



2017 Master Catalog

WIDIA  TM

Application-Specific Drilling •

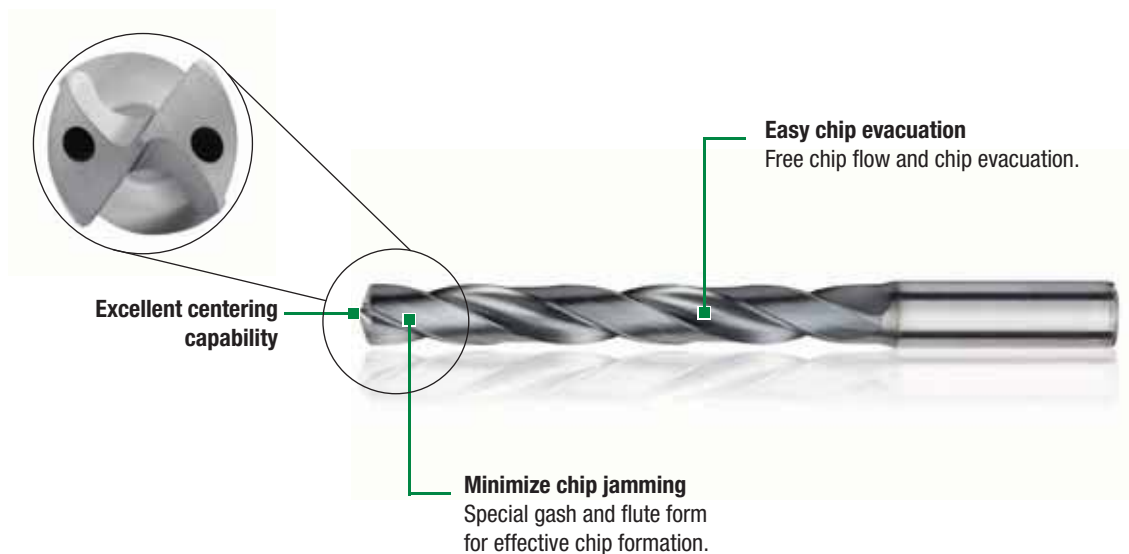
WIDIA™ TOP DRILL S™ for Steel and Cast Iron

TOP DRILL S



TOP DRILL S is the WIDIA line of solid carbide drills engineered to provide maximum performance and superior finish for application-specific tasks. Available in two material applications, TDS for steel and cast iron are each specially designed and coated to maximize output and increase tool life — offering less cost-per-hole and greater productivity.

- Designed for maximum productivity and longer tool life for steel and cast iron.
- Easy to choose and apply.
- One of the broadest ranges on the market for diameter selection, length series, and coolant options.
- Highest metal removal rates possible without sacrificing tool life.
- Latest Victory™ grades from WIDIA.



TOP DRILL S™ for Steel

TOP DRILL S for steel is a high-performance solid carbide drill with an application-specific design. Although the point geometry is strong enough to drill stainless steel and cast iron, it is engineered to maximize performance when drilling steel. The WP20PD™ grade, designed to resist high heat and wear, is the latest in WIDIA™ technology. The two-margin design facilitates excellent hole quality and less friction when drilling steel at high speeds.

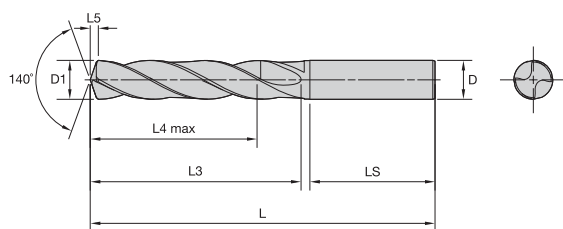
TOP DRILL S for Cast Iron

TOP DRILL S for cast iron is designed with application-specific point geometry for maximum performance in cast iron materials. The point features corner chamfers that minimize breakout on exit holes. A four-margin design improves hole straightness, increasing tool life and extending cross-hole and inclined exit capabilities when drilling tough cast iron. The technologically advanced WK15PD™ grade is specially engineered to withstand high wear.

WIDIA Advantage

- Application-specific geometry with the latest WIDIA grade technology.
- 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.
- Broad range of standard lengths, diameters, and coolant options in one line, including extensive intermediate metric, inch, fraction, and wire sizes.





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



■ TDS202A • TDS212A • 5 x D



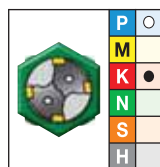
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162258	TDS202A03000	4162417	TDS212A03000	3,000	.1181	—	—	66	28	23	0,5	36	6
4162259	TDS202A03048	4162418	TDS212A03048	3,048	.1200	—	31	66	28	23	0,5	36	6
4162260	TDS202A03100	4162419	TDS212A03100	3,100	.1220	—	—	66	28	23	0,5	36	6
4162261	TDS202A03175	4162420	TDS212A03175	3,175	.1250	1/8	—	66	28	23	0,5	36	6
4162262	TDS202A03200	4162421	TDS212A03200	3,200	.1260	—	—	66	28	23	0,5	36	6
4162283	TDS202A03264	4162422	TDS212A03264	3,264	.1285	—	30	66	28	23	0,5	36	6
4162284	TDS202A03300	4162543	TDS212A03300	3,300	.1299	—	—	66	28	23	0,5	36	6
4162285	TDS202A03400	4162544	TDS212A03400	3,400	.1339	—	—	66	28	23	0,6	36	6
4162286	TDS202A03455	4162545	TDS212A03455	3,455	.1360	—	29	66	28	23	0,6	36	6
4162287	TDS202A03500	4162546	TDS212A03500	3,500	.1378	—	—	66	28	23	0,6	36	6
4162288	TDS202A03571	4162547	TDS212A03571	3,571	.1406	9/64	—	66	28	23	0,6	36	6
4162289	TDS202A03600	4162548	TDS212A03600	3,600	.1417	—	—	66	28	23	0,6	36	6
4162290	TDS202A03658	4162549	TDS212A03658	3,658	.1440	—	27	66	28	23	0,6	36	6
4162291	TDS202A03700	4162550	TDS212A03700	3,700	.1457	—	—	66	28	23	0,6	36	6
4162292	TDS202A03734	4162551	TDS212A03734	3,734	.1470	—	26	66	28	23	0,6	36	6
4162293	TDS202A03800	4162552	TDS212A03800	3,800	.1496	—	—	74	36	29	0,6	36	6
4162294	TDS202A03900	4162553	TDS212A03900	3,900	.1535	—	—	74	36	29	0,6	36	6
4162295	TDS202A03970	4162554	TDS212A03970	3,970	.1563	5/32	—	74	36	29	0,7	36	6
4162296	TDS202A04000	4162555	TDS212A04000	4,000	.1575	—	—	74	36	29	0,7	36	6
4162297	TDS202A04039	4162556	TDS212A04039	4,039	.1590	—	21	74	36	29	0,7	36	6
4162298	TDS202A04090	4162557	TDS212A04090	4,090	.1610	—	20	74	36	29	0,7	36	6
4162299	TDS202A04100	4162558	TDS212A04100	4,100	.1614	—	—	74	36	29	0,7	36	6
4162300	TDS202A04200	4162559	TDS212A04200	4,200	.1654	—	—	74	36	29	0,7	36	6
4162301	TDS202A04217	4162560	TDS212A04217	4,217	.1660	—	19	74	36	29	0,7	36	6

(continued)

(TDS202A • TDS212A • 5 x D — continued)



● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162302	TDS202A04300	4162561	TDS212A04300	4,300	.1693	—	—	74	36	29	0,7	36	6
4162303	TDS202A04366	4162562	TDS212A04366	4,366	.1719	11/64	—	74	36	29	0,7	36	6
4162304	TDS202A04400	4162563	TDS212A04400	4,400	.1732	—	—	74	36	29	0,7	36	6
4162305	TDS202A04500	4162564	TDS212A04500	4,500	.1772	—	—	74	36	29	0,7	36	6
4162306	TDS202A04600	4162565	TDS212A04600	4,600	.1811	—	—	74	36	29	0,8	36	6
4162307	TDS202A04623	4162566	TDS212A04623	4,623	.1820	—	14	74	36	29	0,8	36	6
4162308	TDS202A04700	4162567	TDS212A04700	4,700	.1850	—	13	74	36	29	0,8	36	6
4162309	TDS202A04763	4162568	TDS212A04763	4,763	.1875	3/16	—	82	44	35	0,8	36	6
4162310	TDS202A04800	4162569	TDS212A04800	4,800	.1890	—	12	82	44	35	0,8	36	6
4162311	TDS202A04852	4162570	TDS212A04852	4,852	.1910	—	11	82	44	35	0,8	36	6
4162312	TDS202A04900	4162571	TDS212A04900	4,900	.1929	—	—	82	44	35	0,8	36	6
4162313	TDS202A05000	4162572	TDS212A05000	5,000	.1969	—	—	82	44	35	0,8	36	6
4162314	TDS202A05100	4162573	TDS212A05100	5,100	.2008	—	—	82	44	35	0,8	36	6
4162315	TDS202A05106	4162574	TDS212A05106	5,106	.2010	—	7	82	44	35	0,8	36	6
4162316	TDS202A05159	4162575	TDS212A05159	5,159	.2031	13/64	—	82	44	35	0,9	36	6
4162317	TDS202A05200	4162576	TDS212A05200	5,200	.2047	—	—	82	44	35	0,9	36	6
4162318	TDS202A05300	4162577	TDS212A05300	5,300	.2087	—	—	82	44	35	0,9	36	6
4162319	TDS202A05400	4162578	TDS212A05400	5,400	.2126	—	—	82	44	35	0,9	36	6
4162320	TDS202A05410	4162579	TDS212A05410	5,410	.2130	—	3	82	44	35	0,9	36	6
4162321	TDS202A05500	4162580	TDS212A05500	5,500	.2165	—	—	82	44	35	0,9	36	6
4162322	TDS202A05558	4162581	TDS212A05558	5,558	.2188	7/32	—	82	44	35	0,9	36	6
4162323	TDS202A05600	4162582	TDS212A05600	5,600	.2205	—	—	82	44	35	0,9	36	6
4162324	TDS202A05616	4162583	TDS212A05616	5,616	.2211	—	2	82	44	35	0,9	36	6
4162325	TDS202A05700	4162584	TDS212A05700	5,700	.2244	—	—	82	44	35	1,0	36	6
4162326	TDS202A05800	4162585	TDS212A05800	5,800	.2283	—	—	82	44	35	1,0	36	6
4162327	TDS202A05900	4162586	TDS212A05900	5,900	.2323	—	—	82	44	35	1,0	36	6
4162328	TDS202A05954	4162587	TDS212A05954	5,954	.2344	15/64	—	82	44	35	1,0	36	6
4162329	TDS202A06000	4162588	TDS212A06000	6,000	.2362	—	—	82	44	35	1,0	36	6
4162330	TDS202A06100	4162589	TDS212A06100	6,100	.2402	—	—	91	53	43	1,0	36	8
4162331	TDS202A06200	4162590	TDS212A06200	6,200	.2441	—	—	91	53	43	1,0	36	8
4162332	TDS202A06300	4162591	TDS212A06300	6,300	.2480	—	—	91	53	43	1,1	36	8
4162333	TDS202A06350	4162592	TDS212A06350	6,350	.2500	1/4	—	91	53	43	1,1	36	8
4162334	TDS202A06400	4162593	TDS212A06400	6,400	.2520	—	—	91	53	43	1,1	36	8
4162335	TDS202A06500	4162594	TDS212A06500	6,500	.2559	—	—	91	53	43	1,1	36	8
4162336	TDS202A06528	4162595	TDS212A06528	6,528	.2570	—	—	91	53	43	1,1	36	8
4162337	TDS202A06600	4162596	TDS212A06600	6,600	.2598	—	—	91	53	43	1,1	36	8
4162338	TDS202A06630	4162597	TDS212A06630	6,630	.2610	—	—	91	53	43	1,1	36	8
4162339	TDS202A06700	4162598	TDS212A06700	6,700	.2638	—	—	91	53	43	1,1	36	8
4162340	TDS202A06746	4162599	TDS212A06746	6,746	.2656	17/64	—	91	53	43	1,1	36	8
4148908	TDS202A06800	4148983	TDS212A06800	6,800	.2677	—	—	91	53	43	1,1	36	8

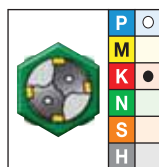
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Solid Carbide Drills

TOP DRILL S™ without Through Coolant • Steel and Cast Iron



(TDS202A • TDS212A • 5 x D — continued)



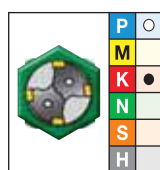
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162341	TDS202A06900	4162600	TDS212A06900	6,900	.2717	—	—	91	53	43	1,2	36	8
4162342	TDS202A07000	4162601	TDS212A07000	7,000	.2756	—	—	91	53	43	1,2	36	8
4162343	TDS202A07100	4162602	TDS212A07100	7,100	.2795	—	—	91	53	43	1,2	36	8
4162344	TDS202A07145	4162603	TDS212A07145	7,145	.2813	9/32	—	91	53	43	1,2	36	8
4162345	TDS202A07200	4162604	TDS212A07200	7,200	.2835	—	—	91	53	43	1,2	36	8
4162346	TDS202A07300	4162605	TDS212A07300	7,300	.2874	—	—	91	53	43	1,2	36	8
4162347	TDS202A07400	4162606	TDS212A07400	7,400	.2913	—	—	91	53	43	1,3	36	8
4162348	TDS202A07500	4162607	TDS212A07500	7,500	.2953	—	—	91	53	43	1,3	36	8
4162349	TDS202A07541	4162608	TDS212A07541	7,541	.2969	19/64	—	91	53	43	1,3	36	8
4162350	TDS202A07600	4162609	TDS212A07600	7,600	.2992	—	—	91	53	43	1,3	36	8
4162351	TDS202A07700	4162610	TDS212A07700	7,700	.3031	—	—	91	53	43	1,3	36	8
4162352	TDS202A07800	4162611	TDS212A07800	7,800	.3071	—	—	91	53	43	1,3	36	8
4162353	TDS202A07900	4162612	TDS212A07900	7,900	.3110	—	—	91	53	43	1,3	36	8
4162354	TDS202A07938	4162613	TDS212A07938	7,938	.3125	5/16	—	91	53	43	1,3	36	8
4162355	TDS202A08000	4162614	TDS212A08000	8,000	.3150	—	—	91	53	43	1,4	36	8
4162356	TDS202A08100	4162615	TDS212A08100	8,100	.3189	—	—	103	61	49	1,4	40	10
4162357	TDS202A08200	4162616	TDS212A08200	8,200	.3228	—	—	103	61	49	1,4	40	10
4162358	TDS202A08300	4162617	TDS212A08300	8,300	.3268	—	—	103	61	49	1,4	40	10
4162359	TDS202A08334	4162618	TDS212A08334	8,334	.3281	21/64	—	103	61	49	1,4	40	10
4162360	TDS202A08400	4162619	TDS212A08400	8,400	.3307	—	—	103	61	49	1,4	40	10
4162361	TDS202A08433	4162620	TDS212A08433	8,433	.3320	—	—	103	61	49	1,4	40	10
4162362	TDS202A08500	4162621	TDS212A08500	8,500	.3346	—	—	103	61	49	1,4	40	10
4162363	TDS202A08600	4162622	TDS212A08600	8,600	.3386	—	—	103	61	49	1,5	40	10
4162364	TDS202A08700	4162623	TDS212A08700	8,700	.3425	—	—	103	61	49	1,5	40	10
4162365	TDS202A08733	4162624	TDS212A08733	8,733	.3438	11/32	—	103	61	49	1,5	40	10
4162366	TDS202A08800	4162625	TDS212A08800	8,800	.3465	—	—	103	61	49	1,5	40	10
4162367	TDS202A08900	4162626	TDS212A08900	8,900	.3504	—	—	103	61	49	1,5	40	10
4162368	TDS202A09000	4162627	TDS212A09000	9,000	.3543	—	—	103	61	49	1,5	40	10
4162369	TDS202A09100	4162628	TDS212A09100	9,100	.3583	—	—	103	61	49	1,5	40	10
4162370	TDS202A09129	4162629	TDS212A09129	9,129	.3594	23/64	—	103	61	49	1,6	40	10
4162371	TDS202A09200	4162630	TDS212A09200	9,200	.3622	—	—	103	61	49	1,6	40	10
4162372	TDS202A09300	4162631	TDS212A09300	9,300	.3661	—	—	103	61	49	1,6	40	10
4162373	TDS202A09347	4162632	TDS212A09347	9,347	.3680	—	—	103	61	49	1,6	40	10
4162374	TDS202A09400	4162633	TDS212A09400	9,400	.3701	—	—	103	61	49	1,6	40	10
4162375	TDS202A09500	4162634	TDS212A09500	9,500	.3740	—	—	103	61	49	1,6	40	10
4162376	TDS202A09525	4162635	TDS212A09525	9,525	.3750	3/8	—	103	61	49	1,6	40	10
4162377	TDS202A09600	4162636	TDS212A09600	9,600	.3780	—	—	103	61	49	1,6	40	10
4162378	TDS202A09700	4162637	TDS212A09700	9,700	.3819	—	—	103	61	49	1,7	40	10
4162379	TDS202A09800	4162638	TDS212A09800	9,800	.3858	—	—	103	61	49	1,7	40	10
4162380	TDS202A09900	4162639	TDS212A09900	9,900	.3898	—	—	103	61	49	1,7	40	10

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(TDS202A • TDS212A • 5 x D — continued)



● first choice

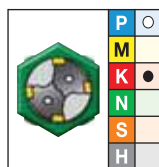
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162381	TDS202A09921	4162640	TDS212A09921	9,921	.3906	25/64	—	103	61	49	1,7	40	10
4167196	TDS202A10000	4162408	TDS212A10000	10,000	.3937	—	—	103	61	49	1,7	40	10
4167198	TDS202A10100	4162409	TDS212A10100	10,100	.3976	—	—	118	71	56	1,7	45	12
4167199	TDS202A10200	4162410	TDS212A10200	10,200	.4016	—	—	118	71	56	1,7	45	12
4167200	TDS202A10300	4162411	TDS212A10300	10,300	.4055	—	—	118	71	56	1,8	45	12
4167201	TDS202A10320	4162412	TDS212A10320	10,320	.4063	13/32	—	118	71	56	1,8	45	12
4167202	TDS202A10400	4162423	TDS212A10400	10,400	.4094	—	—	118	71	56	1,8	45	12
4167203	TDS202A10500	4162424	TDS212A10500	10,500	.4134	—	—	118	71	56	1,8	45	12
4167204	TDS202A10600	4162425	TDS212A10600	10,600	.4173	—	—	118	71	56	1,8	45	12
4167205	TDS202A10700	4162426	TDS212A10700	10,700	.4213	—	—	118	71	56	1,8	45	12
4167206	TDS202A10716	4162427	TDS212A10716	10,716	.4219	27/64	—	118	71	56	1,8	45	12
4167207	TDS202A10800	4162428	TDS212A10800	10,800	.4252	—	—	118	71	56	1,8	45	12
4167208	TDS202A10900	4162429	TDS212A10900	10,900	.4291	—	—	118	71	56	1,9	45	12
4167209	TDS202A11000	4162430	TDS212A11000	11,000	.4331	—	—	118	71	56	1,9	45	12
4167210	TDS202A11100	4162431	TDS212A11100	11,100	.4370	—	—	118	71	56	1,9	45	12
4167211	TDS202A11113	4162432	TDS212A11113	11,113	.4375	7/16	—	118	71	56	1,9	45	12
4167212	TDS202A11200	4162433	TDS212A11200	11,200	.4409	—	—	118	71	56	1,9	45	12
4167213	TDS202A11300	4162434	TDS212A11300	11,300	.4449	—	—	118	71	56	1,9	45	12
4167214	TDS202A11400	4162435	TDS212A11400	11,400	.4488	—	—	118	71	56	2,0	45	12
4167215	TDS202A11500	4162436	TDS212A11500	11,500	.4528	—	—	118	71	56	2,0	45	12
4167216	TDS202A11509	4162437	TDS212A11509	11,509	.4531	29/64	—	118	71	56	2,0	45	12
4167217	TDS202A11600	4162438	TDS212A11600	11,600	.4567	—	—	118	71	56	2,0	45	12
4167218	TDS202A11700	4162439	TDS212A11700	11,700	.4606	—	—	118	71	56	2,0	45	12
4167219	TDS202A11800	4162440	TDS212A11800	11,800	.4646	—	—	118	71	56	2,0	45	12
4167220	TDS202A11900	4162441	TDS212A11900	11,900	.4685	—	—	118	71	56	2,0	45	12
4167221	TDS202A11908	4162442	TDS212A11908	11,908	.4688	15/32	—	118	71	56	2,0	45	12
4167222	TDS202A12000	4162443	TDS212A12000	12,000	.4724	—	—	118	71	56	2,1	45	12
4167223	TDS202A12100	4162444	TDS212A12100	12,100	.4764	—	—	124	77	60	2,1	45	14
4167224	TDS202A12200	4162445	TDS212A12200	12,200	.4803	—	—	124	77	60	2,1	45	14
4167225	TDS202A12300	4162446	TDS212A12300	12,300	.4843	—	—	124	77	60	2,1	45	14
4167226	TDS202A12304	4162447	TDS212A12304	12,304	.4844	31/64	—	124	77	60	2,1	45	14
4167227	TDS202A12400	4162448	TDS212A12400	12,400	.4882	—	—	124	77	60	2,1	45	14
4167228	TDS202A12500	4162449	TDS212A12500	12,500	.4921	—	—	124	77	60	2,1	45	14
4167229	TDS202A12600	4162450	TDS212A12600	12,600	.4961	—	—	124	77	60	2,2	45	14
4167230	TDS202A12700	4162451	TDS212A12700	12,700	.5000	1/2	—	124	77	60	2,2	45	14
4167231	TDS202A12800	4162452	TDS212A12800	12,800	.5039	—	—	124	77	60	2,2	45	14
4167232	TDS202A12900	4162453	TDS212A12900	12,900	.5079	—	—	124	77	60	2,2	45	14
4167233	TDS202A13000	4162454	TDS212A13000	13,000	.5118	—	—	124	77	60	2,2	45	14
4167234	TDS202A13096	4162455	TDS212A13096	13,096	.5156	33/64	—	124	77	60	2,3	45	14
4167235	TDS202A13100	4162456	TDS212A13100	13,100	.5157	—	—	124	77	60	2,3	45	14

(continued)

(TDS202A • TDS212A • 5 x D — continued)



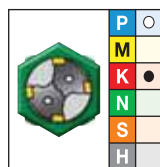
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4167236	TDS202A13200	4162457	TDS212A13200	13,200	.5197	—	—	124	77	60	2,3	45	14
4167237	TDS202A13300	4162458	TDS212A13300	13,300	.5236	—	—	124	77	60	2,3	45	14
4167238	TDS202A13400	4162459	TDS212A13400	13,400	.5276	—	—	124	77	60	2,3	45	14
4167239	TDS202A13500	4162460	TDS212A13500	13,500	.5315	—	—	124	77	60	2,3	45	14
4167240	TDS202A13600	4162461	TDS212A13600	13,600	.5354	—	—	124	77	60	2,3	45	14
4167241	TDS202A13700	4162462	TDS212A13700	13,700	.5394	—	—	124	77	60	2,4	45	14
4167242	TDS202A13800	4162463	TDS212A13800	13,800	.5433	—	—	124	77	60	2,4	45	14
4167243	TDS202A13891	4162464	TDS212A13891	13,891	.5469	35/64	—	124	77	60	2,4	45	14
4167244	TDS202A13900	4162465	TDS212A13900	13,900	.5472	—	—	124	77	60	2,4	45	14
4167245	TDS202A14000	4162466	TDS212A14000	14,000	.5512	—	—	124	77	60	2,4	45	14
4167246	TDS202A14100	4162467	TDS212A14100	14,100	.5551	—	—	133	83	63	2,4	48	16
4167247	TDS202A14200	4162468	TDS212A14200	14,200	.5591	—	—	133	83	63	2,5	48	16
4167248	TDS202A14288	4162469	TDS212A14288	14,288	.5625	9/16	—	133	83	63	2,5	48	16
4167249	TDS202A14300	4162470	TDS212A14300	14,300	.5630	—	—	133	83	63	2,5	48	16
4167250	TDS202A14400	4162471	TDS212A14400	14,400	.5669	—	—	133	83	63	2,5	48	16
4167251	TDS202A14500	4162472	TDS212A14500	14,500	.5709	—	—	133	83	63	2,5	48	16
4167252	TDS202A14600	4162473	TDS212A14600	14,600	.5748	—	—	133	83	63	2,5	48	16
4167253	TDS202A14684	4162474	TDS212A14684	14,684	.5781	37/64	—	133	83	63	2,5	48	16
4167254	TDS202A14700	4162475	TDS212A14700	14,700	.5787	—	—	133	83	63	2,5	48	16
4167255	TDS202A14800	4162476	TDS212A14800	14,800	.5827	—	—	133	83	63	2,6	48	16
4167256	TDS202A14900	4162477	TDS212A14900	14,900	.5866	—	—	133	83	63	2,6	48	16
4167257	TDS202A15000	4162478	TDS212A15000	15,000	.5906	—	—	133	83	63	2,6	48	16
4167258	TDS202A15083	4162479	TDS212A15083	15,083	.5938	19/32	—	133	83	63	2,6	48	16
4167259	TDS202A15100	4162480	TDS212A15100	15,100	.5945	—	—	133	83	63	2,6	48	16
4167260	TDS202A15200	4162481	TDS212A15200	15,200	.5984	—	—	133	83	63	2,6	48	16
4167261	TDS202A15300	4162482	TDS212A15300	15,300	.6024	—	—	133	83	63	2,6	48	16
4167262	TDS202A15400	4162483	TDS212A15400	15,400	.6063	—	—	133	83	63	2,7	48	16
4167263	TDS202A15479	4162484	TDS212A15479	15,479	.6094	39/64	—	133	83	63	2,7	48	16
4167264	TDS202A15500	4162485	TDS212A15500	15,500	.6102	—	—	133	83	63	2,7	48	16
4167265	TDS202A15600	4162486	TDS212A15600	15,600	.6142	—	—	133	83	63	2,7	48	16
4167266	TDS202A15700	4162487	TDS212A15700	15,700	.6181	—	—	133	83	63	2,7	48	16
4167267	TDS202A15800	4162488	TDS212A15800	15,800	.6220	—	—	133	83	63	2,7	48	16
4167268	TDS202A15875	4162489	TDS212A15875	15,875	.6250	5/8	—	133	83	63	2,7	48	16
4167269	TDS202A15900	4162490	TDS212A15900	15,900	.6260	—	—	133	83	63	2,8	48	16
4167270	TDS202A16000	4162491	TDS212A16000	16,000	.6299	—	—	133	83	63	2,8	48	16
4167271	TDS202A16100	4162492	TDS212A16100	16,100	.6339	—	—	143	93	71	2,8	48	18
4167272	TDS202A16200	4162493	TDS212A16200	16,200	.6378	—	—	143	93	71	2,8	48	18
4167273	TDS202A16271	4162494	TDS212A16271	16,271	.6406	41/64	—	143	93	71	2,8	48	18
4167274	TDS202A16300	4162495	TDS212A16300	16,300	.6417	—	—	143	93	71	2,8	48	18
4167275	TDS202A16400	4162496	TDS212A16400	16,400	.6457	—	—	143	93	71	2,8	48	18

(continued)

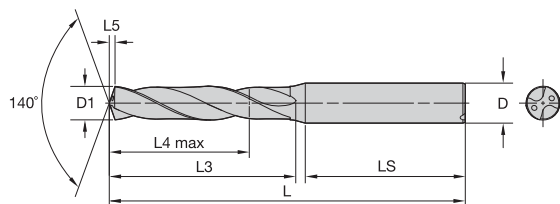
(TDS202A • TDS212A • 5 x D — continued)



● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4167276	TDS202A16500	4162497	TDS212A16500	16,500	.6496	—	—	143	93	71	2,9	48	18
4167277	TDS202A16600	4162498	TDS212A16600	16,600	.6535	—	—	143	93	71	2,9	48	18
4167278	TDS202A16670	4162499	TDS212A16670	16,670	.6563	21/32	—	143	93	71	2,9	48	18
4167279	TDS202A16700	4162500	TDS212A16700	16,700	.6575	—	—	143	93	71	2,9	48	18
4167280	TDS202A16800	4162501	TDS212A16800	16,800	.6614	—	—	143	93	71	2,9	48	18
4167281	TDS202A16900	4162502	TDS212A16900	16,900	.6654	—	—	143	93	71	2,9	48	18
4167282	TDS202A17000	4162503	TDS212A17000	17,000	.6693	—	—	143	93	71	2,9	48	18
4167283	TDS202A17100	4162504	TDS212A17100	17,100	.6732	—	—	143	93	71	3,0	48	18
4167284	TDS202A17200	4162505	TDS212A17200	17,200	.6772	—	—	143	93	71	3,0	48	18
4167285	TDS202A17300	4162506	TDS212A17300	17,300	.6811	—	—	143	93	71	3,0	48	18
4167286	TDS202A17400	4162507	TDS212A17400	17,400	.6850	—	—	143	93	71	3,0	48	18
4167287	TDS202A17463	4162508	TDS212A17463	17,463	.6875	11/16	—	143	93	71	3,0	48	18
4167288	TDS202A17500	4162509	TDS212A17500	17,500	.6890	—	—	143	93	71	3,0	48	18
4167289	TDS202A17600	4162510	TDS212A17600	17,600	.6929	—	—	143	93	71	3,1	48	18
4167290	TDS202A17700	4162511	TDS212A17700	17,700	.6969	—	—	143	93	71	3,1	48	18
4167291	TDS202A17800	4162512	TDS212A17800	17,800	.7008	—	—	143	93	71	3,1	48	18
4167292	TDS202A17859	4162513	TDS212A17859	17,859	.7031	45/64	—	143	93	71	3,1	48	18
4167293	TDS202A17900	4162514	TDS212A17900	17,900	.7047	—	—	143	93	71	3,1	48	18
4163313	TDS202A18000	4160528	TDS212A18000	18,000	.7087	—	—	143	93	71	3,1	48	18
4163314	TDS202A18100	4160464	TDS212A18100	18,100	.7126	—	—	153	101	77	3,1	50	20
4163305	TDS202A18200	4160465	TDS212A18200	18,200	.7165	—	—	153	101	77	3,2	50	20
4163306	TDS202A18258	4160466	TDS212A18258	18,258	.7188	23/32	—	153	101	77	3,2	50	20
4163307	TDS202A18300	4160467	TDS212A18300	18,300	.7205	—	—	153	101	77	3,2	50	20
4163308	TDS202A18400	4160468	TDS212A18400	18,400	.7244	—	—	153	101	77	3,2	50	20
4163309	TDS202A18500	4160469	TDS212A18500	18,500	.7283	—	—	153	101	77	3,2	50	20
4163310	TDS202A18600	4160470	TDS212A18600	18,600	.7323	—	—	153	101	77	3,2	50	20
4163311	TDS202A18654	4160471	TDS212A18654	18,654	.7344	47/64	—	153	101	77	3,2	50	20
4163312	TDS202A18700	4160472	TDS212A18700	18,700	.7362	—	—	153	101	77	3,2	50	20
4163323	TDS202A18800	4160583	TDS212A18800	18,800	.7402	—	—	153	101	77	3,3	50	20
4163324	TDS202A18900	4160584	TDS212A18900	18,900	.7441	—	—	153	101	77	3,3	50	20
4163325	TDS202A19000	4160585	TDS212A19000	19,000	.7480	—	—	153	101	77	3,3	50	20
4163326	TDS202A19050	4160586	TDS212A19050	19,050	.7500	3/4	—	153	101	77	3,3	50	20
4163327	TDS202A19100	4160587	TDS212A19100	19,100	.7520	—	—	153	101	77	3,3	50	20
4163328	TDS202A19200	4160588	TDS212A19200	19,200	.7559	—	—	153	101	77	3,3	50	20
4163329	TDS202A19300	4160589	TDS212A19300	19,300	.7598	—	—	153	101	77	3,4	50	20
4163330	TDS202A19400	4160590	TDS212A19400	19,400	.7638	—	—	153	101	77	3,4	50	20
4163331	TDS202A19500	4160591	TDS212A19500	19,500	.7677	—	—	153	101	77	3,4	50	20
4163332	TDS202A19600	4160592	TDS212A19600	19,600	.7717	—	—	153	101	77	3,4	50	20
4163333	TDS202A19700	4160593	TDS212A19700	19,700	.7756	—	—	153	101	77	3,4	50	20
4163334	TDS202A19800	4160594	TDS212A19800	19,800	.7795	—	—	153	101	77	3,4	50	20
4163335	TDS202A19900	4160595	TDS212A19900	19,900	.7835	—	—	153	101	77	3,5	50	20
4163336	TDS202A20000	4160596	TDS212A20000	20,000	.7874	—	—	153	101	77	3,5	50	20



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



■ TDS401A • TDS411A • 3 x D



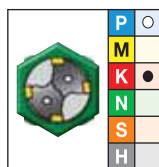
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163315	TDS401A03000	4157799	TDS411A03000	3,000	.1181	—	—	62	20	14	0,5	36	6
4163337	TDS401A03048	4157800	TDS411A03048	3,048	.1200	—	31	62	20	14	0,5	36	6
4163338	TDS401A03100	4157801	TDS411A03100	3,100	.1220	—	—	62	20	14	0,5	36	6
4163339	TDS401A03175	4157802	TDS411A03175	3,175	.1250	1/8	—	62	20	14	0,5	36	6
4163340	TDS401A03200	4157803	TDS411A03200	3,200	.1260	—	—	62	20	14	0,5	36	6
4163341	TDS401A03264	4157804	TDS411A03264	3,264	.1285	—	30	62	20	14	0,5	36	6
4163342	TDS401A03300	4157805	TDS411A03300	3,300	.1299	—	—	62	20	14	0,5	36	6
4163463	TDS401A03400	4157806	TDS411A03400	3,400	.1339	—	—	62	20	14	0,6	36	6
4163464	TDS401A03455	4157807	TDS411A03455	3,455	.1360	—	29	62	20	14	0,6	36	6
4163465	TDS401A03500	4157808	TDS411A03500	3,500	.1378	—	—	62	20	14	0,6	36	6
4163466	TDS401A03571	4157809	TDS411A03571	3,571	.1406	9/64	—	62	20	14	0,6	36	6
4163467	TDS401A03600	4157810	TDS411A03600	3,600	.1417	—	—	62	20	14	0,6	36	6
4163468	TDS401A03658	4157811	TDS411A03658	3,658	.1440	—	27	62	20	14	0,6	36	6
4163469	TDS401A03700	4157812	TDS411A03700	3,700	.1457	—	—	62	20	14	0,6	36	6
4163470	TDS401A03734	4157813	TDS411A03734	3,734	.1470	—	26	62	20	14	0,6	36	6
4163471	TDS401A03800	4157814	TDS411A03800	3,800	.1496	—	—	66	24	17	0,6	36	6
4163472	TDS401A03900	4157815	TDS411A03900	3,900	.1535	—	—	66	24	17	0,6	36	6
4163473	TDS401A03970	4157816	TDS411A03970	3,970	.1563	5/32	—	66	24	17	0,7	36	6
4163474	TDS401A04000	4157817	TDS411A04000	4,000	.1575	—	—	66	24	17	0,7	36	6
4163475	TDS401A04039	4157818	TDS411A04039	4,039	.1590	—	21	66	24	17	0,7	36	6
4163476	TDS401A04090	4157819	TDS411A04090	4,090	.1610	—	20	66	24	17	0,7	36	6
4163477	TDS401A04100	4157820	TDS411A04100	4,100	.1614	—	—	66	24	17	0,7	36	6
4163478	TDS401A04200	4157821	TDS411A04200	4,200	.1654	—	—	66	24	17	0,7	36	6
4163479	TDS401A04217	4157822	TDS411A04217	4,217	.1660	—	19	66	24	17	0,7	36	6

(continued)

(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4163480	TDS401A04300	4157823	TDS411A04300	4,300	.1693	—	—	66	24	17	0,7	36	6
4163481	TDS401A04366	4157824	TDS411A04366	4,366	.1719	11/64	—	66	24	17	0,7	36	6
4163482	TDS401A04400	4157825	TDS411A04400	4,400	.1732	—	—	66	24	17	0,7	36	6
4163483	TDS401A04500	4157826	TDS411A04500	4,500	.1772	—	—	66	24	17	0,7	36	6
4163484	TDS401A04600	4157827	TDS411A04600	4,600	.1811	—	—	66	24	17	0,8	36	6
4163485	TDS401A04623	4157828	TDS411A04623	4,623	.1820	—	14	66	24	17	0,8	36	6
4163486	TDS401A04700	4157829	TDS411A04700	4,700	.1850	—	13	66	24	17	0,8	36	6
4163487	TDS401A04763	4157830	TDS411A04763	4,763	.1875	3/16	—	66	28	20	0,8	36	6
4163488	TDS401A04800	4157831	TDS411A04800	4,800	.1890	—	12	66	28	20	0,8	36	6
4163489	TDS401A04852	4157832	TDS411A04852	4,852	.1910	—	11	66	28	20	0,8	36	6
4163490	TDS401A04900	4157833	TDS411A04900	4,900	.1929	—	—	66	28	20	0,8	36	6
4163491	TDS401A05000	4157834	TDS411A05000	5,000	.1969	—	—	66	28	20	0,8	36	6
4163492	TDS401A05100	4157835	TDS411A05100	5,100	.2008	—	—	66	28	20	0,8	36	6
4163493	TDS401A05106	4157836	TDS411A05106	5,106	.2010	—	7	66	28	20	0,8	36	6
4163494	TDS401A05159	4157837	TDS411A05159	5,159	.2031	13/64	—	66	28	20	0,9	36	6
4163495	TDS401A05200	4157838	TDS411A05200	5,200	.2047	—	—	66	28	20	0,9	36	6
4163496	TDS401A05300	4157839	TDS411A05300	5,300	.2087	—	—	66	28	20	0,9	36	6
4163497	TDS401A05400	4157840	TDS411A05400	5,400	.2126	—	—	66	28	20	0,9	36	6
4163498	TDS401A05410	4157841	TDS411A05410	5,410	.2130	—	3	66	28	20	0,9	36	6
4163499	TDS401A05500	4157842	TDS411A05500	5,500	.2165	—	—	66	28	20	0,9	36	6
4163500	TDS401A05558	4157843	TDS411A05558	5,558	.2188	7/32	—	66	28	20	0,9	36	6
4163501	TDS401A05600	4157844	TDS411A05600	5,600	.2205	—	—	66	28	20	0,9	36	6
4163502	TDS401A05616	4157845	TDS411A05616	5,616	.2211	—	2	66	28	20	0,9	36	6
4163503	TDS401A05700	4157846	TDS411A05700	5,700	.2244	—	—	66	28	20	1,0	36	6
4163504	TDS401A05800	4157847	TDS411A05800	5,800	.2283	—	—	66	28	20	1,0	36	6
4163505	TDS401A05900	4157848	TDS411A05900	5,900	.2323	—	—	66	28	20	1,0	36	6
4163506	TDS401A05954	4157849	TDS411A05954	5,954	.2344	15/64	—	66	28	20	1,0	36	6
4163507	TDS401A06000	4157850	TDS411A06000	6,000	.2362	—	—	66	28	20	1,0	36	6
4163508	TDS401A06100	4157851	TDS411A06100	6,100	.2402	—	—	79	34	24	1,0	36	8
4163509	TDS401A06200	4157852	TDS411A06200	6,200	.2441	—	—	79	34	24	1,0	36	8
4163510	TDS401A06300	4157853	TDS411A06300	6,300	.2480	—	—	79	34	24	1,1	36	8
4163511	TDS401A06350	4157854	TDS411A06350	6,350	.2500	1/4	—	79	34	24	1,1	36	8
4163512	TDS401A06400	4157855	TDS411A06400	6,400	.2520	—	—	79	34	24	1,1	36	8
4163513	TDS401A06500	4157856	TDS411A06500	6,500	.2559	—	—	79	34	24	1,1	36	8
4163514	TDS401A06528	4157857	TDS411A06528	6,528	.2570	—	—	79	34	24	1,1	36	8
4163515	TDS401A06600	4157858	TDS411A06600	6,600	.2598	—	—	79	34	24	1,1	36	8
4163516	TDS401A06630	4157859	TDS411A06630	6,630	.2610	—	—	79	34	24	1,1	36	8
4163517	TDS401A06700	4157860	TDS411A06700	6,700	.2638	—	—	79	34	24	1,1	36	8
4163518	TDS401A06746	4157861	TDS411A06746	6,746	.2656	17/64	—	79	34	24	1,1	36	8
4163519	TDS401A06800	4157862	TDS411A06800	6,800	.2677	—	—	79	34	24	1,1	36	8

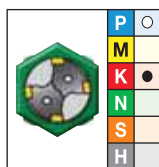
(continued)

Solid Carbide Drills

TOP DRILL S™ with Through Coolant • Steel and Cast Iron



(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

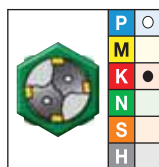
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163520	TDS401A06900	4157863	TDS411A06900	6,900	.2717	—	—	79	34	24	1,2	36	8
4163521	TDS401A07000	4157864	TDS411A07000	7,000	.2756	—	—	79	34	24	1,2	36	8
4163522	TDS401A07100	4157865	TDS411A07100	7,100	.2795	—	—	79	41	29	1,2	36	8
4163523	TDS401A07145	4157866	TDS411A07145	7,145	.2813	9/32	—	79	41	29	1,2	36	8
4163524	TDS401A07200	4157867	TDS411A07200	7,200	.2835	—	—	79	41	29	1,2	36	8
4163525	TDS401A07300	4157868	TDS411A07300	7,300	.2874	—	—	79	41	29	1,2	36	8
4163526	TDS401A07400	4157869	TDS411A07400	7,400	.2913	—	—	79	41	29	1,3	36	8
4163527	TDS401A07500	4157870	TDS411A07500	7,500	.2953	—	—	79	41	29	1,3	36	8
4163528	TDS401A07541	4157871	TDS411A07541	7,541	.2969	19/64	—	79	41	29	1,3	36	8
4163529	TDS401A07600	4157872	TDS411A07600	7,600	.2992	—	—	79	41	29	1,3	36	8
4163530	TDS401A07700	4157873	TDS411A07700	7,700	.3031	—	—	79	41	29	1,3	36	8
4163531	TDS401A07800	4157874	TDS411A07800	7,800	.3071	—	—	79	41	29	1,3	36	8
4163532	TDS401A07900	4157875	TDS411A07900	7,900	.3110	—	—	79	41	29	1,3	36	8
4163533	TDS401A07938	4157876	TDS411A07938	7,938	.3125	5/16	—	79	41	29	1,3	36	8
4163534	TDS401A08000	4157877	TDS411A08000	8,000	.3150	—	—	79	41	29	1,4	36	8
4163535	TDS401A08100	4157878	TDS411A08100	8,100	.3189	—	—	89	47	35	1,4	40	10
4163536	TDS401A08200	4157879	TDS411A08200	8,200	.3228	—	—	89	47	35	1,4	40	10
4163537	TDS401A08300	4157880	TDS411A08300	8,300	.3268	—	—	89	47	35	1,4	40	10
4163538	TDS401A08334	4157881	TDS411A08334	8,334	.3281	21/64	—	89	47	35	1,4	40	10
4163539	TDS401A08400	4157882	TDS411A08400	8,400	.3307	—	—	89	47	35	1,4	40	10
4163540	TDS401A08433	4157883	TDS411A08433	8,433	.3320	—	—	89	47	35	1,4	40	10
4163541	TDS401A08500	4157884	TDS411A08500	8,500	.3346	—	—	89	47	35	1,4	40	10
4163542	TDS401A08600	4157885	TDS411A08600	8,600	.3386	—	—	89	47	35	1,5	40	10
4163543	TDS401A08700	4157886	TDS411A08700	8,700	.3425	—	—	89	47	35	1,5	40	10
4163544	TDS401A08733	4157887	TDS411A08733	8,733	.3438	11/32	—	89	47	35	1,5	40	10
4163545	TDS401A08800	4157888	TDS411A08800	8,800	.3465	—	—	89	47	35	1,5	40	10
4163546	TDS401A08900	4157889	TDS411A08900	8,900	.3504	—	—	89	47	35	1,5	40	10
4163547	TDS401A09000	4157890	TDS411A09000	9,000	.3543	—	—	89	47	35	1,5	40	10
4163548	TDS401A09100	4157891	TDS411A09100	9,100	.3583	—	—	89	47	35	1,5	40	10
4163549	TDS401A09129	4157892	TDS411A09129	9,129	.3594	23/64	—	89	47	35	1,6	40	10
4163550	TDS401A09200	4157893	TDS411A09200	9,200	.3622	—	—	89	47	35	1,6	40	10
4163551	TDS401A09300	4157894	TDS411A09300	9,300	.3661	—	—	89	47	35	1,6	40	10
4163552	TDS401A09347	4157895	TDS411A09347	9,347	.3680	—	—	89	47	35	1,6	40	10
4163553	TDS401A09400	4157896	TDS411A09400	9,400	.3701	—	—	89	47	35	1,6	40	10
4163554	TDS401A09500	4157897	TDS411A09500	9,500	.3740	—	—	89	47	35	1,6	40	10
4163555	TDS401A09525	4157898	TDS411A09525	9,525	.3750	3/8	—	89	47	35	1,6	40	10
4163556	TDS401A09600	4157899	TDS411A09600	9,600	.3780	—	—	89	47	35	1,6	40	10
4163557	TDS401A09700	4157900	TDS411A09700	9,700	.3819	—	—	89	47	35	1,7	40	10
4163558	TDS401A09800	4157901	TDS411A09800	9,800	.3858	—	—	89	47	35	1,7	40	10
4163559	TDS401A09900	4157902	TDS411A09900	9,900	.3898	—	—	89	47	35	1,7	40	10

(continued)

Solid Carbide Drills

(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4163560	TDS401A09921	4157903	TDS411A09921	9,921	.3906	25/64	—	89	47	35	1,7	40	10
4162950	TDS401A10000	4156562	TDS411A10000	10,000	.3937	—	—	89	47	35	1,7	40	10
4162951	TDS401A10100	4156603	TDS411A10100	10,100	.3976	—	—	102	55	40	1,7	45	12
4162952	TDS401A10200	4156604	TDS411A10200	10,200	.4016	—	—	102	55	40	1,7	45	12
4163343	TDS401A10300	4156605	TDS411A10300	10,300	.4055	—	—	102	55	40	1,8	45	12
4163344	TDS401A10320	4156606	TDS411A10320	10,320	.4063	13/32	—	102	55	40	1,8	45	12
4163345	TDS401A10400	4156607	TDS411A10400	10,400	.4094	—	—	102	55	40	1,8	45	12
4163346	TDS401A10500	4156608	TDS411A10500	10,500	.4134	—	—	102	55	40	1,8	45	12
4163347	TDS401A10600	4156609	TDS411A10600	10,600	.4173	—	—	102	55	40	1,8	45	12
4163348	TDS401A10700	4156610	TDS411A10700	10,700	.4213	—	—	102	55	40	1,8	45	12
4163349	TDS401A10716	4156611	TDS411A10716	10,716	.4219	27/64	—	102	55	40	1,8	45	12
4163350	TDS401A10800	4156612	TDS411A10800	10,800	.4252	—	—	102	55	40	1,8	45	12
4163351	TDS401A10900	4156613	TDS411A10900	10,900	.4291	—	—	102	55	40	1,9	45	12
4163352	TDS401A11000	4156614	TDS411A11000	11,000	.4331	—	—	102	55	40	1,9	45	12
4163353	TDS401A11100	4156615	TDS411A11100	11,100	.4370	—	—	102	55	40	1,9	45	12
4163354	TDS401A11113	4156616	TDS411A11113	11,113	.4375	7/16	—	102	55	40	1,9	45	12
4163355	TDS401A11200	4156617	TDS411A11200	11,200	.4409	—	—	102	55	40	1,9	45	12
4163356	TDS401A11300	4156618	TDS411A11300	11,300	.4449	—	—	102	55	40	1,9	45	12
4163357	TDS401A11400	4156619	TDS411A11400	11,400	.4488	—	—	102	55	40	2,0	45	12
4163358	TDS401A11500	4156620	TDS411A11500	11,500	.4528	—	—	102	55	40	2,0	45	12
4163359	TDS401A11509	4156621	TDS411A11509	11,509	.4531	29/64	—	102	55	40	2,0	45	12
4163360	TDS401A11600	4156622	TDS411A11600	11,600	.4567	—	—	102	55	40	2,0	45	12
4163361	TDS401A11700	4156623	TDS411A11700	11,700	.4606	—	—	102	55	40	2,0	45	12
4163362	TDS401A11800	4156624	TDS411A11800	11,800	.4646	—	—	102	55	40	2,0	45	12
4163363	TDS401A11900	4156625	TDS411A11900	11,900	.4685	—	—	102	55	40	2,0	45	12
4163364	TDS401A11908	4156626	TDS411A11908	11,908	.4688	15/32	—	102	55	40	2,0	45	12
4163365	TDS401A12000	4156627	TDS411A12000	12,000	.4724	—	—	102	55	40	2,1	45	12
4163366	TDS401A12100	4156628	TDS411A12100	12,100	.4764	—	—	107	60	43	2,1	45	14
4163367	TDS401A12200	4156629	TDS411A12200	12,200	.4803	—	—	107	60	43	2,1	45	14
4163368	TDS401A12300	4156630	TDS411A12300	12,300	.4843	—	—	107	60	43	2,1	45	14
4163369	TDS401A12304	4156631	TDS411A12304	12,304	.4844	31/64	—	107	60	43	2,1	45	14
4163370	TDS401A12400	4156632	TDS411A12400	12,400	.4882	—	—	107	60	43	2,1	45	14
4163371	TDS401A12500	4156633	TDS411A12500	12,500	.4921	—	—	107	60	43	2,1	45	14
4163372	TDS401A12600	4156634	TDS411A12600	12,600	.4961	—	—	107	60	43	2,2	45	14
4163373	TDS401A12700	4156635	TDS411A12700	12,700	.5000	1/2	—	107	60	43	2,2	45	14
4163374	TDS401A12800	4156636	TDS411A12800	12,800	.5039	—	—	107	60	43	2,2	45	14
4163375	TDS401A12900	4156637	TDS411A12900	12,900	.5079	—	—	107	60	43	2,2	45	14
4163376	TDS401A13000	4156638	TDS411A13000	13,000	.5118	—	—	107	60	43	2,2	45	14
4163377	TDS401A13096	4156639	TDS411A13096	13,096	.5156	33/64	—	107	60	43	2,3	45	14
4163378	TDS401A13100	4156640	TDS411A13100	13,100	.5157	—	—	107	60	43	2,3	45	14

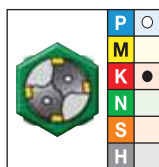
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Solid Carbide Drills

TOP DRILL S™ with Through Coolant • Steel and Cast Iron



(TDS401A • TDS411A • 3 x D — continued)



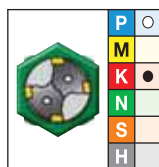
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163379	TDS401A13200	4156641	TDS411A13200	13,200	.5197	—	—	107	60	43	2,3	45	14
4163380	TDS401A13300	4156642	TDS411A13300	13,300	.5236	—	—	107	60	43	2,3	45	14
4163381	TDS401A13400	4156643	TDS411A13400	13,400	.5276	—	—	107	60	43	2,3	45	14
4163382	TDS401A13500	4156644	TDS411A13500	13,500	.5315	—	—	107	60	43	2,3	45	14
4163383	TDS401A13600	4156645	TDS411A13600	13,600	.5354	—	—	107	60	43	2,3	45	14
4163384	TDS401A13700	4156646	TDS411A13700	13,700	.5394	—	—	107	60	43	2,4	45	14
4163385	TDS401A13800	4156647	TDS411A13800	13,800	.5433	—	—	107	60	43	2,4	45	14
4163386	TDS401A13891	4156648	TDS411A13891	13,891	.5469	35/64	—	107	60	43	2,4	45	14
4163387	TDS401A13900	4156649	TDS411A13900	13,900	.5472	—	—	107	60	43	2,4	45	14
4163388	TDS401A14000	4156650	TDS411A14000	14,000	.5512	—	—	107	60	43	2,4	45	14
4163389	TDS401A14100	4156651	TDS411A14100	14,100	.5551	—	—	115	65	45	2,4	48	16
4163390	TDS401A14200	4156652	TDS411A14200	14,200	.5591	—	—	115	65	45	2,5	48	16
4163391	TDS401A14288	4156653	TDS411A14288	14,288	.5625	9/16	—	115	65	45	2,5	48	16
4163392	TDS401A14300	4156654	TDS411A14300	14,300	.5630	—	—	115	65	45	2,5	48	16
4163393	TDS401A14400	4156655	TDS411A14400	14,400	.5669	—	—	115	65	45	2,5	48	16
4163394	TDS401A14500	4156656	TDS411A14500	14,500	.5709	—	—	115	65	45	2,5	48	16
4163395	TDS401A14600	4156657	TDS411A14600	14,600	.5748	—	—	115	65	45	2,5	48	16
4163396	TDS401A14684	4156658	TDS411A14684	14,684	.5781	37/64	—	115	65	45	2,5	48	16
4163397	TDS401A14700	4156659	TDS411A14700	14,700	.5787	—	—	115	65	45	2,5	48	16
4163398	TDS401A14800	4156660	TDS411A14800	14,800	.5827	—	—	115	65	45	2,6	48	16
4163399	TDS401A14900	4156661	TDS411A14900	14,900	.5866	—	—	115	65	45	2,6	48	16
4163400	TDS401A15000	4156662	TDS411A15000	15,000	.5906	—	—	115	65	45	2,6	48	16
4163401	TDS401A15083	4156663	TDS411A15083	15,083	.5938	19/32	—	115	65	45	2,6	48	16
4163402	TDS401A15100	4156664	TDS411A15100	15,100	.5945	—	—	115	65	45	2,6	48	16
4163403	TDS401A15200	4156665	TDS411A15200	15,200	.5984	—	—	115	65	45	2,6	48	16
4163404	TDS401A15300	4156666	TDS411A15300	15,300	.6024	—	—	115	65	45	2,6	48	16
4163405	TDS401A15400	4156667	TDS411A15400	15,400	.6063	—	—	115	65	45	2,7	48	16
4163406	TDS401A15479	4156668	TDS411A15479	15,479	.6094	39/64	—	115	65	45	2,7	48	16
4163407	TDS401A15500	4156669	TDS411A15500	15,500	.6102	—	—	115	65	45	2,7	48	16
4163408	TDS401A15600	4156670	TDS411A15600	15,600	.6142	—	—	115	65	45	2,7	48	16
4163409	TDS401A15700	4156671	TDS411A15700	15,700	.6181	—	—	115	65	45	2,7	48	16
4163410	TDS401A15800	4156672	TDS411A15800	15,800	.6220	—	—	115	65	45	2,7	48	16
4163411	TDS401A15875	4156673	TDS411A15875	15,875	.6250	5/8	—	115	65	45	2,7	48	16
4163412	TDS401A15900	4156674	TDS411A15900	15,900	.6260	—	—	115	65	45	2,8	48	16
4163413	TDS401A16000	4156675	TDS411A16000	16,000	.6299	—	—	115	65	45	2,8	48	16
4163414	TDS401A16100	4156676	TDS411A16100	16,100	.6339	—	—	123	73	51	2,8	48	18
4163415	TDS401A16200	4156677	TDS411A16200	16,200	.6378	—	—	123	73	51	2,8	48	18
4163416	TDS401A16271	4156678	TDS411A16271	16,271	.6406	41/64	—	123	73	51	2,8	48	18
4163417	TDS401A16300	4156679	TDS411A16300	16,300	.6417	—	—	123	73	51	2,8	48	18
4163418	TDS401A16400	4156680	TDS411A16400	16,400	.6457	—	—	123	73	51	2,8	48	18

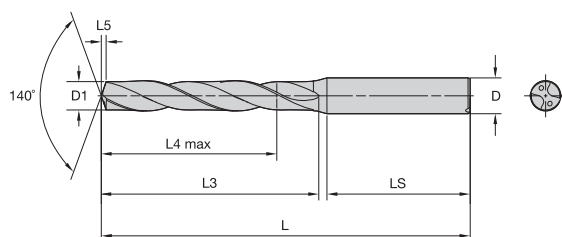
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(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

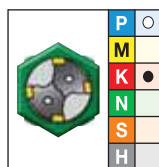
grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4163419	TDS401A16500	4156681	TDS411A16500	16,500	.6496	—	—	123	73	51	2,9	48	18
4163420	TDS401A16600	4156682	TDS411A16600	16,600	.6535	—	—	123	73	51	2,9	48	18
4163421	TDS401A16670	4156683	TDS411A16670	16,670	.6563	21/32	—	123	73	51	2,9	48	18
4163422	TDS401A16700	4156684	TDS411A16700	16,700	.6575	—	—	123	73	51	2,9	48	18
4163423	TDS401A16800	4156685	TDS411A16800	16,800	.6614	—	—	123	73	51	2,9	48	18
4163424	TDS401A16900	4156686	TDS411A16900	16,900	.6654	—	—	123	73	51	2,9	48	18
4163425	TDS401A17000	4156687	TDS411A17000	17,000	.6693	—	—	123	73	51	2,9	48	18
4163426	TDS401A17100	4156688	TDS411A17100	17,100	.6732	—	—	123	73	51	3,0	48	18
4163427	TDS401A17200	4156689	TDS411A17200	17,200	.6772	—	—	123	73	51	3,0	48	18
4163428	TDS401A17300	4156690	TDS411A17300	17,300	.6811	—	—	123	73	51	3,0	48	18
4163429	TDS401A17400	4156691	TDS411A17400	17,400	.6850	—	—	123	73	51	3,0	48	18
4163430	TDS401A17463	4156692	TDS411A17463	17,463	.6875	11/16	—	123	73	51	3,0	48	18
4163431	TDS401A17500	4156693	TDS411A17500	17,500	.6890	—	—	123	73	51	3,0	48	18
4163432	TDS401A17600	4156694	TDS411A17600	17,600	.6929	—	—	123	73	51	3,1	48	18
4163433	TDS401A17700	4156695	TDS411A17700	17,700	.6969	—	—	123	73	51	3,1	48	18
4163434	TDS401A17800	4156696	TDS411A17800	17,800	.7008	—	—	123	73	51	3,1	48	18
4163435	TDS401A17859	4156697	TDS411A17859	17,859	.7031	45/64	—	123	73	51	3,1	48	18
4163436	TDS401A17900	4156698	TDS411A17900	17,900	.7047	—	—	123	73	51	3,1	48	18
4163271	TDS401A18000	4156699	TDS411A18000	18,000	.7087	—	—	123	73	51	3,1	48	18
4163272	TDS401A18100	4156700	TDS411A18100	18,100	.7126	—	—	131	79	55	3,1	50	20
4163283	TDS401A18200	4156701	TDS411A18200	18,200	.7165	—	—	131	79	55	3,2	50	20
4163284	TDS401A18258	4156702	TDS411A18258	18,258	.7188	23/32	—	131	79	55	3,2	50	20
4163285	TDS401A18300	4156713	TDS411A18300	18,300	.7205	—	—	131	79	55	3,2	50	20
4163286	TDS401A18400	4156714	TDS411A18400	18,400	.7244	—	—	131	79	55	3,2	50	20
4163287	TDS401A18500	4156715	TDS411A18500	18,500	.7283	—	—	131	79	55	3,2	50	20
4163288	TDS401A18600	4156716	TDS411A18600	18,600	.7323	—	—	131	79	55	3,2	50	20
4163289	TDS401A18654	4156717	TDS411A18654	18,654	.7344	47/64	—	131	79	55	3,2	50	20
4163290	TDS401A18700	4156718	TDS411A18700	18,700	.7362	—	—	131	79	55	3,2	50	20
4163291	TDS401A18800	4156719	TDS411A18800	18,800	.7402	—	—	131	79	55	3,3	50	20
4163292	TDS401A18900	4156720	TDS411A18900	18,900	.7441	—	—	131	79	55	3,3	50	20
4163293	TDS401A19000	4156721	TDS411A19000	19,000	.7480	—	—	131	79	55	3,3	50	20
4163294	TDS401A19050	4156722	TDS411A19050	19,050	.7500	3/4	—	131	79	55	3,3	50	20
4163295	TDS401A19100	4156723	TDS411A19100	19,100	.7520	—	—	131	79	55	3,3	50	20
4163296	TDS401A19200	4156724	TDS411A19200	19,200	.7559	—	—	131	79	55	3,3	50	20
4163297	TDS401A19300	4156725	TDS411A19300	19,300	.7598	—	—	131	79	55	3,4	50	20
4163298	TDS401A19400	4156726	TDS411A19400	19,400	.7638	—	—	131	79	55	3,4	50	20
4163299	TDS401A19500	4156727	TDS411A19500	19,500	.7677	—	—	131	79	55	3,4	50	20
4163300	TDS401A19600	4156728	TDS411A19600	19,600	.7717	—	—	131	79	55	3,4	50	20
4163301	TDS401A19700	4156729	TDS411A19700	19,700	.7756	—	—	131	79	55	3,4	50	20
4163302	TDS401A19800	4156730	TDS411A19800	19,800	.7795	—	—	131	79	55	3,4	50	20
4163303	TDS401A19900	4156731	TDS411A19900	19,900	.7835	—	—	131	79	55	3,5	50	20
4163304	TDS401A20000	4156732	TDS411A20000	20,000	.7874	—	—	131	79	55	3,5	50	20



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



■ TDS402A • TDS412A • 5 x D



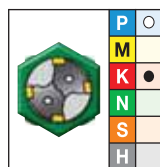
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162967	TDS402A03000	4158757	TDS412A03000	3,000	.1181	—	—	66	28	23	0,5	36	6
4162968	TDS402A03048	4158758	TDS412A03048	3,048	.1200	—	31	66	28	23	0,5	36	6
4162969	TDS402A03100	4158759	TDS412A03100	3,100	.1220	—	—	66	28	23	0,5	36	6
4162970	TDS402A03175	4158760	TDS412A03175	3,175	.1250	1/8	—	66	28	23	0,5	36	6
4162972	TDS402A03200	4158761	TDS412A03200	3,200	.1260	—	—	66	28	23	0,5	36	6
4162983	TDS402A03264	4158762	TDS412A03264	3,264	.1285	—	30	66	28	23	0,5	36	6
4162984	TDS402A03300	4158793	TDS412A03300	3,300	.1299	—	—	66	28	23	0,5	36	6
4162985	TDS402A03400	4158794	TDS412A03400	3,400	.1339	—	—	66	28	23	0,6	36	6
4162986	TDS402A03455	4158795	TDS412A03455	3,455	.1360	—	29	66	28	23	0,6	36	6
4162987	TDS402A03500	4158796	TDS412A03500	3,500	.1378	—	—	66	28	23	0,6	36	6
4162988	TDS402A03571	4158797	TDS412A03571	3,571	.1406	9/64	—	66	28	23	0,6	36	6
4162989	TDS402A03600	4158798	TDS412A03600	3,600	.1417	—	—	66	28	23	0,6	36	6
4162990	TDS402A03658	4158799	TDS412A03658	3,658	.1440	—	27	66	28	23	0,6	36	6
4162991	TDS402A03700	4158800	TDS412A03700	3,700	.1457	—	—	66	28	23	0,6	36	6
4162992	TDS402A03734	4158801	TDS412A03734	3,734	.1470	—	26	66	28	23	0,6	36	6
4162993	TDS402A03800	4158802	TDS412A03800	3,800	.1496	—	—	74	36	29	0,6	36	6
4162994	TDS402A03900	4158803	TDS412A03900	3,900	.1535	—	—	74	36	29	0,6	36	6
4162995	TDS402A03970	4158804	TDS412A03970	3,970	.1563	5/32	—	74	36	29	0,7	36	6
4162996	TDS402A04000	4158805	TDS412A04000	4,000	.1575	—	—	74	36	29	0,7	36	6
4162997	TDS402A04039	4158806	TDS412A04039	4,039	.1590	—	21	74	36	29	0,7	36	6
4162998	TDS402A04090	4158807	TDS412A04090	4,090	.1610	—	20	74	36	29	0,7	36	6
4162999	TDS402A04100	4158808	TDS412A04100	4,100	.1614	—	—	74	36	29	0,7	36	6
4163000	TDS402A04200	4158809	TDS412A04200	4,200	.1654	—	—	74	36	29	0,7	36	6
4163001	TDS402A04217	4158810	TDS412A04217	4,217	.1660	—	19	74	36	29	0,7	36	6

(continued)

(TDS402A • TDS412A • 5 x D — continued)



● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163002	TDS402A04300	4158811	TDS412A04300	4,300	.1693	—	—	74	36	29	0,7	36	6
4163013	TDS402A04366	4158812	TDS412A04366	4,366	.1719	11/64	—	74	36	29	0,7	36	6
4163014	TDS402A04400	4158813	TDS412A04400	4,400	.1732	—	—	74	36	29	0,7	36	6
4163015	TDS402A04500	4158814	TDS412A04500	4,500	.1772	—	—	74	36	29	0,7	36	6
4163016	TDS402A04600	4158815	TDS412A04600	4,600	.1811	—	—	74	36	29	0,8	36	6
4163017	TDS402A04623	4158816	TDS412A04623	4,623	.1820	—	14	74	36	29	0,8	36	6
4163018	TDS402A04700	4158817	TDS412A04700	4,700	.1850	—	13	74	36	29	0,8	36	6
4163019	TDS402A04763	4158818	TDS412A04763	4,763	.1875	3/16	—	82	44	35	0,8	36	6
4163020	TDS402A04800	4158819	TDS412A04800	4,800	.1890	—	12	82	44	35	0,8	36	6
4163021	TDS402A04852	4158820	TDS412A04852	4,852	.1910	—	11	82	44	35	0,8	36	6
4163022	TDS402A04900	4158821	TDS412A04900	4,900	.1929	—	—	82	44	35	0,8	36	6
4163023	TDS402A05000	4158822	TDS412A05000	5,000	.1969	—	—	82	44	35	0,8	36	6
4163024	TDS402A05100	4158823	TDS412A05100	5,100	.2008	—	—	82	44	35	0,8	36	6
4163025	TDS402A05106	4158824	TDS412A05106	5,106	.2010	—	7	82	44	35	0,8	36	6
4163026	TDS402A05159	4158825	TDS412A05159	5,159	.2031	13/64	—	82	44	35	0,9	36	6
4163027	TDS402A05200	4158826	TDS412A05200	5,200	.2047	—	—	82	44	35	0,9	36	6
4163028	TDS402A05300	4158827	TDS412A05300	5,300	.2087	—	—	82	44	35	0,9	36	6
4163029	TDS402A05400	4158828	TDS412A05400	5,400	.2126	—	—	82	44	35	0,9	36	6
4163030	TDS402A05410	4158829	TDS412A05410	5,410	.2130	—	3	82	44	35	0,9	36	6
4163031	TDS402A05500	4158830	TDS412A05500	5,500	.2165	—	—	82	44	35	0,9	36	6
4163032	TDS402A05558	4158831	TDS412A05558	5,558	.2188	7/32	—	82	44	35	0,9	36	6
4163034	TDS402A05600	4158832	TDS412A05600	5,600	.2205	—	—	82	44	35	0,9	36	6
4163035	TDS402A05616	4158833	TDS412A05616	5,616	.2211	—	2	82	44	35	0,9	36	6
4163036	TDS402A05700	4158834	TDS412A05700	5,700	.2244	—	—	82	44	35	1,0	36	6
4163037	TDS402A05800	4158835	TDS412A05800	5,800	.2283	—	—	82	44	35	1,0	36	6
4163038	TDS402A05900	4158836	TDS412A05900	5,900	.2323	—	—	82	44	35	1,0	36	6
4163039	TDS402A05954	4158837	TDS412A05954	5,954	.2344	15/64	—	82	44	35	1,0	36	6
4163040	TDS402A06000	4158838	TDS412A06000	6,000	.2362	—	—	82	44	35	1,0	36	6
4163041	TDS402A06100	4158839	TDS412A06100	6,100	.2402	—	—	91	53	43	1,0	36	8
4163042	TDS402A06200	4158840	TDS412A06200	6,200	.2441	—	—	91	53	43	1,0	36	8
4163043	TDS402A06300	4158841	TDS412A06300	6,300	.2480	—	—	91	53	43	1,1	36	8
4163044	TDS402A06350	4158842	TDS412A06350	6,350	.2500	1/4	—	91	53	43	1,1	36	8
4163045	TDS402A06400	4158843	TDS412A06400	6,400	.2520	—	—	91	53	43	1,1	36	8
4163046	TDS402A06500	4158844	TDS412A06500	6,500	.2559	—	—	91	53	43	1,1	36	8
4163047	TDS402A06528	4158845	TDS412A06528	6,528	.2570	—	—	91	53	43	1,1	36	8
4163048	TDS402A06600	4158846	TDS412A06600	6,600	.2598	—	—	91	53	43	1,1	36	8
4163049	TDS402A06630	4158847	TDS412A06630	6,630	.2610	—	—	91	53	43	1,1	36	8
4163050	TDS402A06700	4158848	TDS412A06700	6,700	.2638	—	—	91	53	43	1,1	36	8
4163051	TDS402A06746	4158849	TDS412A06746	6,746	.2656	17/64	—	91	53	43	1,1	36	8
4163052	TDS402A06800	4158850	TDS412A06800	6,800	.2677	—	—	91	53	43	1,1	36	8

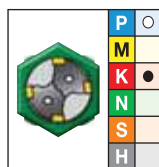
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Solid Carbide Drills

TOP DRILL S™ with Through Coolant • Steel and Cast Iron



(TDS402A • TDS412A • 5 x D — continued)



● first choice
○ alternate choice

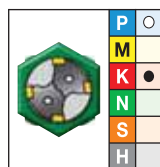
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163053	TDS402A06900	4158851	TDS412A06900	6,900	.2717	—	—	91	53	43	1,2	36	8
4163054	TDS402A07000	4158852	TDS412A07000	7,000	.2756	—	—	91	53	43	1,2	36	8
4163055	TDS402A07100	4158853	TDS412A07100	7,100	.2795	—	—	91	53	43	1,2	36	8
4163056	TDS402A07145	4158854	TDS412A07145	7,145	.2813	9/32	—	91	53	43	1,2	36	8
4163057	TDS402A07200	4158855	TDS412A07200	7,200	.2835	—	—	91	53	43	1,2	36	8
4163058	TDS402A07300	4158856	TDS412A07300	7,300	.2874	—	—	91	53	43	1,2	36	8
4163059	TDS402A07400	4158857	TDS412A07400	7,400	.2913	—	—	91	53	43	1,3	36	8
4163060	TDS402A07500	4158858	TDS412A07500	7,500	.2953	—	—	91	53	43	1,3	36	8
4163061	TDS402A07541	4158859	TDS412A07541	7,541	.2969	19/64	—	91	53	43	1,3	36	8
4163062	TDS402A07600	4158860	TDS412A07600	7,600	.2992	—	—	91	53	43	1,3	36	8
4163063	TDS402A07700	4158861	TDS412A07700	7,700	.3031	—	—	91	53	43	1,3	36	8
4163064	TDS402A07800	4158862	TDS412A07800	7,800	.3071	—	—	91	53	43	1,3	36	8
4163065	TDS402A07900	4158863	TDS412A07900	7,900	.3110	—	—	91	53	43	1,3	36	8
4163066	TDS402A07938	4158864	TDS412A07938	7,938	.3125	5/16	—	91	53	43	1,3	36	8
4163067	TDS402A08000	4158865	TDS412A08000	8,000	.3150	—	—	91	53	43	1,4	36	8
4163068	TDS402A08100	4158866	TDS412A08100	8,100	.3189	—	—	103	61	49	1,4	40	10
4163069	TDS402A08200	4158867	TDS412A08200	8,200	.3228	—	—	103	61	49	1,4	40	10
4163070	TDS402A08300	4158868	TDS412A08300	8,300	.3268	—	—	103	61	49	1,4	40	10
4163071	TDS402A08334	4158869	TDS412A08334	8,334	.3281	21/64	—	103	61	49	1,4	40	10
4163072	TDS402A08400	4158870	TDS412A08400	8,400	.3307	—	—	103	61	49	1,4	40	10
4163073	TDS402A08433	4158871	TDS412A08433	8,433	.3320	—	—	103	61	49	1,4	40	10
4163074	TDS402A08500	4158872	TDS412A08500	8,500	.3346	—	—	103	61	49	1,4	40	10
4163075	TDS402A08600	4158873	TDS412A08600	8,600	.3386	—	—	103	61	49	1,5	40	10
4163077	TDS402A08700	4158874	TDS412A08700	8,700	.3425	—	—	103	61	49	1,5	40	10
4163078	TDS402A08733	4158875	TDS412A08733	8,733	.3438	11/32	—	103	61	49	1,5	40	10
4163079	TDS402A08800	4158876	TDS412A08800	8,800	.3465	—	—	103	61	49	1,5	40	10
4163080	TDS402A08900	4158877	TDS412A08900	8,900	.3504	—	—	103	61	49	1,5	40	10
4163081	TDS402A09000	4158878	TDS412A09000	9,000	.3543	—	—	103	61	49	1,5	40	10
4163082	TDS402A09100	4158879	TDS412A09100	9,100	.3583	—	—	103	61	49	1,5	40	10
4163083	TDS402A09129	4158880	TDS412A09129	9,129	.3594	23/64	—	103	61	49	1,6	40	10
4163084	TDS402A09200	4158881	TDS412A09200	9,200	.3622	—	—	103	61	49	1,6	40	10
4163085	TDS402A09300	4158882	TDS412A09300	9,300	.3661	—	—	103	61	49	1,6	40	10
4163086	TDS402A09347	4158883	TDS412A09347	9,347	.3680	—	—	103	61	49	1,6	40	10
4163087	TDS402A09400	4158884	TDS412A09400	9,400	.3701	—	—	103	61	49	1,6	40	10
4163088	TDS402A09500	4158885	TDS412A09500	9,500	.3740	—	—	103	61	49	1,6	40	10
4163089	TDS402A09525	4158886	TDS412A09525	9,525	.3750	3/8	—	103	61	49	1,6	40	10
4163090	TDS402A09600	4158887	TDS412A09600	9,600	.3780	—	—	103	61	49	1,6	40	10
4163091	TDS402A09700	4158888	TDS412A09700	9,700	.3819	—	—	103	61	49	1,7	40	10
4163092	TDS402A09800	4158889	TDS412A09800	9,800	.3858	—	—	103	61	49	1,7	40	10
4163093	TDS402A09900	4158890	TDS412A09900	9,900	.3898	—	—	103	61	49	1,7	40	10

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Solid Carbide Drills

(TDS402A • TDS412A • 5 x D — continued)



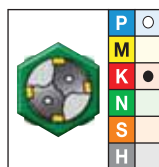
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163094	TDS402A09921	4158891	TDS412A09921	9,921	.3906	25/64	—	103	61	49	1,7	40	10
4162803	TDS402A10000	4156602	TDS412A10000	10,000	.3937	—	—	103	61	49	1,7	40	10
4162804	TDS402A10100	4156733	TDS412A10100	10,100	.3976	—	—	118	71	56	1,7	45	12
4162805	TDS402A10200	4156734	TDS412A10200	10,200	.4016	—	—	118	71	56	1,7	45	12
4162806	TDS402A10300	4156735	TDS412A10300	10,300	.4055	—	—	118	71	56	1,8	45	12
4162807	TDS402A10320	4156736	TDS412A10320	10,320	.4063	13/32	—	118	71	56	1,8	45	12
4162808	TDS402A10400	4156737	TDS412A10400	10,400	.4094	—	—	118	71	56	1,8	45	12
4162809	TDS402A10500	4156738	TDS412A10500	10,500	.4134	—	—	118	71	56	1,8	45	12
4162810	TDS402A10600	4156739	TDS412A10600	10,600	.4173	—	—	118	71	56	1,8	45	12
4162811	TDS402A10700	4156740	TDS412A10700	10,700	.4213	—	—	118	71	56	1,8	45	12
4162812	TDS402A10716	4156741	TDS412A10716	10,716	.4219	27/64	—	118	71	56	1,8	45	12
4162813	TDS402A10800	4156742	TDS412A10800	10,800	.4252	—	—	118	71	56	1,8	45	12
4162814	TDS402A10900	4156743	TDS412A10900	10,900	.4291	—	—	118	71	56	1,9	45	12
4162815	TDS402A11000	4156744	TDS412A11000	11,000	.4331	—	—	118	71	56	1,9	45	12
4162816	TDS402A11100	4156745	TDS412A11100	11,100	.4370	—	—	118	71	56	1,9	45	12
4162817	TDS402A11113	4156746	TDS412A11113	11,113	.4375	7/16	—	118	71	56	1,9	45	12
4162818	TDS402A11200	4156747	TDS412A11200	11,200	.4409	—	—	118	71	56	1,9	45	12
4162819	TDS402A11300	4156748	TDS412A11300	11,300	.4449	—	—	118	71	56	1,9	45	12
4162820	TDS402A11400	4156749	TDS412A11400	11,400	.4488	—	—	118	71	56	2,0	45	12
4162821	TDS402A11500	4156750	TDS412A11500	11,500	.4528	—	—	118	71	56	2,0	45	12
4162822	TDS402A11509	4156751	TDS412A11509	11,509	.4531	29/64	—	118	71	56	2,0	45	12
4162823	TDS402A11600	4156752	TDS412A11600	11,600	.4567	—	—	118	71	56	2,0	45	12
4162824	TDS402A11700	4156753	TDS412A11700	11,700	.4606	—	—	118	71	56	2,0	45	12
4162825	TDS402A11800	4156754	TDS412A11800	11,800	.4646	—	—	118	71	56	2,0	45	12
4162826	TDS402A11900	4156755	TDS412A11900	11,900	.4685	—	—	118	71	56	2,0	45	12
4162827	TDS402A11908	4156756	TDS412A11908	11,908	.4688	15/32	—	118	71	56	2,0	45	12
4162828	TDS402A12000	4156757	TDS412A12000	12,000	.4724	—	—	118	71	56	2,1	45	12
4162829	TDS402A12100	4156758	TDS412A12100	12,100	.4764	—	—	124	77	60	2,1	45	14
4162830	TDS402A12200	4156759	TDS412A12200	12,200	.4803	—	—	124	77	60	2,1	45	14
4162831	TDS402A12300	4156760	TDS412A12300	12,300	.4843	—	—	124	77	60	2,1	45	14
4162832	TDS402A12304	4156761	TDS412A12304	12,304	.4844	31/64	—	124	77	60	2,1	45	14
4162833	TDS402A12400	4156762	TDS412A12400	12,400	.4882	—	—	124	77	60	2,1	45	14
4162834	TDS402A12500	4156763	TDS412A12500	12,500	.4921	—	—	124	77	60	2,1	45	14
4162835	TDS402A12600	4156764	TDS412A12600	12,600	.4961	—	—	124	77	60	2,2	45	14
4162836	TDS402A12700	4156765	TDS412A12700	12,700	.5000	1/2	—	124	77	60	2,2	45	14
4162837	TDS402A12800	4156766	TDS412A12800	12,800	.5039	—	—	124	77	60	2,2	45	14
4162838	TDS402A12900	4156767	TDS412A12900	12,900	.5079	—	—	124	77	60	2,2	45	14
4162839	TDS402A13000	4156768	TDS412A13000	13,000	.5118	—	—	124	77	60	2,2	45	14
4162840	TDS402A13096	4156769	TDS412A13096	13,096	.5156	33/64	—	124	77	60	2,3	45	14
4162841	TDS402A13100	4156770	TDS412A13100	13,100	.5157	—	—	124	77	60	2,3	45	14

(continued)

(TDS402A • TDS412A • 5 x D — continued)



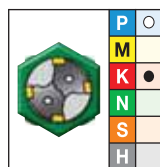
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162842	TDS402A13200	4156771	TDS412A13200	13,200	.5197	—	—	124	77	60	2,3	45	14
4162843	TDS402A13300	4156772	TDS412A13300	13,300	.5236	—	—	124	77	60	2,3	45	14
4162844	TDS402A13400	4156773	TDS412A13400	13,400	.5276	—	—	124	77	60	2,3	45	14
4162845	TDS402A13500	4156774	TDS412A13500	13,500	.5315	—	—	124	77	60	2,3	45	14
4162846	TDS402A13600	4156775	TDS412A13600	13,600	.5354	—	—	124	77	60	2,3	45	14
4162847	TDS402A13700	4156776	TDS412A13700	13,700	.5394	—	—	124	77	60	2,4	45	14
4162848	TDS402A13800	4156777	TDS412A13800	13,800	.5433	—	—	124	77	60	2,4	45	14
4162849	TDS402A13891	4156778	TDS412A13891	13,891	.5469	35/64	—	124	77	60	2,4	45	14
4162850	TDS402A13900	4156779	TDS412A13900	13,900	.5472	—	—	124	77	60	2,4	45	14
4162851	TDS402A14000	4156780	TDS412A14000	14,000	.5512	—	—	124	77	60	2,4	45	14
4162852	TDS402A14100	4156781	TDS412A14100	14,100	.5551	—	—	133	83	63	2,4	48	16
4162853	TDS402A14200	4156782	TDS412A14200	14,200	.5591	—	—	133	83	63	2,5	48	16
4162854	TDS402A14288	4156783	TDS412A14288	14,288	.5625	9/16	—	133	83	63	2,5	48	16
4162855	TDS402A14300	4156784	TDS412A14300	14,300	.5630	—	—	133	83	63	2,5	48	16
4162856	TDS402A14400	4156785	TDS412A14400	14,400	.5669	—	—	133	83	63	2,5	48	16
4162857	TDS402A14500	4156786	TDS412A14500	14,500	.5709	—	—	133	83	63	2,5	48	16
4162858	TDS402A14600	4156787	TDS412A14600	14,600	.5748	—	—	133	83	63	2,5	48	16
4162859	TDS402A14684	4156788	TDS412A14684	14,684	.5781	37/64	—	133	83	63	2,5	48	16
4162860	TDS402A14700	4156789	TDS412A14700	14,700	.5787	—	—	133	83	63	2,5	48	16
4162861	TDS402A14800	4156790	TDS412A14800	14,800	.5827	—	—	133	83	63	2,6	48	16
4162862	TDS402A14900	4156791	TDS412A14900	14,900	.5866	—	—	133	83	63	2,6	48	16
4162863	TDS402A15000	4156792	TDS412A15000	15,000	.5906	—	—	133	83	63	2,6	48	16
4162864	TDS402A15083	4156793	TDS412A15083	15,083	.5938	19/32	—	133	83	63	2,6	48	16
4162865	TDS402A15100	4156794	TDS412A15100	15,100	.5945	—	—	133	83	63	2,6	48	16
4162866	TDS402A15200	4156795	TDS412A15200	15,200	.5984	—	—	133	83	63	2,6	48	16
4162867	TDS402A15300	4156796	TDS412A15300	15,300	.6024	—	—	133	83	63	2,6	48	16
4162868	TDS402A15400	4156797	TDS412A15400	15,400	.6063	—	—	133	83	63	2,7	48	16
4162869	TDS402A15479	4156798	TDS412A15479	15,479	.6094	39/64	—	133	83	63	2,7	48	16
4162870	TDS402A15500	4156799	TDS412A15500	15,500	.6102	—	—	133	83	63	2,7	48	16
4162871	TDS402A15600	4156800	TDS412A15600	15,600	.6142	—	—	133	83	63	2,7	48	16
4162872	TDS402A15700	4156801	TDS412A15700	15,700	.6181	—	—	133	83	63	2,7	48	16
4162873	TDS402A15800	4156802	TDS412A15800	15,800	.6220	—	—	133	83	63	2,7	48	16
4162874	TDS402A15875	4156803	TDS412A15875	15,875	.6250	5/8	—	133	83	63	2,7	48	16
4162875	TDS402A15900	4156804	TDS412A15900	15,900	.6260	—	—	133	83	63	2,8	48	16
4162876	TDS402A16000	4156805	TDS412A16000	16,000	.6299	—	—	133	83	63	2,8	48	16
4162877	TDS402A16100	4156806	TDS412A16100	16,100	.6339	—	—	143	93	71	2,8	48	18
4162878	TDS402A16200	4156807	TDS412A16200	16,200	.6378	—	—	143	93	71	2,8	48	18
4162879	TDS402A16271	4156808	TDS412A16271	16,271	.6406	41/64	—	143	93	71	2,8	48	18
4162880	TDS402A16300	4156809	TDS412A16300	16,300	.6417	—	—	143	93	71	2,8	48	18
4162881	TDS402A16400	4156810	TDS412A16400	16,400	.6457	—	—	143	93	71	2,8	48	18

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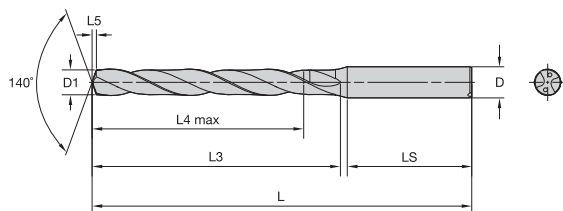
(TDS402A • TDS412A • 5 x D — continued)



● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162882	TDS402A16500	4156811	TDS412A16500	16,500	.6496	—	—	143	93	71	2,9	48	18
4162883	TDS402A16600	4156812	TDS412A16600	16,600	.6535	—	—	143	93	71	2,9	48	18
4162884	TDS402A16670	4156813	TDS412A16670	16,670	.6563	21/32	—	143	93	71	2,9	48	18
4162885	TDS402A16700	4156814	TDS412A16700	16,700	.6575	—	—	143	93	71	2,9	48	18
4162886	TDS402A16800	4156815	TDS412A16800	16,800	.6614	—	—	143	93	71	2,9	48	18
4162887	TDS402A16900	4156816	TDS412A16900	16,900	.6654	—	—	143	93	71	2,9	48	18
4162888	TDS402A17000	4156817	TDS412A17000	17,000	.6693	—	—	143	93	71	2,9	48	18
4162889	TDS402A17100	4156818	TDS412A17100	17,100	.6732	—	—	143	93	71	3,0	48	18
4162890	TDS402A17200	4156819	TDS412A17200	17,200	.6772	—	—	143	93	71	3,0	48	18
4162891	TDS402A17300	4156820	TDS412A17300	17,300	.6811	—	—	143	93	71	3,0	48	18
4162892	TDS402A17400	4156821	TDS412A17400	17,400	.6850	—	—	143	93	71	3,0	48	18
4162893	TDS402A17463	4156822	TDS412A17463	17,463	.6875	11/16	—	143	93	71	3,0	48	18
4162894	TDS402A17500	4156823	TDS412A17500	17,500	.6890	—	—	143	93	71	3,0	48	18
4162895	TDS402A17600	4156824	TDS412A17600	17,600	.6929	—	—	143	93	71	3,1	48	18
4162896	TDS402A17700	4156825	TDS412A17700	17,700	.6969	—	—	143	93	71	3,1	48	18
4162897	TDS402A17800	4156826	TDS412A17800	17,800	.7008	—	—	143	93	71	3,1	48	18
4162898	TDS402A17859	4156827	TDS412A17859	17,859	.7031	45/64	—	143	93	71	3,1	48	18
4162899	TDS402A17900	4156828	TDS412A17900	17,900	.7047	—	—	143	93	71	3,1	48	18
4162274	TDS402A18000	4156853	TDS412A18000	18,000	.7087	—	—	143	93	71	3,1	48	18
4162275	TDS402A18100	4156854	TDS412A18100	18,100	.7126	—	—	153	101	77	3,1	50	20
4162276	TDS402A18200	4156855	TDS412A18200	18,200	.7165	—	—	153	101	77	3,2	50	20
4162277	TDS402A18258	4156856	TDS412A18258	18,258	.7188	23/32	—	153	101	77	3,2	50	20
4162278	TDS402A18300	4156857	TDS412A18300	18,300	.7205	—	—	153	101	77	3,2	50	20
4162279	TDS402A18400	4156858	TDS412A18400	18,400	.7244	—	—	153	101	77	3,2	50	20
4162280	TDS402A18500	4156859	TDS412A18500	18,500	.7283	—	—	153	101	77	3,2	50	20
4162281	TDS402A18600	4156860	TDS412A18600	18,600	.7323	—	—	153	101	77	3,2	50	20
4162282	TDS402A18654	4156861	TDS412A18654	18,654	.7344	47/64	—	153	101	77	3,2	50	20
4162393	TDS402A18700	4156862	TDS412A18700	18,700	.7362	—	—	153	101	77	3,2	50	20
4162394	TDS402A18800	4156863	TDS412A18800	18,800	.7402	—	—	153	101	77	3,3	50	20
4162395	TDS402A18900	4156864	TDS412A18900	18,900	.7441	—	—	153	101	77	3,3	50	20
4162396	TDS402A19000	4156865	TDS412A19000	19,000	.7480	—	—	153	101	77	3,3	50	20
4162397	TDS402A19050	4156866	TDS412A19050	19,050	.7500	3/4	—	153	101	77	3,3	50	20
4162398	TDS402A19100	4156867	TDS412A19100	19,100	.7520	—	—	153	101	77	3,3	50	20
4162399	TDS402A19200	4156868	TDS412A19200	19,200	.7559	—	—	153	101	77	3,3	50	20
4162400	TDS402A19300	4156869	TDS412A19300	19,300	.7598	—	—	153	101	77	3,4	50	20
4162401	TDS402A19400	4156870	TDS412A19400	19,400	.7638	—	—	153	101	77	3,4	50	20
4162402	TDS402A19500	4156871	TDS412A19500	19,500	.7677	—	—	153	101	77	3,4	50	20
4162403	TDS402A19600	4156872	TDS412A19600	19,600	.7717	—	—	153	101	77	3,4	50	20
4162404	TDS402A19700	4156873	TDS412A19700	19,700	.7756	—	—	153	101	77	3,4	50	20
4162405	TDS402A19800	4156874	TDS412A19800	19,800	.7795	—	—	153	101	77	3,4	50	20
4162406	TDS402A19900	4156875	TDS412A19900	19,900	.7835	—	—	153	101	77	3,5	50	20
4162407	TDS402A20000	4156876	TDS412A20000	20,000	.7874	—	—	153	101	77	3,5	50	20



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



■ TDS403A • TDS413A • 8 x D



grade WP20PD
TiAlN



grade WK15PD
AlCrN

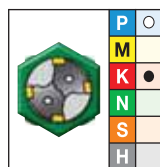
- first choice
- alternate choice

D1 diameter

order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4162796	TDS403A03000	4156972	TDS413A03000	3,000	.1181	—	—	78	40	33	0,5	36	6
4162797	TDS403A03048	4156993	TDS413A03048	3,048	.1200	—	31	78	40	33	0,5	36	6
4162798	TDS403A03100	4156994	TDS413A03100	3,100	.1220	—	—	78	40	33	0,5	36	6
4162799	TDS403A03175	4156995	TDS413A03175	3,175	.1250	1/8	—	78	40	33	0,5	36	6
4162800	TDS403A03200	4156996	TDS413A03200	3,200	.1260	—	—	78	40	33	0,5	36	6
4162801	TDS403A03264	4156997	TDS413A03264	3,264	.1285	—	30	78	40	33	0,5	36	6
4162802	TDS403A03300	4156998	TDS413A03300	3,300	.1299	—	—	78	40	33	0,5	36	6
4163163	TDS403A03400	4156999	TDS413A03400	3,400	.1339	—	—	78	40	33	0,6	36	6
4163164	TDS403A03455	4157000	TDS413A03455	3,455	.1360	—	29	78	40	33	0,6	36	6
4163165	TDS403A03500	4157001	TDS413A03500	3,500	.1378	—	—	78	40	33	0,6	36	6
4163166	TDS403A03571	4157002	TDS413A03571	3,571	.1406	9/64	—	78	40	33	0,6	36	6
4163167	TDS403A03600	4157003	TDS413A03600	3,600	.1417	—	—	78	40	33	0,6	36	6
4163168	TDS403A03658	4157004	TDS413A03658	3,658	.1440	—	27	78	40	33	0,6	36	6
4163169	TDS403A03700	4157005	TDS413A03700	3,700	.1457	—	—	78	40	33	0,6	36	6
4163170	TDS403A03734	4157006	TDS413A03734	3,734	.1470	—	26	78	40	33	0,6	36	6
4163171	TDS403A03800	4157007	TDS413A03800	3,800	.1496	—	—	87	49	41	0,6	36	6
4163172	TDS403A03900	4157008	TDS413A03900	3,900	.1535	—	—	87	49	41	0,6	36	6
4163173	TDS403A03970	4157009	TDS413A03970	3,970	.1563	5/32	—	87	49	41	0,7	36	6
4163174	TDS403A04000	4157010	TDS413A04000	4,000	.1575	—	—	87	49	41	0,7	36	6
4163175	TDS403A04039	4157011	TDS413A04039	4,039	.1590	—	21	87	49	41	0,7	36	6
4163176	TDS403A04090	4157012	TDS413A04090	4,090	.1610	—	20	87	49	41	0,7	36	6
4163177	TDS403A04100	4157013	TDS413A04100	4,100	.1614	—	—	87	49	41	0,7	36	6
4163178	TDS403A04200	4157014	TDS413A04200	4,200	.1654	—	—	87	49	41	0,7	36	6
4163179	TDS403A04217	4157015	TDS413A04217	4,217	.1660	—	19	87	49	41	0,7	36	6
4163180	TDS403A04300	4157016	TDS413A04300	4,300	.1693	—	—	87	49	41	0,7	36	6
4163181	TDS403A04366	4157017	TDS413A04366	4,366	.1719	11/64	—	87	49	41	0,7	36	6
4163182	TDS403A04400	4157018	TDS413A04400	4,400	.1732	—	—	87	49	41	0,7	36	6
4163193	TDS403A04500	4157019	TDS413A04500	4,500	.1772	—	—	87	49	41	0,7	36	6

(continued)

(TDS403A • TDS413A • 8 x D — continued)



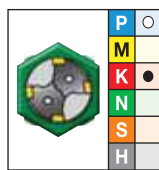
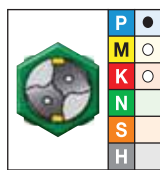
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163194	TDS403A04600	4157020	TDS413A04600	4,600	.1811	—	—	87	49	41	0,8	36	6
4163195	TDS403A04623	4157021	TDS413A04623	4,623	.1820	—	14	87	49	41	0,8	36	6
4163196	TDS403A04700	4157022	TDS413A04700	4,700	.1850	—	13	87	49	41	0,8	36	6
4163197	TDS403A04763	4157023	TDS413A04763	4,763	.1875	3/16	—	94	56	48	0,8	36	6
4163198	TDS403A04800	4157024	TDS413A04800	4,800	.1890	—	12	94	56	48	0,8	36	6
4163199	TDS403A04852	4157025	TDS413A04852	4,852	.1910	—	11	94	56	48	0,8	36	6
4163200	TDS403A04900	4157026	TDS413A04900	4,900	.1929	—	—	94	56	48	0,8	36	6
4163201	TDS403A05000	4157027	TDS413A05000	5,000	.1969	—	—	94	56	48	0,8	36	6
4163202	TDS403A05100	4157028	TDS413A05100	5,100	.2008	—	—	94	56	48	0,8	36	6
4163203	TDS403A05106	4157029	TDS413A05106	5,106	.2010	—	7	94	56	48	0,8	36	6
4163204	TDS403A05159	4157030	TDS413A05159	5,159	.2031	13/64	—	94	56	48	0,9	36	6
4163205	TDS403A05200	4157031	TDS413A05200	5,200	.2047	—	—	94	56	48	0,9	36	6
4163206	TDS403A05300	4157032	TDS413A05300	5,300	.2087	—	—	94	56	48	0,9	36	6
4163207	TDS403A05400	4157033	TDS413A05400	5,400	.2126	—	—	94	56	48	0,9	36	6
4163208	TDS403A05410	4157034	TDS413A05410	5,410	.2130	—	3	94	56	48	0,9	36	6
4163209	TDS403A05500	4157035	TDS413A05500	5,500	.2165	—	—	94	56	48	0,9	36	6
4163210	TDS403A05558	4157036	TDS413A05558	5,558	.2188	7/32	—	94	56	48	0,9	36	6
4163211	TDS403A05600	4157037	TDS413A05600	5,600	.2205	—	—	94	56	48	0,9	36	6
4163212	TDS403A05616	4157038	TDS413A05616	5,616	.2211	—	2	94	56	48	0,9	36	6
4163213	TDS403A05700	4157039	TDS413A05700	5,700	.2244	—	—	94	56	48	1,0	36	6
4163214	TDS403A05800	4157040	TDS413A05800	5,800	.2283	—	—	94	56	48	1,0	36	6
4163215	TDS403A05900	4157041	TDS413A05900	5,900	.2323	—	—	94	56	48	1,0	36	6
4163216	TDS403A05954	4157042	TDS413A05954	5,954	.2344	15/64	—	94	56	48	1,0	36	6
4163217	TDS403A06000	4157043	TDS413A06000	6,000	.2362	—	—	94	56	48	1,0	36	6
4163218	TDS403A06100	4157044	TDS413A06100	6,100	.2402	—	—	105	67	57	1,0	36	8
4163219	TDS403A06200	4157045	TDS413A06200	6,200	.2441	—	—	105	67	57	1,0	36	8
4163220	TDS403A06300	4157046	TDS413A06300	6,300	.2480	—	—	105	67	57	1,1	36	8
4163221	TDS403A06350	4157047	TDS413A06350	6,350	.2500	1/4	—	105	67	57	1,1	36	8
4163222	TDS403A06400	4157048	TDS413A06400	6,400	.2520	—	—	105	67	57	1,1	36	8
4163223	TDS403A06500	4157049	TDS413A06500	6,500	.2559	—	—	105	67	57	1,1	36	8
4163224	TDS403A06528	4157050	TDS413A06528	6,528	.2570	—	—	105	67	57	1,1	36	8
4163225	TDS403A06600	4157051	TDS413A06600	6,600	.2598	—	—	105	67	57	1,1	36	8
4163226	TDS403A06630	4157052	TDS413A06630	6,630	.2610	—	—	105	67	57	1,1	36	8
4163227	TDS403A06700	4157053	TDS413A06700	6,700	.2638	—	—	105	67	57	1,1	36	8
4163228	TDS403A06746	4157054	TDS413A06746	6,746	.2656	17/64	—	105	67	57	1,1	36	8
4163229	TDS403A06800	4157055	TDS413A06800	6,800	.2677	—	—	105	67	57	1,1	36	8
4163230	TDS403A06900	4157056	TDS413A06900	6,900	.2717	—	—	105	67	57	1,2	36	8
4163231	TDS403A07000	4157057	TDS413A07000	7,000	.2756	—	—	105	67	57	1,2	36	8
4163232	TDS403A07100	4157058	TDS413A07100	7,100	.2795	—	—	110	72	61	1,2	36	8
4163233	TDS403A07145	4157059	TDS413A07145	7,145	.2813	9/32	—	110	72	61	1,2	36	8

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(TDS403A • TDS413A • 8 x D — continued)



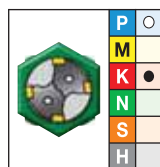
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163234	TDS403A07200	4157060	TDS413A07200	7,200	.2835	—	—	110	72	61	1,2	36	8
4163235	TDS403A07300	4157061	TDS413A07300	7,300	.2874	—	—	110	72	61	1,2	36	8
4163236	TDS403A07400	4157062	TDS413A07400	7,400	.2913	—	—	110	72	61	1,3	36	8
4163237	TDS403A07500	4157063	TDS413A07500	7,500	.2953	—	—	110	72	61	1,3	36	8
4163238	TDS403A07541	4157064	TDS413A07541	7,541	.2969	19/64	—	110	72	61	1,3	36	8
4163239	TDS403A07600	4157065	TDS413A07600	7,600	.2992	—	—	110	72	61	1,3	36	8
4163240	TDS403A07700	4157066	TDS413A07700	7,700	.3031	—	—	110	72	61	1,3	36	8
4163241	TDS403A07800	4157067	TDS413A07800	7,800	.3071	—	—	110	72	61	1,3	36	8
4163242	TDS403A07900	4157068	TDS413A07900	7,900	.3110	—	—	110	72	61	1,3	36	8
4163243	TDS403A07938	4157069	TDS413A07938	7,938	.3125	5/16	—	110	72	61	1,3	36	8
4163244	TDS403A08000	4157070	TDS413A08000	8,000	.3150	—	—	110	72	61	1,4	36	8
4163245	TDS403A08100	4157071	TDS413A08100	8,100	.3189	—	—	122	80	68	1,4	40	10
4163246	TDS403A08200	4157072	TDS413A08200	8,200	.3228	—	—	122	80	68	1,4	40	10
4163247	TDS403A08300	4157073	TDS413A08300	8,300	.3268	—	—	122	80	68	1,4	40	10
4163248	TDS403A08334	4157074	TDS413A08334	8,334	.3281	21/64	—	122	80	68	1,4	40	10
4163249	TDS403A08400	4157075	TDS413A08400	8,400	.3307	—	—	122	80	68	1,4	40	10
4163250	TDS403A08433	4157076	TDS413A08433	8,433	.3320	—	—	122	80	68	1,4	40	10
4163251	TDS403A08500	4157077	TDS413A08500	8,500	.3346	—	—	122	80	68	1,4	40	10
4163252	TDS403A08600	4157078	TDS413A08600	8,600	.3386	—	—	122	80	68	1,5	40	10
4163253	TDS403A08700	4157079	TDS413A08700	8,700	.3425	—	—	122	80	68	1,5	40	10
4163254	TDS403A08733	4157080	TDS413A08733	8,733	.3438	11/32	—	122	80	68	1,5	40	10
4163255	TDS403A08800	4157081	TDS413A08800	8,800	.3465	—	—	122	80	68	1,5	40	10
4163256	TDS403A08900	4157082	TDS413A08900	8,900	.3504	—	—	122	80	68	1,5	40	10
4163257	TDS403A09000	4157083	TDS413A09000	9,000	.3543	—	—	122	80	68	1,5	40	10
4163258	TDS403A09100	4157084	TDS413A09100	9,100	.3583	—	—	122	80	68	1,5	40	10
4163259	TDS403A09129	4157085	TDS413A09129	9,129	.3594	23/64	—	122	80	68	1,6	40	10
4163260	TDS403A09200	4157086	TDS413A09200	9,200	.3622	—	—	122	80	68	1,6	40	10
4163261	TDS403A09300	4157087	TDS413A09300	9,300	.3661	—	—	122	80	68	1,6	40	10
4163262	TDS403A09347	4157088	TDS413A09347	9,347	.3680	—	—	122	80	68	1,6	40	10
4163263	TDS403A09400	4157089	TDS413A09400	9,400	.3701	—	—	122	80	68	1,6	40	10
4163264	TDS403A09500	4157090	TDS413A09500	9,500	.3740	—	—	122	80	68	1,6	40	10
4163265	TDS403A09525	4157091	TDS413A09525	9,525	.3750	3/8	—	122	80	68	1,6	40	10
4163266	TDS403A09600	4157092	TDS413A09600	9,600	.3780	—	—	122	80	68	1,6	40	10
4163267	TDS403A09700	4157093	TDS413A09700	9,700	.3819	—	—	122	80	68	1,7	40	10
4163268	TDS403A09800	4157094	TDS413A09800	9,800	.3858	—	—	122	80	68	1,7	40	10
4163269	TDS403A09900	4157095	TDS413A09900	9,900	.3898	—	—	122	80	68	1,7	40	10
4163270	TDS403A09921	4157096	TDS413A09921	9,921	.3906	25/64	—	122	80	68	1,7	40	10
4162679	TDS403A10000	4156836	TDS413A10000	10,000	.3937	—	—	122	80	68	1,7	40	10
4162680	TDS403A10100	4156837	TDS413A10100	10,100	.3976	—	—	141	94	79	1,7	45	12
4162382	TDS403A10200	4156838	TDS413A10200	10,200	.4016	—	—	141	94	79	1,7	45	12

(continued)

(TDS403A • TDS413A • 8 x D — continued)



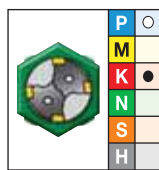
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162703	TDS403A10300	4156839	TDS413A10300	10,300	.4055	—	—	141	94	79	1,8	45	12
4162704	TDS403A10320	4156840	TDS413A10320	10,320	.4063	13/32	—	141	94	79	1,8	45	12
4162705	TDS403A10400	4156841	TDS413A10400	10,400	.4094	—	—	141	94	79	1,8	45	12
4162706	TDS403A10500	4156842	TDS413A10500	10,500	.4134	—	—	141	94	79	1,8	45	12
4162707	TDS403A10600	4156883	TDS413A10600	10,600	.4173	—	—	141	94	79	1,8	45	12
4162708	TDS403A10700	4156884	TDS413A10700	10,700	.4213	—	—	141	94	79	1,8	45	12
4162709	TDS403A10716	4156885	TDS413A10716	10,716	.4219	27/64	—	141	94	79	1,8	45	12
4162710	TDS403A10800	4156886	TDS413A10800	10,800	.4252	—	—	141	94	79	1,8	45	12
4162711	TDS403A10900	4156887	TDS413A10900	10,900	.4291	—	—	141	94	79	1,9	45	12
4162712	TDS403A11000	4156888	TDS413A11000	11,000	.4331	—	—	141	94	79	1,9	45	12
4162713	TDS403A11100	4156889	TDS413A11100	11,100	.4370	—	—	141	94	79	1,9	45	12
4162714	TDS403A11113	4156890	TDS413A11113	11,113	.4375	7/16	—	141	94	79	1,9	45	12
4162715	TDS403A11200	4156891	TDS413A11200	11,200	.4409	—	—	141	94	79	1,9	45	12
4162716	TDS403A11300	4156892	TDS413A11300	11,300	.4449	—	—	141	94	79	1,9	45	12
4162717	TDS403A11400	4156893	TDS413A11400	11,400	.4488	—	—	141	94	79	2,0	45	12
4162718	TDS403A11500	4156894	TDS413A11500	11,500	.4528	—	—	141	94	79	2,0	45	12
4162719	TDS403A11509	4156895	TDS413A11509	11,509	.4531	29/64	—	141	94	79	2,0	45	12
4162720	TDS403A11600	4156896	TDS413A11600	11,600	.4567	—	—	141	94	79	2,0	45	12
4162721	TDS403A11700	4156897	TDS413A11700	11,700	.4606	—	—	141	94	79	2,0	45	12
4162722	TDS403A11800	4156898	TDS413A11800	11,800	.4646	—	—	141	94	79	2,0	45	12
4162723	TDS403A11900	4156899	TDS413A11900	11,900	.4685	—	—	141	94	79	2,0	45	12
4162724	TDS403A11908	4156900	TDS413A11908	11,908	.4688	15/32	—	141	94	79	2,0	45	12
4162725	TDS403A12000	4156901	TDS413A12000	12,000	.4724	—	—	141	94	79	2,1	45	12
4162726	TDS403A12100	4156902	TDS413A12100	12,100	.4764	—	—	155	108	91	2,1	45	14
4162727	TDS403A12200	4156903	TDS413A12200	12,200	.4803	—	—	155	108	91	2,1	45	14
4162728	TDS403A12300	4156904	TDS413A12300	12,300	.4843	—	—	155	108	91	2,1	45	14
4162729	TDS403A12304	4156905	TDS413A12304	12,304	.4844	31/64	—	155	108	91	2,1	45	14
4162730	TDS403A12400	4156906	TDS413A12400	12,400	.4882	—	—	155	108	91	2,1	45	14
4162681	TDS403A12500	4148984	TDS413A12500	12,500	.4921	—	—	155	108	91	2,1	45	14
4162731	TDS403A12600	4156907	TDS413A12600	12,600	.4961	—	—	155	108	91	2,2	45	14
4162732	TDS403A12700	4156908	TDS413A12700	12,700	.5000	1/2	—	155	108	91	2,2	45	14
4162733	TDS403A12800	4156909	TDS413A12800	12,800	.5039	—	—	155	108	91	2,2	45	14
4162734	TDS403A12900	4156910	TDS413A12900	12,900	.5079	—	—	155	108	91	2,2	45	14
4162735	TDS403A13000	4156911	TDS413A13000	13,000	.5118	—	—	155	108	91	2,2	45	14
4162736	TDS403A13096	4156912	TDS413A13096	13,096	.5156	33/64	—	155	108	91	2,3	45	14
4162737	TDS403A13100	4156913	TDS413A13100	13,100	.5157	—	—	155	108	91	2,3	45	14
4162738	TDS403A13200	4156914	TDS413A13200	13,200	.5197	—	—	155	108	91	2,3	45	14
4162739	TDS403A13300	4156915	TDS413A13300	13,300	.5236	—	—	155	108	91	2,3	45	14
4162740	TDS403A13400	4156916	TDS413A13400	13,400	.5276	—	—	155	108	91	2,3	45	14
4162741	TDS403A13500	4156917	TDS413A13500	13,500	.5315	—	—	155	108	91	2,3	45	14

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(TDS403A • TDS413A • 8 x D — continued)



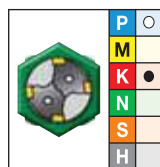
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162742	TDS403A13600	4156918	TDS413A13600	13,600	.5354	—	—	155	108	91	2,3	45	14
4162743	TDS403A13700	4156919	TDS413A13700	13,700	.5394	—	—	155	108	91	2,4	45	14
4162744	TDS403A13800	4156920	TDS413A13800	13,800	.5433	—	—	155	108	91	2,4	45	14
4162745	TDS403A13891	4156921	TDS413A13891	13,891	.5469	35/64	—	155	108	91	2,4	45	14
4162746	TDS403A13900	4156922	TDS413A13900	13,900	.5472	—	—	155	108	91	2,4	45	14
4162747	TDS403A14000	4156923	TDS413A14000	14,000	.5512	—	—	155	108	91	2,4	45	14
4162748	TDS403A14100	4156924	TDS413A14100	14,100	.5551	—	—	171	121	101	2,4	48	16
4162749	TDS403A14200	4156925	TDS413A14200	14,200	.5591	—	—	171	121	101	2,5	48	16
4162750	TDS403A14288	4156926	TDS413A14288	14,288	.5625	9/16	—	171	121	101	2,5	48	16
4162751	TDS403A14300	4156927	TDS413A14300	14,300	.5630	—	—	171	121	101	2,5	48	16
4162752	TDS403A14400	4156928	TDS413A14400	14,400	.5669	—	—	171	121	101	2,5	48	16
4162753	TDS403A14500	4156929	TDS413A14500	14,500	.5709	—	—	171	121	101	2,5	48	16
4162754	TDS403A14600	4156930	TDS413A14600	14,600	.5748	—	—	171	121	101	2,5	48	16
4162755	TDS403A14684	4156931	TDS413A14684	14,684	.5781	37/64	—	171	121	101	2,5	48	16
4162756	TDS403A14700	4156932	TDS413A14700	14,700	.5787	—	—	171	121	101	2,5	48	16
4162757	TDS403A14800	4156933	TDS413A14800	14,800	.5827	—	—	171	121	101	2,6	48	16
4162758	TDS403A14900	4156934	TDS413A14900	14,900	.5866	—	—	171	121	101	2,6	48	16
4162759	TDS403A15000	4156935	TDS413A15000	15,000	.5906	—	—	171	121	101	2,6	48	16
4162760	TDS403A15083	4156936	TDS413A15083	15,083	.5938	19/32	—	171	121	101	2,6	48	16
4162761	TDS403A15100	4156937	TDS413A15100	15,100	.5945	—	—	171	121	101	2,6	48	16
4162762	TDS403A15200	4156938	TDS413A15200	15,200	.5984	—	—	171	121	101	2,6	48	16
4162763	TDS403A15300	4156939	TDS413A15300	15,300	.6024	—	—	171	121	101	2,6	48	16
4162764	TDS403A15400	4156940	TDS413A15400	15,400	.6063	—	—	171	121	101	2,7	48	16
4162765	TDS403A15479	4156941	TDS413A15479	15,479	.6094	39/64	—	171	121	101	2,7	48	16
4162766	TDS403A15500	4156942	TDS413A15500	15,500	.6102	—	—	171	121	101	2,7	48	16
4162767	TDS403A15600	4156943	TDS413A15600	15,600	.6142	—	—	171	121	101	2,7	48	16
4162768	TDS403A15700	4156944	TDS413A15700	15,700	.6181	—	—	171	121	101	2,7	48	16
4162769	TDS403A15800	4156945	TDS413A15800	15,800	.6220	—	—	171	121	101	2,7	48	16
4162770	TDS403A15875	4156946	TDS413A15875	15,875	.6250	5/8	—	171	121	101	2,7	48	16
4162771	TDS403A15900	4156947	TDS413A15900	15,900	.6260	—	—	171	121	101	2,8	48	16
4162772	TDS403A16000	4156948	TDS413A16000	16,000	.6299	—	—	171	121	101	2,8	48	16
4162773	TDS403A16100	4156949	TDS413A16100	16,100	.6339	—	—	185	135	113	2,8	48	18
4162774	TDS403A16200	4156950	TDS413A16200	16,200	.6378	—	—	185	135	113	2,8	48	18
4162775	TDS403A16271	4156951	TDS413A16271	16,271	.6406	41/64	—	185	135	113	2,8	48	18
4162776	TDS403A16300	4156952	TDS413A16300	16,300	.6417	—	—	185	135	113	2,8	48	18
4162777	TDS403A16400	4156953	TDS413A16400	16,400	.6457	—	—	185	135	113	2,8	48	18
4162778	TDS403A16500	4156954	TDS413A16500	16,500	.6496	—	—	185	135	113	2,9	48	18
4162779	TDS403A16600	4156955	TDS413A16600	16,600	.6535	—	—	185	135	113	2,9	48	18
4162780	TDS403A16670	4156956	TDS413A16670	16,670	.6563	21/32	—	185	135	113	2,9	48	18
4162781	TDS403A16700	4156957	TDS413A16700	16,700	.6575	—	—	185	135	113	2,9	48	18

(continued)

(TDS403A • TDS413A • 8 x D — continued)



● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162782	TDS403A16800	4156958	TDS413A16800	16,800	.6614	—	—	185	135	113	2,9	48	18
4162783	TDS403A16900	4156959	TDS413A16900	16,900	.6654	—	—	185	135	113	2,9	48	18
4162784	TDS403A17000	4156960	TDS413A17000	17,000	.6693	—	—	185	135	113	2,9	48	18
4162785	TDS403A17100	4156961	TDS413A17100	17,100	.6732	—	—	185	135	113	3,0	48	18
4162786	TDS403A17200	4156962	TDS413A17200	17,200	.6772	—	—	185	135	113	3,0	48	18
4162787	TDS403A17300	4156963	TDS413A17300	17,300	.6811	—	—	185	135	113	3,0	48	18
4162788	TDS403A17400	4156964	TDS413A17400	17,400	.6850	—	—	185	135	113	3,0	48	18
4162789	TDS403A17463	4156965	TDS413A17463	17,463	.6875	11/16	—	185	135	113	3,0	48	18
4162790	TDS403A17500	4156966	TDS413A17500	17,500	.6890	—	—	185	135	113	3,0	48	18
4162791	TDS403A17600	4156967	TDS413A17600	17,600	.6929	—	—	185	135	113	3,1	48	18
4162792	TDS403A17700	4156968	TDS413A17700	17,700	.6969	—	—	185	135	113	3,1	48	18
4162793	TDS403A17800	4156969	TDS413A17800	17,800	.7008	—	—	185	135	113	3,1	48	18
4162794	TDS403A17859	4156970	TDS413A17859	17,859	.7031	45/64	—	185	135	113	3,1	48	18
4162795	TDS403A17900	4156971	TDS413A17900	17,900	.7047	—	—	185	135	113	3,1	48	18
4162515	TDS403A18000	4157206	TDS413A18000	18,000	.7087	—	—	185	135	113	3,1	48	18
4162516	TDS403A18100	4157207	TDS413A18100	18,100	.7126	—	—	200	148	124	3,1	50	20
4162517	TDS403A18200	4157208	TDS413A18200	18,200	.7165	—	—	200	148	124	3,2	50	20
4162518	TDS403A18258	4157209	TDS413A18258	18,258	.7188	23/32	—	200	148	124	3,2	50	20
4162519	TDS403A18300	4157210	TDS413A18300	18,300	.7205	—	—	200	148	124	3,2	50	20
4162520	TDS403A18400	4157211	TDS413A18400	18,400	.7244	—	—	200	148	124	3,2	50	20
4162521	TDS403A18500	4157212	TDS413A18500	18,500	.7283	—	—	200	148	124	3,2	50	20
4162522	TDS403A18600	4157253	TDS413A18600	18,600	.7323	—	—	200	148	124	3,2	50	20
4162663	TDS403A18654	4157254	TDS413A18654	18,654	.7344	47/64	—	200	148	124	3,2	50	20
4162664	TDS403A18700	4157255	TDS413A18700	18,700	.7362	—	—	200	148	124	3,2	50	20
4162665	TDS403A18800	4157256	TDS413A18800	18,800	.7402	—	—	200	148	124	3,3	50	20
4162666	TDS403A18900	4157257	TDS413A18900	18,900	.7441	—	—	200	148	124	3,3	50	20
4162667	TDS403A19000	4157258	TDS413A19000	19,000	.7480	—	—	200	148	124	3,3	50	20
4162668	TDS403A19050	4157259	TDS413A19050	19,050	.7500	3/4	—	200	148	124	3,3	50	20
4162669	TDS403A19100	4157260	TDS413A19100	19,100	.7520	—	—	200	148	124	3,3	50	20
4162670	TDS403A19200	4157261	TDS413A19200	19,200	.7559	—	—	200	148	124	3,3	50	20
4162671	TDS403A19300	4157262	TDS413A19300	19,300	.7598	—	—	200	148	124	3,4	50	20
4162672	TDS403A19400	4157263	TDS413A19400	19,400	.7638	—	—	200	148	124	3,4	50	20
4162673	TDS403A19500	4157264	TDS413A19500	19,500	.7677	—	—	200	148	124	3,4	50	20
4162674	TDS403A19600	4157265	TDS413A19600	19,600	.7717	—	—	200	148	124	3,4	50	20
4162675	TDS403A19700	4157266	TDS413A19700	19,700	.7756	—	—	200	148	124	3,4	50	20
4162676	TDS403A19800	4157267	TDS413A19800	19,800	.7795	—	—	200	148	124	3,4	50	20
4162677	TDS403A19900	4157268	TDS413A19900	19,900	.7835	—	—	200	148	124	3,5	50	20
4162678	TDS403A20000	4157269	TDS413A20000	20,000	.7874	—	—	200	148	124	3,5	50	20

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Material Group		Cutting Speed — vc Range — SFM	Recommended Feed Rate (f) by Diameter								
			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
			min – max								
P	1	230 – 460	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.006–.013	.008–.015	.009–.018	.011–.022
	2, 3, 4, 6, 7	230 – 460	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.007–.013	.009–.015	.011–.019	.013–.024
	5, 9, 10, 11	200 – 390	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.007–.013	.008–.015	.009–.019	.011–.024
	12, 13.1, 13.2	130 – 200	IPR	.002–.004	.003–.005	.004–.008	.004–.009	.005–.009	.005–.011	.007–.012	.009–.017
M	14.1	100 – 160	IPR	.002–.004	.002–.004	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.006–.010
	14.3	130 – 200	IPR	.002–.004	.003–.005	.004–.005	.004–.007	.004–.008	.005–.009	.006–.010	.006–.011
	14.2, 14.4	100 – 160	IPR	.002–.004	.003–.004	.003–.005	.004–.006	.004–.007	.005–.007	.006–.008	.006–.010

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Material Group		Cutting Speed — vc Range — SFM	Recommended Feed Rate (f) by Diameter								
			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
			min – max								
P	1	260 – 590	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.006–.014	.008–.016	.010–.019	.012–.023
	2, 3, 4, 6, 7	260 – 520	IPR	.003–.007	.004–.008	.005–.010	.006–.012	.008–.014	.009–.016	.012–.020	.014–.025
	5, 9, 10, 11	260 – 460	IPR	.003–.007	.004–.008	.005–.010	.006–.012	.007–.014	.008–.016	.010–.020	.012–.025
	12, 13.1, 13.2	160 – 260	IPR	.002–.004	.003–.005	.004–.008	.004–.009	.005–.010	.006–.011	.007–.013	.010–.017
M	14.1	130 – 200	IPR	.002–.004	.002–.005	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.007–.010
	14.3	130 – 230	IPR	.002–.004	.003–.005	.004–.005	.004–.007	.004–.008	.005–.009	.006–.010	.007–.012
	14.2, 14.4	110 – 160	IPR	.002–.004	.003–.005	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.007–.010

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

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Material Group		Cutting Speed — vc Range — m/min	Recommended Feed Rate (f) by Diameter								
			Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	70 – 140	mm/r	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,30	0,15–0,34	0,20–0,38	0,23–0,45	0,28–0,55
	2, 3, 4, 6, 7	70 – 140	mm/r	0,08–0,16	0,10–0,19	0,12–0,25	0,15–0,30	0,19–0,34	0,22–0,38	0,28–0,48	0,34–0,60
	5, 9, 10, 11	60 – 120	mm/r	0,08–0,16	0,10–0,19	0,12–0,25	0,14–0,30	0,17–0,33	0,20–0,38	0,24–0,48	0,29–0,60
	12, 13.1, 13.2	40 – 60	mm/r	0,06–0,10	0,08–0,12	0,10–0,20	0,10–0,22	0,13–0,24	0,14–0,27	0,18–0,32	0,24–0,42
M	14.1	30 – 50	mm/r	0,05–0,09	0,06–0,11	0,08–0,13	0,09–0,15	0,10–0,17	0,12–0,20	0,14–0,22	0,16–0,25
	14.3	40 – 60	mm/r	0,05–0,10	0,07–0,12	0,09–0,13	0,10–0,18	0,10–0,20	0,12–0,22	0,14–0,25	0,16–0,28
	14.2, 14.4	30 – 50	mm/r	0,05–0,09	0,07–0,11	0,08–0,12	0,09–0,15	0,10–0,17	0,12–0,19	0,14–0,21	0,16–0,25

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Material Group		Cutting Speed — vc Range — m/min	Recommended Feed Rate (f) by Diameter								
			Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	80 – 180	mm/r	0,08–0,16	0,11–0,19	0,13–0,26	0,16–0,32	0,16–0,36	0,21–0,40	0,24–0,47	0,29–0,58
	2, 3, 4, 6, 7	80 – 160	mm/r	0,09–0,17	0,11–0,20	0,13–0,26	0,16–0,32	0,20–0,36	0,23–0,40	0,29–0,50	0,36–0,63
	5, 9, 10, 11	80 – 140	mm/r	0,08–0,17	0,11–0,20	0,12–0,26	0,15–0,32	0,18–0,35	0,21–0,40	0,25–0,50	0,30–0,63
	12, 13.1, 13.2	50 – 80	mm/r	0,06–0,11	0,08–0,13	0,11–0,21	0,10–0,23	0,13–0,25	0,14–0,28	0,29–0,33	0,25–0,44
M	14.1	40 – 60	mm/r	0,05–0,09	0,06–0,12	0,08–0,14	0,09–0,16	0,11–0,18	0,13–0,21	0,15–0,23	0,17–0,26
	14.3	40 – 70	mm/r	0,05–0,11	0,07–0,13	0,09–0,14	0,11–0,19	0,11–0,21	0,13–0,23	0,15–0,26	0,17–0,29
	14.2, 14.4	35 – 50	mm/r	0,05–0,09	0,07–0,12	0,08–0,13	0,09–0,16	0,11–0,18	0,13–0,20	0,15–0,22	0,17–0,26

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

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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
K	15, 16	230	—	560	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	17, 18, 19	260	—	460	IPR	.005–.006	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	230	—	430	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024

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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	
K	15, 16	260	— 620	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029	
	17, 18, 19	300	— 560	IPR	.005–.006	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024	
	20	260	— 490	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024	

nominal size range	Inch tolerance	
	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

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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	
K	15, 16	70 — 170	mm/r	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74	0,31–0,60	0,38–0,74	
	17, 18, 19	80 — 140	mm/r	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60	0,31–0,48	0,38–0,60	
	20	70 — 130	mm/r	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60	0,24–0,48	0,30–0,60	

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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	
K	15, 16	80 — 190	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	90 — 170	mm/r	0,12–0,16	0,13–0,19	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	80 — 150	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	

nominal size range	Metric tolerance	
	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