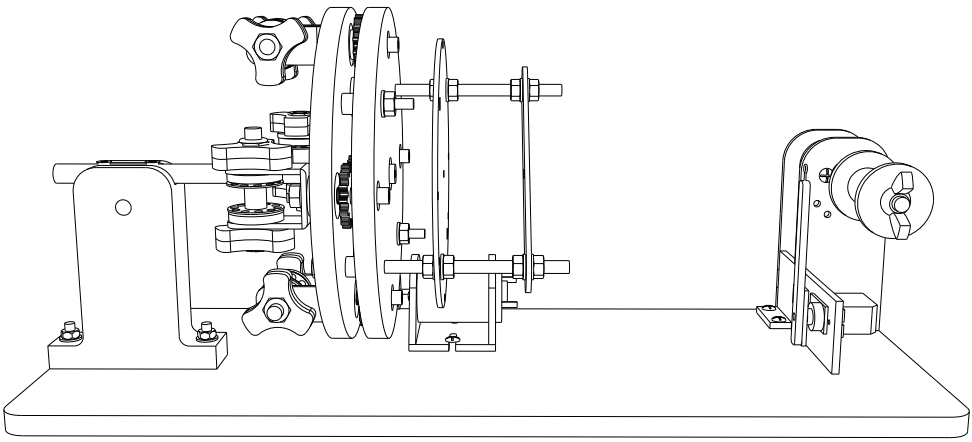
DOMANOFF
WORKSHOP

PL

Endless rope making machine

VERSION 3.2



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Read this before getting started.

- The design of the machine may differ from that shown in this manual.
- If necessary, remove the protective film from plastic parts.
- Before attaching traverse lead for the first time connect traverse motor to the control block and connect it to power supply. Refer to "Take-up assembly" section.
- Drive motor may be already mounted in desired position. If so you do not need to adjust it for the first time.
- PL machine is operated by specially designed micro controller based Smart Control Unit. Refer to User Manual enclosed with machine.

Basic features

PL Endless rope making machine ("PL machine") is intended for making professional model ropes:

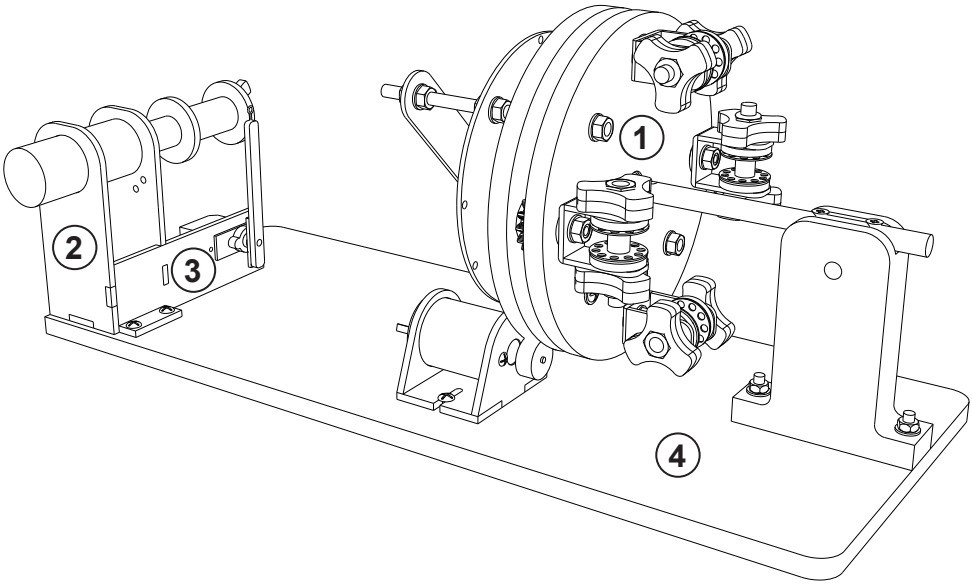
- 2-, 3- or 4-stranded;
- With/without the core;
- Plain laid or cable laid;
- Left or right lay.

Package contents

1. PL machine;
2. Control block;
3. Power supply (may be shipped separately),
4. User manual.
5. PC DVD disk with video tutorial and printing material.

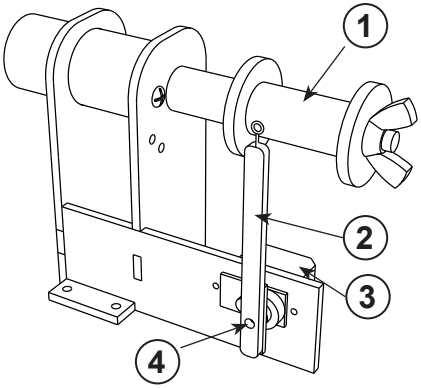
Machine parts

1. The head;
2. Take-up block;
3. Traverse unit;
4. Baseboard;
5. Smart Control Unit (not shown).



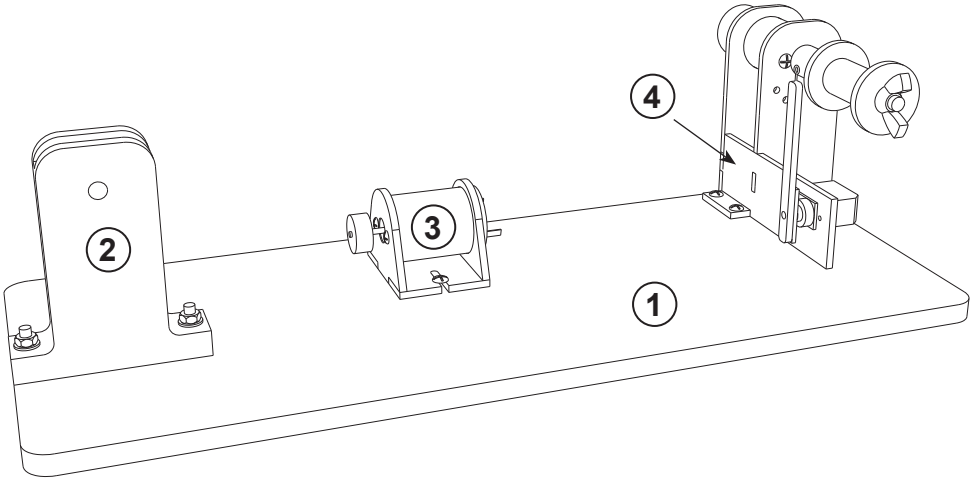
Take-up assembly

1. Mount the take-up spool assembly ***(1)*** on the take-up motor shaft.
2. Before attaching traverse lead ***(2)*** connect traverse motor ***(3)*** to the control block and to the power supply. This rotates traverse to the middle position. After that place the lead ***(2)*** vertically on motor's shaft ***(3)*** and fix it using small screw ***(4)***.



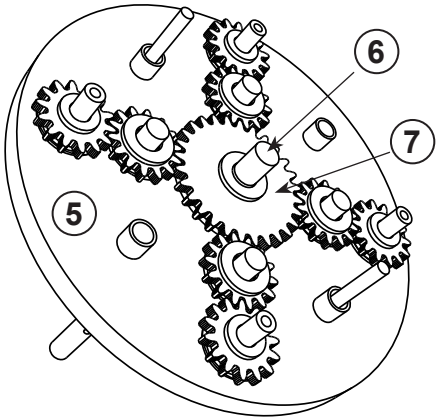
Basic assembly

1. Fix the support column ***(2)*** on the baseboard ***(1)*** using M4 screws and washers enclosed.
2. If drive motor ***(3)*** is not fixed in position use screws to mount it. Do not tighten the screws at this stage.
3. Mount the take-up block with traverse ***(4)*** using screws.

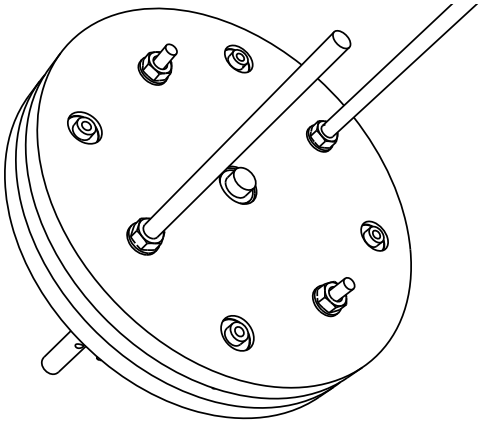


Head assembly

1. Unscrew the nuts off the bolts. Remove one of cheeks ***(5)*** making sure the washers do not come apart.
2. Insert the main axle ***(6)*** with the main gear ***(7)*** into central bearing, having placed M8 washers in between.

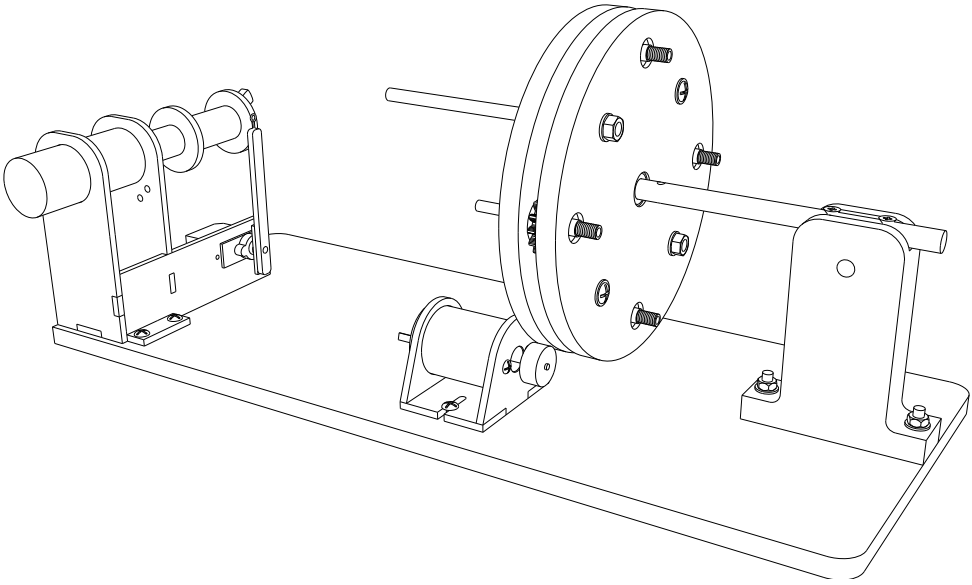


3. Refit the cheek carefully. Make sure all axles sit in their corresponding slots. Make sure all gears engage, otherwise they will break when being mounted. Rotate the central axle to check the gears engagement.
4. Mount spacer sleeves between the cheeks. Insert remaining pins and bolts. Fix those with M5 nuts.
5. Check if the assembly runs freely by rotating the central axle. The nuts can be loosened a bit if necessary.

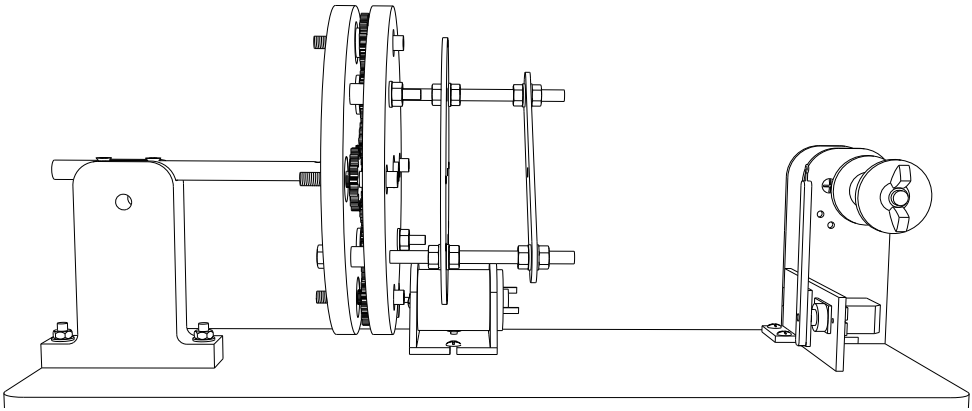


Machine assembly

1. Place the head's main axle into the support column groove.
   Fix it with screws. Try to get into the cut thread.
2. Adjust the friction coupling clamp against the cheek's butt and tighten drive motor screws (friction coupling is a rubber roller on the motor's axle).
   Check the motion.



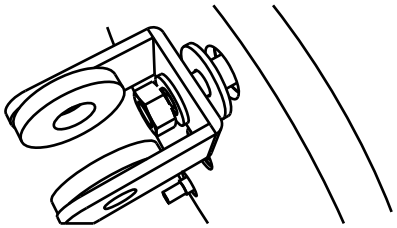
3. Mount the adaptor disk 15 mm away from the head and fix it.
   The disk's holes should be positioned exactly opposite to the axles.
4. Mount the crossbar 35-40 mm away from the adaptor disk. Fix the crossbar.



Spool holders assembly

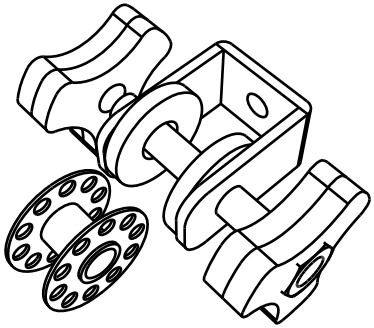
The order of mounting the spoolholder to the axle is as follows:

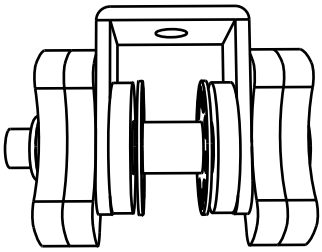
1. M5 washer,
2. Fork,
3. Wedge lock washer,
4. M5 nut.



1. Insert the spool into the fork.
2. Insert the bolt through both fork and spool. Work the nut from the reverse side so that wings are tight againt the fork on both sides. However leave a gap between the spool and the felt collar to allow free rotation of the spool.

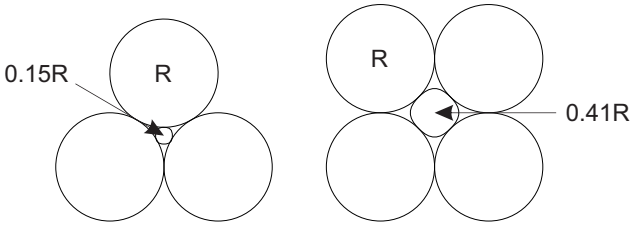
Regardless of the operating mode it is NECESSARY to mount ALL spoolholders, spools, bolts and nuts. This provides good balance of the whole assembly.





Operation guidelines

1. Do not overtighten the spool in the spoolholder. Leave a gap between the spool and the felt collar to allow the thread run down the spool freely.
2. The distance between the crossbar and the adaptor disk defines the winding point. Recommended distance is 35-40 mm away from the adaptor disk.
3. The outage during winding is not the machine's defect - it is about how smoothly the thread runs down from one of spools.
   To eliminate the problem try the following:
   - in some cases the only thing that helps is to remove all spools and refit them in a different order;
   - you can also try to replace the spool itself (the spools may be poor manufactured);
   - to check how the thread runs down just pull the thread and observe how spool rotates in the spool holder.
4. Uneven operation of the take-up block, head jumping, winding point offset do not make a problem and within certain range do not affect the winding. This may piss off, however... :)
5. If you experience the lack of speed at the take-up block, reduce the head rotation speed.
6. To increase the head rotation speed mount the friction coupling of larger diameter. Using smaller diameter friction coupling will reduce the speed.
7. Do not confuse sockets for the main drive and for the take-up block. These require different voltages.
8. Refer to the picture for cores diameters.



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.*

If you find some translation mistakes and/or misprints in this manual, please, let us know sending message to info@ShipWorkshop.com.

Your help is highly appreciated!