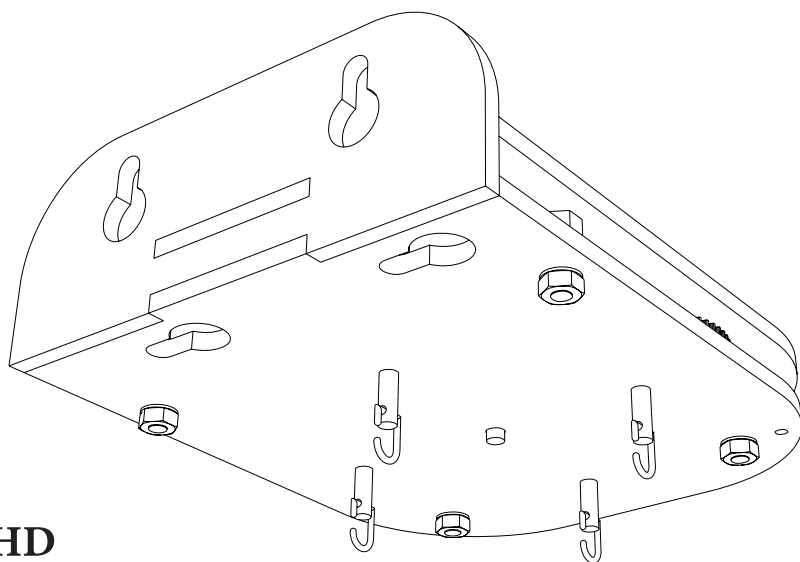


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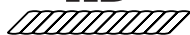
VR

Rope making machine

VERSION 3.1



HD



adaptable

ShipWorkshop.com

Main features

The VR Rope making machine is intended for making professional ropes for your models:

- Plain laid or cable-laid;
- 2-, 3- or 4-stranded;
- With or without core;
- Left or right lay;
- Diameter up to ~2.5mm.

Package contents

1. VR machine.
2. Rotation direction switch.
3. Power supply (can be supplied separately).
4. User manual.
5. PC DVD disk with video tutorial and printing material.
6. Reference on threads.

Operating options

To make ropes **without core** insert thread fastening hooks into the outer axles only.

To make ropes **with a core** first insert thread fastening hooks into outer axles and into side hole, then add a hook into the center axle as shown in video instruction.

Operating options are shown on figures:

- To make **3-stranded** ropes use any 3 outer axles (*fig. 1*).
- To make **4-stranded** ropes use all outer axles (*fig. 2*).
- To make ropes **with a core** also use center axle and side hole.
- **HD adaptable**. Can be transformed into HD (Horizontal Design) machine. Not yet available.

Securing the machine

Using 4mm screws the machine can be secured to:

- Horizontal surface (*fig. 3*).
- Vertical surface (*fig. 4*).
- There are notches on the machine that will help to mark screw holes for securing the machine (*fig. 3*).

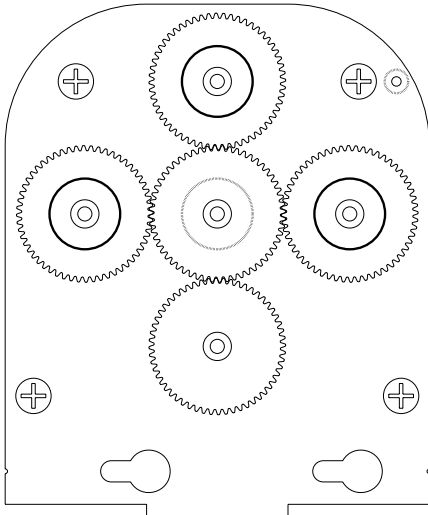


Figure 1.

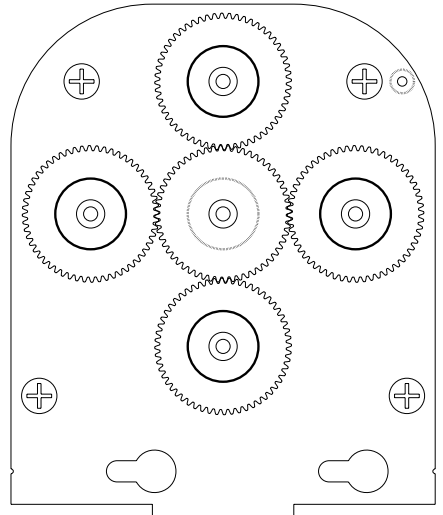


Figure 2.

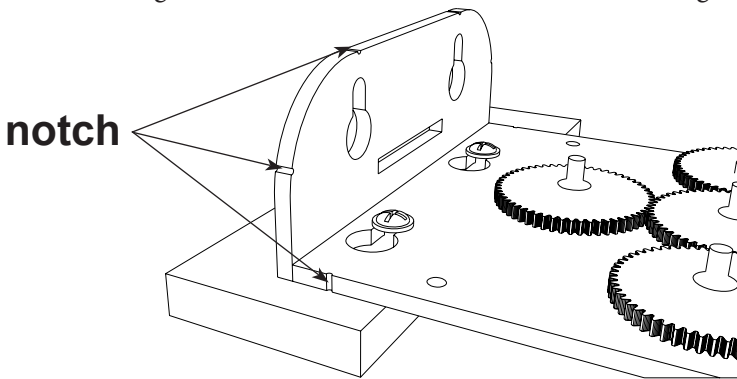


Figure 3.

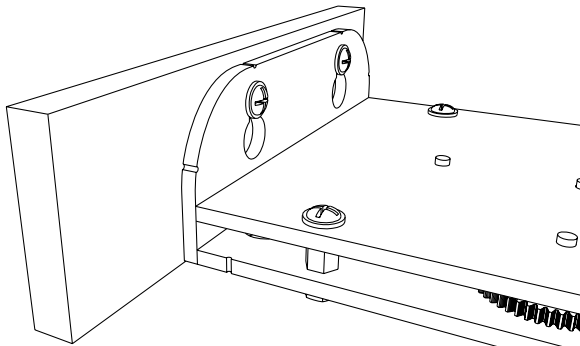


Figure 4.

Operation

(3- or 4-stranded w/o core)

1. Insert the hooks into 3 or 4 outer axles depending on the desired rope type.
2. Connect power supply and the machine to the rotation direction switch.
3. Secure the machine at a required height.
4. Tie source threads (2) to the hooks (1).
5. Tie the load (3) to loose ends of threads (2).

ATTENTION!

Do not use the load of more than 300 gr.

6. Turn on the motor to make source threads (2) wind about axis. Hold the load (3) to prevent its rotation about axis and to prevent source threads (2) from intertwisting. If source threads (2) engage each other, bring them apart manually (*fig. 5*).
7. After a while, when the load (3) has lifted to 10–15 % of source threads' (2) length, stop the motor, release the load (3), and let it rotate freely about axis, thus winding source threads (2) around each other (*fig. 6*).
8. As soon as the load (3) stops rotating, lift it to check if loops build up on the finished rope. Such loops can be eliminated by forced rotation of the load (3) in a free state in either direction, until the loops don't build up any longer. The load's rotation direction corresponds to the direction of a loop unwinding (*fig. 7*).
9. Your rope is now done.

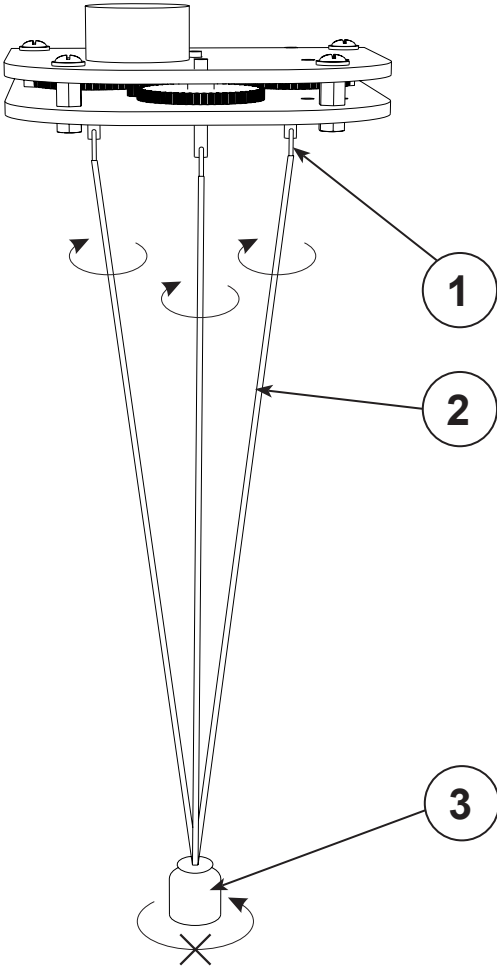


Figure 5.

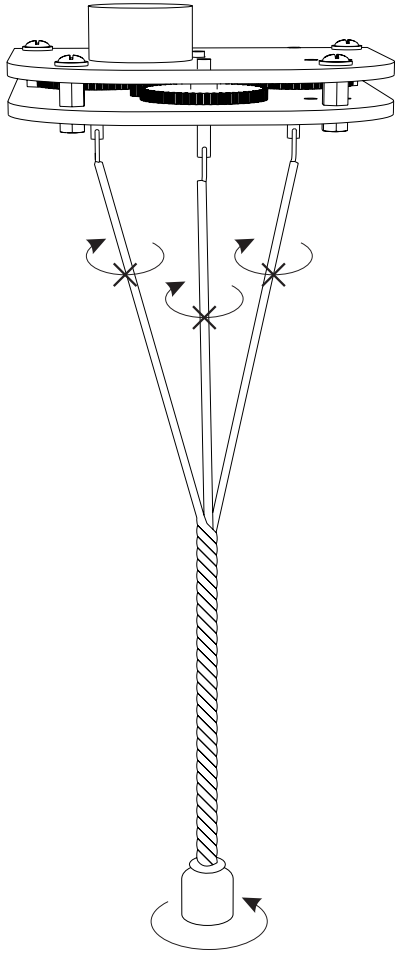


Figure 6.

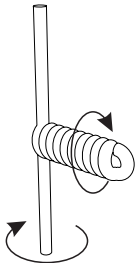


Figure 7.

Operation

(3- or 4-stranded with a core)

1. Insert the hooks into 3 or 4 outer axles depending on the desired rope type.
2. Connect power supply and the machine to the rotation direction switch.
3. Secure the machine at a required height.
4. Tie source threads (2) to the hooks (1).
5. Tie the load (3) to loose ends of threads (2).
6. Tie the core (4) to the load (**fig. 8**). Thread the other end of the core through side hole hook. It is recommended to have the core twice the length of source threads. The core diameter should not exceed the diameter shown on **fig. 10**.

ATTENTION!

Do not use the load of more than 300 gr.

7. Turn on the motor to make source threads (2) wind about axis. Hold the load (3) to prevent its rotation about axis and to prevent source threads (2) from intertwisting. If source threads (2) engage each other, bring them apart manually (**fig. 5**).
8. After a while, when the load (3) has lifted to 10–15 % of source threads' (2) length, stop the motor.
9. Preventing the load from rotating, thread the core (4) through the hook (6) mounted on the central axis and tense it slightly (**fig. 9**).
10. Release the load (3) and let it rotate freely about axis, thus winding source threads (2) around each other and around the core (**fig. 9**).
11. As soon as the load (3) stops rotating, lift it to check if loops build up on the finished rope. Such loops can be eliminated by forced rotation of the load (3) in a free state in either direction, until the loops don't build up any longer. The load's rotation direction corresponds to the direction of a loop unwinding (**fig. 7**).
12. Your rope is now done.

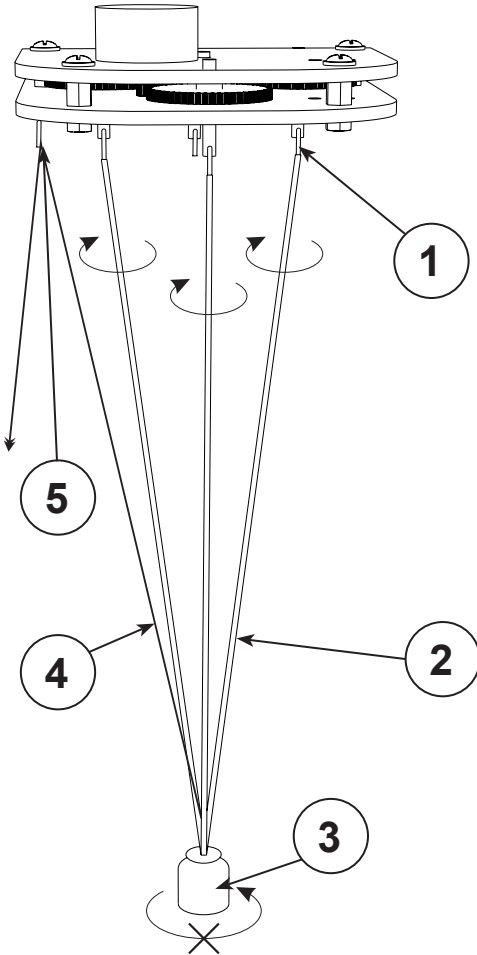


Figure 8.

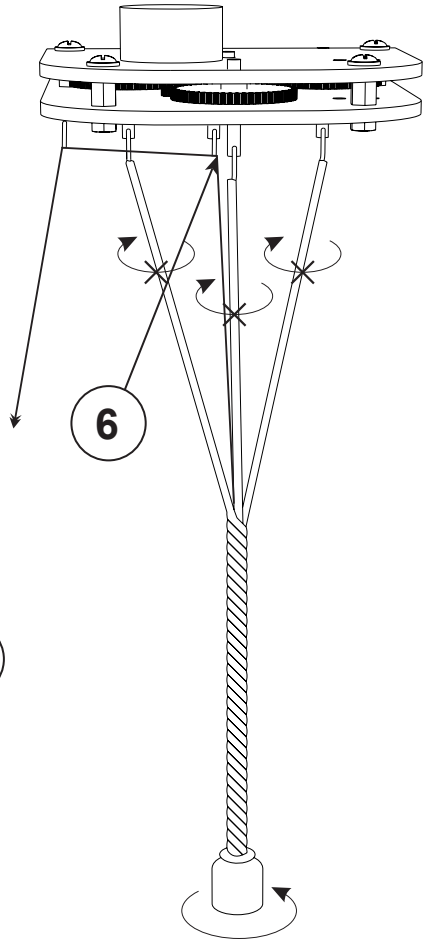


Figure 9.

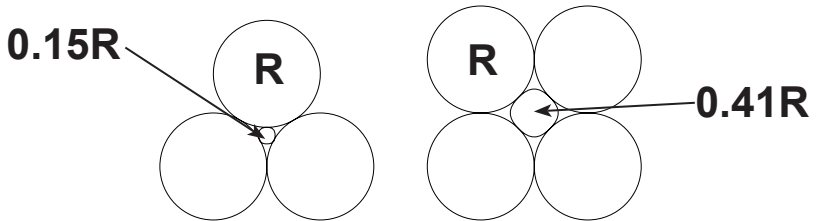


Figure 10.

Some tips on using the machine

1. The longer the source threads (2) are, the easier it is to make the finished rope.
2. The weight of the load (3) is determined experimentally depending on the thread thickness. The heavier the load (3) is the more it is likely that source threads (2) are torn. However, light load (3) increases the possibility of loop build up on source threads (2) during winding, which adversely affects the finished rope.
3. The lifting space for the load (3) during the source threads (2) winding is also defined experimentally. The higher the load (3) lifts, the more source threads (2) are wound, the tighter the finished rope is. However if source threads (2) are wound too tight, this may lead to threads' tear and loops build up, which significantly reduces the quality of the finished rope.
4. Keep in mind that source threads (2) wound clockwise make the finished rope wound counter clockwise (left laid rope) and vice versa.
5. 2-stranded rope can be made using any two hooks, except for the central one. The hooks do not necessarily have to be opposite.
6. Do not mount the hooks (1) on axles which are not in use. Doing so may damage the machine.
7. You can use a nut to tense the core (4). To do that just tie the nut to the loose end of the core. The nut's weight should be less than the load's (3) weight.
8. Do not use power supply with over 12V output voltage.
9. You can not distinguish between 3-stranded and 4-stranded ropes by the look. However, if you put those two ropes close to each other, 4-stranded rope looks more "tight".
10. The possibility to make 4-stranded rope increases the range of the finished rope diameters using the same source threads. But it requires some skills and efforts to make it.

Keep in mind that "VR Rope making machine" is a micro tool intended for certain operations. Do not make it perform tasks which it is not designed for.

Anything can be broken...

Please follow instructions and recommendations given in this manual.

If necessary, remove the protective film from the plastic parts.

Typical problems:

PROBLEM	SOLUTION
Source threads (2) intertwist during winding.	Take the threads apart manually.
Basic threads (2) snap during winding.	1. Reduce the load (3).
	2. Reduce the winding time.
The loops are built up on source threads (2) during winding.	Increase the load.
The finished rope is loose, the winding angle of source threads is too small.	Increase the winding time.
The finished rope is twisted tight, the winding angle of source threads is too large.	Reduce the winding time.
Source threads unwind at the beginning instead of winding. The load (3) goes down.	Change the direction of rotation of motor.
4-stranded rope w/o core comes uneven, with hogs.	See fig. 9 . One of strands attempts to take central position. Use the core.

ATTENTION!

The design of the machine may differ from what you see in this manual! The manufacturer reserves the right to make such alterations which do not deteriorate its operating characteristics.

Threads for making ropes - reference information

Threads used

Polyester threads (lavsan, terylene, dacron, tergal).

List of manufacturers

- Gutermann. Skala, Tera threads.
- Amann Group. Synton, Serafil threads.

Colors article numbers

- Gutermann numbers:
 - black — 0000
 - dark-brown — Skala-696, Tera-452
 - beige — Skala-464, Tera-131
 - red — Skala-180, Tera-448
- Synton, Serafil numbers
 - dark-brown — Serafil-0264, Synton-1224
 - beige — Serafil, Synton-0267
 - red — Serafil, Synton-026

Finished rope diameter depending on the source threads

Thread	Lay	Diameter, mm
Skala 360	1x3	0.19
Skala 240	1x3	0.22
Tera 60 (1/3)	1x3	0.25
Skala 360	2x3	0.26
Skala 200	1x3	0.26
Tera 80 (1/3)	1x3	0.27
Tera 40 (1/3)	1x3	0.31
22Л	1x3	0.33
70Л (1/3)	1x3	0.33
Skala 240	2x3	0.35
Tera 80 (1/3)	2x3	0.36
Skala 360	3x3	0.38
Tera 30 (1/3)	1x3	0.38
Skala 200	2x3	0.42
Tera 60 (1/3)	2x3	0.42
Tera 80	1x3	0.43
Skala 240	3x3	0.48
Skala 200	3x3	0.48
130Л (1/3)	1x3	0.48
Tera 40 (1/3)	2x3	0.50
Tera 20 (1/3)	1x3	0.50
70Л (1/3)	2x3	0.50
22Л	2x3	0.55
Tera 30 (1/3)	2x3	0.57
170Л (1/3)	1x3	0.60
Tera 60	1x3	0.62
Tera 40	1x3	0.62

Thread	Lay	Diameter, mm
70Л	1x3	0.62
Tera 80	2x3	0.65
Tera 10 (1/3)	1x3	0.68
22Л	3x3	0.68
130Л (1/3)	2x3	0.70
Tera 30	1x3	0.72
Tera 20 (1/3)	2x3	0.75
Tera 60	2x3	0.78
Tera 80	3x3	0.84
170Л (1/3)	2x3	0.85
130Л	1x3	0.88
Tera 60	3x3	0.95
Tera 40	2x3	0.95
Tera 10 (1/3)	2x3	0.95
Tera 30	2x3	1.00
Tera 20	1x3	1.00
70Л	2x3	1.00
170Л	1x3	1.15
70Л	3x3	1.22
Tera 40	3x3	1.25
Tera 10	1x3	1.30
170Л	1x4	1.30
Tera 30	3x3	1.45
Tera 20	2x3	1.50
130Л	2x3	1.50
170Л	2x3	1.70
Tera 10	2x3	1.94

Thread	Lay	Diameter, mm
Serafil 120/2	1x3	0.3
Synton 60	1x3	0.5

Thread	Lay	Diameter, mm
Synton 30	1x3	0.7
Synton 20	1x3	1.0

Note:

- 1/3 means that the thread was untwisted into plies which then were used to wind the rope.
- 1x, 2x, 3x - number of plies in a strand.
- x3, x4 - number of strands in the rope.
- The real rope is measured by circumference. Here the diameters are given.

