

HOLEMAKING

Diameter Range

3.0-16.0 mm in 0.1 mm increments
(.1181-.6299" in .0039" increments)

Length to Dia. Ratio

5xD pilot drills
16xD-50xD

No. of Flutes

2

Carbide Grade

IN2005

Materials

5xD » ■ Steel
■ Stainless Steel
■ Non-Ferrous
■ High-Temp Alloys

16xD-50xD » ■ Steel
■ Stainless Steel
■ High-Temp Alloys

Series

DP 5xD
Drill Dia. Range: 3.00-20.00 mm

DHXL 16xD
Drill Dia. Range: 3.00-16.00 mm

DHXL 20xD
Drill Dia. Range: 3.00-14.00 mm

DHXL 25xD
Drill Dia. Range: 3.00-12.00 mm

DHXL 30xD
Drill Dia. Range: 3.00-10.00 mm

DHXL 40xD
Drill Dia. Range: 3.00-8.00 mm

DHXL 50xD
Drill Dia. Range: 4.00-6.35 mm

DRILLIN[®] DHXL[™]



New High Performance Solid Carbide Drills for Steel and Nickel Based Alloys

Ingersoll presents the new DHXL series of high-performance solid carbide drills, designed to enhance drilling efficiency and extend tool longevity in lengths ranging from 16xD to 50xD, specifically for steel and nickel-based alloy applications.

To accommodate the necessity of a pilot hole for these extended drills, Ingersoll is also launching a series of 5xD pilot drills. These pilot drills feature a 150° point geometry, single margins, and coolant-through capabilities, making them suitable for all material applications.

FEATURES & BENEFITS

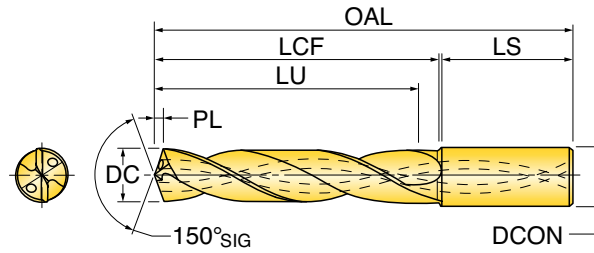
- » 135° split point geometry is employed to achieve superior drill penetration and accuracy.
- » Double margin design enhances stability and straightness.
- » Coolant through to keep the cutting edge cool and improve chip evacuation.
- » Polished chip flutes ensure chip evacuation during deep hole drilling.
- » Specialized coating provides lower friction and reduces tool wear and longer tool life while reducing the risk of chipping and cracking.
- » No pecking required for deep hole drilling.
- » For 40xD and 50xD drills, an intermediate 20xD drill is required.

See it in
action! »





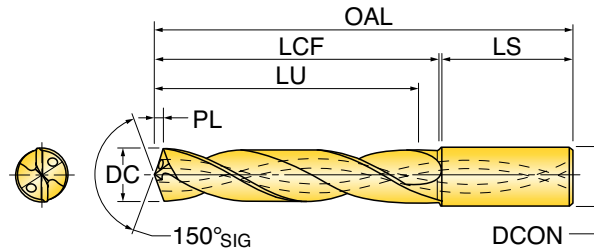
Pilot 5xD



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DP0300024T7R01	0.118	3.00		0.40	23.50	28	38	66	6
DP0310023T7R01	0.122	3.10		0.41	23.35	28	38	66	6
DP0318023T7R01	0.125	3.18	1/8"	0.42	23.24	28	38	66	6
DP0320023T7R01	0.126	3.20		0.43	23.20	28	38	66	6
DP0330023T7R01	0.130	3.30		0.44	23.05	28	38	66	6
DP0340023T7R01	0.134	3.40		0.45	22.90	28	38	66	6
DP0350023T7R01	0.138	3.50		0.47	22.75	28	38	66	6
DP0357023T7R01	0.141	3.57	9/64"	0.48	22.64	28	38	66	6
DP0360023T7R01	0.142	3.60		0.48	22.60	28	38	66	6
DP0370022T7R01	0.146	3.70		0.50	22.45	28	38	66	6
DP0380030T7R01	0.150	3.80		0.51	30.30	36	38	74	6
DP0390030T7R01	0.154	3.90		0.52	30.15	36	38	74	6
DP0397030T7R01	0.156	3.97	5/32"	0.53	30.05	36	38	74	6
DP0400030T7R01	0.158	4.00		0.54	30.00	36	38	74	6
DP0410030T7R01	0.161	4.10		0.55	29.85	36	38	74	6
DP0420030T7R01	0.165	4.20		0.56	29.70	36	38	74	6
DP0430030T7R01	0.169	4.30		0.58	29.55	36	38	74	6
DP0437029T7R01	0.172	4.37	11/64"	0.58	29.45	36	38	74	6
DP0440029T7R01	0.173	4.40		0.59	29.40	36	38	74	6
DP0450029T7R01	0.177	4.50		0.60	29.25	36	38	74	6
DP0460029T7R01	0.181	4.60		0.62	29.10	36	38	74	6
DP0465029T7R01	0.183	4.65		0.62	29.02	36	38	74	6
DP0470029T7R01	0.185	4.70		0.63	28.95	36	38	74	6
DP0476037T7R01	0.188	4.76	3/16"	0.64	36.86	44	38	82	6
DP0480037T7R01	0.189	4.80		0.64	36.80	44	38	82	6
DP0490037T7R01	0.193	4.90		0.66	36.65	44	38	82	6
DP0500036T7R01	0.197	5.00		0.67	36.50	44	38	82	6
DP0510036T7R01	0.201	5.10		0.68	36.35	44	38	82	6
DP0516036T7R01	0.203	5.16	13/64"	0.69	36.26	44	38	82	6
DP0518036T7R01	0.204	5.18		0.69	36.23	44	38	82	6
DP0520036T7R01	0.205	5.20		0.70	36.20	44	38	82	6
DP0530036T7R01	0.209	5.30		0.71	36.05	44	38	82	6
DP0540036T7R01	0.213	5.40		0.72	35.90	44	38	82	6



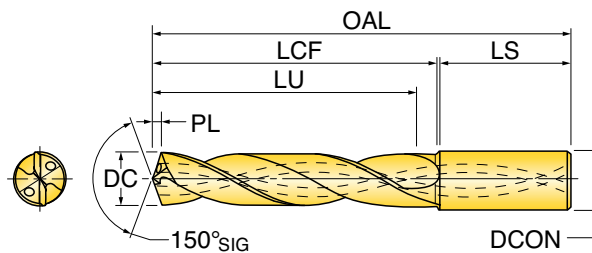
Pilot 5xD (continued)



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DP0550036T7R01	0.217	5.50		0.74	35.75	44	38	82	6
DP0555036T7R01	0.219	5.55		0.74	35.68	44	38	82	6
DP0556036T7R01	0.219	5.55	7/32"	0.74	35.67	44	38	82	6
DP0560036T7R01	0.221	5.60		0.75	35.60	44	38	82	6
DP0570035T7R01	0.224	5.70		0.76	35.45	44	38	82	6
DP0580035T7R01	0.228	5.80		0.78	35.30	44	38	82	6
DP0590035T7R01	0.232	5.90		0.79	35.15	44	38	82	6
DP0595035T7R01	0.234	5.95	15/64"	0.80	35.07	44	38	82	6
DP0600035T0R01	0.236	6.00		0.80	35.00	44	38	82	8
DP0610044T0R01	0.240	6.10		0.82	43.85	53	38	91	8
DP0620044T0R01	0.244	6.20		0.83	43.70	53	38	91	8
DP0630044T0R01	0.248	6.30		0.84	43.55	53	38	91	8
DP0635043T0R01	0.250	6.35	1/4"	0.85	43.47	53	38	91	8
DP0640043T0R01	0.252	6.40		0.86	43.40	53	38	91	8
DP0650043T0R01	0.256	6.50		0.87	43.25	53	38	91	8
DP0660043T0R01	0.260	6.60		0.88	43.10	53	38	91	8
DP0670043T0R01	0.264	6.70		0.90	42.95	53	38	91	8
DP0675043T0R01	0.266	6.75	17/64"	0.90	42.88	53	38	91	8
DP0680043T0R01	0.268	6.80		0.91	42.80	53	38	91	8
DP0690043T0R01	0.272	6.90		0.92	42.65	53	38	91	8
DP0700042T0R01	0.276	7.00		0.94	42.50	53	38	91	8
DP0710042T0R01	0.280	7.10		0.95	42.35	53	38	91	8
DP0715042T0R01	0.281	7.15	9/32"	0.96	42.28	53	38	91	8
DP0720042T0R01	0.284	7.20		0.97	42.20	53	38	91	8
DP0730042T0R01	0.287	7.30		0.98	42.05	53	38	91	8
DP0740042T0R01	0.291	7.40		0.99	41.90	53	38	91	8
DP0750042T0R01	0.295	7.50		1.01	41.75	53	38	91	8
DP0754042T0R01	0.297	7.54	19/64"	1.01	41.69	53	38	91	8
DP0770041T0R01	0.303	7.70		1.03	41.45	53	38	91	8
DP0780041T0R01	0.307	7.80		1.04	41.30	53	38	91	8
DP0790041T0R01	0.311	7.90		1.06	41.15	53	38	91	8
DP0794041T0R01	0.313	7.94	5/16"	1.06	41.09	53	38	91	8
DP0800041T1R01	0.315	8.00		1.07	41.00	53	38	91	10
DP0810049T1R01	0.319	8.10		1.08	48.85	61	42	103	10



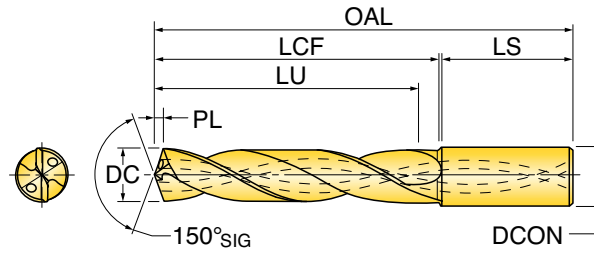
Pilot 5xD (continued)



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DP0810049T1R01	0.319	8.10		1.08	48.85	61	42	103	10
DP0820049T1R01	0.323	8.20		1.10	48.70	61	42	103	10
DP0830049T1R01	0.327	8.30		1.11	48.55	61	42	103	10
DP0833049T1R01	0.328	8.33	21/64"	1.12	48.50	61	42	103	10
DP0840048T1R01	0.331	8.40		1.13	48.40	61	42	103	10
DP0850048T1R01	0.335	8.50		1.14	48.25	61	42	103	10
DP0860048T1R01	0.339	8.60		1.15	48.10	61	42	103	10
DP0870048T1R01	0.343	8.70		1.17	47.95	61	42	103	10
DP0873048T1R01	0.344	8.73	11/32"	1.17	47.91	61	42	103	10
DP0880048T1R01	0.347	8.80		1.18	47.80	61	42	103	10
DP0900048T1R01	0.354	9.00		1.21	47.50	61	42	103	10
DP0913047T1R01	0.359	9.13	23/64"	1.22	47.31	61	42	103	10
DP0920047T1R01	0.362	9.20		1.23	47.20	61	42	103	10
DP0930047T1R01	0.366	9.30		1.24	47.05	61	42	103	10
DP0950047T1R01	0.374	9.50		1.27	46.75	61	42	103	10
DP0953047T1R01	0.375	9.53	3/8"	1.28	46.71	61	42	103	10
DP0960047T1R01	0.378	9.60		1.29	46.60	61	42	103	10
DP0980046T1R01	0.386	9.80		1.31	46.30	61	42	103	10
DP0990046T1R01	0.390	9.90		1.33	46.15	61	42	103	10
DP0992046T1R01	0.391	9.92	25/64"	1.33	46.12	61	42	103	10
DP1000046T2R01	0.394	10.00		1.34	46.00	61	42	103	12
DP1010056T2R01	0.398	10.10		1.35	55.85	71	47	118	12
DP1020056T2R01	0.402	10.20		1.37	55.70	71	47	118	12
DP1030056T2R01	0.406	10.30		1.38	55.55	71	47	118	12
DP1032056T2R01	0.406	10.32	13/32"	1.38	55.52	71	47	118	12
DP1040055T2R01	0.409	10.40		1.39	55.40	71	47	118	12
DP1050055T2R01	0.413	10.50		1.41	55.25	71	47	118	12
DP1072055T2R01	0.422	10.72	27/64"	1.44	54.93	71	47	118	12
DP1080055T2R01	0.425	10.80		1.45	54.80	71	47	118	12
DP1100055T2R01	0.433	11.00		1.47	54.50	71	47	118	12
DP1110054T2R01	0.437	11.10		1.49	54.35	71	47	118	12
DP1111054T2R01	0.438	11.11	7/16"	1.49	54.33	71	47	118	12
DP1120054T2R01	0.441	11.20		1.50	54.20	71	47	118	12



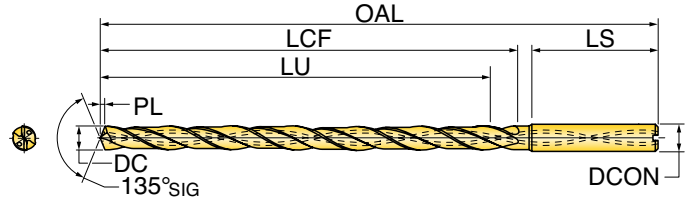
Pilot 5xD (continued)



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DP1150054T2R01	0.453	11.50		1.54	53.75	71	47	118	12
DP1151054T2R01	0.453	11.51	29/64"	1.54	53.74	71	47	118	12
DP1170053T2R01	0.461	11.70		1.57	53.45	71	47	118	12
DP1180053T2R01	0.465	11.80		1.58	53.30	71	47	118	12
DP1190053T2R01	0.469	11.90	15/32"	1.60	53.14	71	47	118	12
DP1200053T2R01	0.472	12.00		1.61	53.00	71	47	118	12
DP1210059U8R01	0.476	12.10		1.62	58.85	77	47	124	14
DP1220059U8R01	0.480	12.20		1.63	58.70	77	47	124	14
DP1230059U8R01	0.484	12.30		1.65	58.55	77	47	124	14
DP1231059U8R01	0.484	12.30	31/64"	1.65	58.54	77	47	124	14
DP1250058U8R01	0.492	12.50		1.67	58.25	77	47	124	14
DP1260058U8R01	0.496	12.60		1.69	58.10	77	47	124	14
DP1270058U8R01	0.500	12.70	1/2"	1.70	57.95	77	47	124	14
DP1300058U8R01	0.512	13.00		1.74	57.50	77	47	124	14
DP1330057U8R01	0.524	13.30		1.78	57.05	77	47	124	14
DP1349057U8R01	0.531	13.50	17/32"	1.81	56.76	77	47	124	14
DP1350057U8R01	0.532	13.50		1.81	56.75	77	47	124	14
DP1400056U8R01	0.551	14.00		1.87	56.00	77	47	124	14
DP1429062T3R01	0.563	14.29	9/16"	1.92	61.57	83	50	133	16
DP1450061T3R01	0.571	14.50		1.94	61.25	83	50	133	16
DP1500060T3R01	0.591	15.00		2.01	60.50	83	50	133	16
DP1550060T3R01	0.610	15.50		2.08	59.75	83	50	133	16
DP1588059T3R01	0.625	15.88	5/8"	2.13	59.19	83	50	133	16
DP1600059T3R01	0.630	16.00		2.14	59.00	83	50	133	16
DP1650068U2R01	0.650	16.50		2.21	68.25	93	50	143	18
DP1700068U2R01	0.669	17.00		2.28	67.50	93	50	143	18
DP1750067U2R01	0.689	17.50		2.34	66.75	93	50	143	18
DP1800066U2R01	0.709	18.00		2.41	66.00	93	50	143	18
DP1850073T4R01	0.728	18.50		2.48	73.25	101	52	153	20
DP1905072T4R01	0.750	19.05	3/4"	2.55	72.43	101	52	153	20
DP1950072T4R01	0.768	19.50		2.61	71.75	101	52	153	20
DP2000071T4R01	0.787	20.00		2.68	71.00	101	52	153	20



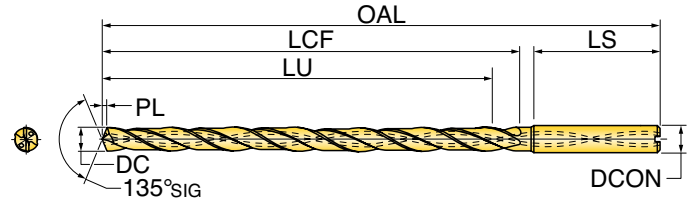
DHXL 16xD



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0300056T7R01	0.118	3.00		0.62	55.50	60	40	100	6
DHXL0318055T7R01	0.125	3.18	1/8"	0.66	55.24	60	40	100	6
DHXL0320055T7R01	0.126	3.20		0.66	55.20	60	40	100	6
DHXL0330055T7R01	0.130	3.30		0.68	55.05	60	40	100	6
DHXL0350055T7R01	0.138	3.50		0.72	54.75	60	40	100	6
DHXL0357070T7R01	0.141	3.57	9/64"	0.74	69.64	75	40	115	6
DHXL0380069T7R01	0.150	3.80		0.79	69.30	75	40	115	6
DHXL0397069T7R01	0.156	3.97	5/32"	0.82	69.05	75	40	115	6
DHXL0400069T7R01	0.158	4.00		0.83	69.00	75	40	115	6
DHXL0410069T7R01	0.161	4.10		0.85	68.86	75	40	115	6
DHXL0420069T7R01	0.165	4.20		0.87	68.70	75	40	115	6
DHXL0437083T7R01	0.172	4.37	11/64"	0.90	83.45	90	40	130	6
DHXL0450083T7R01	0.177	4.50		0.93	83.25	90	40	130	6
DHXL0470083T7R01	0.185	4.70		0.97	82.95	90	40	130	6
DHXL0476083T7R01	0.188	4.76	3/16"	0.99	82.86	90	40	130	6
DHXL0480083T7R01	0.189	4.80		0.99	82.80	90	40	130	6
DHXL0500082T7R01	0.197	5.00		1.04	82.50	90	40	130	6
DHXL0516100T7R01	0.203	5.16	13/64"	1.07	100.26	108	42	150	6
DHXL0518100T7R01	0.204	5.18		1.07	100.23	108	42	150	6
DHXL0550100T7R01	0.217	5.50		1.14	99.75	108	42	150	6
DHXL0556100T7R01	0.219	5.55	7/32"	1.15	99.67	108	42	150	6
DHXL0580099T7R01	0.228	5.80		1.20	99.30	108	42	150	6
DHXL0595099T7R01	0.234	5.95	15/64"	1.23	99.07	108	42	150	6
DHXL0600099T7R01	0.236	6.00		1.24	99.00	108	42	150	6
DHXL0635115T0R01	0.250	6.35	1/4"	1.32	115.48	125	40	165	8
DHXL0650115T0R01	0.256	6.50		1.35	115.25	125	40	165	8
DHXL0675115T0R01	0.266	6.75	17/64"	1.40	114.88	125	40	165	8
DHXL0680115T0R01	0.268	6.80		1.41	114.80	125	40	165	8
DHXL0700115T0R01	0.276	7.00		1.45	114.50	125	40	165	8
DHXL0715129T0R01	0.281	7.15	9/32"	1.48	129.28	140	40	180	8
DHXL0750129T0R01	0.295	7.50		1.55	128.75	140	40	180	8
DHXL0754129T0R01	0.297	7.54	19/64"	1.56	128.69	140	40	180	8
DHXL0780128T0R01	0.307	7.80		1.62	128.30	140	40	180	8



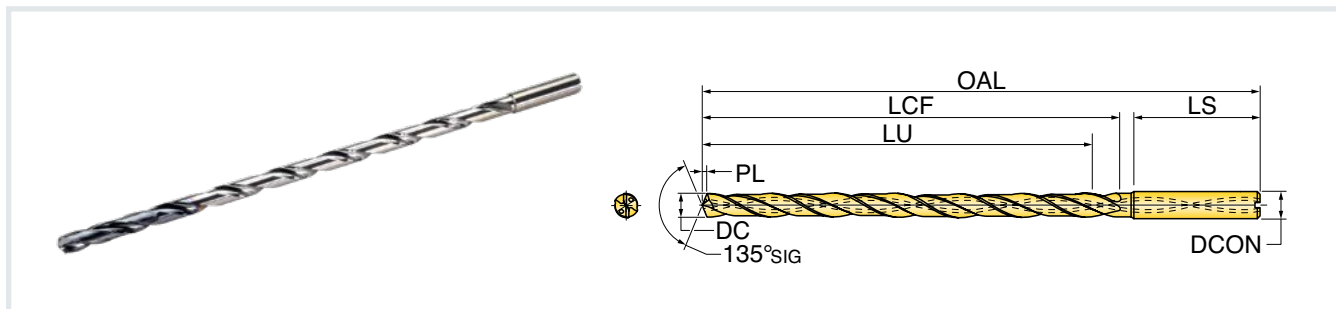
DHXL 16xD (continued)



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0794128T0R01	0.313	7.94	5/16"	1.64	128.09	140	40	180	8
DHXL0800128T0R01	0.315	8.00		1.66	128.00	140	40	180	8
DHXL0833148T1R01	0.328	8.33	21/64"	1.73	147.50	160	45	205	10
DHXL0850147T1R01	0.335	8.50		1.76	147.25	160	45	205	10
DHXL0873147T1R01	0.344	8.73	11/32"	1.81	146.91	160	45	205	10
DHXL0880147T1R01	0.347	8.80		1.82	146.80	160	45	205	10
DHXL0900147T1R01	0.354	9.00		1.86	146.50	160	45	205	10
DHXL0913166T1R01	0.359	9.13	23/64"	1.89	166.31	180	45	225	10
DHXL0953166T1R01	0.375	9.53		1.97	165.71	180	45	225	10
DHXL0980165T1R01	0.386	9.80		2.03	165.30	180	45	225	10
DHXL0992165T1R01	0.391	9.92	25/64"	2.05	165.12	180	45	225	10
DHXL1000165T1R01	0.394	10.00		2.07	165.00	180	45	225	10
DHXL1020175T2R01	0.402	10.20		2.11	174.70	190	50	240	12
DHXL1032175T2R01	0.406	10.32	13/32"	2.14	174.52	190	50	240	12
DHXL1072174T2R01	0.422	10.72	27/64"	2.22	173.93	190	50	240	12
DHXL1080174T2R01	0.425	10.80		2.24	173.80	190	50	240	12
DHXL1100173T2R01	0.433	11.00		2.28	173.50	190	50	240	12
DHXL1111198T2R01	0.438	11.11	7/16"	2.30	198.33	215	50	265	12
DHXL1150198T2R01	0.453	11.50		2.38	197.75	215	50	265	12
DHXL1151198T2R01	0.453	11.51	29/64"	2.38	197.74	215	50	265	12
DHXL1191197T2R01	0.469	11.90	15/32"	2.47	197.14	215	50	265	12
DHXL1200197T2R01	0.472	12.00		2.48	197.00	215	50	265	12
DHXL1230212U8R01	0.484	12.30		2.55	211.55	230	50	280	14
DHXL1231212U8R01	0.484	12.30	31/64"	2.55	211.54	230	50	280	14
DHXL1270211U8R01	0.500	12.70	1/2"	2.63	210.95	230	50	280	14
DHXL1300211U8R01	0.512	13.00		2.69	210.50	230	50	280	14
DHXL1330225U8R01	0.524	13.30		2.75	225.05	245	50	295	14
DHXL1349225U8R01	0.531	13.50	17/32"	2.79	224.76	245	50	295	14
DHXL1350225U8R01	0.532	13.50		2.80	224.75	245	50	295	14
DHXL1400224U8R01	0.551	14.00		2.90	224.00	245	50	295	14
DHXL1429234T3R01	0.563	14.29	9/16"	2.96	233.57	255	50	305	16
DHXL1450233T3R01	0.571	14.50		3.00	233.25	255	50	305	16
DHXL1500232T3R01	0.591	15.00		3.11	232.50	255	50	305	16



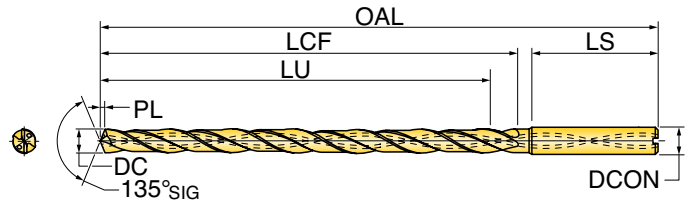
DHXL 16xD (continued)



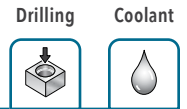
Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL1550252T3R01	0.610	15.50		3.21	251.75	275	50	325	16
DHXL1588251T3R01	0.625	15.88	5/8"	3.29	251.19	275	50	325	16
DHXL1600251T3R01	0.630	16.00		3.31	251.00	275	50	325	16



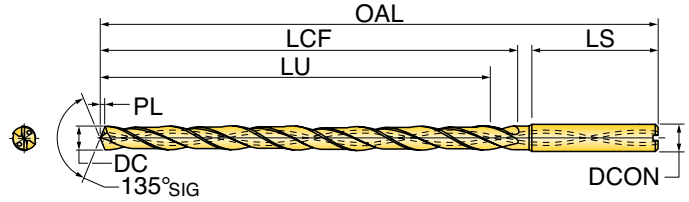
DHXL 20xD



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0300076T7R01	0.118	3.00		0.62	75.50	80	40	120	6
DHXL0318075T7R01	0.125	3.18	1/8"	0.66	75.24	80	40	120	6
DHXL0320075T7R01	0.126	3.20		0.66	75.20	80	40	120	6
DHXL0330075T7R01	0.130	3.30		0.68	75.05	80	40	120	6
DHXL0350075T7R01	0.138	3.50		0.72	74.75	80	40	120	6
DHXL0357085T7R01	0.141	3.57	9/64"	0.74	84.64	90	40	130	6
DHXL0380084T7R01	0.150	3.80		0.79	84.30	90	40	130	6
DHXL0397084T7R01	0.156	3.97	5/32"	0.82	84.05	90	40	130	6
DHXL0400084T7R01	0.158	4.00		0.83	84.00	90	40	130	6
DHXL0420104T7R01	0.165	4.20		0.87	103.70	110	50	160	6
DHXL0437103T7R01	0.172	4.37	11/64"	0.90	103.45	110	50	160	6
DHXL0450103T7R01	0.177	4.50		0.93	103.25	110	50	160	6
DHXL0470113T7R01	0.185	4.70		0.97	112.95	120	40	160	6
DHXL0476113T7R01	0.188	4.76	3/16"	0.99	112.86	120	40	160	6
DHXL0480113T7R01	0.189	4.80		0.99	112.80	120	40	160	6
DHXL0500112T7R01	0.197	5.00		1.04	112.50	120	40	160	6
DHXL0516132T7R01	0.203	5.16	13/64"	1.07	132.26	140	45	185	6
DHXL0518132T7R01	0.204	5.18		1.07	132.23	140	45	185	6
DHXL0550132T7R01	0.217	5.50		1.14	131.75	140	45	185	6
DHXL0555132T7R01	0.219	5.55	7/32"	1.15	131.67	140	45	185	6
DHXL0580131T7R01	0.228	5.80		1.20	131.30	140	45	185	6
DHXL0595131T7R01	0.234	5.95	15/64"	1.23	131.07	140	45	185	6
DHXL0600131T7R01	0.236	6.00		1.24	131.00	140	45	185	6
DHXL0635150T0R01	0.250	6.35	1/4"	1.32	150.47	160	50	210	8
DHXL0650150T0R01	0.256	6.50		1.35	150.25	160	50	210	8
DHXL0675150T0R01	0.266	6.75	17/64"	1.40	149.88	160	50	210	8
DHXL0680150T0R01	0.268	6.80		1.41	149.80	160	50	210	8
DHXL0700149T0R01	0.276	7.00		1.45	149.50	160	50	210	8
DHXL0715169T0R01	0.281	7.15	9/32"	1.48	169.28	180	50	230	8
DHXL0750169T0R01	0.295	7.50		1.55	168.75	180	50	230	8
DHXL0754169T0R01	0.297	7.54	19/64"	1.56	168.69	180	50	230	8
DHXL0780168T0R01	0.307	7.80		1.62	168.30	180	50	230	8
DHXL0794168T0R01	0.313	7.94	5/16"	1.64	168.09	180	50	230	8



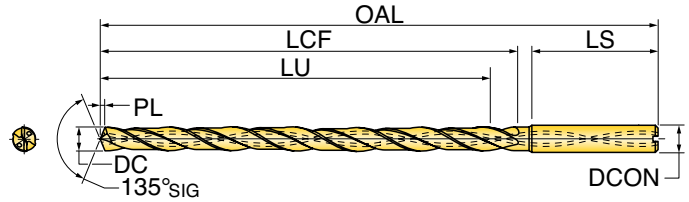
DHXL 20xD (continued)



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0800168T0R01	0.315	8.00		1.66	168.00	180	50	230	8
DHXL0833183T1R01	0.328	8.33	21/64"	1.73	182.50	195	65	260	10
DHXL0850182T1R01	0.335	8.50		1.76	182.25	195	65	260	10
DHXL0873217T1R01	0.344	8.73	11/32"	1.81	216.91	230	60	290	10
DHXL0880217T1R01	0.347	8.80		1.82	216.80	230	60	290	10
DHXL0900217T1R01	0.354	9.00		1.86	216.50	230	60	290	10
DHXL0913216T1R01	0.359	9.13	23/64"	1.89	216.31	230	60	290	10
DHXL0953216T1R01	0.375	9.53	3/8"	1.97	215.71	230	60	290	10
DHXL0980215T1R01	0.386	9.80		2.03	215.30	230	60	290	10
DHXL0992215T1R01	0.391	9.92	25/64"	2.05	215.12	230	60	290	10
DHXL1000215T1R01	0.394	10.00		2.07	215.00	230	60	290	10
DHXL1020253T2R01	0.402	10.20		2.11	252.70	268	47	315	12
DHXL1032253T2R01	0.406	10.32	13/32"	2.14	252.52	268	47	315	12
DHXL1072252T2R01	0.422	10.72	27/64"	2.22	251.93	268	47	315	12
DHXL1080252T2R01	0.425	10.80		2.24	251.80	268	47	315	12
DHXL1100252T2R01	0.433	11.00		2.28	251.50	268	47	315	12
DHXL1111251T2R01	0.438	11.11	7/16"	2.30	251.33	268	47	315	12
DHXL1150251T2R01	0.453	11.50		2.38	250.75	268	47	315	12
DHXL1151251T2R01	0.453	11.51	29/64"	2.38	250.74	268	47	315	12
DHXL1190250T2R01	0.469	11.90	15/32"	2.47	250.14	268	47	315	12
DHXL1200250T2R01	0.472	12.00		2.48	250.00	268	47	315	12
DHXL1230262U8R01	0.484	12.30		2.55	261.55	280	45	325	14
DHXL1231262U8R01	0.484	12.30	31/64"	2.55	261.54	280	45	325	14
DHXL1270261U8R01	0.500	12.70	1/2"	2.63	260.95	280	45	325	14
DHXL1300260U8R01	0.512	13.00		2.69	260.50	280	45	325	14
DHXL1330285U8R01	0.524	13.30		2.75	285.05	305	50	355	14
DHXL1349285U8R01	0.531	13.50	17/32"	2.79	284.76	305	50	355	14
DHXL1350285U8R01	0.532	13.50		2.80	284.75	305	50	355	14
DHXL1400284U8R01	0.551	14.00		2.90	284.00	305	50	355	14



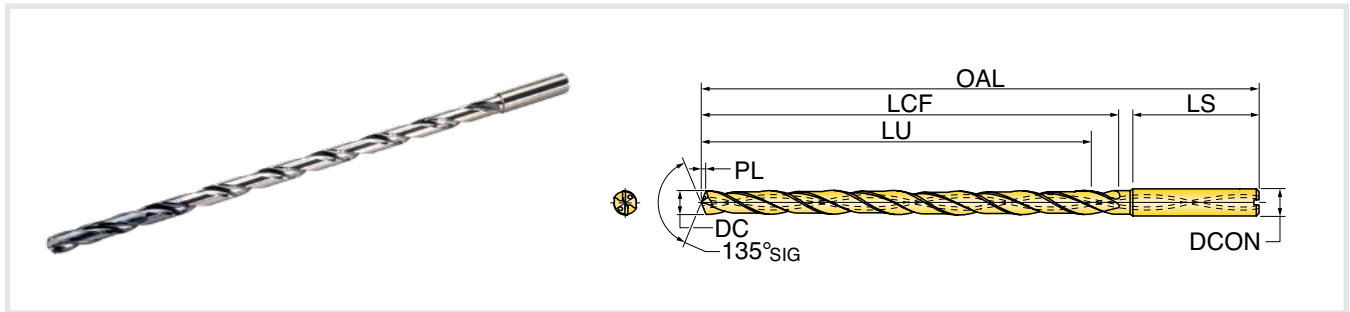
DHXL 25xD



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0300094T7R01	0.118	3.00		0.62	93.50	98	37	135	6
DHXL0318093T7R01	0.125	3.18	1/8"	0.66	93.24	98	37	135	6
DHXL0320093T7R01	0.126	3.20		0.66	93.20	98	37	135	6
DHXL0330093T7R01	0.130	3.30		0.68	93.05	98	37	135	6
DHXL0350093T7R01	0.138	3.50		0.72	92.75	98	37	135	6
DHXL0357115T7R01	0.141	3.57	9/64"	0.74	114.64	120	40	160	6
DHXL0380114T7R01	0.150	3.80		0.79	114.30	120	40	160	6
DHXL0397114T7R01	0.156	3.97	5/32"	0.82	114.05	120	40	160	6
DHXL0400114T7R01	0.158	4.00		0.83	114.00	120	40	160	6
DHXL0420114T7R01	0.165	4.20		0.87	113.70	120	40	160	6
DHXL0437128T7R01	0.172	4.37	11/64"	0.90	128.45	135	45	180	6
DHXL0450128T7R01	0.177	4.50		0.93	128.25	135	45	180	6
DHXL0470128T7R01	0.185	4.70		0.97	127.95	135	45	180	6
DHXL0476128T7R01	0.188	4.76	3/16"	0.99	127.86	135	45	160	6
DHXL0480128T7R01	0.189	4.80		0.99	127.80	135	45	180	6
DHXL0500128T7R01	0.197	5.00		1.04	127.50	135	45	180	6
DHXL0516160T7R01	0.203	5.16	13/64"	1.07	160.26	168	37	205	6
DHXL0518160T7R01	0.204	5.18		1.07	162.06	168	37	205	6
DHXL0550160T7R01	0.217	5.50		1.14	159.75	168	37	205	6
DHXL0555160T7R01	0.219	5.55	7/32"	1.15	159.67	168	37	205	6
DHXL0580159T7R01	0.228	5.80		1.20	159.30	168	37	205	6
DHXL0595159T7R01	0.234	5.95	15/64"	1.23	159.07	168	37	205	6
DHXL0600159T7R01	0.236	6.00		1.24	159.00	168	37	205	6
DHXL0635190T0R01	0.250	6.35	1/4"	1.32	190.47	200	40	240	8
DHXL0650190T0R01	0.256	6.50		1.35	190.25	200	40	240	8
DHXL0675190T0R01	0.266	6.75	17/64"	1.40	189.88	200	40	240	8
DHXL0680190T0R01	0.268	6.80		1.41	189.80	200	40	240	8
DHXL0700189T0R01	0.276	7.00		1.45	189.50	200	40	240	8
DHXL0715209T0R01	0.281	7.15	9/32"	1.48	209.28	220	40	260	8
DHXL0750209T0R01	0.295	7.50		1.55	208.75	220	40	260	8
DHXL0754209T0R01	0.297	7.54	19/64"	1.56	208.69	220	40	260	8
DHXL0780208T0R01	0.307	7.80		1.62	208.30	220	40	260	8
DHXL0794208T0R01	0.313	7.94	5/16"	1.64	208.09	220	40	260	8



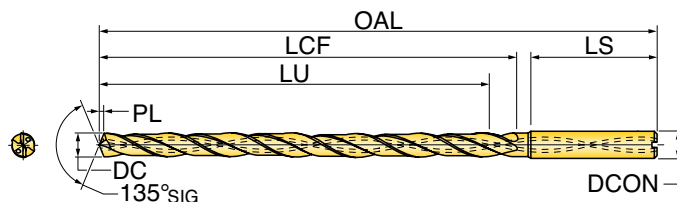
DHXL 25xD (continued)



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0800208T0R01	0.315	8.00		1.66	208.00	220	40	260	8
DHXL0833228T1R01	0.328	8.33	21/64"	1.73	227.50	240	45	285	10
DHXL0850227T1R01	0.335	8.50		1.76	227.25	240	45	285	10
DHXL0873255T1R01	0.344	8.73	11/32"	1.81	254.91	268	42	310	10
DHXL0880255T1R01	0.347	8.80		1.82	254.80	268	42	310	10
DHXL0900255T1R01	0.354	9.00		1.86	254.50	268	42	310	10
DHXL0913254T1R01	0.359	9.13	23/64"	1.89	254.31	268	42	310	10
DHXL0953254T1R01	0.375	9.53	3/8"	1.97	253.71	268	42	310	10
DHXL0980253T1R01	0.386	9.80		2.03	253.30	268	42	310	10
DHXL0992253T1R01	0.391	9.92	25/64"	2.05	253.12	268	42	310	10
DHXL1000260T1R01	0.394	10.00		2.07	259.99	275	50	325	10
DHXL1020285T2R01	0.402	10.20		2.11	284.68	300	50	350	12
DHXL1032285T2R01	0.406	10.32	13/32"	2.14	284.56	300	50	350	12
DHXL1072284T2R01	0.422	10.72	27/64"	2.22	283.92	300	50	350	12
DHXL1080309T2R01	0.425	10.80		2.24	308.79	325	50	375	12
DHXL1100309T2R01	0.433	11.00		2.28	308.50	325	50	375	12
DHXL1111308T2R01	0.438	11.11	7/16"	2.30	308.33	325	50	375	12
DHXL1150308T2R01	0.453	11.50		2.38	307.75	325	50	375	12
DHXL1151308T2R01	0.453	11.51	29/64"	2.38	307.74	325	50	375	12
DHXL1190307T2R01	0.469	11.90		2.47	307.14	325	50	375	12
DHXL1200307T2R01	0.472	12.00		2.48	307.01	325	50	375	12



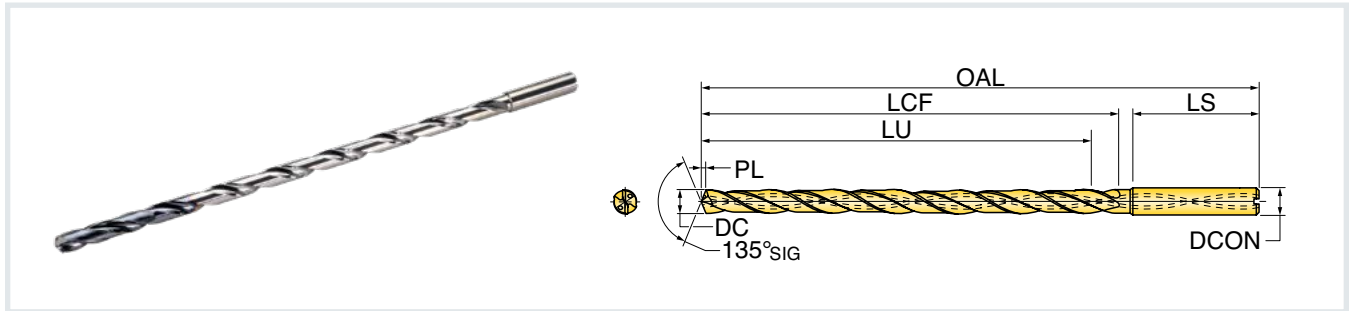
DHXL 30xD



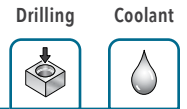
Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0300101T7R01	0.118	3.00		0.62	100.50	105	45	150	6
DHXL0318100T7R01	0.125	3.18	1/8"	0.66	100.24	105	45	150	6
DHXL0320100T7R01	0.126	3.20		0.66	100.20	105	45	150	6
DHXL0330130T7R01	0.130	3.30		0.68	130.05	135	50	185	6
DHXL0350130T7R01	0.138	3.50		0.72	129.75	135	50	185	6
DHXL0357130T7R01	0.141	3.57	9/64"	0.74	129.64	135	50	185	6
DHXL0380129T7R01	0.150	3.80		0.79	129.30	135	50	185	6
DHXL0397129T7R01	0.156	3.97	5/32"	0.82	129.05	135	50	185	6
DHXL0400129T7R01	0.158	4.00		0.83	129.00	135	50	185	6
DHXL0420129T7R01	0.165	4.20		0.87	128.70	135	50	185	6
DHXL0437158T7R01	0.172	4.37	11/64"	0.90	158.45	165	50	215	6
DHXL0450158T7R01	0.177	4.50		0.93	158.25	165	50	215	6
DHXL0470158T7R01	0.185	4.70		0.97	157.95	165	50	215	6
DHXL0476158T7R01	0.188	4.76	3/16"	0.99	157.86	165	50	215	6
DHXL0480158T7R01	0.189	4.80		0.99	157.80	165	50	215	6
DHXL0500158T7R01	0.197	5.00		1.04	157.50	165	50	215	6
DHXL0516172T7R01	0.203	5.16	13/64"	1.07	172.26	180	50	230	6
DHXL0518172T7R01	0.204	5.18		1.07	172.23	180	50	230	6
DHXL0550172T7R01	0.217	5.50		1.14	171.75	180	50	230	6
DHXL0555172T7R01	0.219	5.55	7/32"	1.15	171.67	180	50	230	6
DHXL0580171T7R01	0.228	5.80		1.20	171.30	180	50	230	6
DHXL0595171T7R01	0.234	5.95	15/64"	1.23	171.07	180	50	230	6
DHXL0600171T7R01	0.236	6.00		1.24	171.00	180	50	230	6
DHXL0635205T0R01	0.250	6.35	1/4"	1.32	205.48	215	65	280	8
DHXL0650205T0R01	0.256	6.50		1.35	205.25	215	65	280	8
DHXL0675220T0R01	0.266	6.75	17/64"	1.40	219.88	230	50	280	8
DHXL0680220T0R01	0.268	6.80		1.41	219.80	230	50	280	8
DHXL0700219T0R01	0.276	7.00		1.45	219.50	230	50	280	8
DHXL0715219T0R01	0.281	7.15	9/32"	1.48	219.28	230	50	280	8
DHXL0750219T0R01	0.295	7.50		1.55	218.75	230	50	280	8
DHXL0754254T0R01	0.297	7.54	19/64"	1.56	253.69	265	50	315	8
DHXL0780253T0R01	0.307	7.80		1.62	253.30	265	50	315	8



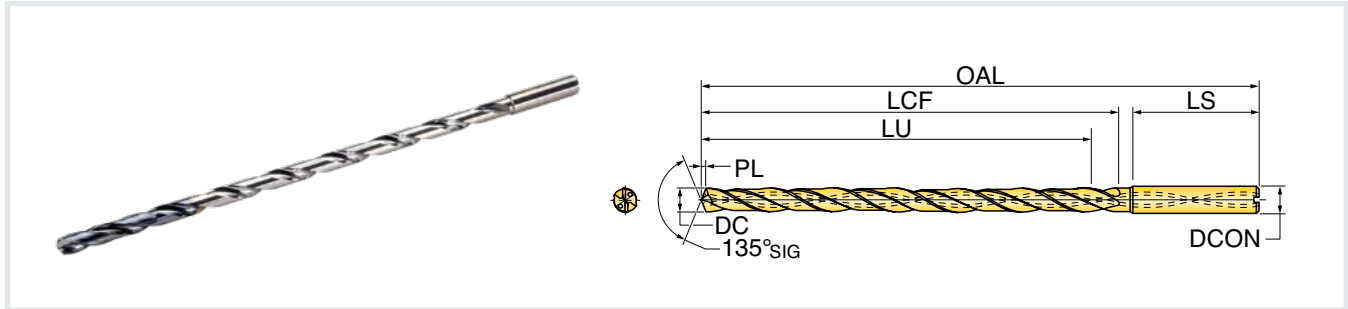
DHXL 30xD (continued)



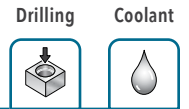
Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0794253T0R01	0.313	7.94	5/16"	1.64	253.10	265	50	315	8
DHXL0800253T0R01	0.315	8.00		1.66	253.00	265	50	315	8
DHXL0833283T1R01	0.328	8.33	21/64"	1.73	282.50	295	55	350	10
DHXL0850282T1R01	0.335	8.50		1.76	282.25	295	55	350	10
DHXL0873317T1R01	0.344	8.73	11/32"	1.81	316.91	330	50	380	10
DHXL0880317T1R01	0.347	8.80		1.82	316.80	330	50	380	10
DHXL0900317T1R01	0.354	9.00		1.86	316.50	330	50	380	10
DHXL0913316T1R01	0.359	9.13	23/64"	1.89	316.31	330	50	380	10
DHXL0953316T1R01	0.375	9.53	3/8"	1.97	315.71	330	50	380	10
DHXL0980315T1R01	0.386	9.80		2.03	315.30	330	50	380	10
DHXL0992315T1R01	0.391	9.92	25/64"	2.05	315.12	330	50	380	10
DHXL1000315T1R01	0.394	10.00		2.07	315.00	330	50	380	10



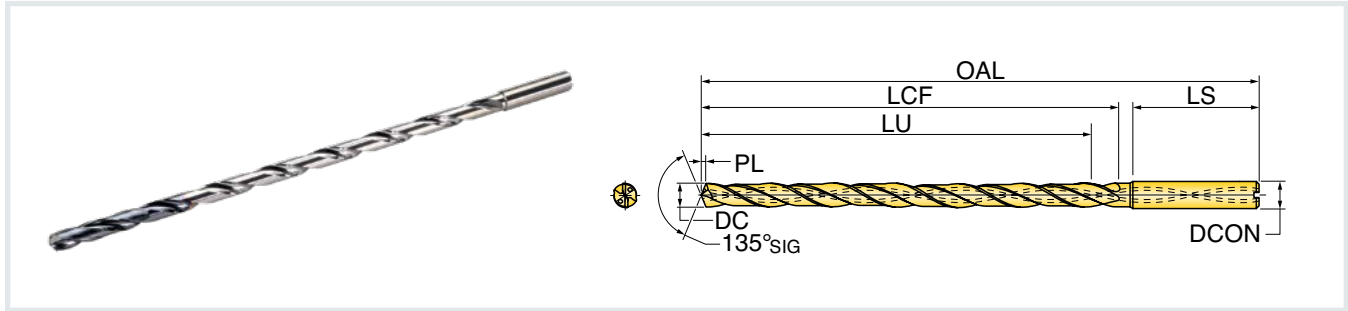
DHXL 40xD



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0300136T7R01	0.118	3.00		0.62	135.50	140	50	190	6
DHXL0318135T7R01	0.125	3.18	1/8"	0.66	135.24	140	50	190	6
DHXL0357175T7R01	0.141	3.57		0.74	174.64	180	50	230	6
DHXL0380174T7R01	0.150	3.80		0.79	174.30	180	50	230	6
DHXL0397174T7R01	0.156	3.97	5/32"	0.82	174.05	180	50	230	6
DHXL0400174T7R01	0.158	4.00		0.83	174.00	180	50	230	6
DHXL0420174T7R01	0.165	4.20		0.87	173.70	180	50	230	6
DHXL0437213T7R01	0.172	4.37	11/64"	0.90	213.45	220	50	270	6
DHXL0450213T7R01	0.177	4.50		0.93	213.25	220	50	270	6
DHXL0470213T7R01	0.185	4.70		0.97	212.95	220	50	270	6
DHXL0476213T7R01	0.188	4.76	3/16"	0.99	212.86	220	50	270	6
DHXL0480213T7R01	0.189	4.80		0.99	212.80	220	50	270	6
DHXL0500212T7R01	0.197	5.00		1.04	212.50	220	50	270	6
DHXL0516232T7R01	0.203	5.16	13/64"	1.07	232.26	240	50	290	6
DHXL0518232T7R01	0.204	5.18		1.07	232.23	240	50	290	6
DHXL0550232T7R01	0.217	5.50		1.14	231.75	240	50	290	6
DHXL0555232T7R01	0.219	5.55	7/32"	1.15	231.67	240	50	290	6
DHXL0580231T7R01	0.228	5.80		1.20	231.30	240	50	290	6
DHXL0595231T7R01	0.234	5.95	15/64"	1.23	231.07	240	50	290	6
DHXL0600231T7R01	0.236	6.00		1.24	231.00	240	50	290	6
DHXL0635280T0R01	0.250	6.35	1/4"	1.32	280.47	290	50	340	8
DHXL0650280T0R01	0.256	6.50		1.35	280.25	290	50	340	8
DHXL0675310T0R01	0.266	6.75	17/64"	1.40	309.88	320	50	370	8
DHXL0680310T0R01	0.268	6.80		1.41	309.80	320	50	370	8
DHXL0700309T0R01	0.276	7.00		1.45	309.50	320	50	370	8
DHXL0715309T0R01	0.281	7.15	9/32"	1.48	309.28	320	50	370	8
DHXL0750309T0R01	0.295	7.50		1.55	308.75	320	50	370	8
DHXL0754339T0R01	0.297	7.54	19/64"	1.56	338.69	350	50	400	8
DHXL0780338T0R01	0.307	7.80		1.62	338.30	350	50	400	8
DHXL0794338T0R01	0.313	7.94	5/16"	1.64	338.09	350	50	400	8
DHXL0800338T0R01	0.315	8.00		1.66	338.00	350	50	400	8



DHXL 50xD



Part Number	DC Cutting Dia. (in)	DC Cutting Dia. (mm)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Dia. (mm)
DHXL0400219T7R01	0.158	4.00		0.8280	219.0013	225	45	270	6
DHXL0420219T7R01	0.165	4.20		0.8712	218.6991	225	45	270	6
DHXL0437268T7R01	0.172	4.37	11/64"	0.9042	268.4526	275	45	320	6
DHXL0450268T7R01	0.177	4.50		0.9322	268.2494	275	45	320	6
DHXL0470268T7R01	0.185	4.70		0.9728	267.9522	275	45	320	6
DHXL0476268T7R01	0.188	4.76	3/16"	0.9855	267.8582	275	45	320	6
DHXL0480268T7R01	0.189	4.80		0.9931	267.7998	275	45	320	6
DHXL0500268T7R01	0.197	5.00		1.0363	267.5001	275	45	320	6
DHXL0516302T7R01	0.203	5.16	13/64"	1.0693	302.2625	310	50	360	6
DHXL0518302T7R01	0.204	5.18		1.0719	302.2270	310	50	360	6
DHXL0550302T7R01	0.217	5.50		1.1379	301.7520	310	50	360	6
DHXL0555302T7R01	0.219	5.55	7/32"	1.1506	301.6682	310	50	360	6
DHXL0580301T7R01	0.228	5.80		1.2014	301.3024	310	50	360	6
DHXL0595301T7R01	0.234	5.95	15/64"	1.2319	301.0687	310	50	360	6
DHXL0600301T7R01	0.236	6.00		1.2421	301.0002	310	50	360	6
DHXL0635330T7R01	0.250	6.35	1/4"	1.3157	330.4743	340	45	385	6

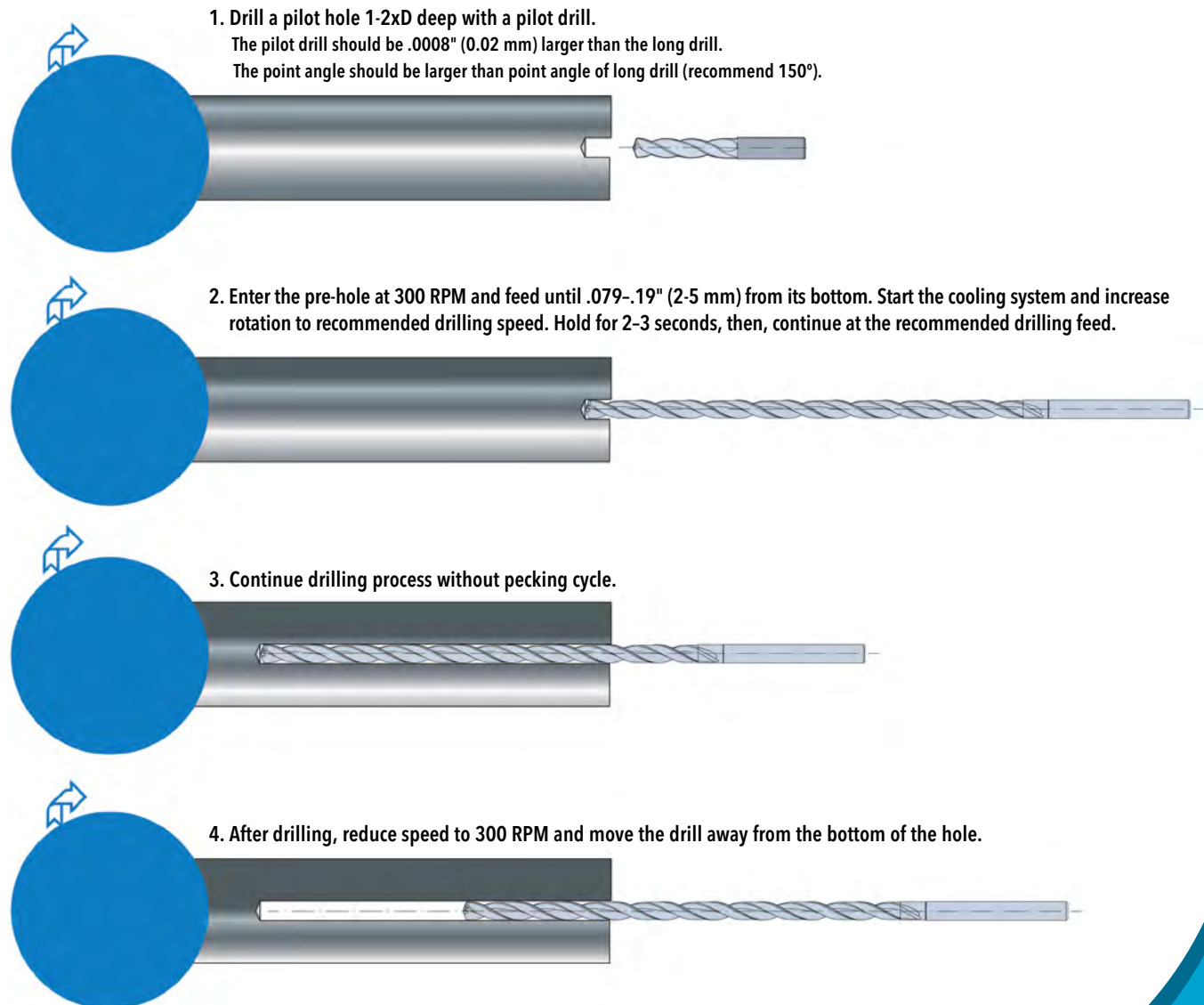
Advantages

- Deep hole drilling up to 50xD without pecking cycle.
- Higher productivity compared to conventional deep hole drills such as HSS drills and gun drills.
- Application on conventional machining center.

Applications

- Automotive parts (i.e. cylinder block, crank shaft, connecting rod)
- Mold and die parts
- Machine tool parts

Recommended Drilling Process



NOTE: 40xD and 50xD drills require an intermediate 20xD drill after piloting.

Operating Guidelines - 5xD

Materials				Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)													
ISO	Mtl Group No.	Type	3.0-6.0 mm (.118-.235")					6.0-9.0 mm (.236-.353")	9.0-12.0 mm (.354-.471")	12.0-16.0 mm (.472-.629")	16.0-19.05 mm (.630-.749")	19.05-20.0 mm (.750-.787")									
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	375	.0030 - .0050	.0050 - .0075	.0075 - .0100	.0100 - .0130	.0130 - .0153	.0153 - .0160								
	2		>= 0.25 %C	Annealed	650	190															
	3		< 0.55 %C	Quenched and Tempered	850	250															
	4		>= 0.55 %C	Annealed	750	220															
	5		> 0.55 %C	Quenched and Tempered	1000	300															
	6	Low alloy steel and cast steel (less than 5% of alloying elements)			Annealed	600								200	275	.0030 - .0050	.0050 - .0075	.0075 - .0100	.0100 - .0130	.0130 - .0153	.0153 - .0160
	7				Quenched and Tempered	930								275							
	8					1000								300							
	9					1200								350							
	10	High alloyed steel, cast steel, and tool steel			Annealed	680	200	275	.0030 - .0050	.0050 - .0075	.0075 - .0100	.0100 - .0130	.0130 - .0153	.0153 - .0160							
	11				Quenched and Tempered	1100	325														
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	230	.0023 - .0047	.0047 - .0070	.0070 - .0094	.0094 - .0126	.0126 - .0138	.0138 - .0140								
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240															
	14	Stainless steel (302, 303, 304)		Austenitic	600	180								.0020 - .0040							
		Stainless steel (310, 316, 321)																			
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	150	.0020 - .0035	.0035 - .0045	.0045 - .0050	.0050 - .0055	.0055 - .0059	.0059 - .0060								
N	21	Aluminum Alloy Forging			<12% Si		820	.0120 - .0140	.0140 - .0200	.0200 - .0250	.0250 - .0260	.0260 - .0268	.0268 - .0270								
	22				1000 - 8000 series																
	23	Aluminum Alloy Casting			>12% Si		820	.0110 - .0150	.0150 - .0190	.0190 - .0230	.0230 - .0240	.0240 - .0248	.0248 - .0250								
	24				4000 series & Castings																
	25																				
S	36	Titanium Ti alloys Ti1100, Ti6AL4V				Rm 400	150	.0020 - .0030	.0030 - .0040	.0040 - .0050	.0050 - .0065	.0065 - .0084	.0080 - .0084								
	37				Alpha + Beta alloys cured	Rm1050															

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.

Operating Guidelines - 16xD

Materials				Condition	Tensile Strength (N/mm ²)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)				
ISO	Mtl Group No.	Type						3.0-5.9 mm (.118-.235")	6.0-8.9 mm (.236-.353")	9.0-11.9 mm (.354-.471")	12.0-15.9 mm (.472-.629")	16.0+ mm (.630+")
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	375	.0058 - .0094	.0094 - .0120	.0120 - .0130	.0130 - .0140	.0140
	2		>= 0.25 %C	Annealed	650	190						
	3		< 0.55 %C	Quenched and Tempered	850	250						
	4		>= 0.55 %C	Annealed	750	220						
	5		> 0.55 %C	Quenched and Tempered	1000	300						
	6	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	260	.0058 - .0094	.0094 - .0120	.012 - .0130	.0130 - .0140	.0140
	7			Quenched and Tempered	930	275						
	8				1000	300						
	9				1200	350						
	10	High alloyed steel, cast steel, and tool steel		Annealed	680	200	230	.0043 - .0069	.0069 - .0088	.0088 - .0095	.0095 - .0102	.0102
	11			Quenched and Tempered	1100	325						
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	230	.0043 - .0069	.0069 - .0088	.0088 - .0095	.0095 - .0102	.0102
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240						
	14	Stainless steel (302, 303, 304)		Austenitic	600	180	220	.0023 - .0047	.0047 - .0070	.0070 - .0094	.0094 - .0122	.0122
		Stainless steel (310, 316, 321)					180	.0018 - .0035	.0035 - .0053	.0053 - .0070	.0070 - .0093	.0093
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	125	.0001 - .0024	.0024 - .0029	.0029 - .0033	.0033 - .0036	.0036
S	36	Titanium Ti alloys Ti1100, Ti6AL4V			Rm 400		125	.0014 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0040	.0040
	37			Alpha + Beta alloys cured	Rm1050							

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.

Operating Guidelines - 20xD

Materials				Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)				
ISO	Mtl Group No.	Type						3.0-5.9 mm (.118-.235")	6.0-8.9 mm (.236-.353")	9.0-11.9 mm (.354-.471")	12.0-16.0 mm (.472+")	
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	360	.0058 - .0094	.0094 - .0120	.0120 - .0130	.0130	
	2		>= 0.25 %C	Annealed	650	190						
	3		< 0.55 %C	Quenched and Tempered	850	250						
	4		>= 0.55 %C	Annealed	750	220						
	5		> 0.55 %C	Quenched and Tempered	1000	300						
	6	Low alloy steel and cast steel (less than 5% of alloying elements)			Annealed	600	200	245	.0058 - .0094	.0094 - .0120	0.012 - .0130	.0130
	7				Quenched and Tempered	930	275					
	8					1000	300					
	9					1200	350					
	10	High alloyed steel, cast steel, and tool steel			Annealed	680	200	220	.0043 - .0069	.0069 - .0088	.0088 - .0094	.0094 - .0102
	11				Quenched and Tempered	1100	325					
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	220	.0043 - .0069	.0069 - .088	.0088 - .0094	.0094 - .0102	
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240						
	14	Stainless steel (302, 303, 304)		Austenitic	600	180	220	.0023 - .0047	.0047 - .0070	.0070 - .0094	.0094 - .0122	
		Stainless steel (310, 316, 321)					165	.0018 - .0035	.0035 - .0053	.0053 - .0070	.0070 - .0093	
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	120	.0010 - .0024	.0024 - .0029	.0029 - .0033	.0033 - .0036	
S	36	Titanium Ti alloys Ti1100, Ti6AL4V				Rm 400	120	.0010 - .0023	.0023 - .0028	.0028 - .0032	.0032 - .0037	
	37				Alpha + Beta alloys cured	Rm1050						

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.

Operating Guidelines - 25xD

Materials				Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)				
ISO	Mtl Group No.	Type						3.0-5.9 mm (.118-.235")	6.0-8.9 mm (.236-.353")	9.0-11.9 mm (.354-.471")	12.0-16.0 mm (.472+")	
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	360	.0058 - .0094	.0094 - .011	.0110 - .0130	.0130	
	2		>= 0.25 %C	Annealed	650	190						
	3		< 0.55 %C	Quenched and Tempered	850	250						
	4		>= 0.55 %C	Annealed	750	220						
	5		> 0.55 %C	Quenched and Tempered	1000	300						
	6	Low alloy steel and cast steel (less than 5% of alloying elements)			Annealed	600	200	230	.0058 - .0094	.0094 - .0110	.0110 - .0130	.0130
	7				Quenched and Tempered	930	275					
	8					1000	300					
	9					1200	350					
	10	High alloyed steel, cast steel, and tool steel			Annealed	680	200	210	.0043 - .0069	.0069 - .0081	.0081 - .0095	.0095
	11				Quenched and Tempered	1100	325					
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	210	.0043 - .0069	.0069 - .0081	.0081 - .0095	.0095	
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240						
	14	Stainless steel (302, 303, 304)		Austenitic	600	180	210	.0023 - .0047	.0047 - .0070	.0070 - .0094	.0094	
		Stainless steel (310, 316, 321)					165	.0016 - .0032	.0032 - .0050	.0050 - .0065	.0065	
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	120	.0011 - .0019	.0019 - .0023	.0023 - .0027	.0027	
S	36	Titanium Ti alloys Ti1100, Ti6AL4V				Rm 400	115	.0010 - .0020	.0020 - .0027	.0027 - .0032	.0032	
	37				Alpha + Beta alloys cured	Rm1050						

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.

Operating Guidelines - 30xD

Materials				Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)			
ISO	Mtl Group No.	Type	3.0-5.9 mm (.118-.235")					6.0-8.9 mm (.236-.353")	9.0-11.9 mm (.354+")		
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	345	.0058 - .0094	.0094 - .0120	.0120	
	2		>= 0.25 %C	Annealed	650	190					
	3		< 0.55 %C	Quenched and Tempered	850	250					
	4		>= 0.55 %C	Annealed	750	220					
	5		> 0.55 %C	Quenched and Tempered	1000	300					
	6	Low alloy steel and cast steel (less than 5% of alloying elements)			Annealed	600	200	215	.0058 - .0094	.0094 - .0120	.0120
	7				Quenched and Tempered	930	275				
	8					1000	300				
	9					1200	350				
	10	High alloyed steel, cast steel, and tool steel			Annealed	680	200	200	.0043 - .0069	.0069 - .0088	.0088
	11				Quenched and Tempered	1100	325				
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	200	.0043 - .0069	.0069 - .0088	.0088	
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240					
	14	Stainless steel (302, 303, 304)		Austenitic	600	180	195	.0023 - .0047	.0047 - .007	.0070	
		Stainless steel (310, 316, 321)					150	.0016 - .0032	.0032 - .0050	.0050	
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	120	.0011 - .0019	.0019 - .0023	.0023	
S	36	Titanium Ti alloys Ti1100, Ti6AL4V				Rm 400	110	.0010 - .0020	.0020 - .0026	.0026	
	37				Alpha + Beta alloys cured	Rm1050					

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.

Operating Guidelines - 40xD

Materials				Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)			
ISO	Mtl Group No.	Type						3.0-5.99 mm (.118-.235")	6.0-7.99 mm (.236-.314")	8.0 mm (.312+")	
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	330	.0050 - .0094	.0094 - .0105	.0105	
	2		>= 0.25 %C	Annealed	650	190					
	3		< 0.55 %C	Quenched and Tempered	850	250					
	4		>= 0.55 %C	Annealed	750	220					
	5		> 0.55 %C	Quenched and Tempered	1000	300					
	6	Low alloy steel and cast steel (less than 5% of alloying elements)			Annealed	600	200	215	.0050 - .0094	.0094 - .0105	.0105
	7				Quenched and Tempered	930	275				
	8					1000	300				
	9					1200	350				
	10	High alloyed steel, cast steel, and tool steel			Annealed	680	200	200	.0037 - .0069	.0069 - .0077	.0077
	11				Quenched and Tempered	1100	325				
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	200	.0037 - .0069	.0069 - .0077	.0077	
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240					
	14	Stainless steel (302, 303, 304)		Austenitic	600	180	195	.0020 - .0040	.0040 - .0055	.0055	
		Stainless steel (310, 316, 321)					145	.0016 - .0032	.0032 - .0045	.0045	
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	115	.0010 - .0019	.0019 - .0021	.0021	
S	36	Titanium Ti alloys Ti1100, Ti6AL4V				Rm 400	100	.0010 - .0020	.0020 - .0030	.0030	
	37				Alpha + Beta alloys cured	Rm1050					

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.

Operating Guidelines - 50xD

ISO	Materials			Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev)		
	Mtl Group No.	Type						4.0-4.99 mm (.157-.196")	5.0-5.99 mm (.197-.235")	6.0 mm (.250+")
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C	Annealed	420	125	330	.0060 - .0075	.0075 - .0094	.0094
	2		>= 0.25 %C	Annealed	650	190				
	3		< 0.55 %C	Quenched and Tempered	850	250				
	4		>= 0.55 %C	Annealed	750	220				
	5		> 0.55 %C	Quenched and Tempered	1000	300				
	6	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	215	.0060 - .0075	.0075 - .0094	.0094
	7			Quenched and Tempered	930	275				
	8				1000	300				
	9				1200	350				
	10	High alloyed steel, cast steel, and tool steel		Annealed	680	200	190	.0040 - .0052	.0052 - .0065	.0065
	11			Quenched and Tempered	1100	325				
M	12	Stainless steel (410, 416, 420, 440)		Ferritic/ Martensitic	680	200	190	.0040 - .0052	.0052 - .0065	.0065
	13	Stainless steel (15-5, 17-4)		Martensitic	820	240				
	14	Stainless steel (302, 303, 304)		Austenitic	600	180	195	.0025 - .0032	.0032 - .0040	.0040
		Stainless steel (310, 316, 321)					145	.0018 - .0026	.0026 - .0032	.0032
	14	Stainless steel (323, 329, F55, 2205)		Austenitic/ Ferritic	820	240	115	.0010 - .0015	.0015 - .0019	.0019
S	36	Titanium Ti alloys Ti1100, Ti6AL4V			Rm 400		100	.0010 - .0015	.0015 - .0020	.0020
	37			Alpha + Beta alloys cured	Rm1050					

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.