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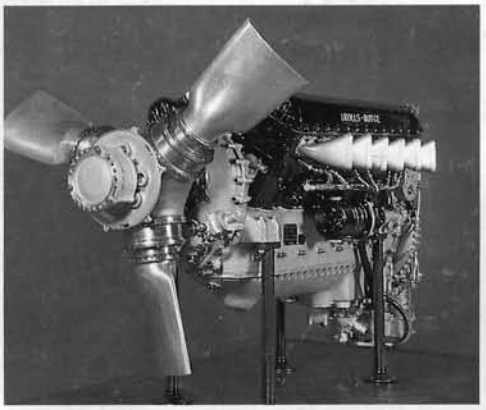

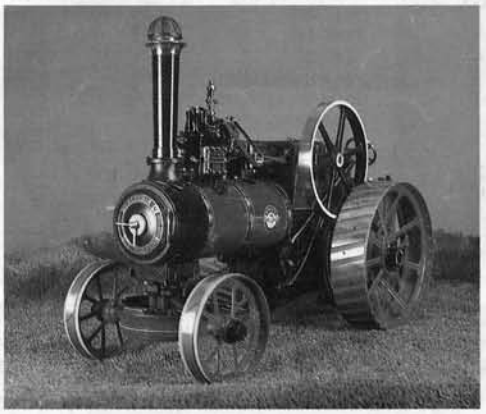

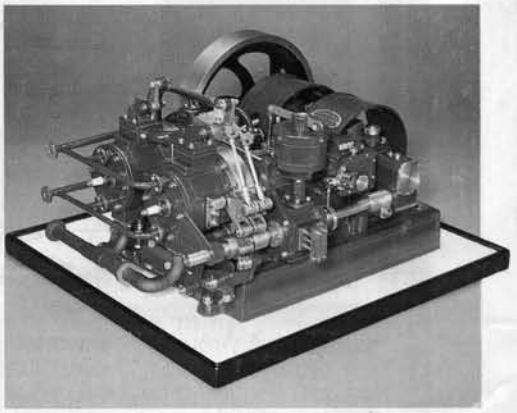

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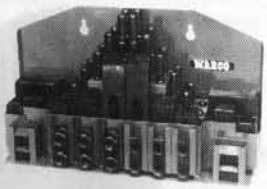

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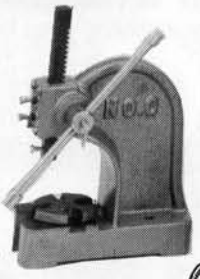

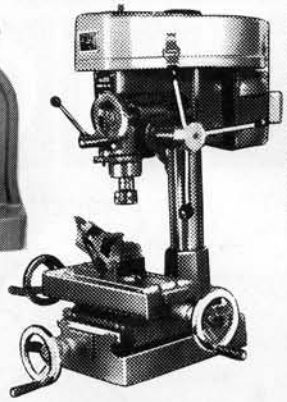

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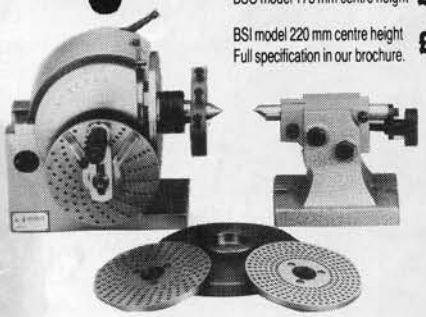

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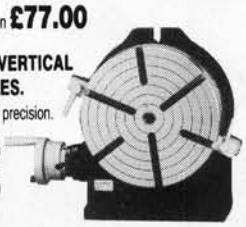

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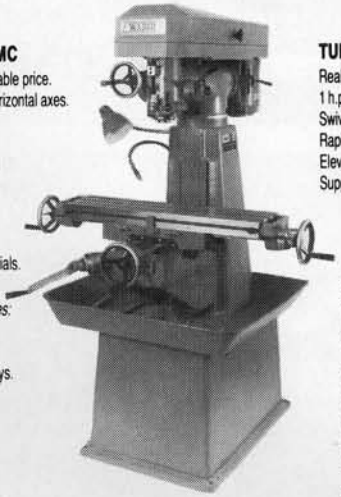

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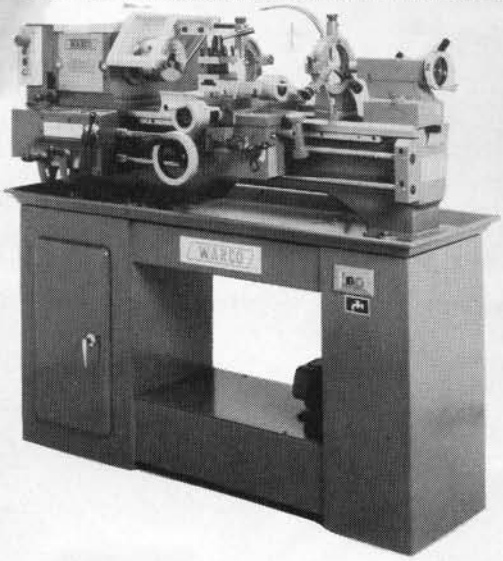

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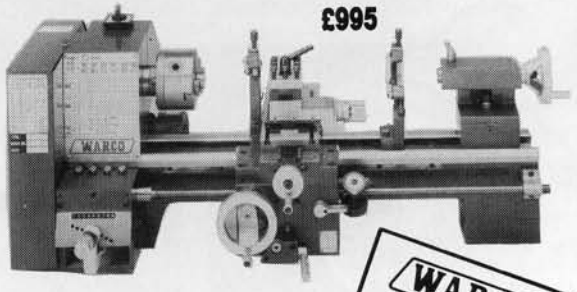

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World of MODEL ENGINEERING

CONTENTS

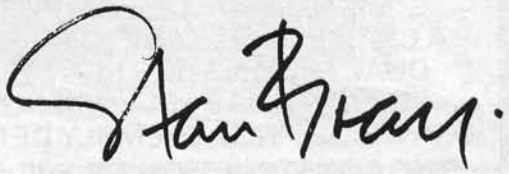
INTRODUCTION

Model engineering is an old-established hobby and has been practised in some form or another since pre-Roman days. At present, it is very much a growth hobby. It is mainly, and always has been, practised by older members of the community which is, I think, rather surprising these days as the cost of one of the smaller lathes is no greater than that of a home computer. Many young men and women can manage the purchase price of a home computer, so why not, I wonder, the lathe?

A lathe is always the main basis of model engineering. With this equipment almost any machining operations can be carried out, providing of course that it is not too large for the size of the lathe. It is understandable that younger people do not want to make models of steam engines which they can hardly remember, but there are many more modern counterparts in transport engineering such as cranes, fork-lift trucks, excavators or the very large range of motor vehicles that are part of everyday life.

A major problem with any hobby is knowing *what* to start with, or indeed, having started, *what* to make for the next project. This volume should assist in resolving any such problems.

If it encourages newcomers I will be specifically satisfied, but I am hoping that what follows will help many established modellers to understand more of their hobby and so resolve those little difficulties for which it is not always easy to find an answer.



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"World of Model Engineering" is printed in Great Britain by Garnett Print, Rotherham, with mono origination by Multiform Photosetting Ltd., Cardiff for the Proprietors and Publishers, Argus Specialist Publications Ltd., Hemel Hempstead, Hertfordshire. Distribution by SM Distributions Ltd.

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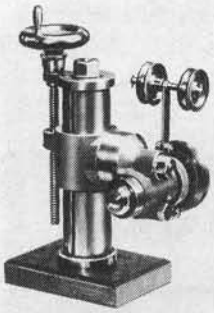

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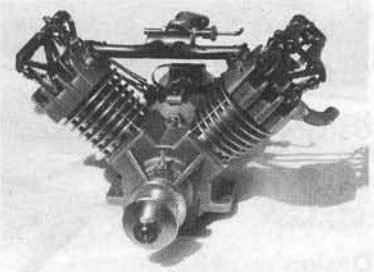

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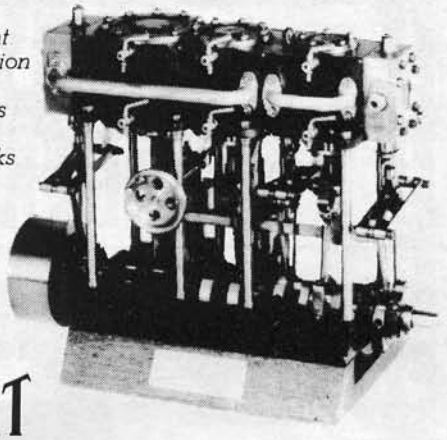

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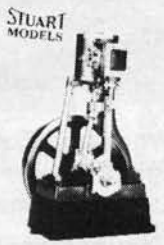

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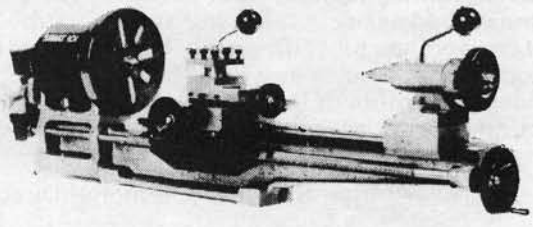

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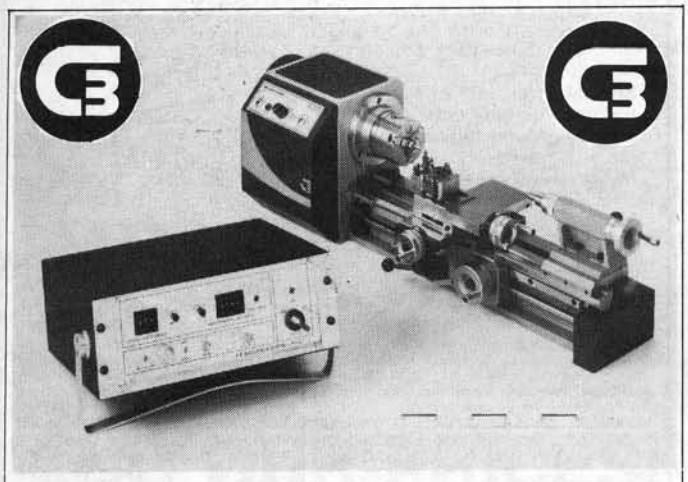

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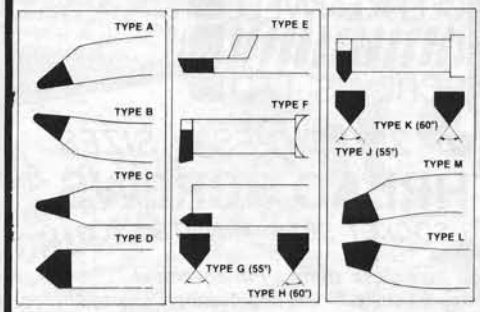

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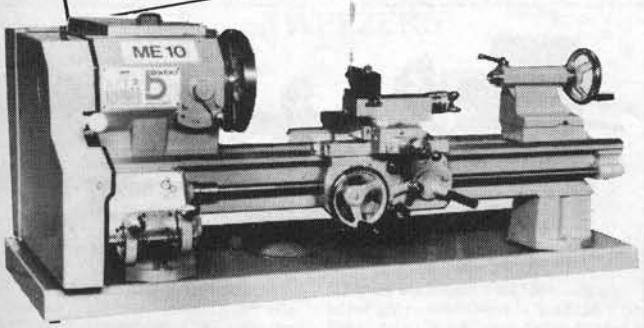

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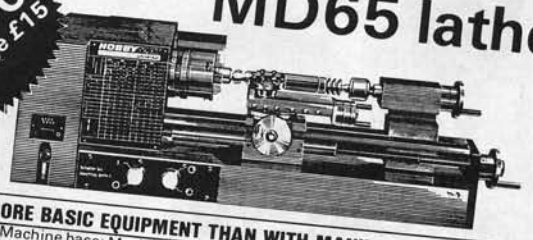

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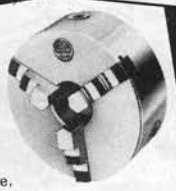

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50 — 75mm	£23.50	3 — 4"	£25.64

- ★ Flat Carbide measuring faces
- ★ Diameter of spindle 0.250" (6mm)
- ★ Cast iron frame with hammertone green enamel finish
- ★ Clamp lever

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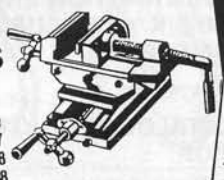

Jaw width	Price
3"	£23.57
4"	£27.48
6"	£45.88

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Plans, Plans, Plans!

O.K., so where do we start? The answer has got to be, with a plan or drawing of the subject to be modelled

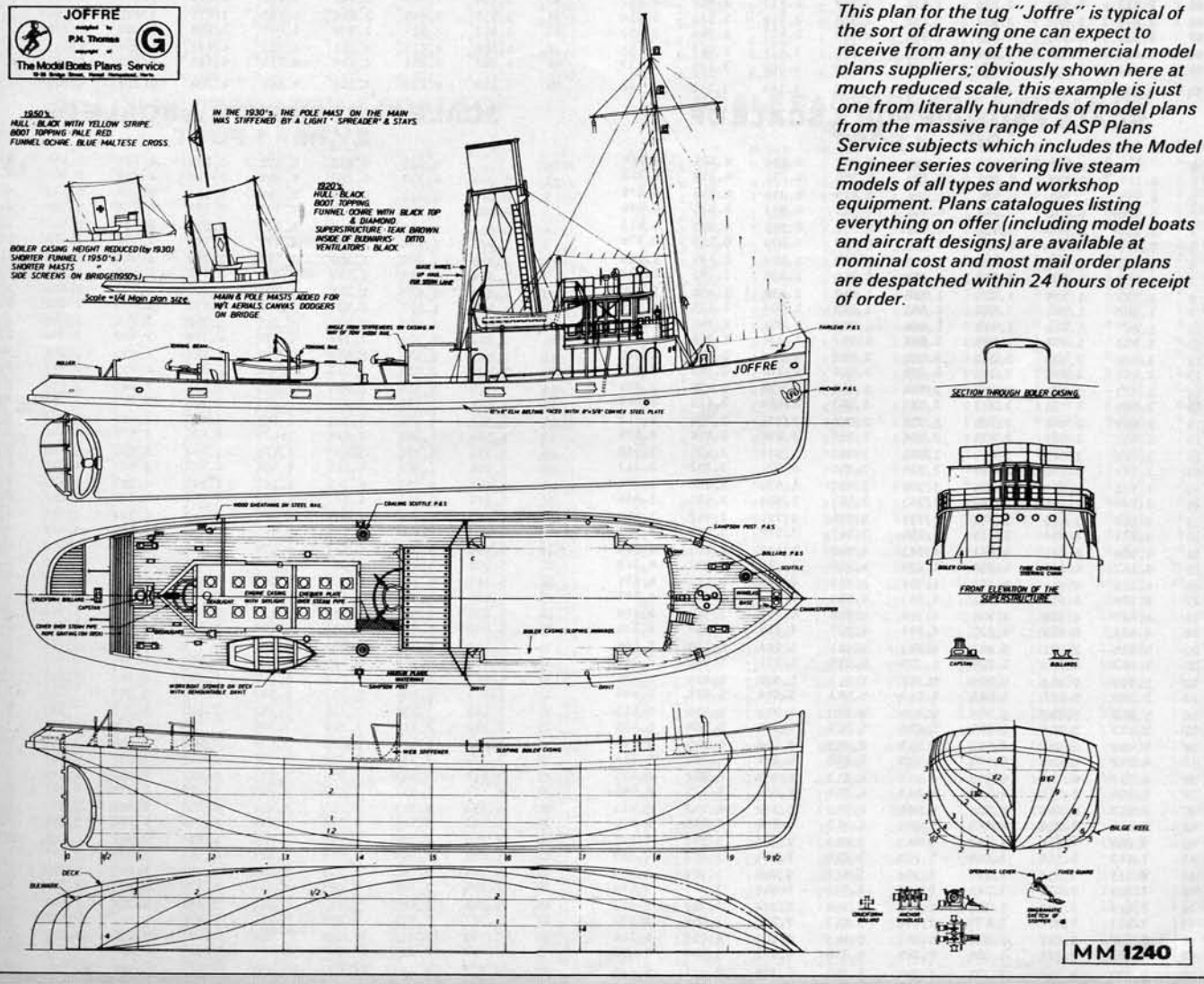
Whenever any form of modelling is contemplated then some form of plan or drawing will be required. In the case of most model engineering subjects we need not only an outline plan, but also plans of the various components that will go to make up the model.

There are hundreds of plans available that will enable us to construct most types of model and *Model Engineer* magazine has a very comprehensive Plans Service which is constantly being added to. The various model engineering suppliers also stock plans, and if they offer any particularly special model then they will hold plans for that. Don Young and T.E.E. Publishing can also supply some plans of model engineering subjects.

Another useful source of plans of model locomotives is Michael Breeze of Northborough, Peterborough who can supply quite a number of sets of drawings for a variety of locomotives, particularly those of the old London North Eastern Railway. Model boats are well taken care of both by ASP Ltd., and several other firms who, between them, supply highly detailed drawings of a very large number of ships.

So far I have only dealt with drawings to the required scale, but what if no such plans are available? In most instances a drawing of some sort can be obtained. The National Maritime Museum at Greenwich, for example, has plenty of plans of ships while the Science Museum in London has a whole range of drawings of stationary engines, cars, locomotives and a great number of other scientific items. Most of the industrial museums, particularly those in the larger towns, have drawings that they will be happy to supply. Frequently, when a firm closes down in their area, the museums often take the drawings over and a polite letter with a large stamped addressed envelope will usually obtain the required information. However, the museum is doing a favour in supplying what it can, so do not expect anything as a right . . .

The drawings of the old British Railway Companies have been taken over by the Oxford Publishing Company who can supply lists of the drawings available of which there are many hundreds. However, the drawings will not, of course, be to the scale you require. Some firms will be prepared to supply drawings of their products, but, again, asking them for copies is asking a favour and your approach should always bear this in mind. As far as locomotives are concerned there are numerous drawings available that have been prepared for small scale railways. ▶



This plan for the tug "Joffre" is typical of the sort of drawing one can expect to receive from any of the commercial model plans suppliers; obviously shown here at much reduced scale, this example is just one from literally hundreds of model plans from the massive range of ASP Plans Service subjects which includes the Model Engineer series covering live steam models of all types and workshop equipment. Plans catalogues listing everything on offer (including model boats and aircraft designs) are available at nominal cost and most mail order plans are despatched within 24 hours of receipt of order.

SCALE FACTORS FOR A SCALE OF ¾in. = 1 FOOT

0		0.008	0.016	0.023	0.031	0.039	0.047	0.055
1	0.063	0.070	0.078	0.086	0.094	0.102	0.109	0.117
2	0.125	0.133	0.141	0.148	0.156	0.164	0.172	0.180
3	0.188	0.195	0.203	0.211	0.219	0.227	0.234	0.242
4	0.250	0.258	0.266	0.273	0.281	0.289	0.297	0.305
5	0.313	0.320	0.328	0.336	0.344	0.352	0.359	0.367
6	0.375	0.383	0.391	0.398	0.406	0.414	0.422	0.430
7	0.438	0.445	0.453	0.461	0.469	0.477	0.484	0.492
8	0.500	0.508	0.516	0.523	0.531	0.539	0.547	0.555
9	0.563	0.570	0.578	0.586	0.594	0.602	0.609	0.617
10	0.625	0.633	0.641	0.648	0.656	0.664	0.672	0.680
11	0.688	0.695	0.703	0.711	0.719	0.727	0.734	0.742
12	0.750	0.758	0.766	0.773	0.781	0.789	0.797	0.805
13	0.813	0.820	0.828	0.836	0.844	0.852	0.859	0.867
14	0.875	0.883	0.891	0.898	0.906	0.914	0.922	0.930
15	0.938	0.945	0.953	0.961	0.969	0.977	0.984	0.992
16	1.000	1.008	1.016	1.023	1.031	1.039	1.047	1.055
17	1.063	1.070	1.078	1.086	1.094	1.102	1.109	1.117
18	1.125	1.133	1.141	1.148	1.156	1.164	1.172	1.180
19	1.188	1.195	1.203	1.211	1.219	1.227	1.234	1.242
20	1.250	1.258	1.266	1.273	1.281	1.289	1.297	1.305
21	1.313	1.320	1.328	1.336	1.344	1.352	1.359	1.367
22	1.375	1.383	1.391	1.398	1.406	1.414	1.422	1.430
23	1.438	1.445	1.453	1.461	1.469	1.477	1.484	1.492
24	1.500	1.508	1.516	1.523	1.531	1.539	1.547	1.555
25	1.563	1.570	1.578	1.586	1.594	1.602	1.609	1.617
26	1.625	1.633	1.641	1.648	1.656	1.664	1.672	1.680
27	1.688	1.695	1.703	1.711	1.719	1.727	1.734	1.742
28	1.750	1.758	1.766	1.773	1.781	1.789	1.797	1.805
29	1.813	1.820	1.828	1.836	1.844	1.852	1.859	1.867
30	1.875	1.883	1.891	1.898	1.906	1.914	1.922	1.930
31	1.938	1.945	1.953	1.961	1.969	1.977	1.984	1.992
32	2.000	2.008	2.016	2.023	2.031	2.039	2.047	2.055
33	2.063	2.070	2.078	2.086	2.094	2.102	2.109	2.117
34	2.125	2.133	2.141	2.148	2.156	2.164	2.172	2.180
35	2.188	2.195	2.203	2.211	2.219	2.227	2.234	2.242
36	2.250	2.258	2.266	2.273	2.281	2.289	2.297	2.305
37	2.313	2.320	2.328	2.336	2.344	2.352	2.359	2.367
38	2.375	2.383	2.391	2.398	2.406	2.414	2.422	2.430
39	2.438	2.445	2.453	2.461	2.469	2.477	2.484	2.492
40	2.500	2.508	2.516	2.523	2.531	2.539	2.547	2.555
41	2.563	2.570	2.578	2.586	2.594	2.602	2.609	2.617
42	2.625	2.633	2.641	2.648	2.656	2.664	2.672	2.680
43	2.688	2.695	2.703	2.711	2.719	2.727	2.734	2.742
44	2.750	2.758	2.766	2.773	2.781	2.789	2.797	2.805
45	2.813	2.820	2.828	2.836	2.844	2.852	2.859	2.867
46	2.875	2.883	2.891	2.898	2.906	2.914	2.922	2.930
47	2.938	2.945	2.953	2.961	2.969	2.977	2.984	2.992
48	3.000	3.008	3.016	3.023	3.031	3.039	3.047	3.055
49	3.063	3.070	3.078	3.086	3.094	3.102	3.109	3.117
50	3.125	3.133	3.141	3.148	3.156	3.164	3.172	3.180

SCALE FACTORS FOR A SCALE OF 1in. = 1 FOOT

0		0.010	0.021	0.031	0.042	0.052	0.063	0.073
1	0.083	0.094	0.104	0.115	0.125	0.135	0.146	0.156
2	0.167	0.177	0.188	0.198	0.208	0.219	0.229	0.240
3	0.250	0.260	0.271	0.281	0.292	0.302	0.313	0.323
4	0.333	0.344	0.354	0.365	0.375	0.385	0.396	0.406
5	0.417	0.427	0.438	0.448	0.458	0.469	0.479	0.490
6	0.500	0.510	0.521	0.531	0.542	0.552	0.563	0.573
7	0.583	0.594	0.604	0.615	0.625	0.635	0.646	0.656
8	0.667	0.677	0.688	0.698	0.708	0.719	0.729	0.740
9	0.750	0.760	0.771	0.781	0.792	0.802	0.813	0.823
10	0.833	0.844	0.854	0.865	0.875	0.885	0.896	0.906
11	0.917	0.927	0.938	0.948	0.958	0.969	0.979	0.990
12	1.000	1.010	1.021	1.031	1.042	1.052	1.063	1.073
13	1.083	1.094	1.104	1.115	1.125	1.135	1.146	1.156
14	1.167	1.177	1.188	1.198	1.208	1.219	1.229	1.240
15	1.250	1.260	1.271	1.281	1.292	1.302	1.313	1.323
16	1.333	1.344	1.354	1.365	1.375	1.385	1.396	1.406
17	1.417	1.427	1.438	1.448	1.458	1.469	1.479	1.490
18	1.500	1.510	1.521	1.531	1.542	1.552	1.563	1.573
19	1.583	1.594	1.604	1.615	1.625	1.635	1.646	1.656
20	1.667	1.677	1.688	1.698	1.708	1.719	1.729	1.740
21	1.750	1.760	1.771	1.781	1.792	1.802	1.813	1.823
22	1.833	1.844	1.854	1.865	1.875	1.885	1.896	1.906
23	1.917	1.927	1.938	1.948	1.958	1.969	1.979	1.990
24	2.000	2.010	2.021	2.031	2.042	2.052	2.063	2.073
25	2.083	2.094	2.104	2.115	2.125	2.135	2.146	2.156
26	2.167	2.177	2.188	2.198	2.208	2.219	2.229	2.240
27	2.250	2.260	2.271	2.281	2.292	2.302	2.313	2.323
28	2.333	2.344	2.354	2.365	2.375	2.385	2.396	2.406
29	2.417	2.427	2.438	2.448	2.458	2.469	2.479	2.490
30	2.500	2.510	2.521	2.531	2.542	2.552	2.563	2.573
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32	2.667	2.677	2.688	2.698	2.708	2.719	2.729	2.740
33	2.750	2.760	2.771	2.781	2.792	2.802	2.813	2.823
34	2.833	2.844	2.854	2.865	2.875	2.885	2.896	2.906
35	2.917	2.927	2.938	2.948	2.958	2.969	2.979	2.990
36	3.000	3.010	3.021	3.031	3.042	3.052	3.063	3.073
37	3.083	3.094	3.104	3.115	3.125	3.135	3.146	3.156
38	3.167	3.177	3.188	3.198	3.208	3.219	3.229	3.240
39	3.250	3.260	3.271	3.281	3.292	3.302	3.313	3.323
40	3.333	3.344	3.354	3.365	3.375	3.385	3.396	3.406
41	3.417	3.427	3.438	3.448	3.458	3.469	3.479	3.490
42	3.500	3.510	3.521	3.531	3.542	3.552	3.563	3.573
43	3.583	3.594	3.604	3.615	3.625	3.635	3.646	3.656
44	3.667	3.677	3.688	3.698	3.708	3.719	3.729	3.740
45	3.750	3.760	3.771	3.781	3.792	3.802	3.813	3.823
46	3.833	3.844	3.854	3.865	3.875	3.885	3.896	3.906
47	3.917	3.927	3.938	3.948	3.958	3.969	3.979	3.990
48	4.000	4.010	4.021	4.031	4.042	4.052	4.063	4.073
49	4.083	4.094	4.104	4.115	4.125	4.135	4.146	4.156
50	4.167	4.177	4.188	4.198	4.208	4.219	4.229	4.240

SCALE FACTORS FOR A SCALE OF 2in. = 1 FOOT

0		0.021	0.042	0.063	0.083	0.104	0.125	0.146
1	0.167	0.188	0.208	0.229	0.250	0.271	0.292	0.313
2	0.333	0.354	0.375	0.396	0.417	0.438	0.458	0.479
3	0.500	0.521	0.542	0.563	0.583	0.604	0.625	0.646
4	0.667	0.688	0.708	0.729	0.750	0.771	0.792	0.813
5	0.833	0.854	0.875	0.896	0.917	0.938	0.958	0.979
6	1.000	1.021	1.042	1.063	1.083	1.104	1.125	1.146
7	1.167	1.188	1.208	1.229	1.250	1.271	1.292	1.313
8	1.333	1.354	1.375	1.396	1.417	1.438	1.458	1.479
9	1.500	1.521	1.542	1.563	1.583	1.604	1.625	1.646
10	1.667	1.688	1.708	1.729	1.750	1.771	1.792	1.813
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19	3.167	3.188	3.208	3.229	3.250	3.271	3.292	3.313
20	3.333	3.354	3.375	3.396	3.417	3.438	3.458	3.479
21	3.500	3.521	3.542	3.563	3.583	3.604	3.625	3.646
22	3.667	3.688	3.708	3.729	3.750	3.771	3.792	3.813
23	3.833	3.854	3.875	3.896	3.917	3.938	3.958	3.979
24	4.000	4.021	4.042	4.063	4.083	4.104	4.125	4.146
25	4.167	4.188	4.208	4.229	4.250	4.271	4.292	4.313
26	4.333	4.354	4.375	4.396	4.417	4.438	4.458	4.479
27	4.500	4.521	4.542	4.563	4.583	4.604	4.625	4.646
28	4.667	4.688	4.708	4.729	4.750	4.771	4.792	4.813
29	4.833	4.854	4.875	4.896	4.917	4.938	4.958	4.979
30	5.000	5.021	5.042	5.063	5.083	5.104	5.125	5.146
31	5.167	5.188	5.208	5.229	5.250	5.271	5.292	5.313
32	5.333	5.354	5.375	5.396	5.417	5.438	5.458	5.479
33	5.500	5.521	5.542	5.563	5.583	5.604	5.625	5.646
34	5.667	5.688	5.708	5.729	5.750	5.771	5.792	5.813
35	5.833	5.854	5.875	5.896	5.917	5.938	5.958	5.979
36	6.000	6.021	6.042	6.063	6.083	6.104	6.125	6.146
37	6.167	6.188	6.208	6.229	6.250	6.271	6.292	6.313
38	6.333	6.354	6.375	6.396	6.417	6.438	6.458	6.479
39	6.500	6.521	6.542	6.563	6.583	6.604	6.625	6.646
40	6.667	6.688	6.708	6.729	6.750	6.771	6.792	6.813
41	6.833	6.854	6.875	6.896	6.917	6.938	6.958	6.979
42	7.000	7.021	7.042	7.063	7.083	7.104	7.125	7.146
43	7.167	7.188	7.208	7.229	7.250	7.271	7.292	7.313
44	7.333	7.354	7.375	7.396	7.417	7.438	7.458	7.479
45	7.500	7.521	7.542	7.563	7.583	7.604	7.625	7.646
46	7.667	7.688	7.708	7.729	7.750	7.771	7.792	7.813
47	7.833	7.854	7.875	7.896	7.917	7.938	7.958	7.979
48	8.000	8.021	8.042	8.063	8.083	8.104	8.125	8.146
49	8.167	8.188	8.208	8.229	8.250	8.271	8.292	8.313
50	8.333	8.354	8.375	8.396	8.417	8.438	8.458	8.479

SCALE FACTORS FOR A SCALE OF 2½in. = 1 FOOT

0		0.026	0.052	0.078	0.104	0.130	0.156	0.182
1	0.208	0.234	0.260	0.286	0.313	0.339	0.365	0.391
2	0.417	0.443	0.469	0.495	0.521	0.547	0.573	0.599
3	0.625	0.651	0.677	0.703	0.729	0.755	0.781	0.807
4	0.833	0.859	0.885	0.911	0.937	0.964	0.990	1.016
5	1.042	1.068	1.094	1.120	1.146	1.172	1.198	1.224
6	1.250	1.276	1.302	1.328	1.354	1.380	1.406	1.432
7	1.458	1.484	1.510	1.536	1.562	1.589	1.615	1.641
8	1.667	1.693	1.719	1.745	1.771	1.797	1.823	1.849
9	1.875	1.901	1.927	1.953	1.979	2.005	2.031	2.057
10	2.083	2.109	2.135	2.161	2.188	2.214	2.240	2.266
11	2.292	2.318	2.344	2.370	2.396	2.422	2.448	2.474
12	2.500	2.526	2.552	2.578	2.604	2.630	2.656	2.682
13	2.708	2.734	2.760	2.786	2.813	2.839	2.865	2.891
14	2.917	2.943	2.969	2.995	3.021	3.047	3.073	3.099
15	3.125	3.151	3.177	3.203	3.229	3.255	3.281	3.307
16	3.333	3.359	3.385	3.411	3.437	3.464	3.490	3.516
17	3.542	3.568	3.594	3.620	3.646	3.672	3.698	3.724
18	3.750	3.776	3.802	3.828	3.854	3.880	3.906	3.932
19	3.958	3.984	4.010	4.036	4.063	4.089	4.115	4.141
20	4.167	4.193	4.219	4.245	4.271	4.297	4.323	4.349
21	4.375	4.401	4.427	4.453	4.479	4.505	4.531	4.557
22	4.583	4.609	4.635	4.661	4.688	4.714	4.740	4.766
23	4.792	4.818	4.844	4.870	4.896	4.922	4.948	4.974
24	5.000	5.026	5.052	5.078	5.104	5.130	5.156	5.182
25	5.208	5.234	5.260	5.286	5.313	5.339	5.365	5.391
26	5.417	5.443	5.469	5.495	5.521	5.547	5.573	5.599
27	5.625	5.651	5.677	5.703	5.729	5.755	5.781	5.807
28	5.833	5.859	5.885	5.911	5.938	5.964	5.990	6.016
29	6.042	6.068	6.094	6.120	6.146	6.172	6.198	6.224
30	6.250	6.276	6.302	6.328	6.354	6.380	6.406	6.432
31	6.458	6.484	6.510	6.536	6.562	6.589	6.615	6.641
32	6.667	6.693	6.719	6.745	6.771	6.797	6.823	6.849
33	6.875	6.901	6.927	6.953	6.979	7.005	7.031	7.057
34	7.083	7.109	7.135	7.161	7.187	7.214	7.240	7.266
35	7.292	7.318	7.344	7.370	7.396	7.422	7.448	7.474
36	7.500	7.526	7.552	7.578	7.604	7.630	7.656	7.682
37	7.708	7.734	7.760	7.786	7.812	7.839	7.865	7.891
38	7.917	7.943	7.969	7.995	8.021	8.047	8.073	8.099
39	8.125	8.151	8.177	8.203	8.229	8.255	8.281	8.307
40	8.333	8.359	8.385	8.411	8.438	8.464	8.490	8.516
41	8.542	8.568	8.594	8.620	8.646	8.672	8.698	8.724
42	8.750	8.776	8.802	8.828	8.854	8.880	8.906	8.932
43	8.958	8.984	9.010	9.036	9.063	9.089	9.115	9.141
44	9.167	9.193	9.219	9.245	9.271	9.297	9.323	9.349
45	9.375	9.401	9.427	9.453	9.479	9.505	9.531	9.557
46	9.583	9.609	9.635	9.661	9.688	9.714	9.740	9.766
47	9.792	9.818	9.844	9.870	9.896	9.922	9.948	9.974
48	10.000	10.026	10.052	10.078	10.104	10.130	10.156	10.182
49	10.208	10.234	10.260	10.286	10.313	10.339	10.365	10.391
50	10.417	10.443	10.469	10.495	10.521	10.547	10.573	10.599

SCALE FACTORS FOR A SCALE OF 1 1/16 in. = 1 FOOT

0		0.011	0.022	0.033	0.044	0.055	0.066	0.077
1	0.089	0.100	0.111	0.122	0.133	0.144	0.155	0.166
2	0.177	0.188	0.199	0.210	0.221	0.232	0.243	0.255
3	0.266	0.277	0.288	0.299	0.310	0.321	0.332	0.343
4	0.354	0.365	0.376	0.387	0.398	0.410	0.421	0.432
5	0.443	0.454	0.465	0.476	0.487	0.498	0.509	0.520
6	0.531	0.542	0.553	0.564	0.576	0.587	0.598	0.609
7	0.620	0.631	0.642	0.653	0.664	0.675	0.686	0.697
8	0.708	0.719	0.730	0.742	0.753	0.764	0.775	0.786
9	0.797	0.808	0.819	0.830	0.841	0.852	0.863	0.874
10	0.885	0.896	0.908	0.919	0.930	0.941	0.952	0.963
11	0.974	0.985	0.996	1.007	1.018	1.029	1.040	1.051
12	1.063	1.074	1.085	1.096	1.107	1.118	1.129	1.140
13	1.151	1.162	1.173	1.184	1.195	1.206	1.217	1.229
14	1.240	1.251	1.262	1.273	1.284	1.295	1.306	1.317
15	1.328	1.339	1.350	1.361	1.372	1.383	1.395	1.406
16	1.417	1.428	1.439	1.450	1.461	1.472	1.483	1.494
17	1.505	1.516	1.527	1.538	1.549	1.561	1.572	1.583
18	1.594	1.605	1.616	1.627	1.638	1.649	1.660	1.671
19	1.682	1.693	1.704	1.715	1.727	1.738	1.749	1.760
20	1.771	1.782	1.793	1.804	1.815	1.826	1.837	1.848
21	1.859	1.870	1.882	1.893	1.904	1.915	1.926	1.937
22	1.948	1.959	1.970	1.981	1.992	2.003	2.014	2.025
23	2.036	2.048	2.059	2.070	2.081	2.092	2.103	2.114
24	2.125	2.136	2.147	2.158	2.169	2.180	2.191	2.202
25	2.214	2.225	2.236	2.247	2.258	2.269	2.280	2.291
26	2.302	2.313	2.324	2.335	2.346	2.357	2.368	2.380
27	2.391	2.402	2.413	2.424	2.435	2.446	2.457	2.468
28	2.479	2.490	2.501	2.512	2.523	2.535	2.546	2.557
29	2.568	2.579	2.590	2.601	2.612	2.623	2.634	2.645
30	2.656	2.667	2.678	2.689	2.701	2.712	2.723	2.734
31	2.745	2.756	2.767	2.778	2.789	2.800	2.811	2.822
32	2.833	2.844	2.855	2.867	2.878	2.889	2.900	2.911
33	2.922	2.933	2.944	2.955	2.966	2.977	2.988	2.999
34	3.010	3.021	3.033	3.044	3.055	3.066	3.077	3.088
35	3.099	3.110	3.121	3.132	3.143	3.154	3.165	3.176
36	3.188	3.199	3.210	3.221	3.232	3.243	3.254	3.265
37	3.276	3.287	3.298	3.309	3.320	3.331	3.342	3.354
38	3.365	3.376	3.387	3.398	3.409	3.420	3.431	3.442
39	3.453	3.464	3.475	3.486	3.497	3.508	3.520	3.531
40	3.542	3.553	3.564	3.575	3.586	3.597	3.608	3.619
41	3.630	3.641	3.652	3.663	3.674	3.686	3.697	3.708
42	3.719	3.730	3.741	3.752	3.763	3.774	3.785	3.796
43	3.807	3.818	3.829	3.840	3.852	3.863	3.874	3.885
44	3.896	3.907	3.918	3.929	3.940	3.951	3.962	3.973
45	3.984	3.995	4.007	4.018	4.029	4.040	4.051	4.062
46	4.073	4.084	4.095	4.106	4.117	4.128	4.139	4.150
47	4.161	4.173	4.184	4.195	4.206	4.217	4.228	4.239
48	4.250	4.261	4.272	4.283	4.294	4.305	4.316	4.327
49	4.339	4.350	4.361	4.372	4.383	4.394	4.405	4.416
50	4.427	4.438	4.449	4.460	4.471	4.482	4.493	4.505

SCALE FACTORS FOR A SCALE OF 1 1/2 in. = 1 FOOT

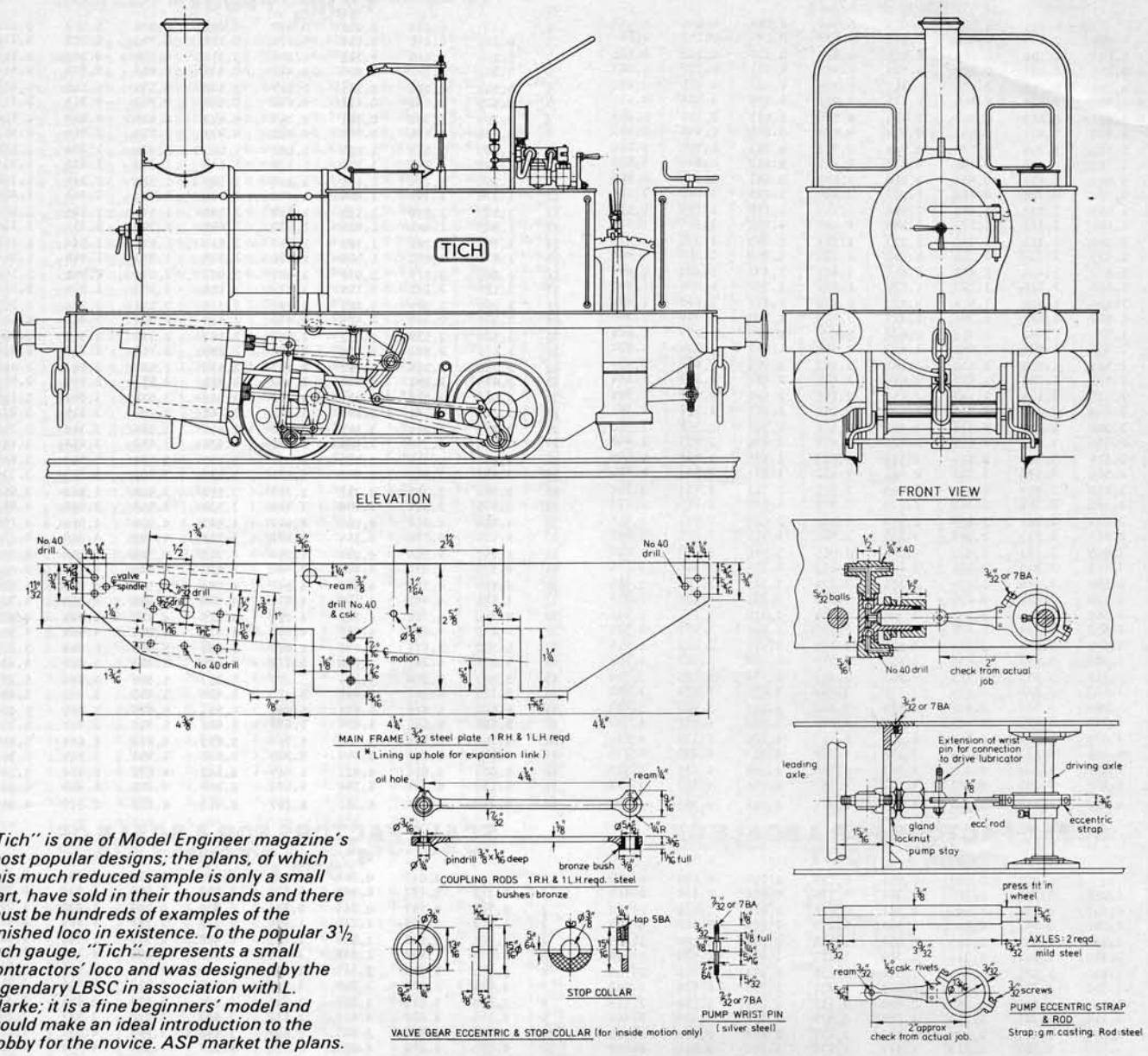
0		0.016	0.031	0.047	0.063	0.078	0.094	0.109
1	0.125	0.141	0.156	0.172	0.188	0.203	0.219	0.234
2	0.250	0.266	0.281	0.297	0.313	0.328	0.344	0.359
3	0.375	0.391	0.406	0.422	0.438	0.453	0.469	0.484
4	0.500	0.516	0.531	0.547	0.563	0.578	0.594	0.609
5	0.625	0.641	0.656	0.672	0.688	0.703	0.719	0.734
6	0.750	0.766	0.781	0.797	0.813	0.828	0.844	0.859
7	0.875	0.891	0.906	0.922	0.938	0.953	0.969	0.984
8	1.000	1.016	1.031	1.047	1.063	1.078	1.094	1.109
9	1.125	1.141	1.156	1.172	1.188	1.203	1.219	1.234
10	1.250	1.266	1.281	1.297	1.313	1.328	1.344	1.359
11	1.375	1.391	1.406	1.422	1.438	1.453	1.469	1.484
12	1.500	1.516	1.531	1.547	1.563	1.578	1.594	1.609
13	1.625	1.641	1.656	1.672	1.688	1.703	1.719	1.734
14	1.750	1.766	1.781	1.797	1.813	1.828	1.844	1.859
15	1.875	1.891	1.906	1.922	1.938	1.953	1.969	1.984
16	2.000	2.016	2.031	2.047	2.063	2.078	2.094	2.109
17	2.125	2.141	2.156	2.172	2.188	2.203	2.219	2.234
18	2.250	2.266	2.281	2.297	2.313	2.328	2.344	2.359
19	2.375	2.391	2.406	2.422	2.438	2.453	2.469	2.484
20	2.500	2.516	2.531	2.547	2.563	2.578	2.594	2.609
21	2.625	2.641	2.656	2.672	2.688	2.703	2.719	2.734
22	2.750	2.766	2.781	2.797	2.813	2.828	2.844	2.859
23	2.875	2.891	2.906	2.922	2.938	2.953	2.969	2.984
24	3.000	3.016	3.031	3.047	3.063	3.078	3.094	3.109
25	3.125	3.141	3.156	3.172	3.188	3.203	3.219	3.234
26	3.250	3.266	3.281	3.297	3.313	3.328	3.344	3.359
27	3.375	3.391	3.406	3.422	3.438	3.453	3.469	3.484
28	3.500	3.516	3.531	3.547	3.563	3.578	3.594	3.609
29	3.625	3.641	3.656	3.672	3.688	3.703	3.719	3.734
30	3.750	3.766	3.781	3.797	3.813	3.828	3.844	3.859
31	3.875	3.891	3.906	3.922	3.938	3.953	3.969	3.984
32	4.000	4.016	4.031	4.047	4.063	4.078	4.094	4.109
33	4.125	4.141	4.156	4.172	4.188	4.203	4.219	4.234
34	4.250	4.266	4.281	4.297	4.313	4.328	4.344	4.359
35	4.375	4.391	4.406	4.422	4.438	4.453	4.469	4.484
36	4.500	4.516	4.531	4.547	4.563	4.578	4.594	4.609
37	4.625	4.641	4.656	4.672	4.688	4.703	4.719	4.734
38	4.750	4.766	4.781	4.797	4.813	4.828	4.844	4.859
39	4.875	4.891	4.906	4.922	4.938	4.953	4.969	4.984
40	5.000	5.016	5.031	5.047	5.063	5.078	5.094	5.109
41	5.125	5.141	5.156	5.172	5.188	5.203	5.219	5.234
42	5.250	5.266	5.281	5.297	5.313	5.328	5.344	5.359
43	5.375	5.391	5.406	5.422	5.438	5.453	5.469	5.484
44	5.500	5.516	5.531	5.547	5.563	5.578	5.594	5.609
45	5.625	5.641	5.656	5.672	5.688	5.703	5.719	5.734
46	5.750	5.766	5.781	5.797	5.813	5.828	5.844	5.859
47	5.875	5.891	5.906	5.922	5.938	5.953	5.969	5.984
48	6.000	6.016	6.031	6.047	6.063	6.078	6.094	6.109
49	6.125	6.141	6.156	6.172	6.188	6.203	6.219	6.234
50	6.250	6.266	6.281	6.297	6.313	6.328	6.344	6.359

SCALE FACTORS FOR A SCALE OF 3in. = 1 FOOT

0		0.031	0.063	0.094	0.125	0.156	0.188	0.219
1	0.250	0.281	0.313	0.344	0.375	0.406	0.438	0.469
2	0.500	0.531	0.563	0.594	0.625	0.656	0.688	0.719
3	0.750	0.781	0.813	0.844	0.875	0.906	0.938	0.969
4	1.000	1.031	1.063	1.094	1.125	1.156	1.188	1.219
5	1.250	1.281	1.313	1.344	1.375	1.406	1.438	1.469
6	1.500	1.531	1.563	1.594	1.625	1.656	1.688	1.719
7	1.750	1.781	1.813	1.844	1.875	1.906	1.938	1.969
8	2.000	2.031	2.063	2.094	2.125	2.156	2.188	2.219
9	2.250	2.281	2.313	2.344	2.375	2.406	2.438	2.469
10	2.500	2.531	2.563	2.594	2.625	2.656	2.688	2.719
11	2.750	2.781	2.813	2.844	2.875	2.906	2.938	2.969
12	3.000	3.031	3.063	3.094	3.125	3.156	3.188	3.219
13	3.250	3.281	3.313	3.344	3.375	3.406	3.438	3.469
14	3.500	3.531	3.563	3.594	3.625	3.656	3.688	3.719
15	3.750	3.781	3.813	3.844	3.875	3.906	3.938	3.969
16	4.000	4.031	4.063	4.094	4.125	4.156	4.188	4.219
17	4.250	4.281	4.313	4.344	4.375	4.406	4.438	4.469
18	4.500	4.531	4.563	4.594	4.625	4.656	4.688	4.719
19	4.750	4.781	4.813	4.844	4.875	4.906	4.938	4.969
20	5.000	5.031	5.063	5.094	5.125	5.156	5.188	5.219
21	5.250	5.281	5.313	5.344	5.375	5.406	5.438	5.469
22	5.500	5.531	5.563	5.594	5.625	5.656	5.688	5.719
23	5.750	5.781	5.813	5.844	5.875	5.906	5.938	5.969
24	6.000	6.031	6.063	6.094	6.125	6.156	6.188	6.219
25	6.250	6.281	6.313	6.344	6.375	6.406	6.438	6.469
26	6.500	6.531	6.563	6.594	6.625	6.656	6.688	6.719
27	6.750	6.781	6.813	6.844	6.875	6.906	6.938	6.969
28	7.000	7.031	7.063	7.094	7.125	7.156	7.188	7.219
29	7.250	7.281	7.313	7.344	7.375	7.406	7.438	7.469
30	7.500	7.531	7.563	7.594	7.625	7.656	7.688	7.719
31	7.750	7.781	7.813	7.844	7.875	7.906	7.938	7.969
32	8.000	8.031	8.063	8.094	8.125	8.156	8.188	8.219
33	8.250	8.281	8.313	8.344	8.375	8.406	8.438	8.469
34	8.500	8.531	8.563	8.594	8.625	8.656	8.688	8.719
35	8.750	8.781	8.813	8.844	8.875	8.906	8.938	8.969
36	9.000	9.031	9.063	9.094	9.125	9.156	9.188	9.219
37	9.250	9.281	9.313	9.344	9.375	9.406	9.438	9.469
38	9.500	9.531	9.563	9.594	9.625	9.656	9.688	9.719
39	9.750	9.781	9.813	9.844	9.875	9.906	9.938	9.969
40	10.000	10.031	10.063	10.094	10.125	10.156	10.188	10.219
41	10.250	10.281	10.313	10.344	10.375	10.406	10.438	10.469
42	10.500	10.531	10.563	10.594	10.625	10.656	10.688	10.719
43	10.750	10.781	10.813	10.844	10.875	10.906	10.938	10.969
44	11.000	11.031	11.063	11.094	11.125	11.156	11.188	11.219
45	11.250	11.281	11.313	11.344	11.375	11.406	11.438	11.469
46	11.500	11.531	11.563	11.594	11.625	11.656	11.688	11.719
47	11.750	11.781	11.813	11.844	11.875	11.906	11.938	11.969
48	12.000	12.031	12.063	12.094	12.125	12.156	12.188	12.219
49	12.250	12.281	12.313	12.344	12.375	12.406	12.438	12.469
50	12.500	12.531	12.563	12.594	12.625	12.656	12.688	12.719

SCALE FACTORS FOR A SCALE OF 4 1/2 in. = 1 FOOT

0		0.047	0.094	0.141	0.188	0.234	0.281	0.328
1	0.375	0.422	0.469	0.516	0.563	0.609	0.656	0.703
2	0.750	0.797	0.844	0.891	0.938	0.984	1.031	1.078
3	1.125	1.172	1.219	1.266	1.313	1.359	1.406	1.453
4	1.500	1.547	1.594	1.641	1.688	1.734	1.781	1.828
5	1.875	1.922	1.969	2.016	2.063	2.109	2.156	2.203
6	2.250	2.297	2.344	2.391	2.438	2.484	2.531	2.578
7	2.625	2.672	2.719	2.766	2.813	2.859	2.906	2.953
8	3.000	3.047	3.094	3.141	3.188	3.234	3.281	3.328
9	3.375	3.422	3.469	3.516	3.563	3.609	3.656	3.703
10	3.750	3.797	3.844	3.891	3.938	3.984	4.031	4.078
11	4.125	4.172	4.219	4.266	4.313	4.359	4.406	4.453
12	4.500	4.547	4.594	4.641	4.688	4.734	4.781	4.828
13	4.875	4.922	4.969	5.016	5.063	5.109	5.156	5.203
14	5.250	5.297	5.344	5.391	5.438	5.484	5.531	5.578
15	5.625	5.672	5.719	5.766	5.813	5.859	5.906	5.953
16	6.000	6.047	6.094	6.141	6.188	6.234	6.281	6.328
17	6.375	6.422	6.469	6.516	6.563	6.609	6.656	6.703
18	6.750	6.797	6.844	6.891	6.938	6.984	7.031	7.078
19	7.125	7.172	7.219	7.266	7.313	7.359	7.406	7.453
20	7.500	7.547	7.594	7.641	7.688	7.734	7.781	7.828
21	7.875	7.922	7.969	8.016	8.063	8.109	8.156	8.203
22	8.250	8.297	8.344	8.391	8.438	8.484	8.531	8.578
23	8.625	8.672	8.719	8.766	8.813	8.859	8.906	8.953
24	9.000	9.047	9.094	9.141	9.188	9.234	9.281	9.328
25	9.375	9.422	9.469	9.516	9.563	9.609	9.656	9.703
26	9.750	9.797	9.844	9.891	9.938	9.984	10.031	10.078
27	10.125	10.172	10.219	10.266	10.313	10.359	10.406	10.453
28	10.500	10.547	10.594	10.641	10.688	10.734	10.781	10.828
29	10.875	10.922	10.969	11.016	11.063	11.109	11.156	11.203
30	11.250	11.297	11.344	11.391	11.438	11.484	11.531	11.578
31	11.625	11.672	11.719	11.766	11.813	11.859	11.906	11.953
32	12.000	12.047	12.094	12.141	12.188	12.234	12.281	12.328
33	12.375	12.422	12.469	12.516	12.563	12.609	12.656	12.703
34	12.750	12.797	12.844	12.891	12.938	12.984	13.031	13.078
35	13.125	13.172	13.219	13.266	13.313	13.359	13.406	13.453
36	13.500	13.547	13.594	13.641	13.688	13.734	13.781	13.828
37	13.875	13.922	13.969	14.016	14.063	14.109	14.156	14.203
38	14.250	14.297	14.344	14.391	14.438	14.484	14.531	14.578
39	14.625	14.672	14.719	14.766	14.813	14.859	14.906	14.953
40	15.000	15.047	15.094	15.141	15.188	15.234	15.281	15.328
41	15.375	15.422	15.469	15.516	15.563	15.609	15.656	15.703
42	15.750	15.797	15.844	15.891	15.938	15.984	16.031	16.078
43	16.125	16.172	16.219	16.266	16.313	16.359	16.406	16.453
44	16.500	16.547	16.594	16.641	16.688	16.734	16.781	16.828
45	16.875	16.922	16.969	17.016	17.063	17.109	17.156	17.203
46	17.250	17.297	17.344	17.391	17.438	17.484	17.531	17.578
47	17.625	17.672	17.719	17.766	17.813	17.859	17.906	17.953
48	18.000	18.047	18.094	18.141	18.188	18.234	18.281	18.328
49	18.375	18.422	18.469	18.516	18.563	18.609	18.656	18.703
50	18.750	18.797	18.844	18.891	18.938	18.984	19.031	19.078



"Tich" is one of Model Engineer magazine's most popular designs; the plans, of which this much reduced sample is only a small part, have sold in their thousands and there must be hundreds of examples of the finished loco in existence. To the popular 3½ inch gauge, "Tich" represents a small contractors' loco and was designed by the legendary LBSC in association with L. Clarke; it is a fine beginners' model and would make an ideal introduction to the hobby for the novice. ASP market the plans.

These drawings, although only of the general arrangement kind, are usually very well drawn and highly detailed and can be extremely useful.

Suppose we have a drawing that is not to the required scale; what can we do? Fortunately there are several alternatives available. Firstly we can laboriously sit down with our calculator, and re-draw the thing to the required scale. We could also work direct from the drawing and just scale the parts as we make them. Some specialist firms have equipment available that will print the drawing for us to the scale required — Variscale, for example, specialise in doing this with model drawings.

It is also possible to scale the drawings without a lot of figure-work, one way being to make a pair of proportional dividers. These are double-ended dividers with the pivot at a set distance from each end. One end has the point at the known drawing scale from the pivot and the other at the scale required, or a multiple of both.

Suppose we know our drawing is to ¼ in. to the foot scale and we want to convert it to 1 in. to the foot. If we made our dividers with the points at one end two inches from the pivot and, at the other, eight inches from the pivot, we could now convert our known measurement (using the short points) to our new drawing using the long points which will be set automatically to the correct measurement.

When the drawings have been obtained, whether to scale or not, always check thoroughly each measurement before committing yourself. Most drawings contain mistakes of one form or another, and this really cannot be helped. Anyone who has done a lot of drawing will realise how easy it is to get a couple of measurements wrong! When you realise that the drawings are probably drawn in the first instance by the designer and then go to be traced, it's easy to understand the possibility of error. Likewise, someone building a model first and producing a drawing later can easily slip up and the error pass unnoticed. So be prepared for errors and check for accuracy regularly. Such errors occur in full-size practice as well as in modelling and, in fact, when batches of locomotives were made, frequently specifications were changed on the shop floor after discussion with the designer and the drawings never up-dated. Plenty of full-size locomotive drawings are not correct for this reason. It is also a good idea to obtain photographs of the subject to be modelled as well and compare your drawings with these before finally committing yourself.

Mark Phillips, one of the *Model Engineer* magazine panel of consultants, has very kindly prepared a set of tables which give scale sizes in relation to full-size. They will help readers to build not only the main model, but also the desirable sundries such as lamps and shovels, etc., to the correct scale. ■

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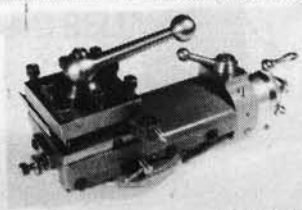

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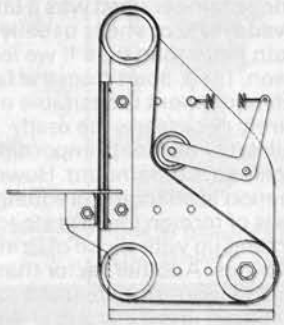

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