

TACKLE BLOCKS AND SNATCH BLOCKS

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1. GENERAL

1.01 This section describes the use, care, and maintenance of standard blocks.

1.02 This section is reissued to revise the maximum load limits of manila rope when used with standard blocks and snatch blocks. This reissue includes the maximum load limits applicable to B Plastic Rope when used in place of manila rope for standard blocks and snatch blocks.

2. SAFETY PRECAUTIONS

2.01 Do not use blocks if the sheaves do not run freely.

2.02 Do not oil roller bushed sheaves.

2.03 Do not use blocks with sharp edges or nicked sheaves. Inspect sheaves frequently for these defects. Care should be taken that the rope

is in contact with only the grooved surface of the sheaves and that it does not ride on any of the fixed parts.

2.04 A hook which has begun to straighten shall immediately be removed from use and discarded.

2.05 Do not use blocks with sheave holes too small to give sufficient clearance between the sheaves and the sides and top.

2.06 The safety precautions set forth in Sections 081-510-101 and 081-511-101 shall be adhered to.

3. BLOCK TERMS

3.01 The terms used in this section pertaining to blocks are as follows:

(a) The parts of a block are the shell, sheave, hook, becket, becket bolt, bushing, sheave pin, cotter pin, center strap, outside strap, and roller bushing (Fig. 1).

(b) **Tackle:** An assemblage of rope and blocks. The rope is commonly called the fall.

(c) **Running Block:** Block attached to object to be moved.

(d) **Standing Block:** Block attached to the fixed support.

(e) **Overhaul Blocks:** To separate or spread blocks in a tackle.

(f) **Run-in Blocks:** To bring blocks closer together.

(g) **Chock-a-Block:** Blocks of a tackle in contact.

(h) **Standing End:** End of rope fixed to the block.

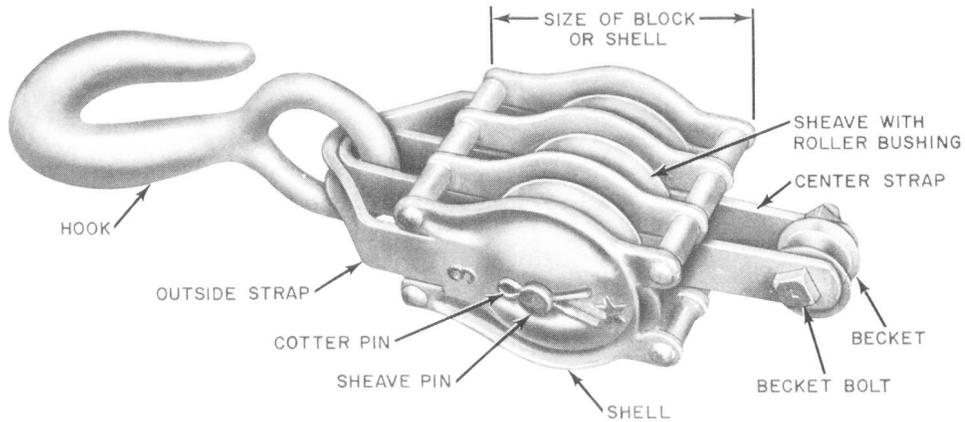


Fig. 1—Three Sheave Tackle Block

- (i) **Luffing a Block:** Taking a purchase on the fall line of a set of blocks with another set of blocks.
- (j) **Running End or Fall End:** Free end of rope in the tackle.
- (k) **Return:** Rope between the two blocks.

(l) **Reeving Blocks:** To pass rope through the aperture of the blocks and over the sheaves so as to obtain mechanical advantage.

4. TACKLE BLOCKS

4.01 Tackle Blocks are sized by shell length and number of sheaves. Equipped with an open-type hook unless ordered with a shackle, blocks are furnished in the sizes given in Table A:

TABLE A

STANDARD ROPE BLOCKS — SIZES AND LOADS — ROPE AND MANPOWER REQUIREMENTS							
BLOCK SIZE (INCHES)	NO. OF SHEAVES	MAXIMUM LOAD LIMIT (LBS)		ROPE SIZE (INCHES)	SUGGESTED ROPE LENGTH (FEET)	NO. OF MEN NEEDED WITHOUT AND WITH LUFFING TACKLE*	
		MANILA ROPE	B PLASTIC ROPE			WITHOUT	WITH
3	1	400	900	3/8	50	2	
3	2	800	1200	3/8	75	2	
3	3	1200	1800	3/8	100	2	
4	3	2500	3000	1/2	150	3	or 1
6	3	4500	5000	3/4	200	—	1
8	3	7500	7600	1	275	—	2

* Assuming Max. pull per man of 130 pounds and 3-inch 3-sheave luffing blocks (See 8.01)

4.02 Always load the hook at the bottom of the opening, never on the point.

5. SNATCH BLOCKS

5.01 Snatch Blocks shall be used only with manila or B Plastic Rope. Wire Rope Snatch Blocks are covered in Section 081-520-150.

5.02 Snatch Blocks are usually used to change the direction of rope pull.

5.03 Fig. 2 illustrates the parts that comprise the Snatch Block.

5.04 Snatch Blocks are furnished in the sizes given in Table B with the corresponding

TABLE B

SNATCH BLOCKS — SIZES, LOADS, AND ROPE REQUIREMENTS				
BLOCK SIZE (INCHES)	NO. OF SHEAVES	MAXIMUM LOAD LIMIT (LBS)		ROPE SIZE (INCHES)
		MANILA ROPE	B PLASTIC ROPE	
6	1	750	2200	3/4
8	1	1250	3700	1

Note: When snatch blocks are used as tackle blocks, the maximum load limits are double the value shown above.

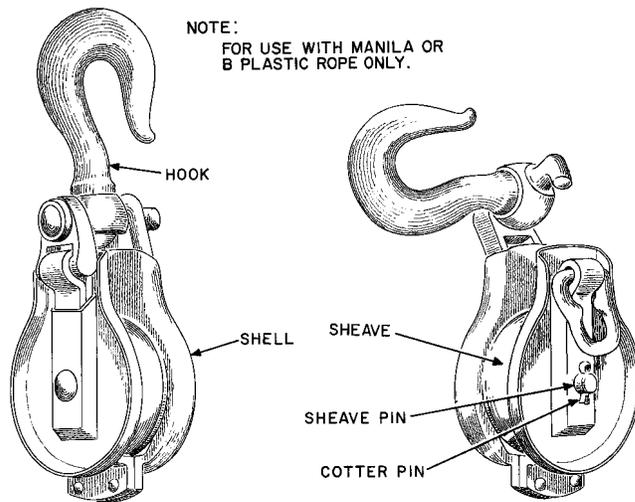


Fig. 2—Snatch Block

maximum load limits for both manila and B Plastic Rope.

6. REEVING BLOCKS

6.01 It is important that blocks be reeved properly in order to have them operate to the best advantage and to avoid jamming of the tackle while under strain with the resultant loss of time and possibility of accident.

6.02 Before using new rope to reeve blocks, place the rope under slight tension. This will facilitate handling of the rope.

6.03 Fig. 3 shows preferred methods for reeving a pair of tackle blocks. The numbers are

shown to facilitate following the reeving illustrated. When the block has three sheaves, the fall line should lead from the center sheave of the upper blocks as shown. When so reeved, the hoisting strain comes on the center of the blocks and they are prevented from turning with consequent injury to the rope by cutting across the edges of the block shell. In order to reeve by this method, the two blocks should be placed so the sheaves in the upper block are at right angles to those in the lower one.

6.04 Where there is a likelihood of the rope being tangled when following the reeving suggested in 6.03 the blocks may be reeved left over right as shown in Fig. 4.



Fig. 3—Reeving Blocks (Preferred Methods)



Fig. 4—Reeving Blocks (Alternative Methods)

7. RIGGING

7.01 The first important part in rigging is to know the approximate weight of the load to be hauled, lifted, or held. This will determine the rigging to be used. (See Part 8 and 9.) Select a system of rigging to perform the work adequately, efficiently, and safely.

7.02 Fig. 5 and 6 show two methods of arranging blocks, one lifting and the other hauling a load.

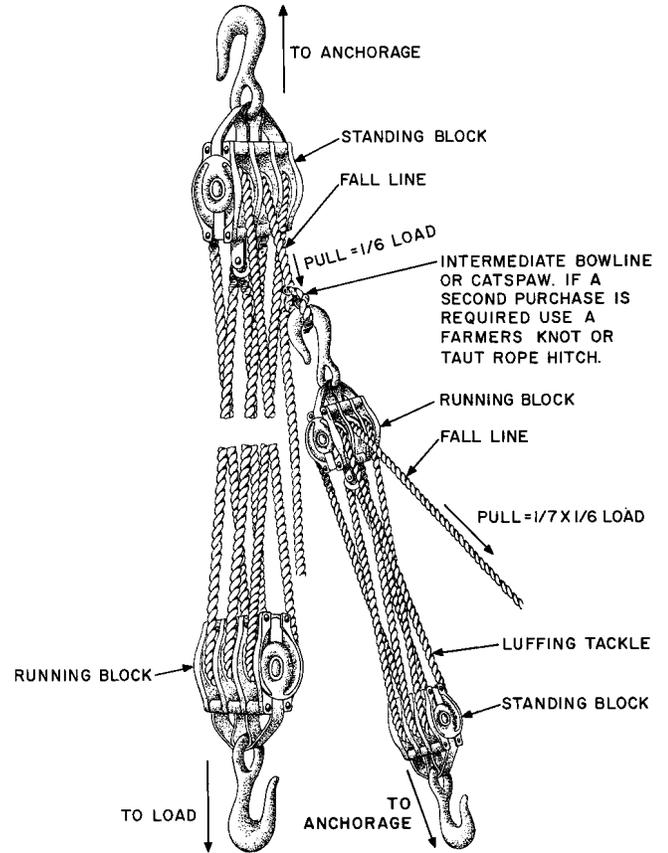


Fig. 5—Lifting Load Using Luffing Tackle

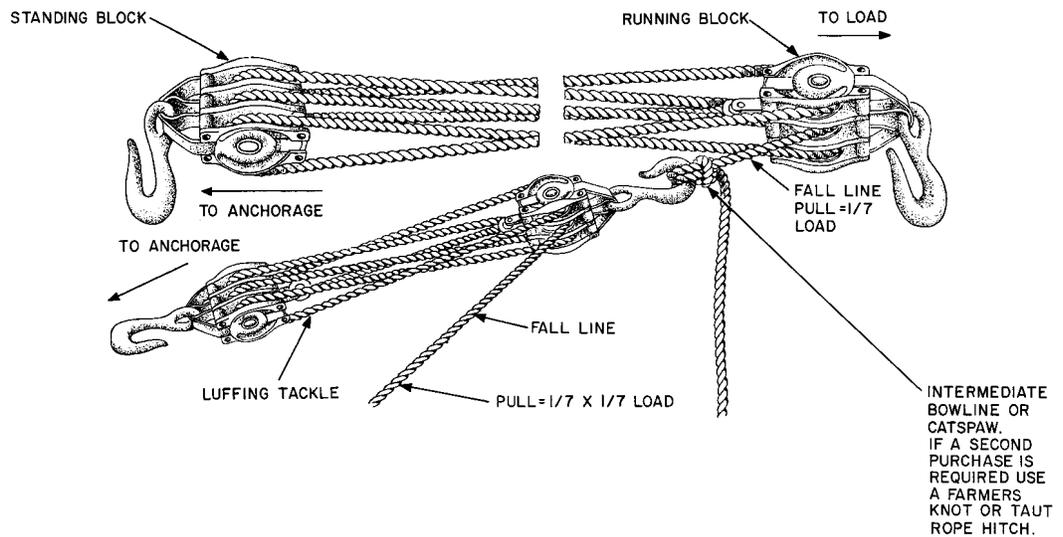


Fig. 6—Hauling Load Using Luffing Tackle

7.03 Fig. 7 through 11 show systems of rigging or strain equalizing that have been found satisfactory for pulling open wire. Where practicable, use rope that has had the twist removed through usage. In general, twist in new rope can be removed by placing a strain on the rope. If a tendency for twisting occurs between the pulling up blocks and strain equalizing arrangement, hold the blocks in position by means of a bar placed in the hook of the block.

7.04 Where more than 10 wires are to be pulled use a combination of the arrangements shown in Fig. 7 through 11.

8. USE OF BLOCKS

8.01 When the load to be held, hauled, or raised is greater than that which can be handled safely and directly by the workmen and no power equipment to do the work is available, a combination of block and ropes known as block and tackle may be used to gain a mechanical advantage. For

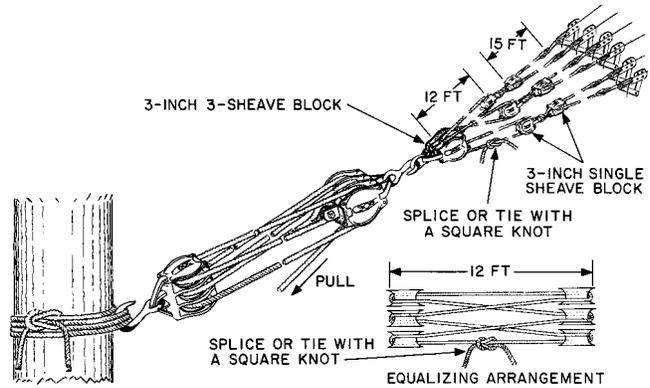


Fig. 9—Pulling Six Open Wires

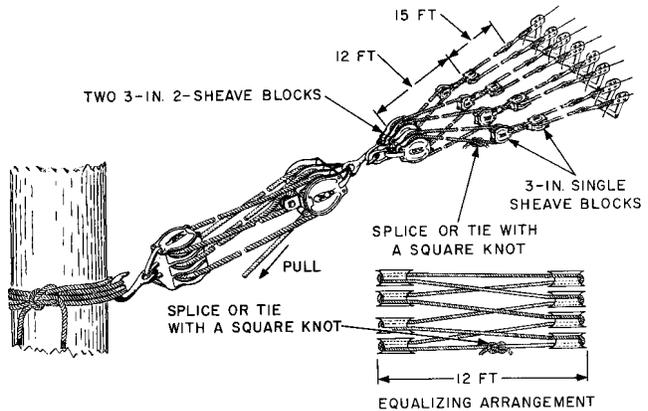


Fig. 10—Pulling Eight Open Wires

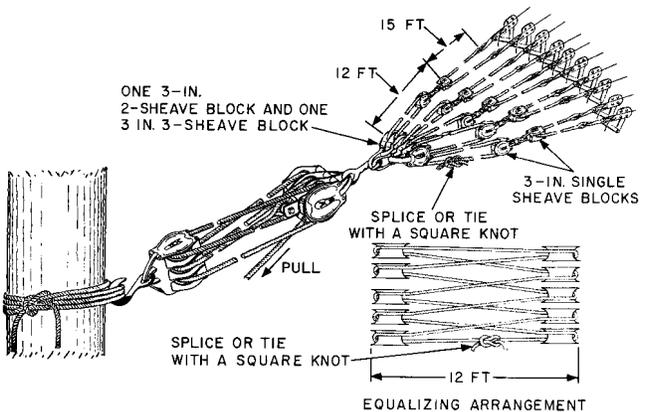


Fig. 11—Pulling Ten Open Wires

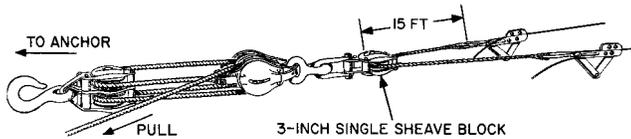


Fig. 7—Pulling Two Open Wires

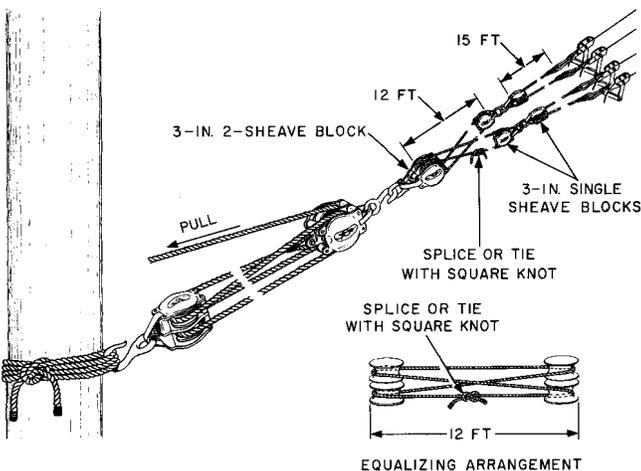


Fig. 8—Pulling Four Open Wires

practical purposes the weight capable of being lifted is equal to the applied force multiplied by the number of ropes supporting the lower or running block. For example, if a man can exert a pull of 130 pounds on the fall line of a pair of three sheave blocks, he will be capable of lifting approximately 6 by 130 or 780 pounds with three sheave blocks and tackle. This assumes that the fall line leaves the standing block. If the fall line leaves the running block as in the case of hauling a load (Fig. 6), a man can exert a pull of 780 pounds plus 130 pounds or 910 pounds which is seven times the applied force.

9. SELECTING SIZE OF BLOCKS FOR THE WORK TO BE PERFORMED

9.01 To select the proper blocks for the work to be performed, it is necessary to know the

BLOCKS	USES
3-Inch, 1-Sheave:	Intended for use in connection with strain equalizing blocks, raising cables in place in cable vaults, and with block and house cable work.
3-Inch, 2-Sheave:	Intended for use in connection with strain equalizing blocks, cutting in or out transpositions, dead ends and pulling up 1 or 2 pairs of open wires.
3-Inch, 3-Sheave:	Intended for use of block and house cable crews in connection with pulling up 2200 pound strand and in making up strain equalizing blocks (Part 7).
4-Inch, 3-Sheave:	*Intended for use in connection with pulling up unloaded 6M suspension strand, and guys where suspension strand has not been placed. Also for pulling 10 wires with equalizing blocks (Part 7). Raising loading coil cases. Pulling slack in strand and general rigging.

approximate weight of the load to be hauled, lifted, or held.

9.02 Knowing the weight of the load, consult Table A and select a system of rigging which has a maximum load limit equal to or exceeding the load to be handled. This table also indicates the number of men necessary to handle the load, considering 3 men as the maximum number which can be used efficiently on a fall line.

9.03 Should Table A indicate that luffing tackle is required, select a system of rigging as shown in Fig. 5 and 6.

9.04 In connection with telephone work the following sizes of blocks have been found satisfactory for the uses specified and are the sizes in general being used by the construction forces for this type of work.

BLOCKS	USES
6-Inch, 3-Sheave:	*Intended for use in connection with raising riser cable, 35 ft. or smaller poles, pulling loaded 6M and 10M suspension strand and guys and unloaded 16M suspension strand and guys, and for general rigging.
8-Inch, 3-Sheave:	*Intended for use in connection with unloading poles, raising poles over 35 ft. in length, pulling loaded 16M suspension strand, unloaded 25M suspension strand and guys, pulling slack in strand and general rigging.
6-Inch Snatch Block	Intended for use in changing the direction of a 3/4- or 1-inch pulling line.
8-Inch Snatch Block	Intended for use in connection with raising poles, pulling cable and similar work.

* Block and tackle shall be used for pulling suspension strand, erecting poles, placing riser cable, etc, only where there is no power equipment available to do the work.

SECTION 081-510-203

10. INSPECTION OF BLOCKS

10.01 Blocks should be examined to determine their conditions. The important conditions to look for are:

- (a) Bent, cracked, or broken shell
- (b) Cracked or broken sheave
- (c) Cracked or broken straps
- (d) Bent hook
- (e) Cotter pin missing
- (f) Roller bushing not functioning
- (g) Cracked or broken becket.

10.02 If the condition of the block is such that there is any doubt as to its safety, it should be exchanged at once for one in good condition in accordance with the locally established routine.

11. MAINTAINING BLOCKS IN THE FIELD

11.01 Keep blocks clean of oil and dirt. The sheaves of the standard blocks are roller bushed and operate better without oil which tends to collect dirt thus causing the rollers to bind. Never oil the sheaves of the standard block; if they do not function properly remove the sheaves and jar the dirt from the rollers by lightly tapping the sides of the sheave.