60.36.15R		6	6	36	52	1,5	1.8	5.3	2.65	3,3	○
G1.7.70.16.10L		7	7	16	32	1	2.5	6.3	3.15	3,6	○
G1.7.70.16.10R		7	7	16	32	1	2.5	6.3	3.15	3,6	○
G1.7.70.16.15L		7	7	16	32	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.16.15R		7	7	16	32	1,5	2.5	6.3	3.15	3,6	●
G1.7.70.16.20L		7	7	16	32	2	2.5	6.3	3.15	3,6	○
G1.7.70.16.20R		7	7	16	32	2	2.5	6.3	3.15	3,6	●
G1.7.70.26.10L		7	7	26	42	1	2.5	6.3	3.15	3,6	○
G1.7.70.26.10R		7	7	26	42	1	2.5	6.3	3.15	3,6	●
G1.7.70.26.15L		7	7	26	42	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.26.15R		7	7	26	42	1,5	2.5	6.3	3.15	3,6	●
G1.7.70.26.20L		7	7	26	42	2	2.5	6.3	3.15	3,6	○
G1.7.70.26.20R		7	7	26	42	2	2.5	6.3	3.15	3,6	●
G1.7.70.31.10L		7	7	31	47	1	2.5	6.3	3.15	3,6	○
G1.7.70.31.10R		7	7	31	47	1	2.5	6.3	3.15	3,6	●
G1.7.70.31.15L		7	7	31	47	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.31.15R		7	7	31	47	1,5	2.5	6.3	3.15	3,6	●
G1.7.70.31.20L		7	7	31	47	2	2.5	6.3	3.15	3,6	○
G1.7.70.31.20R		7	7	31	47	2	2.5	6.3	3.15	3,6	●
G1.7.70.36.10L		7	7	36	52	1	2.5	6.3	3.15	3,6	○
G1.7.70.36.10R		7	7	36	52	1	2.5	6.3	3.15	3,6	○

● Ex stock ○ On demand

✻ With internal cooling

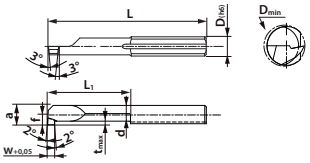
System code > A440 | Tool Holder > A454 | Cutting data > A462 | Nonstandard order > A461

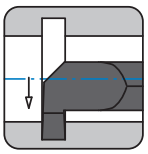
Grooving and turning

G1



Right hand style





Article	✻	Dimensions [mm]									YPG202
		D (h6)	D_{min}	L_1	L	w+0.06	t_{max}	a	f	d	
G1.7.70.36.15L		7	7	36	52	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.36.15R		7	7	36	52	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.36.20L		7	7	36	52	2	2.5	6.3	3.15	3,6	●
G1.7.70.36.20R		7	7	36	52	2	2.5	6.3	3.15	3,6	○
G1.7.70.41.15L		7	7	41	57	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.41.15R		7	7	41	57	1,5	2.5	6.3	3.15	3,6	○
G1.7.70.41.20L		7	7	41	57	2	2.5	6.3	3.15	3,6	○
G1.7.70.41.20R		7	7	41	57	2	2.5	6.3	3.15	3,6	○
G1.7.70.46.10L		7	7	46	62	1	2.5	6.3	3.15	3,6	○
G1.7.70.46.10R		7	7	46	62	1	2.5	6.3	3.15	3,6	○

● Ex stock ○ On demand

✻ With internal cooling

System code A440 Tool Holder A454 Cutting data A462 Nonstandard order A461

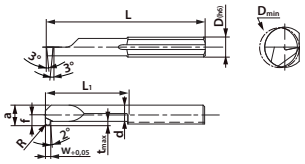
Grooving and turning

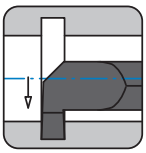
G2

– With full radius



Right hand style





Article	✻	Dimensions [mm]										YPG202
		D (h6)	D_{min}	L_1	L	R	w+0.05	t_{max}	a	f	d	
G2.4.40.16.050.10L		4	4	16	32	0,5	1	0.8	3.5	1.75	2,5	●
G2.4.40.16.050.10R		4	4	16	32	0,5	1	0.8	3.5	1.75	2,5	○
G2.5.50.21.050.10L		5	5	21	37	0,5	1	1	4.4	2.2	3,2	○
G2.5.50.21.050.10R		5	5	21	37	0,5	1	1	4.4	2.2	3,2	●
G2.5.50.21.075.15L		5	5	21	37	0.75	1.5	1	4.4	2.2	3.2	○
G2.5.50.21.075.15R		5	5	21	37	0.75	1.5	1	4.4	2.2	3.2	○
G2.6.60.26.050.10L		6	6	26	42	0,5	1	1.8	5.3	2.65	3,3	●
G2.6.60.26.050.10R		6	6	26	42	0,5	1	1.8	5.3	2.65	3,3	●
G2.6.60.26.100.20L		6	6	26	42	1	2	1.8	5.3	2.65	3,3	●
G2.6.60.26.100.20R		6	6	26	42	1	2	1.8	5.3	2.65	3,3	●
G2.6.60.36.075.15L		6	6	36	52	0,75	2	2	5.3	2.65	3,3	○
G2.6.60.36.075.15R		6	6	36	52	0,75	2	2	5.3	2.65	3,3	●
G2.7.70.31.075.15L		7	7	31	47	0,75	1,5	2.5	6.3	3.15	3,6	○
G2.7.70.31.075.15R		7	7	31	47	0,75	1,5	2.5	6.3	3.15	3,6	○
G2.7.70.31.100.20L		7	7	31	47	1	2	2.5	6.3	3.15	3,6	○
G2.7.70.31.100.20R		7	7	31	47	1	2	2.5	6.3	3.15	3,6	○

● Ex stock ○ On demand

✻ With internal cooling

System code > A440 Tool Holder > A454 Cutting data > A462 Nonstandard order > A461

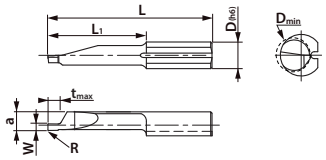
Axial grooving

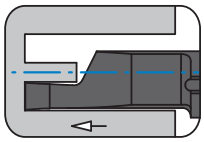
F1

– With corner radius



Right hand style





Article	✻	Dimensions [mm]								YPG202
		D (h6)	D_{min}	L_1	L	R	w+0.05	t_{max}	a	
F1.6.50.21.003.10L		6	5	21	37	0,03	1	2	4.2	●
F1.6.50.21.003.10R		6	5	21	37	0,03	1	2	4.2	●
F1.6.50.21.005.15L		6	5	21	37	0,05	1,5	3	4.2	○
F1.6.50.21.005.15R		6	5	21	37	0,05	1,5	3	4.2	●
F1.6.50.21.005.20L		6	5	21	37	0,05	2	5	4.2	○
F1.6.50.21.005.20R		6	5	21	37	0,05	2	5	4.2	●
F1.6.60.16.005.25L		6	6	16	31	0,05	2,5	5	5.2	○
F1.6.60.16.005.25R		6	6	16	31	0,05	2,5	5	5.2	●
F1.6.60.21.005.10L		6	6	21	37	0,05	1	2	5.2	○
F1.6.60.21.005.10R		6	6	21	37	0,05	1	2	5.2	○
F1.6.60.21.005.15L		6	6	21	37	0,05	1,5	3	5.2	○
F1.6.60.21.005.15R		6	6	21	37	0,05	1,5	3	5.2	●
F1.6.60.21.005.20L		6	6	21	37	0,05	2	5	5.2	○
F1.6.60.21.005.20R		6	6	21	37	0,05	2	5	5.2	●
F1.7.80.21.008.10L		7	8	21	37	0,08	1	2	5.9	○
F1.7.80.21.008.10R		7	8	21	37	0,08	1	2	5.9	○
F1.7.80.21.015.15L		7	8	21	37	0,15	1,5	3	5.9	○
F1.7.80.21.015.15R		7	8	21	37	0,15	1,5	3	5.9	○
F1.7.80.21.015.20L		7	8	21	37	0,15	2	4	5.9	○
F1.7.80.21.015.20R		7	8	21	37	0,15	2	4	5.9	○
F1.7.80.21.015.25L		7	8	21	37	0,15	2,5	5	5.9	○
F1.7.80.21.015.25R		7	8	21	37	0,15	2,5	5	5.9	●
F1.7.80.21.015.30L		7	8	21	37	0,15	3	6	5.9	●
F1.7.80.21.015.30R		7	8	21	37	0,15	3	6	5.9	●

● Ex stock ○ On demand

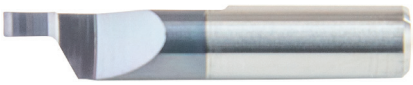
✻ With internal cooling

System code A440 Tool Holder A454 Cutting data A462 Nonstandard order A461

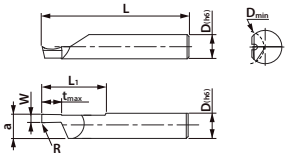
Axial grooving

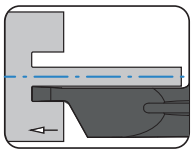
F2

– With corner radius
– At tap



Right hand style





Article	✻	Dimensions [mm]								YPG202
		D (h6)	D_{min}	L_1	L	R	w+0.05	t_{max}	a	
F2.6.60.16.010.15L		6	6	16	31	0,1	1,5	5	4.2	○
F2.6.60.16.010.15R		6	6	16	31	0,1	1,5	5	4.2	●
F2.6.60.16.015.20L		6	6	16	31	0,15	2	3.15	5.2	●
F2.6.60.16.015.20R		6	6	16	31	0,15	2	3.15	5.2	●
F2.6.60.16.015.25L		6	6	16	31	0,15	2,5	5	5.2	○
F2.6.60.16.015.25R		6	6	16	31	0,15	2,5	5	5.2	●
F2.6.65.16.015.30L		6	6.5	16	31	0,15	3	6	5.2	○
F2.6.65.16.015.30R		6	6.5	16	31	0,15	3	6	5.2	●

● Ex stock ○ On demand
✻ With internal cooling

System code > A440 Tool Holder > A454 Cutting data > A462 Nonstandard order > A461

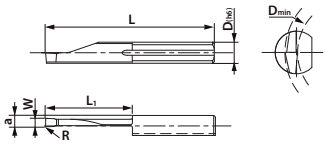
Axial grooving

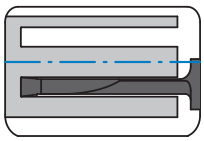
F3

– With corner radius



Right hand style





Article	✻	Dimensions [mm]							YPG202
		D (h6)	D_{min}	L_1	L	R	w+0.05	a	
F3.8.150.15.030.20L		8	15	15	37	0,3	2	5.9	●
F3.8.150.15.030.20R		8	15	15	37	0,3	2	5.9	●
F3.8.150.15.030.30L		8	15	15	37	0,3	3	5.9	●
F3.8.150.20.030.30L		8	15	20	37	0,3	3	5.9	●
F3.8.150.20.030.30R		8	15	20	37	0,3	3	5.9	●
F3.8.150.20.030.50L		8	15	20	37	0,3	5	5.9	●
F3.8.150.20.150.30L		8	15	20	37	1,5	3	5.9	●
F3.8.150.25.030.30L		8	15	25	37	0,3	3	5.9	●
F3.8.150.25.150.30L		8	15	25	37	1,5	3	5.9	●
F3.8.150.30.030.30L		8	15	30	37	0,3	3	5.9	●
F3.8.150.30.030.40R		8	15	30	37	0,3	4	5.9	●
F3.8.150.30.150.30L		8	15	30	37	1,5	3	5.9	●
F3.8.150.40.030.40R		8	15	40	57	0,3	4	5.9	●

● Ex stock ○ On demand

✻ With internal cooling

System code > A440 Tool Holder > A454 Cutting data > A462 Nonstandard order > A461

Inserts (P1–P4)

P1	6	58	21	603	L/R	YPG202
1	2	3	4	5	6	7

1 Series

2 Shank square section D (h6) [mm]

3 Min. bore diameter D_{min} [mm]

4 Effective length L_1 [mm]

5 Thread pitch [mm]

Code	Inch (partial profile)
601	60° / 0,5–0,7 mm / 48–36 TPI
602	60° / 0,5–1,0 mm / 48–24 TPI
603	60° / 1,0–1,5 mm / 24–16 TPI
551	55° / 28–18 TPI
552	55° / 24–16 TPI

6 Type

7 Grade

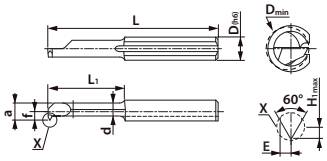
Threading

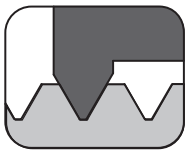
P1

– 60° partial profile



Right hand style





Article	✻	Dimensions [mm]										YPG202
		D (h6)	D_{min}	L_1	L	P	a	f	d	E	H_{1max}	r_{min}	
P1.4.24.11.601L		4	2.4	11	27	0.5-0.7 / 48-36	2.2	1.1	1,6	0.35	0.43	0.03	●
P1.4.24.11.601R		4	2.4	11	27	0.5-0.7 / 48-36	2.2	1.1	1,6	0.35	0.43	0.03	●
P1.4.38.11.602L		4	3.8	11	27	0.5-1.0 / 48-24	3.7	1.85	2,8	0.45	0.66	0.03	○
P1.4.38.11.602R		4	3.8	11	27	0.5-1.0 / 48-24	3.7	1.85	2,8	0.45	0.66	0.03	●
P1.4.38.16.601L		4	3.8	16	32	0.5-0.7 / 48-36	3.7	1.85	2,8	0.35	0.43	0.03	○
P1.4.38.16.601R		4	3.8	16	32	0.5-0.7 / 48-36	3.7	1.85	2,8	0.35	0.43	0.03	●
P1.5.48.16.602L		5	4.8	16	32	0.5-1.0 / 48-24	4.7	2.35	3,2	0.45	0.66	0.03	○
P1.5.48.16.602R		5	4.8	16	32	0.5-1.0 / 48-24	4.7	2.35	3,2	0.45	0.66	0.03	●
P1.5.48.16.603L		5	4.8	16	32	1.0-1.5 / 24-16	4.7	2.35	3,2	0.7	0.97	0.06	○
P1.5.48.16.603R		5	4.8	16	32	1.0-1.5 / 24-16	4.7	2.35	3,2	0.7	0.97	0.06	●
P1.6.58.21.603L		6	5.8	21	37	1.0-1.5 / 24-16	5.5	2.75	4	0.7	0.97	0.03	○
P1.6.58.21.603R		6	5.8	21	37	1.0-1.5 / 24-16	5.5	2.75	4	0.7	0.97	0.03	●

● Ex stock ○ On demand

✻ With internal cooling

System code A448 | Tool Holder A454 | Cutting data A462 | Nonstandard order A461

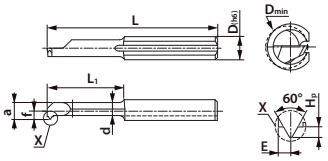
Threading

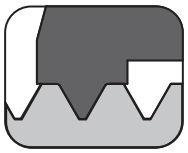
P2

– Metric ISO coarse and fine thread
– 60° full profile



Right hand style





Article	✻	Dimensions [mm]										YPG202
		D (h6)	D_{min}	L_1	L	P	a	f	d	E	H_{1max}	r_{min}	
P2.4.32.11.070L		4	M4x0.7	11	27	0.7	3	1.5	2,4	0.5	0.38	0.41	○
P2.4.32.11.070R		4	M4x0.7	11	27	0.7	3	1.5	2,4	0.5	0.38	0.41	●
P2.4.34.11.050L		4	MF4x0.5	11	27	0.5	3.3	1.65	2,65	0.35	0.27	0.29	○
P2.4.34.11.050R		4	MF4x0.5	11	27	0.5	3.3	1.65	2,65	0.35	0.27	0.29	○
P2.4.40.11.080L		4	M5x0.8	11	27	0.8	3.9	1.95	2,8	0.55	0.43	0.47	○
P2.4.40.11.080R		4	M5x0.8	11	27	0.8	3.9	1.95	2,8	0.55	0.43	0.47	●
P2.5.48.16.100L		5	M6x1/ MF8x1	16	32	1	4.5	2.25	3,4	0.7	0.54	0.59	○
P2.5.48.16.100R		5	M6x1/ MF8x1	16	32	1	4.5	2.25	3,4	0.7	0.54	0.59	●
P2.5.50.16.050L		5	MF6x0.5	16	32	0.5	4.4	2.2	3,3	0.35	0.27	0.29	○
P2.5.50.16.050R		5	MF6x0.5	16	32	0.5	4.4	2.2	3,3	0.35	0.27	0.29	○
P2.5.54.16.075L		5	MF6x0.75	16	32	0.75	4.7	2.35	3,8	0.55	0.41	0.45	○
P2.5.54.16.075R		5	MF6x0.75	16	32	0.75	4.7	2.35	3,8	0.55	0.41	0.45	○
P2.6.58.21.100L		6	M7x1/MF8x1	21	37	1	5.5	2.75	4,4	0.7	0.54	0.59	○
P2.6.58.21.100R		6	M7x1/MF8x1	21	37	1	5.5	2.75	4,4	0.7	0.54	0.59	●
P2.6.65.21.125L		6	M8x1.25 /MF10x1.25	21	37	1.25	5.9	2.95	4,8	0.9	0.68	0.73	○
P2.6.65.21.125R		6	M8x1.25 /MF10x1.25	21	37	1.25	5.9	2.95	4,8	0.9	0.68	0.73	●

● Ex stock ○ On demand

✻ With internal cooling

System code A448 | Tool Holder A454 | Cutting data A462 | Nonstandard order A461

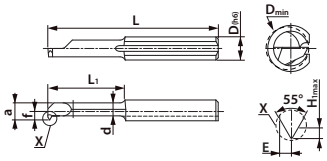
Threading

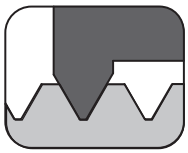
P3

– 55° partial profile



Right hand style





Article	✻	Dimensions [mm]										YPG202
		D (h6)	D_{min}	L_1	L	P	a	f	d	E	H_{1max}	r_{min}	
P3.4.40.11.551L		4	4	11	27	28-24	3.9	1.95	2,8	0.5	0.677	0.125	○
P3.4.40.11.551R		4	4	11	27	28-24	3.9	1.95	2,8	0.5	0.677	0.125	●
P3.5.47.16.552L		5	4.7	16	32	48-24	3.9	1.95	3,3	0.45	0.4	0.17	○
P3.5.47.16.552R		5	4.7	16	32	48-24	3.9	1.95	3,3	0.45	0.4	0.17	●

● Ex stock ○ On demand

✻ With internal cooling

System code > A448 Tool Holder > A454 Cutting data > A462 Nonstandard order > A461

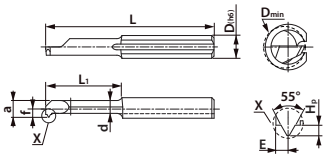
Threading

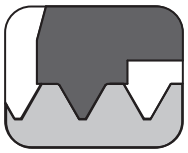
P4

– Whitworth thread
– 55° full profile



Right hand style





Article	✻	Dimensions [mm]										YPG202
		D (h6)	D_{min}	L_1	L	P	a	f	d	E	H_p	
P4.5.52.16.TPI28L		5	1/16"-28BSP / G1/16"	16	32	28	4.95	2.475	3,75	0.8	0.58	○
P4.5.52.16.TPI28R		5	1/16"-28BSP / G1/16"	16	32	28	4.95	2.475	3,75	0.8	0.58	○
P4.6.62.16.TPI19L		6	1/4"-19BSP / G1/4"	16	32	19	5.95	2.975	3,75	1	0.86	○
P4.6.62.16.TPI19R		6	1/4"-19BSP / G1/4"	16	32	19	5.95	2.975	3,75	1	0.86	○

● Ex stock ○ On demand
✻ With internal cooling

System code > A448 Tool Holder > A454 Cutting data > A462 Nonstandard order > A461

Notes

Tool holders

SH	1600	06	(L/R)
1	2	3	4

Type	
Code	Description
DH	Double-sided tool holder
SH	Single-sided tool holder with G1/8" coolant connection
QH	Square tool holder with reduction sleeve
QH90	Square tool holder 90° with reduction sleeve
QHU	Universal tool holder for turning centre with reduction sleeve
RS	Reduction sleeve

1

Shank square section D (h6) [mm]

2

Bore diameter [mm]

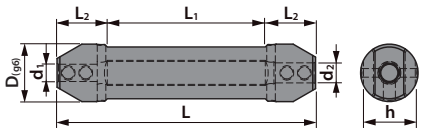
3

Type

4

DH – Double-sided tool holder





Article	✲	Stock	Dimensions [mm]						
			D (g6)	d_1	d_2	L	L_1	L_2	h
DH1600.4.5		●	16	4	5	80	50	15	15
DH1600.6.7		●	16	6	7	80	50	15	15
DH1905.4.5		○	19.05	4	5	90	55	17.5	18
DH1905.6.7		○	19.05	6	7	90	55	17.5	18
DH2000.4.5		●	20	4	5	90	55	17.5	19
DH2000.6.7		●	20	6	7	90	55	17.5	19
DH2200.4.5		○	22	4	5	90	55	17.5	19
DH2200.6.7		○	22	6	7	90	55	17.5	19
DH2500.4.5		●	25	4	5	105	75	15	24
DH2500.6.7		●	25	6	7	105	75	15	24
DH2540.4.5		○	25.4	4	5	105	75	15	24.4
DH2540.6.7		○	25.4	6	7	105	75	15	24.4

● Ex stock ○ On demand

✲ With internal cooling

Spare parts

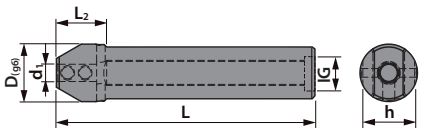
	d1	4	6
	Screw	M5×5MT	M5×5MT
	Wrench	WT25L	WT25L

System code A454 Technical info A607 Cutting data A462

SH – Single-sided tool holder

Coolant connection G1/8"





Article	✻	Stock	Dimensions [mm]					
			D (g6)	d_1	L	L_2	h	IG
SH1600.04	✻	●	16	4	75	20	15	G1/8"
SH1600.05	✻	●	16	5	75	20	15	G1/8"
SH1600.06	✻	●	16	6	75	20	15	G1/8"
SH1600.07	✻	●	16	7	75	20	15	G1/8"
SH1600.08	✻	○	16	8	75	20	15	G1/8"
SH1905.04	✻	○	19.05	4	90	20	18	G1/8"
SH1905.05	✻	○	19.05	5	90	20	18	G1/8"
SH1905.06	✻	○	19.05	6	90	20	18	G1/8"
SH1905.07	✻	○	19.05	7	90	20	18	G1/8"
SH2000.04	✻	●	20	4	90	20	19	G1/8"
SH2000.05	✻	●	20	5	90	20	19	G1/8"
SH2000.06	✻	●	20	6	90	20	19	G1/8"
SH2000.07	✻	●	20	7	90	20	19	G1/8"
SH2000.08	✻	○	20	8	90	20	19	G1/8"
SH2200.04	✻	○	22	4	90	20	21	G1/8"
SH2200.05	✻	○	22	5	90	20	21	G1/8"
SH2200.06	✻	○	22	6	90	20	21	G1/8"
SH2200.07	✻	○	22	7	90	20	21	G1/8"
SH2500.04	✻	○	25	4	100	20	24	G1/8"
SH2500.05	✻	○	25	5	100	20	24	G1/8"
SH2500.06	✻	○	25	6	100	20	24	G1/8"
SH2500.07	✻	○	25	7	100	20	24	G1/8"
SH2540.04	✻	○	25.4	4	100	20	24	G1/8"
SH2540.05	✻	○	25.4	5	100	20	24	G1/8"
SH2540.06	✻	○	25.4	6	100	20	24	G1/8"
SH2540.07	✻	○	25.4	7	100	20	24	G1/8"

● Ex stock ○ On demand

✻ With internal cooling

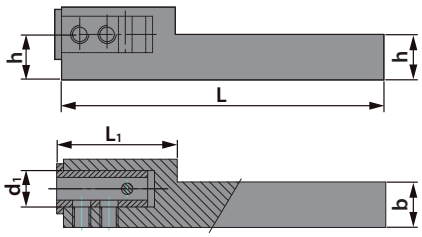
Spare parts

	d1	4	5	6	7	8
	Screw	M5×5MT	M5×5MT	M5×5MT	M5×5MT	M5×5MT
	Wrench	WT25L	WT25L	WT25L	WT25L	WT25L

System code A454 Technical info A607 Cutting data A462

QH – Square tool holder Adapter sleeve





Article	✲	Stock		Dimensions [mm]						
		R	L	d_1	L	L_1	h	b	H_1	B_1
QH1010.08L			○	8	100	25	10	10	16	15
QH1010.08R		○		8	100	25	10	10	16	15
QH1212.08L			○	8	100	25	12	12	16	15
QH1212.08R		○		8	100	25	12	12	16	15
QH1616.12L			○	12	125	25	16	16	24.5	19.5
QH1616.12R		○		12	125	25	16	16	24.5	19.5

● Ex stock ○ On demand

✲ With internal cooling

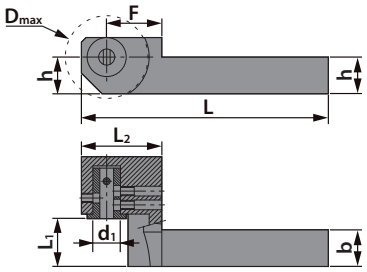
Spare parts

	Article	QH1010.08L	QH1010.08R	QH1212.08L	QH1212.08R	QH1616.12L	QH1616.12R
	Reduzierhülse	RS08.*	RS08.*	RS08.*	RS08.*	RS12.*	RS12.*
	Screw	M5×8MT	M5×8MT	M5×8MT	M5×8MT	M5×8MT	M5×8MT
	Wrench	WT25L	WT25L	WT25L	WT25L	WT25L	WT25L

System code A454 Technical info A607 Cutting data A462

QH90 – Square 90° tool holder Adapter sleeve





Article	✻	Stock		Dimensions [mm]									
		R	L	d_1	L	L_1	L_2	h	b	H_1	B_1	D_{max}	F
QH901010.08L			○	8	100	28	18	10	10	16.5	43	26	19
QH901010.08R		○		8	100	28	18	10	10	16.5	43	26	19
QH901212.12L			○	12	100	30	23	12	12	20.5	48	26	19
QH901212.12R		○		12	100	30	23	12	12	20.5	48	26	19
QH901616.12L			○	12	105	35	28	16	16	26	53	36	24
QH901616.12R		○		12	105	35	28	16	16	26	53	36	24

● Ex stock ○ On demand

✻ With internal cooling

Spare parts

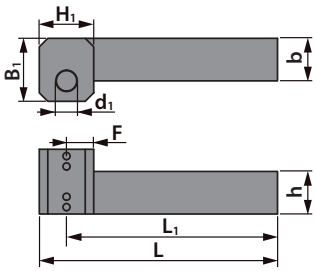
	Article	QH901010.08L	QH901010.08R	QH901212.12L	QH901212.12R	QH901616.12L	QH901616.12R
	Reduzierhülse	RS08.*	RS08.*	RS12.*	RS12.*	RS12.*	RS12.*
	Screw	M5×8MT	M5×8MT	M5×8MT	M5×8MT	M5×8MT	M5×8MT
	Wrench	WT25L	WT25L	WT25L	WT25L	WT25L	WT25L

System code A454 Technical info A607 Cutting data A462

QHU – Universal tool holder

For machining centre with adapter sleeve





Article	✲	Stock		Dimensions [mm]							
		R	L	d_1	L	L_1	h	b	H_1	B_1	F
QHU2020.12L			●	12	140	124	20	20	32	37	16
QHU2020.12R		○		12	140	124	20	20	32	37	16
QHU2525.12L			●	12	140	124	25	25	32	37	16
QHU3232.12L			●	12	140	124	32	32	32	37	16

● Ex stock ○ On demand

✲ With internal cooling

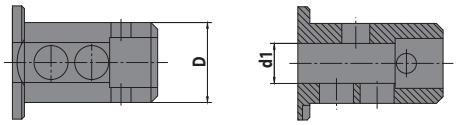
Spare parts

	Article	QHU2020.12L	QHU2020.12R	QHU2525.12L	QHU3232.12L
	Reduzierhülse	RS12.*	RS12.*	RS12.*	RS12.*
	Screw	M5×8MT	M5×8MT	M5×8MT	M5×8MT
	Wrench	WT25L	WT25L	WT25L	WT25L

System code A454 Technical info A607 Cutting data A462

RS – Reduction sleeve



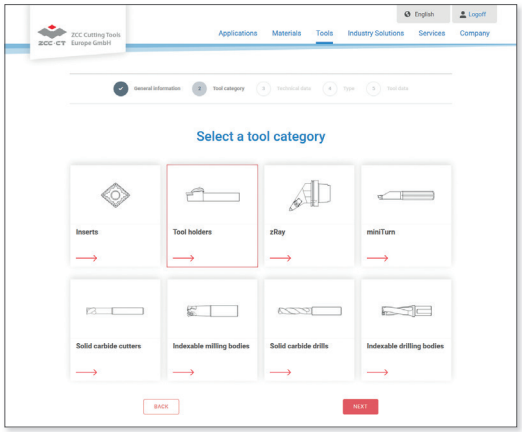


Article	Dimensions [mm]		Stock
	d_1	D	
RS08.04	4	8	●
RS08.05	5	8	●
RS08.06	6	8	●
RS12.04	4	12	●
RS12.05	5	12	●
RS12.06	6	12	●
RS12.07	7	12	●
RS12.08	8	12	●

● Ex stock ○ On demand

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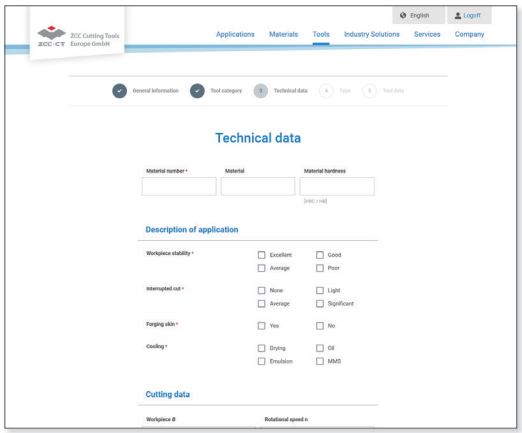
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Defining the tool parameters

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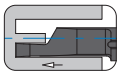
Solid carbide boring bars – miniTURN

Material group		Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]		
						HW	HC (PVD)	
						YD201	YPG202	
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	70	150	
		approx. 0,45 % C	annealed	190	2	70	135	
		approx. 0,45 % C	tempered	250	3	50	115	
		approx. 0,75 % C	annealed	270	4	45	110	
		approx. 0,75 % C	tempered	300	5	40	105	
	Low-alloyed steel		annealed	180	6	55	135	
			tempered	275	7	45	100	
			tempered	300	8	40	90	
			tempered	350	9	40	85	
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	–	100	
			hardened and tempered	325	11	–	75	
M	Stainless steel	ferritic/martensitic	annealed	200	12	60	120	
		martensitic	tempered	240	13	50	100	
		austenitic	quench hardened	180	14	50	115	
		austenitic-ferritic		230	15	40	100	
K	Grey cast iron	perlitic/ferritic		180	16	55	165	
		perlitic (martensitic)		260	17	45	145	
	Cast iron with spheroidal graphite	ferritic		160	18	65	175	
		perlitic		250	19	50	130	
	Malleable cast iron	ferritic		130	20	–	135	
		perlitic		230	21	–	130	
N	Aluminium wrought alloys	cannot be hardened		60	22	200	400	
		hardenable	hardened	100	23	150	300	
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24	100	200	
		≤ 12 % Si, hardenable	hardened	90	25	80	160	
		> 12 % Si, cannot be hardened		130	26	60	120	
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27	60	120	
		CuZn, CuSnZn		90	28	150	300	
		CuSn, Pb-free copper, electrolytic copper		100	29	60	120	
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30	30	75	
			hardened	280	31	30	40	
		Ni or Co bass	annealed	250	32	30	60	
			hardened	350	33	30	55	
			cast	320	34	30	55	
	Titanium alloys	pure titanium		R_m 400	35	30	105	
		α and β alloys	hardened	R_m 1050	36	–	40	
H	Hardened steel		hardened and tempered	55 HRC	37			
			hardened and tempered	60 HRC	38			
	Hard cast iron		cast	400	39			
	Hardened cast iron		hardened and tempered	55 HRC	40			
X	Non-metallic materials	Thermoplastics			41			
		Thermosetting plastics			42			
		Plastic, glass-fibre reinforced GFRP			43			
		Plastic, carbon fibre reinforced CFRP			44			
		Graphite			45			
		Wood			46			

Note: The given cutting values are guide values, which were determined under ideal conditions.

HC Coated carbide
HW Uncoated carbide, primary component (WC)

Depth of cut a_p and feed rate f

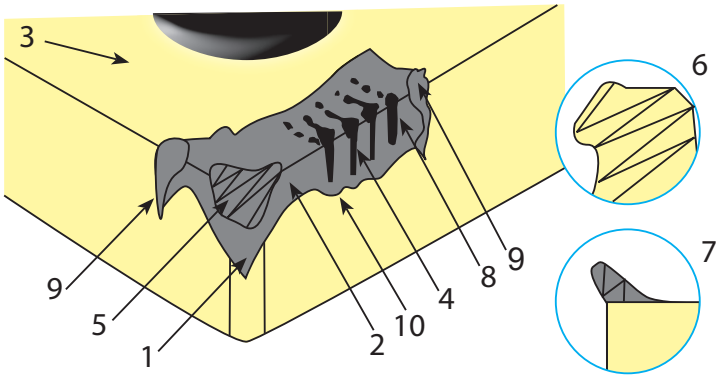
Products	Application			Radius [mm]				
				0,03	0,05	0,1	0,15	0,2
T1–T4		Turning Profiling	Feed rate f [mm/R]	0,01–0,02	0,01–0,03	0,03–0,06	0,03–0,08	0,04–0,12
			Depth of cut a_p [mm]	0,01–0,03	0,02–0,07	0,05–0,15	0,08–0,20	0,10–0,25
C1		Turning Chamfering	Feed rate f [mm/R]	0,01–0,03				
B1		Back turning	Feed rate f [mm/R]	–	0,01–0,03	0,03–0,06	0,03–0,08	–
			Depth of cut a_p [mm]	–	0,02–0,07	0,05–0,15	0,08–0,20	–
G1–G2		Grooving Turning	Feed rate f [mm/R]	0,01–0,05				
F1–F3		Face grooving	Feed rate f [mm/R]	0,01–0,03				

Technical information

Trouble shooting - turning	**A608-A610**
Technical Information - turning	**A611-A618**
Special tools – turning	**A619**

Trouble shooting – general turning

Fig.	Type of wear	Effects	Reason	Countermeasure
1+2	Flank wear	– Bad surface quality and dimensional stability – Increase of cutting force	– Grade not wear-resistant enough – Cutting speed too high – Clearance angle too small – Feed rate too low	– Grade with higher wear-resistance – Reduce cutting speed – Increase clearance angle – Reduce feed rate
3	Crater wear	– Bad surface quality and chip control	– Grade not wear-resistant enough – Cutting speed too high – Feed rate too low	– Grade with higher wear-resistance – Reduce cutting speed – Reduce feed rate
4	Chipping	– Unstable tool life – Sudden breakage of cutting edge	– Grade too hard – Feed rate too high – Cutting edge not stable enough – Stability of the holder or tension insufficient	– Grade with higher toughness – Reduce feed rate – Change honing of cutting edge – Use a more stable tool holder
5	Breakage	– Increase of cutting force – Bad surface quality and dimensional stability	– Grade too hard – Feed rate too high – Cutting edge not stable enough – Stability of the holder or tension insufficient	– Grade with higher toughness – Reduce feed rate – Change honing of cutting edge – Use a more stable tool holder
6	Plastic deformation	– Bad dimensional stability – Damage to cutting edge	– Grade not wear-resistant enough – Cutting speed too high – Cutting depth and/or feed rate too high – Temperature on the cutting edge too high	– Grade with higher toughness – Reduce cutting speed – Reduce cutting depth and feed rate – Grade with higher heat-resistance
7	Welding	– Increase of cutting force – Bad surface quality	– Cutting speed too low – Cutting edge not sharp enough – Grade not suitable	– Increase cutting speed – Increase rake angle – Use a more suitable grade
8	Thermal cracks	– Breakage due to thermal interaction, often caused when cutting is interrupted (milling)	– Temperature fluctuation when machining – Grade too hard	– Dry machining – Grade with higher toughness
9	Notch wear	– Burr formation – Increase of cutting force	– Damage through chips (jagged edges) – Feed rate and cutting speed too high	– Grade with higher wear-resistance – Increase rake angle to get a sharper cutting edge – Reduce cutting speed
10	Flaking (coating)	– Often appears when machining hardened materials or caused by vibration	– Cutting edge adhesion and chipping – Bad chip removal	– Increase rake angle to get a sharper cutting edge – Chip breaker with bigger chip space



Trouble shooting – PCBN & PCD

Type of wear	Countermeasure	
	Geometry	Cutting condition
Flank wear	– Sharper cutting edge for reduced cutting force – Smaller negative chamfer – Use positive inserts	– Reduce cutting speed – Increase feed rate to reduce operation time
Notch wear	– Bigger radius	– Use "method of altering feed rate"
Crater wear/breakage due to crater wear	– Sharper cutting edge for reduced cutting force	– Reduce cutting speed – Increase feed rate to minimise operation time and to increase distance between cutting edge and crater
Chipping due to rough condition or vibration	– Bigger negative chamfer angle and/or honed chamfer	– Increase feed rate to reduce number of hits
Flaking	– Sharper cutting edge to reduce cutting force – Smaller negative chamfer – Use positive inserts	– Increase feed rate to reduce operation time
Thermal crack/breakage	– Sharper cutting edge for reduced cutting force – Smaller negative chamfer – Use positive inserts	– Reduce cutting speed, feed rate and depth of cut – Dry machining
Chipping	– Bigger negative chamfer	– Increase cutting speed to reduce cutting force

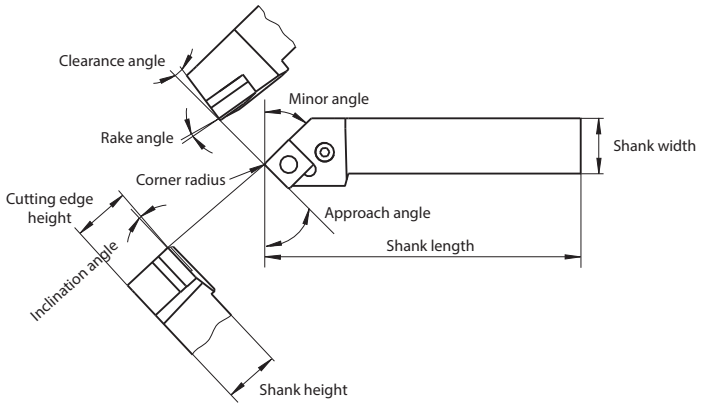
For investigation please send us the used inserts. If breakage is the problem please use inserts only 80–90 % of expected tool life because broken inserts almost have no information.

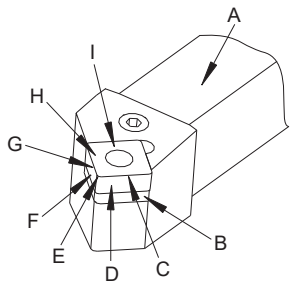
Trouble shooting – threading

Problème	Cause	Solution
Big flank wear	– Cutting speed too high	– Reduce cutting speed
	– Width of cut too small	– Reduce number of width of cut
	– Insert over/under centre line	– Adjust insert height
Asymmetric wear on left and right cutting edge	– Width of cut not optimal	– Adjust width of cut
	– Inclination angle and lead angle are not optimally aligned	– Change the shim to get the correct angle
Breakage	– Cutting speed too low	– Increase cutting speed
	– Cutting force too high	– Increase number of width of cut – Reduce width of cut
	– Unstable conditions	– Improve clamping and overhang to avoid vibrations
	– Bad chip control	– Increase coolant pressure for better chip removal
Déformation plastique	– Cutting speed and temperature too high	– Reduce cutting speed – Increase number of width of cut – Reduce width of cut
	– Insufficient coolant supply	– Improve coolant supply
Mauvais état de surface du filet	– Cutting speed too low	– Increase cutting speed
	– Insert over/under centre line	– Adjust insert height
	– Bad chip control	– Change feed rate and/or width of cut
Profil de filet incorrect	– Incorrect insert height	– Change insert height
	– Tool holder doesn't form a 90° angle	– Adjust tool holder
	– Pitch error in machine	– Adjust machine
Profil de filetage de profondeur insuffisante	– Incorrect insert height	– Change insert height
	– Breakage of cutting edge	– Change insert
	– Excessive wear	– Change insert
Formation d'arêtes rapportées	– Temperature on cutting edge is too low	– Increase cutting speed
	– Often occurs when machining of carbon steel and stainless steel	– Use grade with sufficient toughness (PVD coated)
Vibrations	– Incorrect cutting data	– Increase or highly decrease cutting speed
	– Incorrect insert height	– Change insert height
	– Insufficient clamping	– Improve clamping system and minimise overhang

General turning

Cutting tool geometry





A Holder
B Shim
C Main cutting edge
D Flank face
E Nose radius
G Minor cutting edge
H Rake face
I Insert

Rake angle

The rake angle is a cutting edge angle that has large effects on cutting resistance, chip disposal, cutting temperature and tool life. Increasing the rake angle in positive direction improves the sharpness of the cutting edge and the cutting force decreases but at the same time it lowers the strength. To increase the cutting resistance the rake angle must be increased in negative direction.

Rake angle	Applications
Small	Machining of fragile and hard materials, roughing and interrupted cut
Large	Machining of plastic materials and soft materials, precision machining

Clearance angle

The flank angle prevents friction between the flank face and work piece resulting in smooth feed. Increasing the flank angle decreases the cutting force and the surface roughness becomes better but on the other hand this lowers the cutting edge strength and decreases the flank wear occurrence.

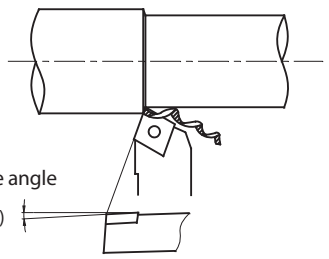
Clearance angle	Applications
Small	Machining of hard and demure materials, for roughing operation with stable cutting edge
Large	Precision machining with low cutting force, work pieces suffer from work hardening easily

Inclination angle

The positive and negative edge inclination angle determines the discharging direction of chips. In heavy cutting, the cutting edge receives extremely large shocks at the beginning of cutting. Cutting edge inclination keeps the cutting edge from receiving this shock and prevents fracturing. On the other hand the back force increases and occurs vibration. For a finishing operation a positive angle is more suitable.

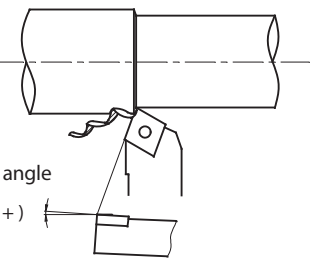
When the edge inclination angle is negative, i.e. the cutting edge is located at the lowest point relative to the bottom plane of the tool holder, the chips flow to the machined surface of workpiece.

Fig. (1)



As shown in Fig. (2), when the edge inclination angle is positive, i.e. the cutting edge is located at the highest point relative to the bottom plane of the tool holder, the chips flow to the un-machined surface of workpiece.

Fig. (2)

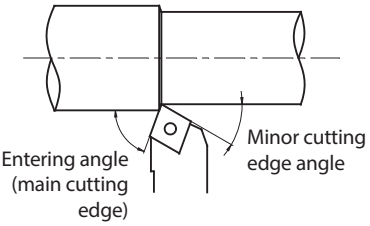


General turning

Entering angle (main cutting edge)

Reducing the lead angle increases the strength of the cutting edge. Because the lead angle is small, the cutting width is long, the force on the unit cutting edge length is small. At the same time, reducing the lead angle can increase the tool life. Normally, when turning thin long shaft and ladder shaft, the lead angle adapts 90°. The lead angle is increased, radial force is reduced, cutting is stable, cutting thickness is increased and chip breaking performance is good.

Entering angle	Applications
Small	For material with high tensile strength, high hardness or hardened layer on surface
Large	For machining with low rigidity



Minor cutting edge

The minor cutting edge angle is the main angle on influence surface roughness; its size is also influence strength of cutter. When the minor cutting edge angle is too small, the cutting force increases and results in chattering and vibration.
The selection principle for the minor cutting edge angle is under the condition of rough machining, or un-influencing friction and producing vibration, the smaller angle should be chosen; the bigger angle can be used for precision machining.

Nose radius

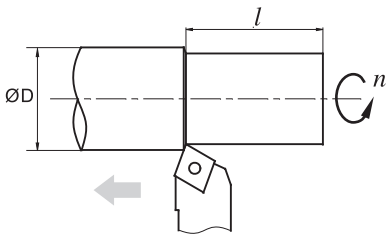
The nose radius effects the cutting edge strength and the finished surface. By increasing the nose radius the surface finish becomes better and the cutting edge strength improves. Flank and rake wear decreases. If the radius becomes too big, the cutting force increases and causes vibration which effects the chip control negative.

Radius	Applications
Small	Finishing with small cutting depth, machining thin long shaft, rigidity of machine is insufficient
Large	Rough machining, high cutting edge strength is required, rigidity of machine is good, machining hardened materials and interrupted cut

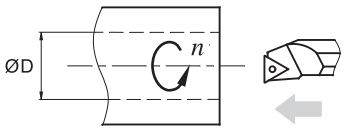
General turning

Cutting speed V_c

$$V_C = \frac{\pi \times D \times n}{1000} \text{ [m/min]}$$



External machining



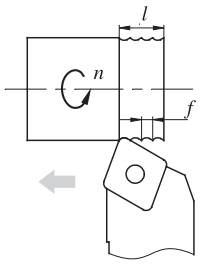
Internal machining

Vc: Cutting speed [m/min]
n: Revolution [1/min]
f: Feed rate [mm]

Example: n = 250 1/min, f = 0,2 mm, l = 150 mm
Result: [insert values in formula Vc]

Feed rate F

$$f = \frac{l}{n} \text{ [mm/rev]}$$



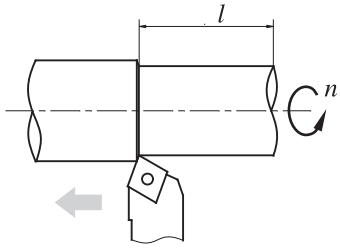
f: Feed rate [mm]
l: Cutting length [mm/min]
n: Revolution [1/min]

Example: n = 500 1/min, l = 100 mm/min
Result: [insert values in formula f]

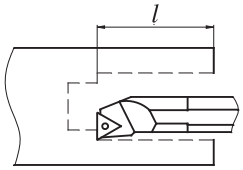
$$f = \frac{l}{n} = \frac{100}{500} = 0{,}2 \text{ mm}$$

Cutting time T_c

$$T_C = \frac{l}{f \times n} \text{ [min]}$$



External machining



Internal machining

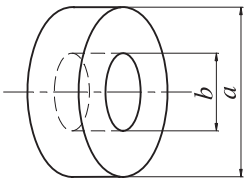
T_C: Cutting time [min]
l: Cutting length [mm/min]
f: Feed rate [mm]
n: Revolution [1/min]

Example: n = 250 1/min, f = 0,2 mm, l = 150 mm
Result: [insert values in formula T_C]

General turning

Cutting time T_c for face milling

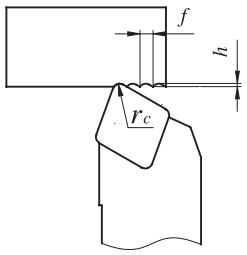
$$T_C = \frac{\pi \times (a^2 - b^2)}{4000 \times V_c \times f} \text{ [min]}$$



T_C: Cutting time [min]
V_C: Cutting speed [m/min]
f: Feed rate [mm]

Theoretical surface roughness R

$$R = \frac{f^2}{8r_c} \times 1000 \text{ [µm]}$$



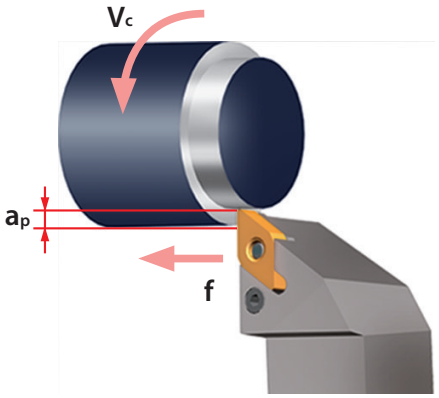
R: Surface roughness [µm]
f: Feed rate [mm]
r_C: Radius of insert [mm]

Example: f = 0,2 mm,
r_C = 0,4 mm

General turning

Three effects of cutting condition for turning

Today short machining time, long tool life and high machining accuracy is expected from modern tools. Based on the machine performance, material shape and hardness of the components the right choice of tool and cutting conditions are the premise for a successful machining process. Cutting speed, feed rate and depth of cut are what we call the "Three effects of cutting".



1. Cutting speed (V_c)

Cutting speed is defined as the rate (or speed) that the material moves past the cutting edge of the tool. The unit for V_c is meter per minute [m/min].

Cutting speed influence: Cutting speed is one of the three important effects of turning and has influence on tool life. Increasing the cutting speed also increases the cutting temperature and that decreases the tool life. Depending on the hardness and type of material the cutting speed varies. Therefore to choose a suitable grade for the cutting speed is necessary.
In general situation, when cutting speed is increased by 20% the tool life will be reduced ½; when the cutting speed is increased by 50% the tool life decreases ⅕. Lower cutting speed results in vibration which will shorten tool life.

2. Feed rate (f)

In turning application feed rate is the distance the tool holder moves per work piece revolution. That has influence to the surface quality. The unit for feed rate is millimetre per revolution [mm/rev]

Feed rate influence: Decreasing the feed rate will increase flank wear and tool life will be shortened. Increasing the feed rate increases the cutting temperature and also flank wear. On the other hand the efficiency will be improved.

3. Depth of cut (a_p)

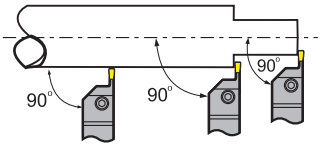
The depth of cut refers to the half different value between the diameter of the unmachined and machined work piece. The unit is millimetre [mm].

Depth of cut influence: Changing depth of cut has no big influence to the tool life. Machining hardened layer with small depth of cut results in friction and short tool life. Machining uncut surface or cast iron material, choose maximum depth of cut according to the machine power so that the cutting edge and corner radius is out of the hardened layer. That helps to prevent chipping and abnormal wear.

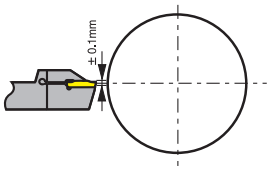
Parting & grooving

Adjusting the cutting edge height

– Mount the tool holder in a 90° angle to the central axis of the workpiece. This improves the surface quality and decreases the risk of vibrations.



– Height tolerance between the cutting edge of the insert and the centre of the work piece should be kept ± 0.1 mm, especially for parting of rods and grooving of materials with a small diameter. This extends the tool life and reduces the cutting forces as well as the formation of burrs.

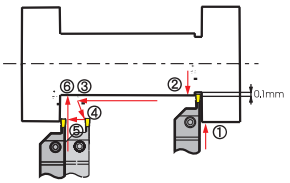


Parting off

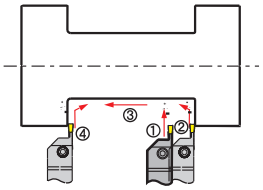
– When the cutting edge nears the central axis of the work piece, reducing the feed rate by 30 % can extend the tool life of the insert.
– Pick a tool holder with the smallest possible overhang to avoid vibrations and tool deflection.

Longitudinal turning and profile turning

– Machining sequence 0.5 mm:
1. Bring radial feed rate to required cutting depth (ap max. 0.75 × cutting edge width)
2. Radial relocating by 0.1 mm
3. Longitudinal turning to opposite shoulder
4. Diagonal relocating by 0.5 mm outward axial feed rate to the starting point
5. Radial feed rate to required cutting depth, etc.

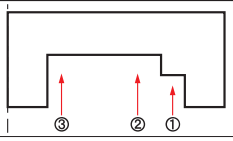


– When machining the chamfer or the base of the slot follow the steps as shown in figure. This reduces tool deflection and avoids cutting edge chipping.

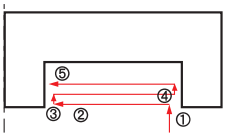


Surface grooving and turning

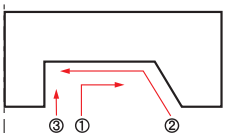
– Roughing:
Processing from largest diameter to the axis. When returning it's recommended to bend the tool slightly.



– Flute turning:
Depth of axial turning less than 0.75 × S (width of insert). When the pocket width is bigger than the depth follow the working steps as shown. When the pocket depth is bigger than the width, we recommend to go to the required diameter step by step.

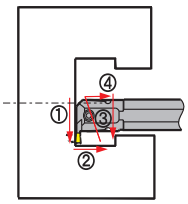


– Finishing:
When finishing begin with the outer diameter and the bottom. Then go on with the inner diameter to the required size.



Internal machining

– Procedure according to figure. For better chip removal in blind holes machine from the inside out.



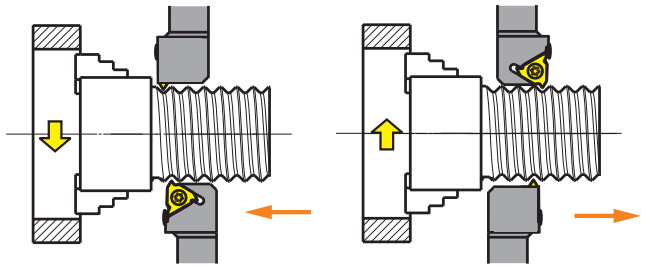
Threading

Steps for best results when thread-cutting

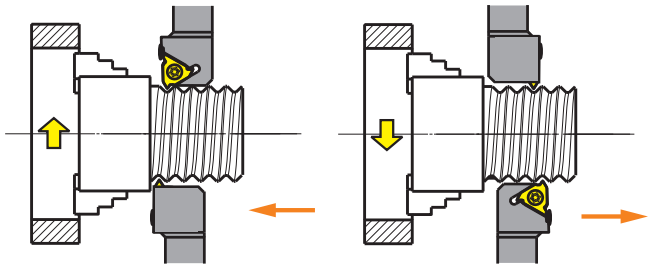
1. Choice of threading method
2. Choice of angle and shim
3. Choice of tool holder and inserts
4. Choice of cutting data
5. Choice of cutting direction

Thread turning method

External machining

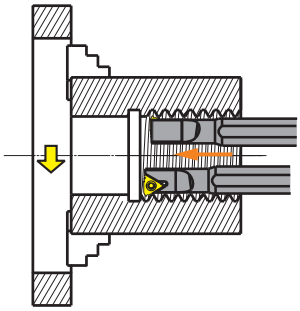


Right hand type

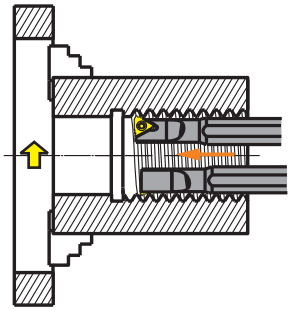


Left hand type

Internal machining



Right hand type



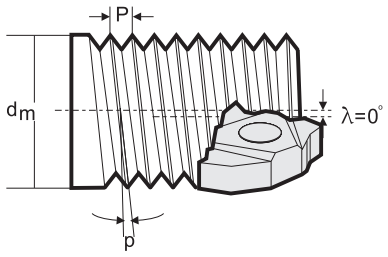
Left hand type

Choice of angle and shim

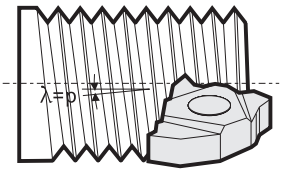
Choice of angle

The flank clearance angles of the thread profile depend on the helical angle of the thread. The helical angle of the thread must coincide with the insert's angle of inclination angle as far as possible to get the ideal profile, to avoid longer unfavourable wear on one of the flanks and thus to ensure tool life.

$$\lambda = \arctan \frac{p}{d_2 \times \pi}$$



Helix angle (p)



Pitch angle (λ)

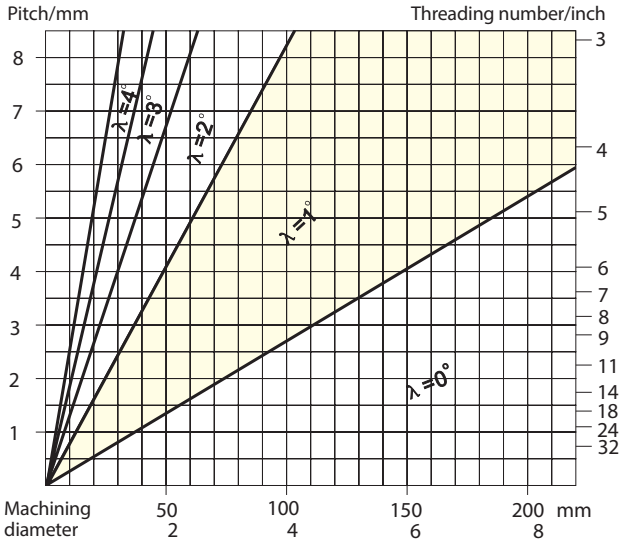
p Pitch
d_2 Flank diameter
λ Pitch angle

Choice of shim

Pitch range	Dimension	Pitch angle	Shim
0,5–3,0 mm	16 mm	0°	MT16-00M(N)
		1°	MT16-01M(N)
		2°	MT16-02M(N)
		3°	MT16-03M(N)
3,5–6,0 mm	22 mm	0°	MT22-00M(N)
		1°	MT22-01M(N)
		2°	MT22-02M(N)
		3°	MT22-03M(N)

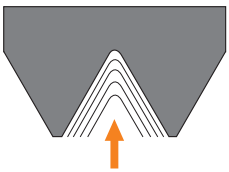
MT-**M** shims for RT and LT thread inserts (from page A581)
MT-**MN** shims for zType thread inserts (from page A559)

The shim λ = 1° is delivered with the tool holder.



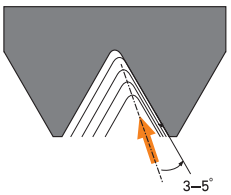
Infeed way of threading

The number of passes and widths of cut are the key points of threading operation. Please choose the cutting parameters with the recommended form according to experience data. In case of breakages or too much wear please have a look at page A447 (trouble shooting).



Radial width of cut

Radial width of cut requires low cutting depth, sharp cutting edge and tough grade. It is recommended when the pitch is smaller than 2 mm, not ideal for material with long chips.



Modified flank width of cut

Infeed at an angle of 3–5° to the flank of the teeth. It is easy for chips flow. Suitable for long chip material and internal threading.

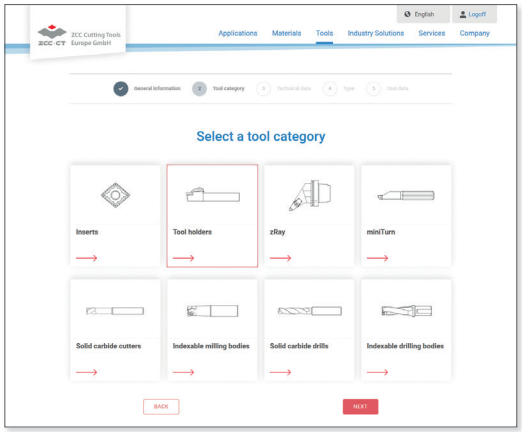


Alternating width of cut

Alternating width of cut is mainly used for large pitches and long chip materials. To get equal insert wear on both edges.

Go directly to the special tool tailored for your turning applications

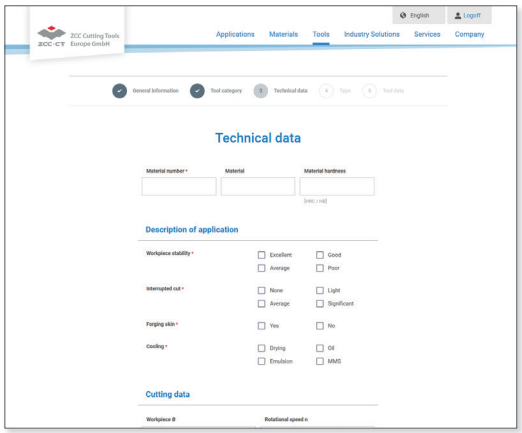
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'Online tool for special tools' launch page where you can select the tool category

Selecting the tool category

Scan the QR code on this page to go directly to the launch page of our online tool where you can request the special tool you need. You can begin by selecting the tool category you need. It's that easy.



Define the relevant tool parameters.

Defining the tool parameters

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European Headquarters
ZCC Cutting Tools Europe GmbH
www.zccct-europe.com
Wanheimer Str. 57, 40472 Düsseldorf, Germany
Tel.: +49 (0)211-989240-0
Fax: +49 (0)211-989240-111
E-mail: info@zccct-europe.com

Branch Office France
ZCC Cutting Tools Europe GmbH
Succursale Française
www.zccct-europe.com
14, Allée Charles Pathé, 18000 Bourges, France
Tel.: +33 (0)2 45 41 01 40
Fax: +33 (0)2 48 66 19 46
E-mail: ventes@zccct-europe.com

Branch Office Italy
ZCC Cutting Tools Europe GmbH
Italy Branch
www.zccct-europe.com
Via Giuseppe di Vittorio 24
20068 Peschiera Borromeo (Milano), Italia
Tel.: +49 (0)211-989240-390
+39 (0)2 39261 156
E-mail: infoit@zccct-europe.com

Branch Office UK
ZCC Cutting Tools Europe GmbH
UK Division
www.zccct-europe.com
Technology & Demonstration Centre UK
Block 1D & 1E Grazebrook Industrial Park, Hulbert Drive
Dudley, West Midlands, DY2 0BE
Tel.: +44 (0)330 441 8766
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