

English transposing gears are used for cutting English screw threads on lathes having metric lead screws. Metric transposing gears are used for cutting metric screw threads on lathes having English lead screws.

The form of the metric thread is similar to the American National Screw Thread form, having a 60° included angle and a flat at the top of the thread, but a small radius at the root of the thread provides greater clearance. (See Fig. 250.)

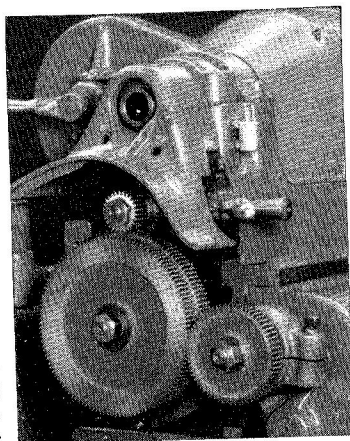


Fig. 247. Lathe Equipped with Transposing Gears

TRANSPOSING GEAR CHART

ENGLISH SCREW THREADS

METRIC PITCH LEAD SCREW

THREADS PER INCH	METRIC PITCH	IDEAL GEAR	SCREW GEAR
4	.64	FIG. 1	24
5	.8	FIG. 1	28
5 1/2	.84	FIG. 1	30
6	.96	FIG. 1	32
6 1/2	.96	FIG. 1	28
7	.96	FIG. 1	28
7 1/2	.96	FIG. 2	30
8	.96	FIG. 2	32
9	.96	FIG. 2	32
10	.96	FIG. 2	32
11	.96	FIG. 2	44
12	.96	FIG. 2	44
13	.96	FIG. 2	55
14	.96	FIG. 2	55
16	.96	FIG. 2	64
17	.96	FIG. 2	64
18	.96	FIG. 2	40
20	.96	FIG. 2	40
22	.96	FIG. 2	48
24	.96	FIG. 2	52
25	.96	FIG. 2	56
27	.96	FIG. 2	56
30	.96	FIG. 2	60
32	.96	FIG. 2	64
36	.96	FIG. 2	64
40	.96	FIG. 2	80
44	.96	FIG. 2	44
45	.96	FIG. 3	48
48	.96	FIG. 3	52
54	.96	FIG. 3	54
56	.96	FIG. 3	60
60	.96	FIG. 3	60
64	.96	FIG. 3	64
72	.96	FIG. 3	80

FIG. 1

FIG. 2

FIG. 3

Left—Fig. 248
Index Chart
Showing Eng-
lish Threads
Cut on Metric
Lathe with
English Trans-
posing Gears

**Right—Fig.
249 Index
Chart showing
Metric Threads
Cut on Eng-
lish Lathe with
Metric Trans-
posing Gears**

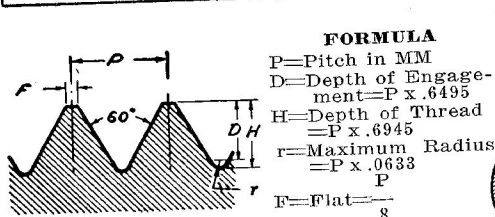


Fig. 250. International Standard Metric Screw Thread Form

TRANSPOSING GEAR CHART METRIC SCREW THREADS ENGLISH PITCH LEAD SCREW

M/M PITCH	STUD GEARS	LEADER GEARS	SCREW GEARS	
6.00	48	FIG. 1	20	
5.50	44	FIG. 1	20	12T STUD GEAR
5.00	40	FIG. 1	20	SCREW GEAR
4.50	36	FIG. 1	20	100T
4.00	32	FIG. 1	20	72T 18T
3.50	28	FIG. 1	20	FIG. 1
3.00	24	FIG. 1	20	
2.75	44	FIG. 1	40	12T STUD GEAR
2.50	32	FIG. 1	32	SCREW GEAR
2.25	36	FIG. 1	40	100T
2.00	32	FIG. 1	40	FIG. 2
1.75	56	FIG. 2	80	
1.50	48	FIG. 2	80	12T STUD GEAR
1.40	56	FIG. 2	100	SCREW GEAR
1.30	64	FIG. 2	100	100T
1.25	40	FIG. 2	80	FIG. 2
1.20	48	FIG. 2	100	
1.10	44	FIG. 2	100	12T STUD GEAR
1.00	40	FIG. 2	100	SCREW GEAR
0.90	36	FIG. 2	100	100T
0.85	28	FIG. 2	80	FIG. 3
0.75	24	FIG. 2	80	
0.70	28	FIG. 2	100	12T STUD GEAR
0.65	36	FIG. 2	100	SCREW GEAR
0.60	24	FIG. 2	100	100T
0.55	32	FIG. 2	100	FIG. 3
0.50	20	FIG. 2	100	
0.45	18	FIG. 2	100	12T STUD GEAR
0.40	16	FIG. 2	100	SCREW GEAR
0.35	56	FIG. 3	100	100T
0.30	48	FIG. 3	100	72T 18T
0.25	40	FIG. 3	100	FIG. 3
0.20	32	FIG. 3	100	

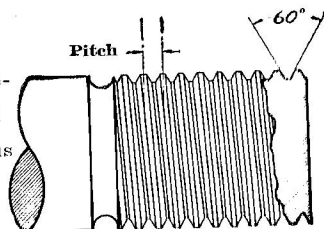


Fig. 251. 2.5 mm. Pitch Metric Screw Thread

Metric Lathe with Metric Lead Screw

Metric lathes equipped with metric lead screws are preferable in locations where metric screw threads are used exclusively. The metric lathe is identical with the English lathe, except that the lead screw, cross-feed screw and compound rest screw have metric threads, and all graduations are in the metric system.

Metric lathes are made in both the Standard Change Gear and Quick Change Gear types. Metric Quick Change Gear Lathes have a quick change gear box which permits cutting a wide range of metric screw threads and feeds, as listed on the index chart, which is illustrated below in Fig. 253. Metric Standard Change Gear Lathes have a similar range of metric screw threads and feeds.

MANUFACTURED BY SOUTH BEND LATHE

PITCHES IN mm—PASOS EN mm—PAS EN mm								POSITION POSITION	STUD HARD- ARBRE
7.500	7.000	6.500	6.000	5.500	5.000	4.500	4.000	D	50
3.750	3.500	3.250	3.000	2.750	2.500	2.250	2.000	C	50
1.875	1.750	1.625	1.500	1.375	1.250	1.125	1.000	B	50

1.500	1.400	1.300	1.200	1.100	1.000	0.900	0.800	C	20
0.750	0.700	0.650	0.600	0.550	0.500	0.450	0.400	B	20
0.375	0.350	0.325	0.300	0.275	0.250	0.225	0.200	A	20

FEEDS IN mm—AVANCES EN mm									
0.512	0.478	0.444	0.410	0.375	0.341	0.307	0.273	C	20
0.256	0.239	0.222	0.205	0.188	0.171	0.154	0.137	B	20
0.128	0.119	0.111	0.102	0.094	0.085	0.077	0.068	A	20

SOUTH BEND, IND., U.S.A.

9-inch—235 mm

S

TRADE MARK
SOUTH BEND
TWIN BED
ENGINE LATHES

SOUTH BEND
LATHE
MODEL A

CATALOG NO. _____
BED LENGTH _____

Positions
Posiciones

A
↑

B
↑

C
↑

D
↑

→

CROSS FEEDS AND OF PITCHES
AVANCES TRANSVERSALES Y DE PASO

Fig. 253. Index Chart Showing Metric Threads and Feeds on a 9-inch Swing Metric Quick Change Gear Lathe

Metric Thread Dial Indicator

The thread dial used for cutting metric screw threads on lathes equipped with metric lead screws is shown in Fig. 254. To provide for the various pitches of metric threads, several gears having different numbers of teeth are mounted on the lower end of the shaft. The vertical position of the thread dial indicator is changed as required so that the correct gear for the pitch of the thread to be cut will mesh with the lead screw.

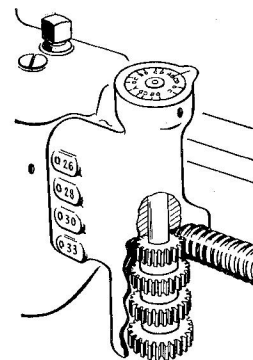


Fig. 254. Metric Thread Dial Indicator

Each graduation on the dial is marked with a letter which indicates the points at which the half-nuts may be engaged for certain threads. A chart (Fig. 254A) is supplied with the thread dial to show which gear and which graduations must be used for each pitch of metric screw thread.

CHART NO. 1				
METRIC THREAD DIAL				
INDICATE AT ANY LINE ON DIAL AS MARKED				
PITCH MM	26 HOLE	28 HOLE	30 HOLE	32 HOLE
1.0	—	A	I	—
1.25	—	—	—	—
1.5	—	A	D	—
1.75	—	—	—	—
2.0	—	—	B	B
2.25	—	D	—	—
2.5	—	—	—	—
2.75	A	A or D	B or C	B
3.0	—	—	—	—
3.25	—	—	B	B
3.5	—	—	B	B
3.75	A	A or D	B or C	B
4.0	—	—	—	—
4.25	—	A or D	—	—
4.5	—	—	B	B
4.75	—	A	—	—
5.0	—	—	—	—
5.25	A	A or D	B or C	B
5.5	—	—	—	—
5.75	—	A	—	B
6.0	—	—	—	—
6.25	—	A or D	—	—
6.5	—	—	B	B
6.75	A	A or D	B or C	B
7.0	—	—	—	—
7.25	—	A	—	B
7.5	—	—	—	—
7.75	—	A or D	—	—
8.0	—	—	B or C	B
8.25	A	A or D	B or C	B
8.5	—	—	—	—
8.75	—	D	—	—
9.0	A	A or D	B or C	B
9.25	—	—	—	—
9.5	A	—	—	B
9.75	—	A	—	—
10.0	—	—	B or C	B
10.25	—	—	—	—
10.5	—	A or D	—	—
10.75	A	—	—	B
11.0	—	—	B or C	B
11.25	—	A or D	—	—
11.5	—	—	B	B
11.75	A	A or D	B or C	B
12.0	—	—	—	—
12.25	—	A	—	—
12.5	—	—	B or C	B
12.75	A	A or D	B or C	B
13.0	—	—	—	—
13.25	—	A or D	—	—
13.5	—	—	B	B
13.75	A	A or D	B or C	B
14.0	—	—	—	—
14.25	—	A or D	—	—
14.5	—	—	B or C	B
14.75	A	A or D	B or C	B
15.0	—	—	—	—
15.25	—	A	—	B
15.5	—	—	B or C	B
15.75	A	A or D	B or C	B
16.0	—	—	—	—
16.25	—	A or D	—	—
16.5	—	—	B	B
16.75	A	A or D	B or C	B
17.0	—	—	—	—
17.25	—	A	—	—
17.5	—	—	B or C	B
17.75	A	A or D	B or C	B
18.0	—	—	—	—
18.25	—	A or D	—	—
18.5	—	—	B	B
18.75	A	A or D	B or C	B
19.0	—	—	—	—
19.25	—	A	—	—
19.5	—	—	B or C	B
19.75	A	A or D	B or C	B
20.0	—	—	—	—
20.25	—	A or D	—	—
20.5	—	—	B	B
20.75	A	A or D	B or C	B
21.0	—	—	—	—
21.25	—	A	—	—
21.5	—	—	B or C	B
21.75	A	A or D	B or C	B
22.0	—	—	—	—
22.25	—	A or D	—	—
22.5	—	—	B	B
22.75	A	A or D	B or C	B
23.0	—	—	—	—
23.25	—	A	—	—
23.5	—	—	B or C	B
23.75	A	A or D	B or C	B
24.0	—	—	—	—
24.25	—	A or D	—	—
24.5	—	—	B	B
24.75	A	A or D	B or C	B
25.0	—	—	—	—
25.25	—	A	—	—
25.5	—	—	B or C	B
25.75	A	A or D	B or C	B
26.0	—	—	—	—
26.2				

Fig. 254A. Index Chart for Metric Thread Dial