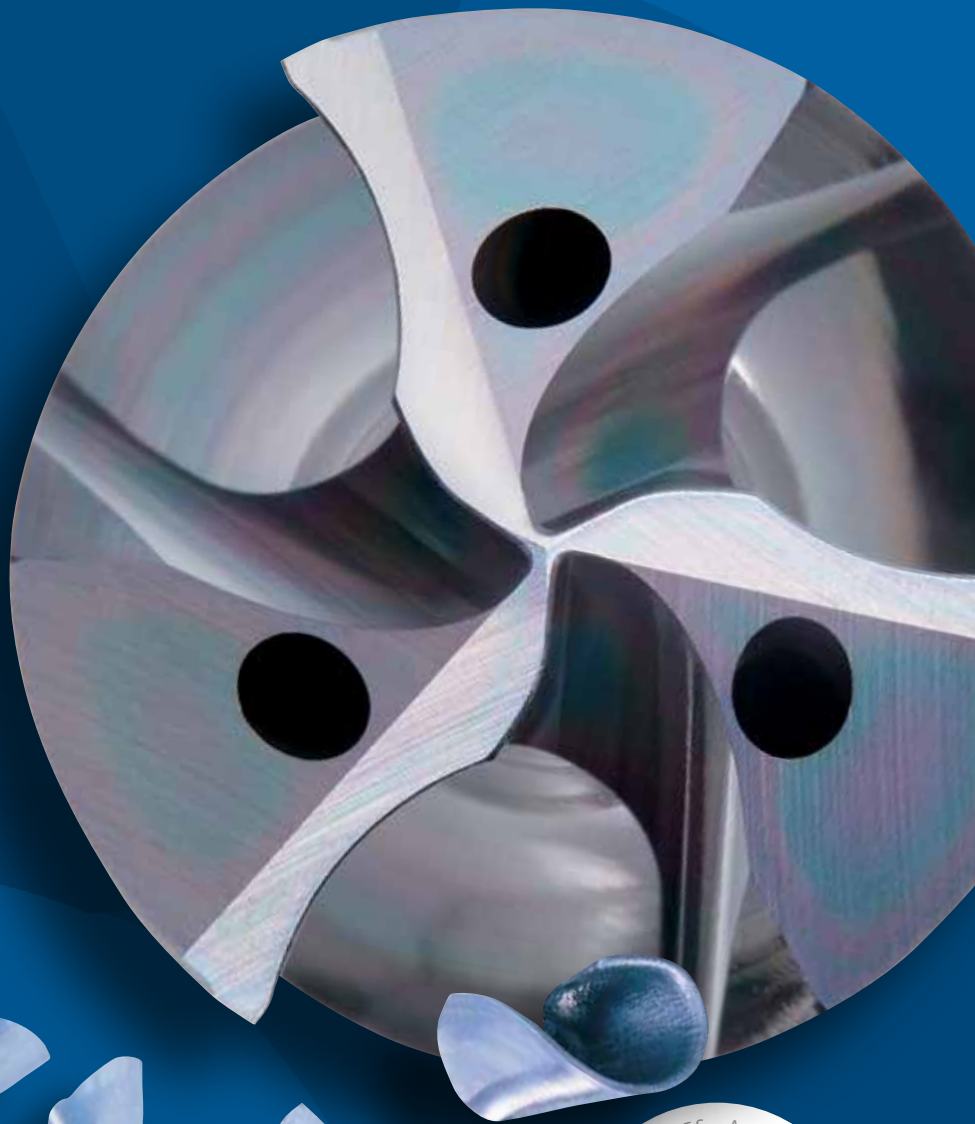




Coolant-through, 3-fluted carbide drill series

ADO-TRS & TRS-HO SERIES

Volume 1



KEY FEATURES: ADO-TRS



1 3 flutes

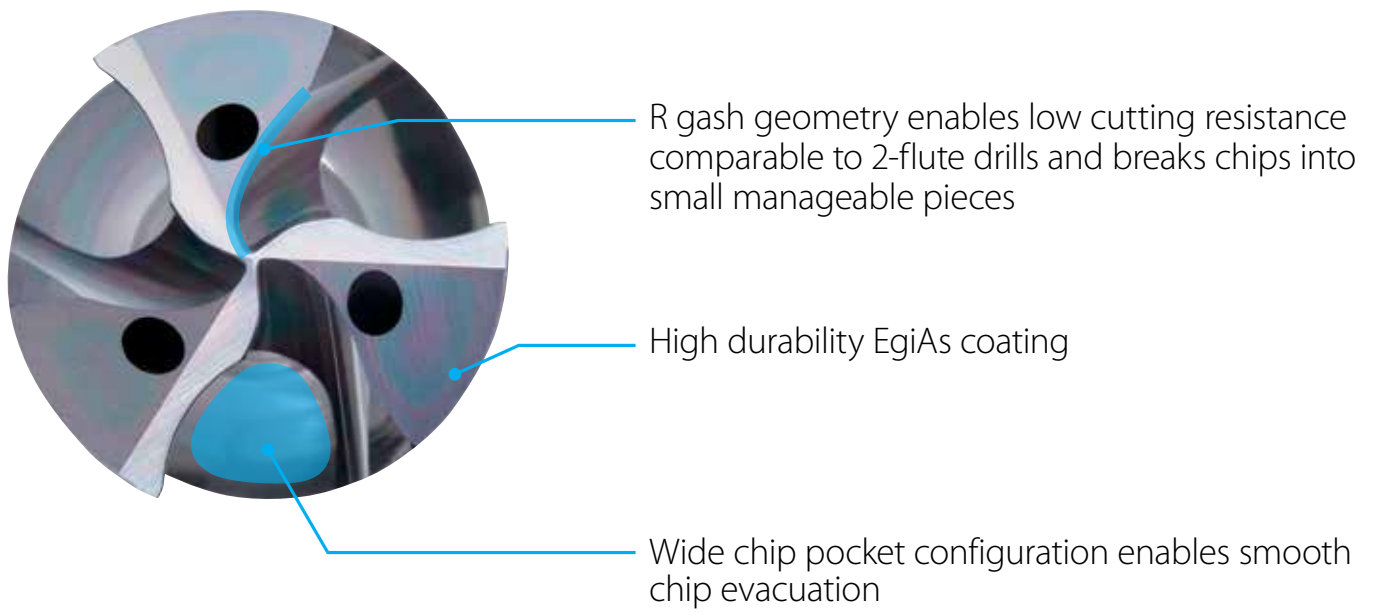
2 Coolant through

3 Feed up to 10% of
drill diameter

4 0,1 increment in sizes 3D & 5D



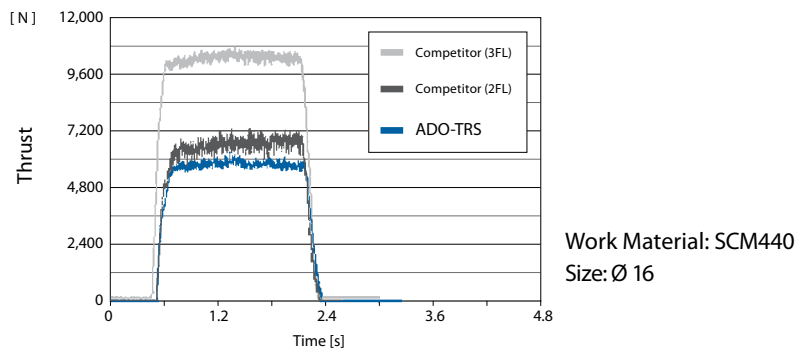
3-FLUTES CARBIDE DRILL WITH OIL HOLE



High thrust force

ADO-TRS enables low resistance drilling

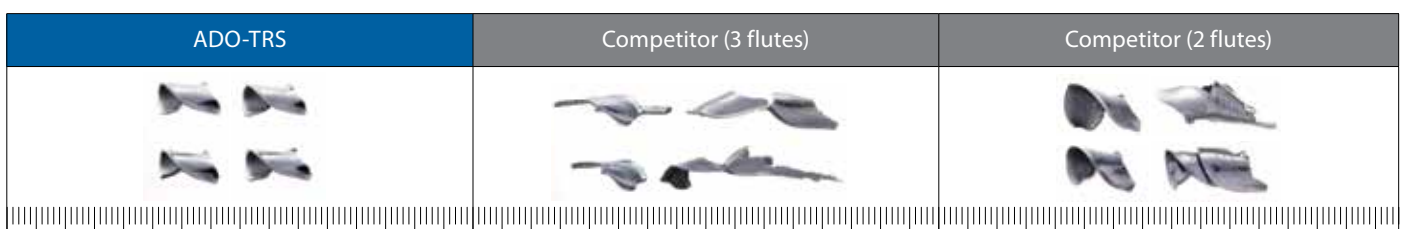
Reduces thrust force by over 30% against a competitor 3-flute drill with even lower thrust force versus a competitor 2-flute drill



Poor Chip Evacuation

ADO-TRS offers outstanding chip management capability and consistent chip form

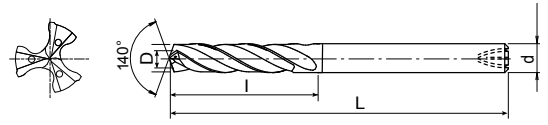
Chips from the competitor 3-flute and 2-flute drills are elongated and are the common cause of chip evaluation troubles



Work Material: S50C

ADO-TRS-3D NEW

Drilling | Solid carbide | 3xD



- First choice in quality and performance
- 3 flute carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 112 sizes

P C: ≤0,2%	P C: 0,25-0,4%	P C: ≥0,45%	P SCM	M INOX	K GG	K GGG	S Ti	H 25-35 HRC	H 35-45 HRC	H 45-52 HRC
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A	CARBIDE	EgiAs	30°	SHRINK FIT	140°	h8	page 13
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Drilling | Solid carbide

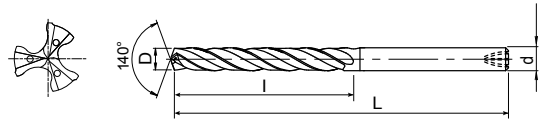
3xD

EDP	D	L	l	d	Price
8720300 <small>NEW</small>	3	66	18	3	
8720330 <small>NEW</small>	3,3	74	20	4	
8720350 <small>NEW</small>	3,5	74	21	4	
8720366 <small>NEW</small>	3,66	74	22	4	
8720400 <small>NEW</small>	4	74	24	4	
8720420 <small>NEW</small>	4,2	80	26	6	
8720450 <small>NEW</small>	4,5	80	27	6	
8720460 <small>NEW</small>	4,6	80	28	6	
8720500	5	80	25	6	
8720510	5,1	82	26	6	
8720520	5,2	82	26	6	
8720530	5,3	82	27	6	
8720540	5,4	82	27	6	
8720550	5,5	82	28	6	
48323555	5,55	82	28	6	
8720560	5,6	82	28	6	
8720570	5,7	82	29	6	
8720580	5,8	82	29	6	
8720590	5,9	82	30	6	
8720600	6	82	30	6	
8720610	6,1	88	31	8	
8720620	6,2	88	31	8	
8720630	6,3	88	32	8	
8720640	6,4	88	32	8	
8720650	6,5	88	33	8	
8720660	6,6	88	33	8	
8720670	6,7	88	34	8	
8720680	6,8	88	34	8	
8720690	6,9	88	35	8	
8720700	7	88	35	8	
8720710	7,1	94	36	8	
8720720	7,2	94	36	8	
8720730	7,3	94	37	8	
8720738 <small>NEW</small>	7,38	94	37	8	
8720740	7,4	94	37	8	
48323745 <small>NEW</small>	7,45	94	38	8	
8720750	7,5	94	38	8	
8720760	7,6	94	38	8	
8720770	7,7	94	39	8	
8720780	7,8	94	39	8	
8720790	7,9	94	40	8	
8720800	8	94	40	8	
8720810	8,1	101	41	10	
8720820	8,2	101	41	10	
8720830	8,3	101	42	10	

EDP	D	L	l	d	Price
8720840	8,4	101	42	10	
8720850	8,5	101	43	10	
8720860	8,6	101	43	10	
8720870	8,7	101	44	10	
8720880	8,8	101	44	10	
8720890	8,9	101	45	10	
8720900	9	101	45	10	
8720910	9,1	106	46	10	
8720920	9,2	106	46	10	
8720925 <small>NEW</small>	9,25	106	47	10	
8720930	9,3	106	47	10	
8720938 <small>NEW</small>	9,38	106	47	10	
8720940	9,4	106	47	10	
8720950	9,5	106	48	10	
8720960	9,6	106	48	10	
8720970	9,7	106	49	10	
8720980	9,8	106	49	10	
8720990	9,9	106	50	10	
8721000	10	106	50	10	
8721010	10,1	113	51	12	
8721020	10,2	113	51	12	
8721030	10,3	113	52	12	
8721040	10,4	113	52	12	
8721050	10,5	113	53	12	
8721060	10,6	113	53	12	
8721070	10,7	113	54	12	
8721080	10,8	113	54	12	
8721090	10,9	113	55	12	
8721100	11	113	55	12	
8721110	11,1	120	56	12	
8721120	11,2	120	56	12	
8721125 <small>NEW</small>	11,25	120	57	12	
8721130	11,3	120	57	12	
8721138 <small>NEW</small>	11,38	120	57	12	
8721140	11,4	120	57	12	
8721150	11,5	120	58	12	
8721160	11,6	120	58	12	
8721170	11,7	120	59	12	
8721180	11,8	120	59	12	
8721190	11,9	120	60	12	
8721200	12	120	60	12	
8721250	12,5	128	63	14	
8721300	13	128	65	14	
8721325 <small>NEW</small>	13,25	134	67	14	
8721330 <small>NEW</small>	13,30	134	67	14	

ADO-TRS-5D NEW

Drilling | Solid carbide | 5xD



- First choice in quality and performance
- 3 flute carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 112 sizes



Drilling | Solid carbide

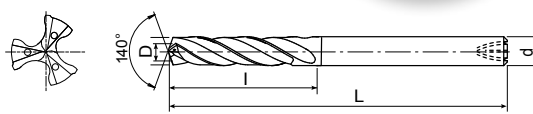
5xD

EDP	D	L	l	d	Price
8722300 <small>NEW</small>	3	78	27	3	
8722330 <small>NEW</small>	3,3	86	30	4	
8722350 <small>NEW</small>	3,5	86	32	4	
8722366 <small>NEW</small>	3,66	86	33	4	
8722400 <small>NEW</small>	4	86	36	4	
8722420 <small>NEW</small>	4,2	95	38	6	
8722450 <small>NEW</small>	4,5	95	41	6	
8722460 <small>NEW</small>	4,6	95	42	6	
8722500	5	95	45	6	
8722510	5,1	100	41	6	
8722520	5,2	100	42	6	
8722530	5,3	100	43	6	
8722540	5,4	100	44	6	
8722550	5,5	100	44	6	
48324555	5,55	100	45	6	
8722560	5,6	100	45	6	
8722570	5,7	100	46	6	
8722580	5,8	100	47	6	
8722590	5,9	100	48	6	
8722600	6	100	48	6	
8722610	6,1	109	49	8	
8722620	6,2	109	50	8	
8722630	6,3	109	51	8	
8722640	6,4	109	52	8	
8722650	6,5	109	52	8	
8722660	6,6	109	53	8	
8722670	6,7	109	54	8	
8722680	6,8	109	55	8	
8722690	6,9	109	56	8	
8722700	7	109	56	8	
8722710	7,1	118	57	8	
8722720	7,2	118	58	8	
8722730	7,3	118	59	8	
8722738 <small>NEW</small>	7,38	118	60	8	
8722740	7,4	118	60	8	
48324745 <small>NEW</small>	7,45	118	60	8	
8722750	7,5	118	60	8	
8722760	7,6	118	61	8	
8722770	7,7	118	62	8	
8722780	7,8	118	63	8	
8722790	7,9	118	64	8	
8722800	8	118	64	8	
8722810	8,1	128	65	10	
8722820	8,2	128	66	10	
8722830	8,3	128	67	10	

EDP	D	L	l	d	Price
8722840	8,4	128	68	10	
8722850	8,5	128	68	10	
8722860	8,6	128	69	10	
8722870	8,7	128	70	10	
8722880	8,8	128	71	10	
8722890	8,9	128	72	10	
8722900	9	128	72	10	
8722910	9,1	136	73	10	
8722920	9,2	136	74	10	
8722925 <small>NEW</small>	9,25	136	74	10	
8722930	9,3	136	75	10	
8722938 <small>NEW</small>	9,38	136	76	10	
8722940	9,4	136	76	10	
8722950	9,5	136	76	10	
8722960	9,6	136	77	10	
8722970	9,7	136	78	10	
8722980	9,8	136	79	10	
8722990	9,9	136	80	10	
8723000	10	136	80	10	
8723010	10,1	146	81	12	
8723020	10,2	146	82	12	
8723030	10,3	146	83	12	
8723040	10,4	146	84	12	
8723050	10,5	146	84	12	
8723060	10,6	146	85	12	
8723070	10,7	146	86	12	
8723080	10,8	146	87	12	
8723090	10,9	146	88	12	
8723100	11	146	88	12	
8723110	11,1	156	89	12	
8723120	11,2	156	90	12	
8723125 <small>NEW</small>	11,25	156	90	12	
8723130	11,3	156	91	12	
8723138 <small>NEW</small>	11,38	156	92	12	
8723140	11,4	156	92	12	
8723150	11,5	156	92	12	
8723160	11,6	156	93	12	
8723170	11,7	156	94	12	
8723180	11,8	156	95	12	
8723190	11,9	156	96	12	
8723200	12	156	96	12	
8723250	12,5	167	100	14	
8723300	13	167	104	14	
8723325 <small>NEW</small>	13,25	176	106	14	
8723330 <small>NEW</small>	13,30	176	107	14	

TRS-HO-3D

Drilling | Solid carbide | 3xD



- First choice in quality and performance
- 3 flute carbide drill with internal coolant, WDI coating
- Up to 3xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 87 sizes

P C: ≤0,2%	P C: 0,25-0,4%	P C: ≥0,45%	P SCM	M INOX	K GG	K GGG	S Ti	H 25-35 HRC	H 35-45 HRC	H 45-52 HRC
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A	CARBIDE	WDI	30°	SHRINK FIT	140°	h8	page 13
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EDP	D	L	l	d	Price
48157050	5	80	25	6	
8660510	5,1	82	26	6	
8660520	5,2	82	26	6	
8660530	5,3	82	27	6	
8660540	5,4	82	27	6	
8660550	5,5	82	28	6	
48157555	5,55	82	28	6	
8660560	5,6	82	28	6	
8660570	5,7	82	29	6	
8660580	5,8	82	29	6	
8660590	5,9	82	30	6	
8660600	6	82	30	6	
48157061	6,1	88	31	8	
48157062	6,2	88	31	8	
48157063	6,3	88	32	8	
48157064	6,4	88	32	8	
48157065	6,5	88	33	8	
48157066	6,6	88	33	8	
48157067	6,7	88	34	8	
48157068	6,8	88	34	8	
48157069	6,9	88	35	8	
48157070	7	88	35	8	
8660710	7,1	94	36	8	
8660720	7,2	94	36	8	
8660730	7,3	94	37	8	
8660740	7,4	94	37	8	
8660750	7,5	94	38	8	
48157755	7,55	94	38	8	
8660760	7,6	94	38	8	
8660770	7,7	94	39	8	
8660780	7,8	94	39	8	
8660790	7,9	94	40	8	
8660800	8	94	40	8	
48157081	8,1	101	41	10	
48157082	8,2	101	41	10	
48157083	8,3	101	42	10	
48157084	8,4	101	42	10	
48157085	8,5	101	43	10	
48157086	8,6	101	43	10	

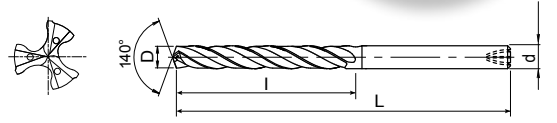
EDP	D	L	l	d	Price
48157087	8,7	101	44	10	
48157088	8,8	101	44	10	
48157089	8,9	101	45	10	
48157090	9	101	45	10	
8660910	9,1	106	46	10	
8660920	9,2	106	46	10	
8660930	9,3	106	47	10	
8660940	9,4	106	47	10	
8660950	9,5	106	48	10	
48157955	9,55	106	48	10	
8660960	9,6	106	48	10	
8660970	9,7	106	49	10	
8660980	9,8	106	49	10	
8660990	9,9	106	50	10	
8661000	10	106	50	10	
48157101	10,1	113	51	12	
48157102	10,2	113	51	12	
48157103	10,3	113	52	12	
48157104	10,4	113	52	12	
48157105	10,5	113	53	12	
48157106	10,6	113	53	12	
48157107	10,7	113	54	12	
48157108	10,8	113	54	12	
48157109	10,9	113	55	12	
48157110	11	113	55	12	
8661110	11,1	120	56	12	
8661120	11,2	120	56	12	
8661130	11,3	120	57	12	
8661140	11,4	120	57	12	
8661150	11,5	120	58	12	
8661160	11,6	120	58	12	
8661170	11,7	120	59	12	
8661180	11,8	120	59	12	
8661190	11,9	120	60	12	
8661200	12	120	60	12	
48157125	12,5	128	63	14	
48157130	13	128	65	14	
8661350	13,5	134	68	14	

Drilling | Solid carbide

3xD

TRS-HO-5D

Drilling | Solid carbide | 5xD



- First choice in quality and performance
- 3 flute carbide drill with internal coolant, WDI coating
- Up to 5xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 95 sizes

P C: ≤0,2%	P C: 0,25-0,4%	P C: ≥0,45%	P SCM	M INOX	K GG	K GGG	H 25-35 HRC
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A	CARBIDE	WDI	30°	SHRINK FIT	140°	h8
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Drilling | Solid carbide

5xD

EDP	D	L	l	d	Price
48158050	5	95	45	6	
8662510	5,1	100	41	6	
8662520	5,2	100	42	6	
8662530	5,3	100	43	6	
8662540	5,4	100	44	6	
8662550	5,5	100	44	6	
48158555	5,55	100	45	6	
8662560	5,6	100	45	6	
8662570	5,7	100	46	6	
8662580	5,8	100	47	6	
8662590	5,9	100	48	6	
8662600	6	100	48	6	
48158061	6,1	109	49	8	
48158062	6,2	109	50	8	
48158063	6,3	109	51	8	
48158064	6,4	109	52	8	
48158065	6,5	109	52	8	
48158066	6,6	109	53	8	
48158067	6,7	109	54	8	
48158068	6,8	109	55	8	
48158069	6,9	109	56	8	
48158070	7	109	56	8	
8662710	7,1	118	57	8	
8662720	7,2	118	58	8	
8662730	7,3	118	59	8	
8662740	7,4	118	60	8	
8662750	7,5	118	60	8	
48158755	7,55	118	61	8	
8662760	7,6	118	61	8	
8662770	7,7	118	62	8	
8662780	7,8	118	63	8	
8662790	7,9	118	64	8	
8662800	8	118	64	8	
48158081	8,1	128	65	10	
48158082	8,2	128	66	10	
48158083	8,3	128	67	10	
48158084	8,4	128	68	10	
48158085	8,5	128	68	10	
48158086	8,6	128	69	10	
48158087	8,7	128	70	10	
48158088	8,8	128	71	10	
48158089	8,9	128	72	10	
48158090	9	128	72	10	
8662910	9,1	136	73	10	
8662920	9,2	136	74	10	

EDP	D	L	l	d	Price
8662930	9,3	136	75	10	
8662940	9,4	136	76	10	
8662950	9,5	136	76	10	
48158955	9,55	136	77	10	
8662960	9,6	136	77	10	
8662970	9,7	136	78	10	
8662980	9,8	136	79	10	
8662990	9,9	136	80	10	
8663000	10	136	80	10	
48158101	10,1	146	81	12	
48158102	10,2	146	82	12	
48158103	10,3	146	83	12	
48158104	10,4	146	84	12	
48158105	10,5	146	84	12	
48158106	10,6	146	85	12	
48158107	10,7	146	86	12	
48158108	10,8	146	87	12	
48158109	10,9	146	88	12	
48158110	11	146	88	12	
8663110	11,1	156	89	12	
8663120	11,2	156	90	12	
8663130	11,3	156	91	12	
8663140	11,4	156	92	12	
8663150	11,5	156	92	12	
8663160	11,6	156	93	12	
8663170	11,7	156	94	12	
8663180	11,8	156	95	12	
8663190	11,9	156	96	12	
8663200	12	156	96	12	
48158121	12,1	167	97	14	
48158122	12,2	167	98	14	
48158123	12,3	167	99	14	
48158124	12,4	167	100	14	
48158125	12,5	167	100	14	
48158126	12,6	167	101	14	
48158127	12,7	167	102	14	
48158128	12,8	167	103	14	
48158129	12,9	167	104	14	
48158130	13	167	104	14	
8663350	13,5	176	108	14	
8663400	14	176	112	14	
48158145	14,5	185	116	16	
48158150	15	185	120	16	
8663550	15,5	193	124	16	
8663600	16	193	128	16	

CUTTING CONDITIONS

Drilling | Solid | Cutting conditions

ADO-TRS-3D/5D

Vc	Mild Steel - Low Carbon Steel SS400 - S10C ~150HB ~500 N/mm ²		Carbon Steel S35C - S50C ~210HB ~710 N/mm ²		Alloy Steel SCM - SCr - sncm 710 ~900 N/mm ²	
	80 ~ 120 m/min		80 ~ 120 m/min		60 ~ 100 m/min	
Ø	S (min ⁻¹)	F (mm/rev.)	S (min ⁻¹)	F (mm/rev.)	S (min ⁻¹)	F (mm/rev.)
3	10.000	0,11 ~ 0,15	10.000	0,11 ~ 0,15	8.500	0,11 ~ 0,15
4	8.000	0,14 ~ 0,2	8.000	0,14 ~ 0,2	6.400	0,14 ~ 0,2
5	6.400	0,18 ~ 0,25	6.400	0,18 ~ 0,25	5.100	0,18 ~ 0,25
6	5.300	0,21 ~ 0,3	5.300	0,21 ~ 0,3	4.200	0,21 ~ 0,3
7	4.500	0,25 ~ 0,35	4.500	0,25 ~ 0,35	3.600	0,25 ~ 0,35
8	4.000	0,28 ~ 0,4	4.000	0,28 ~ 0,4	3.200	0,28 ~ 0,4
9	3.500	0,32 ~ 0,45	3.500	0,32 ~ 0,45	2.800	0,32 ~ 0,45
10	3.200	0,35 ~ 0,5	3.200	0,35 ~ 0,5	2.500	0,35 ~ 0,5
11	2.900	0,39 ~ 0,55	2.900	0,39 ~ 0,55	2.300	0,39 ~ 0,55
12	2.700	0,42 ~ 0,6	2.700	0,42 ~ 0,6	2.100	0,42 ~ 0,6
13	2.400	0,46 ~ 0,65	2.400	0,46 ~ 0,65	2.000	0,46 ~ 0,65
14	2.300	0,49 ~ 0,7	2.300	0,49 ~ 0,7	1.800	0,49 ~ 0,7
15	2.100	0,53 ~ 0,75	2.100	0,53 ~ 0,7	1.700	0,53 ~ 0,7
16	2.000	0,56 ~ 0,8	2.000	0,56 ~ 0,72	1.600	0,56 ~ 0,72
17	1.900	0,6 ~ 0,85	1.900	0,6 ~ 0,77	1.500	0,6 ~ 0,77
18	1.800	0,63 ~ 0,9	1.800	0,63 ~ 0,81	1.400	0,63 ~ 0,81
19	1.700	0,67 ~ 0,9	1.700	0,67 ~ 0,86	1.300	0,67 ~ 0,86
20	1.600	0,7 ~ 0,9	1.600	0,7 ~ 0,9	1.300	0,7 ~ 0,9

Vc	Alloy Steel SCM - SCr - sncm 900 ~1.100 N/mm ²		Cast Iron FC250 ~350N/mm ²		Ductile Cast Iron FCD450 - FCD600 400 ~600 N/mm ²	
	60 ~ 90 m/min		80 ~ 120 m/min		60 ~ 100 m/min	
Ø	S (min ⁻¹)	F (mm/rev.)	S (min ⁻¹)	F (mm/rev.)	S (min ⁻¹)	F (mm/rev.)
3	8.000	0,11 ~ 0,15	10.000	0,11 ~ 0,18	8.500	0,11 ~ 0,15
4	6.000	0,14 ~ 0,2	8.000	0,14 ~ 0,24	6.400	0,14 ~ 0,2
5	4.800	0,18 ~ 0,25	6.400	0,18 ~ 0,3	5.100	0,18 ~ 0,25
6	4.000	0,21 ~ 0,3	5.300	0,21 ~ 0,36	4.200	0,21 ~ 0,3
7	3.400	0,25 ~ 0,35	4.500	0,25 ~ 0,42	3.600	0,25 ~ 0,35
8	3.000	0,28 ~ 0,4	4.000	0,28 ~ 0,48	3.200	0,28 ~ 0,4
9	2.700	0,32 ~ 0,45	3.500	0,32 ~ 0,54	2.800	0,32 ~ 0,45
10	2.400	0,35 ~ 0,5	3.200	0,35 ~ 0,6	2.500	0,35 ~ 0,5
11	2.200	0,39 ~ 0,55	2.900	0,39 ~ 0,66	2.300	0,39 ~ 0,55
12	2.000	0,42 ~ 0,6	2.700	0,42 ~ 0,72	2.100	0,42 ~ 0,6
13	1.800	0,46 ~ 0,65	2.400	0,46 ~ 0,78	2.000	0,46 ~ 0,65
14	1.700	0,49 ~ 0,7	2.300	0,49 ~ 0,84	1.800	0,49 ~ 0,7
15	1.600	0,53 ~ 0,70	2.100	0,53 ~ 0,75	1.700	0,53 ~ 0,7
16	1.500	0,56 ~ 0,72	2.000	0,56 ~ 0,8	1.600	0,56 ~ 0,72
17	1.400	0,6 ~ 0,77	1.900	0,6 ~ 0,85	1.500	0,6 ~ 0,77
18	1.300	0,63 ~ 0,81	1.800	0,63 ~ 0,9	1.400	0,63 ~ 0,81
19	1.300	0,67 ~ 0,86	1.700	0,67 ~ 0,95	1.300	0,67 ~ 0,86
20	1.200	0,7 ~ 0,9	1.600	0,7 ~ 1	1.300	0,7 ~ 0,9

- The indicated speeds and feeds are for drilling with **water-soluble coolant**.
- Water-soluble high density coolant (less than 20 times dilution) is recommended.
- When using non-water-soluble or water-soluble coolant (over 20 times dilution), reduce cutting speed by 30%.
- Equip the drill with a scratch- and dust-free collet and **minimize drill deflection to less than 0.02mm**.
- Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
- A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.

TRS-HO-3D/5D/10D

Vc	Mild Steel - Low Carbon Steel St-52 ~150HB ~500 N/mm ²			Carbon Steel C45 ~210HB ~710 N/mm ²			Alloys Steel 42CrMo4 16~28HRC 710~900 N/mm ²		Alloys Steel 42CrMo4 16~28HRC 900~110 N/mm ²		Cast Iron GG-25 ~350 N/mm ²		Ductile Cast Iron GGG-60 400~600 N/mm ²					
	80 ~ 120 m/min			80 ~ 120 m/min			60 ~ 100 m/min		60 ~ 90 m/min		80 ~ 150 m/min		60 ~ 120 m/min					
Ø	S (min ⁻¹)		F (mm/rev.)	S (min ⁻¹)		F (mm/rev.)	S (min ⁻¹)		F (mm/rev.)	S (min ⁻¹)		F (mm/rev.)	S (min ⁻¹)		F (mm/rev.)			
	3D	5D		10D	3D		5D	10D		3D	5D		10D	3D		5D	10D	3D
5	6.400	6.400	0,18 ~ 0,25	6.400	6.400	0,18 ~ 0,25	4.800	4.800	0,18 ~ 0,25	4.800	5.700	0,18 ~ 0,25	6.400	6.400	0,18 ~ 0,30	6.400	6.400	0,18 ~ 0,25
6	5.300	5.300	0,21 ~ 0,30	5.300	5.300	0,21 ~ 0,30	4.000	4.000	0,21 ~ 0,30	4.000	4.800	0,21 ~ 0,30	5.300	5.300	0,21 ~ 0,36	5.300	5.300	0,21 ~ 0,30
7	4.500	4.500	0,25 ~ 0,35	4.500	4.500	0,25 ~ 0,35	3.400	3.400	0,25 ~ 0,35	3.400	4.100	0,25 ~ 0,35	4.500	4.500	0,25 ~ 0,42	4.500	4.500	0,25 ~ 0,35
8	4.000	4.000	0,28 ~ 0,40	4.000	4.000	0,28 ~ 0,40	3.000	3.000	0,28 ~ 0,40	3.000	3.600	0,28 ~ 0,40	4.000	4.000	0,28 ~ 0,48	4.000	4.000	0,28 ~ 0,40
9	3.500	3.500	0,32 ~ 0,45	3.500	3.500	0,32 ~ 0,45	2.700	2.700	0,32 ~ 0,45	2.700	3.200	0,32 ~ 0,45	3.500	3.500	0,32 ~ 0,54	3.500	3.500	0,32 ~ 0,45
10	3.200	3.200	0,35 ~ 0,50	3.200	3.200	0,35 ~ 0,50	2.400	2.400	0,35 ~ 0,50	2.400	2.900	0,35 ~ 0,50	3.200	3.200	0,35 ~ 0,60	3.200	3.200	0,35 ~ 0,50
11	2.900	2.900	0,39 ~ 0,55	2.900	2.900	0,39 ~ 0,55	2.200	2.200	0,39 ~ 0,50	2.200	2.600	0,39 ~ 0,50	2.900	2.900	0,39 ~ 0,66	2.900	2.900	0,39 ~ 0,55
12	2.700	2.700	0,42 ~ 0,60	2.700	2.700	0,42 ~ 0,60	2.000	2.000	0,42 ~ 0,54	2.000	2.400	0,42 ~ 0,54	2.700	2.700	0,42 ~ 0,72	2.700	2.700	0,42 ~ 0,60
13	2.400	-	0,46 ~ 0,65	2.400	-	0,46 ~ 0,65	1.800	1.800	0,46 ~ 0,59	1.800	-	0,46 ~ 0,59	2.400	-	0,46 ~ 0,78	2.400	-	0,46 ~ 0,65
14	2.300	-	0,49 ~ 0,70	2.300	-	0,49 ~ 0,70	1.700	1.700	0,49 ~ 0,63	1.700	-	0,49 ~ 0,63	2.300	-	0,49 ~ 0,84	2.300	-	0,49 ~ 0,70
16	2.000	-	0,48 ~ 0,72	2.000	-	0,48 ~ 0,72	1.500	1.500	0,48 ~ 0,64	1.500	-	0,48 ~ 0,64	2.000	-	0,56 ~ 0,80	2.000	-	0,48 ~ 0,72
18	1.800	-	0,54 ~ 0,81	1.800	-	0,54 ~ 0,81	1.300	1.300	0,54 ~ 0,72	1.300	-	0,54 ~ 0,72	1.800	-	0,63 ~ 0,90	1.800	-	0,54 ~ 0,81

Drilling | Solid carbide

Cutting conditions

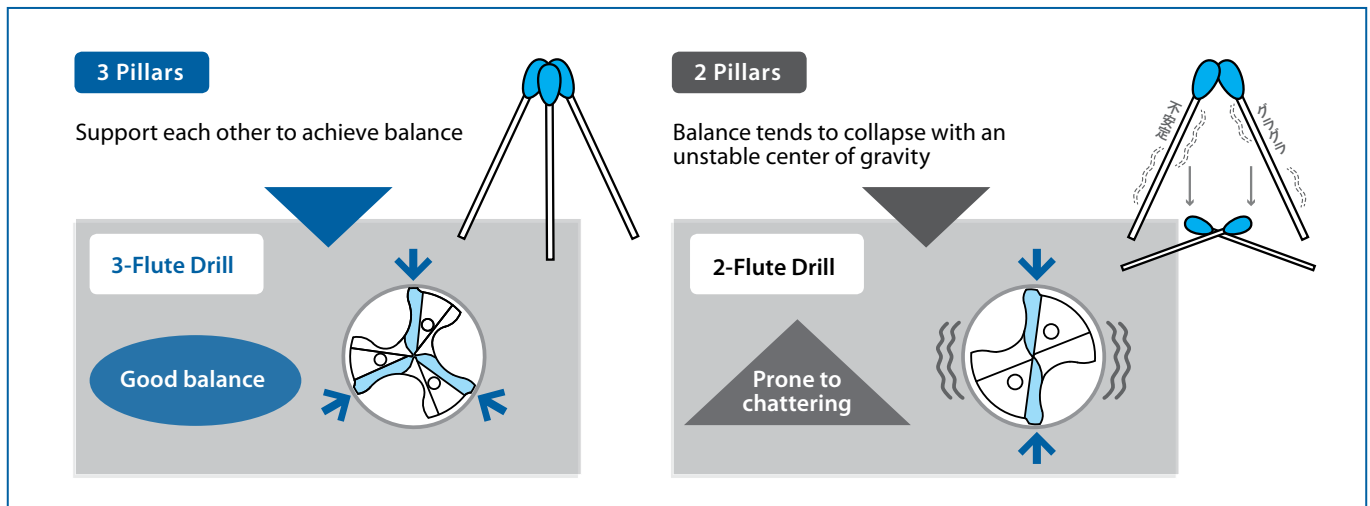
CUSTOM TOOLING

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ADO-TRS: 3 FLUTES DRILL IS WELL-BALANCED



The collapse of balance greatly affects hole quality

		ADO-TRS	Competitor (3FL)	Competitor (2FL)
Hole Expansion Comparison	Entry	0,005mm	0,051mm	0,025mm
	Middle	0,002mm	0,039mm	0,022mm
	Exit	0,003mm	0,05mm	0,018mm
Roundness Cylindricity	16 μm	28 μm	30 μm	32 μm
		52 μm	40 μm	

Tool	ADO-TRS	Cutting Speed	90m/min (1.791min ⁻¹)		Coolant	Water Soluble 3MPa
Work Material	SCM420H	Feed	3FL 1,075mm/min (0.6mm/rev)	2FL 537mm/min (0.3mm/rev)	Machine	Horizontal Machining Center

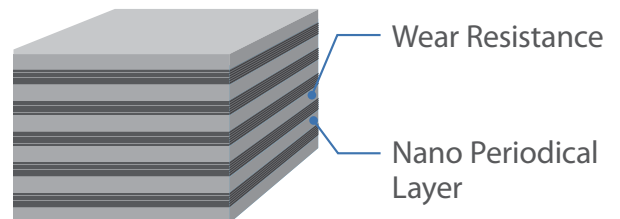
The quality of the pre-drilled hole will affect the performance of the next process such as tapping.

EgiAs Coating

EgiAs coating with high toughness and wear resistance characteristics

Constructed with extreme toughness, high wear and heat resistance characteristics to ensure stable and consistent tool life.

EgiAs

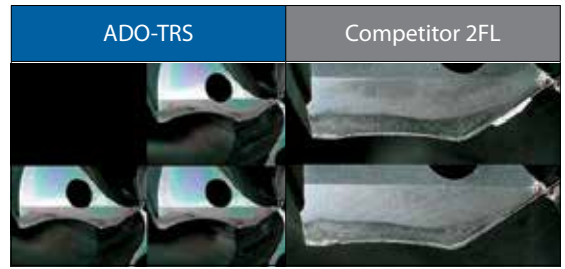


Coating Color	Coating Structure	Hardness (Hv)	Oxidation Temperature (C°)	Heat Resistance	Adhesion Strength	Wear Resistance	Welding Resistance	Toughness
Interference Color	Periodic Nano-layered	40	1.100	☉	☉	☉	☉	☉

CUTTING DATA

Outstanding cutting chip breakage and consistent chip form

Tool	ADO-TRS-5D	Competitor 3FL	Competitor 2FL
Size	Ø 14		
Work Material	S50C		
Cutting Speed	100m/min (2.275min ⁻¹)		
Feed	1,365mm/min (0,6mm/rev)	965mm/min (0,42mm/rev)	
Depth of Hole	70mm (Blind)		
Coolant	Water Soluble		
Machine	Horizontal Machining Center		



	Number of holes			
	500	1.000	1.500	
ADO-TRS	1.600 (Holes)			Still Running
Competitor 3FL	100 (Holes)	Breakage		
Competitor 2FL	1.400 (Holes)			Chipping

Stable performance with trouble-free chip evacuation even in SS400

Tool	ADO-TRS-5D
Size	Ø 8,5
Work Material	SS400
Cutting Speed	100m/min (3.745 min ⁻¹)
Feed	1,273mm/min (0,34mm/rev)
Depth of Hole	43mm (Blind)
Coolant	Water Soluble 3MPa
Machine	Horizontal Machining Center

	Number of holes			
	1.000	2.000	3.000	
ADO-TRS	2.900 (Holes)			Still Running
Competitor 3FL	1 (Hole)	Tangled chips at early stage		
Competitor 2FL	290 (Holes)	Tool breakage due to tangled chips		

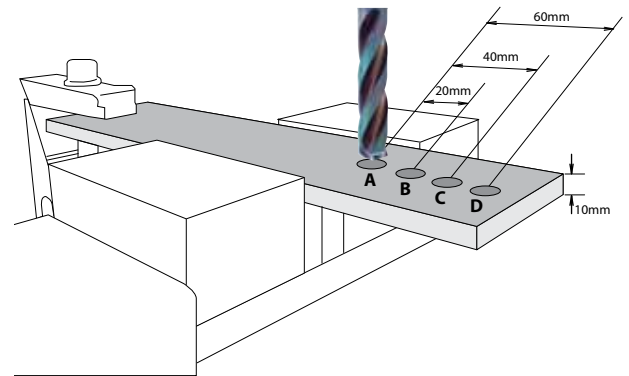
Smooth chip evacuation capability enables long and stable tool life in SS400, a material prone to the elongation of chips



CUTTING DATA

Demonstrates low resistance characteristic in thin plate processing

Tool	ADO-TRS-3D	Competitor 3FL	Competitor 2FL
Size	Ø 14		
Work Material	S53C (30HRC)		
Cutting Speed	100m/min (2.275min ⁻¹)		
Feed	1,274mm/min (0,56mm/rev)	956mm/min (0,42mm/rev)	
Depth of Hole	100mm (Through)		
Coolant	Water Soluble		
Machine	Vertical Machining Center		



Hole precision equivalent to low-feed 2-flute drills

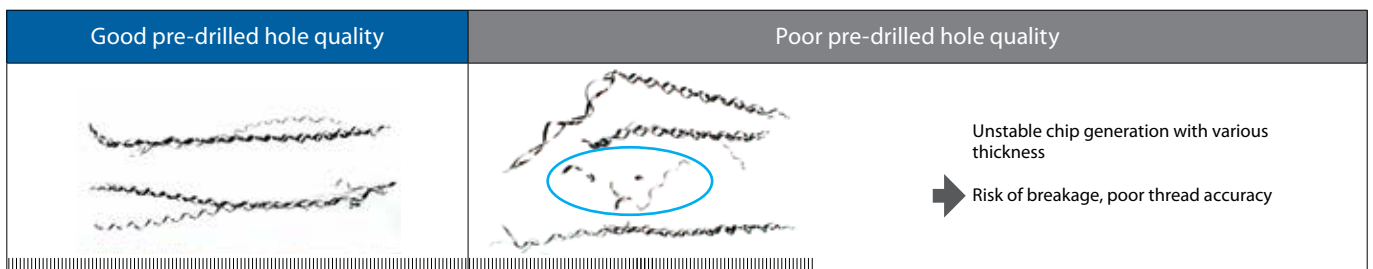
Tool	Feed	Hole Position Accuracy				Hole Diameter			
		A	B	C	D	A	B	C	D
ADO-TRS	1.274mm/min	0,031	0,033	0,038	0,042	13,996	13,998	14,009	14,022
Competitor (3FL)	1.274mm/min	0,055	0,075	0,131	0,272	14,004	14,007	14,020	14,062
Competitor (2FL)	956mm/min	0,023	0,029	0,045	0,046	14,013	14,021	14,026	14,026

Comparison of tapping performance based on quality of pre-drilled holes

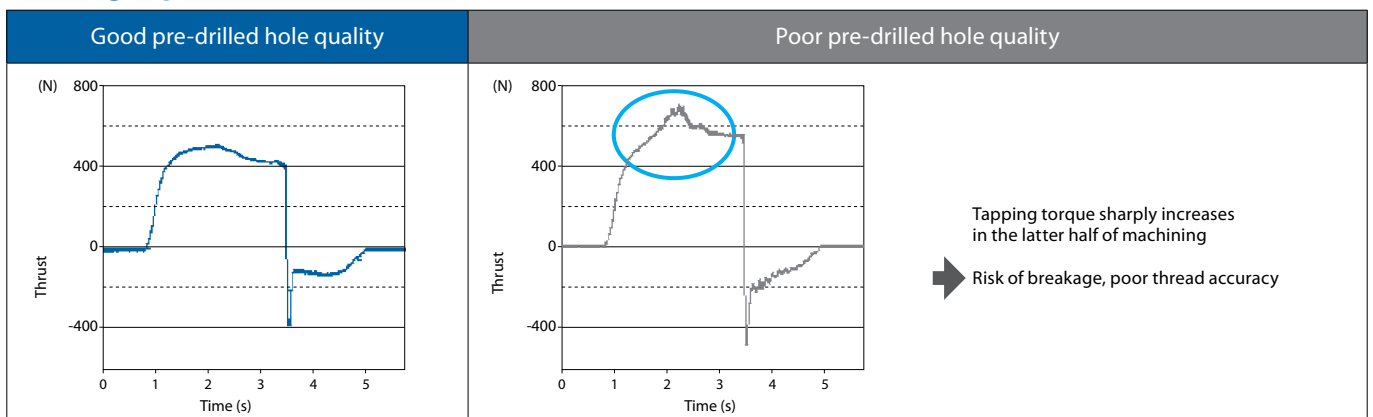
A close-up on the differences between tapping in a good quality pre-drilled hole and a poor quality pre-drilled hole with significant deviation.

Size	M6 X 1	Cutting Speed	15m/min (1.791min ⁻¹)	Coolant	Water Soluble 3MPa
Work Material	S50C	Tapping Length	12mm	Machine	Horizontal Machining Center

Cutting Tap (Drill hole size: Ø 5 x 15mm)



Forming Tap (Drill hole size: Ø 5,52 x 15mm)



CUTTING DATA

Crankshaft (alloy steel) cycle time reduction example



Section A

Tool	ADO-TRS Special	Competitor 2FL
Size	Ø 8,8	
Work Material	Alloy Steel	
Cutting Speed	80m/min (2.895min ⁻¹)	
Feed	1,563mm/min (0,54mm/rev)	347mm/min (0,12mm/rev)
Coolant	MQL	
Machine	Horizontal Machining Center	

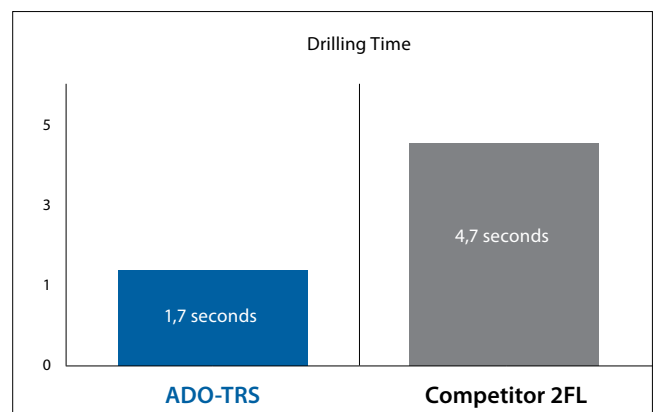
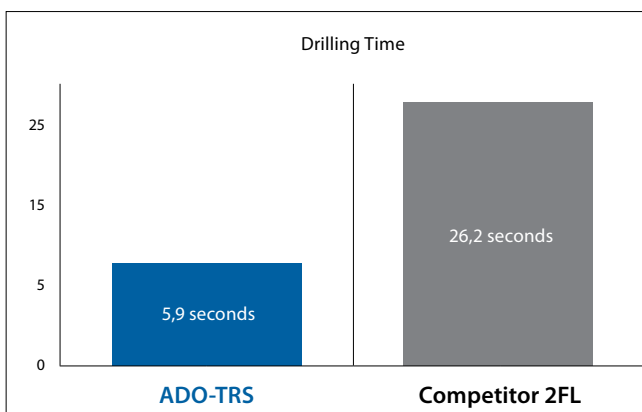
Section B

Tool	ADO-TRS Special	Competitor 2FL
Size	Ø 12,5	
Work Material	Alloy Steel	
Cutting Speed	80m/min (2.038min ⁻¹)	
Feed	1,101mm/min (0,54mm/rev)	408mm/min (0,2mm/rev)
Coolant	MQL	
Machine	Horizontal Machining Center	



	Number of holes		
	2.000	4.000	6.000
ADO-TRS	6.400 (Holes)	Still Running	
Competitor 2FL	3.200 (Holes)	Tool Change	

	Number of holes		
	1.000	2.000	3.000
ADO-TRS	3.000 (Holes)	Still Running	
Competitor 2FL	1.500 (Holes)	Tool Change	

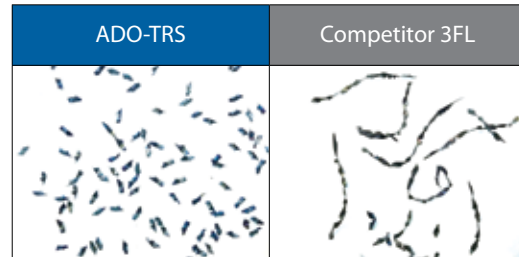


CUTTING DATA

Breaks chips into small manageable pieces even in SCM440 with MQL

Tool	ADO-TRS-5D
Size	Ø 5
Work Material	SCM440(30HRC)
Cutting Speed	75m/min (4.777 min ⁻¹)
Feed	1,194mm/min (0,25mm/rev)
Depth of Hole	25mm (Through)
Coolant	MQL
Machine	Horizontal Machining Center

	Number of Holes		
	1.000	2.000	3.000
ADO-TRS	3.000 (Holes)		Still Running
Competitor 3FL	500 (Holes)	Tangled chips	

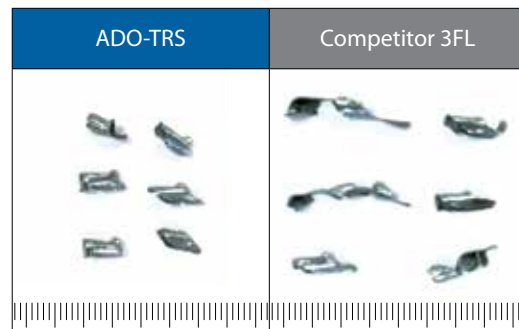


The competitor ejected long cutting chips that tangled around the tool. The ADO-TRS, on the other hand, is able to achieve trouble-free drilling by breaking cutting chips into small manageable pieces

Excellent chip evacuation even in deep hole drilling on a lathe machine

Tool	ADO-TRS-8D Special
Size	Ø 14
Work Material	Alloy Steel
Cutting Speed	80m/min (1.820 min ⁻¹)
Feed	946mm/min (0,52mm/rev)
Depth of Hole	90mm
Coolant	Water Soluble
Machine	Lathe (rotating workpiece)

	Number of Holes		
	1.000	3.000	5.000
ADO-TRS	4.950 (Holes)		Still Running
Competitor 3FL	4.000 (Holes)		Breakage



Demonstrates stable chip evacuation even in deep hole drilling of a rotating workpiece that is difficult to discharge chips



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