DrillLine

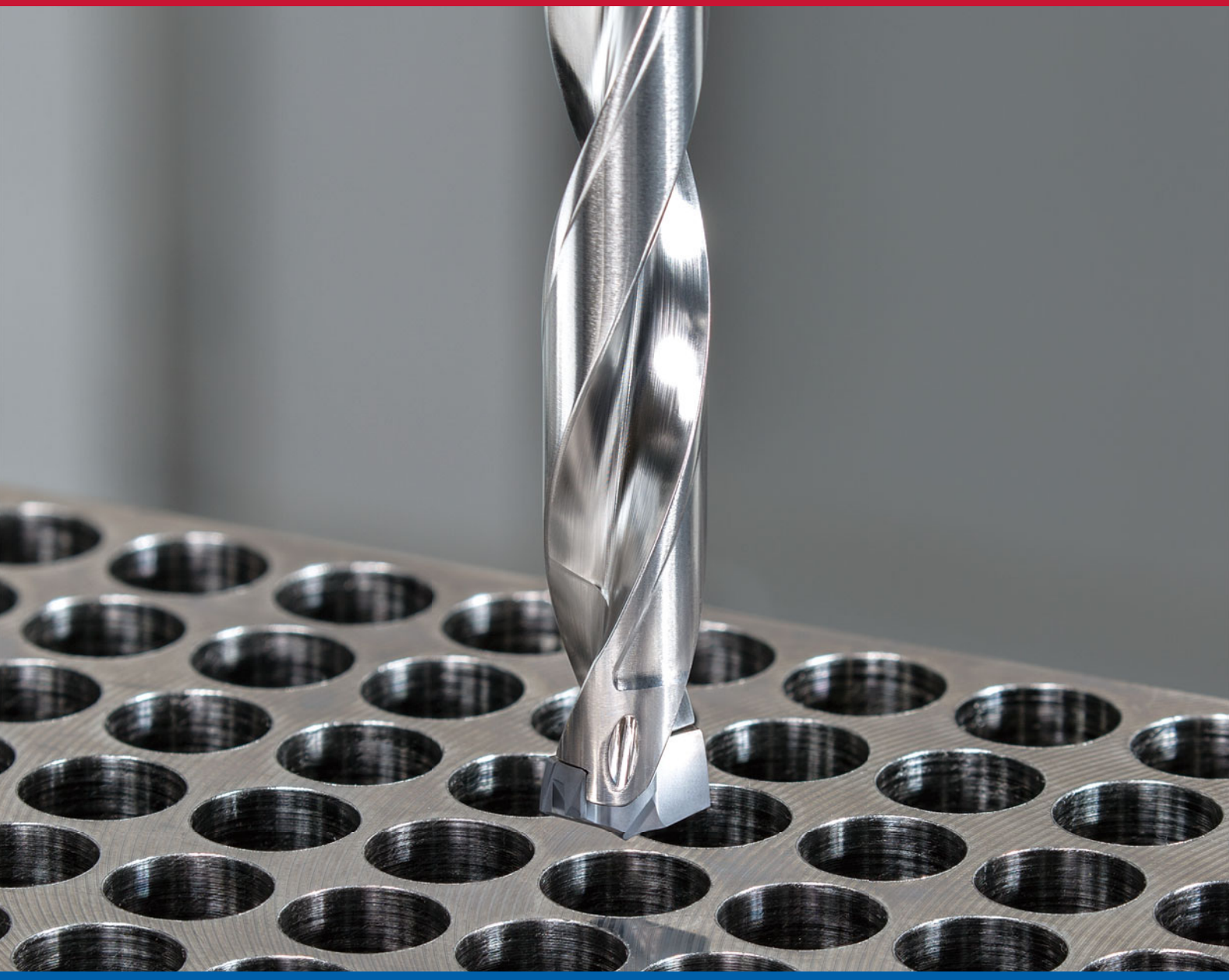
DRILLMEISTER

www.tungaloy.com

Tungaloy Report No. 412-G

High Productive Head-Changeable Drill

New DMC Drill Head Available for Added Stability



INDUSTRY 4.0

FEED the SPEED!


ACCELERATED MACHINING

DrillLine

DRILLMEISTER

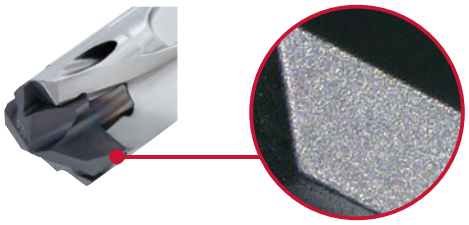
TUNG FORCE DRILL
ACCELERATED MACHINING

Stable performance, long tool life, and significant cost-saving are possible thanks to eliminated tool reconditioning and reduced inventory

Head-changeable drills for unparalleled tool life and machining performance

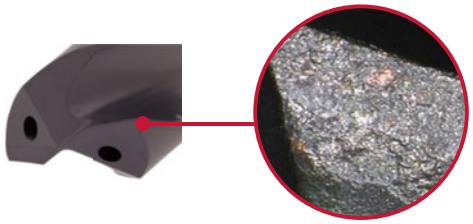
Changeable drill head provides stable and long tool life, while eliminating the need for tool reconditioning

Margin of DrillMeister drill tip



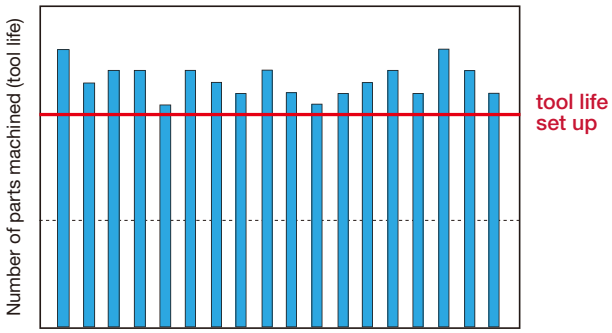
- Cutting head is always new and reliable
- Optimized coating thickness provides extended tool life
- Constant coating quality provides superior tool life predictability

Margin of solid carbide drill tip (after reconditionings)



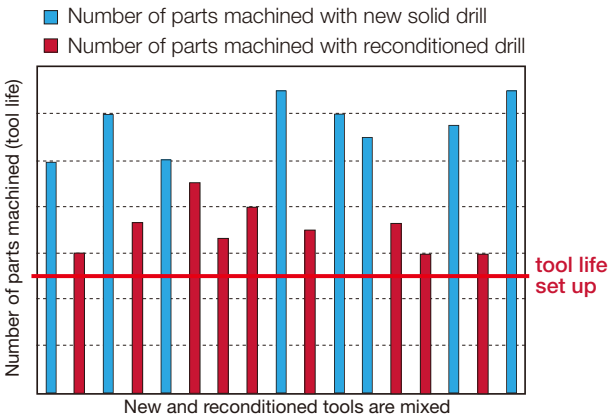
- Excess coating thickness due to multiple re-coating processes
- Fragile coating layer due to excess re-coating
- Result: unpredictable tool life

Tool life fluctuations of head-changeable tools



- Long and predictable too life allows the tool change counter to be set at higher settings

Tool life fluctuations of solid carbide drills

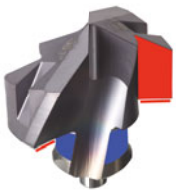


- Tool life prediction is set according to the lowest tool life

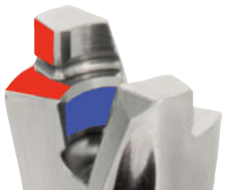
High accuracy, rigidity, and productivity

- Unique clamping structure provides high repeatability and reliability
- No refurbishing cost and reduced tool inventory requirements

Drill head



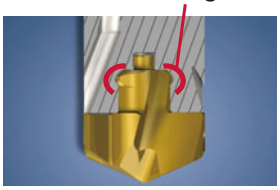
Drill body



Contact area that supports the drill head against cutting force

Contact area that maintains the accurate drill position

Groove to prevent the head from falling off



TID type shank

- Optimized helical flute design enables fast chip evacuation in deep hole drilling
- Ample supply of internal coolant is delivered through the twisted holes

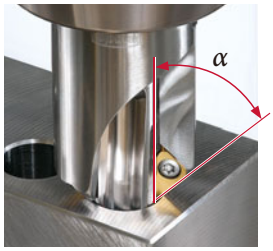
Diameter range	L/D
ø6 - ø6.9	1.5, 3, 5
ø7 - ø25.9	1.5, 3, 5, 8
ø12 - ø22.9	12

TIDC type shank

- The chamfering adapter can be mounted easily on the straight drill shank with no flange in the way

Diameter range	L/D
ø10 - ø19.9	3, 5

Drilling and chamfering in one shot
Three different chamfering angles are available



$\alpha = 60°$ 
$\alpha = 45°$ 
$\alpha = 30°$ 

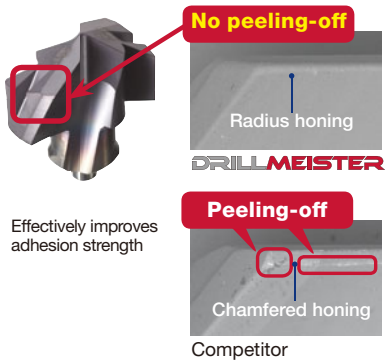
Enhanced drill head variations for higher performance

DMP Drill head - general purpose

- Versatile drill head
- Suited for various materials and applications
- Light cutting due to sharp cutting edge

Unique edge preparation

■ Close-up of edges (new head)

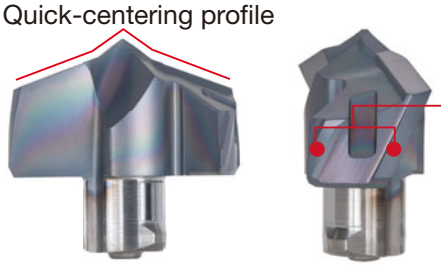


Effectively improves adhesion strength

Competitor

New DMC drill head - high accuracy drilling

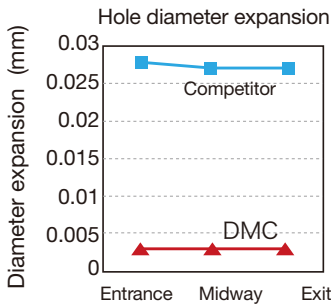
Quick-centering profile

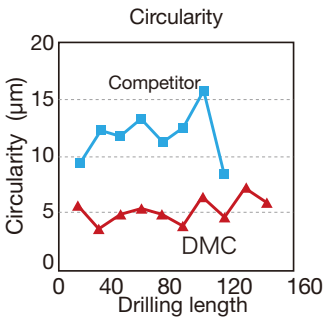


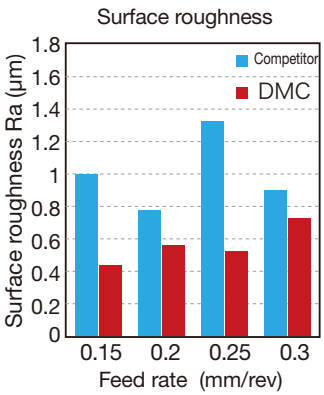
- Innovative chiseled edge for smooth drill entry. No pre-drilling needed in 12xD drilling operation
- Superior hole diameter accuracy and circularity
- Double margins provides superior surface finish and hole drilling straightness

Parameters : *Vc* =100 m/min, *f* = 0.3 mm/rev
Drill diameter : ø13, L/D = 12 (No pilot hole)
Materials : S55C

Hole accuracy





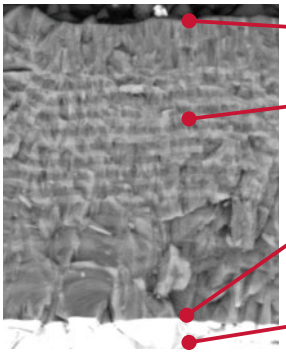


Cutting conditions: *Vc* = 100 m/min, *f* = 0.25 mm/rev
Tool : ø14, L/D = 5
Measured at : 30 mm
Material : S55C

Latest coating optimized for extended tool life

New AH9130

- Unique nano-multilayered coating is made possible by Tungaloy's latest coating technology, providing 3 principal features



Feature 1: Resistance to builtup-edge
Coating layer to resist builtup-edge

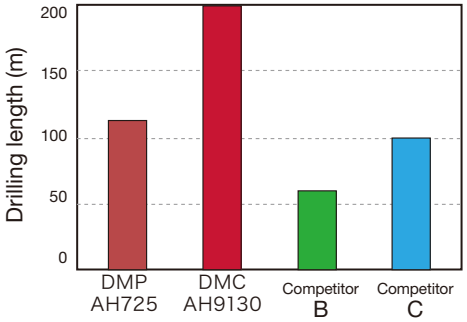
Feature 2: Resistance to wear, oxidation, and fracture
2 coating layers for wear and oxidation resistance
Layered alternatively to prevent crack from propagating to fracture

Feature 3: Strong coating-substrate adhesion
Coating is provided with strong adhesion between the coating layer and carbide substrate to prevent coating delamination

Substrate
Carbide substrate features wear and fracture resistance

Tool life in machining carbon steel (S55C / C55)

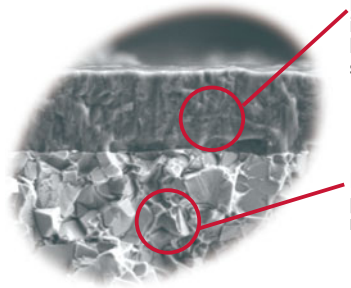
Tool life comparison



Tool	: ø 14 mm, L/D = 5
Workpiece	: S55C / C55
Cutting speed	: *Vc* = 100 m/min
Feed	: *f* = 0.25 mm/rev
Hole depth	: *H* = 60 mm

AH725 PREMIUMTEC

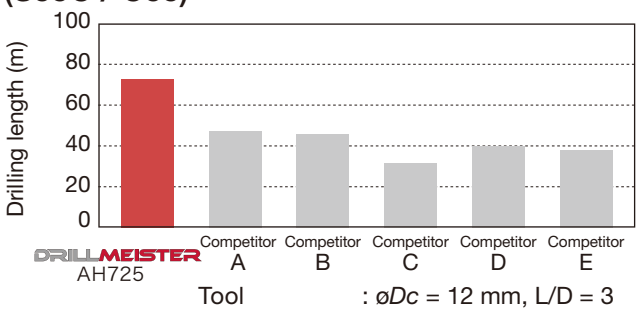
- Reliable PVD grade is suitable for various materials



New coating layer drastically improves adhesion strength between the coating and the substrate.

Micro-grain alloy substrate provides plastic deformation resistance and toughness.

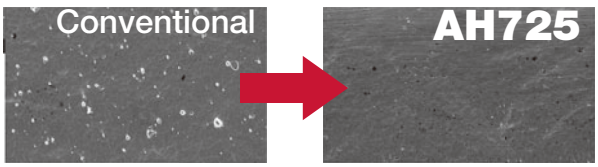
Tool life in machining carbon steel (S55C / C55)



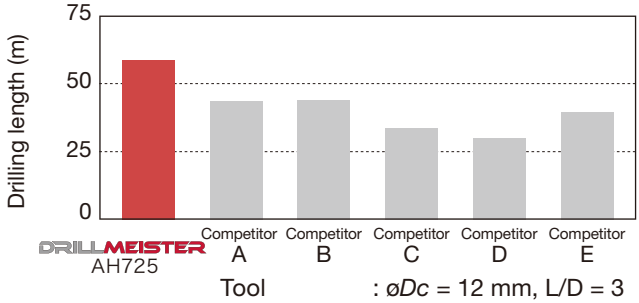
Tool	: ø*Dc* = 12 mm, L/D = 3
Workpiece	: S55C / C55
Cutting speed	: *Vc* = 100 m/min
Feed	: *f* = 0.25 mm/rev
Hole depth	: *H* = 36 mm

Super flash coating

"Premiumtec" improves overall coating surface quality.



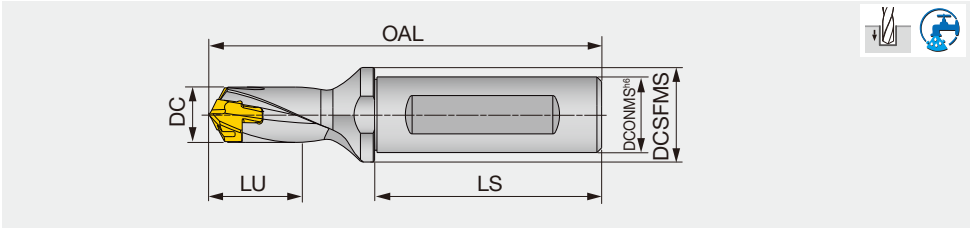
Tool life in machining ductile cast iron (FCD600 / 600-3)



Tool	: ø*Dc* = 12 mm, L/D = 3
Workpiece	: FCD600 / 600-3
Cutting speed	: *Vc* = 150 m/min
Feed	: *f* = 0.25 mm/rev
Hole depth	: *H* = 36 mm

TID L/D=1.5

Head-changeable drill



Designation	DC	DCONMS	DCSFMS	LU	LS	OAL DMP	OAL DMC	Pocket size	Head
TID060F12-1.5	6 - 6.4	12	16	10.1	45	68	–	6	DM*060-DM*064
TID065F12-1.5	6.5 - 6.9	12	16	11.2	45	69.1	–	6	DM*065-DM*069
TID070F12-1.5	7 - 7.4	12	16	12.3	45	70.1	–	7	DM*070-DM*074
TID075F12-1.5	7.5 - 7.9	12	16	12.7	45	70.9	–	7	DM*075-DM*079
TID080F12-1.5	8 - 8.9	12	16	13.5	45	72.4	–	8	DM*080-DM*089
TID090F12-1.5	9 - 9.9	12	16	15.6	45	74.3	–	9	DM*090-DM*099
TID100F16-1.5	10 - 10.9	16	20	16.8	48	79.2	79.8	10	DM*100 - DM*109
TID110F16-1.5	11 - 11.9	16	20	19	48	81.1	81.7	11	DM*110 - DM*119
TID120F16-1.5	12 - 12.9	16	20	20.2	48	83	83.6	12	DM*120 - DM*129
TID130F16-1.5	13 - 13.9	16	20	22.4	48	85.1	85.9	13	DM*130 - DM*139
TID140F16-1.5	14 - 14.9	16	20	23.5	48	89.1	89.9	14	DM*140 - DM*149
TID150F20-1.5	15 - 15.9	20	25	25.7	50	96.2	97.1	15	DM*150 - DM*159
TID160F20-1.5	16 - 16.9	20	25	26.9	50	99.3	100.3	16	DM*160 - DM*169
TID170F20-1.5	17 - 17.9	20	25	29.1	50	102.4	103.4	17	DM*170 - DM*179
TID180F25-1.5	18 - 18.9	25	32	30.3	56	111.5	112.6	18	DM*180 - DM*189
TID190F25-1.5	19 - 19.9	25	32	32.5	56	114.5	115.6	19	DM*190 - DM*199
TID200F25-1.5	20 - 20.9	25	32	33.6	56	117.6	-	20	DM*200 - DM*209
TID210F25-1.5	21 - 21.9	25	32	35.8	56	120.7	-	21	DM*210 - DM*219
TID220F25-1.5	22 - 22.9	25	32	37	56	123.8	-	22	DM*220 - DM*229
TID230F32-1.5	23 - 23.9	32	42	39.2	60	130.8	-	23	DM*230 - DM*239
TID240F32-1.5	24 - 24.9	32	42	40.4	60	133.9	-	24	DM*240 - DM*249
TID250F32-1.5	25 - 25.9	32	42	42.5	60	137	-	25	DM*250 - DM*259

Tool diameter	Hole diameter tolerance*
ø6 - ø25.9	+0.05 / 0

Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

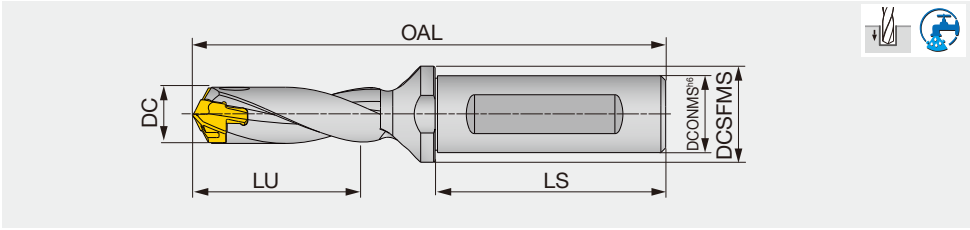
* Just for reference.

SPARE PARTS

Designation	Clamping key
TID060-090	K-TID6-9.99
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=3

Head-changeable drill



Designation	DC	DCONMS	DCSFMS	LU	LS	OAL		Pocket size	Head
						DMP	DMC		
TID060F12-3	6 - 6.4	12	16	19.1	45	77	–	6	DM*060-DM*064
TID065F12-3	6.5 - 6.9	12	16	21.2	45	78.8	–	6	DM*065-DM*069
TID070F12-3	7 - 7.4	12	16	22.3	45	80.6	–	7	DM*070-DM*074
TID075F12-3	7.5 - 7.9	12	16	24.4	45	82.1	–	7	DM*075-DM*079
TID080F12-3	8 - 8.4	12	16	25.5	45	84.4	–	8	DM*080-DM*084
TID085F12-3	8.5 - 8.9	12	16	27.5	45	85.9	–	8	DM*085-DM*089
TID090F12-3	9 - 9.4	12	16	28.6	45	87.8	–	9	DM*090-DM*094
TID095F12-3	9.5 - 9.9	12	16	30.7	45	89.3	–	9	DM*095-DM*099
TID100F16-3	10 - 10.4	16	20	31.8	48	94.2	94.8	10	DM*100 - DM*104
TID105F16-3	10.5 - 10.9	16	20	33.9	48	95.7	96.3	10	DM*105 - DM*109
TID110F16-3	11 - 11.4	16	20	35	48	97.6	98.2	11	DM*110 - DM*114
TID115F16-3	11.5 - 11.9	16	20	37.1	48	99.1	99.7	11	DM*115 - DM*119
TID120F16-3	12 - 12.4	16	20	38.2	48	101	101.6	12	DM*120 - DM*124
TID125F16-3	12.5 - 12.9	16	20	39.3	48	102.5	103.1	12	DM*125 - DM*129
TID130F16-3	13 - 13.4	16	20	41.4	48	104.6	105.4	13	DM*130 - DM*134
TID135F16-3	13.5 - 13.9	16	20	43.5	48	106.1	106.9	13	DM*135 - DM*139
TID140F16-3	14 - 14.4	16	20	44.5	48	110.1	110.9	14	DM*140 - DM*144
TID145F16-3	14.5 - 14.9	16	20	46.6	48	111.6	112.4	14	DM*145 - DM*149
TID150F20-3	15 - 15.9	20	25	47.7	50	118.7	119.6	15	DM*150 - DM*159
TID160F20-3	16 - 16.9	20	25	50.9	50	123.3	124.3	16	DM*160 - DM*169
TID170F20-3	17 - 17.9	20	25	54.1	50	127.9	128.9	17	DM*170 - DM*179
TID180F25-3	18 - 18.9	25	32	57.3	56	138.5	139.6	18	DM*180 - DM*189
TID190F25-3	19 - 19.9	25	32	60.5	56	143	144.1	19	DM*190 - DM*199
TID200F25-3	20 - 20.9	25	32	63.6	56	147.6	-	20	DM*200 - DM*209
TID210F25-3	21 - 21.9	25	32	66.8	56	152.2	-	21	DM*210 - DM*219
TID220F25-3	22 - 22.9	25	32	70	56	156.8	-	22	DM*220 - DM*229
TID230F32-3	23 - 23.9	32	42	73.2	60	165.3	-	23	DM*230 - DM*239
TID240F32-3	24 - 24.9	32	42	76.4	60	169.9	-	24	DM*240 - DM*249
TID250F32-3	25 - 25.9	32	42	79.5	60	174.5	-	25	DM*250 - DM*259

Tool diameter	Hole diameter tolerance*
ø6 - ø25.9	+0.05 / 0

Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

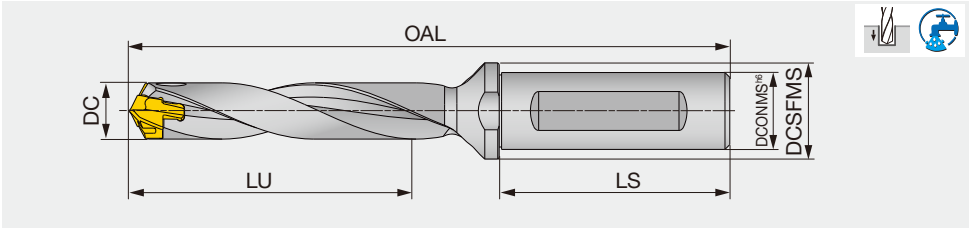
* Just for reference.

SPARE PARTS

Designation	Clamping key
TID060-095	K-TID6-9.99
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=5

Head-changeable drill



Designation	DC	DCONMS	DCSFMS	LU	LS	OAL		Pocket size	Head
						DMP	DMC		
TID060F12-5	6 - 6.4	12	16	31.1	45	89	–	6	DM*060-DM*064
TID065F12-5	6.5 - 6.9	12	16	34.2	45	91.8	–	6	DM*065-DM*069
TID070F12-5	7 - 7.4	12	16	36.3	45	94.6	–	7	DM*070-DM*074
TID075F12-5	7.5 - 7.9	12	16	39.4	45	97.1	–	7	DM*075-DM*079
TID080F12-5	8 - 8.4	12	16	41.5	45	100.4	–	8	DM*080-DM*084
TID085F12-5	8.5 - 8.9	12	16	44.5	45	102.9	–	8	DM*085-DM*089
TID090F12-5	9 - 9.4	12	16	46.6	45	105.8	–	9	DM*090-DM*094
TID095F12-5	9.5 - 9.9	12	16	49.7	45	108.3	–	9	DM*095-DM*099
TID100F16-5	10 - 10.4	16	20	51.8	48	114.2	114.8	10	DM*100 - DM*104
TID105F16-5	10.5 - 10.9	16	20	54.9	48	116.7	117.3	10	DM*105 - DM*109
TID110F16-5	11 - 11.4	16	20	57	48	119.6	120.2	11	DM*110 - DM*114
TID115F16-5	11.5 - 11.9	16	20	60.1	48	122.1	122.7	11	DM*115 - DM*119
TID120F16-5	12 - 12.4	16	20	62.2	48	125	125.6	12	DM*120 - DM*124
TID125F16-5	12.5 - 12.9	16	20	64.3	48	127.5	128.1	12	DM*125 - DM*129
TID130F16-5	13 - 13.4	16	20	67.4	48	130.6	131.4	13	DM*130 - DM*134
TID135F16-5	13.5 - 13.9	16	20	70.5	48	133.1	133.9	13	DM*135 - DM*139
TID140F16-5	14 - 14.4	16	20	72.5	48	138.2	139	14	DM*140 - DM*144
TID145F16-5	14.5 - 14.9	16	20	75.6	48	140.7	141.5	14	DM*145 - DM*149
TID150F20-5	15 - 15.9	20	25	77.7	50	148.7	149.6	15	DM*150 - DM*159
TID160F20-5	16 - 16.9	20	25	82.9	50	155.3	156.3	16	DM*160 - DM*169
TID170F20-5	17 - 17.9	20	25	88.1	50	161.9	162.9	17	DM*170 - DM*179
TID180F25-5	18 - 18.9	25	32	93.3	56	174.5	175.6	18	DM*180 - DM*189
TID190F25-5	19 - 19.9	25	32	98.5	56	181	182.1	19	DM*190 - DM*199
TID200F25-5	20 - 20.9	25	32	103.6	56	187.6	-	20	DM*200 - DM*209
TID210F25-5	21 - 21.9	25	32	108.8	56	194.2	-	21	DM*210 - DM*219
TID220F25-5	22 - 22.9	25	32	114	56	200.8	-	22	DM*220 - DM*229
TID230F32-5	23 - 23.9	32	42	119.2	60	211.3	-	23	DM*230 - DM*239
TID240F32-5	24 - 24.9	32	42	124.4	60	217.9	-	24	DM*240 - DM*249
TID250F32-5	25 - 25.9	32	42	129.5	60	224.5	-	25	DM*250 - DM*259

Tool diameter	Hole diameter tolerance*
ø6 - ø17.9	+0.06 / 0
ø18 - ø25.9	+0.065 / 0

* Just for reference.

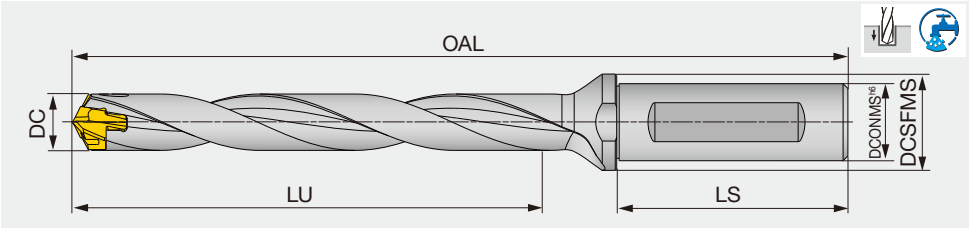
Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

SPARE PARTS

Designation	Clamping key
TID060-095	K-TID6-9.99
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=8

Head-changeable drill



Designation	DC	DCONMS	DCSFMS	LU	LS	OAL		Pocket size	Head
						DMP	DMC		
TID070F12-8	7 - 7.4	12	16	57.3	45	115.6	–	7	DM*070-DM*074
TID075F12-8	7.5 - 7.9	12	16	61.4	45	119.6	–	7	DM*075-DM*079
TID080F12-8	8 - 8.4	12	16	65.5	45	124.4	–	8	DM*080-DM*084
TID085F12-8	8.5 - 8.9	12	16	69.5	45	128.4	–	8	DM*085-DM*089
TID090F12-8	9 - 9.4	12	16	73.6	45	132.8	–	9	DM*090-DM*094
TID095F12-8	9.5 - 9.9	12	16	77.7	45	136.8	–	9	DM*095-DM*099
TID100F16-8	10 - 10.4	16	20	81.8	48	144.2	144.8	10	DM*100 - DM*104
TID105F16-8	10.5 - 10.9	16	20	85.9	48	148.2	148.8	10	DM*105 - DM*109
TID110F16-8	11 - 11.4	16	20	90	48	152.6	153.2	11	DM*110 - DM*114
TID115F16-8	11.5 - 11.9	16	20	94.1	48	156.6	157.2	11	DM*115 - DM*119
TID120F16-8	12 - 12.4	16	20	98.2	48	161	161.6	12	DM*120 - DM*124
TID125F16-8	12.5 - 12.9	16	20	102.3	48	165	165.6	12	DM*125 - DM*129
TID130F16-8	13 - 13.4	16	20	106.4	48	169.6	170.4	13	DM*130 - DM*134
TID135F16-8	13.5 - 13.9	16	20	110.5	48	173.6	174.4	13	DM*135 - DM*139
TID140F16-8	14 - 14.4	16	20	114.5	48	180.1	180.9	14	DM*140 - DM*144
TID145F16-8	14.5 - 14.9	16	20	118.6	48	184.2	185	14	DM*145 - DM*149
TID150F20-8	15 - 15.9	20	25	122.7	50	193.7	194.6	15	DM*150 - DM*159
TID160F20-8	16 - 16.9	20	25	130.9	50	203.3	204.3	16	DM*160 - DM*169
TID170F20-8	17 - 17.9	20	25	139.1	50	212.9	213.9	17	DM*170 - DM*179
TID180F25-8	18 - 18.9	25	32	147.3	56	228.5	229.6	18	DM*180 - DM*189
TID190F25-8	19 - 19.9	25	32	155.5	56	238	239.1	19	DM*190 - DM*199
TID200F25-8	20 - 20.9	25	32	163.6	56	247.6	-	20	DM*200 - DM*209
TID210F25-8	21 - 21.9	25	32	171.8	56	257.2	-	21	DM*210 - DM*219
TID220F25-8	22 - 22.9	25	32	180	56	266.8	-	22	DM*220 - DM*229
TID230F32-8	23 - 23.9	32	42	188.2	60	280.3	-	23	DM*230 - DM*239
TID240F32-8	24 - 24.9	32	42	196.4	60	289.9	-	24	DM*240 - DM*249
TID250F32-8	25 - 25.9	32	42	204.5	60	299.5	-	25	DM*250 - DM*259

Tool diameter	Hole diameter tolerance*
ø7 - ø17.9	+0.07 / 0
ø18 - ø25.9	+0.085 / 0

* Just for reference.

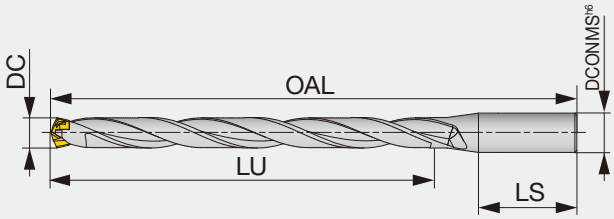
Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

SPARE PARTS

Designation	Clamping key
TID060-095	K-TID6-9.99
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=12

Head-changeable drill



Designation	DC	DCONMS	LU	LS	OAL		Pocket size	Head
					DMP	DMC		
TID120R16-12	12 - 12.4	16	146.2	48	209	209.6	12	DM*120 - DM*124
TID125R16-12	12.5 - 12.9	16	152.3	48	215	215.6	12	DM*125 - DM*129
TID130R16-12	13 - 13.4	16	158.4	48	221.6	222.4	13	DM*130 - DM*134
TID135R16-12	13.5 - 13.9	16	164.5	48	227.6	228.4	13	DM*135 - DM*139
TID140R16-12	14 - 14.4	16	170.5	48	236.2	237	14	DM*140 - DM*144
TID145R16-12	14.5 - 14.9	16	176.6	48	242.2	243	14	DM*145 - DM*149
TID150R20-12	15 - 15.9	20	182.7	50	253.7	254.6	15	DM*150 - DM*159
TID160R20-12	16 - 16.9	20	194.9	50	267.3	268.3	16	DM*160 - DM*169
TID170R20-12	17 - 17.9	20	207.1	50	280.9	281.9	17	DM*170 - DM*179
TID180R25-12	18 - 18.9	25	219.3	56	300.5	301.6	18	DM*180 - DM*189
TID190R25-12	19 - 19.9	25	231.5	56	314	315.1	19	DM*190 - DM*199
TID200R25-12	20 - 20.9	25	243.6	56	327.6	-	20	DM*200 - DM*209
TID210R25-12	21 - 21.9	25	255.8	56	341.2	-	21	DM*210 - DM*219
TID220R25-12	22 - 22.9	25	268	56	354.8	-	22	DM*220 - DM*229

Tool diameter	Hole diameter tolerance*
ø12 - ø17.9	+0.08 / 0
ø18 - ø22.9	+0.095 / 0

* Just for reference.

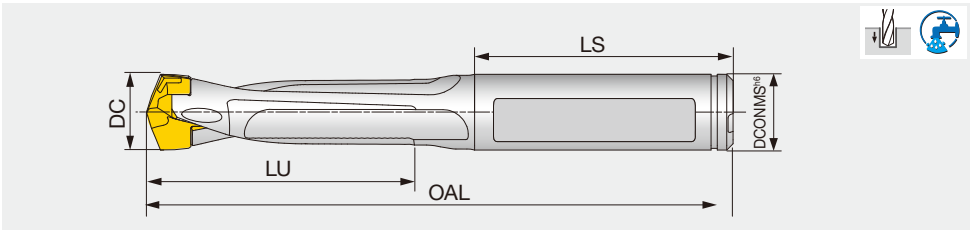
Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

SPARE PARTS

Designation	Clamping key
TID100-190	K-TID10-19.99
TID200-220	K-TID20-26.99

TIDC L/D=3

Head-changeable drill



Designation	DC	DCONMS	LU	LS	OAL		Pocket size	Head
					DMP	DMC		
TIDC100C10-3	10 - 10.4	10	31.8	41	86.1	86.7	10	DM*100 - DM*104
TIDC105C11-3	10.5 - 10.9	11	33.4	41	87.6	88.2	10	DM*105 - DM*109
TIDC110C11-3	11 - 11.4	11	35	41	89.5	90.1	11	DM*110 - DM*114
TIDC115C12-3	11.5 - 11.9	12	36.6	41	91	91.6	11	DM*115 - DM*119
TIDC120C12-3	12 - 12.4	12	38.2	41	92.8	93.4	12	DM*120 - DM*124
TIDC125C13-3	12.5 - 12.9	13	39.8	46	98.3	98.9	12	DM*125 - DM*129
TIDC130C13-3	13 - 13.4	13	41.4	47	102.4	103.2	13	DM*130 - DM*134
TIDC135C14-3	13.5 - 13.9	14	43	43	99.9	100.7	13	DM*135 - DM*139
TIDC140C14-3	14 - 14.4	14	44.5	44	103	103.8	14	DM*140 - DM*144
TIDC145C15-3	14.5 - 14.9	15	46.1	45	105.5	106.3	14	DM*145 - DM*149
TIDC150C15-3	15 - 15.9	15	47.7	45	107.5	108.4	15	DM*150 - DM*159
TIDC160C16-3	16 - 16.9	16	50.9	48	117.5	118.5	16	DM*160 - DM*169
TIDC170C17-3	17 - 17.9	17	54.1	48	119.7	120.7	17	DM*170 - DM*179
TIDC180C18-3	18 - 18.9	18	57.3	48	123.3	124.4	18	DM*180 - DM*189
TIDC190C19-3	19 - 19.9	19	60.5	54	132.4	133.5	19	DM*190 - DM*199

Tool diameter	Hole diameter tolerance*
ø10 - ø19.9	+0.05 / 0

Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

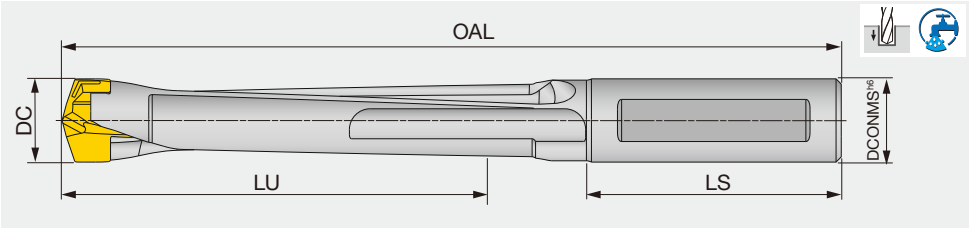
* Just for reference.

SPARE PARTS

Designation	Clamping key
TIDC100-190	K-TID10-19.99

TIDC L/D=5

Head-changeable drill



Designation	DC	DCONMS	LU	LS	OAL		Pocket size	Head
					DMP	DMC		
TIDC100C10-5	10 - 10.4	10	51.8	41	106.1	106.7	10	DM*100 - DM*104
TIDC105C11-5	10.5 - 10.9	11	54.4	41	108.6	109.2	10	DM*105 - DM*109
TIDC110C11-5	11 - 11.4	11	57	41	111.5	112.1	11	DM*110 - DM*114
TIDC115C12-5	11.5 - 11.9	12	59.6	41	114	114.6	11	DM*115 - DM*119
TIDC120C12-5	12 - 12.4	12	62.2	41	116.8	117.4	12	DM*120 - DM*124
TIDC125C13-5	12.5 - 12.9	13	64.8	46	124.3	124.9	12	DM*125 - DM*129
TIDC130C13-5	13 - 13.4	13	67.4	47	128.4	129.2	13	DM*130 - DM*134
TIDC135C14-5	13.5 - 13.9	14	70	43	126.9	127.7	13	DM*135 - DM*139
TIDC140C14-5	14 - 14.4	14	72.5	44	131	131.8	14	DM*140 - DM*144
TIDC145C15-5	14.5 - 14.9	15	75.1	45	134.5	135.3	14	DM*145 - DM*149
TIDC150C15-5	15 - 15.9	15	77.7	45	137.5	138.4	15	DM*150 - DM*159
TIDC160C16-5	16 - 16.9	16	82.9	48	149.5	150.5	16	DM*160 - DM*169
TIDC170C17-5	17 - 17.9	17	88.1	48	153.7	154.7	17	DM*170 - DM*179
TIDC180C18-5	18 - 18.9	18	93.3	48	159.3	160.4	18	DM*180 - DM*189
TIDC190C19-5	19 - 19.9	19	98.5	54	170.4	171.5	19	DM*190 - DM*199

Tool diameter	Hole diameter tolerance*
ø10 - ø19.9	+0.05 / 0

* Just for reference.

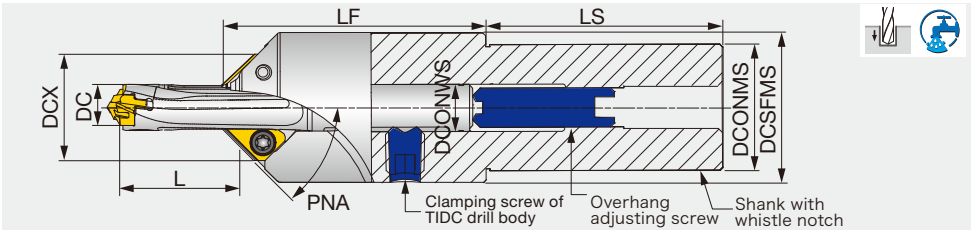
Note : An overall length (OAL) differs for when the DMP insert is mounted and when the DMC is mounted. (No difference for the drill shoulder)

SPARE PARTS

Designation	Clamping key
TIDC100-190	K-TID10-19.99

TIDCF

TIDC TYPE



Designation	DC	DCONMS	DCSFMS	DCX	LF	LS	*L** L/D = 3	*L** L/D = 5	Drill body	DCONWS
TIDCF100-W32	10 - 10.4	32	38	24.9	67.3	60	14.5 - 31.8	31.7 - 51.8	TIDC100C10-...	10
TIDCF110-W32	10.5 - 10.9	32	38	25.9	67.3	60	15.7 - 33.3	31.2 - 54.2	TIDC105C11-...	11
TIDCF110-W32	11 - 11.4	32	38	25.9	67.3	60	16.2 - 35.3	34.1 - 57.3	TIDC110C11-...	11
TIDCF120-W32	11.5 - 11.9	32	38	26.9	67.3	60	15.1 - 36.7	33.8 - 59.4	TIDC115C12-...	12
TIDCF120-W32	12 - 12.4	32	38	26.9	67.3	60	16.5 - 37.7	36.6 - 61.6	TIDC120C12-...	12
TIDCF130-W32	12.5 - 12.9	32	38	27.9	67.3	60	16.1 - 39.6	39.7 - 64.8	TIDC125C13-...	13
TIDCF130-W32	13 - 13.4	32	38	27.9	67.3	60	17.5 - 41.5	42.7 - 68	TIDC130C13-...	13
TIDCF140-W32	13.5 - 13.9	32	38	28.4	67.3	60	17.7 - 42.9	41.4 - 70.3	TIDC135C14-...	14
TIDCF140-W32	14 - 14.4	32	38	28.4	67.3	60	18.1 - 45	44.8 - 73.1	TIDC140C14-...	14
TIDCF150-W32	14.5 - 14.9	32	38	29.4	67.3	60	19.2 - 44.6	44 - 73.9	TIDC145C15-...	15
TIDCF150-W32	15 - 15.9	32	38	29.4	67.3	60	19.7 - 47.4	47.6 - 80.7	TIDC150C15-...	15
TIDCF160-W32	16 - 16.9	32	38	30.4	67.3	60	19.5 - 55.3	57 - 87.5	TIDC160C16-...	16
TIDCF170-W32	17 - 17.9	32	38	31.4	67.3	60	21.4 - 54.9	55.9 - 88.5	TIDC170C17-...	17
TIDCF180-W32	18 - 18.9	32	38	32.4	67.3	60	24.2 - 65.2	60 - 93	TIDC180C18-...	18
TIDCF190-W32	19 - 19.9	32	38	33.4	75	60	28.5 - 62.3	67 - 100	TIDC190C19-...	19

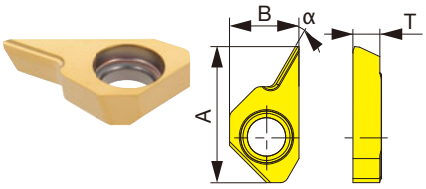
• L* is the dimension when using 45° chamfering insert.

SPARE PARTS

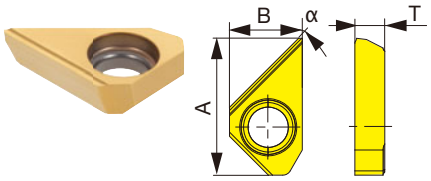
Designation	Insert screw	Grip	Overhang adjusting screw	Clamping screw of TIDC drill body	Torx bit	Wrench
TIDCF	SR14-544/S	SW6-SD	SRM10X10DIN916	SRM10X1.5S	BT15S	HW5.0

CHAMFERING INSERT

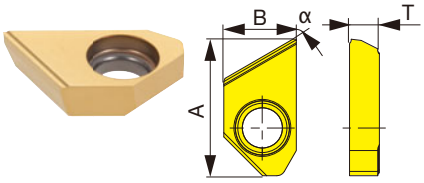
XHGT-30A



XHGR-45A



XHGR-60A



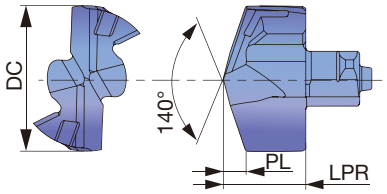
Designation	Grade GH730	A	B	T	Chamfering angle α	Maximum width of chamfer **
XHGT090300-30A	●	16	8.5	3.3	30°	1.5
XHGR090300-45A	●	16	8.5	3.3	45°	6
XHGR090300-60A	●	16	8.5	3.3	60°	3.5

** Please reduce the feed rate to half when chamfering over 60% of maximum width of chamfer

●: Line-up
Package quantity = 2 pcs.

DRILL HEAD

DMP



Tool diameter	ø6 - ø17.9	ø18 - ø25.9
Head diameter tolerance	+0.018 / 0	+0.021 / 0

Designation	DC	Grade AH725	LPR	PL	Pocket size	Body
DMP060	6	●	4	1.09	6	TID*060*
DMP061	6.1	●	4	1.11	6	TID*060*
DMP062	6.2	●	4	1.13	6	TID*060*
DMP063	6.3	●	4	1.15	6	TID*060*
DMP064	6.4	●	4	1.16	6	TID*060*
DMP065	6.5	●	4.3	1.18	6	TID*065*
DMP066	6.6	●	4.3	1.2	6	TID*065*
DMP067	6.7	●	4.3	1.22	6	TID*065*
DMP068	6.8	●	4.3	1.24	6	TID*065*
DMP069	6.9	●	4.3	1.26	6	TID*065*
DMP070	7	●	4.6	1.27	7	TID*070*
DMP071	7.1	●	4.6	1.29	7	TID*070*
DMP072	7.2	●	4.6	1.31	7	TID*070*
DMP073	7.3	●	4.6	1.33	7	TID*070*
DMP074	7.4	●	4.6	1.35	7	TID*070*
DMP075	7.5	●	4.6	1.36	7	TID*075*
DMP076	7.6	●	4.6	1.38	7	TID*075*
DMP077	7.7	●	4.6	1.4	7	TID*075*
DMP078	7.8	●	4.6	1.42	7	TID*075*
DMP079	7.9	●	4.6	1.44	7	TID*075*
DMP080	8	●	5.4	1.46	8	TID*080*
DMP081	8.1	●	5.4	1.47	8	TID*080*
DMP082	8.2	●	5.4	1.49	8	TID*080*
DMP083	8.3	●	5.4	1.51	8	TID*080*
DMP084	8.4	●	5.4	1.53	8	TID*080*
DMP085	8.5	●	5.4	1.55	8	TID*085*
DMP086	8.6	●	5.4	1.57	8	TID*085*
DMP087	8.7	●	5.4	1.58	8	TID*085*
DMP088	8.8	●	5.4	1.6	8	TID*085*
DMP089	8.9	●	5.4	1.62	8	TID*085*
DMP090	9	●	5.8	1.64	9	TID*090*
DMP091	9.1	●	5.8	1.66	9	TID*090*
DMP092	9.2	●	5.8	1.67	9	TID*090*
DMP093	9.3	●	5.8	1.69	9	TID*090*
DMP094	9.4	●	5.8	1.71	9	TID*090*
DMP095	9.5	●	5.8	1.73	9	TID*095*
DMP096	9.6	●	5.8	1.75	9	TID*095*
DMP097	9.7	●	5.8	1.77	9	TID*095*
DMP098	9.8	●	5.8	1.78	9	TID*095*
DMP099	9.9	●	5.8	1.8	9	TID*095*

Designation	DC	Grade AH725	LPR	PL	Pocket size	Body
DMP100	10	●	6.05	1.82	10	TID*100*
DMP101	10.1	●	6.05	1.84	10	TID*100*
DMP102	10.2	●	6.05	1.86	10	TID*100*
DMP103	10.3	●	6.05	1.87	10	TID*100*
DMP104	10.4	●	6.05	1.89	10	TID*100*
DMP105	10.5	●	6.05	1.91	10	TID*105*
DMP106	10.6	●	6.05	1.93	10	TID*105*
DMP107	10.7	●	6.05	1.95	10	TID*105*
DMP108	10.8	●	6.05	1.97	10	TID*105*
DMP109	10.9	●	6.05	1.98	10	TID*105*
DMP110	11	●	6.45	2	11	TID*110*
DMP111	11.1	●	6.45	2.02	11	TID*110*
DMP112	11.2	●	6.45	2.04	11	TID*110*
DMP113	11.3	●	6.45	2.06	11	TID*110*
DMP114	11.4	●	6.45	2.07	11	TID*110*
DMP115	11.5	●	6.45	2.09	11	TID*115*
DMP116	11.6	●	6.45	2.11	11	TID*115*
DMP117	11.7	●	6.45	2.13	11	TID*115*
DMP118	11.8	●	6.45	2.15	11	TID*115*
DMP119	11.9	●	6.45	2.17	11	TID*115*
DMP120	12	●	6.8	2.18	12	TID*120*
DMP121	12.1	●	6.8	2.2	12	TID*120*
DMP122	12.2	●	6.8	2.22	12	TID*120*
DMP123	12.3	●	6.8	2.24	12	TID*120*
DMP124	12.4	●	6.8	2.26	12	TID*120*
DMP125	12.5	●	6.8	2.27	12	TID*125*
DMP126	12.6	●	6.8	2.29	12	TID*125*
DMP127	12.7	●	6.8	2.31	12	TID*125*
DMP128	12.8	●	6.8	2.33	12	TID*125*
DMP129	12.9	●	6.8	2.35	12	TID*125*
DMP130	13	●	7.4	2.37	13	TID*130*
DMP131	13.1	●	7.4	2.38	13	TID*130*
DMP132	13.2	●	7.4	2.4	13	TID*130*
DMP133	13.3	●	7.4	2.42	13	TID*130*
DMP134	13.4	●	7.4	2.44	13	TID*130*
DMP135	13.5	●	7.4	2.46	13	TID*135*
DMP136	13.6	●	7.4	2.47	13	TID*135*
DMP137	13.7	●	7.4	2.49	13	TID*135*
DMP138	13.8	●	7.4	2.51	13	TID*135*
DMP139	13.9	●	7.4	2.53	13	TID*135*

●: Line-up
Package Quantity: ø6.0 - ø19.9 = 2 pcs.
ø20 - ø25.9 = 1 pc.

DRILLMEISTER
TUNGALOY

Designation	DC	Grade AH725	LPR	PL	Pocket size	Body
DMP140	14	●	7.95	2.55	14	TID*140*
DMP141	14.1	●	7.95	2.57	14	TID*140*
DMP142	14.2	●	7.95	2.58	14	TID*140*
DMP143	14.3	●	7.95	2.6	14	TID*140*
DMP144	14.4	●	7.95	2.62	14	TID*140*
DMP145	14.5	●	7.95	2.64	14	TID*145*
DMP146	14.6	●	7.95	2.66	14	TID*145*
DMP147	14.7	●	7.95	2.68	14	TID*145*
DMP148	14.8	●	7.95	2.69	14	TID*145*
DMP149	14.9	●	7.95	2.71	14	TID*145*
DMP150	15	●	8.53	2.73	15	TID*150*
DMP151	15.1	●	8.53	2.75	15	TID*150*
DMP152	15.2	●	8.53	2.77	15	TID*150*
DMP153	15.3	●	8.53	2.78	15	TID*150*
DMP154	15.4	●	8.53	2.8	15	TID*150*
DMP155	15.5	●	8.53	2.82	15	TID*150*
DMP156	15.6	●	8.53	2.84	15	TID*150*
DMP157	15.7	●	8.53	2.86	15	TID*150*
DMP158	15.8	●	8.53	2.88	15	TID*150*
DMP159	15.9	●	8.53	2.89	15	TID*150*
DMP160	16	●	9.1	2.91	16	TID*160*
DMP161	16.1	●	9.1	2.93	16	TID*160*
DMP162	16.2	●	9.1	2.95	16	TID*160*
DMP163	16.3	●	9.1	2.97	16	TID*160*
DMP164	16.4	●	9.1	2.98	16	TID*160*
DMP165	16.5	●	9.1	3	16	TID*160*
DMP166	16.6	●	9.1	3.02	16	TID*160*
DMP167	16.7	●	9.1	3.04	16	TID*160*
DMP168	16.8	●	9.1	3.06	16	TID*160*
DMP169	16.9	●	9.1	3.08	16	TID*160*
DMP170	17	●	9.7	3.09	17	TID*170*
DMP171	17.1	●	9.7	3.11	17	TID*170*
DMP172	17.2	●	9.7	3.13	17	TID*170*
DMP173	17.3	●	9.7	3.15	17	TID*170*
DMP174	17.4	●	9.7	3.17	17	TID*170*
DMP175	17.5	●	9.7	3.18	17	TID*170*
DMP176	17.6	●	9.7	3.2	17	TID*170*
DMP177	17.7	●	9.7	3.22	17	TID*170*
DMP178	17.8	●	9.7	3.24	17	TID*170*
DMP179	17.9	●	9.7	3.26	17	TID*170*

Designation	DC	Grade AH725	LPR	PL	Pocket size	Body
DMP180	18	●	10.3	3.28	18	TID*180*
DMP181	18.1	●	10.3	3.29	18	TID*180*
DMP182	18.2	●	10.3	3.31	18	TID*180*
DMP183	18.3	●	10.3	3.33	18	TID*180*
DMP184	18.4	●	10.3	3.35	18	TID*180*
DMP185	18.5	●	10.3	3.37	18	TID*180*
DMP186	18.6	●	10.3	3.38	18	TID*180*
DMP187	18.7	●	10.3	3.4	18	TID*180*
DMP188	18.8	●	10.3	3.42	18	TID*180*
DMP189	18.9	●	10.3	3.44	18	TID*180*
DMP190	19	●	10.8	3.46	19	TID*190*
DMP191	19.1	●	10.8	3.48	19	TID*190*
DMP192	19.2	●	10.8	3.49	19	TID*190*
DMP193	19.3	●	10.8	3.51	19	TID*190*
DMP194	19.4	●	10.8	3.53	19	TID*190*
DMP195	19.5	●	10.8	3.55	19	TID*190*
DMP196	19.6	●	10.8	3.57	19	TID*190*
DMP197	19.7	●	10.8	3.59	19	TID*190*
DMP198	19.8	●	10.8	3.6	19	TID*190*
DMP199	19.9	●	10.8	3.62	19	TID*190*
DMP200	20	●	11.4	3.64	20	TID*200*
DMP201	20.1	●	11.4	3.66	20	TID*200*
DMP202	20.2	●	11.4	3.68	20	TID*200*
DMP203	20.3	●	11.4	3.69	20	TID*200*
DMP204	20.4	●	11.4	3.71	20	TID*200*
DMP205	20.5	●	11.4	3.73	20	TID*200*
DMP206	20.6	●	11.4	3.75	20	TID*200*
DMP207	20.7	●	11.4	3.77	20	TID*200*
DMP208	20.8	●	11.4	3.79	20	TID*200*
DMP209	20.9	●	11.4	3.8	20	TID*200*
DMP210	21	●	11.98	3.82	21	TID*210*
DMP211	21.1	●	11.98	3.84	21	TID*210*
DMP212	21.2	●	11.98	3.86	21	TID*210*
DMP213	21.3	●	11.98	3.88	21	TID*210*
DMP214	21.4	●	11.98	3.89	21	TID*210*
DMP215	21.5	●	11.98	3.91	21	TID*210*
DMP216	21.6	●	11.98	3.93	21	TID*210*
DMP217	21.7	●	11.98	3.95	21	TID*210*
DMP218	21.8	●	11.98	3.97	21	TID*210*
DMP219	21.9	●	11.98	3.99	21	TID*210*

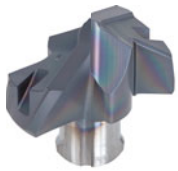
●: Line-up
Package Quantity: ø6.0 - ø19.9 = 2 pcs.
ø20 - ø25.9 = 1 pc.

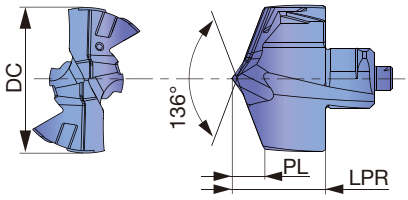
Designation	DC	Grade AH725	LPR	PL	Pocket size	Body
DMP220	22	●	12.56	4	22	TID*220*
DMP221	22.1	●	12.56	4.02	22	TID*220*
DMP222	22.2	●	12.56	4.04	22	TID*220*
DMP223	22.3	●	12.56	4.06	22	TID*220*
DMP224	22.4	●	12.56	4.08	22	TID*220*
DMP225	22.5	●	12.56	4.09	22	TID*220*
DMP226	22.6	●	12.56	4.11	22	TID*220*
DMP227	22.7	●	12.56	4.13	22	TID*220*
DMP228	22.8	●	12.56	4.15	22	TID*220*
DMP229	22.9	●	12.56	4.17	22	TID*220*
DMP230	23	●	13.13	4.19	23	TID*230*
DMP231	23.1	●	13.13	4.2	23	TID*230*
DMP232	23.2	●	13.13	4.22	23	TID*230*
DMP233	23.3	●	13.13	4.24	23	TID*230*
DMP234	23.4	●	13.13	4.26	23	TID*230*
DMP235	23.5	●	13.13	4.28	23	TID*230*
DMP236	23.6	●	13.13	4.29	23	TID*230*
DMP237	23.7	●	13.13	4.31	23	TID*230*
DMP238	23.8	●	13.13	4.33	23	TID*230*
DMP239	23.9	●	13.13	4.35	23	TID*230*
DMP240	24	●	13.7	4.37	24	TID*240*
DMP241	24.1	●	13.7	4.39	24	TID*240*
DMP242	24.2	●	13.7	4.4	24	TID*240*
DMP243	24.3	●	13.7	4.42	24	TID*240*
DMP244	24.4	●	13.7	4.44	24	TID*240*
DMP245	24.5	●	13.7	4.46	24	TID*240*
DMP246	24.6	●	13.7	4.48	24	TID*240*
DMP247	24.7	●	13.7	4.5	24	TID*240*
DMP248	24.8	●	13.7	4.51	24	TID*240*
DMP249	24.9	●	13.7	4.53	24	TID*240*
DMP250	25	●	14.3	4.55	25	TID*250*
DMP251	25.1	●	14.3	4.57	25	TID*250*
DMP252	25.2	●	14.3	4.59	25	TID*250*
DMP253	25.3	●	14.3	4.6	25	TID*250*
DMP254	25.4	●	14.3	4.62	25	TID*250*
DMP255	25.5	●	14.3	4.64	25	TID*250*
DMP256	25.6	●	14.3	4.66	25	TID*250*
DMP257	25.7	●	14.3	4.68	25	TID*250*
DMP258	25.8	●	14.3	4.7	25	TID*250*
DMP259	25.9	●	14.3	4.71	25	TID*250*

●: Line-up
Package Quantity: ø6.0 - ø19.9 = 2 pcs.
ø20 - ø25.9 = 1 pc.

New

DMC





Tool diameter	ø10 - ø17.9	ø18 - ø19.9
Head diameter tolerance	+0.018 / 0	+0.021 / 0

Designation	DC	Grade AH9130	LPR	PL	Pocket size	Body
DMC100	10	●	6.67	2.09	10	TID*100*
DMC101	10.1	●	6.67	2.11	10	TID*100*
DMC102	10.2	★	6.67	2.13	10	TID*100*
DMC103	10.3	●	6.67	2.15	10	TID*100*
DMC104	10.4	●	6.67	2.17	10	TID*100*
DMC105	10.5	●	6.67	2.19	10	TID*105*
DMC106	10.6	●	6.67	2.21	10	TID*105*
DMC107	10.7	★	6.67	2.23	10	TID*105*
DMC108	10.8	●	6.67	2.25	10	TID*105*
DMC109	10.9	★	6.67	2.27	10	TID*105*
DMC110	11	●	7.1	2.32	11	TID*110*
DMC111	11.1	★	7.1	2.34	11	TID*110*
DMC112	11.2	●	7.1	2.36	11	TID*110*
DMC113	11.3	●	7.1	2.38	11	TID*110*
DMC114	11.4	★	7.1	2.40	11	TID*110*
DMC115	11.5	●	7.1	2.42	11	TID*115*
DMC116	11.6	●	7.1	2.44	11	TID*115*
DMC117	11.7	●	7.1	2.46	11	TID*115*
DMC118	11.8	●	7.1	2.48	11	TID*115*
DMC119	11.9	★	7.1	2.50	11	TID*115*
DMC120	12	●	7.43	2.45	12	TID*120*
DMC121	12.1	●	7.43	2.47	12	TID*120*
DMC122	12.2	★	7.43	2.49	12	TID*120*
DMC123	12.3	●	7.43	2.51	12	TID*120*
DMC124	12.4	●	7.43	2.53	12	TID*120*
DMC125	12.5	●	7.43	2.55	12	TID*125*
DMC126	12.6	●	7.43	2.57	12	TID*125*
DMC127	12.7	●	7.43	2.59	12	TID*125*
DMC128	12.8	★	7.43	2.61	12	TID*125*
DMC129	12.9	★	7.43	2.63	12	TID*125*
DMC130	13	●	8.15	2.71	13	TID*130*
DMC131	13.1	●	8.15	2.73	13	TID*130*
DMC132	13.2	★	8.15	2.75	13	TID*130*
DMC133	13.3	●	8.15	2.77	13	TID*130*
DMC134	13.4	★	8.15	2.79	13	TID*130*
DMC135	13.5	●	8.15	2.81	13	TID*135*
DMC136	13.6	★	8.15	2.83	13	TID*135*
DMC137	13.7	★	8.15	2.85	13	TID*135*
DMC138	13.8	●	8.15	2.87	13	TID*135*
DMC139	13.9	★	8.15	2.89	13	TID*135*

Designation	DC	Grade AH9130	LPR	PL	Pocket size	Body
DMC140	14	●	8.76	2.93	14	TID*140*
DMC141	14.1	★	8.76	2.95	14	TID*140*
DMC142	14.2	●	8.76	2.97	14	TID*140*
DMC143	14.3	●	8.76	2.99	14	TID*140*
DMC144	14.4	●	8.76	3.01	14	TID*140*
DMC145	14.5	●	8.76	3.03	14	TID*145*
DMC146	14.6	●	8.76	3.05	14	TID*145*
DMC147	14.7	●	8.76	3.07	14	TID*145*
DMC148	14.8	★	8.76	3.09	14	TID*145*
DMC149	14.9	★	8.76	3.11	14	TID*145*
DMC150	15	●	9.44	3.18	15	TID*150*
DMC151	15.1	★	9.44	3.20	15	TID*150*
DMC152	15.2	●	9.44	3.22	15	TID*150*
DMC153	15.3	★	9.44	3.24	15	TID*150*
DMC154	15.4	★	9.44	3.26	15	TID*150*
DMC155	15.5	●	9.44	3.28	15	TID*150*
DMC156	15.6	★	9.44	3.30	15	TID*150*
DMC157	15.7	●	9.44	3.32	15	TID*150*
DMC158	15.8	●	9.44	3.34	15	TID*150*
DMC159	15.9	●	9.44	3.36	15	TID*150*
DMC160	16	●	10.07	3.39	16	TID*160*
DMC161	16.1	★	10.07	3.41	16	TID*160*
DMC162	16.2	●	10.07	3.43	16	TID*160*
DMC163	16.3	★	10.07	3.45	16	TID*160*
DMC164	16.4	★	10.07	3.47	16	TID*160*
DMC165	16.5	●	10.07	3.49	16	TID*160*
DMC166	16.6	★	10.07	3.51	16	TID*160*
DMC167	16.7	●	10.07	3.53	16	TID*160*
DMC168	16.8	★	10.07	3.55	16	TID*160*
DMC169	16.9	★	10.07	3.57	16	TID*160*
DMC170	17	●	10.68	3.57	17	TID*170*
DMC171	17.1	★	10.68	3.59	17	TID*170*
DMC172	17.2	★	10.68	3.61	17	TID*170*
DMC173	17.3	★	10.68	3.63	17	TID*170*
DMC174	17.4	★	10.68	3.65	17	TID*170*
DMC175	17.5	●	10.68	3.67	17	TID*170*
DMC176	17.6	★	10.68	3.69	17	TID*170*
DMC177	17.7	★	10.68	3.71	17	TID*170*
DMC178	17.8	★	10.68	3.73	17	TID*170*
DMC179	17.9	●	10.68	3.75	17	TID*170*

●: Line-up
★ : To be released in 2019
Package Quantity: ø10 - ø19.9 = 2 pcs.

Designation	DC	Grade AH9130	LPR	PL	Pocket size	Body
DMC180	18	●	11.35	3.78	18	TID*180*
DMC181	18.1	★	11.35	3.80	18	TID*180*
DMC182	18.2	★	11.35	3.82	18	TID*180*
DMC183	18.3	★	11.35	3.84	18	TID*180*
DMC184	18.4	★	11.35	3.86	18	TID*180*
DMC185	18.5	●	11.35	3.88	18	TID*180*
DMC186	18.6	★	11.35	3.90	18	TID*180*
DMC187	18.7	★	11.35	3.92	18	TID*180*
DMC188	18.8	★	11.35	3.94	18	TID*180*
DMC189	18.9	★	11.35	3.96	18	TID*180*
DMC190	19	●	11.91	3.99	19	TID*190*
DMC191	19.1	★	11.91	4.01	19	TID*190*
DMC192	19.2	★	11.91	4.03	19	TID*190*
DMC193	19.3	★	11.91	4.05	19	TID*190*
DMC194	19.4	★	11.91	4.07	19	TID*190*
DMC195	19.5	●	11.91	4.09	19	TID*190*
DMC196	19.6	★	11.91	4.11	19	TID*190*
DMC197	19.7	★	11.91	4.13	19	TID*190*
DMC198	19.8	★	11.91	4.15	19	TID*190*
DMC199	19.9	★	11.91	4.17	19	TID*190*

●: Line-up
★ : To be released in 2019
Package Quantity: ø10 - ø19.9 = 2 pcs.

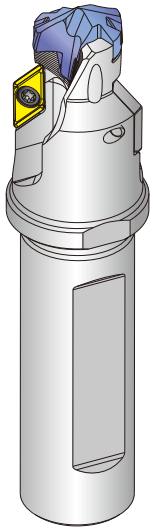
STANDARD CUTTING CONDITIONS

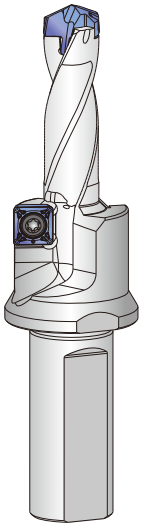
ISO	Workpiece materials	Cutting speed	Feed: *f* (mm/rev)						
			DC (mm)						
		Vc (m/min)	ø6 - 7.9	ø8 - 9.9	ø10 - ø11.9	ø12 - ø13.9	ø14 - ø15.9	ø16 - ø19.9	ø20 - ø25.9
P	Low carbon steel (C < 0.3) (SS400 / St42-1, SM490 / St52-3, S25C / C25, etc.)	80 - 140	0.09 - 0.13	0.12 - 0.25	0.15 - 0.28	0.18 - 0.3	0.20 - 0.35	0.25 - 0.45	0.25 - 0.45
P	High carbon steel (C > 0.3) (S45C / C45, S55C / C55, etc.)	70 - 120	0.09 - 0.13	0.12 - 0.25	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45	0.25 - 0.45
P	Low alloy steel (SCM415, etc.)	70 - 120	0.08 - 0.13	0.11 - 0.25	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4	0.25 - 0.45
P	Alloy steel (SCM440 / 42CrMo4, SCr420 / 20Cr4, etc.)	40 - 90	0.08 - 0.13	0.11 - 0.25	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4	0.25 - 0.45
M	Stainless steel (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-2, etc.)	30 - 70	0.08 - 0.1	0.1 - 0.15	0.12 - 0.18	0.14 - 0.2	0.16 - 0.24	0.16 - 0.26	0.18 - 0.3
K	Grey cast iron (FC250 / GG25, etc.)	80 - 180	0.12 - 0.18	0.15 - 0.3	0.20 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55	0.35 - 0.6
K	Ductile cast iron (FCD700 / GGG70, etc.)	80 - 140	0.12 - 0.18	0.15 - 0.3	0.20 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55	0.35 - 0.6
N	Aluminium alloys (ADC12, etc.)	80 - 220	0.1 - 0.2	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.5	0.4 - 0.6	0.5 - 0.75
S	Titanium alloys (Ti-6Al-4V, etc.)	20 - 50	0.05 - 0.07	0.06 - 0.12	0.08 - 0.15	0.1 - 0.28	0.12 - 0.2	0.14 - 0.22	0.18 - 0.27
S	Nickel-based alloys	20 - 50	0.05 - 0.07	0.06 - 0.11	0.08 - 0.13	0.1 - 0.15	0.12 - 0.18	0.12 - 0.22	0.14 - 0.22
H	Hardened steel	20 - 50	0.05 - 0.07	0.06 - 0.12	0.08 - 0.15	0.1 - 0.18	0.12 - 0.2	0.14 - 0.22	0.16 - 0.25

- Cutting conditions in the above table show standard cutting conditions.
- Cutting conditions may change due to the rigidity and power of the machine and the workpiece material.
- Machined hole diameter may change depending upon the rigidity of the machine tool or cutting conditions.
- In case of L/D = 8 & 12 drill, the recommended range of cutting speeds and feeds is between the minimum and median values listed above.

SPECIALLY-DESIGNED DRILL BODY

Special drill bodies, such as the one featuring chamfering or counter boring capabilities, will be available upon request. Please contact your sales representative for the details.





Typical components

Hub

Knuckle

Bearing caps

Brake disc

Tie rod

Steering rack part

Diff case

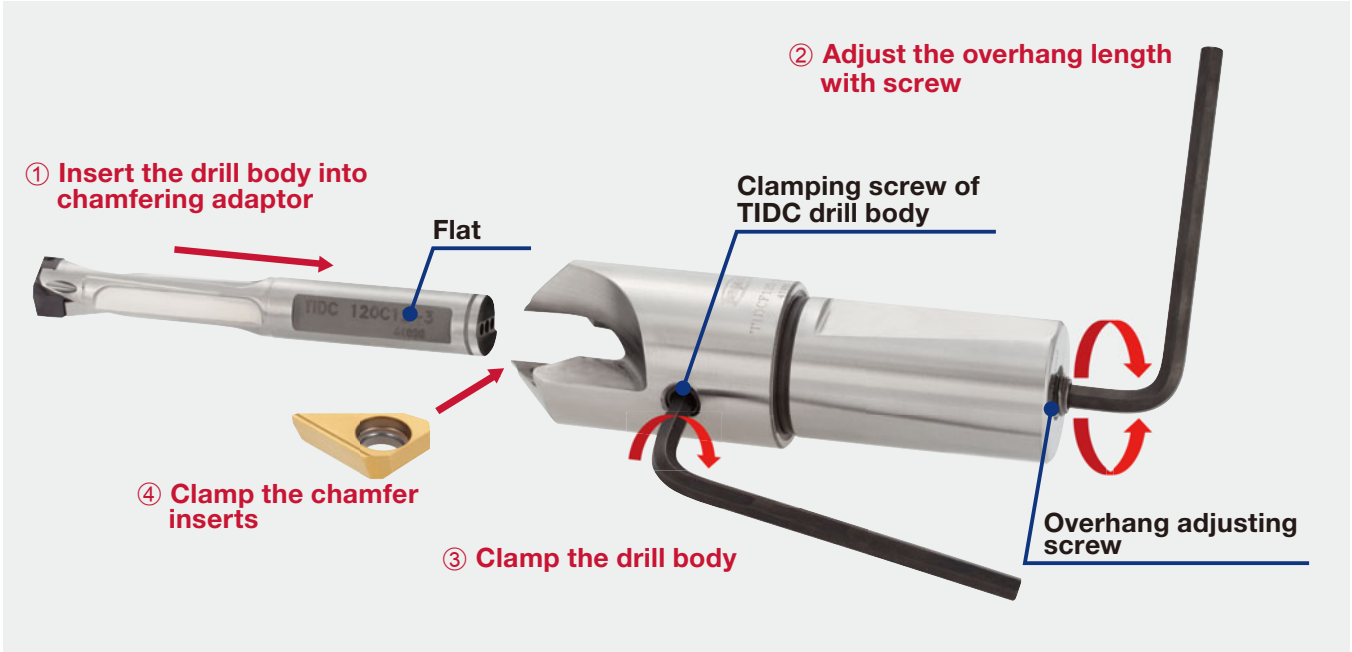
Crank shaft

Shafts

Turbine housing

HOW TO MOUNT THE TIDC DRILL BODY INTO THE CHAMFER ADAPTOR

The overhang length of the drill can be changed by the adjusting screw at the bottom of the adaptor.
The rear end of the drill body must be in contact with the adjusting screw as the screw supports the drill against thrust force when drilling.



Procedure

① Place the TIDC drill body into the chamfer adaptor without chamfer inserts.
② Adjust the overhang length of the drill body with the adjusting screw at the bottom of the adaptor.
③ Adjust the position of the drill body so that the drill body is fixed at the flat and tighten the clamping screw of the drill body. This aligns the flutes of the TIDC drill body with the chamfer inserts.
④ To clamp the chamfer inserts, tighten the clamping screw of the insert while pushing the insert into the insert pocket.

Notice

Before removing the drill body from the adaptor, chamfer inserts must be unclamped.
The overhang adjusting screw can be handled from the top of the adaptor with a flat-blade screwdriver. The overhang length of the drill body can be adjusted after the adaptor is positioned on the drill shank.

PARTS

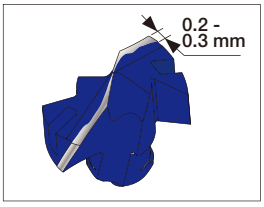
Clamping screw of TIDC drill body	Overhang adjusting screw	Wrench	Clamping screw of insert	Wrench	
				Torx bit	Grip
SRM10x10DIN916	SRM10x1.5S	HW5.0	SR14-544/S ***	BT15S	SW6-SD

*** **SR14-544/S** Package Quantity = 5 pcs.

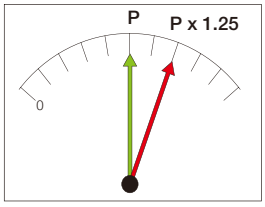
TECHNICAL GUIDELINES

● When to change drill heads (Criteria for the end of tool life)

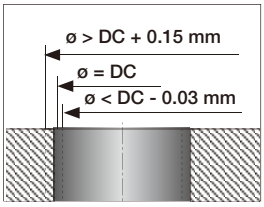
The criteria to identify the time for tool change are as follows:



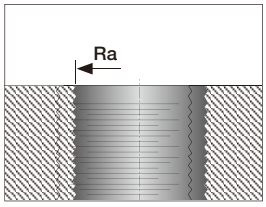
Width of corner wear reaches 0.2 – 0.3 mm.



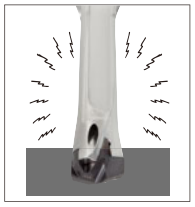
Spindle load exceeds 125% of the normal value.



Hole diameter is 0.15 mm larger or 0.03 mm smaller than the drill diameter.



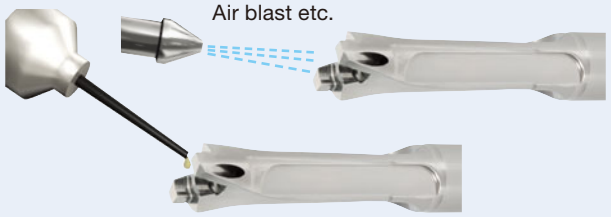
Surface roughness deteriorates.



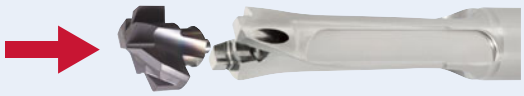
Vibration or unusual noise occurs.

● How to clamp the drill head

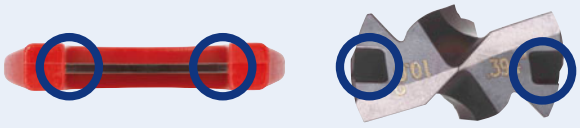
① Clean and lubricate the pocket.



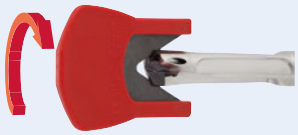
② Set the drill head into the pocket.



③ Set the clamping key on the drill head

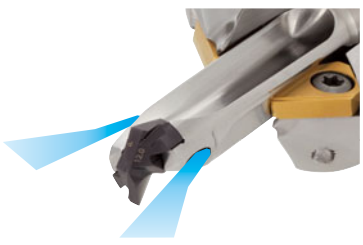


④ Clamp

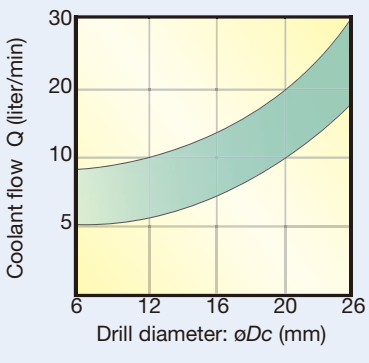


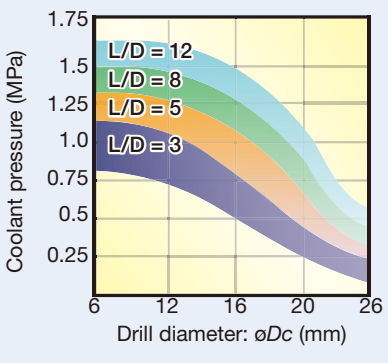
● Coolant supply

Internal coolant supply is recommended.

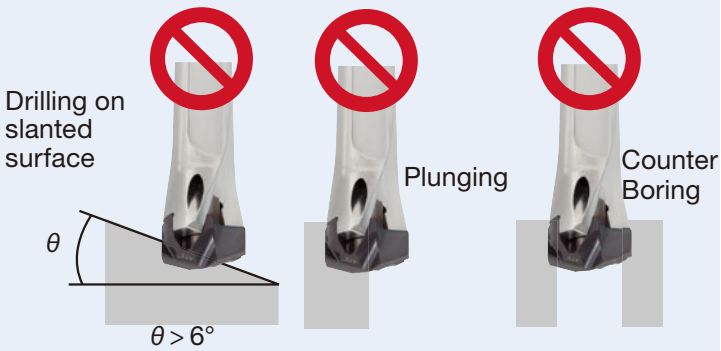


■ The required coolant flow and pressure



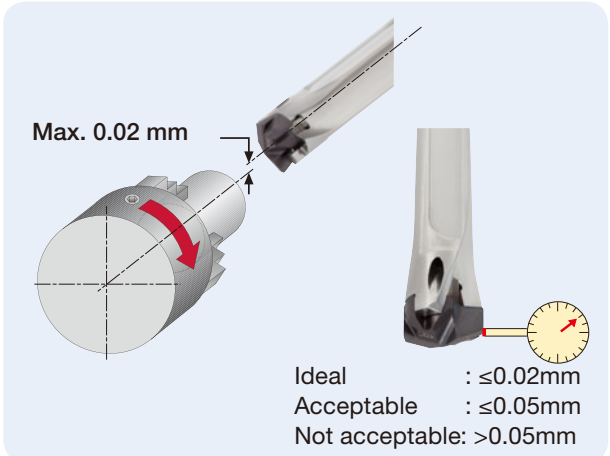


● Applications that are not recommended



● Run-out

Run-out should be less than 0.02 mm.



INSTRUCTION OF CLAMPING HEAD

Fig. #1

Fig. #2

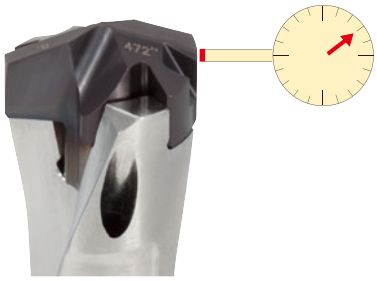


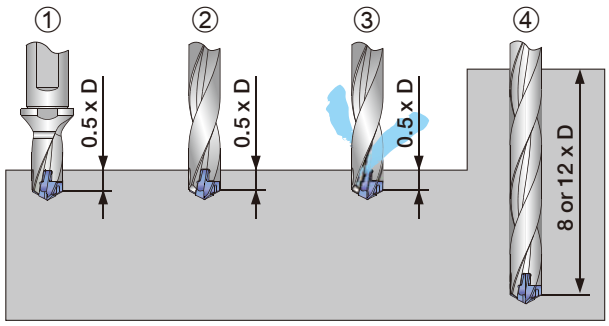
Fig. #3

Procedure

① Clean the clamping areas on the drill body and the head with an air blast, lubricate them, and put the drill head in the pocket.
② Set the clamping key in the groove on the drill head. Push the head toward the pocket with equal torque on the right and the left sides, and turn the clamping key to clamp the head completely. (Fig. #1)
③ Be sure that there is no gap between the bottom of the head and the drill body. A shim in the thickness of around 0.01 mm is useful to check the gap. (Fig. #2)
④ If there is a gap thicker than 0.01 mm, unclamp the head and return to procedure No. ①
⑤ Check the run-out at the margin of the drill head. Run-out must be less than 0.05 mm. (Fig. #3) (Recommended value: less than 0.02 mm)
If the run-out exceeds 0.05 mm, unclamp the head and return to procedure No. ① .

Note #1: If the clamping torque is not equally applied on the right and the left sides of the drill head, there may be a gap between the head and the body, which increases the run-out of the head.
Note #2: Low accuracy in holding the drill body may affect the run-out. If the run-out is large, check the accuracy in holding the drill body.

CAUTION FOR USING DRILLS WITH L/D = 8 & 12



① Drill a pilot hole in the depth of 0.5 x D.
② Rotate the drill at a low speed, such as 100 min^{-1}, and feed it slowly into the pilot hole until the drill reaches several millimeters from the bottom.
③ Supply the coolant and rotate the drill at the recommended speed.
④ Drill the required depth under the recommended cutting conditions.

Use the DMC drill head when using a long overhang drill (8xD-12xD) without a pilot hole.

HOLDERS RECOMMENDED FOR M/C

First recommendation

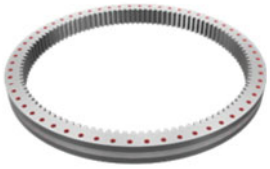
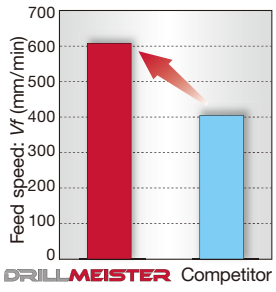
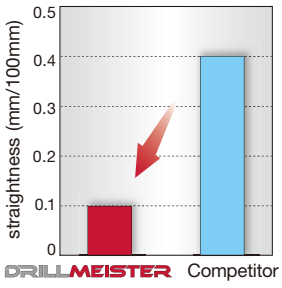
Power chuck

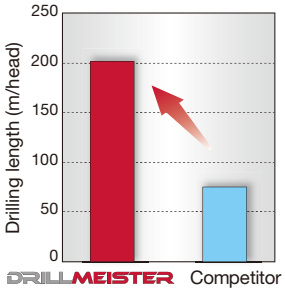
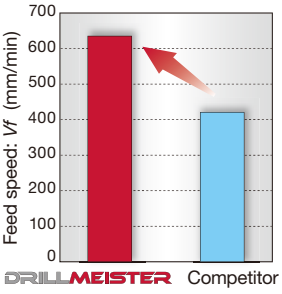
Collet chuck

Side lock

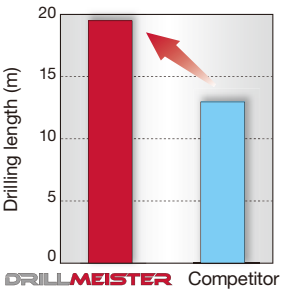
Note: If you need to use a 12xD body with a side-lock holder, the shank will need to have a flat area which may be placed additionally.

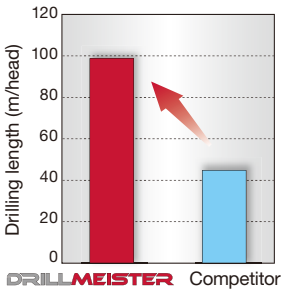
PRACTICAL EXAMPLES

Workpiece type		**Slewing ring**	**Drive pinion shaft**
Drill body		TID140F16-5	TID140F16-8
Head		DMC140 AH9130	DMC140 AH9130
Workpiece material		SCM440 / 42CrMo4	SCM415 / Low carbon alloy
		 P	 P
Cutting conditions	**Cutting speed: *Vc* (m/min)**	90	120
	Feed : *f* (mm/rev)	0.3	0.3
	Feed speed : *Vf* (mm/min)	600	600
	Drill diameter : *øDc* (mm)	14	14
	Hole depth : *H* (mm)	60	80
	Machine	Vertical M/C	Horizontal M/C
	Coolant	Wet (Internal)	Wet (Internal)
Results		 **Productivity 1.5 times!** Irregular hole diameters was an issue with competitor's drill. DrillMeister's DMC drill head was able to drill highly accurate hole diameters.	 **Improved straightness** With the competitor's drill, the hole quality could not satisfy the straightness required. DrillMeister's DMC drill head improved the hole straightness to 1/4 of the competitor's.

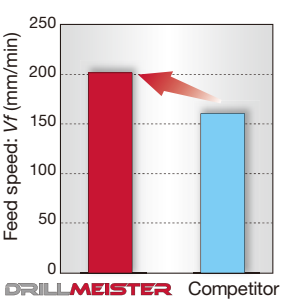
Workpiece type		**Wheel hub**	**Brake disk**
Drill body		TID135F16-3	TID125F16-3
Head		DMP139 AH725	DMP126 AH725
Workpiece material		S50C / C55	FC250 / 250
		 P	 K
Cutting conditions	**Cutting speed: *Vc* (m/min)**	90	100
	Feed : *f* (mm/rev)	0.2	0.2
	Feed speed : *Vf* (mm/min)	412	633
	Drill diameter : *øDc* (mm)	13.9	12.6
	Hole depth : *H* (mm)	15	6
	Machine	Horizontal M/C	Vertical M/C
	Coolant	Wet (External)	Wet (External)
Results		 **Tool life 3 times!** AH725 grade with high fracture resistance extends tool life by 3 times compared to the competitor.	 **Productivity 1.5 times!** As DrillMeister allows machining at high feed, the productivity is increased by 1.5 times and the tool life is tripled compared to the competitor.

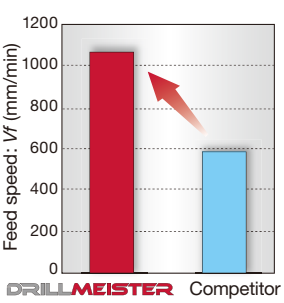
	Workpiece type	CVT pulley	Drive pinion shaft
	Drill body	TIDC160C16-5	TID160F20-5
	Head	DMP165 AH725	DMP160 AH725
	Workpiece material	SCr420 / 20Cr4	SCM415 / Low carbon alloy
Cutting conditions	Cutting speed: *Vc* (m/min)	104	108
	Feed : *f* (mm/rev)	0.3	0.17
	Feed speed : *Vf* (mm/min)	600	365
	Drill diameter : ø*Dc* (mm)	16.5	16
	Hole depth : *H* (mm)	13	90
	Machine	Horizontal M/C	NC lathe
	Coolant	Wet (Internal)	Wet (Internal)
	Results	Tool life 1.5 times! Compared to the competitor's similar product, DrillMeister extends tool life by 1.5 times.	Tool life 2 times! DrillMeister's tool life is 2 times longer than the competitor's similar product.





	Workpiece type	Ball valve	Ring gear
	Drill body	TIDC100C10-3	TIDC100C10-3
	Head	DMP105 AH725	DMP100 AH725
	Workpiece material	SUS304 / X5CrNi18-9	SCM440 / 42CrMo4
Cutting conditions	Cutting speed: *Vc* (m/min)	45	122
	Feed : *f* (mm/rev)	0.15	0.28
	Feed speed : *Vf* (mm/min)	200	1050
	Drill diameter : ø*Dc* (mm)	10.5	10
	Hole depth : *H* (mm)	23	35
	Machine	Horizontal M/C	Verthical M/C
	Coolant	Wet (Internal supply)	Wet (Internal supply)
	Results	Productivity 1.3 times! DrillMeister allows high-feed machining and increases productivity by 1.3 times. AH725 with good chipping resistance extends tool life by 30%.	Productivity 2 times! DrillMeister allows machining at double the feed rate compared to the competitor, which drastically improves productivity. No sudden fracture occurs, extending tool life by 20%.





MEMO

Check our site and our App to get more info!

www.tungaloy.com

Tungaloy Corporation (Head office)
11-1 Yoshima-Kogyodanchi
Iwaki-city, Fukushima, 970-1144 Japan
Phone: +81-246-36-8501
Fax: +81-246-36-8542
www.tungaloy.co.jp

Tungaloy America, Inc.
3726 N Ventura Drive
Arlington Heights,IL 60004, U.S.A.
Phone: +1-888-554-8394
Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada
432 Elgin St. Unit 3
Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779
Fax: +1-519-758-5791
www.tungaloy.com/ca

Tungaloy de Mexico S.A.
C Los Arellano 113,
Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone: +52-449-929-5410
Fax: +52-449-929-5411
www.tungaloy.com/mx

Tungaloy do Brasil Ltda.
Avd. Independencia N4158 Residencial Flora
13280-000 Vinhedo, São Paulo, Brasil
Phone: +55-19-38262757
Fax: +55-19-38262757
www.tungaloy.com/br

Tungaloy Germany GmbH
An der Alten Ziegelei 1
D-40789 Monheim, Germany
Phone: +49-2173-90420-0
Fax: +49-2173-90420-19
www.tungaloy.de

Tungaloy France S.A.S.
ZA Courtaboeuf - Le Rio
1 rue de la Terre de feu
F-91952 Courtaboeuf Cedex, France
Phone: +33-1-6486-4300
Fax: +33-1-6907-7817
www.tungaloy.fr

Tungaloy Italia S.r.l.
Via E. Andolfato 10
I-20126 Milano, Italy
Phone: +39-02-252012-1
Fax: +39-02-252012-65
www.tungaloy.it

Tungaloy Czech s.r.o.
Turanka 115
CZ-627 00 Brno, Czech Republic
Phone: +420-532 123 391
Fax: +420-532 123 392
www.tungaloy.cz

Tungaloy Ibérica S.L.
C/Miquel Servet, 43B, Nau 7
Pol. Ind. Bufalvent
ES-08243 Manresa (BCN), Spain
Phone: +34 93 113 1360
Fax: +34 93 876 2798
www.tungaloy.es

Tungaloy Scandinavia AB
Bultgatan 38
442 40 Kungälv, Sweden
Phone: +46-462119200
www.tungaloy.se

Tungaloy Rus, LLC
115432, Moscow, Andropov Avenue, 18,
building 7, 11th floor (office 3). Metro station
"Technopark". Business center «I-Land».
Phone: +7-499-683-01-80/81
www.tungaloy.com/ru

Tungaloy Polska Sp. z o.o.
ul. Genewska 24
03-963 Warszawa, Poland
Phone: +48-22-617-0890
Fax: +48-22-617-0890
www.tungaloy.com/pl

Tungaloy U.K. Ltd
The Technology Centre,
Wolverhampton Science Park
Glaisher Drive, Wolverhampton
West Midlands WV10 9RU, UK
Phone: +44 121 4000 231
Fax: +44 121 270 9694
www.tungaloy.com/uk
salesinfo@tungaloyuk.co.uk

Tungaloy Hungary Kft
Erzsébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-6846
Fax: +36 1 781-6866
www.tungaloy.com/hu
info@tungaloytools.hu

Tungaloy Turkey
Dudullu OSB 4. Cad No:4
34776 Umraniye Istanbul, TURKEY
Phone: +90 216 540 04 67
Fax: +90 216 540 04 87
www.tungaloy.com.tr
info@tungaloy.com.tr

Tungaloy Benelux b.v.
Tjalk 70
NL-2411 NZ Bodegraven, Netherlands
Phone: +31 172 630 420
Fax: +31 172 630 429
www.tungaloy-benelux.com

Tungaloy Croatia
Ulica bana Josipa Jelačića 87,
10430 Samobor
Phone: +385 1 3326 604
Fax: +385 1 3327 683
www.tungaloy.hr

Tungaloy Cutting Tool (Shanghai) Co.,Ltd.
Rm No 401 No.88 Zhabei
Jiangchang No.3 Rd
Shanghai 200436, China
Phone: +86-21-3632-1880
Fax: +86-21-3621-1918
www.tungaloy.com/cn

Tungaloy Cutting Tool (Thailand) Co.,Ltd.
Interlink tower 4th Fl.
1858/5-7 Bangna-Trad Road
km.5 Bangna, Bangna, Bangkok 10260
Thailand
Phone: +66-2-751-5711
Fax: +66-2-751-5715
www.tungaloy.co.th

Tungaloy Singapore (Pte.), Ltd.
62 Ubi Road 1, #06-11 Oxley BizHub 2
Singapore 408734
Phone: +65-6391-1833
Fax: +65-6299-4557
www.tungaloy.com/sg

Tungaloy Vietnam
LE 04-38, Lexington Residence
67 Mai Chi Tho, Dist. 2,
Ho Chi Minh City, Vietnam
Phone: +84-8-37406660
Fax: +84-8-37406662
www.tungaloy.com/sg

Tungaloy India Pvt. Ltd.
Indiabulls Finance Centre,
Unit # 902-A, 9th Floor,
Tower 1, Senapati Bapat Marg,
Elphinstone Road (West),
Mumbai -400013, India
Phone: +91-22-6124-8804
Fax: +91-22-6124-8899
www.tungaloy.com/in

Tungaloy Korea Co., Ltd
#1312, Byucksan Digital Valley 5-cha
Beotkkot-ro 244, Geumcheon-gu
153-788 Seoul, Korea
Phone: +82-2-2621-6161
Fax: +82-2-6393-8952
www.tungaloy.com/kr

Tungaloy Malaysia Sdn Bhd
50 K-2, Kelana Mall, Jalan SS6/14
Kelana Jaya, 47301
Petaling Jaya, Selangor Darul Ehsan
Malaysia
Phone: +603-7805-3222
Fax: +603-7804-8563
www.tungaloy.com/my

Tungaloy Australia Pty Ltd
PO Box 2232, 68/1470
Ferntree Gully Road, Knoxfield
Victoria 3180, Australia
Phone: +61-3-9755-8147
Fax: +61-3-9755-6070
www.tungaloy.com.au

PT. Tungaloy Indonesia
Kompleks Grand Wisata Block AA-10 No.3-5
Cibitung
Bekasi 17510, Indonesia
Phone: +62-21-8261-5808
Fax: +62-21-8261-5809
www.tungaloy.com/id

Member IMC Group Tungaloy

w w w . t u n g a l o y . c o m
follow us at:
f a c e b o o k . c o m / t u n g a l o y j a p a n
t w i t t e r . c o m / t u n g a l o y j a p a n
www.youtube.com/tungaloycorporation

AS9100 Certified
78006
2015.11.04

ISO14001 Certified
EC97J1123
1997.11.26

Distributed by:

6989342

FIND US ON THE CLOUD!
machiningcloud.com

TUNGALOY ATLAS

Dr. Carbide Tungaloy

Produced from Recycled paper Jan. 2019 (TJ)