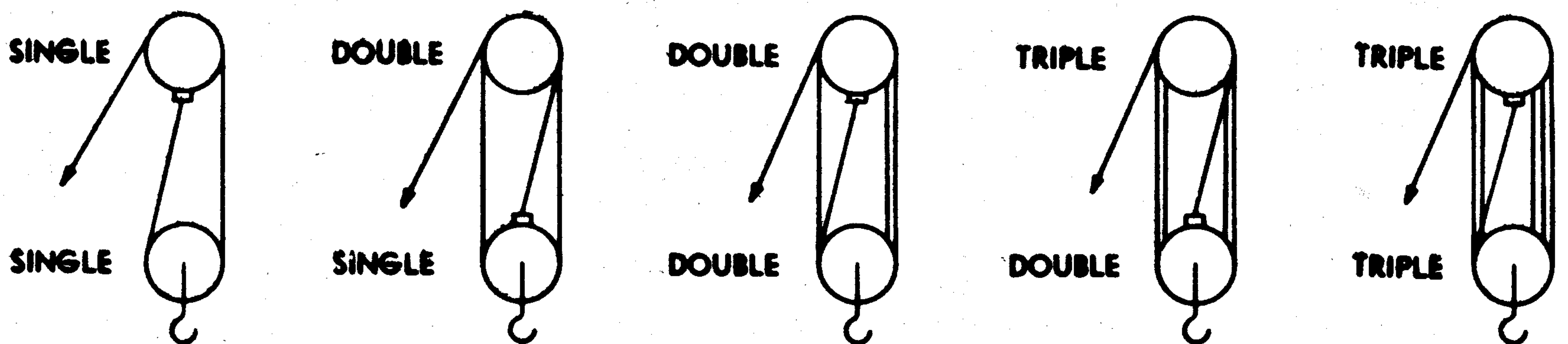


APPENDIX B

TABLES OF USEFUL INFORMATION



Load to be lifted (tons)		Total number of sheaves in blocks				
		2 (2-single blocks)	3 (1-single 1-double)	4 (2-double blocks)	5 (1-double 1-triple)	6 (2-triple blocks)
1/2	Smallest permissible rope diameter (inch).....	1/2	3/16	3/8	3/8	3/8
	Lead line pull (lbs).....	540	380	300	250	220
1	Rope diameter.....	3/4	5/8	1/2	1/2	1/2
	Pull.....	1,100	760	600	500	440
1 1/2	Rope diameter.....	3/4	3/4	3/4	3/4	1/2
	Pull.....	1,600	1,100	900	750	660
2	Rope diameter.....	1 1/4	3/4	3/4	3/4	3/4
	Pull.....	2,200	1,500	1,200	1,000	880
3	Rope diameter.....	3/4	1 1/2	1	3/4	3/4
	Pull.....	3,300	2,300	1,800	1,500	1,300
4	Rope diameter.....	1 1/2	1 1/4	1 1/4	1	1
	Pull.....	4,400	3,000	2,400	2,000	1,800
6	Rope diameter.....		1 1/2	1 1/4	1 1/4	1 1/4
	Pull.....		4,500	3,600	3,000	2,600
8	Rope diameter.....			1 1/4	1 1/2	1 1/4
	Pull.....			4,800	4,000	3,500

Note. Permissible rope diameters are for new rope used under favorable conditions as rope ages or deteriorates increase factor of safety progressively to 8, when selecting rope size. Lead line pull is not affected by age or condition.

Table B-1. Simple Block and Tackle Rigging for Manila Rope (Factor of Safety 3).

**Table B-2. Simple Block and Tackle Rigging for Plow Steel Wire Rope
(Factor of Safety 6)**

Load to be lifted (tons)		Total number of sheaves in blocks				
		2 (2-single blocks)	3 (1-single 1-double)	4 (2-double blocks)	5 (1-double 1-triple)	6 (2-triple blocks)
1	Smallest permissible rope diameter (inch) -----	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
	Lead line pull (lbs) -----	1,000	720	560	460	400
2	Rope -----	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
	Pull -----	2,100	1,400	1,100	920	800
4	Rope -----	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{8}$
	Pull -----	4,200	2,900	2,200	1,800	1,600
6	Rope -----	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
	Pull -----	6,200	4,300	3,400	2,800	2,400
8	Rope -----	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
	Pull -----	8,300	5,800	4,500	3,700	3,200
10	Rope -----	1	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
	Pull -----	10,400	7,200	5,600	4,600	4,000
15	Rope -----	$1\frac{1}{8}$	1	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
	Pull -----	15,600	10,800	8,400	6,900	6,000
20	Rope -----	$1\frac{1}{8}$	$1\frac{1}{8}$	1	$\frac{3}{8}$	$\frac{3}{8}$
	Pull -----	20,800	14,400	11,200	9,200	8,000

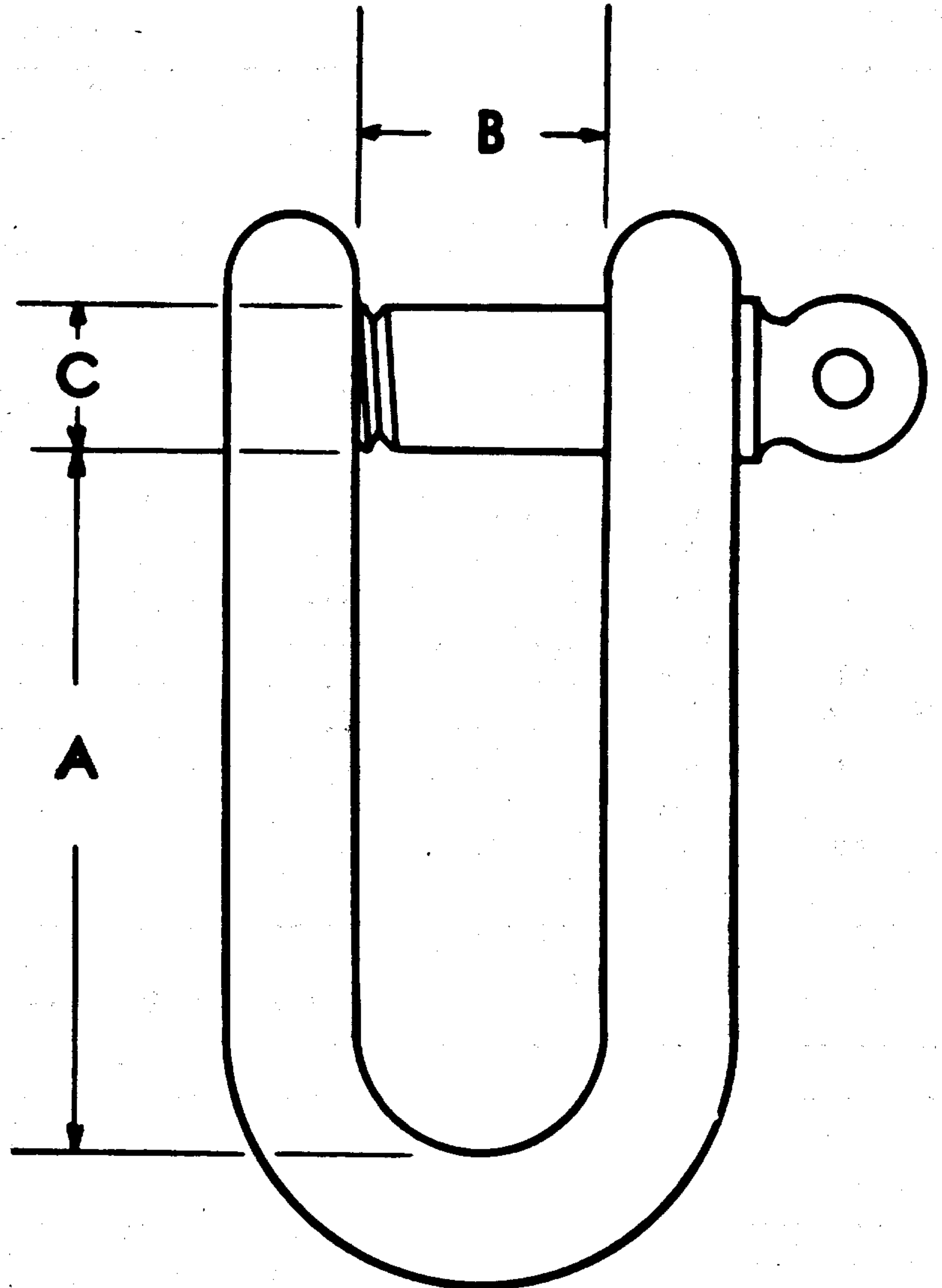
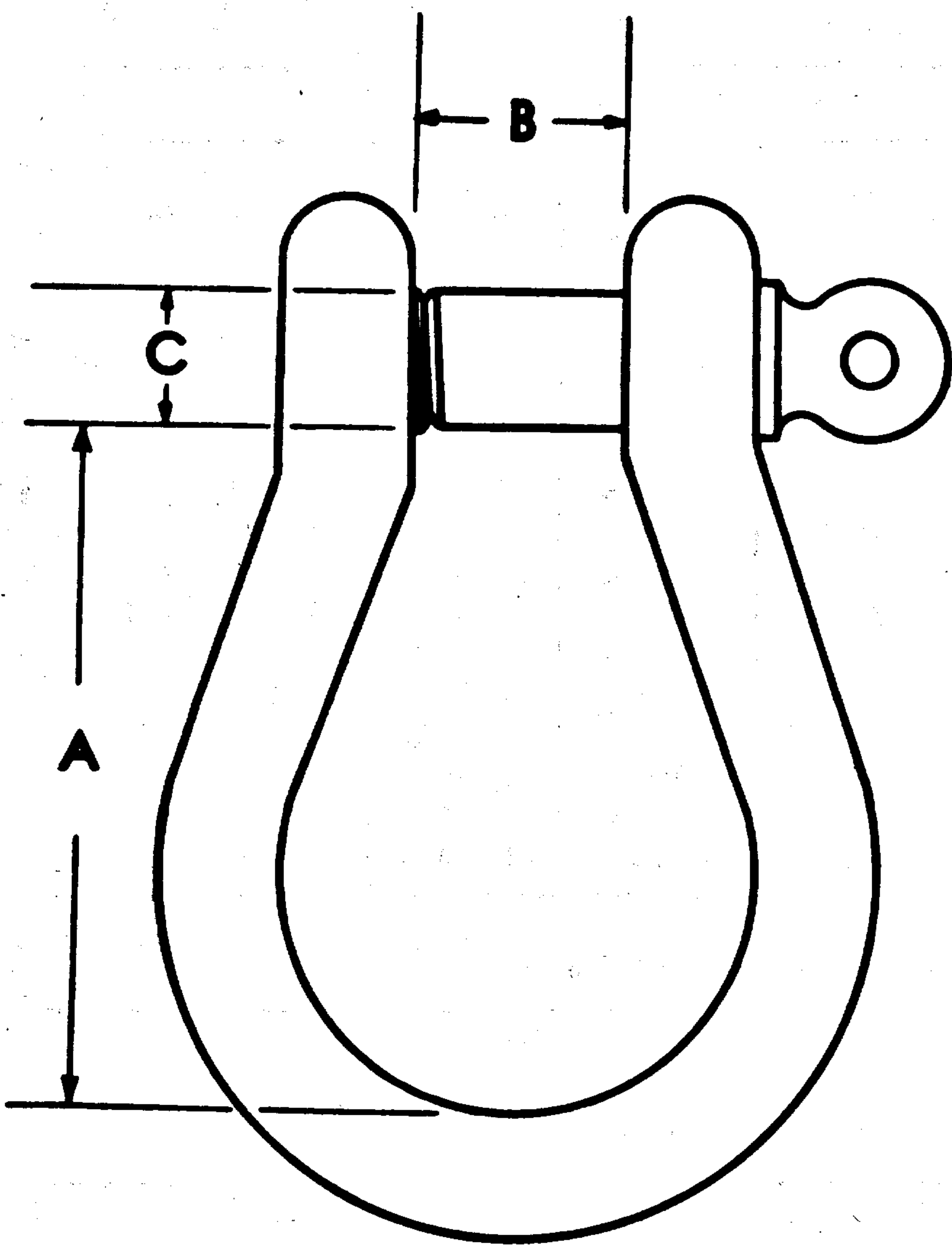
Table B-3. Recommended Sizes of Tackle Blocks

Wire rope		Manila rope	
Rope diameter (inches)	Outside-diameter of sheave (inches)	Rope diameter (inches)	Length of sheave (inches)
$\frac{3}{8}$ -----	6-8	$\frac{1}{2}$ -----	4
$\frac{1}{2}$ -----	8-10	$\frac{3}{8}$ -----	6
$\frac{5}{8}$ -----	10-12	$\frac{3}{8}$ -----	6-7
$\frac{3}{4}$ -----	12-16	$\frac{3}{8}$ -----	7-8
$\frac{3}{4}$ -----	14-18	1 -----	8-10
1 -----	14-20	$1\frac{1}{8}$ -----	8-10
		$1\frac{1}{4}$ -----	10-12
		$1\frac{1}{2}$ -----	12-14
		$1\frac{3}{4}$ -----	14-16

Note. Largest diameter of sheave for a given size of rope is preferred, when available, except that for 6 x 37 wire rope the smaller diameter of sheave is suitable.

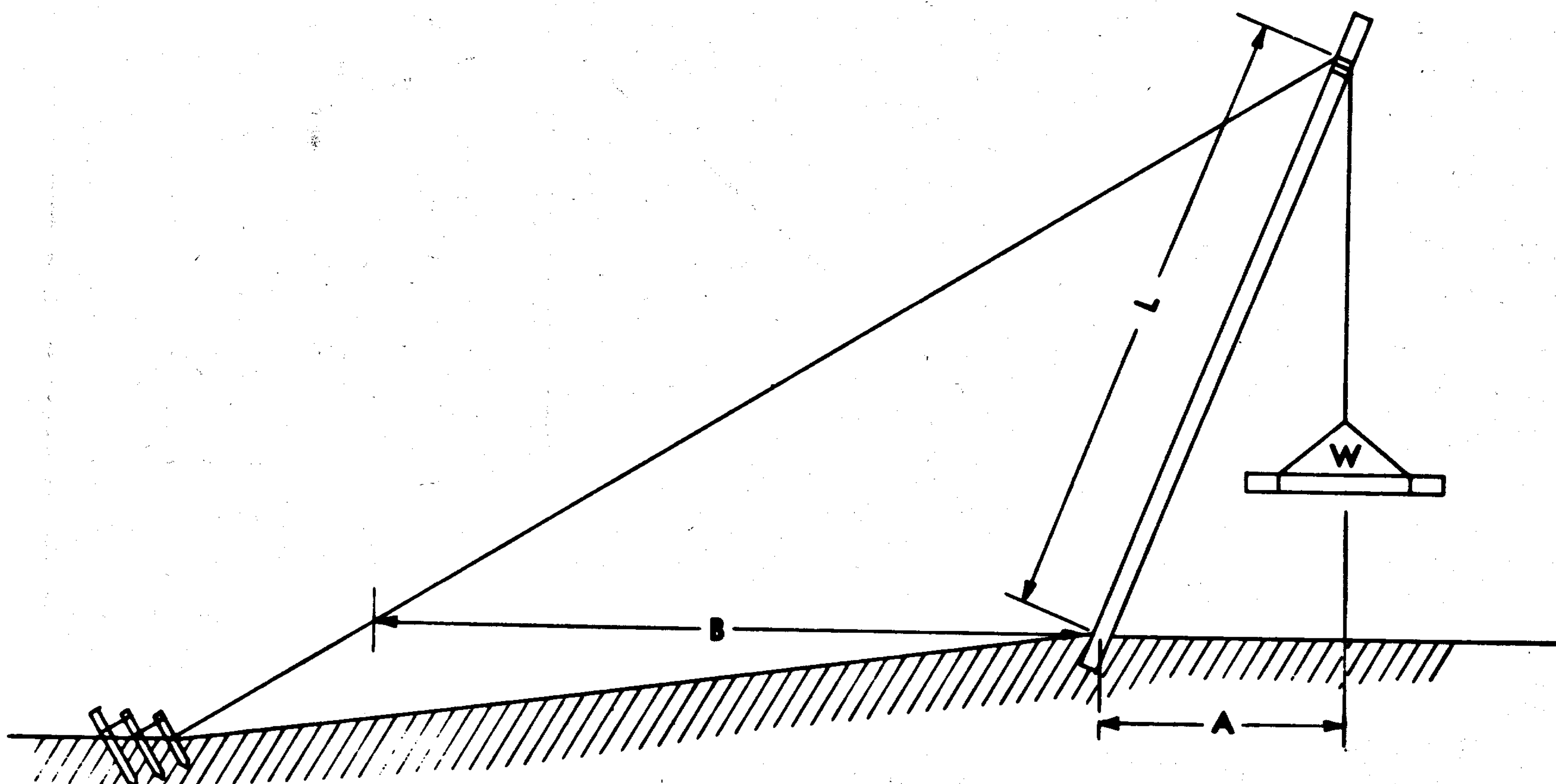
Table B-4. Bearing Capacity of Soils

General description	Condition	Safe allowable pressure (psi)
Fine grained soils: Clays, silts, very fine sands, or mixtures of these containing few coarse particles of sand or gravel. Classification: MH, CH, OH, ML, CL, OL.	Soft, unconsolidated, having high moisture content (mud).	1,000
	Stiff, partly consolidated, medium moisture content	4,000
	Hard, well consolidated, low moisture content (slightly damp to dry).	8,000
Sands and well-graded sandy soils, containing some silt and clay. Classification: SW, SC, SP, SF.	Loose, not confined -----	3,000
	Loose, confined -----	5,000
	Compact -----	10,000
	Loose, not confined -----	4,000
Gravel and well-graded gravelly soils containing some sand, silt and clay. Classification: GW, GC, GP.	Loose, confined -----	6,000
	Compact -----	12,000
	Cemented sand and gravel -----	16,000
	Poor quality rock, soft and fractured; also hardpan.	10,000
Rock -----	Good quality; hard and solid -----	20,000



Size	Length of opening (in.) A	Distance between eyes (in.) B	Diameter of pin (in.) C	Safe load in pounds
3/4	2 3/4	1 1/4	3/8	6,500
7/8	3 1/4	1 1/2	1	8,800
1	3 3/4	1 5/8	1 1/8	11,000
1 1/4	4 1/4	1 3/4	1 1/4	13,000
1 1/2	4 3/4	1 3/4	1 1/2	16,000
1 3/4	5 1/4	2	1 3/4	19,000
1 7/8	5 1/2	2 1/4	1 3/4	23,000
1 3/4	7	2 3/4	2	35,000
2	7 1/4	3	2 1/4	42,000

Table B-5. Safe Loads on Screw-Pin Shackles

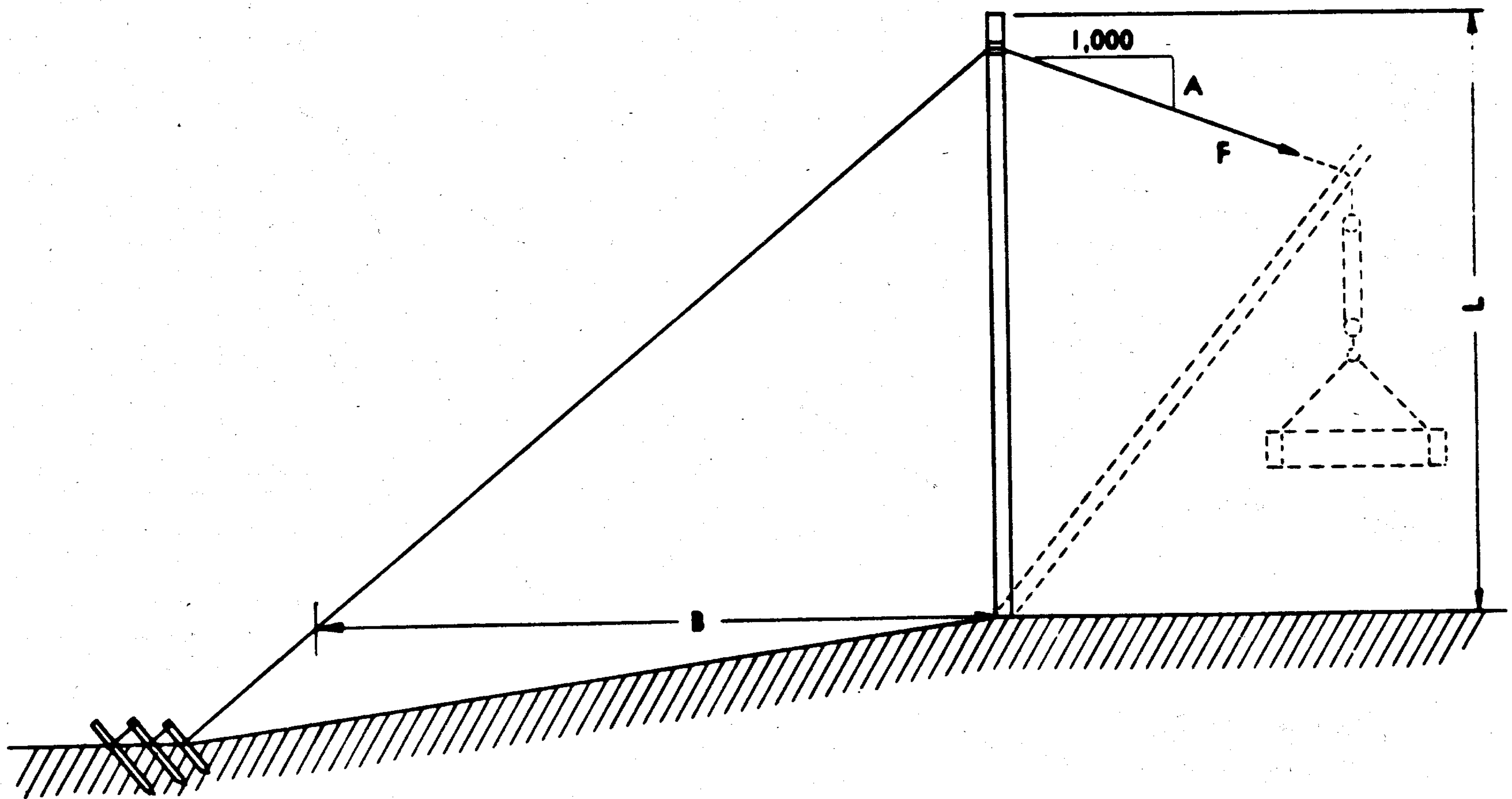


A	Stress (pounds) in guy for $w=1,000$ pounds				
	B=1/2L	B=1/2L	B=L	B=1 1/2L	B=2L
0.....	0	0	0	0	0
1/10L.....	230	180	150	130	120
1/8L.....	300	220	190	160	150
1/6L.....	400	300	260	220	200
1/4L.....	630	480	410	350	320
1/3L.....	890	680	580	480	440

Stress (pounds) in spar for $w=1,000$ pounds					
0.....	1,000	1,000	1,000	1,000	1,000
1/10L.....	1,210	1,140	1,100	1,070	1,050
1/8L.....	1,260	1,180	1,140	1,090	1,070
1/6L.....	1,350	1,240	1,180	1,130	1,100
1/4L.....	1,550	1,380	1,290	1,210	1,160
1/3L.....	1,770	1,530	1,420	1,300	1,240

Key—W = weight to be lifted plus 1/2 the weight of pole.
 A = Drift.
 B = Horizontal distance from base of pole to guy.
 L = Length of gin pole.

Table B-6. Stresses in Guys and Spars of Gin Poles



A	Stress (pounds) in guy for F=1,000 pounds				
	B=1/2L	B=3/4L	B=L	B=1 1/2L	B=2L
0.....	2, 240	1, 670	1, 420	1, 200	1, 120
0.50.....	2, 000	1, 490	1, 260	1, 080	1, 000
0.667.....	1, 860	1, 390	1, 180	1, 000	930
1.00.....	1, 570	1, 180	1, 000	850	790
1.33.....	1, 340	1, 000	850	720	670
2.00.....	1, 000	750	630	540	500

Stress (pounds) in mast for F=1,000 pounds					
0.....	2, 000	1, 330	1, 000	670	500
0.50.....	2, 240	1, 640	1, 340	1, 040	900
0.667.....	2, 220	1, 660	1, 390	1, 110	970
1.00.....	2, 120	1, 650	1, 410	1, 180	1, 060
1.33.....	2, 000	1, 600	1, 400	1, 200	1, 100
2.00.....	1, 800	1, 490	1, 340	1, 190	1, 120

Key—F=Total force on boom lift falls.
A=Vertical distance for each unit of horizontal distance.
B=Horizontal distance from base of mast to guy.
L=Length of mast.

Table B-7. Stresses in Guys and Mast of Guy Derrick