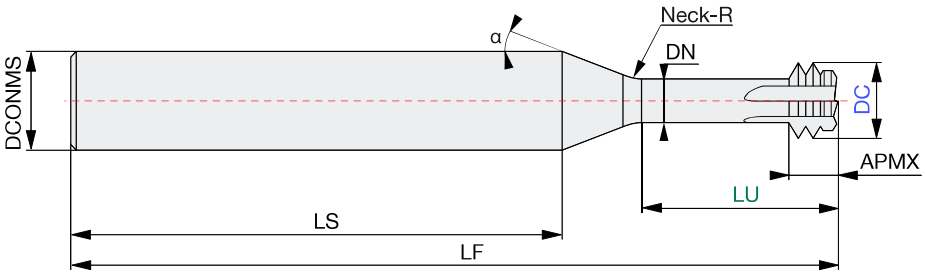
EDT-ATH Lineup Metric Type

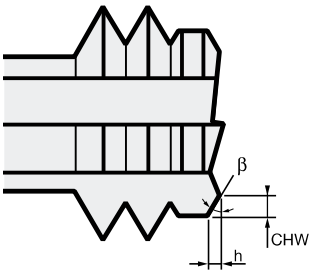
Counter Clockwise (left rotation) | NOF 4 | h5 | Carbide | ATH coated | 65 HRC

P M K
N S H



No inner coolant

With inner coolant



Info for chamfering

LU 2.5 x Regular Thread

ID Code	Item Code	Regular Thread	Size (mm)													Inner Coolant
			DC	Pitch	LU	APMX	DN	LS	LF	DCONMS	Neck-R	α	h	CHW	β	
EP1595	EDT-0.4-5-TH	M2	1.4	0.4	5	1.2	0.91	38.8	50	6	1	25	0.062	0.117	28	No
EP1596	EDT-0.45-6.25-TH	M2.5	1.8	0.45	6.25	1.35	1.24	37.95	50	6	1	25	0.089	0.168	28	No
EP1597	EDT-0.5-7.5-TH	M3	2.4	0.5	7.5	1.5	1.78	37.25	50	6	1	25	0.133	0.25	28	No
EP1598	EDT-0.7-10-TH	M4	3.1	0.7	10	2.1	2.24	34.75	50	6	1	25	0.163	0.306	28	No
EP1600	EDT-0.8-12.5-TH	M5	3.8	0.8	12.5	2.4	2.8	32.85	50	6	1	25	0.209	0.394	28	No
EP1601	EDT-1.0-15-TH	M6	4.6	1	15	3	3.36	30.95	50	6	1	25	0.247	0.465	28	No
EP1603	EDT-1.25-20-TH	M8	6.2	1.25	20	3.75	4.64	42.81	70	10	2	25	0.347	0.652	28	No
EP1599	EDT-0.75-20-TH	*	6.2	0.75	20	2.25	5.13	43.3	70	10	2	25	0.222	0.417	28	No
EP1604	EDT-1.5-25-TH	M10	7.5	1.5	25	4.5	5.61	38.85	70	10	2	25	0.422	0.794	28	Yes
EP1602	EDT-1.0-25-TH	*	7.5	1	25	3	6.11	39.4	70	10	2	25	0.314	0.59	28	Yes
EP1605	EDT-1.75-30-TH	M12	9	1.75	30	5.25	6.78	45.1	80	10	2	25	0.514	0.967	28	Yes
EP1606	EDT-2-40-TH	M16	11.5	2	40	6	8.87	55.2	100	12	2	25	0.691	1.299	28	Yes
EP1810	EDT-2.5-50-TH	M20	15	2.5	50	7.5	11.71	78.1	135	16	-	20	0.917	1.724	28	Yes

* is only for fine pitch type thread

LU 5 x Regular Thread

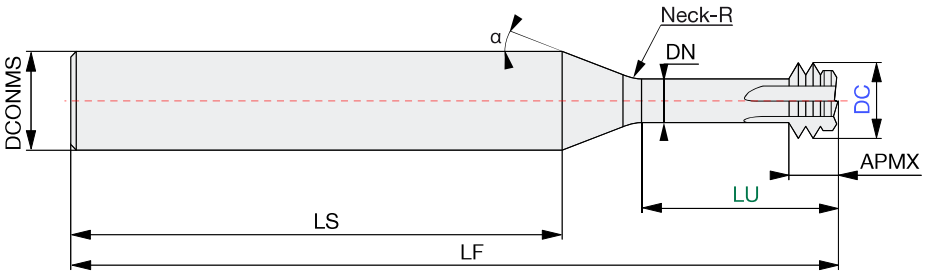
ID Code	Item Code	Regular Thread	Size (mm)													Inner Coolant
			DC	Pitch	LU	APMX	DN	LS	LF	DCONMS	Neck-R	α	h	CHW	β	
EP1803	EDT-0.5-15-TH	M3 long	2.4	0.5	15	1.5	1.78	39.75	60	6	1	25	0.133	0.25	28	No
EP1804	EDT-0.7-20-TH	M4 long	3.1	0.7	20	2.1	2.24	34.75	60	6	1	25	0.163	0.306	28	No
EP1805	EDT-0.8-25-TH	M5 long	3.8	0.8	25	2.4	2.8	40.35	70	6	1	25	0.209	0.394	28	No
EP1806	EDT-1.0-30-TH	M6 long	4.6	1	30	3	3.36	35.95	70	6	1	25	0.247	0.465	28	No
EP1807	EDT-1.25-40-TH	M8 long	6.2	1.25	40	3.75	4.64	52.81	100	10	2	25	0.347	0.652	28	No
EP1808	EDT-1.5-50-TH	M10 long	7.5	1.5	50	4.5	5.61	43.85	100	10	2	25	0.422	0.794	28	Yes
EP1809	EDT-1.75-60-TH	M12 long	9	1.75	60	5.25	6.78	45.1	110	10	2	25	0.514	0.967	28	Yes

All items on EU-stock

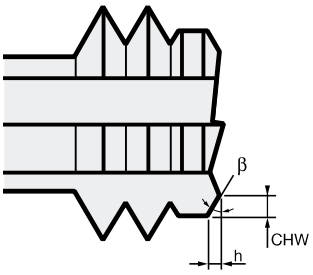
EDT-ATH Lineup G-Type

Counter Clockwise (left rotation) | NOF 4 | h5 | Carbide | ATH coated | 65 HRC

P M K
N S H



No
inner coolant



Info for chamfering

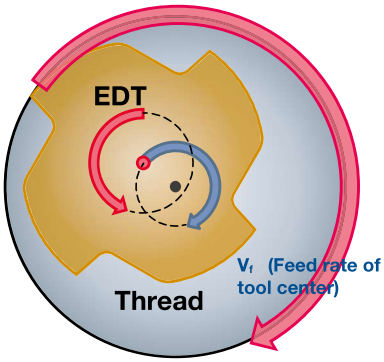
G-Type (ISO 228-1)

ID Code	Item Code	Regular Thread	Size (mm)													Inner Coolant
			DC	Pitch	LU	APMX	DN	LS	LF	DCONMS	Neck-R	α	h	CHW	β	
EP1811	EDT-G1/16-18-ATH	G1/16	5.8	0.9071	18	2.721	4.3	49.49	70	6	1	20	0.277	0.58	25.5	No
EP1812	EDT-G1/8-19-ATH	G1/8	7.3	0.9071	19	2.721	5.81	54.89	80	10	2	20	0.272	0.57	25.5	No
EP1813	EDT-G1/4-28-ATH	G1/4	9.8	1.3368	28	4.011	7.57	48.31	80	10	2	20	0.391	0.82	25.5	No
EP1814	EDT-G3/8-28-ATH	G3/8	11.8	1.3368	28	4.011	9.6	78.35	110	12	2	20	0.384	0.805	25.5	No
EP1815	EDT-G1/2-35-ATH	G1/2	15.7	1.8143	35	5.443	12.73	95.51	135	16	-	20	0.513	1.075	25.5	No
EP1816	EDT-G1-45-ATH	G1	15.8	2.3091	45	6.927	12.04	84.56	135	16	-	20	0.637	1.335	25.5	No

All items on EU-stock

EDT-ATH General usage instruction

About tool feed rate



$$vf = fz \times z \times n \times \frac{D1 - DC}{D1}$$

vf	: Feed rate	(mm/min)
fz	: Feed per tooth	(mm/t)
z	: No. of flutes	
n	: Rotation	(min^{-1})
$D1$	: Thread diameter	(mm)
Dc	: Tool diameter	(mm)

When performing thread milling by helical interpolation, the cutting point feed rate should be multiplied by a coefficient to determine the tool center feed rate.

The equation for calculating the tool center feed rate is shown at left.

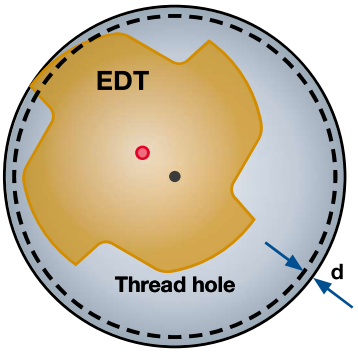
The standard cutting conditions for PT and NPT threads are calculated based on the thread diameter D1' at the machin-able maximum depth (neck length) .

PT-thread milling example with EDT-PT1/8-19-ATH:

D1' = D1 - (underneck length * thread taper) = 9.728 - (19 * 1/16) = 8.5405 (mm)

Note:
1/16 (thread taper angle in arc dimension) is valid for all PT/NPT threads!

About the correction of tool dimension (cylindrical threads)

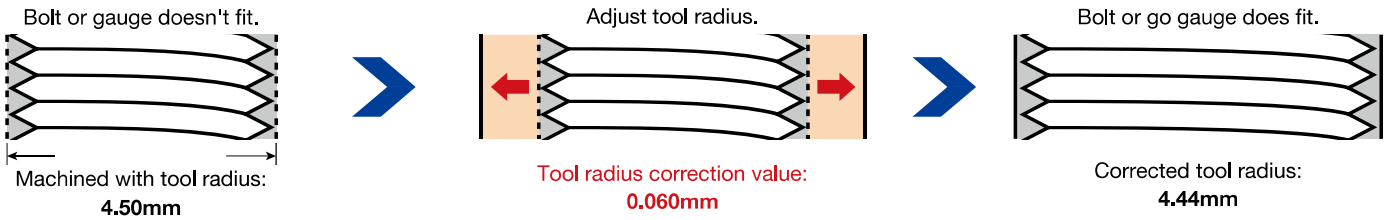


Possible situation

The machined thread diameter may need to be adjusted if reduced by wear and/or deflection of tool. Tool diameter correction or repeated zero-cut could be helpful to reach the requested thread size.

Correction example: Machining an M12 × 1.75 thread with EDT-1.75-30-TH (DC 9mm)

Corrected tool radius = DC/2- d = 9.0 / 2 - 0.060 = 4.44 (mm)

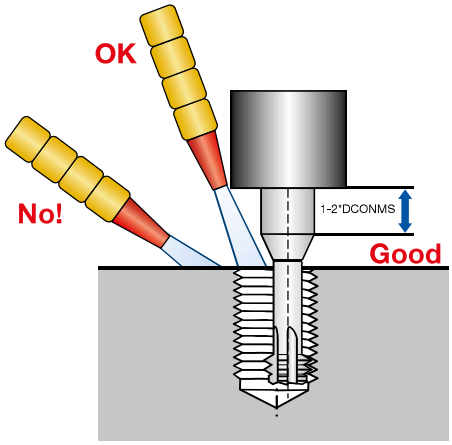


EDT-ATH General usage instruction

About coolant

Work material	EDT	
	Air-blow	Water-base
Hardened steel, Pre-hardened steel Tool steel, Cast iron, Carbon steel	◎	△
Stainless steel	×	◎
Super heat resistant alloy, Titanium alloy	×	◎
Aluminium alloy, Copper alloy, Resin	×	◎

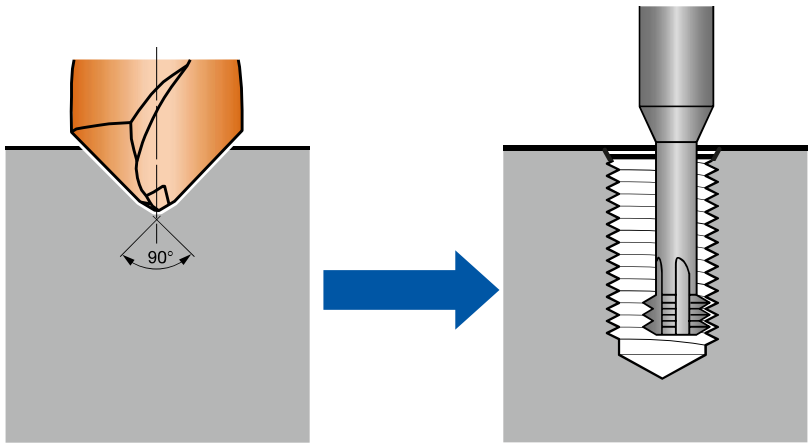
◎: First recommended
○: Second recommended
△: Tendency to decrease tool life
X : Not recommended



The first recommended coolant shown in the table tends to have the superior tool life. When priority is given to finished surface quality, water-soluble cutting fluids are effective.
Oil-based cutting fluids are not suitable because they degrade chip removal characteristics.

In addition, coolant pressure should be adjusted so that it removes cutting chips. If the setting is bad, cutting chip clogging may lead to flute tip damage or tool breakage.

Chamfering for improved thread quality



Centering EDT threadmill

Centering before using EDT-ATH allows chamfer without deformed thread profiles.

EDT-ATH Trouble shooting

Regarding thread diameter expansion / contraction

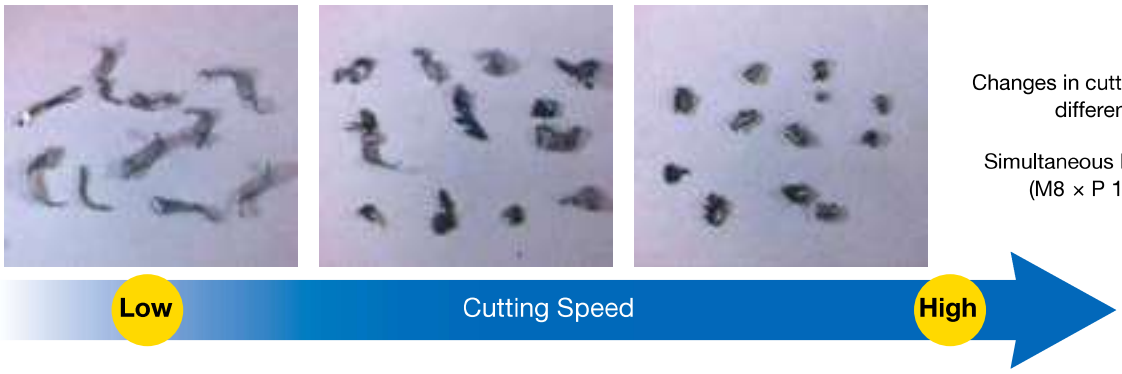
Suitable tool diameter correction should be performed according to the work material and tool wear condition. Also, please be careful not to forget to input the tool diameter correction value into the machine.

Dimensional accuracy worsens when moving toward the bottom of the hole (deflection)

A characteristic of the thread milling method is that tool deflection increases as the tool progresses toward the bottom of the hole.
It may be necessary to perform zero cutting in order to perform high-accuracy thread milling with low deflection.

Regarding tool breakage

As a countermeasure against tool breakage, performing processing with a reduced feed rate is effective. In addition, when processing with tool extended or when large rough cutting chips are produced, breakage due to chip clogging should be considered. In such cases, if processing is performed with a higher cutting speed (at same Vf), the cutting chips will be broken into smaller bits which may improve conditions.



Changes in cutting chip conditions due to different cutting speeds.

Simultaneous boring and thread milling (M8 × P 1.25) of carbon steel.

Regarding upper limit on machinable thread diameters

Please note that since EDT performs boring simultaneously, it cannot perform thread milling for diameters of more than 1.68 times the tool diameter DC. There are no particular similar limitations when using EDT with pilot hole.

Also, please be aware that if screws of a size smaller than the thread diameter described in the line-up table are processed, there is a possibility of malfunctioning the screw shape.

Example: Threading M14×2 with EDT-2-40-PN (designed for M16×2)

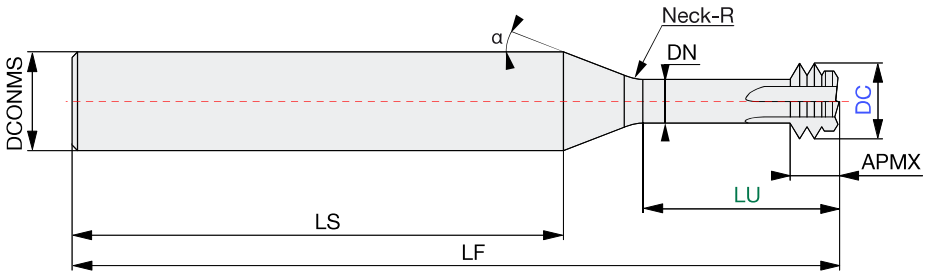
EDT-ATH General technical information

ISO 513 Symbol	Description	Examples
P	Non-alloy steel, low alloy steel, high alloy steel, ferritic/martensitic stainless steel, tool steel	1.2343 / X38CrMoV5-1; 1.2738 / 40CrMnNiMo8; 1.0503 / C45; 1.0570 / ST52-3; 1.1730 / C45W; 1.7131 / 16MnCr5; 1.7225 / 42CrMo4; 1.3343 / HS6-5-2; 1.0511 / C40; 1.2312 / 40CrMnMoS8-6; 1.2311 / 40CrMnMo7; 1.2344 / X40CrMoV5-1; 1.2767 / X45NiCrMo4; 1.2083 / X42Cr13; 1.2085 / X33CrS16; 1.2714 / 55NiCrMoV7; 1.2842 / 90MnCrV8;
M	Austenitic stainless steel	1.4301 / X5CrNi18-9; 1.4401 / X5CrNiMo17-12-2; 1.4404 / X2CrNiMo17-13-2; 1.4828 / X15CrNiSi20 12
K	Grey cast iron (GG), nodular cast iron (GGG), malleable cast iron	0.6025 / GG-25; GGG-40.3; 0.8155 / GTS-55-04
N	Aluminum wrought all, copper alloy, aluminum-cast, alloyed, non-metallic	2.0060 / E-Cu57; 2.0321 / CuZn37; 3.0255 / Al99.5; 3.5103 / MgSE3Zn27r1
S	High temperature alloys, titanium and Ti alloys	1.4864 / X12NiCrSi36 16; 2.4856 / NiCr22Mo9Nb; 1.4977 / X40CoCrNi20 20; 2.4669 / NiCr15Fe7TiAl
H	Hardened steel, chilled cast iron, cast iron	

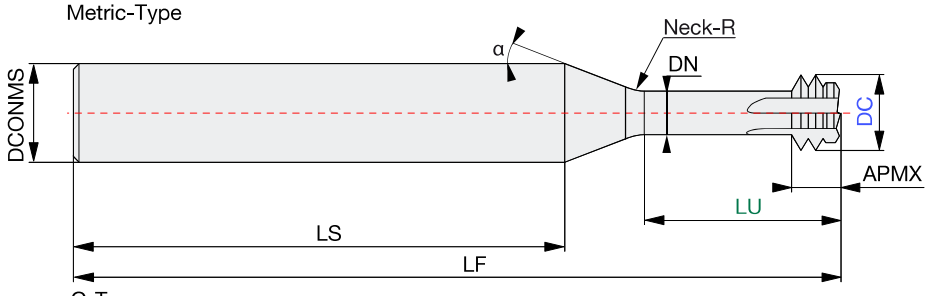
Recommended: P M K N S H

Suitable: P M K N S H

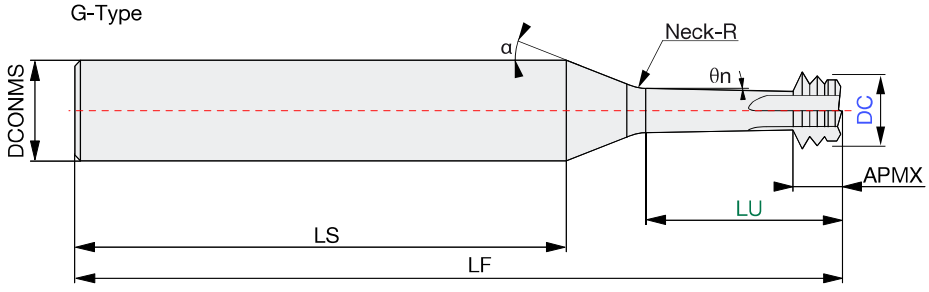
NOT recommended: P M K N S H



Metric-Type



G-Type



PT/NPT-Type

Drawing nomenclature	
DC	Diameter Cutting
DCONMS	Connection Diameter Machine Side
DN	Diameter Neck
LU	Length Usage
LS	Length Shank
LF	Length Function
APMX	Cutting Edge Length