

ZENSTAR

Quality Tooling Redefined

Complete range of Dies & Die Nuts

- BSW, UNC, UNF & BSF
- BSP, BSPT & NPT
- BSB, ME & BA
- METRIC, COARSE AND FINE PITCH

CATALOGUE - 2023

SEED

HSS External Threading Round Dies & Hex Nuts



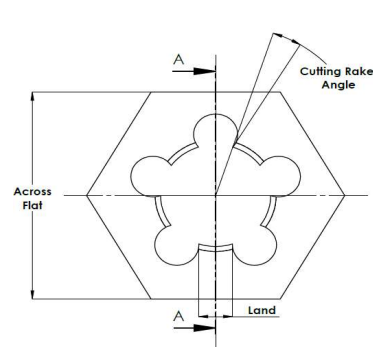
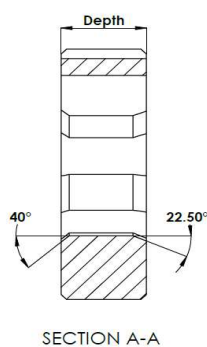
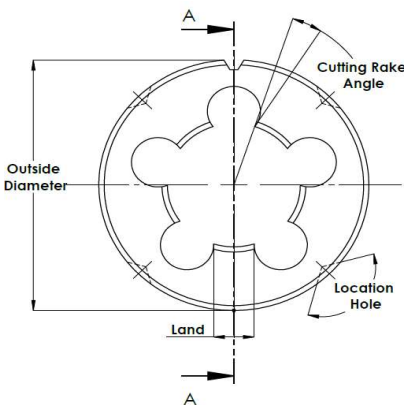
TECHNICAL DETAILS

DOS AND DONT'S - THREADING WITH DIES

- ❑ **Chamfer:** Make a chamfer at the end of the bar at an angle of 45 degrees to remove sudden loading of the leading edges. This has to be done before starting the die or die nut. Also it has to be made certain that the die or die nut is presented to the bolt squarely.
- ❑ **Tolerance:** Major diameter of the bolt usually has large tolerances. Use this to your advantage by reducing the diameter of the bar. Thus, the cutting force will be reduced to a minimum. If tolerance class is not specified, consider tolerance applicable for medium range i.e. 6H and 6G.
- ❑ **Swarf:** To direct the swarf away from cutting area, it is always preferable to use the gun nose type of die.
- ❑ **Lubricant:** The cutting area should always be supplied with a steady flow of the correct lubricant.
- ❑ **Split dies:** To avoid rubbing, the adjustable split die should not open out. Move the adjustable screws equally by say, 0.15 mm to close the split die. If it is done unequally, there may be pressure on one side which may lead to breakage.
- ❑ **Cleaning:** As a norm, die nuts are used for cleaning out existing threads. Usually the process is done by hand. Avoid using die nuts for thread cutting unless it is an exception.
- ❑ **Rake angle:** Large rake angle for long chip formation whereas a small rake angle for short chip formation. Its applicable and or workpiece material isn't specified, assume it as intermediate tensile strength.

ROUND DIES NOMENCLATURE

HEXAGONAL DIES NOMENCLATURE



ADVANTAGES - LAPPING

Lapping is a process of fine removal of material using emery compound. In this process material removal is in Microns.

Thread Lapping on Round Dies are done primarily for bring thread closer to the required tolerance.

Close to 20 to 25 micron material is removed from the flank of the threads to achieve required tolerance.

Lapped Threads not only achieves tighter tolerance, but also produces superior quality threads on components, especially on soft material like Brass and Aluminium.

It also adds to the overall look of the Tool.

CONTENTS

ROUND SPLIT DIES

Material		Thread Form	Standard	Tolerance
CS	HSS	M	BS1127	6G
CS	HSS	MF	BS1127	6G
CS	HSS	BSW	BS1127	6G
CS	HSS	BSF	BS1127	6G
CS	HSS	BA	BS1127	6G
CS	HSS	BSB	BS1127	6G
CS	HSS	ME	BS1127	6G
CS	HSS	WF	BS1127	6G
CS	HSS	BSP	BS1127	6G
CS	HSS	BSPT	BS1127	6G
CS	HSS	UNC	BS1127	2A
CS	HSS	UNF	BS1127	2A

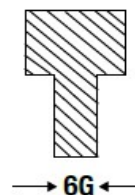
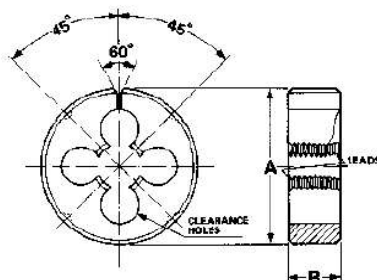
ROUND SOLID DIES

Material		Thread Form	Standard	Tolerance
CS	HSS	NPT	BS1127	2A
CS	HSS	M	BS1127	6G
CS	HSS	MF	BS1127	6G

HEXAGONAL DIES

Material		Thread Form	Standard	Tolerance
CS	HSS	M	BS1127	6G
CS	HSS	MF	BS1127	6G
CS	HSS	BSW	BS1127	6G
CS	HSS	BSF	BS1127	6G
CS	HSS	BSP	BS1127	2A
CS	HSS	BSPT	BS1127	2A
CS	HSS	UNC	BS1127	2A
CS	HSS	UNF	BS1127	2A
CS	HSS	NPT	BS1127	2A

Model Engineer Threads (ME)



Unit : mm

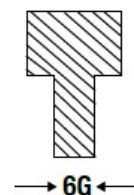
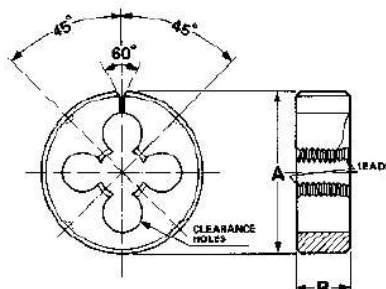
Nominal Diameter	TPI	Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter
Ø D		A	B		
1/8"	40	13/16"	1/4"	3	3.14
5/32"	32	13/16"	1/4"	3	3.93
3/16"	40	13/16"	1/4"	3	4.72
7/32"	40	13/16"	1/4"	4	5.51
1/4"	40	13/16"	1/4"	4	6.31
1/4"	40	1"	3/8"	4	6.31
9/32"	32	1"	3/8"	4	7.10
5/16"	32	1"	3/8"	4	7.90
3/8"	32	1"	3/8"	4	9.48

British Brass Threads (BSB)

Nominal Diameter	TPI	Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter
Ø D		A	B		
1/4"	26	13/16"	1/4"	4	6.31
1/4"	26	1"	3/8"	4	6.31
5/16"	26	1"	3/8"	4	7.89
3/8"	26	1"	3/8"	4	9.48
7/16"	26	1.1/2"	1/2"	5	11.06
1/2"	26	1.1/2"	1/2"	5	12.64
9/16"	26	1.1/2"	1/2"	5	14.23
5/8"	26	1.1/2"	1/2"	5	15.81
3/4"	26	1.1/2"	1/2"	6	18.98

British Association Thread (BA)

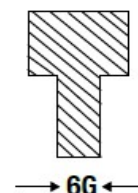
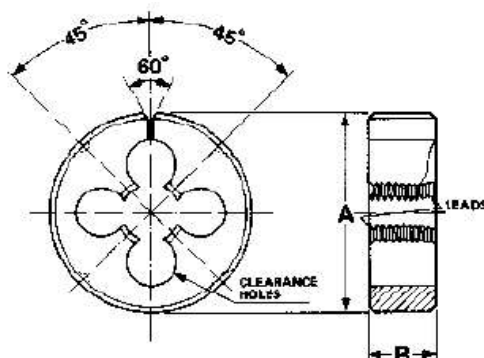
Nominal Diameter	TPI	Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter
Ø D		A	B		
# 12	90.9	13/16"	1/4"	3	1.27
# 11	81.9	13/16"	1/4"	3	1.47
# 10	72.6	13/16"	1/4"	3	1.67
# 9	65.1	13/16"	1/4"	3	1.87
# 8	59.1	13/16"	1/4"	3	2.16
# 7	52.9	13/16"	1/4"	3	2.46
# 6	47.9	13/16"	1/4"	3	2.76
# 5	43	13/16"	1/4"	3	3.15
# 4	38.5	13/16"	1/4"	3	3.55
# 3	34.8	13/16"	1/4"	3	4.04
# 2	31.4	13/16"	1/4"	3	4.64
# 1	28.2	13/16"	1/4"	4	5.23
# 0	25.4	13/16"	1/4"	4	5.92

BSW / BSF / UNC / UNF THREADS


Unit : mm

Nominal Diameter	TPI				Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter	
	Ø D	BSW	BSF	UNC					UNF
1/16"	60					13/16"	1/4"	3	1.56
3/32"	48					13/16"	1/4"	3	2.35
1/8"	40					13/16"	1/4"	3	3.14
5/32"	32					13/16"	1/4"	3	3.93
3/16"	24	32				13/16"	1/4"	3	4.72
7/32"	24	28				13/16"	1/4"	4	5.51
1/4"	20	26	20	28		1"	3/8"	3	6.31
9/32"	20	26				1"	3/8"	4	7.10
5/16"	18	22	18	24		1"	3/8"	4	7.88
3/8"	16	20	16	24		1"	3/8"	4	9.47
7/16"	14	18	14	20		1.1/2"	1/2"	4	11.05
1/2"	12	16	13	20		1.1/2"	1/2"	4	12.63
9/16"	12	16	12	18		1.1/2"	1/2"	5	14.21
5/8"	11	14	11	18		1.1/2"	1/2"	5	15.80
11/16"	11					1.1/2"	1/2"	6	17.39
3/4"	10	12	10	16		1.1/2"	1/2"	6	18.97
7/8"	9	11	9	14		2"	5/8"	5	22.14
1"	8	10	8	12		2"	5/8"	6	25.30
1.1/8"	7	9	7	12		2.1/4"	11/16"	6	
1.1/4"	7	9	7	12		2.1/4"	11/16"	6	
1.3/8"	6	8	6	12		65 mm	7/8"	6	
1.1/2"	6	8	6	12		65 mm	7/8"	6	
1.1/2"	6	8	6	12		65 mm	7/8"	6	
1.3/4"	5	7	5	14		90 mm	1"	6	
2"	4.5	7	5			90 mm	1"	6	
#3				56		13/16"	1/4"	3	2.83
#4			40	48		13/16"	1/4"	3	2.83
#5			40	44		13/16"	1/4"	3	3.15
#6			32	40		13/16"	1/4"	3	3.48
#8			32	36		13/16"	1/4"	3	4.14
#10			24	32		13/16"	1/4"	3	4.79
#12			24	28		13/16"	1/4"	4	5.45

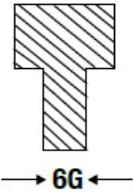
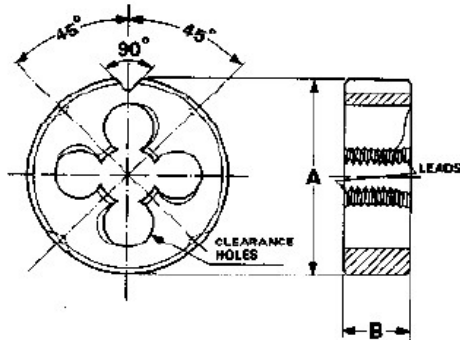
Metric Coarse Threads



Unit : mm

Nominal Diameter	TPI	Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter
Ø D		A	B		
M2.0	0.40	13/16"	1/4"	3	1.96
M2.2	0.45	13/16"	1/4"	3	1.96
M2.3	0.40	13/16"	1/4"	3	1.96
M2.5	0.45	13/16"	1/4"	3	1.96
M3	0.50	13/16"	1/4"	3	2.95
M3.5	0.60	13/16"	1/4"	3	2.95
M4	0.70	13/16"	1/4"	3	3.95
M4.5	0.75	13/16"	1/4"	3	3.95
M5	0.80	13/16"	1/4"	3	4.95
M6	1.00	13/16"	1/4"	4	5.93
M7	1.00	13/16"	1/4"	4	6.93
M8	1.25	1"	3/8"	4	7.92
M9	1.24	1"	3/8"	4	8.93
M10	1.50	1"	3/8"	4	9.91
M12	1.75	1.1/2"	1/2"	4	11.90
M14	2.00	1.1/2"	1/2"	5	13.89
M16	2.00	1.1/2"	1/2"	5	15.89
M18	2.50	1.1/2"	1/2"	6	17.88
M20	2.50	2"	5/8"	5	19.88
M22	2.50	2"	5/8"	5	21.88
M24	3.00	2"	5/8"	5	23.88
M25	3.00	2.1/4"	11/16"	6	23.88
M27	3.00	2.1/4"	11/16"	6	
M30	3.50	2.1/4"	11/16"	6	
M33	3.50	2.1/4"	11/16"	6	
M36	4.00	75 mm	7/8"	6	
M39	4.00	75 mm	7/8"	6	
M42	4.50	75 mm	7/8"	6	
M45	4.50	75 mm	7/8"	6	
M48	5.00	90 mm	1"	6	

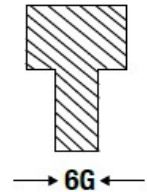
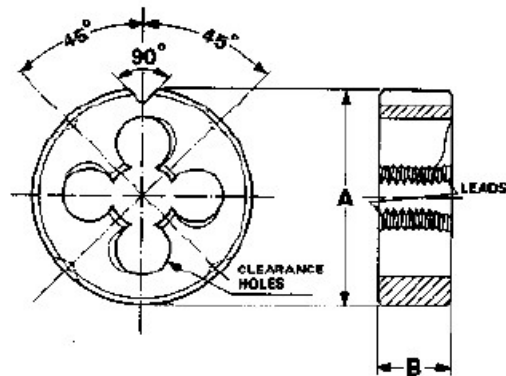
Metric Fine Threads



Unit : mm

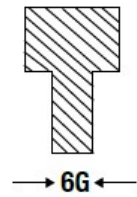
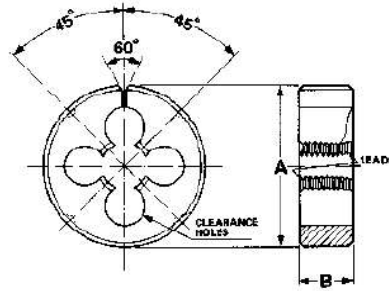
Nominal Diameter	TPI	Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter
Ø D		A	B		
M3.0	0.35	13/16"	1/4"	3	2.96
M3.5	0.35	13/16"	1/4"	3	3.46
M4	0.50	13/16"	1/4"	3	3.95
M4.5	0.50	13/16"	1/4"	3	4.45
M5	0.50	13/16"	1/4"	3	4.95
M6	0.75	13/16"	1/4"	4	5.95
M7	0.75	1"	1/4"	4	6.95
M8	0.75	1"	3/8"	4	7.97
M8	1.00	1"	3/8"	4	7.93
M9	1.00	1"	3/8"	4	8.95
M10	1.00	1"	3/8"	4	9.93
M10	1.25	1"	3/8"	4	9.95
M12	1.00	1.1/2"	1/2"	5	11.93
M12	1.25	1.1/2"	1/2"	5	11.92
M12	1.50	1.1/2"	1/2"	4	11.91
M14	1.00	1.1/2"	1/2"	5	13.93
M14	1.25	1.1/2"	1/2"	5	13.92
M14	1.50	1.1/2"	1/2"	5	13.91
M16	1.00	1.1/2"	1/2"	5	15.93
M16	1.50	1.1/2"	1/2"	5	15.91
M18	1.00	1.1/2"	1/2"	6	17.91
M18	1.50	1.1/2"	1/2"	6	17.91
M18	2.00	1.1/2"	1/2"	6	17.91
M20	1.50	2"	1/2"	6	19.91
M20	2.00	2"	5/8"	5	19.91
M22	1.50	2"	5/8"	6	21.91
M22	2.00	2"	5/8"	6	21.91
M24	1.50	2"	5/8"	6	23.93
M24	2.00	2"	5/8"	6	23.9

Metric Fine Threads



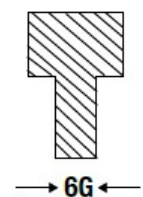
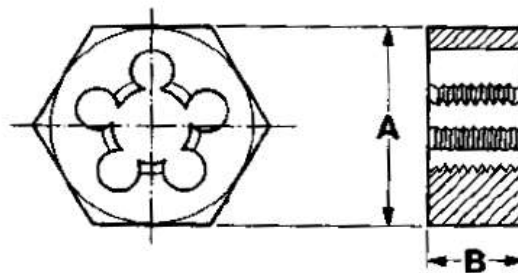
Unit : mm

Nominal Diameter	TPI	Outer Diameter	Thickness	No. Clearance Hole	Threading Diameter
Ø D		A	B		
M25	1.50	2.1/4"	5/8"	6	24.91
M25	2.00	2.1/4"	5/8"	6	24.91
M26	1.50	2.1/4"	5/8"	6	25.9
M26	2.00	2.1/4"	5/8"	6	25.9
M27	1.50	2.1/4"	5/8"	6+6	26.9
M27	2.00	2.1/4"	5/8"	6+6	26.9
M28	1.50	2.1/4"	5/8"	6+6	27.9
M28	2.00	2.1/4"	5/8"	6+6	27.9
M30	1.50	2.1/4"	5/8"	6+6	29.9
M30	2.00	2.1/4"	5/8"	6+6	29.9
M30	3.00	2.1/4"	5/8"	6+6	29.9
M32	1.50	2.1/4"	11/16"	6+6	
M32	2.00	2.1/4"	11/16"	6+6	
M33	1.50	2.1/4"	11/16"	6+6	
M33	2.00	2.1/4"	11/16"	6+6	
M33	3.00	2.1/4"	11/16"	6+6	
M35	1.50	2.1/4"	7/8"	6	
M36	1.50	75 mm	7/8"	6	
M36	2.00	75 mm	7/8"	6	
M36	3.00	75 mm	7/8"	6	
M39	1.50	75 mm	7/8"	6	
M39	2.00	75 mm	7/8"	6	
M39	3.00	75 mm	7/8"	6	
M42	1.50	75 mm	7/8"	6	
M42	2.00	75 mm	7/8"	6	
M42	3.00	75 mm	7/8"	6	
M42	4.00	75 mm	7/8"	6	
M45	1.50	75 mm	7/8"	6	
M45	2.00	75 mm	7/8"	6	
M45	3.00	75 mm	7/8"	6	
M45	4.00	75 mm	7/8"	6	
M48	1.50	90 mm	1"	6	
M48	2.00	90 mm	1"	6	
M48	3.00	90 mm	1"	6	
M48	4.00	90 mm	1"	6	

BSP / NPT / BSPT Threads


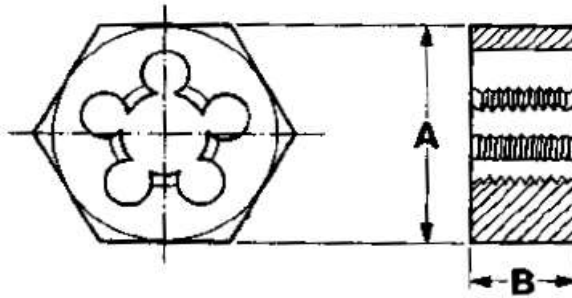
Unit : mm

Nominal Diameter	TPI			Outer Diameter	Thickness	Thickness	No. Clearance Hole	Threading Diameter
Ø D	BSP	NPT	BSPT	A	BSP	BSPT/NPT		
1/8"	28	27	28	1"	3/8"	10	4	9.68
1/4"	19	18	19	1.1/2"	1/2"	14	5	13.11
3/8"	19	18	19	1.1/2"	1/2"	14	5	16.6
1/2"	14	14	14	2"	5/8"	19	6	20.89
5/8"	14			2"	5/8"		6	22.84
3/4"	14	14	14	2"	5/8"	20	6	26.36
7/8"	14			2.1/4"	5/8"		6+6	30.11
1"	11	11.1/2	11	2.1/4"	5/8"	25	6+6	33.16
1.1/8"	11			75 mm	7/8"		6	
1.1/4"	11	11.1/2	11	75 mm	7/8"	25	6	
1.3/8"	11			90 mm	1"			
1.1/2"	11	11.1/2	11	90 mm	1"	25	6	

HSS HEXAGONAL DIES
BSP / NPT / BSPT Threads


Unit : mm

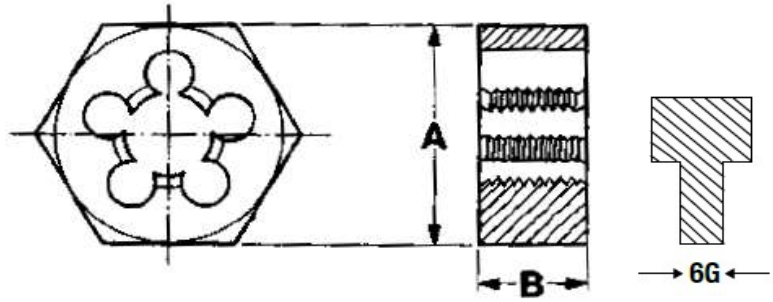
Nominal Diameter	TPI			Across Flat	Thickness
Ø D	BSP	NPT	BSPT	A	
1/8"	28	27	28	0.920"	10
1/4"	19	18	19	1.100"	14
3/8"	19	18	19	1.300"	14
1/2"	14	14	14	1.670"	19
3/4"	14	14	14	2.050"	20
1"	11	11.1/2	11	2.580"	25
1.1/2"	11	11.1/2	11	3.150"	
2"	11	11.1/2	11	3.890"	

BSW / BSF / UNC / UNF Threads


Unit : mm

Nominal Diameter Ø D	TPI				Across Flat A	Thickness
	BSW	BSF	UNC	UNF	A	
1/8"	40				0.710"	6.35
5/32"	32				0.710"	6.35
3/16"	24	32			0.710"	6.35
7/32"	24	28			0.710"	6.35
1/4"	20	26	20	28	0.710"	6.35
9/32"	20	26			0.820"	7.94
5/16"	18	22	18	24	0.820"	7.94
3/8"	16	20	16	24	0.920"	9.53
7/16"	14	18	14	20	1.010"	11.11
1/2"	12	16	13	20	1.100"	12.7
9/16"	12	16	12	18	1.300"	15.88
5/8"	11	14	11	18	1.300"	15.88
3/4"	10	12	10	16	1.480"	17.46
7/8"	9	11	9	14	1.670"	20.63
1"	8	10	8	12	2.050"	23.81
1.1/8"	7	9	7	12	2.220"	26.99
1.1/4"	7	9	7	12	2.220"	26.99
1.3/8"	6	8	6	12	2.580"	28.58
1.1/2"	6	8	6	12	2.760"	31.75
1.3/4"	5	7	5	14	3.150"	31.75/44.45
2"	5	7	5		3.550"	31.75/44.45
#5			40	44	0.710"	6.35
#6			32	40	0.710"	6.35
#8			32	36	0.710"	6.35
#10			24	32	0.710"	6.35
#12			24	28	0.710"	6.35

Metric Coarse Threads



Unit : mm

Nominal Diameter	TPI	Across Flat	Thickness
Ø D		A	
M3	0.50	0.710"	6.35
M3.5	0.60	0.710"	6.35
M4	0.70	0.710"	6.35
M4.5	0.75	0.710"	6.35
M5	0.80	0.710"	6.35
M6	1.00	0.710"	6.35
M7	1.00	0.710"	6.35
M8	1.25	0.820"	7.94
M9	1.24	0.920"	9.53
M10	1.50	0.920"	9.53
M11	2.00	1.010"	11.11
M12	1.75	1.100"	12.7
M14	2.00	1.300"	15.88
M16	2.00	1.300"	15.88
M18	2.50	1.480"	17.46
M20	2.50	1.480"	17.46
M22	2.50	1.670"	20.63
M24	3.00	2.050"	23.81
M25	3.00	2.220"	26.99
M27	3.00	2.220"	26.99
M30	3.50	2.220"	26.99
M32	2.00	2.220"	26.99
M33	3.50	2.580"	28.5
M36	4.00	2.580"	28.5
M39	4.00	2.580"	28.5
M42	4.50	2.580"	28.5

*“Products are made in the factory,
but brands are created in the mind”*



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