2017 Master Catalog

WIDIA™

TOP DRILL S+

The WIDIA™ line of TOP DRILL S+ enables superior performance across a wide variety of even the most complex and challenging applications, such as drilling through inclined entries, x-holes, and exits. Proprietary technology ensures the highest speed and feed rates available. Advanced grade and geometry features define the TOP DRILL S+ as a true troubleshooter.

- Suitable for a broad range of materials and applications.
- Ensures increased tool life and enhanced wear resistance.
- Facilitates consistent chip forming and breaking.

The versatile TOP DRILL S+ provides reliable performance across a broad scope of applications, including alloyed and unalloyed steel, cast iron, and some stainless steels and high-temperature alloys.

- Four-margin design ensures stability, consistency, and improved hole quality.
- PVD coating provides increased tool life and wear resistance.
- Through tool coolant and solid versions available standard.

Use as Pilot Drill

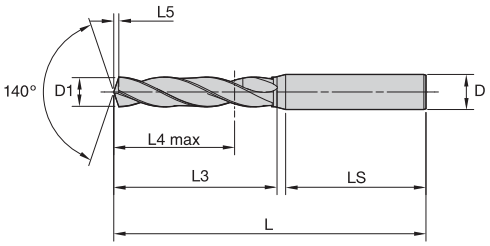
- Ideal point angle and tolerance make the TOP DRILL S+™ drill the preferred pilot drill for TDD Series solid carbide deep-hole drills.

TOP DRILL S+ Drill-Point Design

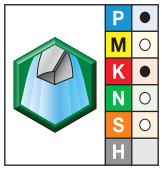
- Low thrust. Works well on a variety of machines.
- Excellent centering capabilities.
- Easy to regrind.

Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment and stability in tough drilling applications — even when drilling through cross holes.



TDS301A • 3 x D

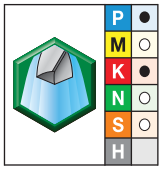


● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter									
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964222	TDS301A03000	3,000	.1181	–	–	.24	.79	.55	.019	1.42	2.44
2964233	TDS301A03100	3,100	.1220	–	–	.24	.79	.55	.020	1.42	2.44
2964234	TDS301A03200	3,200	.1260	–	–	.24	.79	.55	.020	1.42	2.44
2964235	TDS301A03250	3,250	.1280	–	–	.24	.79	.55	.021	1.42	2.44
2964236	TDS301A03300	3,300	.1299	–	–	.24	.79	.55	.021	1.42	2.44
2964237	TDS301A03400	3,400	.1339	–	–	.24	.79	.55	.022	1.42	2.44
2964238	TDS301A03500	3,500	.1378	–	–	.24	.79	.55	.022	1.42	2.44
2964239	TDS301A03600	3,600	.1417	–	–	.24	.79	.55	.023	1.42	2.44
2964240	TDS301A03700	3,700	.1457	–	–	.24	.79	.55	.024	1.42	2.44
2964241	TDS301A03800	3,800	.1496	–	–	.24	.94	.67	.025	1.42	2.60
2964242	TDS301A03900	3,900	.1535	–	–	.24	.94	.67	.025	1.42	2.60
2964243	TDS301A04000	4,000	.1575	–	–	.24	.94	.67	.026	1.42	2.60
2964244	TDS301A04100	4,100	.1614	–	–	.24	.94	.67	.027	1.42	2.60
2964245	TDS301A04200	4,200	.1654	–	–	.24	.94	.67	.027	1.42	2.60
2964246	TDS301A04300	4,300	.1693	–	–	.24	.94	.67	.028	1.42	2.60
2964247	TDS301A04370	4,370	.1720	–	–	.24	.94	.67	.028	1.42	2.60
2964248	TDS301A04400	4,400	.1732	–	–	.24	.94	.67	.029	1.42	2.60
2964249	TDS301A04500	4,500	.1772	–	–	.24	.94	.67	.029	1.42	2.60
2964250	TDS301A04600	4,600	.1811	–	–	.24	.94	.67	.030	1.42	2.60
2964251	TDS301A04650	4,650	.1831	–	–	.24	.94	.67	.030	1.42	2.60
2964252	TDS301A04700	4,700	.1850	–	13	.24	.94	.67	.031	1.42	2.60
2964273	TDS301A04760	4,760	.1874	–	–	.24	1.10	.79	.031	1.42	2.60
2964274	TDS301A04800	4,800	.1890	–	12	.24	1.10	.79	.031	1.42	2.60
2964275	TDS301A04900	4,900	.1929	–	–	.24	1.10	.79	.032	1.42	2.60

(continued)

(TDS301A • 3 x D — continued)



grade WU25PD
TiAlN

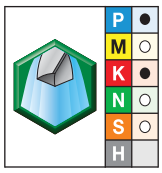
● first choice
○ alternate choice

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964276	TDS301A05000	5,000	.1969	—	—	.24	1.10	.79	.033	1.42	2.60
2964277	TDS301A05100	5,100	.2008	—	—	.24	1.10	.79	.033	1.42	2.60
2964278	TDS301A05160	5,160	.2031	13/64	—	.24	1.10	.79	.034	1.42	2.60
2964279	TDS301A05200	5,200	.2047	—	—	.24	1.10	.79	.034	1.42	2.60
2964280	TDS301A05300	5,300	.2087	—	—	.24	1.10	.79	.035	1.42	2.60
2964281	TDS301A05400	5,400	.2126	—	—	.24	1.10	.79	.035	1.42	2.60
2964282	TDS301A05500	5,500	.2165	—	—	.24	1.10	.79	.036	1.42	2.60
2964293	TDS301A05550	5,550	.2185	—	—	.24	1.10	.79	.037	1.42	2.60
2964294	TDS301A05560	5,560	.2189	—	—	.24	1.10	.79	.037	1.42	2.60
2964295	TDS301A05600	5,600	.2205	—	—	.24	1.10	.79	.037	1.42	2.60
2964296	TDS301A05700	5,700	.2244	—	—	.24	1.10	.79	.038	1.42	2.60
2964297	TDS301A05800	5,800	.2283	—	—	.24	1.10	.79	.038	1.42	2.60
2964298	TDS301A05900	5,900	.2323	—	—	.24	1.10	.79	.039	1.42	2.60
2964299	TDS301A05950	5,950	.2343	—	—	.24	1.10	.79	.039	1.42	2.60
2964300	TDS301A06000	6,000	.2362	—	—	.24	1.10	.79	.040	1.42	2.60
2964301	TDS301A06100	6,100	.2402	—	—	.32	1.34	.94	.040	1.42	3.11
2964302	TDS301A06200	6,200	.2441	—	—	.32	1.34	.94	.041	1.42	3.11
2964313	TDS301A06300	6,300	.2480	—	—	.32	1.34	.94	.042	1.42	3.11
2964314	TDS301A06350	6,350	.2500	1/4	E	.32	1.34	.94	.042	1.42	3.11
2964315	TDS301A06400	6,400	.2520	—	—	.32	1.34	.94	.042	1.42	3.11
2964316	TDS301A06500	6,500	.2559	—	—	.32	1.34	.94	.043	1.42	3.11
2964317	TDS301A06600	6,600	.2598	—	—	.32	1.34	.94	.044	1.42	3.11
2964318	TDS301A06700	6,700	.2638	—	—	.32	1.34	.94	.044	1.42	3.11
2964319	TDS301A06750	6,750	.2657	—	—	.32	1.34	.94	.045	1.42	3.11
2964320	TDS301A06800	6,800	.2677	—	—	.32	1.34	.94	.045	1.42	3.11
2964321	TDS301A06900	6,900	.2717	—	—	.32	1.34	.94	.046	1.42	3.11
2964322	TDS301A07000	7,000	.2756	—	—	.32	1.34	.94	.046	1.42	3.11
2964333	TDS301A07100	7,100	.2795	—	—	.32	1.61	1.14	.047	1.42	3.11
2964334	TDS301A07140	7,140	.2811	—	—	.32	1.61	1.14	.047	1.42	3.11
2964335	TDS301A07200	7,200	.2835	—	—	.32	1.61	1.14	.048	1.42	3.11
2964336	TDS301A07300	7,300	.2874	—	—	.32	1.61	1.14	.049	1.42	3.11
2964337	TDS301A07400	7,400	.2913	—	—	.32	1.61	1.14	.049	1.42	3.11
2964338	TDS301A07500	7,500	.2953	—	—	.32	1.61	1.14	.050	1.42	3.11
2964339	TDS301A07540	7,540	.2969	19/64	—	.32	1.61	1.14	.050	1.42	3.11
2964340	TDS301A07600	7,600	.2992	—	—	.32	1.61	1.14	.051	1.42	3.11
2964341	TDS301A07700	7,700	.3031	—	—	.32	1.61	1.14	.051	1.42	3.11
2964342	TDS301A07800	7,800	.3071	—	—	.32	1.61	1.14	.052	1.42	3.11
2964353	TDS301A07900	7,900	.3110	—	—	.32	1.61	1.14	.053	1.42	3.11
2964354	TDS301A07940	7,940	.3126	—	—	.32	1.61	1.14	.053	1.42	3.11
2964355	TDS301A08000	8,000	.3150	—	—	.32	1.61	1.14	.053	1.42	3.11

(continued)

(TDS301A • 3 x D — continued)

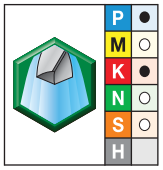


grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964356	TDS301A08100	8,100	.3189	–	–	.39	1.85	1.38	.054	1.57	3.50
2964357	TDS301A08200	8,200	.3228	–	–	.39	1.85	1.38	.055	1.57	3.50
2964358	TDS301A08300	8,300	.3268	–	–	.39	1.85	1.38	.055	1.57	3.50
2964359	TDS301A08330	8,330	.3280	–	–	.39	1.85	1.38	.056	1.57	3.50
2964360	TDS301A08400	8,400	.3307	–	–	.39	1.85	1.38	.056	1.57	3.50
2964361	TDS301A08500	8,500	.3346	–	–	.39	1.85	1.38	.057	1.57	3.50
2964362	TDS301A08600	8,600	.3386	–	–	.39	1.85	1.38	.058	1.57	3.50
2964373	TDS301A08700	8,700	.3425	–	–	.39	1.85	1.38	.058	1.57	3.50
2964374	TDS301A08800	8,800	.3465	–	–	.39	1.85	1.38	.059	1.57	3.50
2964375	TDS301A08900	8,900	.3504	–	–	.39	1.85	1.38	.060	1.57	3.50
2964376	TDS301A09000	9,000	.3543	–	–	.39	1.85	1.38	.060	1.57	3.50
2964377	TDS301A09100	9,100	.3583	–	–	.39	1.85	1.38	.061	1.57	3.50
2964378	TDS301A09130	9,130	.3594	23/64	–	.39	1.85	1.38	.061	1.57	3.50
2964379	TDS301A09200	9,200	.3622	–	–	.39	1.85	1.38	.062	1.57	3.50
2964380	TDS301A09300	9,300	.3661	–	–	.39	1.85	1.38	.062	1.57	3.50
2964381	TDS301A09400	9,400	.3701	–	–	.39	1.85	1.38	.063	1.57	3.50
2964382	TDS301A09500	9,500	.3740	–	–	.39	1.85	1.38	.064	1.57	3.50
2964393	TDS301A09520	9,520	.3748	–	–	.39	1.85	1.38	.064	1.57	3.50
2964394	TDS301A09600	9,600	.3780	–	–	.39	1.85	1.38	.064	1.57	3.50
2964395	TDS301A09700	9,700	.3819	–	–	.39	1.85	1.38	.065	1.57	3.50
2964396	TDS301A09800	9,800	.3858	–	–	.39	1.85	1.38	.066	1.57	3.50
2964397	TDS301A09900	9,900	.3898	–	–	.39	1.85	1.38	.067	1.57	3.50
2964398	TDS301A09920	9,920	.3906	25/64	–	.39	1.85	1.38	.067	1.57	3.50
2964399	TDS301A10000	10,000	.3937	–	–	.39	1.85	1.38	.067	1.57	3.50
2964400	TDS301A10100	10,100	.3976	–	–	.47	2.17	1.57	.068	1.77	4.02
2964401	TDS301A10200	10,200	.4016	–	–	.47	2.17	1.57	.069	1.77	4.02
2964402	TDS301A10300	10,300	.4055	–	–	.47	2.17	1.57	.069	1.77	4.02
2964413	TDS301A10320	10,320	.4063	13/32	–	.47	2.17	1.57	.069	1.77	4.02
2964414	TDS301A10400	10,400	.4094	–	–	.47	2.17	1.57	.070	1.77	4.02
2964415	TDS301A10500	10,500	.4134	–	–	.47	2.17	1.57	.071	1.77	4.02
2964416	TDS301A10600	10,600	.4173	–	–	.47	2.17	1.57	.071	1.77	4.02
2964417	TDS301A10700	10,700	.4213	–	–	.47	2.17	1.57	.072	1.77	4.02
2964418	TDS301A10720	10,720	.4220	–	–	.47	2.17	1.57	.072	1.77	4.02
2964419	TDS301A10800	10,800	.4252	–	–	.47	2.17	1.57	.073	1.77	4.02
2964420	TDS301A10900	10,900	.4291	–	–	.47	2.17	1.57	.074	1.77	4.02
2964421	TDS301A11000	11,000	.4331	–	–	.47	2.17	1.57	.074	1.77	4.02
2964423	TDS301A11100	11,100	.4370	–	–	.47	2.17	1.57	.075	1.77	4.02
2964424	TDS301A11110	11,110	.4374	–	–	.47	2.17	1.57	.075	1.77	4.02
2964425	TDS301A11200	11,200	.4409	–	–	.47	2.17	1.57	.076	1.77	4.02
2964426	TDS301A11300	11,300	.4449	–	–	.47	2.17	1.57	.076	1.77	4.02

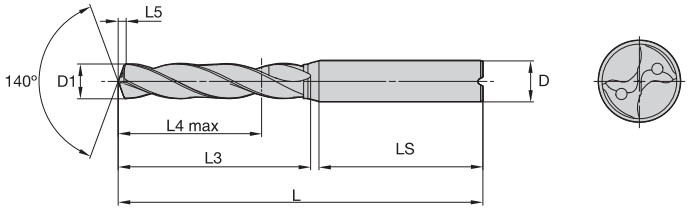
(TDS301A • 3 x D — continued)



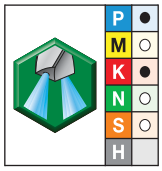
grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964427	TDS301A11400	11,400	.4488	—	—	.47	2.17	1.57	.077	1.77	4.02
2964428	TDS301A11500	11,500	.4528	—	—	.47	2.17	1.57	.078	1.77	4.02
2964429	TDS301A11600	11,600	.4567	—	—	.47	2.17	1.57	.078	1.77	4.02
2964430	TDS301A11700	11,700	.4606	—	—	.47	2.17	1.57	.079	1.77	4.02
2964431	TDS301A11800	11,800	.4646	—	—	.47	2.17	1.57	.080	1.77	4.02
2964432	TDS301A11900	11,900	.4685	—	—	.47	2.17	1.57	.080	1.77	4.02
2964433	TDS301A11910	11,910	.4689	—	—	.47	2.17	1.57	.081	1.77	4.02
2964434	TDS301A12000	12,000	.4724	—	—	.47	2.17	1.57	.081	1.77	4.02
2964435	TDS301A12300	12,300	.4843	—	—	.55	2.36	1.69	.083	1.77	4.21
2964436	TDS301A12500	12,500	.4921	—	—	.55	2.36	1.69	.085	1.77	4.21
2964437	TDS301A12700	12,700	.5000	1/2	—	.55	2.36	1.69	.086	1.77	4.21
2964438	TDS301A12800	12,800	.5039	—	—	.55	2.36	1.69	.087	1.77	4.21
2964439	TDS301A13000	13,000	.5118	—	—	.55	2.36	1.69	.088	1.77	4.21
2964440	TDS301A13500	13,500	.5315	—	—	.55	2.36	1.69	.092	1.77	4.21
2964441	TDS301A13800	13,800	.5433	—	—	.55	2.36	1.69	.094	1.77	4.21
2964442	TDS301A14000	14,000	.5512	—	—	.55	2.36	1.69	.095	1.77	4.21
2964443	TDS301A14290	14,290	.5626	—	—	.63	2.56	1.77	.097	1.89	4.53
2964444	TDS301A14500	14,500	.5709	—	—	.63	2.56	1.77	.099	1.89	4.53
2964445	TDS301A14800	14,800	.5827	—	—	.63	2.56	1.77	.101	1.89	4.53
2964446	TDS301A15000	15,000	.5906	—	—	.63	2.56	1.77	.102	1.89	4.53
2964447	TDS301A15500	15,500	.6102	—	—	.63	2.56	1.77	.106	1.89	4.53
2964448	TDS301A15800	15,800	.6220	—	—	.63	2.56	1.77	.108	1.89	4.53
2964449	TDS301A15870	15,870	.6248	—	—	.63	2.56	1.77	.108	1.89	4.53
2964450	TDS301A16000	16,000	.6299	—	—	.63	2.56	1.77	.109	1.89	4.53
2964451	TDS301A16500	16,500	.6496	—	—	.71	2.87	2.01	.113	1.89	4.84
2964452	TDS301A16670	16,670	.6563	21/32	—	.71	2.87	2.01	.114	1.89	4.84
2964453	TDS301A16800	16,800	.6614	—	—	.71	2.87	2.01	.115	1.89	4.84
2964454	TDS301A17000	17,000	.6693	—	—	.71	2.87	2.01	.116	1.89	4.84
2964455	TDS301A17500	17,500	.6890	—	—	.71	2.87	2.01	.120	1.89	4.84
2964456	TDS301A17800	17,800	.7008	—	—	.71	2.87	2.01	.122	1.89	4.84
2964457	TDS301A18000	18,000	.7087	—	—	.71	2.87	2.01	.123	1.89	4.84
2964458	TDS301A18500	18,500	.7283	—	—	.79	3.11	2.17	.127	1.97	5.16
2964459	TDS301A18800	18,800	.7402	—	—	.79	3.11	2.17	.129	1.97	5.16
2964460	TDS301A19000	19,000	.7480	—	—	.79	3.11	2.17	.130	1.97	5.16
2964461	TDS301A19050	19,050	.7500	3/4	—	.79	3.11	2.17	.130	1.97	5.16
2964462	TDS301A19500	19,500	.7677	—	—	.79	3.11	2.17	.134	1.97	5.16
2964463	TDS301A19800	19,800	.7795	—	—	.79	3.11	2.17	.136	1.97	5.16
2964464	TDS301A20000	20,000	.7874	—	—	.79	3.11	2.17	.137	1.97	5.16



TDS501A • 3 x D



● first choice
○ alternate choice

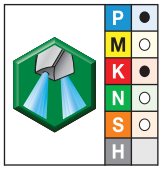
grade WU25PD TiAlN

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964947	TDS501A03000	3,000	.1181	–	–	.24	.79	.55	.019	1.42	2.44
2964948	TDS501A03100	3,100	.1220	–	–	.24	.79	.55	.020	1.42	2.44
4051234	TDS501A03175	3,175	.1250	1/8	–	.24	.79	.55	.025	1.42	2.44
2964949	TDS501A03200	3,200	.1260	–	–	.24	.79	.55	.020	1.42	2.44
2964950	TDS501A03250	3,250	.1280	–	–	.24	.79	.55	.021	1.42	2.44
2964951	TDS501A03300	3,300	.1299	–	–	.24	.79	.55	.021	1.42	2.44
2964952	TDS501A03400	3,400	.1339	–	–	.24	.79	.55	.022	1.42	2.44
4051233	TDS501A03455	3,450	.1358	–	29	.24	.79	.55	.022	1.42	2.44
2964953	TDS501A03500	3,500	.1378	–	–	.24	.79	.55	.022	1.42	2.44
5661464	TDS501A03571	3,571	.1406	9/64	–	.24	.79	.55	.023	1.42	2.44
2964954	TDS501A03600	3,600	.1417	–	–	.24	.79	.55	.023	1.42	2.44
2964955	TDS501A03700	3,700	.1457	–	–	.24	.79	.55	.024	1.42	2.44
2964956	TDS501A03800	3,800	.1496	–	–	.24	.94	.67	.025	1.42	2.60
2964957	TDS501A03900	3,900	.1535	–	–	.24	.94	.67	.025	1.42	2.60
2964958	TDS501A04000	4,000	.1575	–	–	.24	.94	.67	.026	1.42	2.60
2964959	TDS501A04100	4,100	.1614	–	–	.24	.94	.67	.027	1.42	2.60
2964960	TDS501A04200	4,200	.1654	–	–	.24	.94	.67	.027	1.42	2.60
2964961	TDS501A04300	4,300	.1693	–	–	.24	.94	.67	.028	1.42	2.60
2964962	TDS501A04370	4,370	.1720	–	–	.24	.94	.67	.028	1.42	2.60
2964963	TDS501A04400	4,400	.1732	–	–	.24	.94	.67	.029	1.42	2.60
2964964	TDS501A04500	4,500	.1772	–	–	.24	.94	.67	.029	1.42	2.60
2964965	TDS501A04600	4,600	.1811	–	–	.24	.94	.67	.030	1.42	2.60
5661502	TDS501A04623	4,623	.1820	–	14	.24	.94	.67	.030	1.42	2.60
2964966	TDS501A04650	4,650	.1831	–	–	.24	.94	.67	.030	1.42	2.60

(continued)

(TDS501A • 3 x D — continued)



● first choice
○ alternate choice

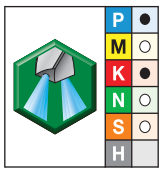
grade WU25PD
TiAlN

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964967	TDS501A04700	4,700	.1850	—	13	.24	.94	.67	.031	1.42	2.60
5661503	TDS501A04763	4,763	.1875	3/16	—	.24	1.10	.79	.031	1.42	2.60
2964969	TDS501A04800	4,800	.1890	—	12	.24	1.10	.79	.031	1.42	2.60
2964970	TDS501A04900	4,900	.1929	—	—	.24	1.10	.79	.032	1.42	2.60
2964971	TDS501A05000	5,000	.1969	—	—	.24	1.10	.79	.033	1.42	2.60
2964972	TDS501A05100	5,100	.2008	—	—	.24	1.10	.79	.033	1.42	2.60
2964973	TDS501A05160	5,160	.2031	13/64	—	.24	1.10	.79	.034	1.42	2.60
2964974	TDS501A05200	5,200	.2047	—	—	.24	1.10	.79	.034	1.42	2.60
2964975	TDS501A05300	5,300	.2087	—	—	.24	1.10	.79	.035	1.42	2.60
2964976	TDS501A05400	5,400	.2126	—	—	.24	1.10	.79	.035	1.42	2.60
5661504	TDS501A05410	5,410	.2130	—	3	.24	1.10	.79	.036	1.42	2.60
2964977	TDS501A05500	5,500	.2165	—	—	.24	1.10	.79	.036	1.42	2.60
2964978	TDS501A05550	5,550	.2185	—	—	.24	1.10	.79	.037	1.42	2.60
5661505	TDS501A05558	5,558	.2188	7/32	—	.24	1.10	.79	.037	1.42	2.60
2964980	TDS501A05600	5,600	.2205	—	—	.24	1.10	.79	.037	1.42	2.60
2964981	TDS501A05700	5,700	.2244	—	—	.24	1.10	.79	.038	1.42	2.60
2964982	TDS501A05800	5,800	.2283	—	—	.24	1.10	.79	.038	1.42	2.60
2964983	TDS501A05900	5,900	.2323	—	—	.24	1.10	.79	.039	1.42	2.60
2964984	TDS501A05950	5,950	.2343	—	—	.24	1.10	.79	.039	1.42	2.60
2964985	TDS501A06000	6,000	.2362	—	—	.24	1.10	.79	.040	1.42	2.60
2964986	TDS501A06100	6,100	.2402	—	—	.32	1.34	.94	.040	1.42	3.11
2964987	TDS501A06200	6,200	.2441	—	—	.32	1.34	.94	.041	1.42	3.11
2964988	TDS501A06300	6,300	.2480	—	—	.32	1.34	.94	.042	1.42	3.11
2964989	TDS501A06350	6,350	.2500	1/4	E	.32	1.34	.94	.042	1.42	3.11
2964990	TDS501A06400	6,400	.2520	—	—	.32	1.34	.94	.042	1.42	3.11
2964991	TDS501A06500	6,500	.2559	—	—	.32	1.34	.94	.043	1.42	3.11
5661506	TDS501A06528	6,528	.2570	—	F	.32	1.34	.94	.043	1.42	3.11
2964992	TDS501A06600	6,600	.2598	—	—	.32	1.34	.94	.044	1.42	3.11
2964993	TDS501A06700	6,700	.2638	—	—	.32	1.34	.94	.044	1.42	3.11
5661507	TDS501A06746	6,746	.2656	17/64	—	.32	1.34	.94	.045	1.42	3.11
2964995	TDS501A06800	6,800	.2677	—	—	.32	1.34	.94	.045	1.42	3.11
2964996	TDS501A06900	6,900	.2717	—	—	.32	1.34	.94	.046	1.42	3.11
2964997	TDS501A07000	7,000	.2756	—	—	.32	1.34	.94	.046	1.42	3.11
2964998	TDS501A07100	7,100	.2795	—	—	.32	1.61	1.14	.047	1.42	3.11
5661509	TDS501A07145	7,145	.2813	9/32	—	.32	1.61	1.14	.047	1.42	3.11
2965000	TDS501A07200	7,200	.2835	—	—	.32	1.61	1.14	.048	1.42	3.11
2965001	TDS501A07300	7,300	.2874	—	—	.32	1.61	1.14	.049	1.42	3.11
2965002	TDS501A07400	7,400	.2913	—	—	.32	1.61	1.14	.049	1.42	3.11
2965003	TDS501A07500	7,500	.2953	—	—	.32	1.61	1.14	.050	1.42	3.11
2965004	TDS501A07541	7,540	.2969	19/64	—	.32	1.61	1.14	.050	1.42	3.11

(continued)

(TDS501A • 3 x D — continued)



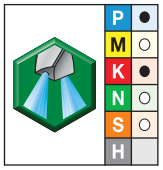
grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2965005	TDS501A07600	7,600	.2992	—	—	.32	1.61	1.14	.051	1.42	3.11
2965006	TDS501A07700	7,700	.3031	—	—	.32	1.61	1.14	.051	1.42	3.11
2965007	TDS501A07800	7,800	.3071	—	—	.32	1.61	1.14	.052	1.42	3.11
2965008	TDS501A07900	7,900	.3110	—	—	.32	1.61	1.14	.053	1.42	3.11
5661540	TDS501A07938	7,938	.3125	5/16	—	.32	1.61	1.14	.053	1.42	3.11
2965010	TDS501A08000	8,000	.3150	—	—	.32	1.61	1.14	.053	1.42	3.11
2965011	TDS501A08100	8,100	.3189	—	—	.39	1.85	1.38	.054	1.57	3.50
2965012	TDS501A08200	8,200	.3228	—	—	.39	1.85	1.38	.055	1.57	3.50
2965013	TDS501A08300	8,300	.3268	—	—	.39	1.85	1.38	.055	1.57	3.50
5661541	TDS501A08334	8,334	.3281	21/64	—	.39	1.85	1.38	.056	1.57	3.50
2965015	TDS501A08400	8,400	.3307	—	—	.39	1.85	1.38	.056	1.57	3.50
5661542	TDS501A08433	8,433	.3320	—	Q	.39	1.85	1.38	.056	1.57	3.50
2965016	TDS501A08500	8,500	.3346	—	—	.39	1.85	1.38	.057	1.57	3.50
2965017	TDS501A08600	8,600	.3386	—	—	.39	1.85	1.38	.058	1.57	3.50
2965018	TDS501A08700	8,700	.3425	—	—	.39	1.85	1.38	.058	1.57	3.50
5661543	TDS501A08733	8,733	.3438	11/32	—	.39	1.85	1.38	.058	1.57	3.50
2965019	TDS501A08800	8,800	.3465	—	—	.39	1.85	1.38	.059	1.57	3.50
2965020	TDS501A08900	8,900	.3504	—	—	.39	1.85	1.38	.060	1.57	3.50
2965021	TDS501A09000	9,000	.3543	—	—	.39	1.85	1.38	.060	1.57	3.50
2965022	TDS501A09100	9,100	.3583	—	—	.39	1.85	1.38	.061	1.57	3.50
2965023	TDS501A09129	9,130	.3594	23/64	—	.39	1.85	1.38	.061	1.57	3.50
2965024	TDS501A09200	9,200	.3622	—	—	.39	1.85	1.38	.062	1.57	3.50
2965025	TDS501A09300	9,300	.3661	—	—	.39	1.85	1.38	.062	1.57	3.50
5661544	TDS501A09347	9,347	.3680	—	U	.39	1.85	1.38	.063	1.57	3.50
2965026	TDS501A09400	9,400	.3701	—	—	.39	1.85	1.38	.063	1.57	3.50
2965027	TDS501A09500	9,500	.3740	—	—	.39	1.85	1.38	.064	1.57	3.50
2965029	TDS501A09600	9,600	.3780	—	—	.39	1.85	1.38	.064	1.57	3.50
2965030	TDS501A09700	9,700	.3819	—	—	.39	1.85	1.38	.065	1.57	3.50
5661546	TDS501A09750	9,750	.3839	—	—	.39	1.85	1.38	.066	1.57	3.50
2965031	TDS501A09800	9,800	.3858	—	—	.39	1.85	1.38	.066	1.57	3.50
2965032	TDS501A09900	9,900	.3898	—	—	.39	1.85	1.38	.067	1.57	3.50
2965033	TDS501A09921	9,920	.3906	25/64	—	.39	1.85	1.38	.067	1.57	3.50
2965034	TDS501A10000	10,000	.3937	—	—	.39	1.85	1.38	.067	1.57	3.50
2965035	TDS501A10100	10,100	.3976	—	—	.47	2.17	1.57	.068	1.77	4.02
2965036	TDS501A10200	10,200	.4016	—	—	.47	2.17	1.57	.069	1.77	4.02
2965037	TDS501A10300	10,300	.4055	—	—	.47	2.17	1.57	.069	1.77	4.02
2965038	TDS501A10320	10,320	.4063	13/32	—	.47	2.17	1.57	.069	1.77	4.02
2965039	TDS501A10400	10,400	.4094	—	—	.47	2.17	1.57	.070	1.77	4.02
2965040	TDS501A10500	10,500	.4134	—	—	.47	2.17	1.57	.071	1.77	4.02
2965041	TDS501A10600	10,600	.4173	—	—	.47	2.17	1.57	.071	1.77	4.02

(continued)

(TDS501A • 3 x D — continued)



grade WU25PD
TiAlN

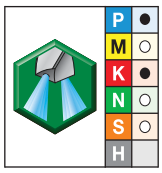
● first choice
○ alternate choice

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2965042	TDS501A10700	10,700	.4213	—	—	.47	2.17	1.57	.072	1.77	4.02
5661547	TDS501A10716	10,716	.4219	27/64	—	.47	2.17	1.57	.072	1.77	4.02
2965044	TDS501A10800	10,800	.4252	—	—	.47	2.17	1.57	.073	1.77	4.02
2965045	TDS501A10900	10,900	.4291	—	—	.47	2.17	1.57	.074	1.77	4.02
2965046	TDS501A11000	11,000	.4331	—	—	.47	2.17	1.57	.074	1.77	4.02
2965047	TDS501A11100	11,100	.4370	—	—	.47	2.17	1.57	.075	1.77	4.02
2965048	TDS501A11113	11,113	.4375	7/16	—	.47	2.17	1.57	.075	1.77	4.02
2964736	TDS501A11200	11,200	.4409	—	—	.47	2.17	1.57	.076	1.77	4.02
2964737	TDS501A11300	11,300	.4449	—	—	.47	2.17	1.57	.076	1.77	4.02
2964738	TDS501A11400	11,400	.4488	—	—	.47	2.17	1.57	.077	1.77	4.02
2964739	TDS501A11500	11,500	.4528	—	—	.47	2.17	1.57	.078	1.77	4.02
2964740	TDS501A11600	11,600	.4567	—	—	.47	2.17	1.57	.078	1.77	4.02
2964741	TDS501A11700	11,700	.4606	—	—	.47	2.17	1.57	.079	1.77	4.02
2964742	TDS501A11800	11,800	.4646	—	—	.47	2.17	1.57	.080	1.77	4.02
2965053	TDS501A11900	11,900	.4685	—	—	.47	2.17	1.57	.080	1.77	4.02
2965054	TDS501A11910	11,910	.4689	—	—	.47	2.17	1.57	.081	1.77	4.02
2965055	TDS501A12000	12,000	.4724	—	—	.47	2.17	1.57	.081	1.77	4.02
2965056	TDS501A12300	12,300	.4843	—	—	.55	2.36	1.69	.083	1.77	4.21
5661548	TDS501A12304	12,304	.4844	31/64	—	.55	2.36	1.69	.083	1.77	4.21
2965057	TDS501A12500	12,500	.4921	—	—	.55	2.36	1.69	.085	1.77	4.21
2965058	TDS501A12700	12,700	.5000	1/2	—	.55	2.36	1.69	.086	1.77	4.21
2965059	TDS501A12800	12,800	.5039	—	—	.55	2.36	1.69	.087	1.77	4.21
2965060	TDS501A13000	13,000	.5118	—	—	.55	2.36	1.69	.088	1.77	4.21
4051235	TDS501A13100	13,100	.5157	—	—	.55	2.36	1.69	.110	1.77	4.21
2965061	TDS501A13500	13,500	.5315	—	—	.55	2.36	1.69	.092	1.77	4.21
2965062	TDS501A13800	13,800	.5433	—	—	.55	2.36	1.69	.094	1.77	4.21
2965063	TDS501A14000	14,000	.5512	—	—	.55	2.36	1.69	.095	1.77	4.21
2965064	TDS501A14290	14,290	.5626	—	—	.63	2.56	1.77	.097	1.89	4.53
2965065	TDS501A14500	14,500	.5709	—	—	.63	2.56	1.77	.099	1.89	4.53
2965066	TDS501A14800	14,800	.5827	—	—	.63	2.56	1.77	.101	1.89	4.53
2965067	TDS501A15000	15,000	.5906	—	—	.63	2.56	1.77	.102	1.89	4.53
2965068	TDS501A15500	15,500	.6102	—	—	.63	2.56	1.77	.106	1.89	4.53
2965069	TDS501A15800	15,800	.6220	—	—	.63	2.56	1.77	.108	1.89	4.53
2965070	TDS501A15870	15,870	.6248	—	—	.63	2.56	1.77	.108	1.89	4.53
2965071	TDS501A16000	16,000	.6299	—	—	.63	2.56	1.77	.109	1.89	4.53
2965072	TDS501A16500	16,500	.6496	—	—	.71	2.87	2.01	.113	1.89	4.84
2965073	TDS501A16670	16,670	.6563	21/32	—	.71	2.87	2.01	.114	1.89	4.84
2965074	TDS501A16800	16,800	.6614	—	—	.71	2.87	2.01	.115	1.89	4.84
2965075	TDS501A17000	17,000	.6693	—	—	.71	2.87	2.01	.116	1.89	4.84
2965076	TDS501A17500	17,500	.6890	—	—	.71	2.87	2.01	.120	1.89	4.84

(continued)

(TDS501A • 3 x D — continued)

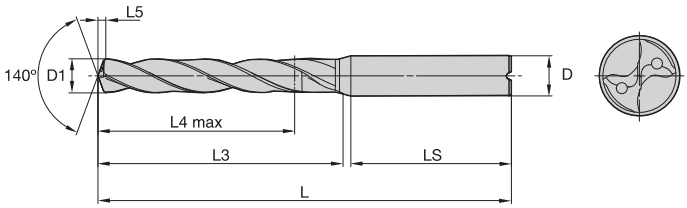


● first choice
○ alternate choice

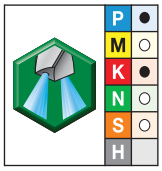
grade WU25PD
TiAlN

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2965077	**TDS501A17800**	17,800	.7008	—	—	.71	2.87	2.01	.122	1.89	4.84
2965078	**TDS501A18000**	18,000	.7087	—	—	.71	2.87	2.01	.123	1.89	4.84
2965079	**TDS501A18500**	18,500	.7283	—	—	.79	3.11	2.17	.127	1.97	5.16
2965080	**TDS501A18800**	18,800	.7402	—	—	.79	3.11	2.17	.129	1.97	5.16
2965081	**TDS501A19000**	19,000	.7480	—	—	.79	3.11	2.17	.130	1.97	5.16
2965082	**TDS501A19050**	19,050	.7500	3/4	—	.79	3.11	2.17	.130	1.97	5.16
2965083	**TDS501A19500**	19,500	.7677	—	—	.79	3.11	2.17	.134	1.97	5.16
2965084	**TDS501A19800**	19,800	.7795	—	—	.79	3.11	2.17	.136	1.97	5.16
2965085	**TDS501A20000**	20,000	.7874	—	—	.79	3.11	2.17	.137	1.97	5.16



TDS502A • 5 x D

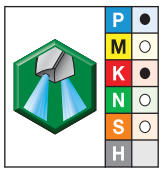


● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter									
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964803	TDS502A03000	3,000	.1181	—	—	.24	1.10	.91	.019	1.42	2.60
2964804	TDS502A03100	3,100	.1220	—	—	.24	1.10	.91	.020	1.42	2.60
4051237	TDS502A03175	3,175	.1250	1/8	—	.24	1.10	.91	.025	1.42	2.60
2964805	TDS502A03200	3,200	.1260	—	—	.24	1.10	.91	.020	1.42	2.60
2964806	TDS502A03250	3,250	.1280	—	—	.24	1.10	.91	.021	1.42	2.60
2964807	TDS502A03300	3,300	.1299	—	—	.24	1.10	.91	.021	1.42	2.60
2964808	TDS502A03400	3,400	.1339	—	—	.24	1.10	.91	.022	1.42	2.60
4051236	TDS502A03455	3,455	.1360	—	29	.24	1.10	.91	.028	1.42	2.60
2964809	TDS502A03500	3,500	.1378	—	—	.24	1.10	.91	.022	1.42	2.60
2964810	TDS502A03600	3,600	.1417	—	—	.24	1.10	.91	.023	1.42	2.60
2964811	TDS502A03700	3,700	.1457	—	—	.24	1.10	.91	.024	1.42	2.60
2964812	TDS502A03800	3,800	.1496	—	—	.24	1.42	1.14	.025	1.42	2.91
2964813	TDS502A03900	3,900	.1535	—	—	.24	1.42	1.14	.025	1.42	2.91
2964814	TDS502A04000	4,000	.1575	—	—	.24	1.42	1.14	.026	1.42	2.91
2964815	TDS502A04100	4,100	.1614	—	—	.24	1.42	1.14	.027	1.42	2.91
2964816	TDS502A04200	4,200	.1654	—	—	.24	1.42	1.14	.027	1.42	2.91
2964817	TDS502A04300	4,300	.1693	—	—	.24	1.42	1.14	.028	1.42	2.91
2964818	TDS502A04370	4,370	.1720	—	—	.24	1.42	1.14	.028	1.42	2.91
2964819	TDS502A04400	4,400	.1732	—	—	.24	1.42	1.14	.029	1.42	2.91
2964820	TDS502A04500	4,500	.1772	—	—	.24	1.42	1.14	.029	1.42	2.91
2964821	TDS502A04600	4,600	.1811	—	—	.24	1.42	1.14	.030	1.42	2.91
2964822	TDS502A04650	4,650	.1831	—	—	.24	1.42	1.14	.030	1.42	2.91
2964823	TDS502A04700	4,700	.1850	—	13	.24	1.42	1.14	.031	1.42	2.91
2964824	TDS502A04760	4,760	.1874	—	—	.24	1.73	1.38	.031	1.42	3.23

(continued)

(TDS502A • 5 x D — continued)



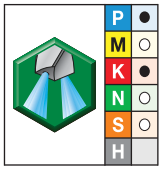
grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964825	TDS502A04800	4,800	.1890	—	12	.24	1.73	1.38	.031	1.42	3.23
2964826	TDS502A04900	4,900	.1929	—	—	.24	1.73	1.38	.032	1.42	3.23
2964827	TDS502A05000	5,000	.1969	—	—	.24	1.73	1.38	.033	1.42	3.23
2964828	TDS502A05100	5,100	.2008	—	—	.24	1.73	1.38	.033	1.42	3.23
2964829	TDS502A05160	5,160	.2031	13/64	—	.24	1.73	1.38	.034	1.42	3.23
2964830	TDS502A05200	5,200	.2047	—	—	.24	1.73	1.38	.034	1.42	3.23
2964831	TDS502A05300	5,300	.2087	—	—	.24	1.73	1.38	.035	1.42	3.23
2964832	TDS502A05400	5,400	.2126	—	—	.24	1.73	1.38	.035	1.42	3.23
2964833	TDS502A05500	5,500	.2165	—	—	.24	1.73	1.38	.036	1.42	3.23
2964834	TDS502A05550	5,550	.2185	—	—	.24	1.73	1.38	.037	1.42	3.23
2964835	TDS502A05560	5,560	.2189	—	—	.24	1.73	1.38	.037	1.42	3.23
2964836	TDS502A05600	5,600	.2205	—	—	.24	1.73	1.38	.037	1.42	3.23
2964837	TDS502A05700	5,700	.2244	—	—	.24	1.73	1.38	.038	1.42	3.23
2964838	TDS502A05800	5,800	.2283	—	—	.24	1.73	1.38	.038	1.42	3.23
2964839	TDS502A05900	5,900	.2323	—	—	.24	1.73	1.38	.039	1.42	3.23
2964840	TDS502A05950	5,950	.2343	—	—	.24	1.73	1.38	.039	1.42	3.23
2964841	TDS502A06000	6,000	.2362	—	—	.24	1.73	1.38	.040	1.42	3.23
2964842	TDS502A06100	6,100	.2402	—	—	.32	2.09	1.69	.040	1.42	3.58
2964843	TDS502A06200	6,200	.2441	—	—	.32	2.09	1.69	.041	1.42	3.58
2964844	TDS502A06300	6,300	.2480	—	—	.32	2.09	1.69	.042	1.42	3.58
2964845	TDS502A06350	6,350	.2500	1/4	E	.32	2.09	1.69	.042	1.42	3.58
2964846	TDS502A06400	6,400	.2520	—	—	.32	2.09	1.69	.042	1.42	3.58
2964847	TDS502A06500	6,500	.2559	—	—	.32	2.09	1.69	.043	1.42	3.58
2964848	TDS502A06600	6,600	.2598	—	—	.32	2.09	1.69	.044	1.42	3.58
2964849	TDS502A06700	6,700	.2638	—	—	.32	2.09	1.69	.044	1.42	3.58
2964850	TDS502A06750	6,750	.2657	—	—	.32	2.09	1.69	.045	1.42	3.58
2964851	TDS502A06800	6,800	.2677	—	—	.32	2.09	1.69	.045	1.42	3.58
2964852	TDS502A06900	6,900	.2717	—	—	.32	2.09	1.69	.046	1.42	3.58
2964853	TDS502A07000	7,000	.2756	—	—	.32	2.09	1.69	.046	1.42	3.58
2964854	TDS502A07100	7,100	.2795	—	—	.32	2.09	1.69	.047	1.42	3.58
2964855	TDS502A07140	7,140	.2811	—	—	.32	2.09	1.69	.047	1.42	3.58
2964856	TDS502A07200	7,200	.2835	—	—	.32	2.09	1.69	.048	1.42	3.58
2964857	TDS502A07300	7,300	.2874	—	—	.32	2.09	1.69	.049	1.42	3.58
2964858	TDS502A07400	7,400	.2913	—	—	.32	2.09	1.69	.049	1.42	3.58
2964859	TDS502A07500	7,500	.2953	—	—	.32	2.09	1.69	.050	1.42	3.58
2964860	TDS502A07540	7,540	.2969	19/64	—	.32	2.09	1.69	.050	1.42	3.58
2964861	TDS502A07600	7,600	.2992	—	—	.32	2.09	1.69	.051	1.42	3.58
2964862	TDS502A07700	7,700	.3031	—	—	.32	2.09	1.69	.051	1.42	3.58
2964863	TDS502A07800	7,800	.3071	—	—	.32	2.09	1.69	.052	1.42	3.58
2964864	TDS502A07900	7,900	.3110	—	—	.32	2.09	1.69	.053	1.42	3.58

(continued)

(TDS502A • 5 x D — continued)



● first choice
○ alternate choice

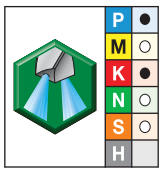
grade WU25PD
TiAlN

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964865	TDS502A07940	7,940	.3126	—	—	.32	2.09	1.69	.053	1.42	3.58
2964866	TDS502A08000	8,000	.3150	—	—	.32	2.09	1.69	.053	1.42	3.58
2964867	TDS502A08100	8,100	.3189	—	—	.39	2.40	1.93	.054	1.57	4.06
2964868	TDS502A08200	8,200	.3228	—	—	.39	2.40	1.93	.055	1.57	4.06
2964869	TDS502A08300	8,300	.3268	—	—	.39	2.40	1.93	.055	1.57	4.06
2964870	TDS502A08330	8,330	.3280	—	—	.39	2.40	1.93	.056	1.57	4.06
2964871	TDS502A08400	8,400	.3307	—	—	.39	2.40	1.93	.056	1.57	4.06
2964872	TDS502A08500	8,500	.3346	—	—	.39	2.40	1.93	.057	1.57	4.06
2964873	TDS502A08600	8,600	.3386	—	—	.39	2.40	1.93	.058	1.57	4.06
2964874	TDS502A08700	8,700	.3425	—	—	.39	2.40	1.93	.058	1.57	4.06
2964875	TDS502A08800	8,800	.3465	—	—	.39	2.40	1.93	.059	1.57	4.06
2964876	TDS502A08900	8,900	.3504	—	—	.39	2.40	1.93	.060	1.57	4.06
2964877	TDS502A09000	9,000	.3543	—	—	.39	2.40	1.93	.060	1.57	4.06
2964878	TDS502A09100	9,100	.3583	—	—	.39	2.40	1.93	.061	1.57	4.06
2964879	TDS502A09130	9,130	.3594	23/64	—	.39	2.40	1.93	.061	1.57	4.06
2964880	TDS502A09200	9,200	.3622	—	—	.39	2.40	1.93	.062	1.57	4.06
2964881	TDS502A09300	9,300	.3661	—	—	.39	2.40	1.93	.062	1.57	4.06
2964882	TDS502A09400	9,400	.3701	—	—	.39	2.40	1.93	.063	1.57	4.06
2964883	TDS502A09500	9,500	.3740	—	—	.39	2.40	1.93	.064	1.57	4.06
2964884	TDS502A09520	9,520	.3748	—	—	.39	2.40	1.93	.064	1.57	4.06
2964885	TDS502A09600	9,600	.3780	—	—	.39	2.40	1.93	.064	1.57	4.06
2964886	TDS502A09700	9,700	.3819	—	—	.39	2.40	1.93	.065	1.57	4.06
2964887	TDS502A09800	9,800	.3858	—	—	.39	2.40	1.93	.066	1.57	4.06
2964888	TDS502A09900	9,900	.3898	—	—	.39	2.40	1.93	.067	1.57	4.06
2964889	TDS502A09920	9,920	.3906	25/64	—	.39	2.40	1.93	.067	1.57	4.06
2964890	TDS502A10000	10,000	.3937	—	—	.39	2.40	1.93	.067	1.57	4.06
2964891	TDS502A10100	10,100	.3976	—	—	.47	2.80	2.20	.068	1.77	4.65
2964892	TDS502A10200	10,200	.4016	—	—	.47	2.80	2.20	.069	1.77	4.65
2964893	TDS502A10300	10,300	.4055	—	—	.47	2.80	2.20	.069	1.77	4.65
2964894	TDS502A10320	10,320	.4063	13/32	—	.47	2.80	2.20	.069	1.77	4.65
2964895	TDS502A10400	10,400	.4094	—	—	.47	2.80	2.20	.070	1.77	4.65
2964896	TDS502A10500	10,500	.4134	—	—	.47	2.80	2.20	.071	1.77	4.65
2964897	TDS502A10600	10,600	.4173	—	—	.47	2.80	2.20	.071	1.77	4.65
2964898	TDS502A10700	10,700	.4213	—	—	.47	2.80	2.20	.072	1.77	4.65
2964899	TDS502A10720	10,720	.4220	—	—	.47	2.80	2.20	.072	1.77	4.65
2964900	TDS502A10800	10,800	.4252	—	—	.47	2.80	2.20	.073	1.77	4.65
2964901	TDS502A10900	10,900	.4291	—	—	.47	2.80	2.20	.074	1.77	4.65
2964902	TDS502A11000	11,000	.4331	—	—	.47	2.80	2.20	.074	1.77	4.65
2964903	TDS502A11100	11,100	.4370	—	—	.47	2.80	2.20	.075	1.77	4.65
2964904	TDS502A11110	11,110	.4374	—	—	.47	2.80	2.20	.075	1.77	4.65

(continued)

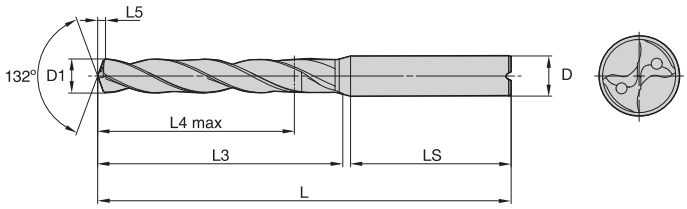
(TDS502A • 5 x D — continued)



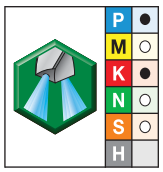
grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964905	TDS502A11200	11,200	.4409	—	—	.47	2.80	2.20	.076	1.77	4.65
2964906	TDS502A11300	11,300	.4449	—	—	.47	2.80	2.20	.076	1.77	4.65
2968374	TDS502A11400	11,400	.4488	—	—	.47	2.80	2.20	.077	1.77	4.65
2968375	TDS502A11500	11,500	.4528	—	—	.47	2.80	2.20	.078	1.77	4.65
2968376	TDS502A11600	11,600	.4567	—	—	.47	2.80	2.20	.078	1.77	4.65
2968377	TDS502A11700	11,700	.4606	—	—	.47	2.80	2.20	.079	1.77	4.65
2968378	TDS502A11800	11,800	.4646	—	—	.47	2.80	2.20	.080	1.77	4.65
2968379	TDS502A11900	11,900	.4685	—	—	.47	2.80	2.20	.080	1.77	4.65
2968380	TDS502A11910	11,910	.4689	—	—	.47	2.80	2.20	.081	1.77	4.65
2968381	TDS502A12000	12,000	.4724	—	—	.47	2.80	2.20	.081	1.77	4.65
2968382	TDS502A12300	12,300	.4843	—	—	.55	3.03	2.36	.083	1.77	4.88
2968393	TDS502A12500	12,500	.4921	—	—	.55	3.03	2.36	.085	1.77	4.88
2968394	TDS502A12700	12,700	.5000	1/2	—	.55	3.03	2.36	.086	1.77	4.88
2968395	TDS502A12800	12,800	.5039	—	—	.55	3.03	2.36	.087	1.77	4.88
2968396	TDS502A13000	13,000	.5118	—	—	.55	3.03	2.36	.088	1.77	4.88
4051238	TDS502A13100	13,100	.5157	—	—	.55	3.03	2.36	.110	1.77	4.88
2968397	TDS502A13500	13,500	.5315	—	—	.55	3.03	2.36	.092	1.77	4.88
2968398	TDS502A13800	13,800	.5433	—	—	.55	3.03	2.36	.094	1.77	4.88
2968399	TDS502A14000	14,000	.5512	—	—	.55	3.03	2.36	.095	1.77	4.88
2968400	TDS502A14290	14,290	.5626	—	—	.63	3.27	2.48	.097	1.89	5.24
2968401	TDS502A14500	14,500	.5709	—	—	.63	3.27	2.48	.099	1.89	5.24
2968402	TDS502A14800	14,800	.5827	—	—	.63	3.27	2.48	.101	1.89	5.24
2968403	TDS502A15000	15,000	.5906	—	—	.63	3.27	2.48	.102	1.89	5.24
2968404	TDS502A15500	15,500	.6102	—	—	.63	3.27	2.48	.106	1.89	5.24
2968405	TDS502A15800	15,800	.6220	—	—	.63	3.27	2.48	.108	1.89	5.24
2968406	TDS502A15870	15,870	.6248	—	—	.63	3.27	2.48	.108	1.89	5.24
2968407	TDS502A16000	16,000	.6299	—	—	.63	3.27	2.48	.109	1.89	5.24
2968408	TDS502A16500	16,500	.6496	—	—	.71	3.66	2.80	.113	1.89	5.63
2968409	TDS502A16670	16,670	.6563	21/32	—	.71	3.66	2.80	.114	1.89	5.63
2968410	TDS502A16800	16,800	.6614	—	—	.71	3.66	2.80	.115	1.89	5.63
2968411	TDS502A17000	17,000	.6693	—	—	.71	3.66	2.80	.116	1.89	5.63
2968412	TDS502A17500	17,500	.6890	—	—	.71	3.66	2.80	.120	1.89	5.63
2968413	TDS502A17800	17,800	.7008	—	—	.71	3.66	2.80	.122	1.89	5.63
2968414	TDS502A18000	18,000	.7087	—	—	.71	3.66	2.80	.123	1.89	5.63
2968415	TDS502A18500	18,500	.7283	—	—	.79	3.98	3.03	.127	1.97	6.02
2968416	TDS502A18800	18,800	.7402	—	—	.79	3.98	3.03	.129	1.97	6.02
2968417	TDS502A19000	19,000	.7480	—	—	.79	3.98	3.03	.130	1.97	6.02
2968418	TDS502A19050	19,050	.7500	3/4	—	.79	3.98	3.03	.130	1.97	6.02
2968419	TDS502A19500	19,500	.7677	—	—	.79	3.98	3.03	.134	1.97	6.02
2968420	TDS502A19800	19,800	.7795	—	—	.79	3.98	3.03	.136	1.97	6.02
2968421	TDS502A20000	20,000	.7874	—	—	.79	3.98	3.03	.137	1.97	6.02



TDS503A • 8 x D



grade WU25PD
TiAlN

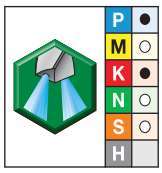
● first choice
○ alternate choice

D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2968422	TDS503A03000	3,000	.1181	–	–	.24	1.57	1.30	.024	1.42	3.07
4051239	TDS503A03100	3,100	.1220	–	–	.24	1.57	1.30	.025	1.42	3.07
4051240	TDS503A03175	3,175	.1250	1/8	–	.24	1.57	1.30	.025	1.42	3.07
4051241	TDS503A03200	3,200	.1260	–	–	.24	1.57	1.30	.026	1.42	3.07
4051242	TDS503A03250	3,250	.1280	–	–	.24	1.57	1.30	.026	1.42	3.07
2968503	TDS503A03300	3,300	.1299	–	–	.24	1.57	1.30	.026	1.42	3.07
4051243	TDS503A03400	3,400	.1339	–	–	.24	1.57	1.30	.027	1.42	3.07
4051244	TDS503A03455	3,455	.1360	–	29	.24	1.57	1.30	.028	1.42	3.07
2968504	TDS503A03500	3,500	.1378	–	–	.24	1.57	1.30	.028	1.42	3.07
2968505	TDS503A03700	3,700	.1457	–	–	.24	1.57	1.30	.030	1.42	3.07
2968506	TDS503A03800	3,800	.1496	–	–	.24	1.93	1.61	.031	1.42	3.43
4051245	TDS503A03900	3,900	.1535	–	–	.24	1.93	1.61	.031	1.42	3.43
2968507	TDS503A04000	4,000	.1575	–	–	.24	1.93	1.61	.032	1.42	3.43
4051246	TDS503A04100	4,100	.1614	–	–	.24	1.93	1.61	.033	1.42	3.43
2968508	TDS503A04200	4,200	.1654	–	–	.24	1.93	1.61	.034	1.42	3.43
4051247	TDS503A04300	4,300	.1693	–	–	.24	1.93	1.61	.035	1.42	3.43
2968509	TDS503A04370	4,370	.1720	–	–	.24	1.93	1.61	.035	1.42	3.43
4051248	TDS503A04400	4,400	.1732	–	–	.24	1.93	1.61	.036	1.42	3.43
2968510	TDS503A04500	4,500	.1772	–	–	.24	1.93	1.61	.037	1.42	3.43
4051249	TDS503A04600	4,600	.1811	–	–	.24	1.93	1.61	.037	1.42	3.43
4051250	TDS503A04650	4,650	.1831	–	–	.24	1.93	1.61	.038	1.42	3.43
2968511	TDS503A04700	4,700	.1850	–	13	.24	1.93	1.61	.038	1.42	3.43
2968512	TDS503A04760	4,760	.1874	–	–	.24	2.20	1.89	.039	1.42	3.70
2968513	TDS503A04800	4,800	.1890	–	12	.24	2.20	1.89	.039	1.42	3.70

(continued)

(TDS503A • 8 x D — continued)



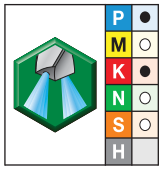
grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
4051251	TDS503A04900	4,900	.1929	—	—	.24	2.20	1.89	.040	1.42	3.70
2968514	TDS503A05000	5,000	.1969	—	—	.24	2.20	1.89	.041	1.42	3.70
4051252	TDS503A05100	5,100	.2008	—	—	.24	2.20	1.89	.042	1.42	3.70
2968515	TDS503A05160	5,160	.2031	13/64	—	.24	2.20	1.89	.042	1.42	3.70
4051253	TDS503A05200	5,200	.2047	—	—	.24	2.20	1.89	.042	1.42	3.70
4051254	TDS503A05300	5,300	.2087	—	—	.24	2.20	1.89	.043	1.42	3.70
4051255	TDS503A05400	5,400	.2126	—	—	.24	2.20	1.89	.044	1.42	3.70
2968516	TDS503A05500	5,500	.2165	—	—	.24	2.20	1.89	.045	1.42	3.70
4051256	TDS503A05550	5,550	.2185	—	—	.24	2.20	1.89	.045	1.42	3.70
2968517	TDS503A05560	5,560	.2189	—	—	.24	2.20	1.89	.045	1.42	3.70
4051257	TDS503A05600	5,600	.2205	—	—	.24	2.20	1.89	.046	1.42	3.70
4051258	TDS503A05700	5,700	.2244	—	—	.24	2.20	1.89	.047	1.42	3.70
2968518	TDS503A05800	5,800	.2283	—	—	.24	2.20	1.89	.047	1.42	3.70
4051259	TDS503A05900	5,900	.2323	—	—	.24	2.20	1.89	.048	1.42	3.70
2968519	TDS503A05950	5,950	.2343	—	—	.24	2.20	1.89	.049	1.42	3.70
2968520	TDS503A06000	6,000	.2362	—	—	.24	2.20	1.89	.049	1.42	3.70
4051260	TDS503A06100	6,100	.2402	—	—	.32	2.64	2.24	.050	1.42	4.13
4051261	TDS503A06200	6,200	.2441	—	—	.32	2.64	2.24	.051	1.42	4.13
4051262	TDS503A06300	6,300	.2480	—	—	.32	2.64	2.24	.052	1.42	4.13
2968521	TDS503A06350	6,350	.2500	1/4	E	.32	2.64	2.24	.052	1.42	4.13
4051263	TDS503A06400	6,400	.2520	—	—	.32	2.64	2.24	.053	1.42	4.13
2968522	TDS503A06500	6,500	.2559	—	—	.32	2.64	2.24	.053	1.42	4.13
4051264	TDS503A06600	6,600	.2598	—	—	.32	2.64	2.24	.054	1.42	4.13
4051265	TDS503A06700	6,700	.2638	—	—	.32	2.64	2.24	.055	1.42	4.13
2968523	TDS503A06750	6,750	.2657	—	—	.32	2.64	2.24	.056	1.42	4.13
2968524	TDS503A06800	6,800	.2677	—	—	.32	2.64	2.24	.056	1.42	4.13
4051266	TDS503A06900	6,900	.2717	—	—	.32	2.64	2.24	.057	1.42	4.13
2968525	TDS503A07000	7,000	.2756	—	—	.32	2.64	2.24	.058	1.42	4.13
4051267	TDS503A07100	7,100	.2795	—	—	.32	2.83	2.40	.059	1.42	4.33
2968526	TDS503A07140	7,140	.2811	—	—	.32	2.83	2.40	.059	1.42	4.33
4051268	TDS503A07200	7,200	.2835	—	—	.32	2.83	2.40	.059	1.42	4.33
4051269	TDS503A07300	7,300	.2874	—	—	.32	2.83	2.40	.060	1.42	4.33
4051270	TDS503A07400	7,400	.2913	—	—	.32	2.83	2.40	.061	1.42	4.33
2968527	TDS503A07500	7,500	.2953	—	—	.32	2.83	2.40	.062	1.42	4.33
2968528	TDS503A07540	7,540	.2969	19/64	—	.32	2.83	2.40	.062	1.42	4.33
3998454	TDS503A07600	7,600	.2992	—	—	.32	2.83	2.40	.063	1.42	4.33
4051271	TDS503A07700	7,700	.3031	—	—	.32	2.83	2.40	.064	1.42	4.33
2968529	TDS503A07800	7,800	.3071	—	—	.32	2.83	2.40	.064	1.42	4.33
4051272	TDS503A07900	7,900	.3110	—	—	.32	2.83	2.40	.065	1.42	4.33
2968530	TDS503A07940	7,940	.3126	—	—	.32	2.83	2.40	.066	1.42	4.33

(continued)

(TDS503A • 8 x D — continued)



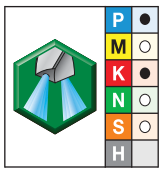
● first choice
○ alternate choice

grade WU25PD
TiAlN

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2968531	TDS503A08000	8,000	.3150	—	—	.32	2.83	2.40	.066	1.42	4.33
4051273	TDS503A08100	8,100	.3189	—	—	.39	3.15	2.68	.067	1.57	4.80
4051274	TDS503A08200	8,200	.3228	—	—	.39	3.15	2.68	.068	1.57	4.80
4051275	TDS503A08300	8,300	.3268	—	—	.39	3.15	2.68	.069	1.57	4.80
2968532	TDS503A08330	8,330	.3280	—	—	.39	3.15	2.68	.069	1.57	4.80
4051276	TDS503A08400	8,400	.3307	—	—	.39	3.15	2.68	.070	1.57	4.80
2968533	TDS503A08500	8,500	.3346	—	—	.39	3.15	2.68	.070	1.57	4.80
4051277	TDS503A08600	8,600	.3386	—	—	.39	3.15	2.68	.071	1.57	4.80
4051278	TDS503A08700	8,700	.3425	—	—	.39	3.15	2.68	.072	1.57	4.80
4051279	TDS503A08800	8,800	.3465	—	—	.39	3.15	2.68	.073	1.57	4.80
4051280	TDS503A08900	8,900	.3504	—	—	.39	3.15	2.68	.074	1.57	4.80
2968534	TDS503A09000	9,000	.3543	—	—	.39	3.15	2.68	.075	1.57	4.80
4051281	TDS503A09100	9,100	.3583	—	—	.39	3.15	2.68	.076	1.57	4.80
2968535	TDS503A09130	9,130	.3594	23/64	—	.39	3.15	2.68	.076	1.57	4.80
4051282	TDS503A09200	9,200	.3622	—	—	.39	3.15	2.68	.076	1.57	4.80
4051283	TDS503A09300	9,300	.3661	—	—	.39	3.15	2.68	.077	1.57	4.80
4051284	TDS503A09400	9,400	.3701	—	—	.39	3.15	2.68	.078	1.57	4.80
2968536	TDS503A09500	9,500	.3740	—	—	.39	3.15	2.68	.079	1.57	4.80
2968537	TDS503A09520	9,520	.3748	—	—	.39	3.15	2.68	.079	1.57	4.80
4051285	TDS503A09600	9,600	.3780	—	—	.39	3.15	2.68	.080	1.57	4.80
4051286	TDS503A09700	9,700	.3819	—	—	.39	3.15	2.68	.081	1.57	4.80
2968538	TDS503A09800	9,800	.3858	—	—	.39	3.15	2.68	.082	1.57	4.80
4051287	TDS503A09900	9,900	.3898	—	—	.39	3.15	2.68	.082	1.57	4.80
2968539	TDS503A09920	9,920	.3906	25/64	—	.39	3.15	2.68	.083	1.57	4.80
2968540	TDS503A10000	10,000	.3937	—	—	.39	3.15	2.68	.083	1.57	4.80
4051288	TDS503A10100	10,100	.3976	—	—	.47	3.70	3.11	.084	1.77	5.55
2968541	TDS503A10200	10,200	.4016	—	—	.47	3.70	3.11	.085	1.77	5.55
4051289	TDS503A10300	10,300	.4055	—	—	.47	3.70	3.11	.086	1.77	5.55
2968542	TDS503A10320	10,320	.4063	13/32	—	.47	3.70	3.11	.086	1.77	5.55
4051290	TDS503A10400	10,400	.4094	—	—	.47	3.70	3.11	.087	1.77	5.55
2968543	TDS503A10500	10,500	.4134	—	—	.47	3.70	3.11	.088	1.77	5.55
4051291	TDS503A10600	10,600	.4173	—	—	.47	3.70	3.11	.088	1.77	5.55
4051292	TDS503A10700	10,700	.4213	—	—	.47	3.70	3.11	.089	1.77	5.55
2968544	TDS503A10720	10,720	.4220	—	—	.47	3.70	3.11	.089	1.77	5.55
2968545	TDS503A10800	10,800	.4252	—	—	.47	3.70	3.11	.090	1.77	5.55
4051293	TDS503A10900	10,900	.4291	—	—	.47	3.70	3.11	.091	1.77	5.55
2968546	TDS503A11000	11,000	.4331	—	—	.47	3.70	3.11	.092	1.77	5.55
4051294	TDS503A11100	11,100	.4370	—	—	.47	3.70	3.11	.093	1.77	5.55
3998456	TDS503A11110	11,110	.4374	—	—	.47	3.70	3.11	.093	1.77	5.55
4051295	TDS503A11200	11,200	.4409	—	—	.47	3.70	3.11	.094	1.77	5.55

(continued)

(TDS503A • 8 x D — continued)



grade WU25PD
TiAlN

● first choice
○ alternate choice

order #	catalog #	D1 diameter mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
4051296	TDS503A11300	11,300	.4449	—	—	.47	3.70	3.11	.094	1.77	5.55
4051297	TDS503A11400	11,400	.4488	—	—	.47	3.70	3.11	.095	1.77	5.55
2968547	TDS503A11500	11,500	.4528	—	—	.47	3.70	3.11	.096	1.77	5.55
4051298	TDS503A11600	11,600	.4567	—	—	.47	3.70	3.11	.097	1.77	5.55
4051299	TDS503A11700	11,700	.4606	—	—	.47	3.70	3.11	.098	1.77	5.55
2968548	TDS503A11800	11,800	.4646	—	—	.47	3.70	3.11	.099	1.77	5.55
4051300	TDS503A11900	11,900	.4685	—	—	.47	3.70	3.11	.099	1.77	5.55
2968549	TDS503A11910	11,910	.4689	—	—	.47	3.70	3.11	.100	1.77	5.55
2968550	TDS503A12000	12,000	.4724	—	—	.47	3.70	3.11	.100	1.77	5.55
2968551	TDS503A12300	12,300	.4843	—	—	.55	4.25	3.58	.103	1.77	6.10
2968552	TDS503A12500	12,500	.4921	—	—	.55	4.25	3.58	.105	1.77	6.10
2968553	TDS503A12700	12,700	.5000	1/2	—	.55	4.25	3.58	.106	1.77	6.10
2968554	TDS503A12800	12,800	.5039	—	—	.55	4.25	3.58	.107	1.77	6.10
2968555	TDS503A13000	13,000	.5118	—	—	.55	4.25	3.58	.109	1.77	6.10
4051301	TDS503A13100	13,100	.5157	—	—	.55	4.25	3.58	.110	1.77	6.10
2968556	TDS503A13500	13,500	.5315	—	—	.55	4.25	3.58	.113	1.77	6.10
2968557	TDS503A13800	13,800	.5433	—	—	.55	4.25	3.58	.116	1.77	6.10
2968558	TDS503A14000	14,000	.5512	—	—	.55	4.25	3.58	.117	1.77	6.10
2968559	TDS503A14290	14,290	.5626	—	—	.63	4.76	3.98	.120	1.89	6.73
2968560	TDS503A14500	14,500	.5709	—	—	.63	4.76	3.98	.122	1.89	6.73
2968561	TDS503A14800	14,800	.5827	—	—	.63	4.76	3.98	.124	1.89	6.73
2968562	TDS503A15000	15,000	.5906	—	—	.63	4.76	3.98	.126	1.89	6.73
2968563	TDS503A15500	15,500	.6102	—	—	.63	4.76	3.98	.130	1.89	6.73
2968564	TDS503A15800	15,800	.6220	—	—	.63	4.76	3.98	.133	1.89	6.73
2968565	TDS503A15870	15,870	.6248	—	—	.63	4.76	3.98	.134	1.89	6.73
2968566	TDS503A16000	16,000	.6299	—	—	.63	4.76	3.98	.135	1.89	6.73
4051302	TDS503A16500	16,500	.6496	—	—	.71	5.32	4.45	.139	1.89	7.28
4051303	TDS503A16670	16,670	.6563	—	—	.71	5.32	4.45	.140	1.89	7.28
4051304	TDS503A16800	16,800	.6614	—	—	.71	5.32	4.45	.142	1.89	7.28
4051305	TDS503A17000	17,000	.6693	—	—	.71	5.32	4.45	.143	1.89	7.28
4051306	TDS503A17500	17,500	.6890	—	—	.71	5.32	4.45	.148	1.89	7.28
4051307	TDS503A17800	17,800	.7008	—	—	.71	5.32	4.45	.150	1.89	7.28
4051308	TDS503A18000	18,000	.7087	—	—	.71	5.32	4.45	.152	1.89	7.28
4051309	TDS503A18500	18,500	.7283	—	—	.79	5.83	4.88	.156	1.97	7.87
4051310	TDS503A18800	18,800	.7402	—	—	.79	5.83	4.88	.159	1.97	7.87
4051311	TDS503A19000	19,000	.7480	—	—	.79	5.83	4.88	.160	1.97	7.87
4051312	TDS503A19050	19,050	.7500	3/4	—	.79	5.83	4.88	.161	1.97	7.87
4051313	TDS503A19500	19,500	.7677	—	—	.79	5.83	4.88	.165	1.97	7.87
4051314	TDS503A19800	19,800	.7795	—	—	.79	5.83	4.88	.167	1.97	7.87
4051315	TDS503A20000	20,000	.7874	—	—	.79	5.83	4.88	.169	1.97	7.87

■ TOP DRILL S+ • TDS301 • WU25PD™ • Flood Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Recommended Feed Rate (f) by Diameter								
		min	–	max	Tool Diameter (inch)	.125–1/8	.188–3/16	.250 –1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4
P	1	260	–	430	IPR	.002–.005	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.012–.024
	2, 3, 4, 6, 7	200	–	390	IPR	.003–.005	.004–.007	.006–.010	.007–.012	.008–.015	.009–.017	.011–.020	.015–.026
	5, 9, 10, 11	200	–	390	IPR	.003–.005	.004–.007	.005–.010	.006–.012	.007–.015	.008–.017	.010–.020	.013–.026
	12, 13.1, 13.2	130	–	230	IPR	.002–.003	.002–.004	.004–.006	.004–.008	.005–.009	.006–.011	.008–.014	.010–.018
M	14.1	100	–	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	14.3	100	–	200	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	14.2, 14.4	100	–	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	15, 16	330	–	690	IPR	.003–.006	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.002	.015–.029
	17, 18, 19	430	–	520	IPR	.003–.005	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	330	–	560	IPR	.002–.005	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.010–.019	.012–.024
N	21	330	–	980	IPR	.004–.007	.005–.008	.006–.010	.008–.012	.010–.014	.012–.016	.014–.020	.016–.024
	22, 23, 24	330	–	980	IPR	.004–.008	.005–.010	.006–.012	.008–.014	.010–.016	.012–.018	.014–.022	.016–.026
	25	330	–	980	IPR	.006–.007	.006–.008	.007–.010	.008–.012	.010–.014	.012–.016	.014–.020	.016–.022
	26, 27, 28	330	–	820	IPR	.004–.008	.005–.010	.006–.012	.008–.014	.010–.016	.012–.018	.014–.020	.016–.024
S	31, 32	70	–	100	IPR	.001–.002	.002–.003	.002–.004	.003–.005	.004–.005	.004–.006	.005–.006	.006–.007
	33, 34, 35	30	–	100	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	36	70	–	130	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006
	37	70	–	160	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006

Inch tolerance

D1	D1 tolerance m7	D	D tolerance h6
> .1181–.2362	.0002/.0006	.2362	.0000/-.0003
> .2362–.3937	.0002/.0008	.315–.3937	.0000/-.0004
> .3937–.7087	.0003/.0010	.4724–.7087	.0000/-.0004
> .7087–.7874	.0003/.0011	.7874	.0000/-.0005

■ TOP DRILL S+ • TDS301 • WU25PD™ • Flood Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min			Recommended Feed Rate (f) by Diameter							
		min	–	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	80	–	130	mm/r	0,06–0,12	0,10–0,18	0,12–0,24	0,14–0,29	0,17–0,34	0,20–0,39	0,24–0,47	0,31–0,60
	2, 3, 4, 6, 7	60	–	120	mm/r	0,07–0,13	0,10–0,19	0,14–0,25	0,17–0,31	0,21–0,37	0,24–0,42	0,29–0,52	0,38–0,65
	5, 9, 10, 11	60	–	120	mm/r	0,07–0,13	0,09–0,19	0,13–0,25	0,16–0,31	0,19–0,37	0,21–0,42	0,26–0,52	0,32–0,65
	12, 13.1, 13.2	40	–	70	mm/r	0,05–0,08	0,06–0,11	0,09–0,16	0,11–0,20	0,13–0,24	0,15–0,27	0,20–0,35	0,26–0,45
M	14.1	30	–	50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	14.3	30	–	60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	14.2, 14.4	30	–	50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	15, 16	100	–	210	mm/r	0,08–0,16	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,74
	17, 18, 19	130	–	160	mm/r	0,08–0,13	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	20	100	–	170	mm/r	0,06–0,13	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
N	21	100	–	300	mm/r	0,10–0,18	0,12–0,20	0,15–0,25	0,20–0,30	0,25–0,35	0,30–0,40	0,35–0,50	0,40–0,60
	22, 23, 24	100	–	300	mm/r	0,10–0,20	0,12–0,25	0,15–0,30	0,20–0,35	0,25–0,40	0,30–0,45	0,35–0,55	0,40–0,65
	25	100	–	300	mm/r	0,15–0,18	0,16–0,20	0,18–0,25	0,20–0,30	0,25–0,35	0,30–0,40	0,35–0,50	0,40–0,55
	26, 27, 28	100	–	250	mm/r	0,10–0,20	0,12–0,25	0,15–0,30	0,20–0,35	0,25–0,40	0,30–0,45	0,35–0,50	0,40–0,60
S	31, 32	20	–	30	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	33, 34, 35	10	–	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	36	20	–	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	37	20	–	50	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

	Metric tolerance	
nominal size range	D1 tolerance	D tolerance h6
>3–6	0,004/0,016	0,000/–0,008
>6–10	0,006/0,021	0,000/–0,009
>10–18	0,007/0,025	0,000/–0,011
>18–21	0,008/0,029	0,000/–0,013

■ TOP DRILL S+ • TDS501 TDS502 TDS503 • WU25PD™ • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Recommended Feed Rate (f) by Diameter								
		min	–	max	Tool Diameter (inch)	.125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4
P	1	300	–	590	IPR	.003–.006	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.012–.024
	2, 3, 4, 6, 7	260	–	390	IPR	.004–.007	.004–.007	.006–.010	.007–.012	.008–.015	.009–.017	.011–.020	.015–.026
	5, 9, 10, 11	230	–	390	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.015	.008–.017	.010–.020	.013–.026
	12, 13.1, 13.2	160	–	260	IPR	.002–.004	.002–.004	.004–.006	.004–.008	.006–.009	.006–.011	.008–.014	.010–.018
M	14.1	100	–	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	14.3	100	–	200	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	14.2, 14.4	100	–	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	15, 16	330	–	690	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	17, 18, 19	430	–	520	IPR	.004–.007	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	330	–	560	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024
N	21	330	–	1150	IPR	.004–.007	.005–.008	.006–.010	.008–.012	.010–.014	.012–.016	.014–.020	.016–.024
	22, 23, 24	330	–	980	IPR	.004–.008	.005–.010	.006–.012	.008–.014	.010–.016	.012–.018	.014–.022	.016–.026
	25	330	–	980	IPR	.006–.007	.006–.008	.007–.010	.008–.012	.010–.014	.012–.016	.014–.020	.016–.022
	26, 27, 28	330	–	820	IPR	.004–.008	.005–.010	.006–.012	.008–.014	.010–.016	.012–.018	.014–.020	.016–.024
S	31, 32	70	–	100	IPR	.001–.002	.002–.003	.002–.004	.003–.005	.004–.005	.004–.006	.005–.006	.006–.007
	33, 34, 35	30	–	100	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	36	70	–	130	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006
	37	70	–	160	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006

Inch tolerance

D1	D1 tolerance m7	D	D tolerance h6
> .1181–.2362	.0002/.0006	.2362	.0000/-.0003
> .2362–.3937	.0002/.0008	.315–.3937	.0000/-.0004
> .3937–.7087	.0003/.0010	.4724–.7087	.0000/-.0004
> .7087–.7874	.0003/.0011	.7874	.0000/-.0005

■ TOP DRILL S+ • TDS501 TDS502 TDS503 • WU25PD™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter							
		min	–	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	90	–	180	mm/r	0,08–0,16	0,09–0,18	0,12–0,24	0,14–0,29	0,17–0,34	0,20–0,39	0,24–0,47	0,31–0,60
	2, 3, 4, 6, 7	80	–	120	mm/r	0,09–0,17	0,10–0,19	0,14–0,25	0,17–0,31	0,21–0,37	0,24–0,42	0,29–0,52	0,38–0,65
	5, 9, 10, 11	70	–	120	mm/r	0,08–0,17	0,09–0,19	0,13–0,25	0,16–0,31	0,19–0,37	0,21–0,42	0,26–0,52	0,32–0,65
	12, 13.1, 13.2	50	–	80	mm/r	0,05–0,09	0,06–0,11	0,09–0,16	0,11–0,20	0,14–0,24	0,15–0,27	0,20–0,35	0,26–0,45
M	14.1	30	–	50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	14.3	30	–	60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	14.2, 14.4	30	–	50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	15, 16	100	–	210	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	17, 18, 19	130	–	160	mm/r	0,11–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	20	100	–	170	mm/r	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60
N	21	100	–	350	mm/r	0,10–0,18	0,12–0,20	0,15–0,25	0,20–0,30	0,25–0,35	0,30–0,40	0,35–0,50	0,40–0,60
	22, 23, 24	100	–	300	mm/r	0,10–0,20	0,12–0,25	0,15–0,30	0,20–0,35	0,25–0,40	0,30–0,45	0,35–0,55	0,40–0,65
	25	100	–	300	mm/r	0,15–0,18	0,16–0,20	0,18–0,25	0,20–0,30	0,25–0,35	0,30–0,40	0,35–0,50	0,40–0,55
	26, 27, 28	100	–	250	mm/r	0,10–0,20	0,12–0,25	0,15–0,30	0,20–0,35	0,25–0,40	0,30–0,45	0,35–0,50	0,40–0,60
S	31, 32	20	–	30	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	33, 34, 35	10	–	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	36	20	–	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	37	20	–	50	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

	Metric tolerance	
nominal size range	D1 tolerance	D tolerance h6
>3–6	0,004/0,016	0,000/–0,008
>6–10	0,006/0,021	0,000/–0,009
>10–18	0,007/0,025	0,000/–0,011
>18–21	0,008/0,029	0,000/–0,013

Good for You, Better for the Environment!

The WIDIA™ Carbide Recycling Program can turn accumulated scrap carbide tooling in your shop into cash.

Carbide Recycling

EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

We pay cash for used carbide tooling, including coated or non-coated carbide inserts, drills, end mills, reamers, and taps, regardless of brand.

It's good for the environment and a responsible way to dispose of scrap carbide.

Our carbide recycling program features:

- Easy-to-use web portal that shows what your scrap carbide is worth before sending it to us.
- Online forms that make it easy to ship scrap carbide to WIDIA.
- Green Box™ containers for safe, convenient shipping of scrap carbide to WIDIA.
- Cash payment for used carbide tooling.

For more information, contact your local WIDIA Authorized Distributor or visit **widia.com/services**.

WIDIA™

Deep-Hole Drilling without Piloting •

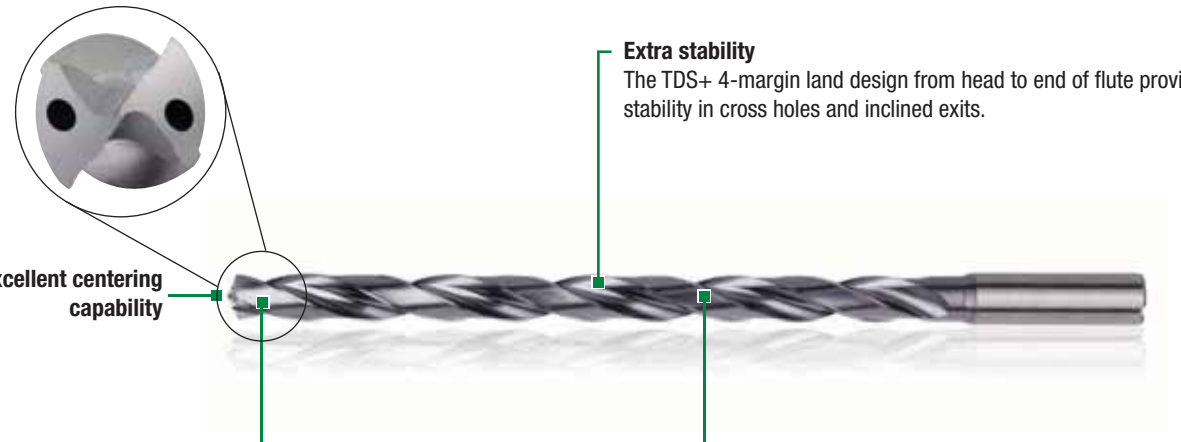
WIDIA™ TOP DRILL S+™ 12 x D

The versatile TOP DRILL S+ provides reliable performance across a broad scope of applications, including alloyed and unalloyed steel, cast iron, and some stainless steels and high-temperature alloys. TDS+ is now available in 12 x D, adding to its already wide range of options from 3–8 x D.

TOP DRILL S+ 12 x D

TDS+ 12 x D is capable of drilling an array of materials. The 4-margin land configuration offers stability, minimizes chipping and jamming, and promotes chip evacuation. Because TDS+ 12 x D does not require a pilot drill, it increases efficiency by reducing the number of steps required for basic applications.

- 12 x D fits the gap between 8 x D and 15 x D.
- One drill that covers all materials.
- Can be used without a pilot.



Excellent centering capability

Extra stability
The TDS+ 4-margin land design from head to end of flute provides stability in cross holes and inclined exits.

Minimized chip jamming
Special gash and flute form for effective chip formation across a variety of materials.

Easy chip evacuation
The TDS+ utilizes the same technology developed for WIDIA deep-hole drills. The polished surface enables effective chip evacuation from deep holes.

Improved Productivity

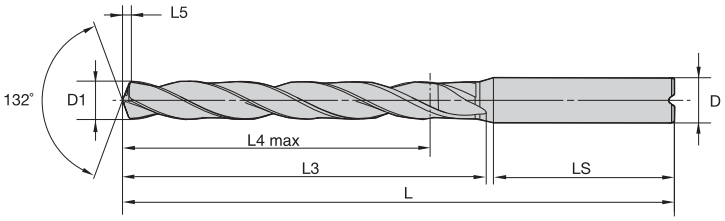
- Excellent centering capability — the new TDS+ 12 x D point is engineered to provide excellent centering capability.
- No pilot drill required — save time and money by reducing the number of steps required for your 12 x D application.

Increased Tool Life

- Minimized runout — cylindrical body design provides guidance, and precision h6 shank is standard for better runout and less breakage.
- New WU20PD™ grade — designed specifically for long tool life.
- Factory regrind service — available through your WIDIA™ reconditioning service.

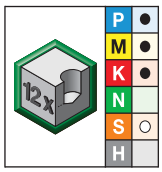
WIDIA Advantage

- Lower cost-per-hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:
  Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Get more predictable results from local regrind services using OEM standards to recondition, ensuring value throughout the entire life of the drill.
- Broad range of standard lengths, diameters, and coolant options in one line. Includes extensive intermediate metric, inch, fraction, and wire size, including tap drill sizes.



For information on L, L3, and L4 max, see page R133.

■ TDS504A • 12 x D



● first choice
○ alternate choice

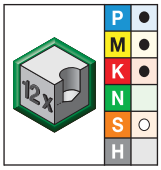
grade WU20PD TiAlN

D1 diameter

order #	catalog #	mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4173459	TDS504A03000	3,000	.1181	–	–	93	44	52,0	0,6	36	6
4173460	TDS504A03175	3,175	.1250	1/8	–	93	44	52,0	0,7	36	6
4173461	TDS504A03264	3,264	.1285	–	30	93	44	53,0	0,7	36	6
4173545	TDS504A03455	3,455	.1360	–	29	93	44	53,0	0,7	36	6
4173462	TDS504A03500	3,500	.1378	–	–	93	44	53,0	0,7	36	6
4173546	TDS504A03734	3,734	.1470	–	26	93	45	54,0	0,8	36	6
4173463	TDS504A03970	3,970	.1563	5/32	–	107	56	66,0	0,8	36	6
4173464	TDS504A04000	4,000	.1575	–	–	107	56	66,0	0,8	36	6
4173465	TDS504A04500	4,500	.1772	–	–	107	56	67,0	0,9	36	6
4173466	TDS504A04600	4,600	.1811	–	–	107	57	68,0	1,0	36	6
4173467	TDS504A04763	4,763	.1875	3/16	–	125	69	82,0	1,0	36	6
4173468	TDS504A04800	4,800	.1890	–	12	125	69	82,0	1,0	36	6
4173469	TDS504A05000	5,000	.1969	–	–	125	70	83,0	1,1	36	6
4173470	TDS504A05100	5,100	.2008	–	–	125	70	83,0	1,1	36	6
4173471	TDS504A05200	5,200	.2047	–	–	125	70	83,0	1,1	36	6
4173472	TDS504A05300	5,300	.2087	–	–	125	71	84,0	1,1	36	6
4173473	TDS504A05410	5,410	.2130	–	3	125	71	84,0	1,1	36	6
4173474	TDS504A05500	5,500	.2165	–	–	125	71	84,0	1,2	36	6
4173475	TDS504A05558	5,558	.2188	7/32	–	125	71	84,0	1,2	36	6
4173476	TDS504A05600	5,600	.2205	–	–	125	72	85,0	1,2	36	6
4173477	TDS504A05700	5,700	.2244	–	–	125	72	85,0	1,2	36	6
4173478	TDS504A05800	5,800	.2283	–	–	125	71	85,0	1,2	36	6
4173479	TDS504A06000	6,000	.2362	–	–	125	72	86,0	1,3	36	6
4173480	TDS504A06200	6,200	.2441	–	–	139	82	97,0	1,3	36	8

(continued)

(TDS504A • 12 x D — continued)



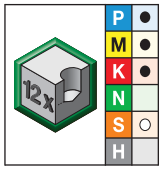
● first choice
○ alternate choice

grade WU20PD
TiAlN

order #	catalog #	D1 diameter mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4173481	TDS504A06350	6,350	.2500	1/4	E	139	83	98,0	1,3	36	8
4173482	TDS504A06500	6,500	.2559	—	—	139	83	98,0	1,4	36	8
4173483	TDS504A06528	6,528	.2570	—	F	139	83	98,0	1,4	36	8
4173484	TDS504A06600	6,600	.2598	—	—	139	84	99,0	1,4	36	8
4173485	TDS504A06746	6,746	.2656	17/64	—	139	83	99,0	1,4	36	8
4173486	TDS504A06800	6,800	.2677	—	—	139	83	99,0	1,4	36	8
4173487	TDS504A06909	6,909	.2720	—	I	139	84	100,0	1,5	36	8
4173488	TDS504A07000	7,000	.2756	—	—	139	84	100,0	1,5	36	8
4173489	TDS504A07145	7,145	.2813	9/32	—	153	94	111,0	1,5	36	8
4173490	TDS504A07500	7,500	.2953	—	—	153	95	112,0	1,6	36	8
4173491	TDS504A07541	7,541	.2969	19/64	—	153	95	112,0	1,6	36	8
4173492	TDS504A07700	7,700	.3031	—	—	153	96	113,0	1,6	36	8
4173493	TDS504A07800	7,800	.3071	—	—	153	95	113,0	1,7	36	8
4173494	TDS504A07938	7,938	.3125	5/16	—	153	96	114,0	1,7	36	8
4173495	TDS504A08000	8,000	.3150	—	—	153	96	114,0	1,7	36	8
4173496	TDS504A08100	8,100	.3189	—	—	185	116	136,0	1,7	40	10
4173497	TDS504A08334	8,334	.3281	21/64	—	185	117	137,0	1,8	40	10
4173498	TDS504A08433	8,433	.3320	—	Q	185	117	137,0	1,8	40	10
4173499	TDS504A08500	8,500	.3346	—	—	185	117	137,0	1,8	40	10
4173500	TDS504A08700	8,700	.3425	—	—	185	118	138,0	1,9	40	10
4173501	TDS504A08733	8,733	.3438	11/32	—	185	117	138,0	1,9	40	10
4173502	TDS504A09000	9,000	.3543	—	—	185	118	139,0	1,9	40	10
4173503	TDS504A09100	9,100	.3583	—	—	185	118	139,0	1,9	40	10
4173504	TDS504A09129	9,129	.3594	23/64	—	185	118	139,0	1,9	40	10
4173547	TDS504A09347	9,347	.3680	—	U	185	119	140,0	2,0	40	10
4173505	TDS504A09500	9,500	.3740	—	—	185	119	140,0	2,0	40	10
4173506	TDS504A09525	9,525	.3750	3/8	—	185	119	140,0	2,0	40	10
4173507	TDS504A09921	9,921	.3906	25/64	—	185	120	142,0	2,1	40	10
4173508	TDS504A10000	10,000	.3937	—	—	185	120	142,0	2,1	40	10
4173509	TDS504A10200	10,200	.4016	—	—	218	140	164,0	2,2	45	12
4173510	TDS504A10300	10,300	.4055	—	—	218	141	165,0	2,2	45	12
4173511	TDS504A10320	10,320	.4063	13/32	—	218	141	165,0	2,2	45	12
4173512	TDS504A10500	10,500	.4134	—	—	218	141	165,0	2,2	45	12
4173513	TDS504A10716	10,716	.4219	27/64	—	218	142	166,0	2,3	45	12
4173514	TDS504A10800	10,800	.4252	—	—	218	141	166,0	2,3	45	12
4173515	TDS504A11000	11,000	.4331	—	—	218	142	167,0	2,4	45	12
4173516	TDS504A11113	11,113	.4375	7/16	—	218	142	167,0	2,4	45	12
4173517	TDS504A11500	11,500	.4528	—	—	218	143	168,0	2,5	45	12
4173518	TDS504A11800	11,800	.4646	—	—	218	143	169,0	2,5	45	12
4173519	TDS504A12000	12,000	.4724	—	—	218	144	170,0	2,6	45	12

(continued)

(TDS504A • 12 x D — continued)



● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter									
order #	catalog #	mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4173520	**TDS504A12100**	12,100	.4764	—	—	246	164	192,0	2,6	45	14
4173521	**TDS504A12304**	12,304	.4844	31/64	—	246	165	193,0	2,6	45	14
4148906	**TDS504A12500**	12,500	.4921	—	—	246	165	193,0	2,7	45	14
4173522	**TDS504A12700**	12,700	.5000	1/2	—	246	166	194,0	2,7	45	14
4173523	**TDS504A13000**	13,000	.5118	—	—	246	166	195,0	2,8	45	14
4173524	**TDS504A13100**	13,100	.5157	—	—	246	166	195,0	2,8	45	14
4173525	**TDS504A13500**	13,500	.5315	—	—	246	167	196,0	2,9	45	14
4173526	**TDS504A14000**	14,000	.5512	—	—	246	168	198,0	3,0	45	14
4173527	**TDS504A14100**	14,100	.5551	—	—	277	188	220,0	3,0	48	16
4173528	**TDS504A14288**	14,288	.5625	9/16	—	277	188	220,0	3,1	48	16
4173529	**TDS504A14500**	14,500	.5709	—	—	277	189	221,0	3,1	48	16
4173530	**TDS504A14684**	14,684	.5781	37/64	—	277	190	222,0	3,2	48	16
4173531	**TDS504A15000**	15,000	.5906	—	—	277	190	223,0	3,2	48	16
4173532	**TDS504A15500**	15,500	.6102	—	—	277	191	224,0	3,3	48	16
4173533	**TDS504A15875**	15,875	.6250	5/8	—	277	192	225,0	3,4	48	16
4173534	**TDS504A16000**	16,000	.6299	—	—	277	192	226,0	3,4	48	16
4173535	**TDS504A16500**	16,500	.6496	—	—	305	213	249,0	3,6	48	18
4173536	**TDS504A17000**	17,000	.6693	—	—	305	214	250,0	3,7	48	18
4173537	**TDS504A17463**	17,463	.6875	11/16	—	305	215	252,0	3,8	48	18
4173538	**TDS504A17500**	17,500	.6890	—	—	305	215	252,0	3,8	48	18
4173539	**TDS504A18000**	18,000	.7087	—	—	305	216	253,0	3,9	48	18
4173540	**TDS504A18500**	18,500	.7283	—	—	334	237	277,0	4,0	50	20
4173541	**TDS504A19000**	19,000	.7480	—	—	334	238	278,0	4,1	50	20
4173542	**TDS504A19050**	19,050	.7500	3/4	—	334	239	279,0	4,1	50	20
4173543	**TDS504A19500**	19,500	.7677	—	—	334	239	280,0	4,2	50	20
4173544	**TDS504A20000**	20,000	.7874	—	—	334	240	281,0	4,3	50	20

TOP DRILL S+ • TDS504 Series • WU20PD™ • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM min	–	max	Tool Diameter (inch)	Recommended Feed Rate (f) by Diameter .125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4
P	1	300	–	590	IPR	.003–.006	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.012–.024
	2, 3, 4, 6, 7	260	–	390	IPR	.004–.007	.004–.007	.006–.010	.007–.012	.008–.015	.009–.017	.011–.020	.015–.026
	5, 9, 10, 11	230	–	390	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.015	.008–.017	.010–.020	.013–.026
	12, 13	160	–	260	IPR	.002–.004	.002–.004	.004–.006	.004–.008	.006–.009	.006–.011	.008–.014	.010–.018
M	14,1	100	–	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	14,3	100	–	200	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	14.2, 14.4	100	–	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	15, 16	330	–	690	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	17, 18, 19	430	–	520	IPR	.004–.007	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	330	–	560	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024

TOP DRILL S+ • TDS504 Series • WU20PD • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min min	–	max	Tool Diameter (mm)	Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	90	–	180	mm/r	0,08–0,16	0,09–0,18	0,12–0,24	0,14–0,29	0,17–0,34	0,20–0,39	0,24–0,47	0,31–0,60
	2, 3, 4, 6, 7	80	–	120	mm/r	0,09–0,17	0,10–0,19	0,14–0,25	0,17–0,31	0,21–0,37	0,24–0,42	0,29–0,52	0,38–0,65
	5, 9, 10, 11	70	–	120	mm/r	0,08–0,17	0,09–0,19	0,13–0,25	0,16–0,31	0,19–0,37	0,21–0,42	0,26–0,52	0,32–0,65
	12, 13	50	–	80	mm/r	0,05–0,09	0,06–0,11	0,09–0,16	0,11–0,20	0,14–0,24	0,15–0,27	0,20–0,35	0,26–0,45
M	14,1	30	–	50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	14,3	30	–	60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	14.2, 14.4	30	–	50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	15, 16	100	–	210	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	17, 18, 19	130	–	160	mm/r	0,11–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	20	100	–	170	mm/r	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60

Inch

tolerance

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0000/.0005	.0000/-.0003
>.2360–.3937	.0000/.0006	.0000/-.0004
>.3937–.7087	.0000/.0007	.0000/-.0004
>.7078–.1.0000	.0000/.0009	.0000/-.0005

Metric

tolerance

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013