

To create metric thread on an American lathe My best pick from the master list of 377.

The first number is the number of threads per inch required to produce the required metric thread simulation. The first of each group has the perfect number to do the conversion and the metric equivalent. Followed by the error after one inch and then the ratio of the error. The next six numbers are the gears starting with the one connected to the lathes head and ending with the one connected to the lead screw. Example with the first one to produce a 6.0mm thread it is the same as a 4.23280 threads per inch. The head is connected to a 48 gear followed by a 32 with a 54 on the same shaft, followed by a 40 on the same shaft with a 56, and a 60 on the lead screw. The top line of each group has the equivalent threads per inch set equal to the metric pitch. The next number is the error in the pitch for one inch of threads and ratio of the error. For a 1:8002 it would take 8002 turns to be 1 turn in error.

Note when cutting the threads you need to back up the carriage 5 times the pitch inches, not the normal 1 inch. This is the first point that the inch and metric system are equal is at 5 inches and 127mm, for a 1.00mm pitch and 4 inches for a 0.80mm pitch. It may be easier to back off the carriage which has to be done anyways and run the lathe in reverse.

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| 4.23333 = 6.00mm 0.00053 1:8002 | 25.40000 = 1.00mm 0.00317 1:8002 |
| 4.23280 48 32 54 40 56 60 | 25.39683 36 60 56 40 18 48 |
| 4.61818 = 5.50mm 0.00058 1:8002 | 31.75000 = 0.80mm 0.00568 1:5588 |
| 4.61760 44 32 54 40 56 60 | 31.75568 32 36 44 46 16 54 |
| 5.08000 = 5.00mm 0.00063 1:8002 | 33.86667 = 0.75mm 0.00423 1:8002 |
| 5.07937 54 48 56 40 32 32 | 33.86243 36 64 56 40 18 60 |
| 5.64444 = 4.50mm 0.00071 1:8002 | 36.28571 = 0.70mm 0.00649 1:5588 |
| 5.64374 54 40 56 32 36 60 | 36.29221 56 54 44 46 16 72 |
| 6.35000 = 4.00mm 0.00079 1:8002 | 42.33333 = 0.60mm 0.00758 1:5588 |
| 6.34921 54 40 56 32 32 60 | 42.34091 16 48 44 46 32 54 |
| 7.25714 = 3.50mm 0.00130 1:5588 | 50.80000 = 0.50mm 0.00635 1:8002 |
| 7.25844 40 36 44 54 56 46 | 50.79365 18 64 56 40 24 60 |
| 8.46667 = 3.00mm 0.00106 1:8002 | 56.44444 = 0.45mm 0.01010 1:5588 |
| 8.46561 36 40 54 48 56 60 | 56.45455 16 48 44 46 24 54 |
| 10.16000 = 2.50mm 0.00127 1:8002 | 63.50000 = 0.40mm 0.01136 1:5588 |
| 10.15873 32 32 36 64 56 40 | 63.51136 32 46 44 54 16 72 |
| 12.70000 = 2.00mm 0.00159 1:8002 | 72.57143 = 0.35mm 0.06349 1:1143 |
| 12.69841 54 60 56 40 24 48 | 72.63492 16 64 56 44 18 52 |
| 14.51429 = 1.75mm 0.00260 1:5588 | 84.66667 = 0.30mm 0.01515 1:5588 |
| 14.51688 44 54 56 46 40 72 | 84.68182 16 54 44 46 24 72 |
| 16.93333 = 1.50mm 0.00212 1:8002 | 101.60000 = 0.25mm 0.06154 1:1651 |
| 16.93122 54 60 56 40 18 48 | 101.53846 16 72 52 44 18 60 |
| 20.32000 = 1.25mm 0.00254 1:8002 | 127.00000 = 0.20mm 0.11111 1:1143 |
| 20.31746 32 64 56 32 18 40 | 127.11111 16 52 32 44 18 64 |

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The first number is the number of threads per inch required to produce the required metric thread simulation. The first of each group has the perfect number to do the conversion and the metric equivalent. Followed by the error after one inch and then the ratio of the error. The next six numbers are the gears starting with the one connected to the lathes head and ending with the one connected to the lead screw. Example with the first one to produce a 6.0mm thread it is the same as a 4.23280 threads per inch. The head is connected to a 48 gear followed by a 32 with a 54 on the same shaft, followed by a 40 on the same shaft with a 56, and a 60 on the lead screw. The top line of each group has the equivalent threads per inch set equal to the metric pitch. The next number is the error in the pitch for one inch of threads and ratio of the error. For a 1:8002 it would take 8002 turns to be 1 turn in error.

Note when cutting the threads you need to back up the carriage 5 times the pitch inches, not the normal 1 inch. This is the first point that the inch and metric system are equal is at 5 inches and 127mm, for a 1.00mm pitch and 4 inches for a 0.80mm pitch. It may be easier to back off the carriage which has to be done anyways and run the lathe in reverse.

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|------------------|---------|--------|---------|----|----|----|---------|----|----|----|----|----|----|
| 4.23333 = 6.00mm | 0.00053 | 1:8002 | 5.07937 | 48 | 32 | 56 | 32 | 36 | 60 | | | | |
| 4.23280 | 48 | 32 | 54 | 40 | 56 | 60 | 5.07937 | 48 | 32 | 56 | 40 | 54 | 72 |
| 4.23280 | 48 | 32 | 56 | 40 | 54 | 60 | 5.07937 | 48 | 36 | 56 | 40 | 54 | 64 |
| 4.23280 | 54 | 16 | 24 | 60 | 56 | 40 | 5.07937 | 48 | 40 | 56 | 16 | 24 | 64 |
| 4.23280 | 54 | 24 | 36 | 60 | 56 | 40 | 5.07937 | 48 | 40 | 56 | 24 | 18 | 32 |
| 4.23280 | 54 | 24 | 56 | 40 | 36 | 60 | 5.07937 | 48 | 40 | 56 | 32 | 24 | 32 |
| 4.23280 | 54 | 32 | 56 | 40 | 48 | 60 | 5.07937 | 54 | 16 | 18 | 60 | 56 | 36 |
| 4.23280 | 54 | 40 | 56 | 16 | 24 | 60 | 5.07937 | 54 | 16 | 24 | 60 | 56 | 48 |
| 4.23280 | 56 | 16 | 24 | 60 | 54 | 40 | 5.07937 | 54 | 16 | 24 | 72 | 56 | 40 |
| 4.23280 | 56 | 24 | 36 | 60 | 54 | 40 | 5.07937 | 54 | 16 | 32 | 60 | 56 | 64 |
| 4.23280 | 56 | 24 | 54 | 40 | 36 | 60 | 5.07937 | 54 | 16 | 32 | 64 | 56 | 60 |
| 4.23280 | 56 | 32 | 54 | 40 | 48 | 60 | 5.07937 | 54 | 16 | 36 | 60 | 56 | 72 |
| 4.23280 | 56 | 40 | 54 | 16 | 24 | 60 | 5.07937 | 54 | 18 | 24 | 64 | 56 | 40 |
| 4.23280 | 56 | 40 | 72 | 16 | 18 | 60 | 5.07937 | 54 | 18 | 36 | 60 | 56 | 64 |
| 4.23280 | 56 | 60 | 72 | 16 | 18 | 40 | 5.07937 | 54 | 18 | 36 | 64 | 56 | 60 |
| 4.23280 | 72 | 16 | 18 | 60 | 56 | 40 | 5.07937 | 54 | 24 | 32 | 64 | 56 | 40 |
| 4.23280 | 72 | 16 | 56 | 40 | 18 | 60 | 5.07937 | 54 | 24 | 36 | 60 | 56 | 48 |
| 4.23280 | 72 | 32 | 36 | 60 | 56 | 40 | 5.07937 | 54 | 24 | 56 | 24 | 18 | 60 |
| 4.23280 | 72 | 32 | 56 | 40 | 36 | 60 | 5.07937 | 54 | 24 | 56 | 32 | 16 | 40 |
| 4.23280 | 72 | 40 | 54 | 48 | 56 | 60 | 5.07937 | 54 | 24 | 56 | 32 | 24 | 60 |
| 4.23280 | 72 | 40 | 56 | 16 | 18 | 60 | 5.07937 | 54 | 24 | 56 | 36 | 18 | 40 |
| 4.23280 | 72 | 40 | 56 | 32 | 36 | 60 | 5.07937 | 54 | 24 | 56 | 40 | 24 | 48 |
| | | | | | | | 5.07937 | 54 | 24 | 56 | 40 | 32 | 64 |
| 4.61818 = 5.50mm | 0.00058 | 1:8002 | 5.07937 | 54 | 24 | 56 | 40 | 36 | 72 | | | | |
| 4.61760 | 44 | 32 | 54 | 40 | 56 | 60 | 5.07937 | 54 | 32 | 56 | 24 | 16 | 40 |
| 4.61760 | 44 | 32 | 56 | 40 | 54 | 60 | 5.07937 | 54 | 32 | 56 | 24 | 24 | 60 |
| 4.61760 | 54 | 32 | 56 | 40 | 44 | 60 | 5.07937 | 54 | 32 | 56 | 36 | 24 | 40 |
| 4.61760 | 56 | 32 | 54 | 40 | 44 | 60 | 5.07937 | 54 | 32 | 56 | 40 | 24 | 36 |
| | | | | | | | 5.07937 | 54 | 32 | 56 | 40 | 32 | 48 |
| 5.08000 = 5.00mm | 0.00063 | 1:8002 | 5.07937 | 54 | 32 | 56 | 40 | 48 | 72 | | | | |
| 5.07937 | 36 | 40 | 56 | 16 | 24 | 48 | 5.07937 | 54 | 36 | 56 | 16 | 18 | 60 |
| 5.07937 | 36 | 40 | 56 | 24 | 24 | 32 | 5.07937 | 54 | 36 | 56 | 24 | 18 | 40 |
| 5.07937 | 48 | 16 | 18 | 60 | 56 | 32 | 5.07937 | 54 | 36 | 56 | 32 | 24 | 40 |
| 5.07937 | 48 | 16 | 24 | 64 | 56 | 40 | 5.07937 | 54 | 36 | 56 | 40 | 48 | 64 |
| 5.07937 | 48 | 16 | 36 | 60 | 56 | 64 | 5.07937 | 54 | 40 | 56 | 16 | 24 | 72 |
| 5.07937 | 48 | 16 | 36 | 64 | 56 | 60 | 5.07937 | 54 | 40 | 56 | 18 | 24 | 64 |
| 5.07937 | 48 | 24 | 36 | 64 | 56 | 40 | 5.07937 | 54 | 40 | 56 | 24 | 16 | 32 |
| 5.07937 | 48 | 32 | 36 | 60 | 56 | 32 | 5.07937 | 54 | 40 | 56 | 24 | 18 | 36 |
| 5.07937 | 48 | 32 | 54 | 40 | 56 | 72 | 5.07937 | 54 | 40 | 56 | 24 | 24 | 48 |
| 5.07937 | 48 | 32 | 56 | 16 | 18 | 60 | 5.07937 | 54 | 40 | 56 | 24 | 32 | 64 |
| 5.07937 | 48 | 32 | 56 | 24 | 18 | 40 | 5.07937 | 54 | 40 | 56 | 32 | 24 | 36 |
| 5.07937 | 48 | 32 | 56 | 32 | 24 | 40 | 5.07937 | 54 | 40 | 56 | 32 | 32 | 48 |

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5.07937 54 48 56 24 24 40
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5.07937 56 16 18 60 54 36
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5.07937 56 16 24 64 48 40
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5.07937 56 16 32 60 54 64
5.07937 56 16 32 64 54 60
5.07937 56 16 36 24 18 60
5.07937 56 16 36 32 24 60
5.07937 56 16 36 40 24 48
5.07937 56 16 36 40 32 64
5.07937 56 16 36 60 48 64
5.07937 56 16 36 60 54 72
5.07937 56 16 36 64 48 60
5.07937 56 16 48 32 18 60
5.07937 56 16 48 40 24 64
5.07937 56 18 24 64 54 40
5.07937 56 18 36 60 54 64
5.07937 56 18 36 64 54 60
5.07937 56 18 54 40 24 64
5.07937 56 24 24 60 54 32
5.07937 56 24 32 64 54 40
5.07937 56 24 36 16 18 60
5.07937 56 24 36 24 18 40
5.07937 56 24 36 32 24 40
5.07937 56 24 36 48 54 60
5.07937 56 24 36 60 54 48
5.07937 56 24 36 64 48 40
5.07937 56 24 48 32 18 40
5.07937 56 24 48 40 36 64
5.07937 56 24 54 24 18 60
5.07937 56 24 54 32 16 40
5.07937 56 24 54 32 24 60
5.07937 56 24 54 36 18 40
5.07937 56 24 54 40 24 48
5.07937 56 24 54 40 32 64
5.07937 56 24 54 40 36 72
5.07937 56 24 54 48 36 60
5.07937 56 32 36 60 48 32
5.07937 56 32 48 16 18 60
5.07937 56 32 48 24 18 40
5.07937 56 32 48 32 24 40
5.07937 56 32 48 32 36 60
5.07937 56 32 54 24 16 40
5.07937 56 32 54 24 24 60
5.07937 56 32 54 36 24 40
5.07937 56 32 54 40 24 36
5.07937 56 32 54 40 32 48
5.07937 56 32 54 40 48 72
5.07937 56 32 54 48 32 40
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5.07937 56 36 54 16 18 60

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5.07937 56 36 54 32 24 40
5.07937 56 36 54 40 48 64
5.07937 56 40 48 24 18 32
5.07937 56 40 48 32 24 32
5.07937 56 40 54 16 24 72
5.07937 56 40 54 18 24 64
5.07937 56 40 54 24 16 32
5.07937 56 40 54 24 18 36
5.07937 56 40 54 24 24 48
5.07937 56 40 54 24 32 64
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5.07937 56 40 72 24 24 64
5.07937 56 48 54 24 24 40
5.07937 56 48 54 32 32 40
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5.07937 56 48 72 16 18 60
5.07937 56 48 72 24 18 40
5.07937 56 60 72 16 18 48
5.07937 56 60 72 24 18 32
5.07937 56 64 72 24 24 40
5.07937 64 32 56 32 18 40
5.07937 72 16 18 60 56 48
5.07937 72 16 24 60 56 64
5.07937 72 16 24 64 56 60
5.07937 72 24 24 64 56 40
5.07937 72 24 36 60 56 64
5.07937 72 24 36 64 56 60
5.07937 72 24 56 32 18 60
5.07937 72 24 56 40 18 48
5.07937 72 24 56 40 24 64
5.07937 72 32 32 64 56 40
5.07937 72 32 36 60 56 48
5.07937 72 32 56 24 18 60
5.07937 72 32 56 32 16 40
5.07937 72 32 56 32 24 60
5.07937 72 32 56 36 18 40
5.07937 72 32 56 40 24 48
5.07937 72 32 56 40 32 64
5.07937 72 40 56 24 18 48
5.07937 72 40 56 32 18 36
5.07937 72 40 56 32 24 48
5.07937 72 40 56 32 32 64
5.07937 72 48 56 16 18 60
5.07937 72 48 56 24 18 40
5.07937 72 48 56 32 24 40

5.64444 = 4.50mm 0.00071 1:8002

5.64374 54 16 18 60 56 40
5.64374 54 32 36 60 56 40
5.64374 54 32 56 40 36 60
5.64374 54 40 56 16 18 60
5.64374 54 40 56 32 36 60
5.64374 56 16 18 60 54 40
5.64374 56 32 36 60 54 40
5.64374 56 32 54 40 36 60
5.64374 56 40 54 16 18 60
5.64374 56 40 54 32 36 60

6.35000 = 4.00mm 0.00079 1:8002
6.34921 36 40 56 16 24 60
6.34921 48 16 18 60 56 40
6.34921 48 32 36 60 56 40
6.34921 48 32 56 40 36 60
6.34921 48 40 56 16 18 60
6.34921 48 40 56 32 36 60
6.34921 54 24 56 40 24 60
6.34921 54 32 56 40 32 60
6.34921 54 40 56 24 24 60
6.34921 54 40 56 32 32 60
6.34921 56 16 18 60 48 40
6.34921 56 16 24 40 36 60
6.34921 56 16 36 40 24 60
6.34921 56 16 48 40 18 60
6.34921 56 24 24 60 54 40
6.34921 56 24 54 40 24 60
6.34921 56 32 32 60 54 40
6.34921 56 32 36 60 48 40
6.34921 56 32 48 40 36 60
6.34921 56 32 54 40 32 60
6.34921 56 40 36 60 48 32
6.34921 56 40 48 16 18 60
6.34921 56 40 54 24 24 60
6.34921 56 40 54 32 32 60
6.34921 56 40 72 24 18 60
6.34921 56 60 72 24 18 40
6.34921 72 24 56 40 18 60
6.34921 72 32 56 40 24 60
6.34921 72 40 56 24 18 60
6.34921 72 40 56 32 24 60
6.34921 72 48 56 40 36 60

7.25714 = 3.50mm 0.00130 1:5588
7.25844 40 36 44 54 56 46
7.25844 40 36 56 46 44 54
7.25844 44 36 56 46 40 54
7.25844 44 46 56 36 40 54
7.25844 44 54 56 46 40 36
7.25844 56 36 40 46 44 54
7.25844 56 36 40 54 44 46
7.25844 56 36 44 46 40 54
7.25844 56 36 44 54 40 46
7.25844 56 46 44 54 40 36

8.46667 = 3.00mm 0.00106 1:8002
8.46561 36 40 54 48 56 60
8.46561 36 40 56 16 18 60
8.46561 54 24 56 40 18 60
8.46561 54 32 56 40 24 60
8.46561 54 40 56 24 18 60
8.46561 54 40 56 32 24 60
8.46561 54 48 56 40 36 60
8.46561 56 16 18 40 36 60
8.46561 56 16 36 40 18 60
8.46561 56 24 54 40 18 60
8.46561 56 32 54 40 24 60
8.46561 56 40 54 24 18 60
8.46561 56 40 54 32 24 60
8.46561 56 40 54 48 36 60
8.46561 56 48 54 40 36 60
8.46561 56 60 54 48 36 40

8.46561 72 32 56 40 18 60
8.46561 72 40 56 32 18 60
8.46561 72 60 56 32 18 40
10.16000 = 2.50mm 0.00127 1:8002
10.15873 32 32 36 64 56 40
10.15873 36 32 32 64 56 40
10.15873 36 40 54 48 56 72
10.15873 36 40 56 16 18 72
10.15873 36 40 56 24 18 48
10.15873 36 40 56 24 24 64
10.15873 36 40 56 32 24 48
10.15873 36 40 56 32 32 64
10.15873 36 48 56 16 18 60
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10.15873 48 32 36 60 56 64
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10.15873 54 16 18 60 56 72
10.15873 54 16 18 72 56 60
10.15873 54 24 18 72 56 40
10.15873 54 24 24 64 56 60
10.15873 54 24 56 40 16 64
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10.15873 54 32 32 64 56 60
10.15873 54 32 36 60 56 72
10.15873 54 32 56 32 16 60
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10.15873 54 40 56 24 16 64
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10.15873 54 48 56 32 16 40
10.15873 54 48 56 32 24 60
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10.15873 56 60 72 24 18 64
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10.15873 56 64 72 24 18 60
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12.70000 = 2.00mm 0.00159 1:8002

12.69841 36 40 56 24 18 60
12.69841 36 40 56 32 24 60
12.69841 48 32 56 40 18 60
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12.69841 56 60 54 40 24 48
12.69841 72 48 56 40 18 60
12.69841 72 60 56 40 18 48
12.69841 72 60 56 40 24 64
12.69841 72 64 56 40 24 60

14.51429 = 1.75mm 0.00260 1:5588

14.51688 44 54 56 46 40 72
14.51688 56 46 44 54 40 72

16.93333 = 1.50mm 0.00212 1:8002

16.93122 36 40 56 32 18 60
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16.93122 54 48 56 40 18 60
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16.93122 54 64 56 40 24 60
16.93122 56 32 36 40 18 60

16.93122 56 40 36 32 18 60
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16.93122 56 48 54 40 18 60
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16.93122 56 60 54 40 24 64
16.93122 56 64 54 40 24 60
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20.32000 = 1.25mm 0.00254 1:8002

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20.31746 56 48 54 40 16 64
20.31746 56 48 54 40 18 72
20.31746 56 60 54 32 16 64
20.31746 56 60 54 32 18 72
20.31746 56 60 54 36 18 64
20.31746 56 60 54 48 24 64

20.31746 56 64 54 32 16 60
20.31746 56 64 54 36 18 60
20.31746 56 64 54 40 16 48
20.31746 56 64 54 40 24 72
20.31746 56 64 54 48 24 60

25.40000 = 1.00mm 0.00317 1:8002

25.39683 24 60 56 32 18 40
25.39683 36 48 56 40 18 60
25.39683 36 60 56 40 18 48
25.39683 36 60 56 40 24 64
25.39683 36 64 56 40 24 60
25.39683 48 60 56 40 18 64
25.39683 48 64 56 40 18 60
25.39683 54 60 56 40 16 64
25.39683 54 60 56 40 18 72
25.39683 54 64 56 40 16 60
25.39683 54 72 56 40 18 60
25.39683 56 32 24 40 18 60
25.39683 56 40 24 60 36 64
25.39683 56 40 24 64 36 60
25.39683 56 40 36 48 18 60
25.39683 56 40 36 60 24 64
25.39683 56 40 36 64 24 60
25.39683 56 48 36 40 18 60
25.39683 56 60 48 40 18 64
25.39683 56 60 54 40 16 64
25.39683 56 60 54 40 18 72
25.39683 56 64 48 40 18 60
25.39683 56 64 54 40 16 60

31.75000 = 0.80mm 0.00568 1:5588

31.75568 32 36 44 46 16 54
31.75568 32 46 44 36 16 54
31.75568 32 46 44 54 32 72
31.75568 32 54 44 36 16 46
31.75568 44 36 32 46 16 54
31.75568 44 46 32 36 16 54
31.75568 44 46 32 54 32 72
31.75568 64 46 44 54 16 72
31.75568 64 54 44 46 16 72

33.86667 = 0.75mm 0.00423 1:8002

33.86243 36 60 56 40 18 64
33.86243 36 64 56 40 18 60
33.86243 56 40 18 64 36 60
33.86243 56 40 36 60 18 64

36.28571 = 0.70mm 0.00649 1:5588

36.29221 44 54 56 46 16 72
36.29221 44 72 56 46 16 54
36.29221 56 46 44 54 16 72
36.29221 56 54 44 46 16 72

42.33333 = 0.60mm 0.00758 1:5588

42.34091 16 48 44 46 32 54
42.34091 16 48 44 54 32 46
42.34091 16 54 44 48 32 46
42.34091 24 46 44 36 16 54
42.34091 24 46 44 54 32 72
42.34091 24 54 44 36 16 46
42.34091 32 36 44 46 16 72
42.34091 32 46 24 72 44 54

| | | | | | | | | | | | | | |
|----------|----|--------|---------|--------|----|----|-----------|----|--------|---------|--------|----|----|
| 42.34091 | 32 | 46 | 44 | 36 | 16 | 72 | 56.45455 | 44 | 46 | 32 | 54 | 16 | 64 |
| 42.34091 | 32 | 46 | 44 | 48 | 16 | 54 | 56.45455 | 44 | 46 | 32 | 54 | 18 | 72 |
| 42.34091 | 32 | 46 | 44 | 54 | 24 | 72 | 56.45455 | 44 | 46 | 36 | 54 | 16 | 72 |
| 42.34091 | 32 | 48 | 44 | 46 | 16 | 54 | 56.45455 | 44 | 46 | 40 | 60 | 16 | 72 |
| 42.34091 | 32 | 54 | 44 | 46 | 24 | 72 | 56.45455 | 44 | 48 | 24 | 46 | 16 | 54 |
| 42.34091 | 40 | 46 | 44 | 54 | 16 | 60 | 56.45455 | 44 | 48 | 32 | 46 | 16 | 72 |
| 42.34091 | 40 | 54 | 44 | 46 | 16 | 60 | 56.45455 | 44 | 54 | 32 | 46 | 16 | 64 |
| 42.34091 | 40 | 60 | 44 | 46 | 16 | 54 | 56.45455 | 44 | 54 | 32 | 46 | 18 | 72 |
| 42.34091 | 44 | 36 | 24 | 46 | 16 | 54 | 56.45455 | 44 | 54 | 36 | 46 | 16 | 72 |
| 42.34091 | 44 | 36 | 32 | 46 | 16 | 72 | 56.45455 | 44 | 60 | 40 | 46 | 16 | 72 |
| 42.34091 | 44 | 46 | 32 | 36 | 16 | 72 | | | | | | | |
| 42.34091 | 44 | 46 | 32 | 48 | 16 | 54 | 63.50000 | = | 0.40mm | 0.01136 | 1:5588 | | |
| 42.34091 | 44 | 46 | 32 | 54 | 24 | 72 | 63.51136 | 32 | 46 | 44 | 54 | 16 | 72 |
| 42.34091 | 44 | 46 | 40 | 54 | 16 | 60 | 63.51136 | 32 | 54 | 44 | 46 | 16 | 72 |
| 42.34091 | 44 | 46 | 48 | 54 | 16 | 72 | 63.51136 | 44 | 46 | 32 | 54 | 16 | 72 |
| 42.34091 | 44 | 48 | 32 | 46 | 16 | 54 | 63.51136 | 44 | 54 | 32 | 46 | 16 | 72 |
| 42.34091 | 44 | 54 | 40 | 46 | 16 | 60 | | | | | | | |
| 42.34091 | 44 | 54 | 48 | 46 | 16 | 72 | 72.57143 | = | 0.35mm | 0.06349 | 1:1143 | | |
| 42.34091 | 44 | 60 | 40 | 46 | 16 | 54 | 72.63492 | 16 | 64 | 56 | 44 | 18 | 52 |
| 42.34091 | 44 | 72 | 48 | 46 | 16 | 54 | 72.63492 | 18 | 64 | 56 | 44 | 16 | 52 |
| 42.34091 | 48 | 46 | 44 | 54 | 16 | 72 | 72.63492 | 56 | 44 | 16 | 52 | 18 | 64 |
| 42.34091 | 48 | 54 | 44 | 46 | 16 | 72 | 72.63492 | 56 | 44 | 18 | 52 | 16 | 64 |
| | | | | | | | | | | | | | |
| 50.80000 | = | 0.50mm | 0.00635 | 1:8002 | | | 84.66667 | = | 0.30mm | 0.01515 | 1:5588 | | |
| 50.79365 | 18 | 60 | 56 | 40 | 24 | 64 | 84.68182 | 16 | 54 | 44 | 46 | 24 | 72 |
| 50.79365 | 18 | 64 | 56 | 40 | 24 | 60 | 84.68182 | 24 | 46 | 44 | 54 | 16 | 72 |
| 50.79365 | 24 | 60 | 56 | 40 | 18 | 64 | 84.68182 | 24 | 54 | 44 | 46 | 16 | 72 |
| 50.79365 | 24 | 64 | 56 | 40 | 18 | 60 | 84.68182 | 44 | 46 | 24 | 54 | 16 | 72 |
| 50.79365 | 56 | 40 | 18 | 60 | 24 | 64 | | | | | | | |
| 50.79365 | 56 | 40 | 18 | 64 | 24 | 60 | 101.60000 | = | 0.25mm | 0.06154 | 1:1651 | | |
| 50.79365 | 56 | 40 | 24 | 60 | 18 | 64 | 101.53846 | 16 | 60 | 52 | 44 | 18 | 72 |
| | | | | | | | 101.53846 | 16 | 72 | 52 | 44 | 18 | 60 |
| 56.44444 | = | 0.45mm | 0.01010 | 1:5588 | | | 101.53846 | 18 | 60 | 52 | 44 | 16 | 72 |
| 56.45455 | 16 | 48 | 44 | 46 | 24 | 54 | 101.53846 | 18 | 72 | 52 | 44 | 16 | 60 |
| 56.45455 | 16 | 48 | 44 | 46 | 32 | 72 | 101.53846 | 52 | 44 | 16 | 60 | 18 | 72 |
| 56.45455 | 16 | 54 | 44 | 36 | 18 | 46 | 101.53846 | 52 | 44 | 18 | 60 | 16 | 72 |
| 56.45455 | 16 | 54 | 44 | 46 | 24 | 48 | | | | | | | |
| 56.45455 | 16 | 54 | 44 | 48 | 24 | 46 | 127.00000 | = | 0.20mm | 0.11111 | 1:1143 | | |
| 56.45455 | 18 | 46 | 44 | 36 | 16 | 54 | 127.11111 | 16 | 52 | 32 | 44 | 18 | 64 |
| 56.45455 | 18 | 46 | 44 | 54 | 32 | 72 | 127.11111 | 16 | 52 | 36 | 44 | 18 | 72 |
| 56.45455 | 18 | 54 | 44 | 36 | 16 | 46 | 127.11111 | 18 | 52 | 32 | 44 | 16 | 64 |
| 56.45455 | 24 | 46 | 24 | 72 | 44 | 54 | 127.11111 | 18 | 52 | 36 | 44 | 16 | 72 |
| 56.45455 | 24 | 46 | 44 | 36 | 16 | 72 | 127.11111 | 24 | 44 | 18 | 48 | 16 | 52 |
| 56.45455 | 24 | 46 | 44 | 48 | 16 | 54 | 127.11111 | 24 | 44 | 24 | 52 | 16 | 64 |
| 56.45455 | 24 | 46 | 44 | 54 | 24 | 72 | 127.11111 | 24 | 44 | 24 | 52 | 18 | 72 |
| 56.45455 | 24 | 48 | 44 | 46 | 16 | 54 | 127.11111 | 32 | 44 | 16 | 52 | 18 | 64 |
| 56.45455 | 24 | 54 | 44 | 46 | 24 | 72 | 127.11111 | 32 | 44 | 18 | 52 | 16 | 64 |
| 56.45455 | 32 | 46 | 44 | 48 | 16 | 72 | 127.11111 | 36 | 44 | 16 | 52 | 18 | 72 |
| 56.45455 | 32 | 46 | 44 | 54 | 16 | 64 | 127.11111 | 36 | 44 | 18 | 52 | 16 | 72 |
| 56.45455 | 32 | 46 | 44 | 54 | 18 | 72 | | | | | | | |
| 56.45455 | 32 | 48 | 44 | 46 | 16 | 72 | | | | | | | |
| 56.45455 | 32 | 54 | 44 | 46 | 16 | 64 | | | | | | | |
| 56.45455 | 32 | 54 | 44 | 46 | 18 | 72 | | | | | | | |
| 56.45455 | 32 | 64 | 44 | 46 | 16 | 54 | | | | | | | |
| 56.45455 | 36 | 46 | 44 | 54 | 16 | 72 | | | | | | | |
| 56.45455 | 36 | 54 | 44 | 46 | 16 | 72 | | | | | | | |
| 56.45455 | 40 | 60 | 44 | 46 | 16 | 72 | | | | | | | |
| 56.45455 | 44 | 36 | 16 | 46 | 18 | 54 | | | | | | | |
| 56.45455 | 44 | 36 | 18 | 46 | 16 | 54 | | | | | | | |
| 56.45455 | 44 | 36 | 24 | 46 | 16 | 72 | | | | | | | |
| 56.45455 | 44 | 46 | 24 | 48 | 16 | 54 | | | | | | | |
| 56.45455 | 44 | 46 | 24 | 54 | 24 | 72 | | | | | | | |
| 56.45455 | 44 | 46 | 32 | 48 | 16 | 72 | | | | | | | |