

СВЕРЛА

со сменной пластиной



ALCRONIT

TECHNICAL TEAM



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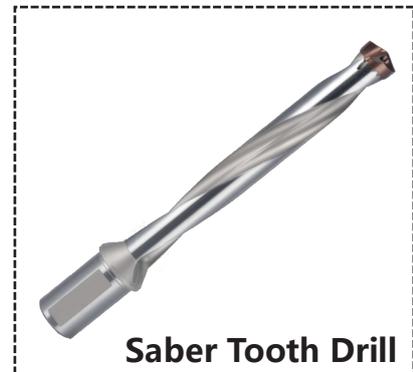
07 MULTI-PURPOSE DRILL BODY

08 SPECIAL TYPE DRILL



PRODUCT COMPARISON

Product Name	U Drill	Spade Drill	Saber Tooth Drill	Anti-Vibration Saber Tooth Drill Body
Diameter Range	∅ 13-∅ 60	∅ 13-∅ 114	∅ 12-∅ 33.5	∅ 12-∅ 20
Processing Machine	CNC machines	CNC machine, bench drill radial drilling machine etc.	High precision CNC machines	High precision CNC machines
Length Range	2x-5x diameter	Within 20x diameter	3x/5x/8x/10x/12x diameter	2x-3x diameter
Features	Suitable for most machines, more economical and practical. Compared with traditional twist drills, it has obvious advantages in both cost and machining time.	Shovel drilling arc inserts, flat bottom inserts, hole-making inserts can be installed on the same drill body, more versatile. When machining crossholes, installing a guide bar can better process the product.	It is much better than normal drills in terms of precision and finish, and the processing speed is much higher than common drills	A drill body designed for long overhanging holes, filling the situation where common saber tooth drills with long diameters cannot directly process.



PRODUCT COMPARISON



Product Name	MDD Deep Hole Drill	Phoenix Drill	Multi-Purpose Drill Body
Diameter Range	∅ 45-∅ 250	∅ 12.5-∅ 40	∅ 8-∅ 20
Processing Machine	Horizontal machines	High precision CNC machines	High precision CNC machines
Length Range	Choose 100-400mm extension rods	3x/5x/7x/10x diameter	2.25x-3.25x diameter
Features	Large diameter deep hole machining, depending on the depth of the hole, use corresponding connecting rods, more flexible.	The special design of the drill tip provides better centering ability, lower axial force and higher machining efficiency.	Drilling and turning functions can be realized with the same tool body. It is highly versatile and can reduce stock.



PHOENIX DRILL

1. Insert diameter range: 12.5-40mm, depth: 3,5,7,10x diameter.
2. Excellent centering performance.
3. Equipped with internal cooling holes to enhance tool life.
4. Special design of inserts with low axial force for improved feed and machining efficiency.
5. Optimized coating for better wear resistance.

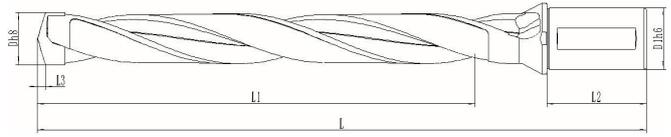


Phoenix Drill Body



3D								
Model	Insert Diameter(D)	Effective Depth	Shank Length	Tip Height	Shank Diameter	Groove Size	Center Tightening Screws	Wrench
		L1	L2	L3	D1			
APD03-125-XP20	12.5-13.0	38	48	2.0	20	C	M3.0/M2.5*14	T6*156
APD03-130-XP20	13.0-13.5	39	48	2.1	20	C	M3.0/M2.5*14	T6*156
APD03-136-XP20	13.51-14.0	42	48	2.2	20	B	M3.0/M2.5*14	T6*156
APD03-140-XP20	14.0-14.5	42	48	2.2	20	B	M3.0/M2.5*14	T6*156
APD03-146-XP20	14.51-15.0	45	50	2.3	20	A	M3.0/M2.5*14	T6*156
APD03-150-XP20	15.0-15.5	45	50	2.4	20	A	M3.0/M2.5*14	T6*156
APD03-155-XP20	15.5-15.88	47	50	2.5	20	A	M3.0/M2.5*14	T6*156
APD03-160-XP20	15.89-16.5	48	50	2.5	20	1	*M3.5/M3.0*16	1.5*185
APD03-165-XP20	16.5-17.0	50	50	2.6	20	1	*M3.5/M3.0*16	1.5*185
APD03-170-XP20	17.0-17.5	51	50	2.7	20	1	*M3.5/M3.0*16	1.5*185
APD03-175-XP20	17.5-18.0	53	50	2.8	20	1	*M3.5/M3.0*16	1.5*185
APD03-181-XP25	18.01-18.5	56	56	2.9	25	2	M4.0/M3.0*16	2.0*210
APD03-185-XP25	18.5-19.0	56	56	2.9	25	2	M4.0/M3.0*16	2.0*210
APD03-190-XP25	19-19.5	57	56	3.0	25	2	M4.0/M3.0*16	2.0*210
APD03-195-XP25	19.5-19.99	59	56	3.1	25	2	M4.0/M3.0*16	2.0*210
APD03-200-XP25	20-20.5	60	56	3.2	25	3	M4.0/M3.0*19	2.0*210
APD03-205-XP25	20.5-21	62	56	3.3	25	3	M4.0/M3.0*19	2.0*210
APD03-210-XP25	21-21.5	63	56	3.3	25	3	M4.0/M3.0*19	2.0*210
APD03-215-XP25	21.5-22	65	56	3.4	25	3	M4.0/M3.0*19	2.0*210
APD03-221-XP25	22.01-22.5	68	56	3.5	25	4	M4.0/M3.0*19	2.0*210
APD03-225-XP25	22.5-23	68	56	3.6	25	4	M4.0/M3.0*19	2.0*210
APD03-230-XP25	23-23.5	69	56	3.7	25	4	M4.0/M3.0*19	2.0*210
APD03-235-XP25	23.5-24	71	56	3.7	25	4	M4.0/M3.0*19	2.0*210
APD03-241-XP32	24.01-24.5	74	60	3.8	32	5	M5.0/M4.0*23	2.5*240

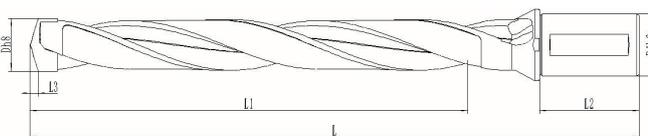
Phoenix Drill Body



3D								
Model	Insert Diameter(D)	Effective Depth	Shank Length	Tip Height	Shank Diameter	Groove Size	Center Tightening Screws	Wrench
		L1	L2	L3	D1			
APD03-245-XP32	24.5-25	74	60	3.9	32	5	M5.0/M4.0*23	2.5*240
APD03-250-XP32	25-25.5	75	60	3.8	32	5	M5.0/M4.0*23	2.5*240
APD03-255-XP32	25.5-26.0	77	60	3.9	32	5	M5.0/M4.0*23	2.5*240
APD03-261-XP32	26.01-26.5	80	60	4.0	32	6	M5.0/M4.0*23	2.5*240
APD03-265-XP32	26.5-27	80	60	4.1	32	6	M5.0/M4.0*23	2.5*240
APD03-270-XP32	27-27.5	81	60	4.2	32	6	M5.0/M4.0*23	2.5*240
APD03-275-XP32	27.5-28	83	60	4.2	32	6	M5.0/M4.0*23	2.5*240
APD03-281-XP32	28.01-28.5	86	60	4.3	32	7	M6.0/M5.0*28	3.0*265
APD03-285-XP32	28.5-29	86	60	4.4	32	7	M6.0/M5.0*28	3.0*265
APD03-290-XP32	29-29.5	87	60	4.5	32	7	M6.0/M5.0*28	3.0*265
APD03-295-XP32	29.5-30	89	60	4.5	32	7	M6.0/M5.0*28	3.0*265
APD03-301-XP32	30.01-30.5	91	60	4.6	32	8	M6.0/M5.0*28	3.0*265
APD03-305-XP32	30.5-31	91	60	4.7	32	8	M6.0/M5.0*28	3.0*265
APD03-310-XP32	31-31.5	93	60	4.8	32	8	M6.0/M5.0*28	3.0*265
APD03-315-XP32	31.5-32	95	60	4.8	32	8	M6.0/M5.0*28	3.0*265
APD03-321-XP40	32.01-33	99	70	4.9	40	9	M6.0/M6.0*32	3.0*265
APD03-330-XP40	33.0-34.0	99	70	5.1	40	9	M6.0/M6.0*32	3.0*265
APD03-340-XP40	34.0-35.0	102	70	5.2	40	9	M6.0/M6.0*32	3.0*265
APD03-350-XP40	35.0-36.0	105	70	5.4	40	9	M6.0/M6.0*32	3.0*265
APD03-361-XP40	36.01-37.0	111	70	5.5	40	10	M6.0/M6.0*32	3.0*265
APD03-370-XP40	37.0-38.0	111	70	5.7	40	10	M6.0/M6.0*32	3.0*265
APD03-380-XP40	38.0-39.0	114	70	5.8	40	10	M6.0/M6.0*32	3.0*265
APD03-390-XP40	39.0-40.0	117	70	6.0	40	10	M6.0/M6.0*32	3.0*265
APD03-400-XP40	40.0	120	70	6.2	40	10	M6.0/M6.0*32	3.0*265

* 15.89-18.00 diameter inserts have two types of screw holes, and the drill bodies are fitted with M3.5/M3.0 or M3.5/M2.5 screws depending on the insert(M3.5/M3.0 screws are used in most cases). For 18.01-19.99 diameter inserts, because M3.5/M2.5 screws are easily damaged, the regular stock is M4.0/M3.0 screws.

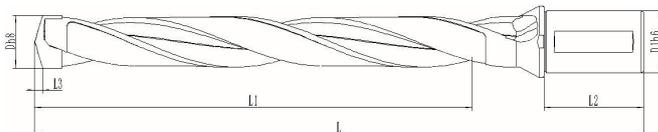
Phoenix Drill Body



5D

Model	Insert Diameter(D)					Groove Size	Center Tightening Screws	Wrench
		Effective Depth	Shank Length	Tip Height	Shank Diameter			
		L1	L2	L3	D1			
APD05-125-XP20	12.5-13.0	63	48	2.0	20	C	M3.0/M2.5*14	T6*156
APD05-130-XP20	13.0-13.5	65	48	2.1	20	C	M3.0/M2.5*14	T6*156
APD05-136-XP20	13.51-14.0	69	48	2.2	20	B	M3.0/M2.5*14	T6*156
APD05-140-XP20	14.0-14.5	70	48	2.2	20	B	M3.0/M2.5*14	T6*156
APD05-146-XP20	14.51-15.0	74	50	2.3	20	A	M3.0/M2.5*14	T6*156
APD05-150-XP20	15.0-15.5	75	50	2.4	20	A	M3.0/M2.5*14	T6*156
APD05-155-XP20	15.5-15.88	78	50	2.5	20	A	M3.0/M2.5*14	T6*156
APD05-160-XP20	15.89-16.5	80	50	2.5	20	1	*M3.5/M3.0*16	1.5*185
APD05-165-XP20	16.5-17.0	83	50	2.6	20	1	*M3.5/M3.0*16	1.5*185
APD05-170-XP20	17.0-17.5	85	50	2.7	20	1	*M3.5/M3.0*16	1.5*185
APD05-175-XP20	17.5-18.0	88	50	2.8	20	1	*M3.5/M3.0*16	1.5*185
APD05-181-XP25	18.01-18.5	92	56	2.9	25	2	M4.0/M3.0*16	2.0*210
APD05-185-XP25	18.5-19.0	93	56	2.9	25	2	M4.0/M3.0*16	2.0*210
APD05-190-XP25	19-19.5	95	56	3.0	25	2	M4.0/M3.0*16	2.0*210
APD05-195-XP25	19.5-19.99	98	56	3.1	25	2	M4.0/M3.0*16	2.0*210
APD05-200-XP25	20-20.5	100	56	3.2	25	3	M4.0/M3.0*19	2.0*210
APD05-205-XP25	20.5-21	103	56	3.3	25	3	M4.0/M3.0*19	2.0*210
APD05-210-XP25	21-21.5	105	56	3.3	25	3	M4.0/M3.0*19	2.0*210
APD05-215-XP25	21.5-22	108	56	3.4	25	3	M4.0/M3.0*19	2.0*210
APD05-221-XP25	22.01-22.5	112	56	3.5	25	4	M4.0/M3.0*19	2.0*210
APD05-225-XP25	22.5-23	113	56	3.6	25	4	M4.0/M3.0*19	2.0*210
APD05-230-XP25	23-23.5	115	56	3.7	25	4	M4.0/M3.0*19	2.0*210
APD05-235-XP25	23.5-24	118	56	3.7	25	4	M4.0/M3.0*19	2.0*210
APD05-241-XP32	24.01-24.5	122	60	3.8	32	5	M5.0/M4.0*23	2.5*240

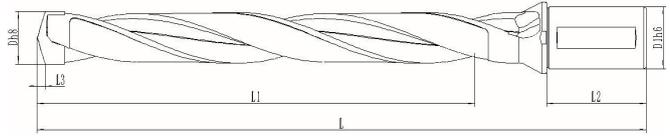
Phoenix Drill Body



5D								
Model	Insert Diameter(D)					Groove Size	Center Tightening Screws	Wrench
		Effective Depth	Shank Length	Tip Height	Shank Diameter			
		L1	L2	L3	D1			
APD05-245-XP32	24.5-25	123	60	3.9	32	5	M5.0/M4.0*23	2.5*240
APD05-250-XP32	25-25.5	125	60	3.8	32	5	M5.0/M4.0*23	2.5*240
APD05-255-XP32	25.5-26.0	128	60	3.9	32	5	M5.0/M4.0*23	2.5*240
APD05-261-XP32	26.01-26.5	132	60	4.0	32	6	M5.0/M4.0*23	2.5*240
APD05-265-XP32	26.5-27	133	60	4.1	32	6	M5.0/M4.0*23	2.5*240
APD05-270-XP32	27-27.5	135	60	4.2	32	6	M5.0/M4.0*23	2.5*240
APD05-275-XP32	27.5-28	138	60	4.2	32	6	M5.0/M4.0*23	2.5*240
APD05-281-XP32	28.01-28.5	142	60	4.3	32	7	M6.0/M5.0*28	3.0*265
APD05-285-XP32	28.5-29	143	60	4.4	32	7	M6.0/M5.0*28	3.0*265
APD05-290-XP32	29-29.5	145	60	4.5	32	7	M6.0/M5.0*28	3.0*265
APD05-295-XP32	29.5-30	143	60	4.5	32	7	M6.0/M5.0*28	3.0*265
APD05-301-XP32	30.01-30.5	151	60	4.6	32	8	M6.0/M5.0*28	3.0*265
APD05-305-XP32	30.5-31	152	60	4.7	32	8	M6.0/M5.0*28	3.0*265
APD05-310-XP32	31-31.5	155	60	4.8	32	8	M6.0/M5.0*28	3.0*265
APD05-315-XP32	31.5-32	158	60	4.8	32	8	M6.0/M5.0*28	3.0*265
APD05-321-XP40	32.01-33	163	70	4.9	40	9	M6.0/M6.0*32	3.0*330
APD05-330-XP40	33.0-34.0	165	70	5.1	40	9	M6.0/M6.0*32	3.0*330
APD05-340-XP40	34.0-35.0	170	70	5.2	40	9	M6.0/M6.0*32	3.0*330
APD05-350-XP40	35.0-36.0	175	70	5.4	40	9	M6.0/M6.0*32	3.0*330
APD05-361-XP40	36.01-37.0	183	70	5.5	40	10	M6.0/M6.0*32	3.0*330
APD05-370-XP40	37.0-38.0	185	70	5.7	40	10	M6.0/M6.0*32	3.0*330
APD05-380-XP40	38.0-39.0	190	70	5.8	40	10	M6.0/M6.0*32	3.0*330
APD05-390-XP40	39.0-40.0	195	70	6.0	40	10	M6.0/M6.0*32	3.0*330
APD05-400-XP40	40.0	200	70	6.2	40	10	M6.0/M6.0*32	3.0*330

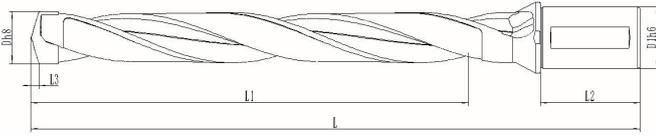
* 15.89-18.00 diameter inserts have two types of screw holes, and the drill bodies are fitted with M3.5/M3.0 or M3.5/M2.5 screws depending on the insert(M3.5/M3.0 screws are used in most cases).
 For 18.01-19.99 diameter inserts, because M3.5/M2.5 screws are easily damaged, the regular stock is M4.0/M3.0 screws.

Phoenix Drill Body



7D								
Model	Insert Diameter (D)					Groove Size	Center Tightening Screws	Wrench
		Effective Depth	Shank Length	Tip Height	Shank Diameter			
		L1	L2	L3	D1			
APD07-125-XP20	12.5-13.0	88	48	2.0	20	C	M3.0/M2.5*14	T6*188
APD07-130-XP20	13.0-13.5	91	48	2.1	20	C	M3.0/M2.5*14	T6*188
APD07-136-XP20	13.51-14.0	96	48	2.2	20	B	M3.0/M2.5*14	T6*188
APD07-140-XP20	14.0-14.5	98	48	2.2	20	B	M3.0/M2.5*14	T6*188
APD07-146-XP20	14.51-15.0	103	50	2.3	20	A	M3.0/M2.5*14	T6*188
APD07-150-XP20	15.0-15.5	105	50	2.4	20	A	M3.0/M2.5*14	T6*188
APD07-155-XP20	15.5-15.88	109	50	2.5	20	A	M3.0/M2.5*14	T6*188
APD07-160-XP20	15.89-16.5	112	50	2.5	20	1	*M3.5/M3.0*16	1.5*225
APD07-165-XP20	16.5-17.0	116	50	2.6	20	1	*M3.5/M3.0*16	1.5*225
APD07-170-XP20	17.0-17.5	119	50	2.7	20	1	*M3.5/M3.0*16	1.5*225
APD07-175-XP20	17.5-18.0	123	50	2.8	20	1	*M3.5/M3.0*16	1.5*225
APD07-181-XP25	18.01-18.5	128	56	2.9	25	2	M4.0/M3.0*16	2.0*260
APD07-185-XP25	18.5-19.0	130	56	2.9	25	2	M4.0/M3.0*16	2.0*260
APD07-190-XP25	19-19.5	133	56	3.0	25	2	M4.0/M3.0*16	2.0*260
APD07-195-XP25	19.5-19.99	137	56	3.1	25	2	M4.0/M3.0*16	2.0*260
APD07-200-XP25	20-20.5	140	56	3.2	25	3	M4.0/M3.0*19	2.0*260
APD07-205-XP25	20.5-21	144	56	3.3	25	3	M4.0/M3.0*19	2.0*260
APD07-210-XP25	21-21.5	147	56	3.3	25	3	M4.0/M3.0*19	2.0*260
APD07-215-XP25	21.5-22	151	56	3.4	25	3	M4.0/M3.0*19	2.0*260
APD07-221-XP25	22.01-22.5	156	56	3.5	25	4	M4.0/M3.0*19	2.0*260
APD07-225-XP25	22.5-23	158	56	3.6	25	4	M4.0/M3.0*19	2.0*260
APD07-230-XP25	23-23.5	161	56	3.7	25	4	M4.0/M3.0*19	2.0*260
APD07-235-XP25	23.5-24	165	56	3.7	25	4	M4.0/M3.0*19	2.0*260
APD07-241-XP32	24.01-24.5	170	60	3.8	32	5	M5.0/M4.0*23	2.5*295

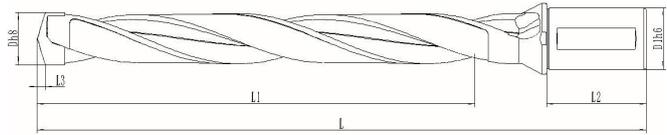
Phoenix Drill Body



7D								
Model	Insert Diameter(D)					Groove Size	Center Tightening Screws	Wrench
		Effective Depth	Shank Length	Tip Height	Shank Diameter			
		L1	L2	L3	D1			
APD07-245-XP32	24.5-25	172	60	3.9	32	5	M5.0/M4.0*23	2.5*295
APD07-250-XP32	25-25.50	175	60	3.8	32	5	M5.0/M4.0*23	2.5*295
APD07-255-XP32	25.51-26.0	179	60	3.9	32	5	M5.0/M4.0*23	2.5*295
APD07-261-XP32	26.01-26.5	184	60	4.0	32	6	M5.0/M4.0*23	2.5*295
APD07-265-XP32	26.5-27.0	186	60	4.1	32	6	M5.0/M4.0*23	2.5*295
APD07-270-XP32	27-27.5	189	60	4.2	32	6	M5.0/M4.0*23	2.5*295
APD07-275-XP32	27.5-28.0	193	60	4.2	32	6	M5.0/M4.0*23	2.5*295
APD07-281-XP32	28.01-28.5	198	60	4.3	32	7	M6.0/M5.0*28	3.0*330
APD07-285-XP32	28.5-29	200	60	4.4	32	7	M6.0/M5.0*28	3.0*330
APD07-290-XP32	29-29.5	203	60	4.5	32	7	M6.0/M5.0*28	3.0*330
APD07-295-XP32	29.5-30	207	60	4.5	32	7	M6.0/M5.0*28	3.0*330
APD07-301-XP32	30.01-30.5	211	60	4.6	32	8	M6.0/M5.0*28	3.0*330
APD07-305-XP32	30.5-31	213	60	4.7	32	8	M6.0/M5.0*28	3.0*330
APD07-310-XP32	31-31.5	217	60	4.8	32	8	M6.0/M5.0*28	3.0*330
APD07-315-XP32	31.5-32	221	60	4.8	32	8	M6.0/M5.0*28	3.0*330
APD07-321-XP40	32.01-33	227	70	4.9	40	9	M6.0/M6.0*32	3.0*439
APD07-330-XP40	33.0-34.0	231	70	5.1	40	9	M6.0/M6.0*32	3.0*439
APD07-340-XP40	34.0-35.0	238	70	5.2	40	9	M6.0/M6.0*32	3.0*439
APD07-350-XP40	35.0-36.0	245	70	5.4	40	9	M6.0/M6.0*32	3.0*439
APD07-361-XP40	36.01-37.0	255	70	5.5	40	10	M6.0/M6.0*32	3.0*439
APD07-370-XP40	37.0-38.0	259	70	5.7	40	10	M6.0/M6.0*32	3.0*439
APD07-380-XP40	38.0-39.0	266	70	5.8	40	10	M6.0/M6.0*32	3.0*439
APD07-390-XP40	39.0-40.0	273	70	6.0	40	10	M6.0/M6.0*32	3.0*439
APD07-400-XP40	40.0	280	70	6.2	40	10	M6.0/M6.0*32	3.0*439

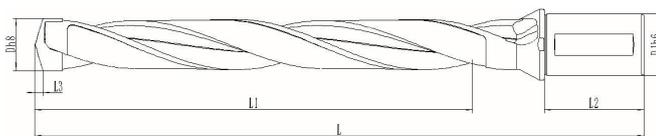
* 15.89-18.00 diameter inserts have two types of screw holes, and the drill bodies are fitted with M3.5/M3.0 or M3.5/M2.5 screws depending on the insert(M3.5/M3.0 screws are used in most cases). For 18.01-19.99 diameter inserts, because M3.5/M2.5 screws are easily damaged, the regular stock is M4.0 /M3.0 screws.

Phoenix Drill Body



10D								
Model	Insert Diameter(D)	Effective Depth	Shank Length	Tip Height	Shank Diameter	Groove Size	Center Tightening Screws	Wrench
		L1	L2	L3	D1			
APD10-125-XP20	12.5-13.0	125	48	2.0	20	C	M3.0/M2.5*14	T6*230
APD10-130-XP20	13.0-13.5	130	48	2.1	20	C	M3.0/M2.5*14	T6*230
APD10-136-XP20	13.51-14.0	136	48	2.2	20	B	M3.0/M2.5*14	T6*230
APD10-140-XP20	14.0-14.5	140	48	2.2	20	B	M3.0/M2.5*14	T6*230
APD10-146-XP20	14.51-15.0	146	50	2.3	20	A	M3.0/M2.5*14	T6*230
APD10-150-XP20	15.0-15.5	150	50	2.4	20	A	M3.0/M2.5*14	T6*230
APD10-155-XP20	15.5-15.88	155	50	2.5	20	A	M3.0/M2.5*14	T6*230
APD10-160-XP20	15.89-16.5	160	50	2.5	20	1	*M3.5/M3.0*16	1.5*297
APD10-165-XP20	16.5-17.0	165	50	2.6	20	1	*M3.5/M3.0*16	1.5*297
APD10-170-XP20	17.0-17.5	170	50	2.7	20	1	*M3.5/M3.0*16	1.5*297
APD10-175-XP20	17.5-18.0	175	50	2.8	20	1	*M3.5/M3.0*16	1.5*297
APD10-181-XP25	18.01-18.5	182	56	2.9	25	2	M4.0/M3.0*16	2.0*343
APD10-185-XP25	18.5-19.0	185	56	2.9	25	2	M4.0/M3.0*16	2.0*343
APD10-190-XP25	19-19.5	190	56	3.0	25	2	M4.0/M3.0*16	2.0*343
APD10-195-XP25	19.5-19.99	195	56	3.1	25	2	M4.0/M3.0*16	2.0*343
APD10-200-XP25	20-20.5	200	56	3.2	25	3	M4.0/M3.0*19	2.0*343
APD10-205-XP25	20.5-21	205	56	3.3	25	3	M4.0/M3.0*19	2.0*343
APD10-210-XP25	21-21.5	210	56	3.3	25	3	M4.0/M3.0*19	2.0*343
APD10-215-XP25	21.5-22	215	56	3.4	25	3	M4.0/M3.0*19	2.0*343
APD10-221-XP25	22.01-22.5	222	56	3.5	25	4	M4.0/M3.0*19	2.0*343
APD10-225-XP25	22.5-23	225	56	3.6	25	4	M4.0/M3.0*19	2.0*343
APD10-230-XP25	23-23.5	230	56	3.7	25	4	M4.0/M3.0*19	2.0*343
APD10-235-XP25	23.5-24	235	56	3.7	25	4	M4.0/M3.0*19	2.0*343
APD10-241-XP32	24.01-24.5	242	60	3.8	32	5	M5.0/M4.0*23	2.5*393

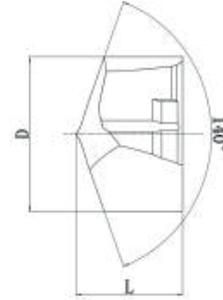
Phoenix Drill Body



10D								
Model	Insert Diameter(D)	Effective Depth	Shank Length	Tip Height	Shank Diameter	Groove Size	Center Tightening Screws	Wrench
		L1	L2	L3	D1			
APD10-245-XP32	24.5-25	245	60	3.9	32	5	M5.0/M4.0*23	2.5*393
APD10-250-XP32	25-25.5	250	60	3.8	32	5	M5.0/M4.0*23	2.5*393
APD10-255-XP32	25.5-26.0	255	60	3.9	32	5	M5.0/M4.0*23	2.5*393
APD10-261-XP32	26.01-26.5	262	60	4.0	32	6	M5.0/M4.0*23	2.5*393
APD10-265-XP32	26.5-27	265	60	4.1	32	6	M5.0/M4.0*23	2.5*393
APD10-270-XP32	27-27.5	270	60	4.2	32	6	M5.0/M4.0*23	2.5*393
APD10-275-XP32	27.5-28	275	60	4.2	32	6	M5.0/M4.0*23	2.5*393
APD10-281-XP32	28.01-28.5	282	60	4.3	32	7	M6.0/M5.0*28	3.0*439
APD10-285-XP32	28.5-29	285	60	4.4	32	7	M6.0/M5.0*28	3.0*439
APD10-290-XP32	29-29.5	290	60	4.5	32	7	M6.0/M5.0*28	3.0*439
APD10-295-XP32	29.5-30	295	60	4.5	32	7	M6.0/M5.0*28	3.0*439
APD10-301-XP32	30.01-30.5	302	60	4.6	32	8	M6.0/M5.0*28	3.0*439
APD10-305-XP32	30.5-31	305	60	4.7	32	8	M6.0/M5.0*28	3.0*439
APD10-310-XP32	31-31.5	310	60	4.8	32	8	M6.0/M5.0*28	3.0*439
APD10-315-XP32	31.5-32	315	60	4.8	32	8	M6.0/M5.0*28	3.0*439
APD10-321-XP40	32.01-33	323	70	4.9	40	9	M6.0/M6.0*32	3.0*530
APD10-330-XP40	33.0-34.0	330	70	5.1	40	9	M6.0/M6.0*32	3.0*530
APD10-340-XP40	34.0-35.0	340	70	5.2	40	9	M6.0/M6.0*32	3.0*530
APD10-350-XP40	35.0-36.0	350	70	5.4	40	9	M6.0/M6.0*32	3.0*530
APD10-361-XP40	36.01-37.0	363	70	5.5	40	10	M6.0/M6.0*32	3.0*530
APD10-370-XP40	37.0-38.0	370	70	5.7	40	10	M6.0/M6.0*32	3.0*530
APD10-380-XP40	38.0-39.0	380	70	5.8	40	10	M6.0/M6.0*32	3.0*530
APD10-390-XP40	39.0-40.0	390	70	6.0	40	10	M6.0/M6.0*32	3.0*530
APD10-400-XP40	40.0	400	70	6.2	40	10	M6.0/M6.0*32	3.0*530

* 15.89-18.00 diameter inserts have two types of screw holes, and the drill bodies are fitted with M3.5/M3.0 or M3.5/M2.5 screws depending on the insert(M3.5/M3.0 screws are used in most cases). For 18.01-19.99 diameter inserts, because M3.5/M2.5 screws are easily damaged, the regular stock is M4.0/M3.0 screws.

Phoenix Drill Insert



Insert Types				
Model	Shank Size	Insert Diameter Rang(D)	L	Thread
APDPA-(1250-1350)	C	12.5-13.5	9.6	M2.5
APDPA-(1351-1450)	B	13.51-14.5	10.1	M2.5
APDPA-(1451-1588)	A	14.51-15.88	10.6	M2.5
APDPA-(1589-1800)	1	15.89-18.0	11.6	M3.0
APDPA-(1589-1800)-1F	1F	15.89-18.0	11.6	M2.5
APDPA-(1801-1999)	2	18.01-19.99	12.6	M3.0
APDPA-(1801-1999)-2F	2F	18.01-19.99	12.6	M2.5
APDPA-(2000-2200)	3	20.00-22.00	13.6	M3.0
APDPA-(2201-2400)	4	22.01-24.0	14.6	M3.0
APDPA-(2401-2600)	5	24.01-26.0	15.6	M4.0
APDPA-(2601-2800)	6	26.01-28.0	16.6	M4.0
APDPA-(2801-3000)	7	28.01-30.0	17.6	M5.0
APDPA-(3001-3200)	8	30.01-32.0	18.6	M5.0
APDPA-(3201-3600)	9	32.01-36.0	20.6	M6.0
APDPA-(3601-4000)	10	36.01-40.0	22.6	M6.0

* The two diameter range, 15.89-18.00 and 18.01-19.99 have two types of thread, M3.0 and M2.5, whose matching drill bodies are 1/1F and 2/2F (We have 1 and 2, i.e. M3.0, in regular stock).

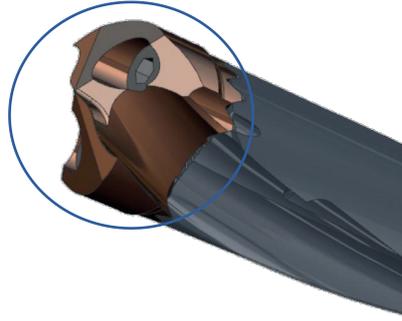
SABER TOOTH DRILL

- 1.Insert diameter range: 12-33.5mm, depth: 1.5x, 3x, 5x, 8x, 12x diameter.
- 2.Resharpener allowance of 1.5mm-3mm is reserved for inserts to further reduce tool costs.
- 3.Interchangeable carbide inserts and high rigidity alloy drill body greatly improve machining accuracy and efficiency.
- 4.The radial tooth design of the insert and the drill body realizes high precision and high strength.
- 5.Designed with internal coolant holes, it makes drilling cold enough for longer tool life and smoother chip evacuation.
- 6.The same drill body can be assembled with different diameters of blades, saving tooling costs.
- 7.Optimized spiral design for smooth chip evacuation control.
- 8.Enhanced edge treatment dramatically improves machining life.
- 9.Shank design suitable for a wide range of shank systems.
- 10.Quick and easy insert change without removing the drill body from the machine.



Components

Installation Status



Screws

High-strength screws for stable locking of inserts from the head



Insert

A wide range of different cutting edges for different workpiece materials.



High-precision mating tooth profile for a solid connection

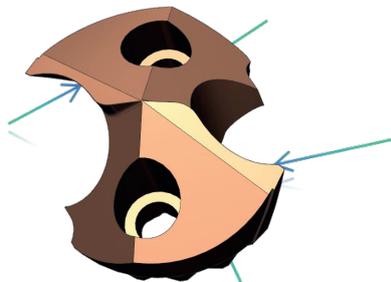
Inner Cooling Hole

Drill Body

The drill body is made of high-quality alloy steel with good rigidity and toughness.

Optimized drill tips for better centering performance

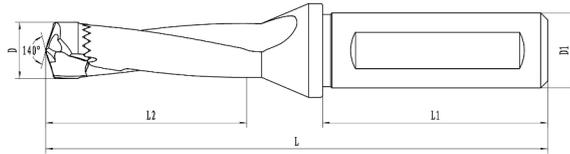
Chamfered main cutting edge for enhanced insert strength and wear resistance



Reinforced cutting edge protection for better chipping resistance during the cutting process

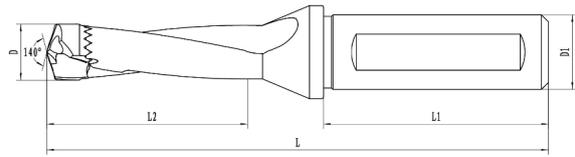
Superior coating for more wear-resistant inserts

Saber Tooth Drill Body Models and Sizes



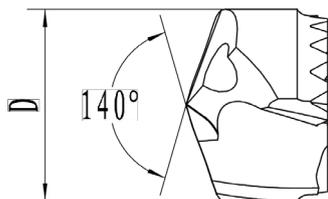
Diameter (D) (h7)	1.5D		3D		5D		universal		Screw	Wrench			
	Model	Size		Model	Size		Model	Size					
		L2	L		L2	L		L2			L	L1	D1
12.0-12.49	ATC1.5-120-XP16	28	91	ATC03-120-XP16	46	107	ATC05-120-XP16	71	132	48	16	M2.2*8	T6
12.5-13.49	ATC1.5-130-XP16	30	92	ATC03-130-XP16	49	112	ATC05-130-XP16	76	142				
13.5-14.5	ATC1.5-140-XP16	34	96	ATC03-140-XP16	55	119	ATC05-140-XP16	84	149				
14.51-15.5	ATC1.5-150-XP20	35	100	ATC03-150-XP20	58	129	ATC05-150-XP20	89	159	50	20	M2.5*9	T8
15.51-16.5	ATC1.5-160-XP20	38	103	ATC03-160-XP20	62	134	ATC05-160-XP20	95	169				
16.51-17.5	ATC1.5-170-XP20	39	105	ATC03-170-XP20	66	140	ATC05-170-XP20	101	175				
17.51-18.5	ATC1.5-180-XP20	43	107	ATC03-180-XP20	70	145	ATC05-180-XP20	107	180	56	25	M3.0*11	T8
18.51-19.5	ATC1.5-190-XP25	44	115	ATC03-190-XP25	73	160	ATC05-190-XP25	112	195				
19.51-20.5	ATC1.5-200-XP25	47	118	ATC03-200-XP25	77	160	ATC05-200-XP25	118	200				
20.51-21.5	ATC1.5-210-XP25	48	119	ATC03-210-XP25	80	160	ATC05-210-XP25	123	200	60	32	M3.5*12	T15
21.51-22.8	ATC1.5-220-XP25	51	121	ATC03-220-XP25	84	165	ATC05-220-XP25	129	205				
22.81-23.8	ATC1.5-230-XP25	51	122	ATC03-230-XP25	81	165	ATC05-230-XP25	134	215				
23.81-24.8	ATC1.5-240-XP32	54	129	ATC03-240-XP32	91	175	ATC05-240-XP32	140	225	60	32	M4.0*14	T15
24.81-25.8	ATC1.5-250-XP32	54	129	ATC03-250-XP32	93	175	ATC05-250-XP32	145	230				
25.81-26.8	ATC1.5-260-XP32	57	132	ATC03-260-XP32	97	180	ATC05-260-XP32	151	235				
26.81-27.8	ATC1.5-270-XP32	58	133	ATC03-270-XP32	99	180	ATC05-270-XP32	156	245	60	32	M4.5*15	T15
27.81-28.8	ATC1.5-280-XP32	60	135	ATC03-280-XP32	102	185	ATC05-280-XP32	162	245				
28.81-29.9	ATC1.5-290-XP32	61	136	ATC03-290-XP32	105	190	ATC05-290-XP32	167	250				
29.81-30.8	ATC1.5-300-XP32	64	139	ATC03-300-XP32	110	191	ATC05-300-XP32	173	261	60	32	M4.5*15	T15
30.81-32.0	ATC1.5-320-XP32	67	143	ATC03-320-XP32	116	201	ATC05-320-XP32	181	266				
32.01-33.5	ATC1.5-330-XP32	69	146	ATC03-330-XP32	121	206	ATC05-330-XP32	191	276				

Saber Tooth Drill Body Models and Sizes



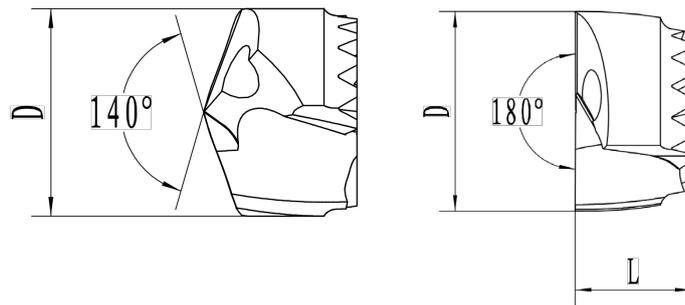
Diameter (D) (h7)	8D			10D			12D			universal		Screw	Wrench
	Model	Size		Model	Size		Model	Size		Size			
		L2	L		L2	L		L2	L	L1	D1		
12.0-12.49	ATC08-120-XP16	107	168	ATC10-120-XP16	-	-	-	-	-	48	16	M2.2*8	T6
12.5-13.49	ATC08-130-XP16	115	182	ATC10-130-XP16	-	-	-	-	-				
13.5-14.5	ATC08-140-XP16	127	194	ATC10-140-XP16	156.5	220.5	ATC12-140-XP16	186.5	249.5				
14.51-15.5	ATC08-150-XP20	136	204	ATC10-150-XP20	166.7	232.7	ATC12-150-XP20	198.7	263.7	50	20	M2.5*9	T8
15.51-16.5	ATC08-160-XP20	144	214	ATC10-160-XP20	178.5	243.5	ATC12-160-XP20	211.5	276.5				
16.51-17.5	ATC08-170-XP20	154	225	ATC10-170-XP20	188.7	253.7	ATC12-170-XP20	223.7	288.7				
17.51-18.5	ATC08-180-XP20	162	230	ATC10-180-XP20	198.8	264.8	ATC12-180-XP20	236.8	301.8	56	25	M3.0*11	T8
18.51-19.5	ATC08-190-XP25	171	255	ATC10-190-XP25	209.9	280.9	ATC12-190-XP25	248.9	314.8				
19.51-20.5	ATC08-200-XP25	179	270	ATC10-200-XP25	220.5	291.5	ATC12-200-XP25	261.5	332.5				
20.51-21.5	ATC08-210-XP25	188	266	ATC10-210-XP25	230.6	361.6	ATC12-210-XP25	273.6	344.6	60	32	M3.5*12	T15
21.51-22.8	ATC08-220-XP25	196	275	ATC10-220-XP25	244.1	315.1	ATC12-220-XP25	289.7	360.7				
22.81-23.8	ATC08-230-XP25	205	285	ATC10-230-XP25	253.7	324.7	ATC12-230-XP25	301.3	372.3				
23.81-24.8	ATC08-240-XP32	213	300	ATC10-240-XP32	264.9	339.9	ATC12-240-XP32	264.9	389.5	60	32	M4.0*14	T15
24.81-25.8	ATC08-250-XP32	222	305	ATC10-250-XP32	270	350	ATC12-250-XP32	326.6	401.6				
25.81-26.8	ATC08-260-XP32	230	315	ATC10-260-XP32	285.3	360.3	ATC12-260-XP32	338.9	413.9				
26.81-27.8	ATC08-270-XP32	239	325	ATC10-270-XP32	295.3	370.3	ATC12-270-XP32	350.9	425.9	60	32	M4.5*15	T15
27.81-28.8	ATC08-280-XP32	247	330	ATC10-280-XP32	306.2	381.2	ATC12-280-XP32	363.8	438.8				
28.81-29.9	ATC08-290-XP32	256	340	ATC10-290-XP32	316.4	391.4	ATC12-290-XP32	376	451				
29.81-30.8	ATC08-300-XP32	265	351	ATC10-300-XP32	327.9	402.9	ATC12-300-XP32	389.5	464.5	60	32	M4.5*15	T15
30.81-32.0	ATC08-320-XP32	276	361	ATC10-320-XP32	345.9	424.9	-	-	-				
32.01-33.5	ATC08-330-XP32	291	376	ATC10-330-XP32	364	443	-	-	-				

Saber Tooth Drill Insert Models and Sizes



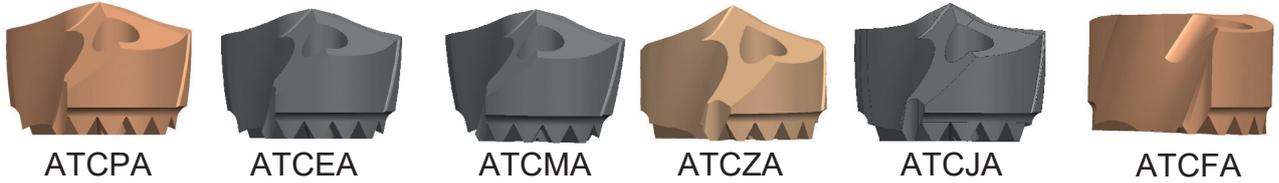
Saber Tooth Drill Insert Models and Sizes						
Diameter D(mm)	Model	Model	Model	L	Model	L
12.0	ATCEA-1200	ATCPA-1200	ATCMA-1200	9.1	ATCFA-1200	7.1
12.5	ATCEA-1250	ATCPA-1250	ATCMA-1250	9.4	ATCFA-1250	7.2
13.0	ATCEA-1300	ATCPA-1300	ATCMA-1300	9.7	ATCFA-1300	7.5
13.5	ATCEA-1350	ATCPA-1350	ATCMA-1350	10.3	ATCFA-1350	7.9
14.0	ATCEA-1400	ATCPA-1400	ATCMA-1400		ATCFA-1400	
14.5	ATCEA-1450	ATCPA-1450	ATCMA-1450		ATCFA-1450	
15.0	ATCEA-1500	ATCPA-1500	ATCMA-1500	11.0	ATCFA-1500	8.3
15.5	ATCEA-1550	ATCPA-1550	ATCMA-1550		ATCFA-1550	
16.0	ATCEA-1600	ATCPA-1600	ATCMA-1600	11.6	ATCFA-1600	8.8
16.5	ATCEA-1650	ATCPA-1650	ATCMA-1650		ATCFA-1650	
17.0	ATCEA-1700	ATCPA-1700	ATCMA-1700	12.3	ATCFA-1700	9.3
17.5	ATCEA-1750	ATCPA-1750	ATCMA-1750		ATCFA-1750	
18.0	ATCEA-1800	ATCPA-1800	ATCMA-1800	12.9	ATCFA-1800	9.8
18.5	ATCEA-1850	ATCPA-1850	ATCMA-1850		ATCFA-1850	
19.0	ATCEA-1900	ATCPA-1900	ATCMA-1900	13.6	ATCFA-1900	10.2
19.5	ATCEA-1950	ATCPA-1950	ATCMA-1950		ATCFA-1950	
20.0	ATCEA-2000	ATCPA-2000	ATCMA-2000	14.1	ATCFA-2000	10.7
20.5	ATCEA-2050	ATCPA-2050	ATCMA-2050		ATCFA-2050	
21.0	ATCEA-2100	ATCPA-2100	ATCMA-2100	14.8	ATCFA-2100	11.2
21.5	ATCEA-2150	ATCPA-2150	ATCMA-2150		ATCFA-2150	
22.0	ATCEA-2200	ATCPA-2200	ATCMA-2200	15.0	ATCFA-2200	
22.5	ATCEA-2250	ATCPA-2250	ATCMA-2250		ATCFA-2250	
23.0	ATCEA-2300	ATCPA-2300	ATCMA-2300	15.2	ATCFA-2300	
23.5	ATCEA-2350	ATCPA-2350	ATCMA-2350		ATCFA-2350	

Saber Tooth Drill Insert Models and Sizes



Saber Tooth Drill Insert Models and Sizes						
Diameter D(mm)	Model	Model	Model	L	Model	L
24.0	ATCEA-2400	ATCPA-2400	ATCMA-2400	15.4	ATCFA-2400	11.3
24.5	ATCEA-2450	ATCPA-2450	ATCMA-2450		ATCFA-2450	
25.0	ATCEA-2500	ATCPA-2500	ATCMA-2500	15.9	ATCFA-2500	11.7
25.5	ATCEA-2550	ATCPA-2550	ATCMA-2550		ATCFA-2550	
26.0	ATCEA-2600	ATCPA-2600	ATCMA-2600	16.5	ATCFA-2600	12.2
26.5	ATCEA-2650	ATCPA-2650	ATCMA-2650		ATCFA-2650	
27.0	ATCEA-2700	ATCPA-2700	ATCMA-2700	17.2	ATCFA-2700	12.7
27.5	ATCEA-2750	ATCPA-2750	ATCMA-2750		ATCFA-2750	
28.0	ATCEA-2800	ATCPA-2800	ATCMA-2800	17.8	ATCFA-2800	13.2
28.5	ATCEA-2850	ATCPA-2850	ATCMA-2850		ATCFA-2850	
29.0	ATCEA-2900	ATCPA-2900	ATCMA-2900	18.4	ATCFA-2900	13.6
29.5	ATCEA-2950	ATCPA-2950	ATCMA-2950		ATCFA-2950	
30.0	ATCEA-3000	ATCPA-3000	ATCMA-3000	19.0	ATCFA-3000	14.1
30.5	ATCEA-3050	ATCPA-3050	ATCMA-3050		ATCFA-3050	
31.0	ATCEA-3100	ATCPA-3100	ATCMA-3100			
31.5	ATCEA-3150	ATCPA-3150	ATCMA-3150			
32.0	ATCEA-3200	ATCPA-3200	ATCMA-3200			
32.5	ATCEA-3250	ATCPA-3250	ATCMA-3250			
33.0	ATCEA-3300	ATCPA-3300	ATCMA-3300			
33.5	ATCEA-3350	ATCPA-3350	ATCMA-3350			

Assembly-Insert



- ATCPA: High tip strength for machining common steel parts, AlCr coating(P).
- ATCEA: Relatively sharp tip for machining mild steel and cast iron, AlCrN coating(P/K).
- ATCMA: Dedicated to machining stainless steel with a tough, chipping-resistant matrix, AlTiN coating(M/K).
- ATCZA: Self-centering drill tip with double top corner design, there's no need to make a pilot hole when using 8x diameter drills, AlCr coating(P/K).
- ATCJA: Double top angle design for machining structural steel, AlCrN coating.
- ATCFA: Top angle design for inlet beveling or bottom flat holemaking requirements, AlCr coating(P/K/M).



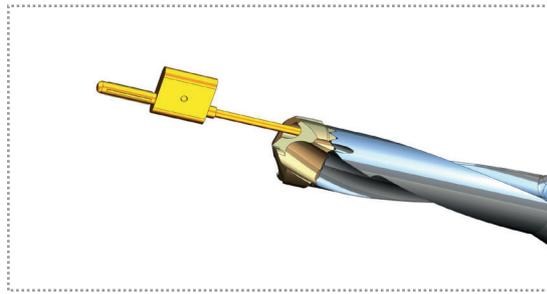
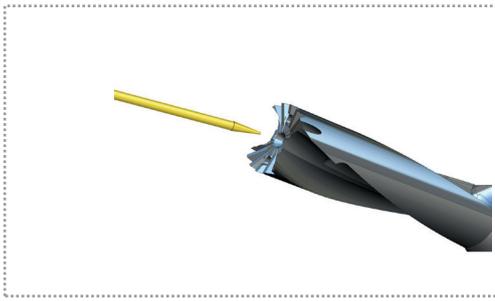
Recommended Processing Parameter of Saber Tooth Drill



			Diameter(mm)		
Workpiece Material	Recommended Insert Models	Cutting Speed Vc (m/min)	12 ~ 16	16 ~ 20	20-30.8
Mild Steel (~ 250HB)	ATCPA/ATCEA	80-120 (50-80)	0.15-0.3	0.15-0.3	0.15-0.35
Plain Steel(250-320HB)	ATCPA/ATCEA	70-120 (50-80)	0.15-0.3	0.15-0.3	0.15-0.35
Highly Hardened Steel(45HRC)	ATCPA	40-90 (30-70)	0.1-0.2	0.1-0.2	0.15-0.25
Stainless Steel(~ 200HB)	ATCMA/ATCEA	50-90 (40-60)	0.1-0.2	0.1-0.2	0.15-0.25
Gray Cast Iron	ATCPA/ATCEA	50-100 (40-80)	0.15-0.3	0.15-0.35	0.15-0.4
Ductile Iron	ATCPA/ATCEA	50-90 (40-70)	0.15-0.3	0.15-0.35	0.15-0.35

It needs to make a pilot hole when processing with 8x and 12x diameter drill, processing parameters refer to the parameters in parentheses

Tips for Replacing Inserts of Saber Tooth Drills

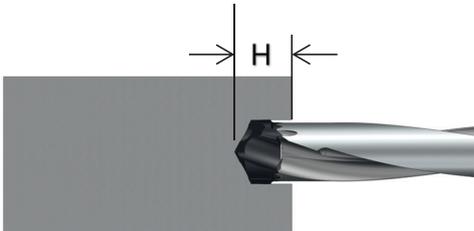


1. Remove the worn-out cutterhead and blow out any foreign matter from the connection between the drill body and the cutterhead with an air gun.
2. For those cannot be blown away with an air gun, use a metal brush.
3. Please note that damage can occur around the insert hole if the wrench is shaken when locking the screws.
4. Replace the screws immediately before they become visibly worn or deformed.
5. Evenly tighten the insert when locking the screws.

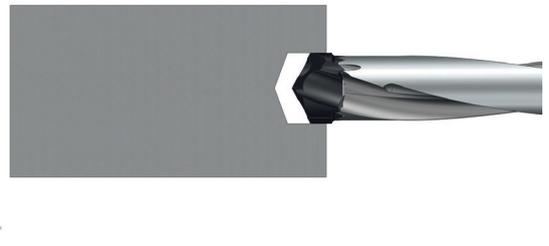
Tips for Drilling High Diameter Deep Holes

1. Use 1.5x or 3x diameter saber tooth drill to make a pilot hole

★ 1.5D or 3D saber-tooth drill inserts for making a pilot hole, then use the same type of insert and drill body as 8 times the diameter and above. The depth of the pilot hole(H) is 1-1.5 times the diameter of the hole.

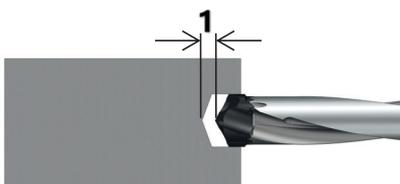


3. Increase the drilling speed to the set speed and start the cutting feed.



2. Insert 8x diameter and above saber tooth drill bodies and inserts into pilot holes at low RPMs.

★ RPMs: 500r/min ★ Feed rate: 1000-2000mm/min

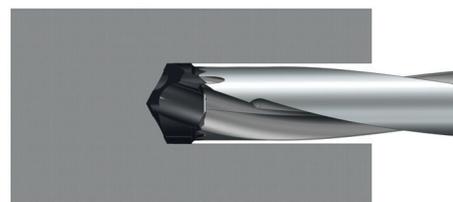


★ Insert the drill 1mm from the bottom of the guide hole

If the drill is inserted into the pilot hole at the set cutting speed, the peripheral runout of the drill bit may damage the shoulder of the insert. Insert the drill to 1mm from the bottom of the pilot hole.

4. After machining, reduce the rotational speed and pull out from the workpiece.

★ RPMs: 500r/min ★ Feed rate: 1000-2000mm/min



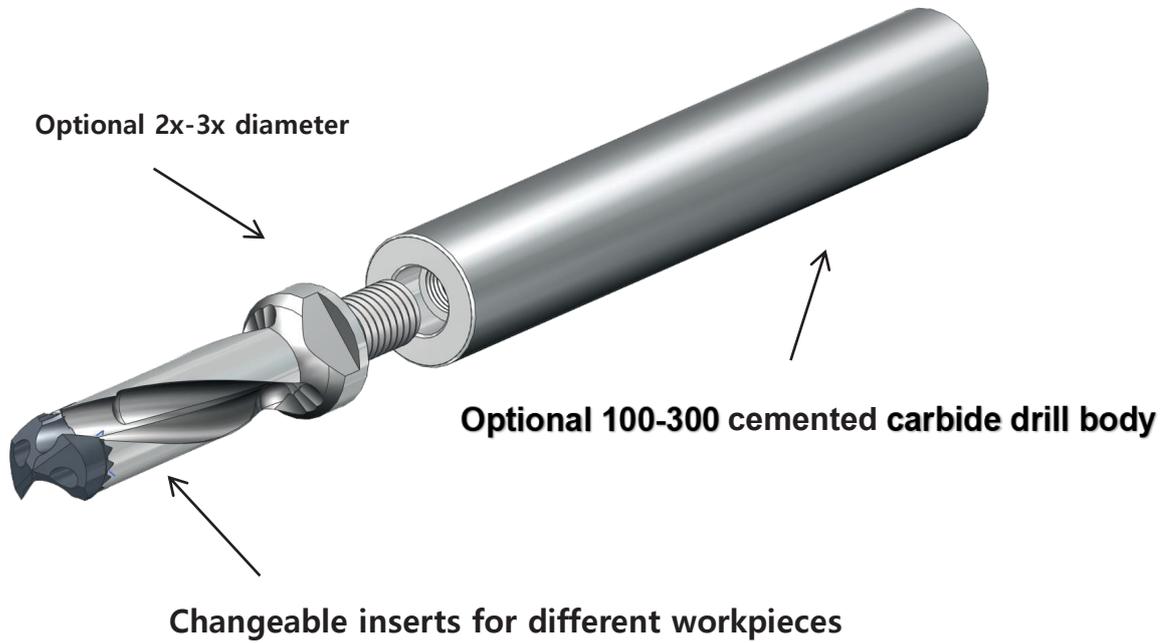
If the drill insert is pulled out of the hole while rotating at high speed, the side of the insert may be damaged due to the runout of the drill bit.

ANTI VIBRATION SABER TOOTH DRILL BODY

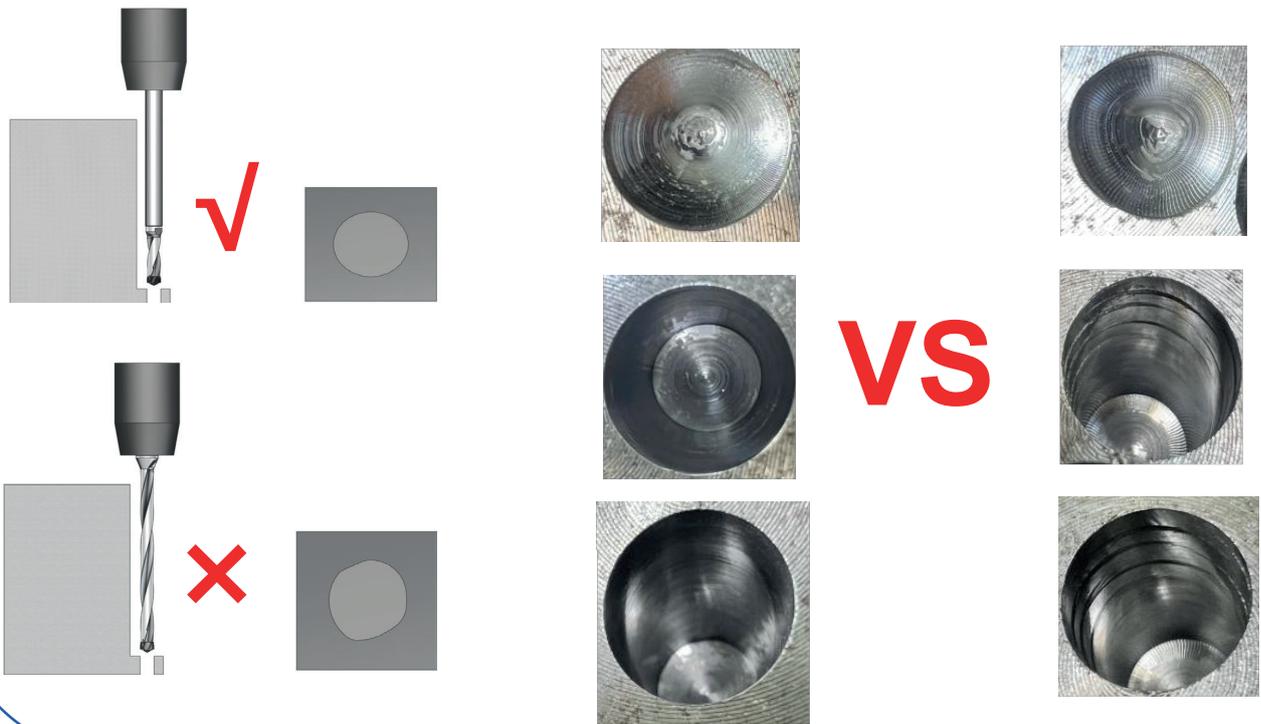


1. Insert diameter range: 12-20mm, optional 100-300 carbide drill bodies available.
2. Resharpening allowance of 1.5mm-3mm is reserved for inserts to further reduce tool costs.
3. When machining special workpieces, it is more rigid than conventional saber tooth drills with higher precision.
4. Enhanced edge treatment to dramatically improve machining life.
5. The use of tool bodies with integral carbide drill bodies enhances tool rigidity and chatter stability.
6. Quick and easy insert change without removing the drill body from the machine.

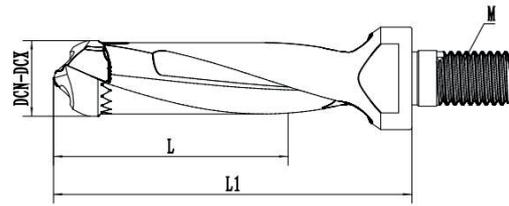
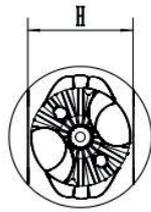
Tips for Replacing Inserts of Saber Tooth Drills



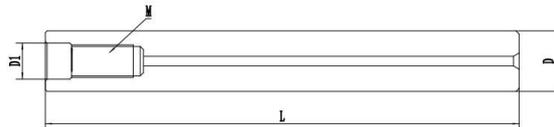
In the processing of special workpieces, the holes produced by anti-vibration saber tooth drill rods with carbide rods are far superior to those produced by conventional saber-tooth drill rods in terms of finish and size.



Anti-Vibration Saber Tooth Drill Body



Model	DC	L	L1	H	M
ATF02-12.00-M10	12.00-12.49	32	50.5	15	M10
ATF02-13.00-M10	12.50-13.49	35	53.5	15	M10
ATF02-14.00-M10	13.50-14.50	37	55.5	15	M10
ATF02-15.00-M10	14.51-15.50	39.5	58	15	M10
ATF02-16.00-M12	15.51-16.50	42	60.5	17	M12
ATF02-17.00-M12	16.51-17.50	45.5	64	17	M12
ATF02-18.00-M12	17.51-18.50	47	65.5	17	M12
ATF02-19.00-M12	18.51-19.50	49.5	68	17	M12
ATF02-20.00-M12	19.51-20.50	52	70.5	17	M12
ATF03-12.00-M10	12.00-12.49	44	62.5	15	M10
ATF03-13.00-M10	12.50-13.49	48	66.5	15	M10
ATF03-14.00-M10	13.50-14.50	51	69.5	15	M10
ATF03-15.00-M10	14.51-15.50	54.5	73	15	M10
ATF03-16.00-M12	15.51-16.50	58	76.5	17	M12
ATF03-17.00-M12	16.51-17.50	62.5	80	17	M12
ATF03-18.00-M12	17.51-18.50	65	83.5	17	M12
ATF03-19.00-M12	18.51-19.50	68.5	87	17	M12
ATF03-20.00-M12	19.51-20.50	72	90.5	17	M12



	D	D1	L	M
AKZ-100-M10	20	10.5	100	M10
AKZ-150-M10	20	10.5	150	M10
AKZ-200-M10	20	10.5	200	M10
AKZ-250-M10	20	10.5	250	M10
AKZ-300-M10	20	10.5	300	M10
AKZ-100-M12	25	12.5	100	M12
AKZ-150-M12	25	12.5	150	M12
AKZ-200-M12	25	12.5	200	M12
AKZ-250-M12	25	12.5	250	M12
AKZ-300-M12	25	12.5	300	M12

SPADE DRILL

1. When processing different materials of workpieces, choose different materials of spade drill inserts for processing. Spade drill inserts are divided into carbide, powder high-speed steel and cobalt-containing high-speed steel material, the same diameter of the three materials of the inserts can be installed in the same spade drill body, greatly reducing the cost of the drill body.
2. High-speed steel and powder high-speed steel inserts are recommended for vertical drilling and rocker arm drilling, and carbide inserts are not recommended because the low speed of the machine tool, poor rigidity, and large clearance can easily cause carbide inserts to chip.
3. All spade drill bodies have a central water outlet hole, and it is recommended to use high pressure internal coolant which will greatly extend the service life of the inserts and is more conducive to chip evacuation.
4. All spade drill blades are designed with chipbreaker grooves, the chips produced are small compared with the long chips produced by traditional twist drills. So it is easier to remove the chips, and there is no need to back off to break the chips, and the drill can be directly to the bottom, so as to shorten the machining time, and enhance the machining efficiency.
5. Spade drill inserts have self-centering function and symmetrical and uniform force on both edges, so they are suitable for processing deep holes.
6. Insert diameter range: 9.5mm-114mm.



Calculation of machining parameters for spade drill

High-speed steel spade drill inserts and powdered high-speed steel spade drill inserts have a line speed of about 20-40 meters, while carbide spade drill line speeds are about 60-80 meters.

The formula for calculating the rotational speed is $S = Vc * 1000 / 3.14 / Dc$ (S is the rotational speed, Vc is the linear speed, and Dc is the diameter of the insert).

The formula for feed calculation is $Vf = Fr * S$ (Vf is feed, Fr is feed per revolution, S is rotational speed). The spade drill inserts are capable of feeding 0.2-0.6mm per revolution.

The hole machining time formula is $Tc = H / Vf * 60$ (Tc is the machining time, H is the hole depth, Vf is the feed)

An example of calculating machining speed and feed:

Machining diameter is 20mm, depth is 100mm, choose powder high-speed steel blade, line speed is calculated at 40 meters.

$S = 40 * 1000 / 3.14 / 20 \approx 636$ (Suggested revolution speed is about 600-650 RPM)

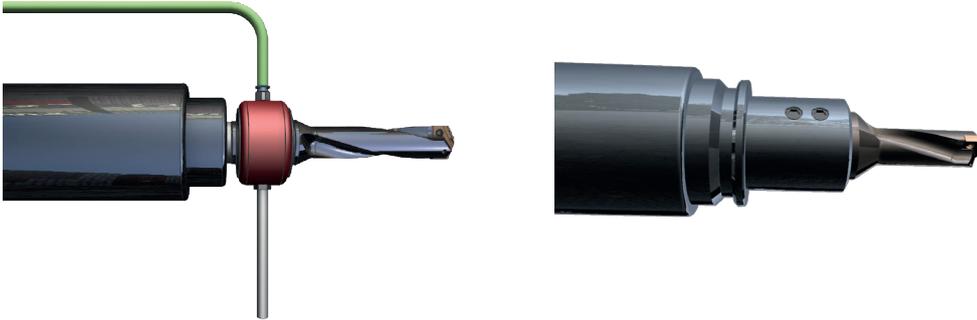
$Vf = 0.2 * 636 \approx 127$ (Suggested feed is about 110-130 per minute.)

$Tc = 100 / 127 * 60 \approx 47$ (Processing time is about 50 seconds)

The speed and feed should be adjusted according to the customers' processing conditions and other factors. If you have any questions, please contact us, we will give advice according to the actual situation of the customer.



Installation and Use Requirements for Spade Drill



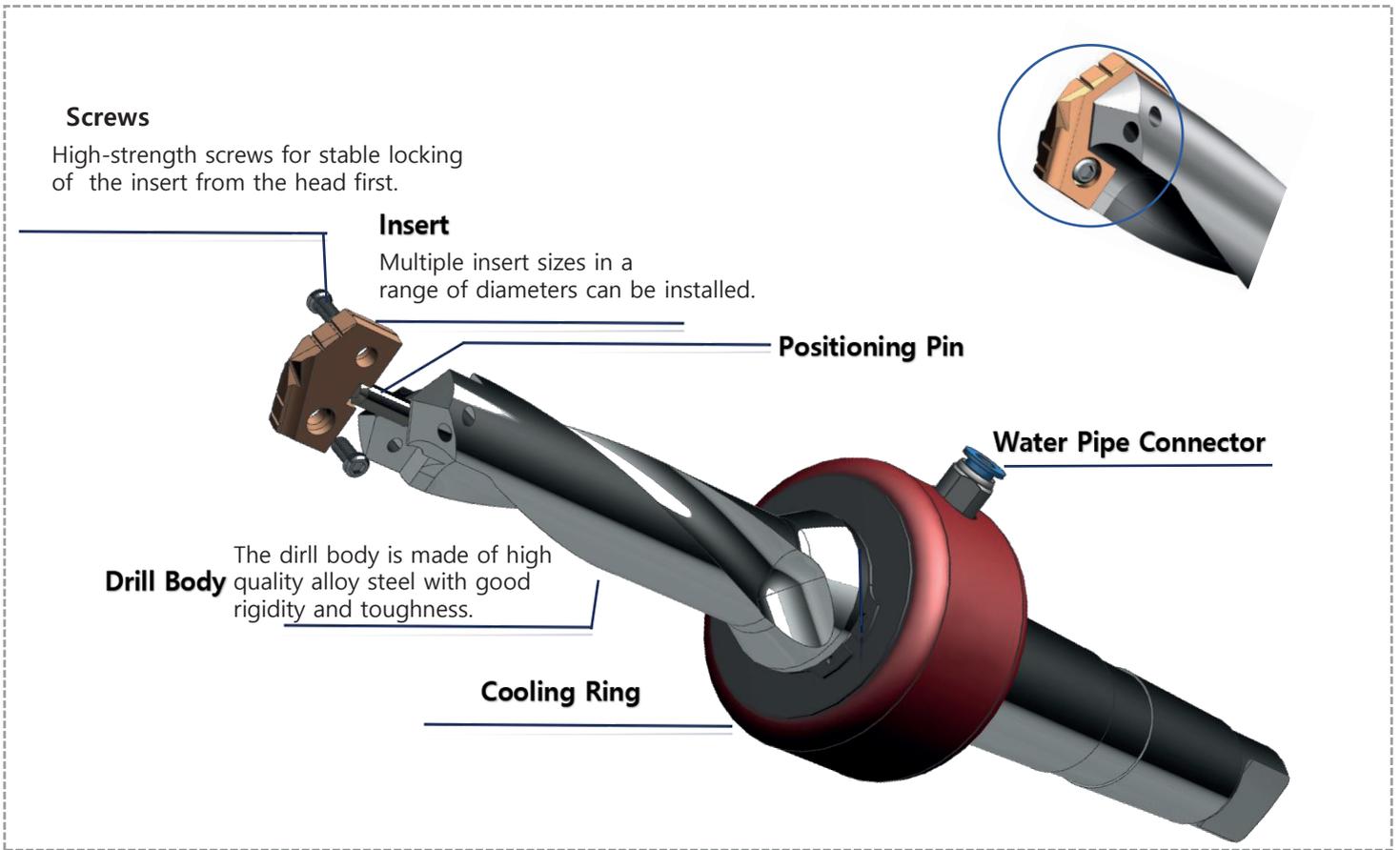
1. Drill rotation: (Rocker arm drilling, vertical, horizontal and boring machines), check that the installation is tightly connected and meets the requirements.
2. Lathe use: Achieving the highest possible coaxiality between the tool axis and the machine spindle axis is critical to the performance of the spade drill, so please check carefully. The general coaxiality requirement is a runout of <math><0.03\text{mm}</math> measured with a meter.
3. Increase the coolant pressure as much as possible to assist in chip breaking and chip evacuation while taking away heat to significantly extend tool life, the deeper the depth the greater the pressure requirements.
4. The insert would wear after a period of time of working, CNC equipment can be shown in the spindle load column: if increased by 5% ~ 8%, please replace it in time.

For general equipment, based on visual inspection, a combination of cutting sound and the roughness of the workpiece should be considered to determine whether to replace the inserts. Please replace the inserts in time to avoid the chipping of the inserts and the deformation of the drill bodies.

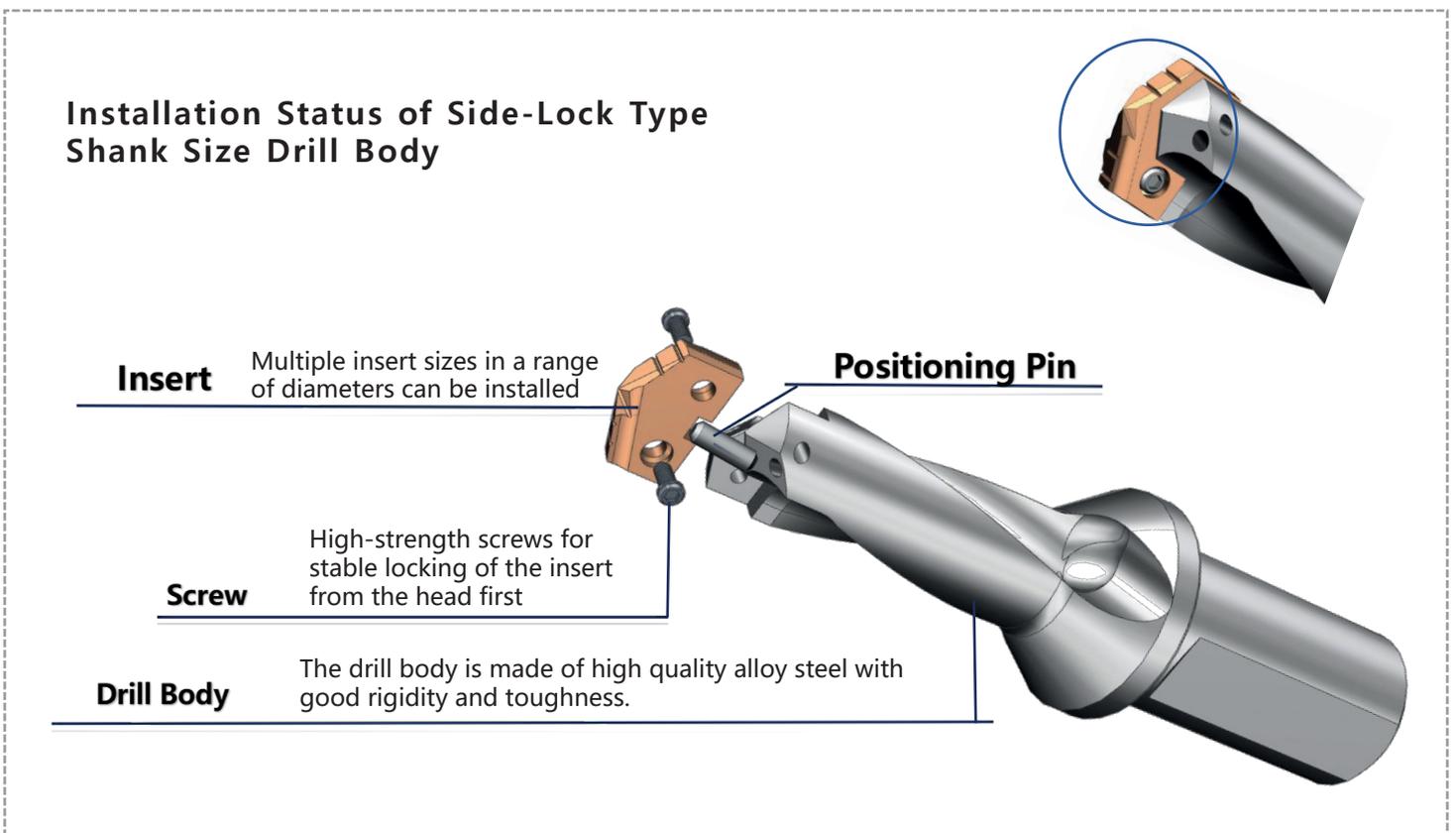
Naming Conventions

<u>ASD</u>		<u>10</u>	<u>H</u>	<u>-168</u>	<u>-XP</u>	<u>32</u>
↓		↓	↓	↓	↓	↓
Drill Body Type	Series	Groove Type		Effective Processing Depth of Drill Body	Shank Type	Shank Size
ASD	Spade Drill Body	For example : 10、15、20、25		For example : 118、168、218etc	XP	Side-Lock type
		H	Spiral Groove		MT	Morse Taper Type
		S	Straight Groove			2、3、4、5

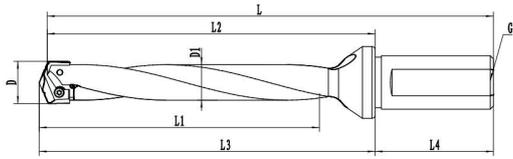
Installation Status of Morse Taper Drill Body



Installation Status of Side-Lock Type Shank Size Drill Body

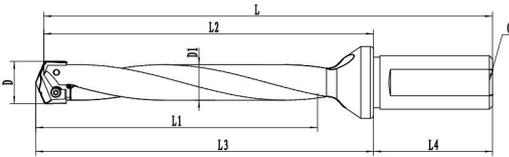


Side-Lock Type Spade Drill Body



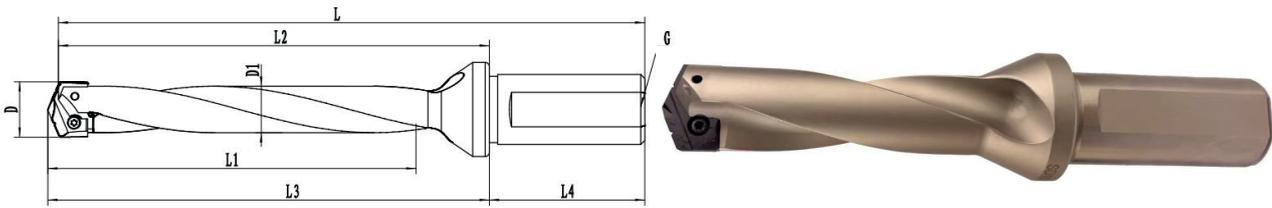
Y0 Series ($\phi 9.5\text{-}\phi 11.0$)						
Model	L1	L2	L3	L	D1	G
ASDY0H-19-XP16	19	47.6	50	95.6	9.4	G1/16
ASDY0H-32-XP20	32	61.1	63.5	111.1	9.4	G1/8
ASDY0H-60-XP20	60	89.7	92.1	139.7	9.4	
ASDY0H-111-XP20	111	140.5	142.9	190.5	9.4	
ASDY0H-222-XP20	222	251.7	254.1	301.7	9.4	
ASDY0H-290-XP20	290	319.9	322.3	369.9	9.4	
00 Series ($\phi 13.0\text{-}\phi 17.5$)						
Model	L1	L2	L3	L	D1	G
ASD00H-23-XP20	23	47.6	50.4	97.6	12.4	G1/8
ASD00H-35-XP20	35	63.5	66.3	113.5	12.4	
ASD00H-64-XP20	64	92.1	94.9	142.1	12.4	
ASD00H-114-XP20	114	142.9	145.7	192.9	12.4	
ASD00H-178-XP20	178	206.4	209.1	256.4	12.4	
ASD00H-240-XP20	240	268.6	271.3	318.6	12.4	
ASD00H-295-XP20	295	323.9	326.7	373.9	12.4	
ASD00H-387-XP20	387	416	418.8	466	12.4	
10 Series ($\phi 17.6\text{-}\phi 24.4$)						
Model	L1	L2	L3	L	D1	G
ASD10H-48-XP25	48	75.8	79.4	131.8	17	G1/8
ASD10H-67-XP25	67	107.2	110.7	163.1	17	
ASD10H-118-XP25	118	154.8	158.4	210.8	17	
ASD10H-168-XP25	168	205.6	209.2	261.6	17	
ASD10H-218-XP25	218	255.3	258.9	311.3	17	
ASD10H-270-XP25	270	307.2	310.8	363.2	17	
ASD10H-365-XP25	365	402.2	405.8	458.2	17	
ASD10H-457-XP25	457	494.5	498.1	550.5	17	
ASD10H-569-XP25	569	602.5	606.1	658.5	17	
20 Series ($\phi 24.5\text{-}\phi 35.0$)						
Model	L1	L2	L3	L	D1	G
ASD20H-57-XP32	57	88.5	92.1	148.5	23.9	G1/4
ASD20H-86-XP32	86	128.6	132.2	188.6	23.9	
ASD20H-137-XP32	137	179.4	183	239.4	23.9	
ASD20H-187-XP32	187	230.2	233.8	290.2	23.9	
ASD20H-237-XP32	237	279.9	283.5	339.9	23.9	
ASD20H-289-XP32	289	331.8	335.4	391.8	23.9	
ASD20H-400-XP32	400	442.8	446.4	502.8	23.9	
ASD20H-511-XP32	511	554.1	557.7	614.1	23.9	
ASD20H-692-XP32	692	735.1	738.7	795.1	23.9	

Side-Lock Type Spade Drill Body



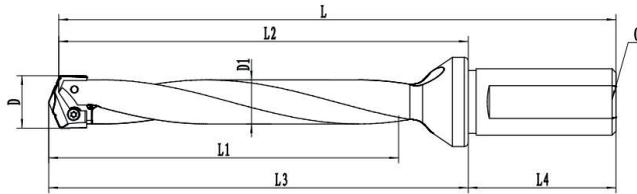
Z0 Series ($\phi 11.1$ - $\phi 12.9$)						
Model	L1	L2	L3	L	D1	G
ASDZ0H-19-XP16	19	47.6	50	95.6	10.4	G1/16
ASDZ0H-32-XP20	32	61.1	63.5	111.1	10.4	G1/8
ASDZ0H-60-XP20	60	89.7	92.1	139.7	10.4	
ASDZ0H-111-XP20	111	140.5	142.9	190.5	10.4	
ASDZ0H-222-XP20	222	251.7	254.1	301.7	10.4	
ASDZ0H-290-XP20	290	319.9	322.3	369.9	10.4	
05 Series ($\phi 15.5$ - $\phi 17.5$)						
Model	L1	L2	L3	L	D1	G
ASD05H-23-XP20	23	47.6	50.4	97.6	14.7	G1/8
ASD05H-35-XP20	35	63.5	66.3	113.5	14.7	
ASD05H-64-XP20	64	92.1	94.9	142.1	14.7	
ASD05H-114-XP20	114	142.9	145.7	192.9	14.7	
ASD05H-178-XP20	178	206.4	209.1	256.4	14.7	
ASD05H-240-XP20	240	268.6	271.3	318.6	14.7	
ASD05H-295-XP20	295	323.9	326.7	373.9	14.7	
ASD05H-387-XP20	387	416	418.8	466	14.7	
15 Series ($\phi 22.0$ - $\phi 24.4$)						
Model	L1	L2	L3	L	D1	G
ASD15H-57-XP25	57	88.5	92.1	144.5	21.2	G1/8
ASD15H-67-XP25	67	107.2	110.7	163.1	21.2	
ASD15H-118-XP25	118	154.8	158.4	210.8	21.2	
ASD15H-168-XP25	168	205.6	209.2	261.6	21.2	
ASD15H-218-XP25	218	255.3	258.9	311.3	21.2	
ASD15H-270-XP25	270	307.2	310.8	363.2	21.2	
ASD15H-365-XP25	365	400.2	405.8	458.2	21.2	
ASD15H-457-XP25	457	494.5	498.1	550.5	21.2	
ASD15H-569-XP25	569	602.5	606.1	658.5	21.2	
25 Series ($\phi 30.0$ - $\phi 35.0$)						
Model	L1	L2	L3	L	D1	G
ASD25H-86-XP32	86	123.4	127	183.4	29.2	G1/4
ASD25H-92-XP32	92	128.6	132.2	188.6	29.2	
ASD25H-137-XP32	137	179.4	183	239.4	29.2	
ASD25H-187-XP32	187	230.2	233.8	290.2	29.2	
ASD25H-237-XP32	237	279.9	283.5	339.9	29.2	
ASD25H-289-XP32	289	331.8	335.4	391.8	29.2	
ASD25H-400-XP32	400	442.8	446.4	502.8	29.2	
ASD25H-511-XP32	511	554.1	557.7	614.1	29.2	

Side-Lock Type Spade Drill Body



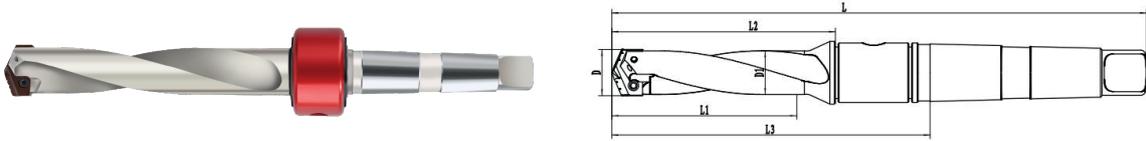
30 Series (φ35.1-φ47.9)						
Model	L1	L2	L3	L	D1	G
ASD30H-76-XP40	76	125	129.8	195	34.2	G1/4
ASD30H-121-XP40	121	173	177.8	243	34.2	
ASD30H-165-XP40	165	217.5	222.3	287.5	34.2	
ASD30H-210-XP40	210	261.9	266.7	331.9	34.2	
ASD30H-260-XP40	260	312.3	317.1	382.3	34.2	
ASD30H-349-XP40	349	401.6	406.4	471.6	34.2	
ASD30H-450-XP40	450	502.6	507.4	518.6	34.2	
ASD30H-559-XP40	559	611.1	615.9	681.1	34.2	
ASD30H-787-XP40	787	839.7	844.5	909.7	34.2	
40 Series (φ48.0-φ65.28)						
Model	L1	L2	L3	L	D1	G
ASD40H-130-XP40	130	179.4	184.2	249.4	47.2	G1/4
ASD40H-232-XP40	232	281	285.8	351	47.2	
ASD40H-350-XP40	350	399.2	404	469.2	47.2	
ASD40H-422-XP40	422	471.5	476.3	541.5	47.2	
ASD40H-525-XP40	525	574.2	579	644.2	47.2	
ASD40H-625-XP40	625	674.7	679.5	744.7	47.2	
ASD40H-879-XP40	879	928.7	933.5	998.7	47.2	
50 Series (φ65.3-φ89.08)						
Model	L1	L2	L3	L	D1	G
ASD50H-171-XP50	171	235	240	315	62.5	G1/4
ASD50H-350-XP50	350	414	419	494	62.5	
ASD50H-464-XP50	464	528	553	608	62.5	
ASD50H-660-XP50	660	724	729	804	62.5	
ASD50H-800-XP50	800	984	989	1064	62.5	

Side-Lock Type Spade Drill Body



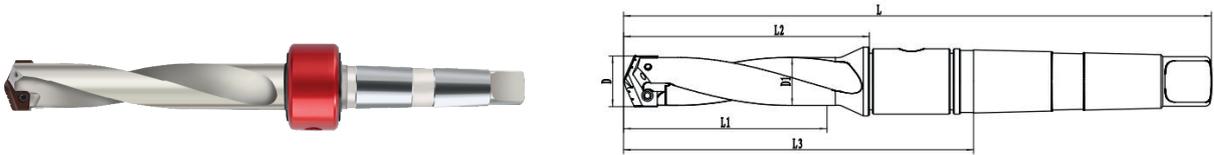
35 Series (φ42.0-φ47.9)						
Mode	L1	L2	L3	L	D1	G
ASD35H-76-XP40	76	125	129.8	195	41.2	G1/4
ASD35H-121-XP40	121	173	177.8	243	41.2	
ASD35H-165-XP40	165	217.5	222.3	287.5	41.2	
ASD35H-210-XP40	210	261.9	266.7	331.9	41.2	
ASD35H-260-XP40	260	312.3	317.1	382.3	41.2	
ASD35H-349-XP40	349	401.6	406.4	471.6	41.2	
ASD35H-559-XP40	559	611.1	615.9	681.1	41.2	
ASD35H-787-XP40	787	839.7	844.5	909.7	41.2	
45 Series (φ56.0-φ65.28)						
Mode	L1	L2	L3	L	D1	G
ASD45H-130-XP40	130	179.4	184.2	249.4	54.2	G1/4
ASD45H-232-XP40	232	281	285.8	351	54.2	
ASD45H-350-XP40	350	399.2	404	469.2	54.2	
ASD45H-422-XP40	422	471.5	476.3	541.5	54.2	
ASD45H-525-XP40	525	574.2	579	644.2	54.2	
ASD45H-625-XP40	625	674.7	679.5	744.7	54.2	
ASD45H-879-XP40	879	928.7	933.5	998.7	54.2	
70 Series (φ89.1-φ114.48)						
Mode	L1	L2	L3	L	D1	G
ASD70H-200-XP50	200	275	280	355	87	G1/4
ASD70H-400-XP50	400	475	480	555	87	
ASD70H-800-XP50	800	875	880	955	87	

Morse Taper Type Spade Drill Body



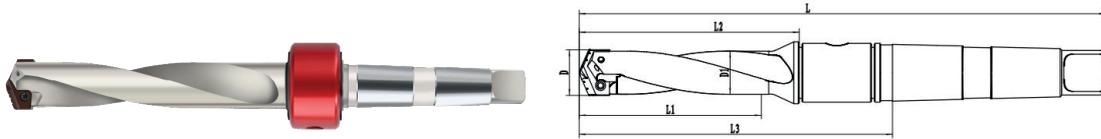
Y0 Series (φ9.5-φ11.0)					
Model	L1	L2	L3	L	D1
ASDY0H-32-MT2	32	51.5	88	160.3	9.4
ASDY0H-60-MT2	60	80.2	116.7	188.9	9.4
ASDY0H-111-MT2	111	130.9	167.4	239.7	9.4
00 Series (φ13.0-φ17.5)					
Model	L1	L2	L3	L	D1
ASD00H-35-MT2	35	55.5	95.4	167.3	12.4
ASD00H-63-MT2	63	84.1	124	195.9	12.4
ASD00H-114-MT2	114	135	174.8	246.7	12.4
ASD00H-178-MT2	178	198.5	238.3	310.2	12.4
10 Series (φ17.6-φ24.4)					
Model	L1	L2	L3	L	D1
ASD10H-70-MT3	70	98.4	149	239	17
ASD10H-121-MT3	121	149.2	199.8	289.8	17
ASD10H-171-MT3	171	200	250.6	340.7	17
ASD10H-222-MT3	222	250.5	301.1	391.2	17
ASD10H-273-MT3	273	301.6	352.2	442.3	17
20 Series (φ24.5-φ35.0)					
Model	L1	L2	L3	L	D1
ASD20H-86-MT4	86	114.3	172.9	286.3	23.9
ASD20H-137-MT4	137	165.1	223.7	337.1	23.9
ASD20H-187-MT4	187	215.9	274.5	387.9	23.9
ASD20H-237-MT4	237	265.6	324.2	437.6	23.9
ASD20H-289-MT4	289	317.5	376.1	489.5	23.9
ASD20H-400-MT4	400	428.5	487.1	600	23.9

Morse Taper Type Spade Drill Body



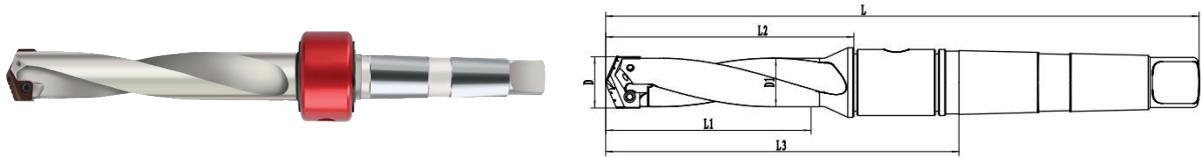
Z0 Series (φ11.1-φ12.9)					
Model	L1	L2	L3	L	D1
ASDZ0H-32-MT2	32	51.5	88	160.3	10.4
ASDZ0H-60-MT2	60	80.2	116.7	188.9	10.4
ASDZ0H-111-MT2	111	130.9	167.4	239.7	10.4
05 Series (φ15.5-φ17.5)					
Model	L1	L2	L3	L	D1
ASD05H-35-MT2	35	55.5	95.4	167.3	14.7
ASD05H-63-MT2	63	84.1	124	195.9	14.7
ASD05H-114-MT2	114	135	174.8	246.7	14.7
ASD05H-178-MT2	178	198.5	238.3	310.2	14.7
15 Series (φ22.0-φ24.4)					
Model	L1	L2	L3	L	D1
ASD15H-70-MT3	70	98.4	149	239	21.2
ASD15H-121-MT3	121	149.2	199.8	289.8	21.2
ASD15H-171-MT3	171	200	250.6	340.7	21.2
ASD15H-222-MT3	222	250.5	301.1	391.2	21.2
ASD15H-273-MT3	273	301.6	352.2	442.3	21.2
25 Series (φ30.0-φ35.0)					
Model	L1	L2	L3	L	D1
ASD25H-86-MT4	86	114.3	172.9	286.3	29.2
ASD25H-137-MT4	137	165.1	223.7	337.1	29.2
ASD25H-187-MT4	187	215.9	274.5	387.9	29.2
ASD25H-237-MT4	237	265.6	324.2	437.6	29.2
ASD25H-289-MT4	289	317.5	376.1	489.5	29.2
ASD25H-400-MT4	400	428.5	487.1	600	29.2

Morse Taper Type Spade Drill Body



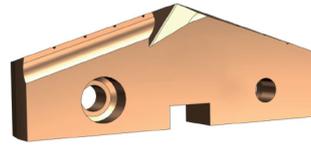
30 Series (φ35.1-φ47.9)					
Model	L1	L2	L3	L	D1
ASD30H-121-MT4	121	152.4	211.7	324.4	34.2
ASD30H-165-MT4	165	196.9	256.2	368.9	34.2
ASD30H-209-MT4	209	241.3	300.6	413.3	34.2
ASD30H-260-MT4	260	291.8	351.1	463.8	34.2
ASD30H-349-MT4	349	381	440.3	553	34.2
ASD30H-559-MT4	559	590.6	649.9	762.5	34.2
ASD30H-787-MT4	787	819.2	878.5	991.1	34.2
40 Series (φ48.0-φ65.28)					
Model	L1	L2	L3	L	D1
ASD40H-130-MT5	130	165.1	225	369.4	47.2
ASD40H-232-MT5	232	266.7	326.6	471	47.2
ASD40H-350-MT5	350	384.9	444.8	589.2	47.2
ASD40H-422-MT5	422	457.2	517.1	661.5	47.2
ASD40H-625-MT5	625	660.4	720.3	864.7	47.2
ASD40H-879-MT5	879	914.4	974.3	1118.7	47.2
50 Series (φ65.3-φ89.08)					
Model	L1	L2	L3	L	D1
ASD50H-171-MT5	171	215.9	287.3	430.2	62.5
ASD50H-273-MT5	273	317.5	388.9	531.8	62.5
ASD50H-464-MT5	464	508	579.4	722.3	62.5
ASD50H-660-MT5	660	704.8	776.2	919.1	62.5
ASD50H-889-MT5	889	933.4	1004.8	1147.7	62.5

Morse Taper Type Spade Drill Body



35 Series ($\varphi 42.0$ - $\varphi 47.9$)					
Model	L1	L2	L3	L	D1
ASD35H-121-MT4	121	152.4	211.7	324.4	41.2
ASD35H-165-MT4	165	196.9	256.2	368.9	41.2
ASD35H-209-MT4	209	241.3	300.6	413.3	41.2
ASD35H-260-MT4	260	291.8	351.1	463.8	41.2
ASD35H-349-MT4	349	381	440.3	553	41.2
ASD35H-559-MT4	559	590.6	649.9	762.5	41.2
ASD35H-787-MT4	787	819.2	878.5	991.1	41.2
45 Series ($\varphi 56.0$ - $\varphi 65.28$)					
Model	L1	L2	L3	L	D1
ASD45H-130-MT5	130	165.1	225	369.4	54.2
ASD45H-232-MT5	232	266.7	326.6	471	54.2
ASD45H-350-MT5	350	384.9	444.8	589.2	54.2
ASD45H-422-MT5	422	457.2	517.1	661.5	54.2
ASD45H-625-MT5	625	660.4	720.3	864.7	54.2
ASD45H-879-MT5	879	914.4	974.3	1118.7	54.2
70 Series ($\varphi 89.1$ - $\varphi 114.48$)					
Model	L1	L2	L3	L	D1
ASD70H-171-MT5	171	225.4	296.8	439.7	87
ASD70H-273-MT5	273	327	398.5	541.3	87
ASD70H-556-MT5	556	609.6	681.1	823.9	87
ASD70H-685-MT5	685	739.7	811.2	954	87
ASD70H-939-MT5	939	993.7	1065.2	1208	87

Spade Drill Insert Naming Conventions



A50mm ----- **S2** ----- **ST** ----- **A**

(External Diameter)

<p>S2--- HSS with cobalt(HSS E) S6--- Powder high speed steel G2--- Cemented carbide</p>
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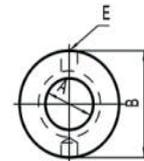
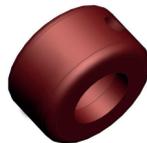
<p>Groove Type ST Universal Type DT Strong Chipbreaking Universal Groove Type</p>
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<p>Coating A TiAlN H ALCrN P ALTIN D DLC</p>

Spade Drill Inserts

Applicable Drill Body	Insert Diameter Range	Thickness	Top Angle	Materials								
				HSS with Cobalt(HSSE)			Powder High Speed Steel			Cemented Carbide		
ASDY0-ASDZ0	φ9.5-φ12.9	2.38	132°	S2STA	S2DTH	S2DTP	S6STA	S6DTH	S6DTP	G2STA	G2DTH	G2DTP
ASD00-ASD05	φ13.0-φ17.5	3.18										
ASD10-ASD15	φ17.6-φ24.4	3.97										
ASD20-ASD25	φ24.5-φ35.0	4.76										
ASD30-ASD35	φ35.1-φ47.9	6.35										
ASD40-ASD45	φ48.0-φ65.28	7.94										
ASD50-ASD55	φ65.3-φ89.08	11.11	144°	S2STA	S2DTH	S2DTP	S6STA	S6DTH	S6DTP	G2STA	G2DTH	G2DTP
ASD70	φ89.1-φ114.48											

Cooling Ring



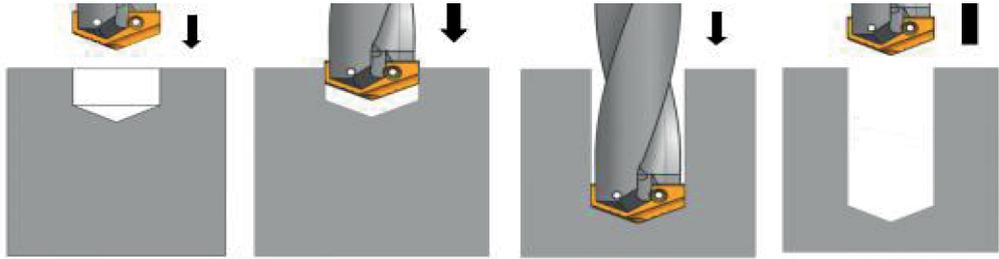
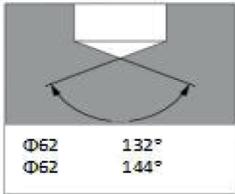
Model	Internal Diameter (A)	External Diameter(B)	Thickness (C)	Stopper Thread (D)	Cooling Nozzle Thread(E)	Applicable Drill Body Series
ARK-MT2R	19.4	49	22.5	M8*1.25	1/8"	Y0、Z0、00、05
ARK-MT3R	25.5	53	30	M8*1.25	1/8"	10、15
ARK-MT4R	32.5	63	36	M10*1.5	1/4"	20、25、30、35
ARK-MT5R	48.5	76	36	M10*1.5	1/4"	40、45
ARK-MT5R2	60.1	95.3	44.5	M12*1.75	1/2"	50、70

Deep Hole Machining Procedure

How to use 8x and larger diameter spade drills (applicable to both vertical and horizontal machines)			
①pilot hole processing		<ul style="list-style-type: none"> ● Use a short drill of the same diameter as the processed deep hole to drill a pilot hole to a depth of at least 2x diameter. ● Use inserts that have the same front angle as, or a larger angle than the deep hole drill inserts. 	
②insertion of deep hole drills		<ul style="list-style-type: none"> ●The rotational speed is set at a maximum of 50 RPM, the feed is fixed at F=300mm/min, the coolant is turned off, and the deep hole drill is positioned 1-3 mm from the bottom of the pilot hole with the above conditions. 	
③blind hole processing		<ul style="list-style-type: none"> ●Set the speed and feed to the recommended values of 100%, and check the chip evacuation status and machine load rate while processing deep hole. Do not use the segmented feed method. 	
<p>※If it is not possible to separate the chips in actual machining, please use the segmented feed method. Starting with 4mm feed, and gradually increase the length of the segmented feed.</p>			
<p>※If the machine load rate varies drastically, it may be due to chip blockage. To prevent damage to the drill, interrupt machining and review the cutting conditions and insert shape.</p>			
④Through-hole processing(before you almost open the hole)		<ul style="list-style-type: none"> ●Before the tip of the drill is exposed, set the speed to 50% of the recommended value and the feed to 75% of the recommended value.. ●In the case of a slanted hole, please use the same setting as above before any part of the drill tip is exposed. ●The blade of the drill insert must be exposed at least 3mm before the drill can be withdrawn. 	
⑤Method of withdrawing the drill from the workpiece		<ul style="list-style-type: none"> ●When withdrawing the drill. the maximum rotation speed is 50 RPM. 	
Precautions for the Use of Spade Drills			
1. Tighten the blade fastening bolts evenly from side to side.		Do not tighten one side first	
	Wrong Way	②Temporary tightening ④Processing tightening ⑥Reinforcemen of tightening	Proper Way
2. Do not touch the tip of the insert during preparation.			
3. Please refer to the machining parameter table of the spade drill to confirm the cutting speed and cutting feed.			

How to use spade drills with 8x and larger diameter drill Bodies (applicable to both vertical and horizontal holes)

Pilot Hole Depth: 1D-2D



①When machining pilot holes with short drill bodies, use inserts with the same diameter as 8x diameter drill bodies and above to check chip cutting.

②Use a drill body of 8x diameter and above, the same diameter as the pilot hole drill bit, to insert into the pilot hole with low rotation, fast feed, and open cooling.

③Start cutting rotation and feed at 1~2mm of the hole.

④Check the load table of the machine while cutting and evacuating chips.

⑤Low-speed rotation, fast feed back to home position.

※Be sure to drill 1xD-2xD pilot holes when using 8x diameter and larger spade drill bodies.

※Please use coolant as much as possible.

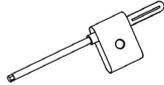
Pay attention to the processing rhythm when using the drill, i.e., slow when the inserts just touch the workpiece, and slow when punching through, at about 1/2 to 1/3 of the normal feed.

Normal machining feed should be fast.

When there is vibration in the cutting process, it may cause the bolt to loosen.

Check the tightness of the bolts at the beginning.

Spade Drill Accessories

Drill Body Series		
Y0 series - Z0 series	M2.0*5	T6
00 series - 05 series	M2.5*6	T8
10 series - 15 series	M3*8	
20 series - 25 series	M3.5*10	T15
30 series - 35 series	M5*10	T20
40 series - 45 series	M5*15	
50 series - 70 series	M6*15	T25

High Speed Steel Spade Drill Insert

Workpiece Material	Hardness (HB)	Cutting Speed (m/min)		Cutting Feed (mm/rev)						
		TIALN	ALCrN	Φ9.5 ~ Φ12.9	Φ13.0 ~ Φ17.5	Φ17.6 ~ Φ24.4	Φ24.5 ~ Φ35.0	Φ35.1 ~ Φ47.9	Φ48.0 ~ Φ65.28	Φ65.3 ~ Φ114.48
Free Cutting Steel	100 ~ 150	55	64	0.12	0.16	0.21	0.26	0.33	0.38	0.46
	150 ~ 200	51	59	0.12	0.16	0.22	0.26	0.33	0.38	0.46
	200 ~ 250	47	54	0.1	0.16	0.22	0.26	0.33	0.38	0.46
Mild Steel	85 ~ 125	49	57	0.1	0.15	0.19	0.25	0.31	0.38	0.45
	125 ~ 175	47	54	0.1	0.15	0.19	0.25	0.31	0.34	0.39
	175 ~ 225	45	51	0.09	0.13	0.16	0.23	0.3	0.34	0.39
	225 ~ 275	42	48	0.09	0.13	0.16	0.23	0.3	0.31	0.36
Medium Carbon Steel	125 ~ 175	47	54	0.1	0.15	0.19	0.25	0.31	0.38	0.45
	175 ~ 225	45	51	0.09	0.13	0.16	0.23	0.3	0.34	0.39
	225 ~ 275	42	48	0.09	0.13	0.16	0.23	0.3	0.34	0.39
	275 ~ 325	38	45	0.06	0.12	0.15	0.19	0.26	0.31	0.36
Alloy Steel	125 ~ 175	42	47	0.1	0.13	0.16	0.23	0.28	0.31	0.36
	175 ~ 225	38	45	0.09	0.13	0.16	0.23	0.28	0.31	0.36
	225 ~ 275	35	42	0.09	0.12	0.16	0.23	0.28	0.31	0.36
	275 ~ 325	34	38	0.06	0.1	0.15	0.19	0.25	0.28	0.33
	325 ~ 375	30	35	0.06	0.1	0.15	0.19	0.25	0.28	0.33
High-hardness Alloy Steel	225 ~ 300	22	24	0.09	0.12	0.15	0.16	0.23	0.28	0.33
	300 ~ 350	17	19	0.06	0.12	0.15	0.16	0.23	0.28	0.33
	350 ~ 400	14	16	0.06	0.1	0.13	0.15	0.19	0.25	0.3
Structural Steel	100 ~ 150	39	46	0.1	0.16	0.19	0.23	0.3	0.34	0.42
	150 ~ 250	26	38	0.09	0.15	0.16	0.19	0.26	0.31	0.39
	250 ~ 350	28	31	0.06	0.13	0.15	0.16	0.23	0.28	0.33
High-Temperature Alloy	140 ~ 220	8	9	0.06	0.12	0.13	0.16	0.19	0.25	0.28
	220 ~ 310	7	8	0.06	0.1	0.12	0.13	0.16	0.19	0.23
Stainless Steel	135 ~ 185	21	23	0.1	0.13	0.15	0.18	0.23	0.26	0.33
	185 ~ 275	18	20	0.09	0.12	0.13	0.16	0.19	0.23	0.3
Tool Steel	150 ~ 200	22	24	0.06	0.1	0.13	0.16	0.19	0.25	0.28
	200 ~ 250	18	20	0.06	0.1	0.13	0.16	0.19	0.25	0.28
Aluminum Alloy	30	166	-	0.13	0.22	0.26	0.32	0.36	0.42	0.42
	180	89	-	0.13	0.22	0.26	0.3	0.36	0.42	0.42
Cast Iron	120 ~ 150	49	57	0.12	0.19	0.26	0.33	0.39	0.45	0.49
	150 ~ 200	45	51	0.1	0.18	0.23	0.3	0.36	0.42	0.46
	200 ~ 220	38	45	0.1	0.15	0.19	0.26	0.3	0.34	0.39
	220 ~ 260	32	38	0.09	0.12	0.15	0.19	0.23	0.28	0.33
	260 ~ 320	26	30	0.06	0.1	0.12	0.15	0.19	0.23	0.26
Recommended Cutting Parameters for Different Drill Bodies										
Insert Diameter	Multiple Diameter									
9.5-24.4	10			17			22			
24.5-65.28	7			11			18			
65.3-114.48	5			7			9			
	0.85x recommended cutting speed			recommended cutting speed			0.75x recommended cutting speed			
	0.95x recommended cutting feed			0.9x recommended cutting feed			0.9x recommended cutting feed			

Carbide Spade Drill Inserts

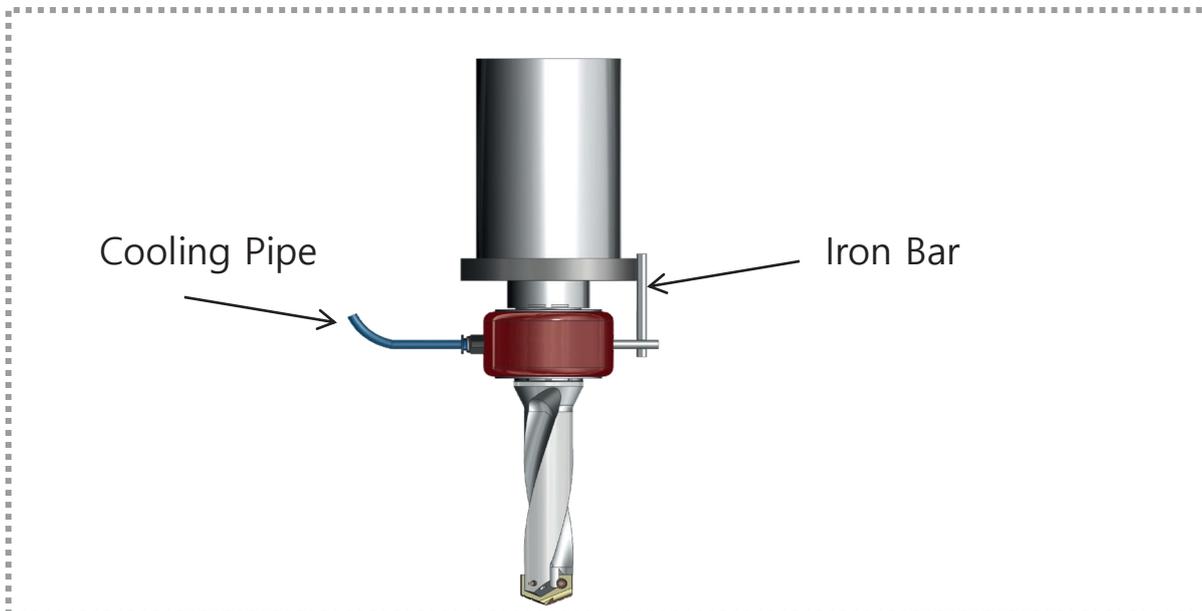
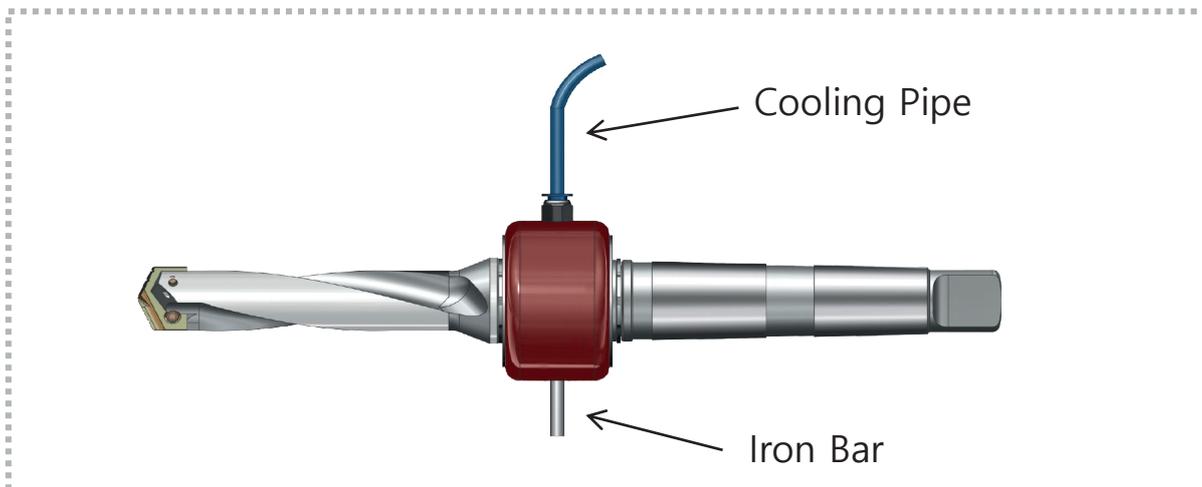
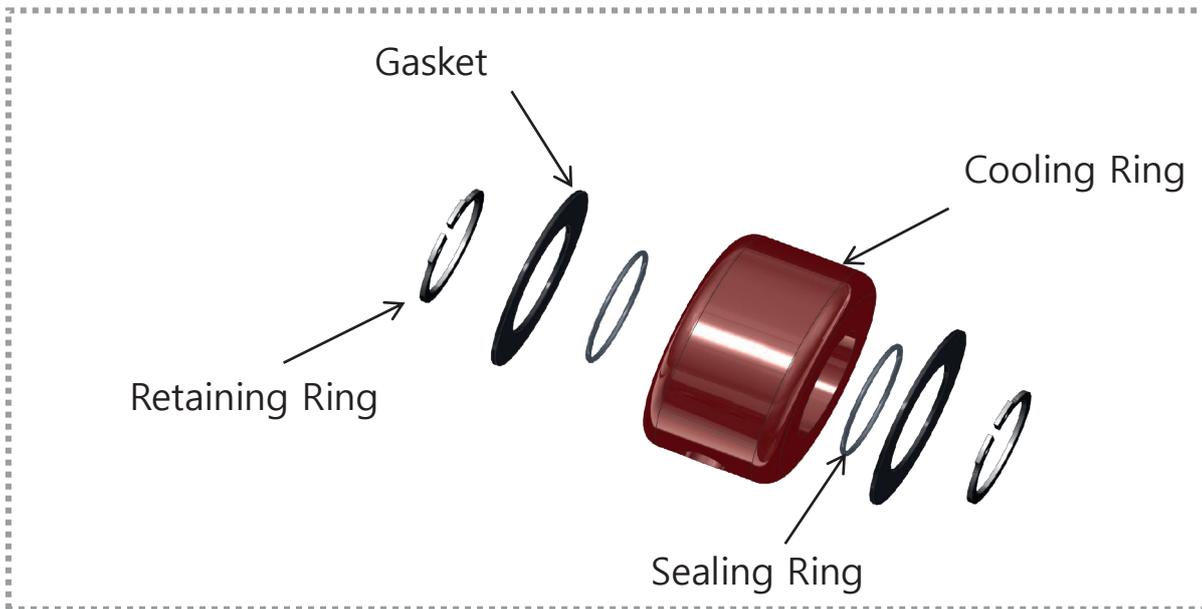
Workpiece Material	Hardness (HB)	Cutting Speed(m/min)		Cutting Feed(mm/rev)					
		TIALN	ALCrN	Φ9.5 ~ Φ12.9	Φ13.0 ~ Φ17.5	Φ17.6 ~ Φ24.4	Φ24.5 ~ Φ35.0	Φ35.1 ~ Φ47.9	
Free Cutting Steel	100 ~ 150	82	93	0.13	0.19	0.24	0.29	0.34	
	150 ~ 200	70	80	0.11	0.18	0.22	0.26	0.3	
	200 ~ 250	67	76	0.1	0.16	0.21	0.24	0.27	
Mild Steel	85 ~ 125	77	87	0.13	0.16	0.21	0.27	0.3	
	125 ~ 175	67	76	0.11	0.16	0.21	0.26	0.29	
	175 ~ 225	61	69	0.1	0.14	0.19	0.24	0.27	
	225 ~ 275	54	60	0.08	0.14	0.19	0.24	0.27	
Medium Carbon Steel	125 ~ 175	67	76	0.11	0.16	0.21	0.26	0.29	
	175 ~ 225	61	69	0.1	0.14	0.19	0.24	0.27	
	225 ~ 275	54	60	0.1	0.14	0.19	0.24	0.27	
	275 ~ 325	45	51	0.08	0.13	0.18	0.22	0.26	
Alloy Steel	125 ~ 175	64	73	0.11	0.16	0.21	0.26	0.29	
	175 ~ 225	59	67	0.1	0.14	0.19	0.24	0.27	
	225 ~ 275	54	60	0.1	0.14	0.19	0.24	0.27	
	275 ~ 325	49	55	0.08	0.13	0.18	0.22	0.26	
	325 ~ 375	43	50	0.06	0.11	0.16	0.21	0.24	
High-Hardness Alloy Steel	225 ~ 300	39	46	0.1	0.13	0.16	0.19	0.24	
	300 ~ 350	35	39	0.08	0.13	0.14	0.14	0.22	
	350 ~ 400	32	35	0.06	0.11	0.13	0.16	0.19	
Structural Steel	100 ~ 150	61	69	0.13	0.18	0.22	0.26	0.29	
	150 ~ 250	49	55	0.1	0.16	0.19	0.22	0.26	
	250 ~ 350	45	51	0.08	0.14	0.18	0.19	0.22	
High-Temperature Alloy	140 ~ 220	21	22	0.06	0.11	0.14	0.18	0.21	
	220 ~ 310	17	18	0.06	0.1	0.13	0.16	0.19	
Stainless Steel	135 ~ 185	42	46	0.11	0.14	0.19	0.22	0.26	
	185 ~ 275	32	35	0.1	0.13	0.18	0.19	0.22	
Tool Steel	150 ~ 200	43	50	0.06	0.11	0.14	0.18	0.21	
	200 ~ 250	34	38	0.06	0.11	0.14	0.18	0.21	
Aluminum Alloy	30	294	-	0.16	0.24	0.29	0.32	0.35	
	180	196	-	0.14	0.21	0.26	0.29	0.32	
Cast Iron	120 ~ 150	90	97	0.13	0.19	0.24	0.3	0.37	
	150 ~ 200	78	93	0.11	0.18	0.21	0.27	0.34	
	200 ~ 220	70	83	0.1	0.14	0.19	0.24	0.29	
	220 ~ 260	61	72	0.08	0.13	0.18	0.21	0.24	
	260 ~ 320	54	65	0.08	0.11	0.16	0.18	0.21	
Recommended Cutting Parameters for Different Drill Bodies									
Insert Diameter	Multiple Diameter								
9.5-24.4	10		17			22			
24.5-65.28	7		11			18			
65.3-114.48	5		7			9			
	0.85x recommended cutting speed		0.8x recommended cutting speed			0.75x recommended cutting speed			
	0.95x recommended cutting speed		0.9x recommended cutting speed			0.9x recommended cutting speed			

Water Pressure and Flow

■ Recommended Coolant Pressure and Flow Upper Part: Coolant Pressure(MPa) Lower Part: Coolant Flow(L/min)												
workpiece Material	Hardness (HB)	Different Insert Sizes										
		HSS Inserts							Carbide Inserts			
		Φ9.5~ Φ12.9	Φ13.0~ Φ17.5	Φ17.6~ Φ24.4	Φ24.5~ Φ35.0	Φ35.1~ Φ47.9	Φ48 ~ Φ65.28	Φ65.3~ Φ114.0	Φ9.5~ Φ12.9	Φ13.0~ Φ17.5	Φ17.6~ Φ24.4	Φ24.5~ Φ35.0
Free Cutting Steel	100 ~ 250	1.4	1.3	0.8	1	0.8	0.4	0.6	1.4	1	1.1	1
		10	10	11	20	30	125	167	10	13	21	34
Mild Steel	85 ~ 275	1.3	1.2	0.6	0.7	0.6	0.3	0.5	1.3	0.7	0.7	0.8
		10	10	10	16	27	114	114	10	11	17	30
Medium Carbon Steel	125 ~ 325	1.2	1.1	0.6	0.6	0.5	0.3	0.5	1.2	0.7	0.6	0.7
		10	9	10	16	23	114	144	10	11	16	27
Alloy Steel	125 ~ 375	1.1	1.1	0.5	0.6	0.5	0.2	0.4	1.1	0.6	0.7	0.5
		9	9	9	15	23	106	125	9	10	16	23
High-Hardness Alloy Steel	225 ~ 400	1.1	1.1	0.4	0.4	0.2	0.2	0.2	1.1	0.5	0.4	0.3
		9	9	8	12	19	87	98	9	9	12	19
Structural Steel	100 ~ 350	1.2	1.1	0.6	0.6	0.4	0.2	0.4	1.2	0.8	0.7	0.5
		10	9	10	15	23	98	125	10	11	17	23
High-Temperature Alloy	140 ~ 310	1.2	1.1	0.5	0.4	0.2	0.2	—	1.2	0.7	0.7	0.7
		10	9	9	12	19	98	—	10	11	16	27
Stainless Steel	135 ~ 275	1.5	1.2	0.6	0.5	0.4	0.2	0.3	1.5	1	1	0.9
		11	10	10	15	23	98	117	11	13	22	34
Tool Steel	150 ~ 250	1.1	1.1	0.4	0.4	0.2	0.2	0.2	1.1	0.4	0.4	0.3
		9	9	8	12	19	87	98	9	8	12	19
Aluminum Alloy	30 ~ 180	2.2	1.5	1.2	1.6	1.1	0.4	0.6	2.2	1.9	2.1	1.7
		13	10	14	23	34	125	159	13	18	29	46
Cast Iron	120 ~ 320	1.1	1.1	0.5	0.4	0.3	0.2	0.2	1.1	0.5	0.5	0.4
		9	9	9	13	19	98	106	9	9	13	19

Morse Taper Shank Cooling Ring Installation Schematic

Cooling Ring Accessories



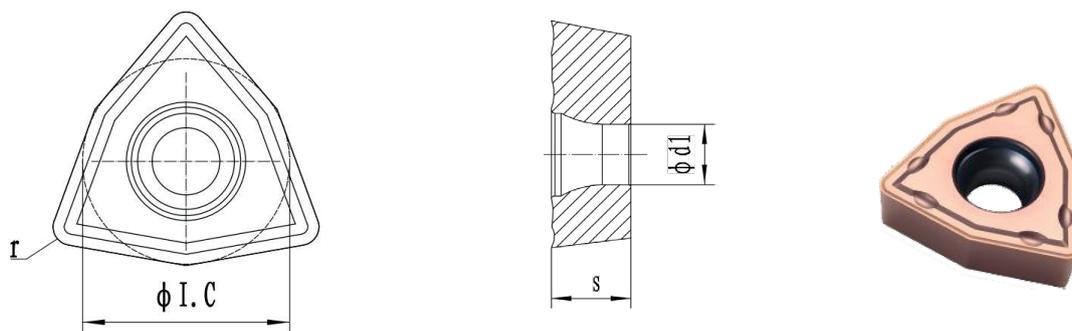
Working Conditions and Processing Method to Pay Attention to

Please note that the following problems may occur in the following application cases.			
Application Cases		Problems	Methods
External Oiling	 <p>External oiling is used for machining of longitudinal shapes of 1.5D or more and transverse shapes of 3D or more.</p>	Machining of vertical type 1.5xD or larger and horizontal type 3xD or larger may result in cutting clogging due to the difficulty in leading the external cutting fluid in, causing the tool to break.	Use on equipment that can be internally oiled.
Dry Processing		Clogging occurs when there is no cooling of the drill tip, incomplete chip evacuation, and abnormal wear of the insert, which may lead to drill insert broken.	
Atomization Processing			
The following application cases may be not applicable to standard hole shape processing			
Application Cases		Problems	Methods
Crosshole (including horizontal hole)	 <p>Crosshole diameter is larger than insert edge support length.</p>	If the edge touches the workpiece, vibration may occur. And the hole flanging tool may be broken.	It is recommended to make special spade drill bodies with guide bar.
Entrance Ramp	 <p>The shoulder of the insert touches the workpiece before the tip.</p>	Vibration may be generated when the edge support collides unilaterally. And hole flanging tool may be broken.	 <p>Machining a straight part with an end mill first, then start processing.</p>
Outlet Ramp	 <p>Large tilt when retracting the drill, one-sided collision at the edge support area.</p>	Vibration may be generated when the edge support collides unilaterally. And hole flanging tool may be broken.	 <p>Machining a straight part with an end mill first, then start processing.</p>
Holes to be widened	 <p>When the offset from the bottom hole is more than 0.2mm.</p>		Start machining after opening a 1xD-2xD pilot hole, and use flat-bottomed inserts in some cases.

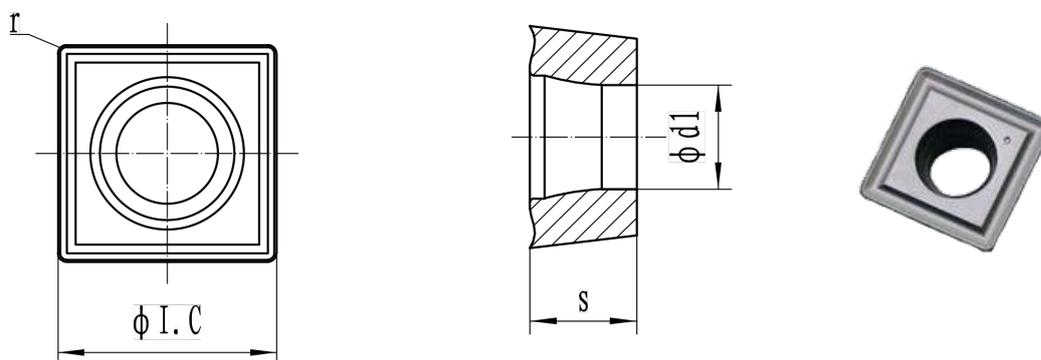
U DRILL

1. Rough processing drills for most machines
2. It is more economical and practical, and has a huge advantage in both cost and machining time compared with common twist drills.
3. Water outlet holes inside for better blade cooling during machining.
4. Inserts with different edges for different workpiece materials.





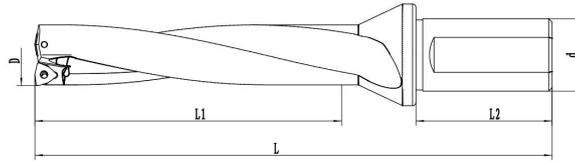
	IC	s	r	d1	Hole Diameter
WCMT 030208-U APU15	5.56	2.38	0.8	2.8	14-20.5
WCMT 040208-U APU15	6.35	2.38	0.8	2.9	21-24.5
WCMT 050308-U APU15	7.94	3.18	0.8	3.4	25-31.5
WCMT 06T308-U APU15	9.52	3.97	0.8	3.8	32-42.5
WCMT 080412-U APU15	12.7	4.76	1.2	4.4	43-57.5



	IC	s	r	d1	Hole Diameter
SPMG 050204-U APU25	5	2.38	0.4	2.2	13-15
SPMG 060204-U APU25	6	2.38	0.4	2.6	15.5-21.5
SPMG 07T308-U APU25	7.94	3.97	0.8	2.8	22-27
SPMG 090408-U APU25	9.8	4.3	0.8	4.23	27.5-33
SPMG 110408-U APU25	11.5	4.76	0.8	4.4	33.5-40.5
SPMG 140512-U APU25	14.3	5.2	1.2	5.75	41-51

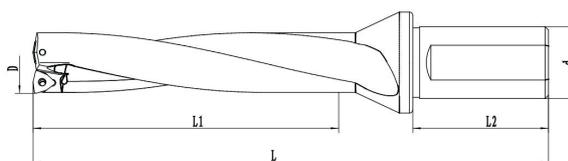
Геометрия U-универсальная, для обработки материалов по ISO P/M/K/S/N с твердостью до 45 HRC
 Сплав APU25 -PVD сплав с покрытием на основе TiAlN
 Сплав APU15 -PVD сплав с покрытием на основе AlCN

2x Diameter WC U Drill



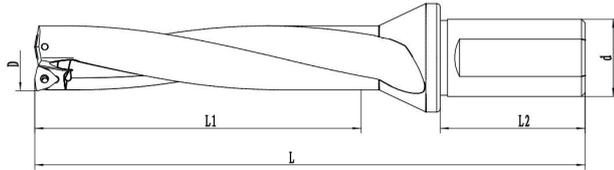
Model	D	L1	L	L2	d
AZD02-14.0-XP25-WC03-02	14	28	106	56	25
AZD02-14.5-XP25-WC03-02	14.5	29	107		
AZD02-15.0-XP25-WC03-02	15	30	108		
AZD02-15.5-XP25-WC03-02	15.5	31	109		
AZD02-16.0-XP25-WC03-02	16	32	110		
AZD02-16.5-XP25-WC03-02	16.5	33	111		
AZD02-17.0-XP25-WC03-02	17	34	112		
AZD02-17.5-XP25-WC03-02	17.5	35	113		
AZD02-18.0-XP25-WC03-02	18	36	114		
AZD02-18.5-XP25-WC03-02	18.5	37	115		
AZD02-19.0-XP25-WC03-02	19	38	116		
AZD02-19.5-XP25-WC03-02	19.5	39	117		
AZD02-20.0-XP25-WC03-02	20	40	119		
AZD02-20.5-XP25-WC03-02	20.5	41	120		
AZD02-21.0-XP25-WC04-02	21	42	121		
AZD02-21.5-XP25-WC04-02	21.5	43	122		
AZD02-22.0-XP25-WC04-02	22	44	123		
AZD02-22.5-XP25-WC04-02	22.5	45	124		
AZD02-23.0-XP25-WC04-02	23	46	125		
AZD02-23.5-XP25-WC04-02	23.5	47	126		
AZD02-24.0-XP25-WC04-02	24	48	127		
AZD02-24.5-XP25-WC04-02	24.5	49	128		
AZD02-25.0-XP32-WC05-02	25	50	141	60	32
AZD02-25.5-XP32-WC05-02	25.5	51	142		
AZD02-26.0-XP32-WC05-02	26	52	143		
AZD02-26.5-XP32-WC05-02	26.5	53	144		
AZD02-27.0-XP32-WC05-02	27	54	145		
AZD02-27.5-XP32-WC05-02	27.5	55	146		
AZD02-28.0-XP32-WC05-02	28	56	147		
AZD02-28.5-XP32-WC05-02	28.5	57	148		
AZD02-29.0-XP32-WC05-02	29	58	149		
AZD02-29.5-XP32-WC05-02	29.5	59	150		
AZD02-30.0-XP32-WC05-02	30	60	151		
AZD02-30.5-XP32-WC05-02	30.5	61	152		
AZD02-31.0-XP32-WC05-02	31	62	153		
AZD02-31.5-XP32-WC05-02	31.5	63	154		

2x Diameter WC U Drill



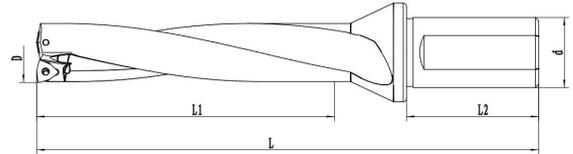
Model	D	L1	L	L2	d
AZD02-32.0-XP32-WC06-02	32	64	155	60	32
AZD02-32.5-XP32-WC06-02	32.5	65	156		
AZD02-33.0-XP32-WC06-02	33	66	157		
AZD02-33.5-XP32-WC06-02	33.5	67	158		
AZD02-34.0-XP32-WC06-02	34	68	159		
AZD02-34.5-XP32-WC06-02	34.5	69	160		
AZD02-35.0-XP32-WC06-02	35	70	161		
AZD02-35.5-XP32-WC06-02	35.5	71	162		
AZD02-36.0-XP32-WC06-02	36	72	163		
AZD02-36.5-XP32-WC06-02	36.5	73	164		
AZD02-37.0-XP32-WC06-02	37	74	165		
AZD02-37.5-XP32-WC06-02	37.5	75	166		
AZD02-38.0-XP32-WC06-02	38	76	167		
AZD02-38.5-XP32-WC06-02	38.5	77	168		
AZD02-39.0-XP32-WC06-02	39	78	169		
AZD02-39.5-XP32-WC06-02	39.5	79	170		
AZD02-40.0-XP32-WC06-02	40	80	171		
AZD02-41.0-XP32-WC06-02	41	82	173		
AZD02-42.0-XP32-WC06-02	42	84	175		
AZD02-43.0-XP40-WC08-02	43	86	186		
AZD02-44.0-XP40-WC08-02	44	88	188		
AZD02-45.0-XP40-WC08-02	45	90	190		
AZD02-46.0-XP40-WC08-02	46	92	192		
AZD02-47.0-XP40-WC08-02	47	94	194		
AZD02-48.0-XP40-WC08-02	48	96	196		
AZD02-49.0-XP40-WC08-02	49	98	198		
AZD02-50.0-XP40-WC08-02	50	100	200		
AZD02-51.0-XP40-WC08-02	51	102	202		
AZD02-52.0-XP40-WC08-02	52	104	204		
AZD02-53.0-XP40-WC08-02	53	106	206		
AZD02-54.0-XP40-WC08-02	54	108	208		
AZD02-55.0-XP40-WC08-02	55	110	210		
AZD02-56.0-XP40-WC08-02	56	112	212		
AZD02-57.0-XP40-WC08-02	57	114	214		
AZD02-58.0-XP40-WC06-04	58	116	216		
AZD02-59.0-XP40-WC06-04	59	118	218		
AZD02-60.0-XP40-WC06-04	60	120	220		

3x Diameter WC U Drill



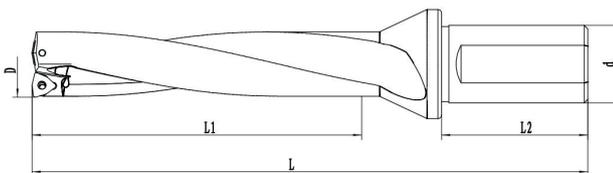
Model	D	L1	L	L2	d
AZD03-14.0-XP25-WC03-02	14	42	120	56	25
AZD03-14.5-XP25-WC03-02	14.5	43.5	122		
AZD03-15.0-XP25-WC03-02	15	45	123		
AZD03-15.5-XP25-WC03-02	15.5	46.5	124		
AZD03-16.0-XP25-WC03-02	16	48	126		
AZD03-16.5-XP25-WC03-02	16.5	49.5	127		
AZD03-17.0-XP25-WC03-02	17	51	129		
AZD03-17.5-XP25-WC03-02	17.5	52.5	130		
AZD03-18.0-XP25-WC03-02	18	54	132		
AZD03-18.5-XP25-WC03-02	18.5	55.5	133		
AZD03-19.0-XP25-WC03-02	19	57	135		
AZD03-19.5-XP25-WC03-02	19.5	58.5	137		
AZD03-20.0-XP25-WC03-02	20	60	139		
AZD03-20.5-XP25-WC03-02	20.5	61.5	140		
AZD03-21.0-XP25-WC04-02	21	63	142		
AZD03-21.5-XP25-WC04-02	21.5	64.5	143		
AZD03-22.0-XP25-WC04-02	22	66	145		
AZD03-22.5-XP25-WC04-02	22.5	67.5	148		
AZD03-23.0-XP25-WC04-02	23	69	148		
AZD03-23.5-XP25-WC04-02	23.5	70.5	149		
AZD03-24.0-XP25-WC04-02	24	72	151		
AZD03-24.5-XP25-WC04-02	24.5	73.5	152		
AZD03-25.0-XP32-WC05-02	25	75	166	60	32
AZD03-25.5-XP32-WC05-02	25.5	76.5	167		
AZD03-26.0-XP32-WC05-02	26	78	169		
AZD03-26.5-XP32-WC05-02	26.5	79.5	170		
AZD03-27.0-XP32-WC05-02	27	81	172		
AZD03-27.5-XP32-WC05-02	27.5	82.5	173		
AZD03-28.0-XP32-WC05-02	28	84	175		
AZD03-28.5-XP32-WC05-02	28.5	85.5	176		
AZD03-29.0-XP32-WC05-02	29	87	178		
AZD03-29.5-XP32-WC05-02	29.5	88.5	179		
AZD03-30.0-XP32-WC05-02	30	90	181		
AZD03-30.5-XP32-WC05-02	30.5	91.5	182		
AZD03-31.0-XP32-WC05-02	31	93	184		
AZD03-31.5-XP32-WC05-02	31.5	94.5	185		

3x Diameter WC U Drill



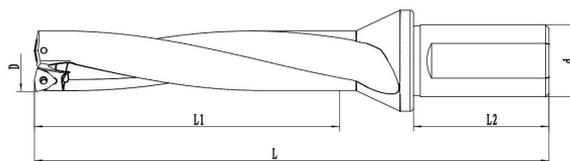
Model	D	L1	L	L2	d
AZD03-32.0-XP32-WC06-02	32	96	187	60	32
AZD03-32.5-XP32-WC06-02	32.5	97.5	188		
AZD03-33.0-XP32-WC06-02	33	99	190		
AZD03-33.5-XP32-WC06-02	33.5	100.5	191		
AZD03-34.0-XP32-WC06-02	34	102	193		
AZD03-34.5-XP32-WC06-02	34.5	103.5	194		
AZD03-35.0-XP32-WC06-02	35	105	196		
AZD03-35.5-XP32-WC06-02	35.5	106.5	197		
AZD03-36.0-XP32-WC06-02	36	108	199		
AZD03-36.5-XP32-WC06-02	36.5	109.5	200		
AZD03-37.0-XP32-WC06-02	37	111	202		
AZD03-37.5-XP32-WC06-02	37.5	112.5	203		
AZD03-38.0-XP32-WC06-02	38	114	205		
AZD03-38.5-XP32-WC06-02	38.5	115.5	206		
AZD03-39.0-XP32-WC06-02	39	117	206		
AZD03-39.5-XP32-WC06-02	39.5	118.5	209		
AZD03-40.0-XP32-WC06-02	40	120	211		
AZD03-41.0-XP32-WC06-02	41	123	214		
AZD03-42.0-XP32-WC06-02	42	126	217		
AZD03-43.0-XP40-WC08-02	43	129	229	65	40
AZD03-44.0-XP40-WC08-02	44	132	232		
AZD03-45.0-XP40-WC08-02	45	135	235		
AZD03-46.0-XP40-WC08-02	46	138	238		
AZD03-47.0-XP40-WC08-02	47	141	241		
AZD03-48.0-XP40-WC08-02	48	144	244		
AZD03-49.0-XP40-WC08-02	49	147	247		
AZD03-50.0-XP40-WC08-02	50	150	250		
AZD03-51.0-XP40-WC08-02	51	153	253		
AZD03-52.0-XP40-WC08-02	52	156	256		
AZD03-53.0-XP40-WC08-02	53	159	259		
AZD03-54.0-XP40-WC08-02	54	162	262		
AZD03-55.0-XP40-WC08-02	55	165	265		
AZD03-56.0-XP40-WC08-02	56	168	268		
AZD03-57.0-XP40-WC08-02	57	171	271		
AZD03-58.0-XP40-WC06-04	58	174	274		
AZD03-59.0-XP40-WC06-04	59	177	277		
AZD03-60.0-XP40-WC06-04	60	180	280		

4x Diameter WC U Drill



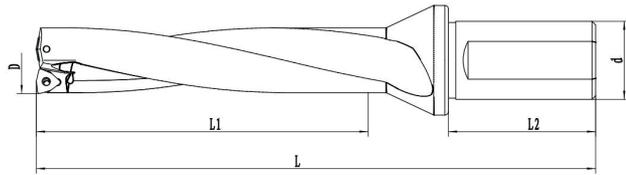
Model	D	L1	L	L2	d
AZD04-14.0-XP25-WC03-02	14	56	134	56	25
AZD04-14.5-XP25-WC03-02	14.5	58	136		
AZD04-15.0-XP25-WC03-02	15	60	138		
AZD04-15.5-XP25-WC03-02	15.5	62	140		
AZD04-16.0-XP25-WC03-02	16	64	142		
AZD04-16.5-XP25-WC03-02	16.5	66	144		
AZD04-17.0-XP25-WC03-02	17	68	146		
AZD04-17.5-XP25-WC03-02	17.5	70	148		
AZD04-18.0-XP25-WC03-02	18	72	150		
AZD04-18.5-XP25-WC03-02	18.5	74	152		
AZD04-19.0-XP25-WC03-02	19	76	154		
AZD04-19.5-XP25-WC03-02	19.5	78	155		
AZD04-20.0-XP25-WC03-02	20	80	159		
AZD04-20.5-XP25-WC03-02	20.5	82	161		
AZD04-21.0-XP25-WC04-02	21	84	163		
AZD04-21.5-XP25-WC04-02	21.5	86	165		
AZD04-22.0-XP25-WC04-02	22	88	167		
AZD04-22.5-XP25-WC04-02	22.5	90	169		
AZD04-23.0-XP25-WC04-02	23	92	171		
AZD04-23.5-XP25-WC04-02	23.5	94	173		
AZD04-24.0-XP25-WC04-02	24	96	175		
AZD04-24.5-XP25-WC04-02	24.5	98	177		
AZD04-25.0-XP32-WC05-02	25	100	191	60	32
AZD04-25.5-XP32-WC05-02	25.5	102	193		
AZD04-26.0-XP32-WC05-02	26	104	195		
AZD04-26.5-XP32-WC05-02	26.5	106	197		
AZD04-27.0-XP32-WC05-02	27	108	199		
AZD04-27.5-XP32-WC05-02	27.5	110	201		
AZD04-28.0-XP32-WC05-02	28	112	203		
AZD04-28.5-XP32-WC05-02	28.5	114	205		
AZD04-29.0-XP32-WC05-02	29	116	207		
AZD04-29.5-XP32-WC05-02	29.5	118	209		
AZD04-30.0-XP32-WC05-02	30	120	211		
AZD04-30.5-XP32-WC05-02	30.5	122	213		
AZD04-31.0-XP32-WC05-02	31	124	215		
AZD04-31.5-XP32-WC05-02	31.5	126	217		

4x Diameter WC U Drill



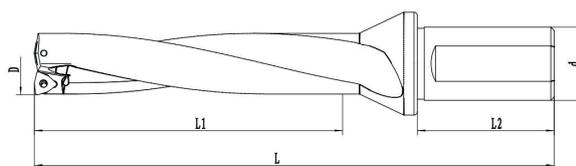
Model	D	L1	L	L2	d
AZD04-32.0-XP32-WC06-02	32	128	219	60	32
AZD04-32.5-XP32-WC06-02	32.5	130	221		
AZD04-33.0-XP32-WC06-02	33	132	223		
AZD04-33.5-XP32-WC06-02	33.5	134	225		
AZD04-34.0-XP32-WC06-02	34	136	227		
AZD04-34.5-XP32-WC06-02	34.5	138	229		
AZD04-35.0-XP32-WC06-02	35	140	231		
AZD04-35.5-XP32-WC06-02	35.5	142	233		
AZD04-36.0-XP32-WC06-02	36	144	235		
AZD04-36.5-XP32-WC06-02	36.5	146	237		
AZD04-37.0-XP32-WC06-02	37	148	239		
AZD04-37.5-XP32-WC06-02	37.5	150	241		
AZD04-38.0-XP32-WC06-02	38	152	243		
AZD04-38.5-XP32-WC06-02	38.5	154	245		
AZD04-39.0-XP32-WC06-02	39	156	247		
AZD04-39.5-XP32-WC06-02	39.5	158	249		
AZD04-40.0-XP32-WC06-02	40	160	251		
AZD04-41.0-XP32-WC06-02	41	164	255		
AZD04-42.0-XP32-WC06-02	42	168	259		
AZD04-43.0-XP40-WC08-02	43	172	272	65	40
AZD04-44.0-XP40-WC08-02	44	176	276		
AZD04-45.0-XP40-WC08-02	45	180	280		
AZD04-46.0-XP40-WC08-02	46	184	284		
AZD04-47.0-XP40-WC08-02	47	188	288		
AZD04-48.0-XP40-WC08-02	48	192	292		
AZD04-49.0-XP40-WC08-02	49	196	296		
AZD04-50.0-XP40-WC08-02	50	200	300		
AZD04-51.0-XP40-WC08-02	51	204	304		
AZD04-52.0-XP40-WC08-02	52	208	308		
AZD04-53.0-XP40-WC08-02	53	212	312		
AZD04-54.0-XP40-WC08-02	54	216	316		
AZD04-55.0-XP40-WC08-02	55	220	320		
AZD04-56.0-XP40-WC08-02	56	224	324		
AZD04-57.0-XP40-WC08-02	57	228	328		
AZD04-58.0-XP40-WC06-04	58	232	332		
AZD04-59.0-XP40-WC06-04	59	236	336		
AZD04-60.0-XP40-WC06-04	60	240	340		

5x Diameter WC U Drill



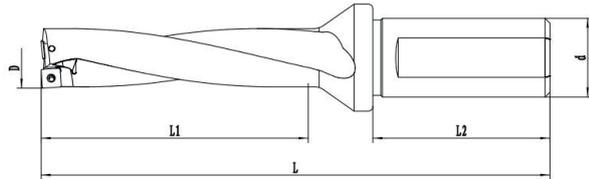
Model	D	L1	L	L2	d
AZD05-14.0-XP25-WC03-02	14	70	148	56	25
AZD05-14.5-XP25-WC03-02	14.5	72.5	150		
AZD05-15.0-XP25-WC03-02	15	75	153		
AZD05-15.5-XP25-WC03-02	15.5	77.5	155		
AZD05-16.0-XP25-WC03-02	16	80	158		
AZD05-16.5-XP25-WC03-02	16.5	82.5	160		
AZD05-17.0-XP25-WC03-02	17	85	163		
AZD05-17.5-XP25-WC03-02	17.5	87.5	165		
AZD05-18.0-XP25-WC03-02	18	90	168		
AZD05-18.5-XP25-WC03-02	18.5	92.5	170		
AZD05-19.0-XP25-WC03-02	19	95	173		
AZD05-19.5-XP25-WC03-02	19.5	97.5	175		
AZD05-20.0-XP25-WC03-02	20	100	179		
AZD05-20.5-XP25-WC03-02	20.5	102.5	181		
AZD05-21.0-XP25-WC04-02	21	105	184		
AZD05-21.5-XP25-WC04-02	21.5	107.5	186		
AZD05-22.0-XP25-WC04-02	22	110	189		
AZD05-22.5-XP25-WC04-02	22.5	112.5	193		
AZD05-23.0-XP25-WC04-02	23	115	194		
AZD05-23.5-XP25-WC04-02	23.5	117.5	196		
AZD05-24.0-XP25-WC04-02	24	120	199		
AZD05-24.5-XP25-WC04-02	24.5	122.5	201		
AZD05-25.0-XP32-WC05-02	25	125	216	60	32
AZD05-25.5-XP32-WC05-02	25.5	127.5	218		
AZD05-26.0-XP32-WC05-02	26	130	221		
AZD05-26.5-XP32-WC05-02	26.5	132.5	223		
AZD05-27.0-XP32-WC05-02	27	135	226		
AZD05-27.5-XP32-WC05-02	27.5	137.5	228		
AZD05-28.0-XP32-WC05-02	28	140	231		
AZD05-28.5-XP32-WC05-02	28.5	142.5	233		
AZD05-29.0-XP32-WC05-02	29	145	236		
AZD05-29.5-XP32-WC05-02	29.5	147.5	238		
AZD05-30.0-XP32-WC05-02	30	150	241		
AZD05-30.5-XP32-WC05-02	30.5	152.5	243		
AZD05-31.0-XP32-WC05-02	31	155	246		
AZD05-31.5-XP32-WC05-02	31.5	157.5	248		
AZD05-32.0-XP32-WC06-02	32	160	251		

5x Diameter WC U Drill



Model	D	L1	L	L2	d
AZD05-32.5-XP32-WC06-02	32.5	162.5	253	60	32
AZD05-33.0-XP32-WC06-02	33	165	256		
AZD05-33.5-XP32-WC06-02	33.5	167.5	258		
AZD05-34.0-XP32-WC06-02	34	170	261		
AZD05-34.5-XP32-WC06-02	34.5	172.5	263		
AZD05-35.0-XP32-WC06-02	35	175	266	60	32
AZD05-35.5-XP32-WC06-02	35.5	177.5	268		
AZD05-36.0-XP32-WC06-02	36	180	271		
AZD05-36.5-XP32-WC06-02	36.5	182.5	273		
AZD05-37.0-XP32-WC06-02	37	185	276		
AZD05-37.5-XP32-WC06-02	37.5	187.5	278		
AZD05-38.0-XP32-WC06-02	38	190	281		
AZD05-38.5-XP32-WC06-02	38.5	192.5	283		
AZD05-39.0-XP32-WC06-02	39	195	284		
AZD05-39.5-XP32-WC06-02	39.5	197.5	288		
AZD05-40.0-XP32-WC06-02	40	200	291		
AZD05-41.0-XP32-WC06-02	41	205	296		
AZD05-42.0-XP32-WC06-02	42	210	301	65	40
AZD05-43.0-XP40-WC08-02	43	215	315		
AZD05-44.0-XP40-WC08-02	44	220	320		
AZD05-45.0-XP40-WC08-02	45	225	325		
AZD05-46.0-XP40-WC08-02	46	230	330		
AZD05-47.0-XP40-WC08-02	47	235	335		
AZD05-48.0-XP40-WC08-02	48	240	340		
AZD05-49.0-XP40-WC08-02	49	245	345		
AZD05-50.0-XP40-WC08-02	50	250	350		
AZD05-51.0-XP40-WC08-02	51	255	355		
AZD05-52.0-XP40-WC08-02	52	260	360		
AZD05-53.0-XP40-WC08-02	53	265	365		
AZD05-54.0-XP40-WC08-02	54	270	370		
AZD05-55.0-XP40-WC08-02	55	275	375		
AZD05-56.0-XP40-WC08-02	56	280	380		
AZD05-57.0-XP40-WC08-02	57	285	385		
AZD05-58.0-XP40-WC06-04	58	290	390		
AZD05-59.0-XP40-WC06-04	59	295	395		
AZD05-60.0-XP40-WC06-04	60	300	400		

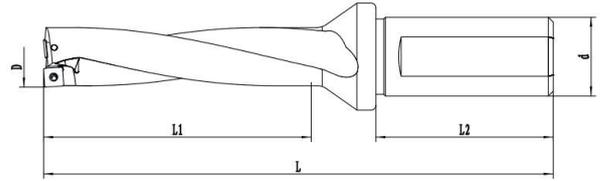
2x Diameter SP U Drill



Model	D	L1	L	L2	d
AZD02-13.0-XP25-SP05-02	13	26	104	56	25
AZD02-13.5-XP25-SP05-02	13.5	27	105		
AZD02-14.0-XP25-SP05-02	14	28	106		
AZD02-14.5-XP25-SP05-02	14.5	29	107		
AZD02-15.0-XP25-SP05-02	15	30	108		
AZD02-15.5-XP25-SP06-02	15.5	31	109		
AZD02-16.0-XP25-SP06-02	16	32	110		
AZD02-16.5-XP25-SP06-02	16.5	33	111		
AZD02-17.0-XP25-SP06-02	17	34	112		
AZD02-17.5-XP25-SP06-02	17.5	35	113		
AZD02-18.0-XP25-SP06-02	18	36	114		
AZD02-18.5-XP25-SP06-02	18.5	37	115		
AZD02-19.0-XP25-SP06-02	19	38	116		
AZD02-19.5-XP25-SP06-02	19.5	39	117		
AZD02-20.0-XP25-SP06-02	20	40	119		
AZD02-20.5-XP25-SP06-02	20.5	41	120		
AZD02-21.0-XP25-SP06-02	21	42	121		
AZD02-21.5-XP25-SP06-02	21.5	43	122		
AZD02-22.0-XP25-SP07-02	22	44	123		
AZD02-22.5-XP25-SP07-02	22.5	45	124		
AZD02-23.0-XP25-SP07-02	23	46	125		
AZD02-23.5-XP25-SP07-02	23.5	47	126		
AZD02-24.0-XP25-SP07-02	24	48	127		
AZD02-24.5-XP25-SP07-02	24.5	49	128		
AZD02-25.0-XP32-SP07-02	25	50	141	60	32
AZD02-25.5-XP32-SP07-02	25.5	51	142		
AZD02-26.0-XP32-SP07-02	26	52	143		
AZD02-26.5-XP32-SP07-02	26.5	53	144		
AZD02-27.0-XP32-SP07-02	27	54	145		
AZD02-27.5-XP32-SP09-02	27.5	55	146		
AZD02-28.0-XP32-SP09-02	28	56	147		
AZD02-28.5-XP32-SP09-02	28.5	57	148		
AZD02-29.0-XP32-SP09-02	29	58	149		
AZD02-29.5-XP32-SP09-02	29.5	59	150		
AZD02-30.0-XP32-SP09-02	30	60	151		
AZD02-30.5-XP32-SP09-02	30.5	61	152		
AZD02-31.0-XP32-SP09-02	31	62	153		

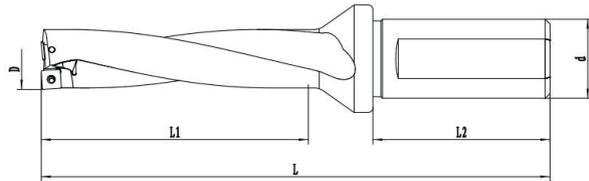


2x Diameter SP U Drill



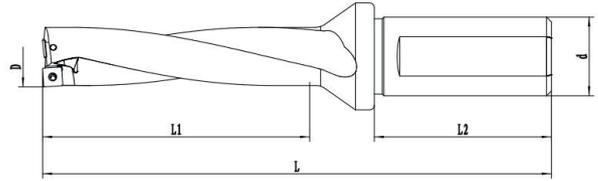
Model	D	L1	L	L2	d
AZD02-31.5-XP32-SP09-02	31.5	63	154	60	32
AZD02-32.0-XP32-SP09-02	32	64	155		
AZD02-32.5-XP32-SP09-02	32.5	65	156		
AZD02-33.0-XP32-SP09-02	33	66	157		
AZD02-33.5-XP32-SP11-02	33.5	67	158		
AZD02-34.0-XP32-SP11-02	34	68	159		
AZD02-34.5-XP32-SP11-02	34.5	69	160		
AZD02-35.0-XP32-SP11-02	35	70	161		
AZD02-35.5-XP32-SP11-02	35.5	71	162		
AZD02-36.0-XP32-SP11-02	36	72	163		
AZD02-36.5-XP32-SP11-02	36.5	73	164		
AZD02-37.0-XP32-SP11-02	37	74	165		
AZD02-37.5-XP32-SP11-02	37.5	75	166		
AZD02-38.0-XP32-SP11-02	38	76	167		
AZD02-38.5-XP32-SP11-02	38.5	77	168		
AZD02-39.0-XP32-SP11-02	39	78	169		
AZD02-39.5-XP32-SP11-02	39.5	79	170		
AZD02-40.0-XP32-SP11-02	40	80	171		
AZD02-41.0-XP32-SP14-02	41	82	173	65	40
AZD02-42.0-XP32-SP14-02	42	84	175		
AZD02-43.0-XP40-SP14-02	43	86	186		
AZD02-44.0-XP40-SP14-02	44	88	188		
AZD02-45.0-XP40-SP14-02	45	90	190		
AZD02-46.0-XP40-SP14-02	46	92	192		
AZD02-47.0-XP40-SP14-02	47	94	194		
AZD02-48.0-XP40-SP14-02	48	96	196		
AZD02-49.0-XP40-SP14-02	49	98	198		
AZD02-50.0-XP40-SP14-02	50	100	200		
AZD02-51.0-XP40-SP14-02	51	102	202		
AZD02-52.0-XP40-SP09-04	52	104	204		
AZD02-53.0-XP40-SP09-04	53	106	206		
AZD02-54.0-XP40-SP09-04	54	108	208		
AZD02-55.0-XP40-SP09-04	55	110	210		
AZD02-56.0-XP40-SP09-04	56	112	212		
AZD02-57.0-XP40-SP09-04	57	114	214		
AZD02-58.0-XP40-SP09-04	58	116	216		
AZD02-59.0-XP40-SP09-04	59	118	218		
AZD02-60.0-XP40-SP09-04	60	120	220		

3x Diameter SP U Drill



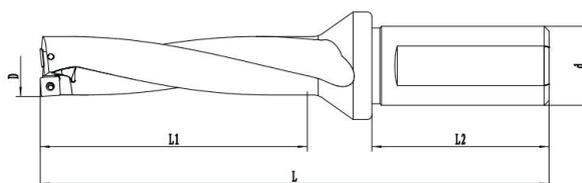
Model	D	L1	L	L2	d
AZD03-13.0-XP25-SP05-02	13	39	117	56	25
AZD03-13.5-XP25-SP05-02	13.5	40.5	118		
AZD03-14.0-XP25-SP05-02	14	42	120		
AZD03-14.5-XP25-SP05-02	14.5	43.5	122		
AZD03-15.0-XP25-SP05-02	15	45	123		
AZD03-15.5-XP25-SP06-02	15.5	46.5	124		
AZD03-16.0-XP25-SP06-02	16	48	126		
AZD03-16.5-XP25-SP06-02	16.5	49.5	127		
AZD03-17.0-XP25-SP06-02	17	51	129		
AZD03-17.5-XP25-SP06-02	17.5	52.5	130		
AZD03-18.0-XP25-SP06-02	18	54	132		
AZD03-18.5-XP25-SP06-02	18.5	55.5	133		
AZD03-19.0-XP25-SP06-02	19	57	135		
AZD03-19.5-XP25-SP06-02	19.5	58.5	135		
AZD03-20.0-XP25-SP06-02	20	60	139		
AZD03-20.5-XP25-SP06-02	20.5	61.5	140		
AZD03-21.0-XP25-SP06-02	21	63	142		
AZD03-21.5-XP25-SP06-02	21.5	64.5	143		
AZD03-22.0-XP25-SP07-02	22	66	145		
AZD03-22.5-XP25-SP07-02	22.5	67.5	148		
AZD03-23.0-XP25-SP07-02	23	69	148		
AZD03-23.5-XP25-SP07-02	23.5	70.5	149		
AZD03-24.0-XP25-SP07-02	24	72	151		
AZD03-24.5-XP25-SP07-02	24.5	73.5	152		
AZD03-25.0-XP32-SP07-02	25	75	166	60	32
AZD03-25.5-XP32-SP07-02	25.5	76.5	167		
AZD03-26.0-XP32-SP07-02	26	78	169		
AZD03-26.5-XP32-SP07-02	26.5	79.5	170		
AZD03-27.0-XP32-SP07-02	27	81	172		
AZD03-27.5-XP32-SP09-02	27.5	82.5	173		
AZD03-28.0-XP32-SP09-02	28	84	175		
AZD03-28.5-XP32-SP09-02	28.5	85.5	176		
AZD03-29.0-XP32-SP09-02	29	87	178		
AZD03-29.5-XP32-SP09-02	29.5	88.5	179		
AZD03-30.0-XP32-SP09-02	30	90	181		
AZD03-30.5-XP32-SP09-02	30.5	91.5	182		
AZD03-31.0-XP32-SP09-02	31	93	184		

3x Diameter SP U Drill



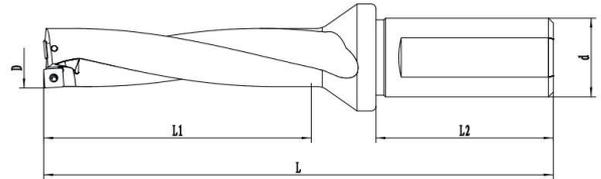
Model	D	L1	L	L2	d
AZD03-31.5-XP32-SP09-02	31.5	94.5	185	60	32
AZD03-32.0-XP32-SP09-02	32	96	187		
AZD03-32.5-XP32-SP09-02	32.5	97.5	188		
AZD03-33.0-XP32-SP09-02	33	99	190		
AZD03-33.5-XP32-SP11-02	33.5	100.5	191		
AZD03-34.0-XP32-SP11-02	34	102	193		
AZD03-34.5-XP32-SP11-02	34.5	103.5	194		
AZD03-35.0-XP32-SP11-02	35	105	196		
AZD03-35.5-XP32-SP11-02	35.5	106.5	197		
AZD03-36.0-XP32-SP11-02	36	108	199		
AZD03-36.5-XP32-SP11-02	36.5	109.5	200		
AZD03-37.0-XP32-SP11-02	37	111	202		
AZD03-37.5-XP32-SP11-02	37.5	112.5	203		
AZD03-38.0-XP32-SP11-02	38	114	205		
AZD03-38.5-XP32-SP11-02	38.5	115.5	206		
AZD03-39.0-XP32-SP11-02	39	117	206		
AZD03-39.5-XP32-SP11-02	39.5	118.5	209		
AZD03-40.0-XP32-SP11-02	40	120	211		
AZD03-41.0-XP32-SP14-02	41	123	214		
AZD03-42.0-XP32-SP14-02	42	126	217		
AZD03-43.0-XP40-SP14-02	43	129	229	65	40
AZD03-44.0-XP40-SP14-02	44	132	232		
AZD03-45.0-XP40-SP14-02	45	135	235		
AZD03-46.0-XP40-SP14-02	46	138	238		
AZD03-47.0-XP40-SP14-02	47	141	241		
AZD03-48.0-XP40-SP14-02	48	144	244		
AZD03-49.0-XP40-SP14-02	49	147	247		
AZD03-50.0-XP40-SP14-02	50	150	250		
AZD03-51.0-XP40-SP14-02	51	153	253		
AZD03-52.0-XP40-SP09-04	52	156	256		
AZD03-53.0-XP40-SP09-04	53	159	259		
AZD03-54.0-XP40-SP09-04	54	162	262		
AZD03-55.0-XP40-SP09-04	55	165	265		
AZD03-56.0-XP40-SP09-04	56	168	268		
AZD03-57.0-XP40-SP09-04	57	171	271		
AZD03-58.0-XP40-SP09-04	58	174	274		
AZD03-59.0-XP40-SP09-04	59	177	277		
AZD03-60.0-XP40-SP09-04	60	180	280		

4x Diameter SP U Drill



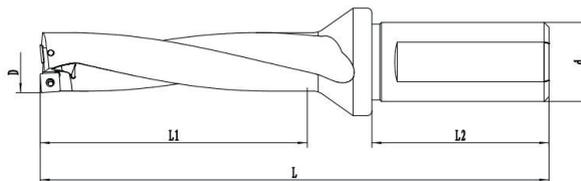
Model	D	L1	L	L2	d
AZD04-13.0-XP25-SP05-02	13	52	130	56	25
AZD04-13.5-XP25-SP05-02	13.5	54	132		
AZD04-14.0-XP25-SP05-02	14	56	134		
AZD04-14.5-XP25-SP05-02	14.5	58	136		
AZD04-15.0-XP25-SP05-02	15	60	138		
AZD04-15.5-XP25-SP06-02	15.5	62	140		
AZD04-16.0-XP25-SP06-02	16	64	142		
AZD04-16.5-XP25-SP06-02	16.5	66	144		
AZD04-17.0-XP25-SP06-02	17	68	146		
AZD04-17.5-XP25-SP06-02	17.5	70	148		
AZD04-18.0-XP25-SP06-02	18	72	150		
AZD04-18.5-XP25-SP06-02	18.5	74	152		
AZD04-19.0-XP25-SP06-02	19	76	154		
AZD04-19.5-XP25-SP06-02	19.5	78	155		
AZD04-20.0-XP25-SP06-02	20	80	159		
AZD04-20.5-XP25-SP06-02	20.5	82	161		
AZD04-21.0-XP25-SP06-02	21	84	163		
AZD04-21.5-XP25-SP06-02	21.5	86	165		
AZD04-22.0-XP25-SP07-02	22	88	167		
AZD04-22.5-XP25-SP07-02	22.5	90	169		
AZD04-23.0-XP25-SP07-02	23	92	171		
AZD04-23.5-XP25-SP07-02	23.5	94	173		
AZD04-24.0-XP25-SP07-02	24	96	175		
AZD04-24.5-XP25-SP07-02	24.5	98	177		
AZD04-25.0-XP32-SP07-02	25	100	191	60	32
AZD04-25.5-XP32-SP07-02	25.5	102	193		
AZD04-26.0-XP32-SP07-02	26	104	195		
AZD04-26.5-XP32-SP07-02	26.5	106	197		
AZD04-27.0-XP32-SP07-02	27	108	199		
AZD04-27.5-XP32-SP09-02	27.5	110	201		
AZD04-28.0-XP32-SP09-02	28	112	203		
AZD04-28.5-XP32-SP09-02	28.5	114	205		
AZD04-29.0-XP32-SP09-02	29	116	207		
AZD04-29.5-XP32-SP09-02	29.5	118	209		
AZD04-30.0-XP32-SP09-02	30	120	211		
AZD04-30.5-XP32-SP09-02	30.5	122	213		
AZD04-31.0-XP32-SP09-02	31	124	215		

4x Diameter SP U Drill



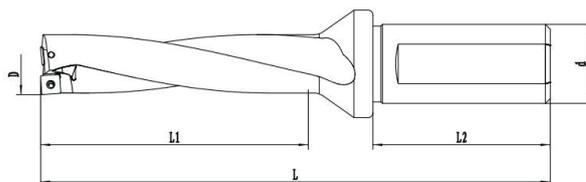
Model	D	L1	L	L2	d
AZD04-31.5-XP32-SP09-02	31.5	126	217	60	32
AZD04-32.0-XP32-SP09-02	32	128	219		
AZD04-32.5-XP32-SP09-02	32.5	130	221		
AZD04-33.0-XP32-SP09-02	33	132	223		
AZD04-33.5-XP32-SP11-02	33.5	134	225		
AZD04-34.0-XP32-SP11-02	34	136	227		
AZD04-34.5-XP32-SP11-02	34.5	138	229		
AZD04-35.0-XP32-SP11-02	35	140	231		
AZD04-35.5-XP32-SP11-02	35.5	142	233		
AZD04-36.0-XP32-SP11-02	36	144	235		
AZD04-36.5-XP32-SP11-02	36.5	146	237		
AZD04-37.0-XP32-SP11-02	37	148	239		
AZD04-37.5-XP32-SP11-02	37.5	150	241		
AZD04-38.0-XP32-SP11-02	38	152	243		
AZD04-38.5-XP32-SP11-02	38.5	154	245		
AZD04-39.0-XP32-SP11-02	39	156	247		
AZD04-39.5-XP32-SP11-02	39.5	158	249		
AZD04-40.0-XP32-SP11-02	40	160	251		
AZD04-41.0-XP32-SP14-02	41	164	255		
AZD04-42.0-XP32-SP14-02	42	168	259		
AZD04-43.0-XP40-SP14-02	43	172	272	65	40
AZD04-44.0-XP40-SP14-02	44	176	276		
AZD04-45.0-XP40-SP14-02	45	180	280		
AZD04-46.0-XP40-SP14-02	46	184	284		
AZD04-47.0-XP40-SP14-02	47	188	288		
AZD04-48.0-XP40-SP14-02	48	192	292		
AZD04-49.0-XP40-SP14-02	49	196	296		
AZD04-50.0-XP40-SP14-02	50	200	300		
AZD04-51.0-XP40-SP14-02	51	204	304		
AZD04-52.0-XP40-SP09-04	52	208	308		
AZD04-53.0-XP40-SP09-04	53	212	312		
AZD04-54.0-XP40-SP09-04	54	216	316		
AZD04-55.0-XP40-SP09-04	55	220	320		
AZD04-56.0-XP40-SP09-04	56	224	324		
AZD04-57.0-XP40-SP09-04	57	228	328		
AZD04-58.0-XP40-SP09-04	58	232	332		
AZD04-59.0-XP40-SP09-04	59	236	336		
AZD04-60.0-XP40-SP09-04	60	240	340		

5x Diameter SP U Drill



Model	D	L1	L	L2	d
AZD05-14.0-XP25-SP05-02	14	70	148	56	25
AZD05-14.5-XP25-SP05-02	14.5	72.5	150		
AZD05-15.0-XP25-SP05-02	15	75	153		
AZD05-15.5-XP25-SP06-02	15.5	77.5	155		
AZD05-16.0-XP25-SP06-02	16	80	158		
AZD05-16.5-XP25-SP06-02	16.5	82.5	160		
AZD05-17.0-XP25-SP06-02	17	85	163		
AZD05-17.5-XP25-SP06-02	17.5	87.5	165		
AZD05-18.0-XP25-SP06-02	18	90	168		
AZD05-18.5-XP25-SP06-02	18.5	92.5	170		
AZD05-19.0-XP25-SP06-02	19	95	173		
AZD05-19.5-XP25-SP06-02	19.5	97.5	175		
AZD05-20.0-XP25-SP06-02	20	100	179		
AZD05-20.5-XP25-SP06-02	20.5	102.5	181		
AZD05-21.0-XP25-SP06-02	21	105	184		
AZD05-21.5-XP25-SP06-02	21.5	107.5	186		
AZD05-22.0-XP25-SP07-02	22	110	189		
AZD05-22.5-XP25-SP07-02	22.5	112.5	193		
AZD05-23.0-XP25-SP07-02	23	115	194		
AZD05-23.5-XP25-SP07-02	23.5	117.5	196		
AZD05-24.0-XP25-SP07-02	24	120	199		
AZD05-24.5-XP25-SP07-02	24.5	122.5	201		
AZD05-25.0-XP32-SP07-02	25	125	216	60	32
AZD05-25.5-XP32-SP07-02	25.5	127.5	218		
AZD05-26.0-XP32-SP07-02	26	130	221		
AZD05-26.5-XP32-SP07-02	26.5	132.5	223		
AZD05-27.0-XP32-SP07-02	27	135	226		
AZD05-27.5-XP32-SP09-02	27.5	137.5	228		
AZD05-28.0-XP32-SP09-02	28	140	231		
AZD05-28.5-XP32-SP09-02	28.5	142.5	233		
AZD05-29.0-XP32-SP09-02	29	145	236		
AZD05-29.5-XP32-SP09-02	29.5	147.5	238		
AZD05-30.0-XP32-SP09-02	30	150	241		
AZD05-30.5-XP32-SP09-02	30.5	152.5	243		
AZD05-31.0-XP32-SP09-02	31	155	246		
AZD05-31.5-XP32-SP09-02	31.5	157.5	248		
AZD05-32.0-XP32-SP09-02	32	160	251		

5x Diameter SP U Drill



Model	D	L1	L	L2	d
AZD05-32.5-XP32-SP09-02	32.5	162.5	253	60	32
AZD05-33.0-XP32-SP09-02	33	165	256		
AZD05-33.5-XP32-SP11-02	33.5	167.5	258		
AZD05-34.0-XP32-SP11-02	34	170	261		
AZD05-34.5-XP32-SP11-02	34.5	172.5	263		
AZD05-35.0-XP32-SP11-02	35	175	266		
AZD05-35.5-XP32-SP11-02	35.5	177.5	268	60	32
AZD05-36.0-XP32-SP11-02	36	180	271		
AZD05-36.5-XP32-SP11-02	36.5	182.5	273		
AZD05-37.0-XP32-SP11-02	37	185	276		
AZD05-37.5-XP32-SP11-02	37.5	187.5	278		
AZD05-38.0-XP32-SP11-02	38	190	281		
AZD05-38.5-XP32-SP11-02	38.5	192.5	283		
AZD05-39.0-XP32-SP11-02	39	195	284		
AZD05-39.5-XP32-SP11-02	39.5	197.5	288		
AZD05-40.0-XP32-SP11-02	40	200	291		
AZD05-41.0-XP32-SP14-02	41	205	296		
AZD05-42.0-XP32-SP14-02	42	210	301		
AZD05-43.0-XP40-SP14-02	43	215	315		
AZD05-44.0-XP40-SP14-02	44	220	320		
AZD05-45.0-XP40-SP14-02	45	225	325		
AZD05-46.0-XP40-SP14-02	46	230	330		
AZD05-47.0-XP40-SP14-02	47	235	335		
AZD05-48.0-XP40-SP14-02	48	240	340		
AZD05-49.0-XP40-SP14-02	49	245	345		
AZD05-50.0-XP40-SP14-02	50	250	350		
AZD05-51.0-XP40-SP14-02	51	255	355		
AZD05-52.0-XP40-SP09-04	52	260	360		
AZD05-53.0-XP40-SP09-04	53	265	365		
AZD05-54.0-XP40-SP09-04	54	270	370		
AZD05-55.0-XP40-SP09-04	55	275	375		
AZD05-56.0-XP40-SP09-04	56	280	380		
AZD05-57.0-XP40-SP09-04	57	285	385		
AZD05-58.0-XP40-SP09-04	58	290	390		
AZD05-59.0-XP40-SP09-04	59	295	395		
AZD05-60.0-XP40-SP09-04	60	300	400		

Blind Hole Bottom Dimension Description



Shape of SP Inserts

Model	Wave Height(a)
SPMG050204	0.30mm
SPMG060204	0.40mm
SPMG07T308	0.50mm
SPMG090408	0.70mm
SPMG110408	0.80mm
SPMG140512	0.90mm



Quadrilateral Insert
Shallow Hole Drill



Shape of WC Inserts

Model	Wave Height(a)
WCMT030208	0.50mm
WCMT040208	0.70mm
WCMT050308	0.80mm
WCMT06T308	0.95mm
WCMT080412	1.25mm



Shallow Hole Drilling with Equilateral
Unequal Hexagonal Inserts

Drill Rotation Speed

$$n = \frac{V_c \times 1000}{\pi \times D_c}$$

For example,
Insert Line Speed=100m/min,
Drill Diameter=20mm, so the rotation speed:

V_c (m/min): Line Speed
 D_c (mm): Insert Diameter
 n (rev/min): Rotation Speed

$$n = \frac{100 \times 1000}{3.14 \times 20} = 1600 \text{ rev/min}$$

Feed Rate

$$V_f = F_r \times n$$

For example,
Spindle Speed=1600rev/min, Feed per Revolution=0.1mm/rev, so the
Feed Rate:

V_f (mm/min): Feed Rate
 F_r (mm/rev): Feed per Revolution
 n (rev/min): Spindle Speed

$$V_f \times F_r \times n = 1600 \times 0.1 = 160 \text{ mm/min}$$

Processing Time

$$T_c = \frac{H}{V_f} \times 60$$

For example,
Hole Diameter=20mm, Hole Depth=40mm, Feed Rate=140mm/min, so
the Processing Time:

T_c (s): Processing Time
 H (mm): Hole Depth

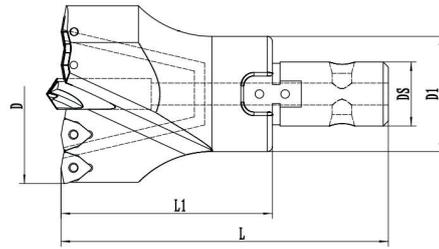
$$T_c = \frac{H}{V_f} \times 60 = \frac{40}{140} \times 60 = 17 \text{ s}$$

MDD DEEP HOLE DRILL

1. Adoption of center-guided drilling structure with good centering effect, thus ensuring good straightness of holes.
2. The inner and outer blades are equipped with replaceable small cartridges. In practice, the outer blade cartridges are prone to wear. Replacement of small tool bodies without replacing the entire drill saves tool costs.
3. Drill size can be adjusted from 0 mm to 5 mm by adjusting outer cartridges.
4. The tool head and shank are of combined structure. For different depths of holes, it only need to replace the shanks with different lengths.
5. The drill has a center water outlet hole which can better cool the blade, extend the service life of the blade, and at the same time is conducive to chip evacuation.
6. The use of indexable carbide inserts improves speed and feed, the hole wall finish is greatly improved.
7. During machining, the iron chips are all broken compared with the long and thin twisted iron chips produced by traditional twist drills, which greatly improves safety.
8. Automatic and continuous feeding of drills during machining eliminates the need to retract the drill each time to return chips, dramatically increasing efficiency.

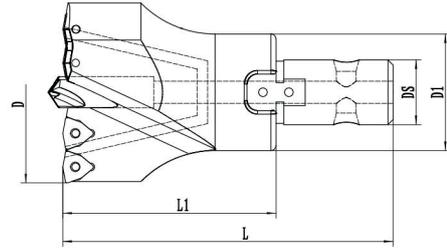


MDD DEEP HOLE DRILL



MDD Modular Large-Diameter Deep Hole Drill Series										
Model	D	DS	D1	L1	L	Outer Cartridge	Inner Cartridge	Pilot Drill	Inserts	Number of Inserts
AMDD-045050	45-50	16	30	60	95	AVMC-045050T	AVNC-045050N	AHPD-1035C-H	WC03	4
AMDD-050055	50-55					AVMC-050055T	AVNC-050055N	AHPD-1035C-H	WC04	4
AMDD-055060	55-60					AVMC-055060T	AVNC-055060N	AHPD-1238C-H	WC04	4
AMDD-060065	60-65	25	45	82	127	AVMC-060065T	AVNC-060065N	AHPD-1238C-H	WC05	4
AMDD-065070	65-70					AVMC-065070T	AVNC-065070N	AHPD-1238C-H	WC05	4
AMDD-070075	70-75					AVMC-070075T	AVNC-070075N	AHPD-1238C-H	WC06	4
AMDD-075080	75-80					AVMC-075080T	AVNC-075080N	AHPD-1645C-H	WC06	4
AMDD-080085	80-85					AVMC-080085T	AVNC-080085N	AHPD-1645C-H	WC06	4
AMDD-085090	85-90					AVMC-085090T	AVNC-085090N	AHPD-1645C-H	WC06	4
AMDD-090095	90-95	30	50	82	127	AVMC-090095T	AVNC-090095N	AHPD-1645C-H	WC06	4
AMDD-095100	95-100					AVMC-095100T	AVNC-095100N	AHPD-1645C-H	WC05	6
AMDD-100105	100-105					AVMC-100105T	AVNC-100105N	AHPD-2045C-H	WC05	6
AMDD-105110	105-110	32	58	94	139	AVMC-105110T	AVNC-105110N	AHPD-2045C-H	WC05	6
AMDD-110115	110-115					AVMC-110115T	AVNC-110115N	AHPD-2045C-H	WC06	6
AMDD-115120	115-120	40	70	104	154	AVMC-115120T	AVNC-115120N	AHPD-2045C-H	WC06	6
AMDD-120125	120-125					AVMC-120125T	AVNC-120125N	AHPD-2556C-H	WC06	6
AMDD-125130	125-130					AVMC-125130T	AVNC-125130N	AHPD-2556C-H	WC06	6
AMDD-130135	130-135					AVMC-130135T	AVNC-130135N	AHPD-2556C-H	WC06	6
AMDD-135140	135-140					AVMC-135140T	AVNC-135140N	AHPD-2556C-H	WC06	8

MDD DEEP HOLE DRILL



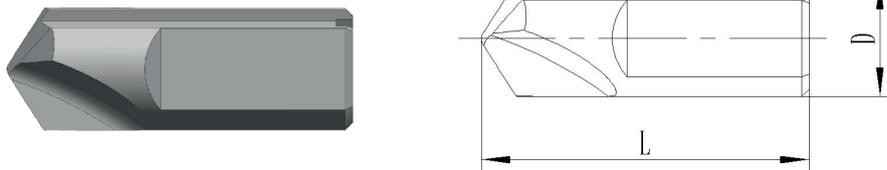
MDD Modular Large-Diameter Deep Hole Drill Series

Model	D	DS	D1	L1	L	Outer Cartridge	Inner Cartridge	Pilot Drill	Inserts	Number of Inserts
AMDD-140145	140-145	50	80	116	176	AVMC-140145T	AVNC-140145N	AHPD-2556C-H	WC06	8
AMDD-145150	145-150					AVMC-145150T	AVNC-145150N	AHPD-2556C-H	WC08	6
AMDD-150155	150-155					AVMC-150155T	AVNC-150155N	AHPD-2556C-H	WC08	6
AMDD-155160	155-160					AVMC-155160T	AVNC-155160N	AHPD-2556C-H	WC08	6
AMDD-160165	160-165					AVMC-160165T	AVNC-160165N	AHPD-2556C-H	WC06	10
AMDD-165170	165-170					AVMC-165170T	AVNC-165170N	AHPD-2556C-H	WC06	10
AMDD-170175	170-175					AVMC-170175T	AVNC-170175N	AHPD-2556C-H	WC08	8
AMDD-175180	175-180					AVMC-175180T	AVNC-175180N	AHPD-2556C-H	WC08	8
AMDD-180185	180-185					AVMC-180185T	AVNC-180185N	AHPD-2556C-H	WC08	8
AMDD-185190	185-190					AVMC-185190T	AVNC-185190N	AHPD-2556C-H	WC08	8
AMDD-190195	190-195					AVMC-190195T	AVNC-190195N	AHPD-2556C-H	WC08	8
AMDD-195200	195-200					AVMC-195200T	AVNC-195200N	AHPD-2556C-H	WC08	10
AMDD-200205	200-205	60	110	128	208	AVMC-200205T	AVNC-200205N	AHPD-3068C-H	WC08	8
AMDD-205210	205-210					AVMC-205210T	AVNC-205210N	AHPD-3068C-H	WC08	8
AMDD-210220	210-220		125			AVMC-210220T	AVNC-210220N	AHPD-3068C-H	WC08	10
AMDD-220230	220-230					AVMC-220230T	AVNC-220230N	AHPD-3068C-H	WC08	10
AMDD-230240	230-240	80	150			AVMC-230240T	AVNC-230240N	AHPD-3068C-H	WC08	10
AMDD-240250	240-250					AVMC-240250T	AVNC-240250N	AHPD-3068C-H	WC08	10
AMDD-250260	250-260					AVMC-250260T	AVNC-250260N	AHPD-3068C-H	WC08	12

Pilot Drill



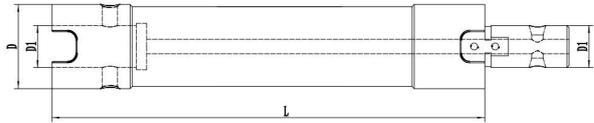
HSS Pilot Drill Model	D	L
AHPD-1035C-H	10	35
AHPD-1238C-H	12	38
AHPD-1645C-H	16	45
AHPD-2045C-H	20	45
AHPD-2556C-H	25	56
AHPD-3068C-H	30	68



Carbide Pilot Drill Model	D	L
ACPD-1035C-H	10	35
ACPD-1238C-H	12	38
ACPD-1645C-H	16	45
ACPD-2045C-H	20	45
ACPD-2556C-H	25	56



MDD Extension Rod



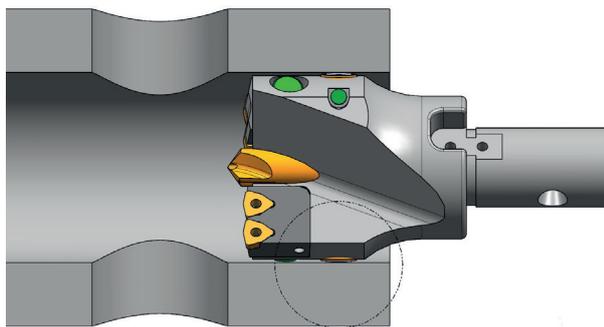
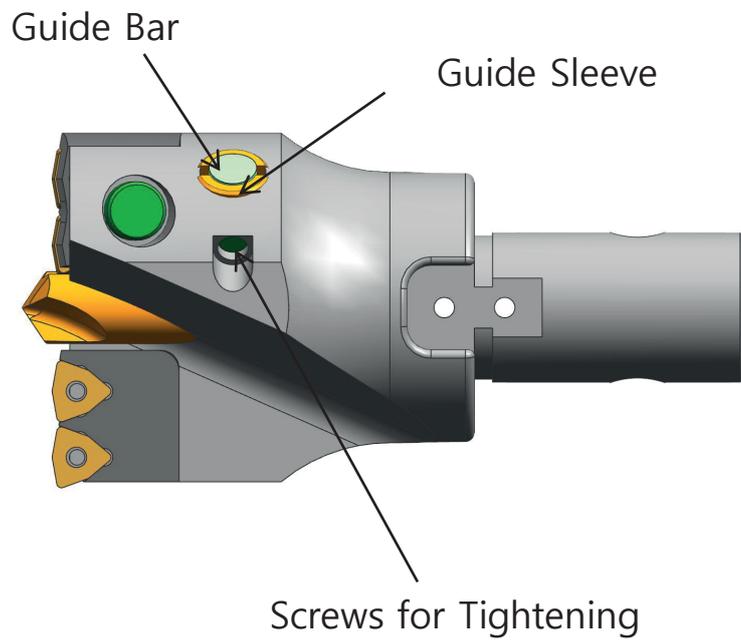
Model	D	D1	L	Hole Diameter	Model	D	D1	L	Hole Diameter
AYXZ-3016200	30	16	200	φ45-φ55	AYXZ-8050200	80	50	200	φ140-φ195
AYXZ-3016300	30	16	300		AYXZ-8050300	80	50	300	
AYXZ-3016400	30	16	400		AYXZ-8050400	80	50	400	
AYXZ-3016500	30	16	500		AYXZ-8050500	80	50	500	
AYXZ-4525200	45	25	200	φ60-φ80	AYXZ-11060200	110	60	200	φ200-φ205
AYXZ-4525300	45	25	300		AYXZ-11060300	110	60	300	
AYXZ-4525400	45	25	400		AYXZ-11060400	110	60	400	
AYXZ-4525500	45	25	500		AYXZ-11060500	110	60	500	
AYXZ-5030200	50	30	200	φ85-φ95	AYXZ-12560200	125	60	200	φ210-φ220
AYXZ-5030300	50	30	300		AYXZ-12560300	125	60	300	
AYXZ-5030400	50	30	400		AYXZ-12560400	125	60	400	
AYXZ-5030500	50	30	500		AYXZ-12560500	125	60	500	
AYXZ-5832200	58	32	200	φ100-φ110	AYXZ-15080200	150	80	200	φ230-φ250
AYXZ-5832300	58	32	300		AYXZ-15080300	150	80	300	
AYXZ-5832400	58	32	400		AYXZ-15080400	150	80	400	
AYXZ-5832500	58	32	500		AYXZ-15080500	150	80	500	
AYZX-7040200	70	40	200	φ115-φ135					
AYZX-7040300	70	40	300						
AYZX-7040400	70	40	400						
AYZX-7040500	70	40	500						

MDD Connection Rod

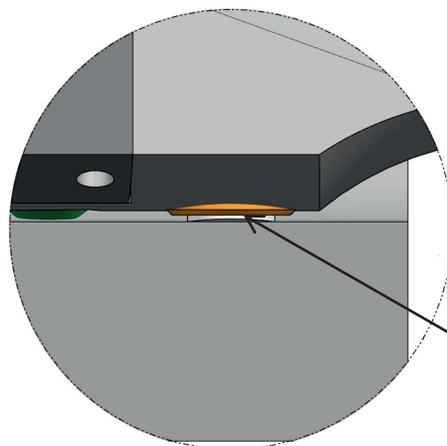
Model	D	D1	D2	L	L1	Hole Diameter							
ADXZ-301632100	30	16	32	100	65	φ45-φ55							
ADXZ-301632150	30	16	32	150	65								
ADXZ-301632200	30	16	32	200	65								
ADXZ-301632250	30	16	32	250	65								
ADXZ-301632300	30	16	32	300	65								
ADXZ-301632350	30	16	32	350	65								
ADXZ-301632400	30	16	32	400	65								
ADXZ-301632450	30	16	32	450	65								
ADXZ-301632500	30	16	32	500	65								
ADXZ-452540100	45	25	40	100	75	φ60-φ80	ADXZ-805050100	80	50	50	100	80	φ140-φ195
ADXZ-452540150	45	25	40	150	75		ADXZ-805050150	80	50	50	150	80	
ADXZ-452540200	45	25	40	200	75		ADXZ-805050200	80	50	50	200	80	
ADXZ-452540250	45	25	40	250	75		ADXZ-805050250	80	50	50	250	80	
ADXZ-452540300	45	25	40	300	75		ADXZ-805050300	80	50	50	300	80	
ADXZ-452540350	45	25	40	350	75		ADXZ-805050350	80	50	50	350	80	
ADXZ-452540400	45	25	40	400	75		ADXZ-805050400	80	50	50	400	80	
ADXZ-452540450	45	25	40	450	75		ADXZ-805050450	80	50	50	450	80	
ADXZ-452540500	45	25	40	500	75		ADXZ-805050500	80	50	50	500	80	
ADXZ-503040100	50	30	40	100	75		φ85-φ95	ADXZ-1106060100	110	60	60	100	
ADXZ-503040150	50	30	40	150	75	ADXZ-1106060150		110	60	60	150	80	
ADXZ-603040200	50	30	40	200	75	ADXZ-1106060200		110	60	60	200	80	
ADXZ-503040250	50	30	40	250	75	ADXZ-1106060250		110	60	60	250	80	
ADXZ-503040300	50	30	40	300	75	ADXZ-1106060300		110	60	60	300	80	
ADXZ-503040350	50	30	40	350	75	ADXZ-1106060350		110	60	60	350	80	
ADXZ-503040400	50	30	40	400	75	ADXZ-1106060400		110	60	60	400	80	
ADX7-503040450	50	30	40	450	75	ADXZ-1106060450		110	60	60	450	80	
ADXZ-503040500	50	30	40	500	75	ADXZ-1106060500		110	60	60	500	80	
ADXZ-583240100	58	32	40	100	75	φ100-φ110		ADXZ-1256080100	125	60	80	100	100
ADXZ-683240150	58	32	40	150	75		ADXZ-1256080150	125	60	80	150	100	
ADXZ-583240200	58	32	40	200	75		ADXZ-1256080200	125	60	80	200	100	
ADXZ-583240250	58	32	40	250	75		ADXZ-1256080250	125	60	80	250	100	
ADXZ-583240300	58	32	40	300	75		ADXZ-1256080300	125	60	80	300	100	
ADXZ-583240350	58	32	40	350	75		ADXZ-1256080350	125	60	80	350	100	
ADXZ-563240400	58	32	40	400	75		ADXZ-1256080400	125	60	80	400	100	
ADXZ-583240450	58	32	40	450	75		ADXZ-1256080450	125	60	80	450	100	
ADXZ-583240500	58	32	40	500	75		ADXZ-1256080500	125	60	80	500	100	
ADXZ-704050100	70	40	50	100	80		φ115-φ135	ADXZ-15080100100	150	80	100	100	120
ADXZ-704050150	70	40	50	150	80	ADXZ-15080100150		150	80	100	150	120	
ADXZ-704050200	70	40	50	200	80	ADXZ-15080100200		150	80	100	200	120	
ADXZ-704050250	70	40	50	250	80	ADXZ-15080100250		150	80	100	250	120	
ADXZ-704050300	70	40	50	300	80	ADXZ-15080100300		150	80	100	300	120	
ADXZ-704050350	70	40	50	350	80	ADXZ-15080100350		150	80	100	350	120	
ADXZ-704050400	70	40	50	400	80	ADXZ-15080100400		150	80	100	400	120	
ADXZ-704050450	70	40	50	450	80	ADXZ-15080100450		150	80	100	450	120	



MDD3 Deep Hole Drill

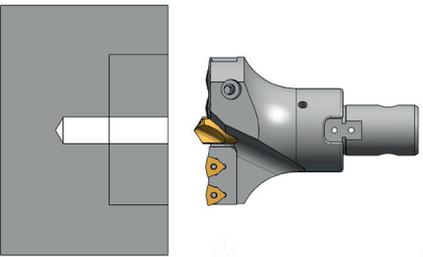
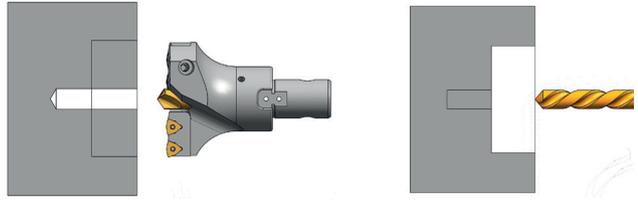
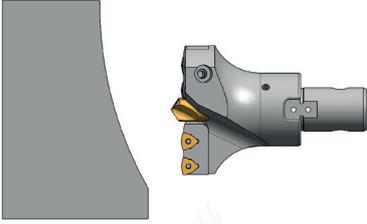
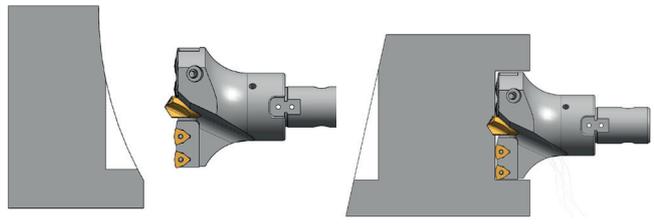
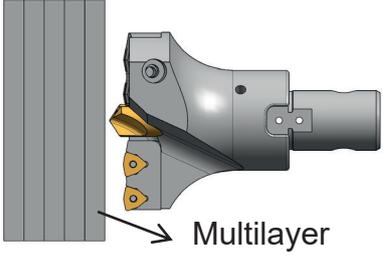
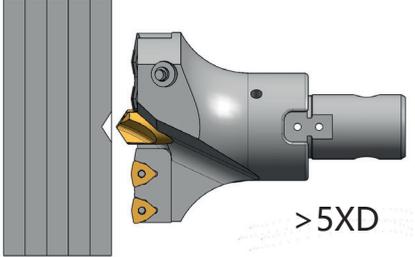


Details

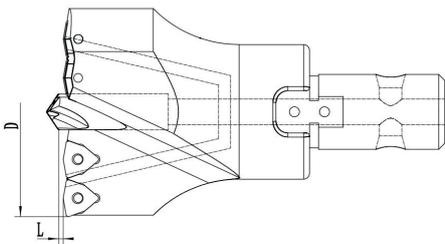


Guide Bar for Supporting

Processing Method

Don'ts	Solutions
	
	
	

Length of Pilot Drill Beyond Insert



External Diameter	L		
	2-4XD	4-6XD	6-8XD
45-55	1.6	1.8	2
55-75	1.8	2	2.2
75-100	2.2	2.5	2.8
100-120	2.4	2.8	3.2
120-170	3.2	3.6	4
170-180	3.5	3.9	4.3

MDD Indexable Large Drill Greatly Improves Processing Efficiency

Drilling Speed

$$S = \frac{V_c \times 1000}{3.14 \times D_c}$$

V_c (Line Speed)=100m/min
 D_c (Drill Diameter)(mm)=100mm
 S (Spindle Speed)

For example, when $D_c=100$,

$$S = \frac{100 \times 1000}{3.14 \times 100} = 318 \text{ rev/min}$$

Techniques	Processes	Rotation Speed	Feed	Processing Time	Total Time
Traditional Techniques	① Twisted Drill(D=60)	80	16	70min	150min
	② Rough Boring Tools 1	200	30	40min	
	③ Rough Boring Tools 2	200	30	40min	
New Techniques	MDD Indexable Large Drill(D=103)	280	45	18min	18min

Feed Rate

$$V_f = F_r \times S$$

V_f : Feed Rate
 F_r : Feed per Revolution
 S : Spindle Speed

For example,
 when $D_c=100\text{mm}$, $F_r=0.15\text{mm/rev}$,

$$V_f = 0.15 \times 318 = 47.7 \text{ mm/min}$$

Processing Time

$$T_c = \frac{H}{V_f} \times 60$$

$T_c(a)$: Processing Time
 H : Hole Depth

For example,
 when $D_c=100\text{mm}$, $H=100\text{mm}$:

$$T_c = \frac{100 \times 60}{47.7} \approx 126(s)$$

In the petroleum, coal mining and other machinery industries, large hole machining is becoming more and more common. The application of MDD indexable large drill can greatly improve the machining efficiency. Here are the highlights of MDD indexable large drill:

1. Adoption of center-guided drilling structure with good centering effect, thus ensuring good straightness of holes.
2. The inner and outer blades are equipped with replaceable small cartridges. In practice, the outer blade cartridges are prone to wear. Replacement of small tool bodies without replacing the entire drill saves tool costs.
3. Drill size can be adjusted from 0 mm to 5 mm by adjusting outer cartridges.
4. The tool head and shank are of combined structure. For different depths of holes, it only need to replace the shanks with different lengths.
5. The drill has a center water outlet hole which can better cool the blade, extend the service life of the blade, and at the same time is conducive to chip evacuation.
6. The use of indexable carbide inserts improves speed and feed, the hole wall finish is greatly improved.
7. During machining, the iron chips are all broken compared with the long and thin twisted iron chips produced by traditional twist drills, which greatly improves safety.
8. Automatic and continuous feeding of drills during machining eliminates the need to retract the drill each time to return chips, dramatically increasing efficiency.

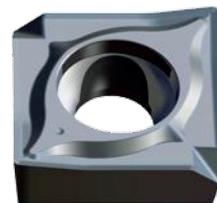
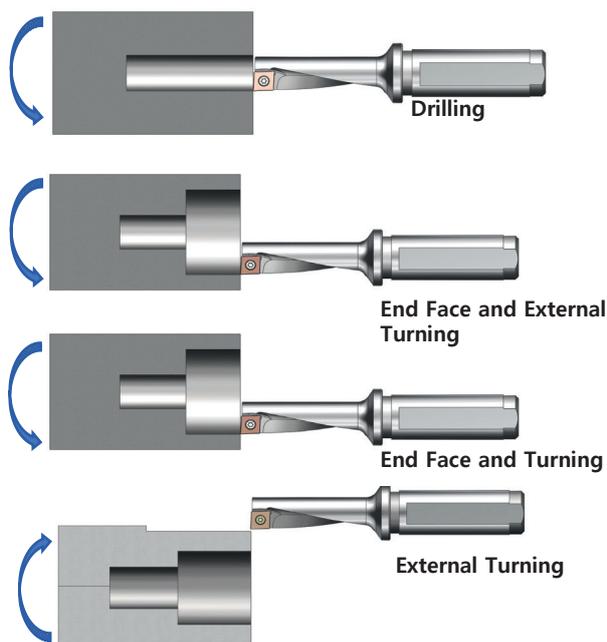
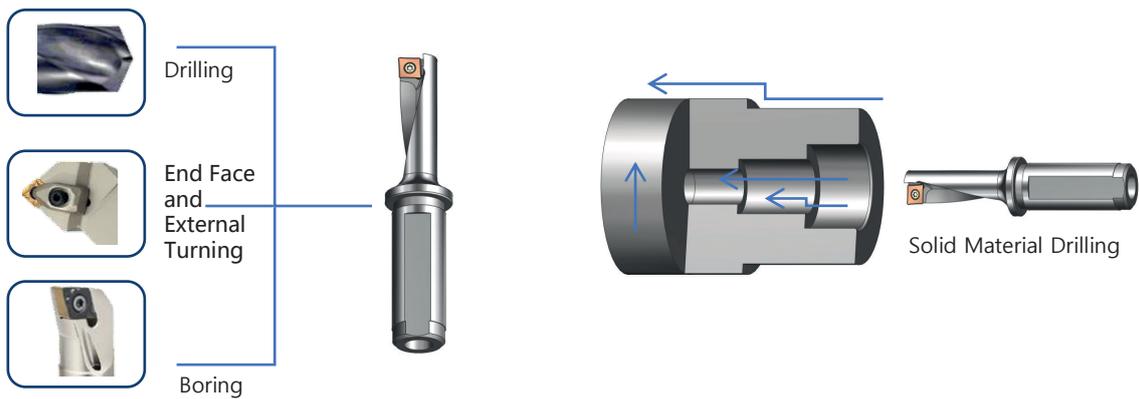
Multi-Purpose Drill Body

1. It can be applied in drilling, turning and boring for multiple purposes.
2. Water outlet holes inside for better insert cooling during machining.
3. Replaceable inserts to reduce costs.



Multi-Purpose Drill Body

Model	Multiple Diameter	D	L1	LS	d	Inserts	Pipe Thread
ATCAP-08R/L-2.25DN	2.25	8	18	61	12	XCMT040104	G1/16
ATCAP-10R/L-2.25DN		10	22.5	70	12	XCMT050204	G1/16
ATCAP-12R/L-2.25DN		12	27	77	16	XCMT060204	G1/8
ATCAP-14R/L-2.25DN		14	31.5	81	16	XCMT070304	G1/8
ATCAP-16R/L-2.25DN		16	36	91	20	XCMT080304	G1/8
ATCAP-20R/L-2.25DN		20	45	106	25	XCMT10T304	G1/8
ATCAP-08R/L-3.25DN	3.25	8	26	68	12	XCMT040104	G1/16
ATCAP-10R/L-3.25DN		10	33	79	12	XCMT050204	G1/16
ATCAP-12R/L-3.25DN		12	39	90	16	XCMT060204	G1/8
ATCAP-14R/L-3.25DN		14	46	97	16	XCMT070304	G1/8
ATCAP-16R/L-3.25DN		16	52	110	20	XCMT080304	G1/8
ATCAP-20R/L-3.25DN		20	65	131	25	XCMT10T304	G1/8



*Inner Cooling Type.

*Large spiral groove for smooth chip evacuation.

*Inserts are designed for drilling and turning in two-piece design.

*Large helix angle cutting edge reduces cutting forces.

*Smooth chip evacuation at small feeds and small depths of cuts.

Special Drill Bodies

	Toothed Drill Compound Drill	Efficient combination of toothed drills and chamfering drills for positive and negative chamfering for greater efficiency and dimensional stability.	Cost-effective for high-precision hole machining requiring positive and negative chamfering.
	Spade Compound Drill	The combination of multiple-diameter spade drills with reaming or chamfering is more flexible, and a variety of spade drill insert grooves can be used to machine different workpieces.	Stepped holes can be machined
	Rapid Drill with Centering	U drills with centering drills can effectively deal with poor size, poor finish, and difficulties to process deep holes of common U drills.	Can be adapted to a variety of equipment; with the corresponding inserts can be used to achieve efficient drilling of various materials; guide blocks for better straightness of the hole.
	Nesting Drill	It is designed for retained core parts to remove the required material more efficiently, with chamfering to solve all problems at once.	High efficiency, low cost and low power requirements for large diameter holes, the core material can be used as raw material for other workpieces, which greatly improves material utilization.
	Indexable Drill	A drill for hole processing with symmetrical design, which is more flexible and versatile.	Suitable for workpieces with pre-drilled holes, increasing the diameter of the holes on the basis of the existing holes.
	Compound Drill	Combined reaming, boring and chamfering in a single compound drill for higher efficiency	A hole processing tool for drilling, boring, chamfering, and many other processes.

Special Inserts

	Cluster Drill	Double top angle design and cluster drill-like structure can reduce the height of the main edge and provide fast cutting and good chip breakage.	Designed for aluminum alloy processing, good chip breaking, reducing hole exit cutting, and adapting to automated production.
	Large Diameter Spade Drill	Insert Diameter can reach 200mm and above.	It meets the demands of large diameter drilling.
	Spade Drill Inserts for Drilling with Reverse Chamfering	Common drilling edge on one side and milling edge on the other side.	One insert, two functions.
	Flat-Bottomed Inserts	Small drill tips with flat cutting edge design.	It meets the need for machining flat hole bottoms
	Contour Molding Inserts	Special top angle with R-shape shoulder.	It meets customized shape requirements.
	Double Top Angle Spade Drill Inserts	Special double top angle inserts	It meets customized shape requirements.

