

Naloge

Vaje za kolokvij

1. Naloga

- Kolikšna je poraba materiala L_M pri polaganju krojnih delov v krojno sliko za materiale z raporti, če je širina materiala $\check{s}_{KS} = 150$ cm, površina krojnih delov je $1,36$ m². Izkoristek krojne slike je $I_{KS} = 75,2$ %.

$$\check{s}_{KS} = 150 \text{ cm} = 1,5 \text{ m}$$

$$A_{KD} = 1,36 \text{ m}^2$$

$$I_{KS} = 75,2 \%$$

L_M = poraba materiala (v cm, m)

L_{KS} = dolžina krojne slike (v cm ali m)

\check{s}_{KS} = širina krojne slike (v cm ali m)

ΔL = dodatek k dolžini krojne slike za sigurnost)

Rešitev naloge

$$I_{KS} = \frac{A_{KD}}{A_{KS}} \cdot 100 (\%) \rightarrow A_{KS} = \frac{A_{KD}}{I_{KS}} \cdot 100 = \frac{1,36 \text{ m}^2}{75,2\%} \cdot 100\% = 1,81 \text{ m}^2$$

$$A_{KS} = L_{KS} \cdot \check{s}_{KS} \rightarrow L_{KS} = \frac{A_{KS}}{\check{s}_{KS}} = \frac{1,81 \text{ m}^2}{1,5 \text{ m}} = 1,2 \text{ m}$$

$$\Delta L = 3 \text{ cm}$$

$$L_M = L_{KS} + \Delta L = 1,2 \text{ m} + 0,03 \text{ m} = 1,23 \text{ m}$$

2. Naloga

- Kakšno medvlogo bi izbrali za fiksiranje moškega suknjiča?
- **Odgovor:**
Tkana medvloga s PA termoplastom.

Pa še malo ponovitve teorije

- Medvloga je tekstilna površina, ki se s pomočjo spajanja, tj. našivanja ali toplotne obdelave pritrjuje na posamezne dele oblačila.



Tkana

BW, PES, rajon, mešanice



Platno, atlas, keper



Netkana

PES, PA



Pletena

BW, PES, PA, acetat



Vrste termoplastov

Termoplasti so pri sobni temperaturi trdni in nelepljivi, pri povišani temperaturi pa postajajo lepljivi. Termoplasti so kopolimeri.

Vrsta termoplasta	*Tališče $T_{tal}/^{\circ}C$	*Talilni indeks/ $cm^3 \cdot 10^{-1} \cdot min$	Parametri fiksiranja			Obstojnost	
			<i>Temp./ °C</i>	<i>Čas/s</i>	<i>Tlak/ Ncm⁻¹</i>	<i>Pranje</i>	<i>Kem. čiščenje</i>
PA	105-125 75-80	18-42	115-150	10-20	3-5	do 40°C	+
PES	115-125	20-40	140-170	10-20	5-15	do 95°C	pogojno
PE-Visokotlačni (razvejana CH-veriga)	75-100	20-70	120-150	8-12	3-5	delno	-
PE-nizkotlačni	120-135	6-35	140-170	10-18	10-20	do 95 °C	+

3. Naloga

- Izračunaj porabo sukanca za izdelavo dolžine polo majice s tipom vboda 406, če dolžina šiva znaša 105 cm, gostota vboda 4 vb/cm (iz tega vemo, daje dolžina enega vboda 2,5 mm), širina šiva 0,5 cm, debelina materiala 1 mm in koeficient stisljivosti 1. Opiši tip vboda 406 in za kaj se uporablja?

$$L = N(n_1 \cdot D_v + n_2 \cdot \check{S}_v + n_3 \cdot \sqrt{D_v^2 + \check{S}_v^2} + n_4 \cdot k \cdot D_m)$$

$$L_{406} = 1 \text{ vbod} \cdot (6 \cdot 0,25 \text{ cm} + 1 \cdot 0,5 \text{ cm} + 1 \cdot \sqrt{0,25^2 \text{ cm}^2 + 0,5^2 \text{ cm}^2} + 4 \cdot 1 \cdot 0,1 \text{ cm}) =$$

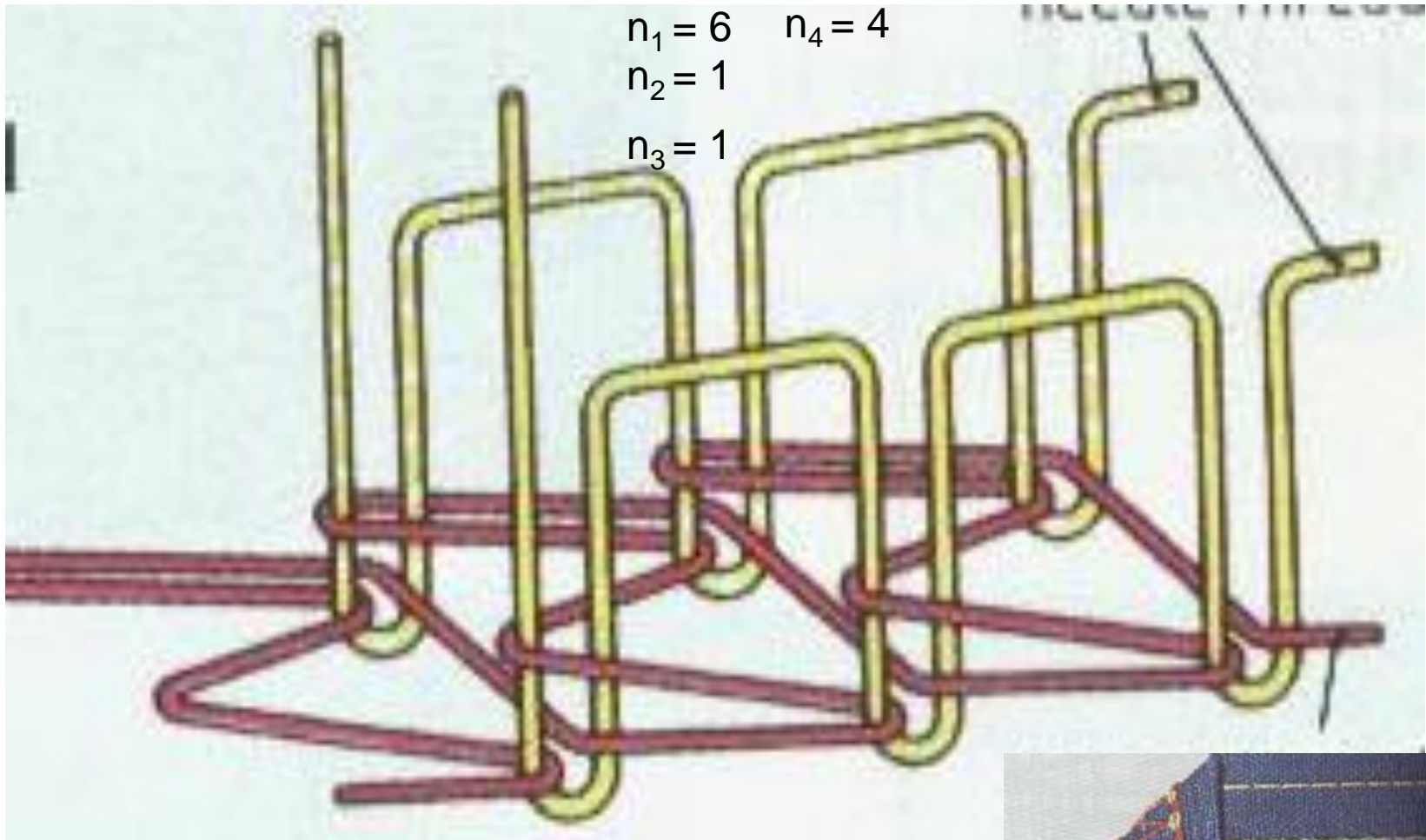
$$L_{406} = 2,7 \text{ cm}$$

2,7 cmza 0,25 cm (1 vbod)

X cm za 105 cm (dolžina šiva)

$X = (105 \text{ cm} \times 2,7 \text{ cm}) / 0,25 \text{ cm} = 1050 \text{ cm} = 10,5 \text{ m}$ sukanca porabimo⁶

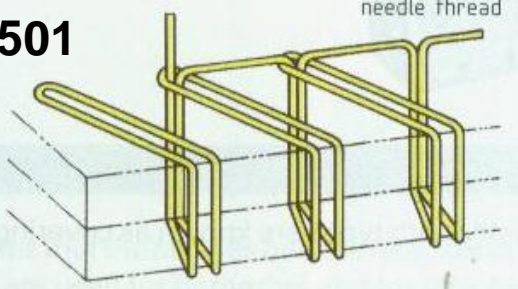
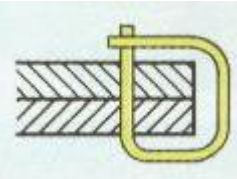

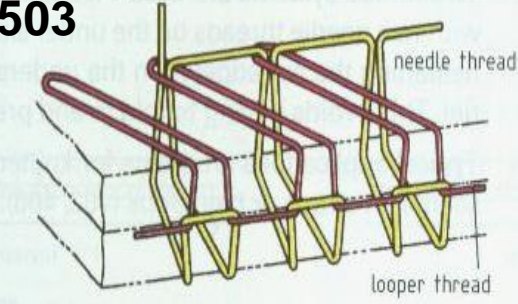
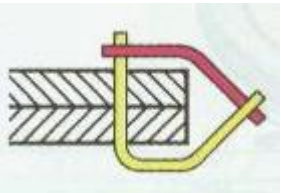

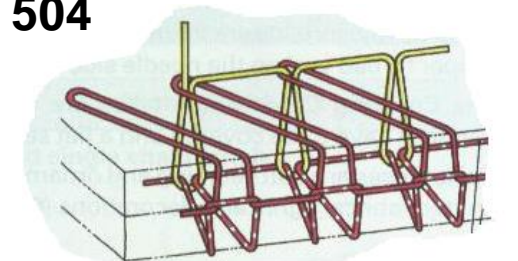
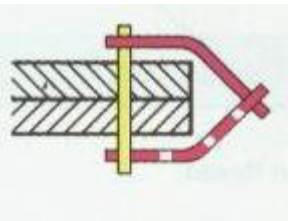
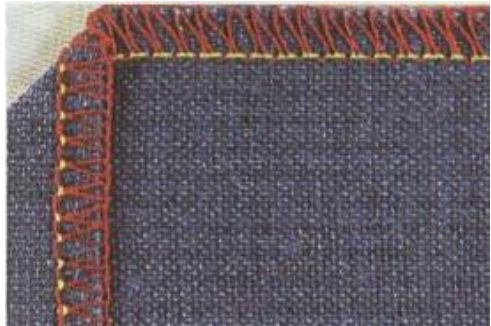
Tip vboda 406



Dvoigelni, trinitni verižni vbod
Uporablja se ga za izdelavo dolžine pri izdelkih iz pletiva.

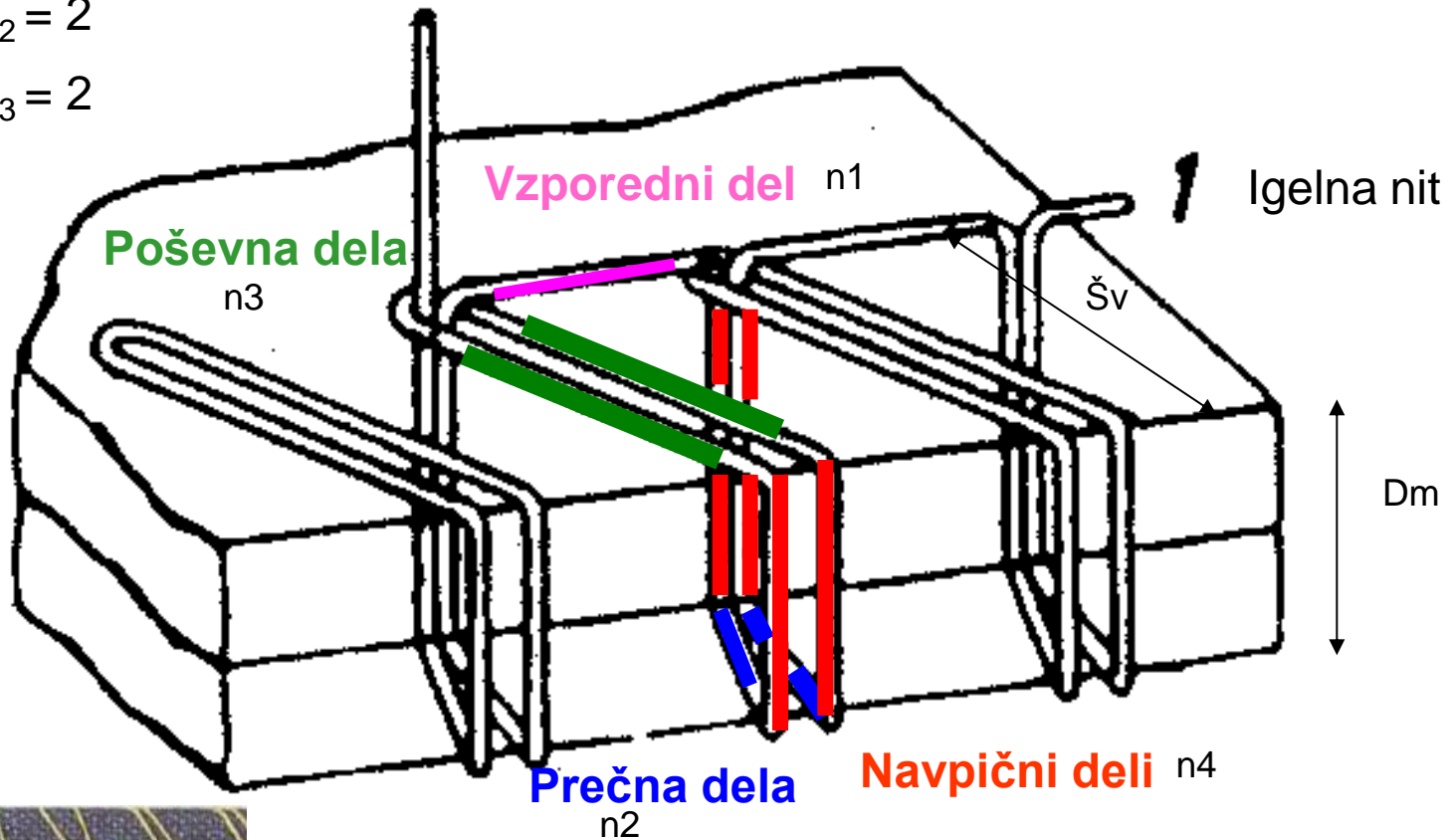


Malo za ponovitev

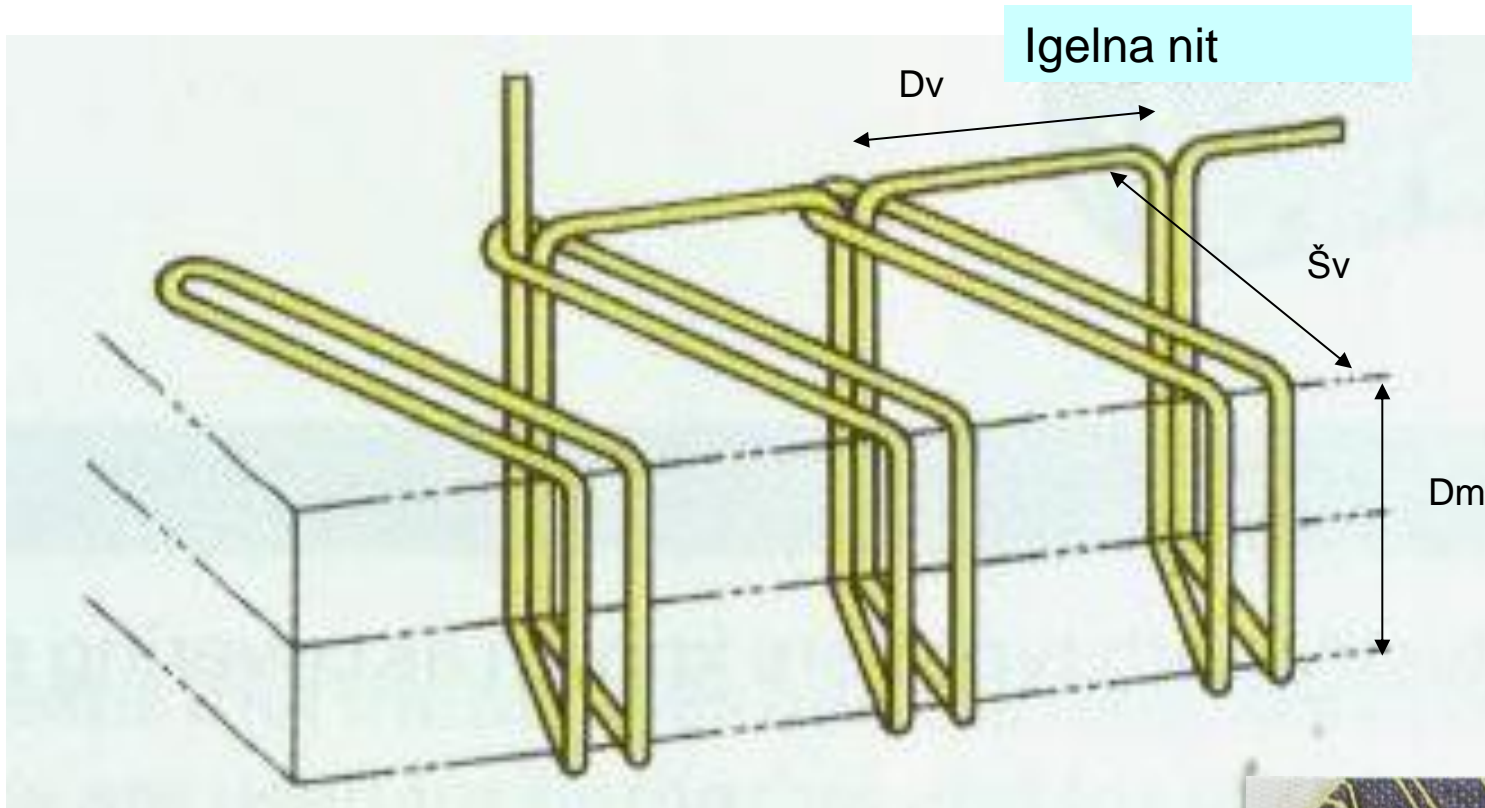
Tip vboda	Prečni prerez	Izgled šiva z vbodom
501  <p>needle thread</p>		
503  <p>needle thread</p> <p>looper thread</p>		
504 		

Tip vboda 501

$$\begin{aligned}n_1 &= 1 & n_4 &= 4 \\n_2 &= 2 \\n_3 &= 2\end{aligned}$$



$$L = N(n_1 \cdot D_v + n_2 \cdot \check{S}_v + n_3 \cdot \sqrt{D_v^2 + \check{S}_v^2} + n_4 \cdot k \cdot D_m)$$

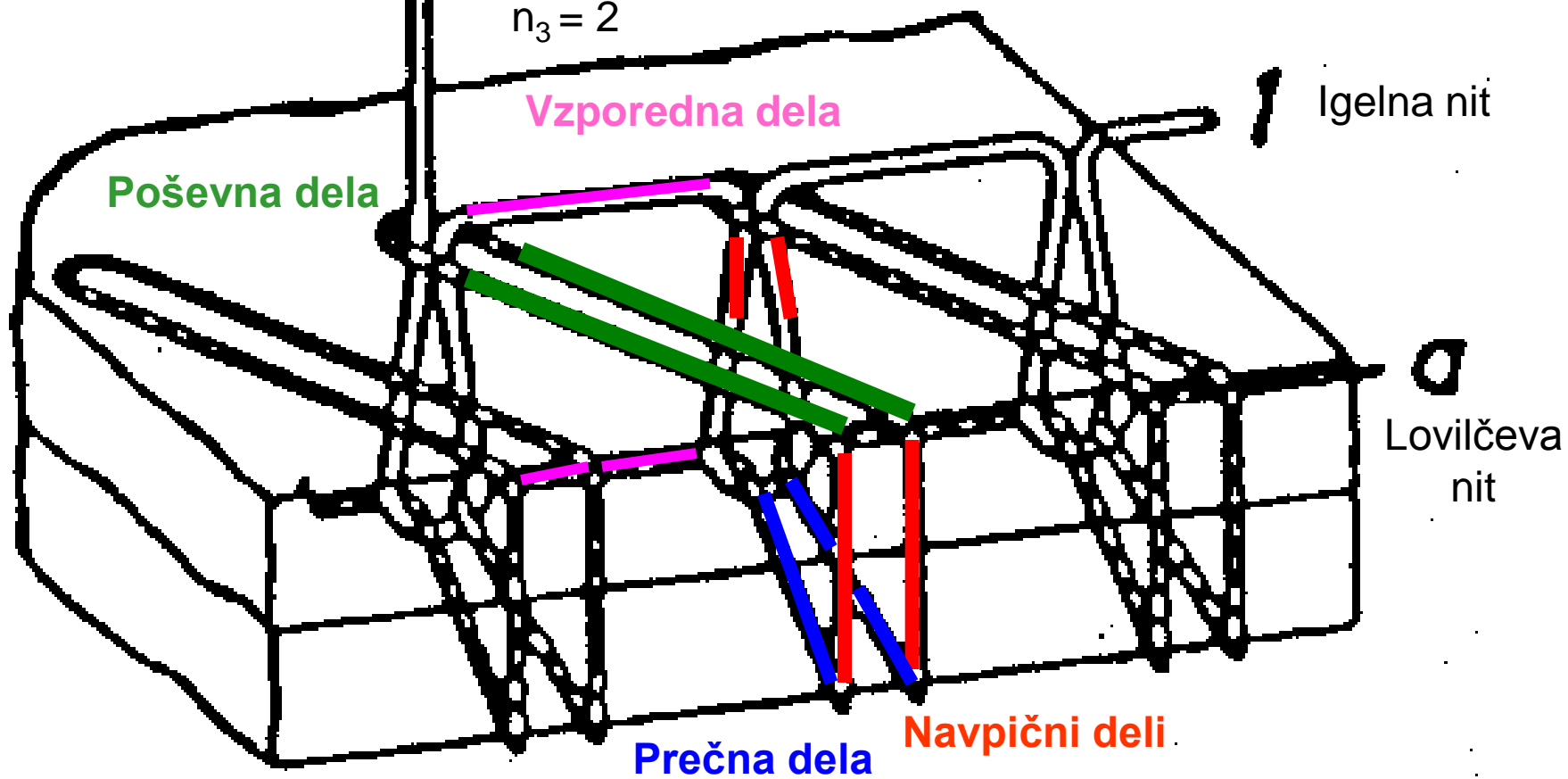


Tip vboda 502

$$n_1 = 2 \quad n_4 = 4$$

$$n_2 = 2$$

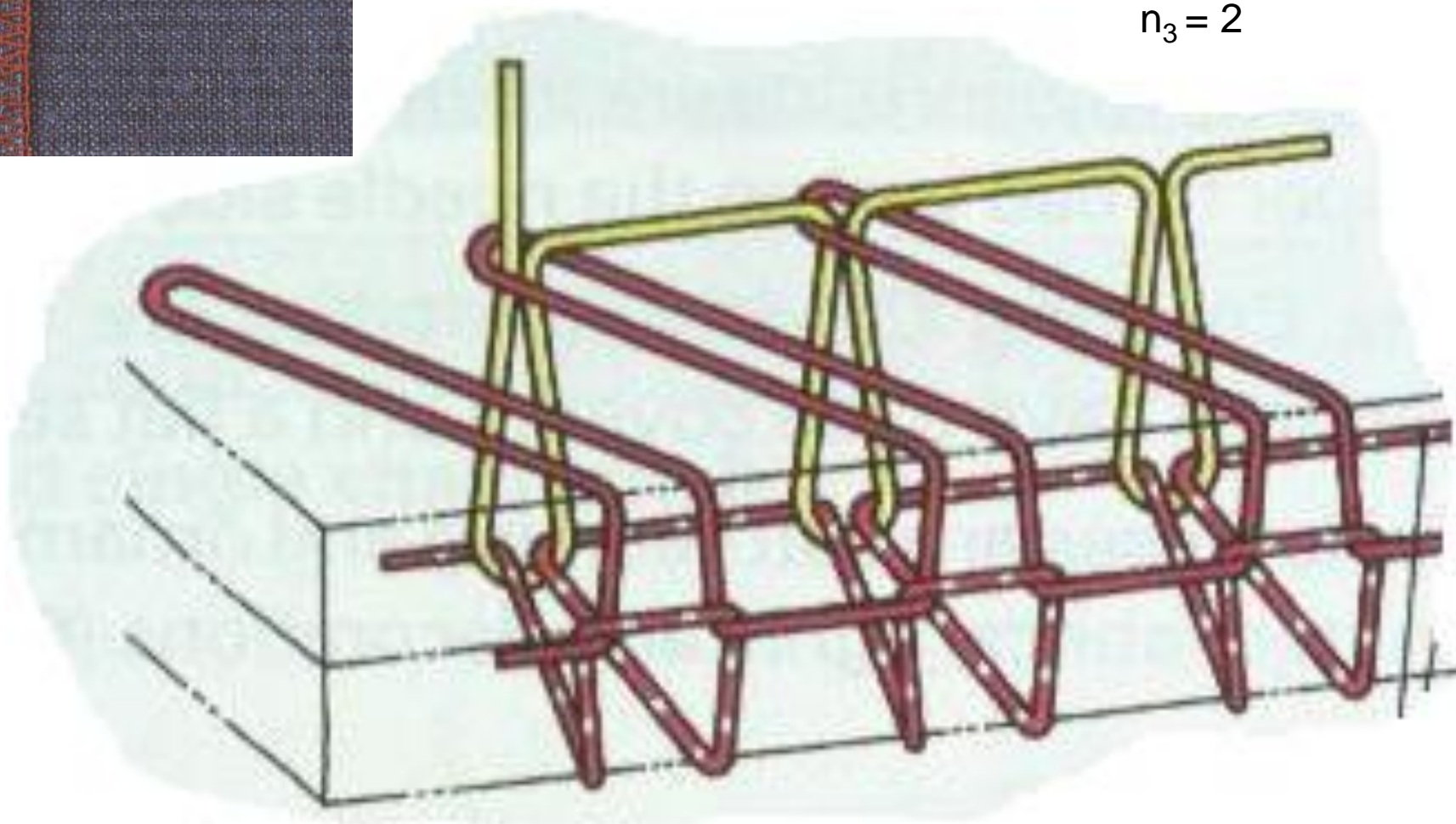
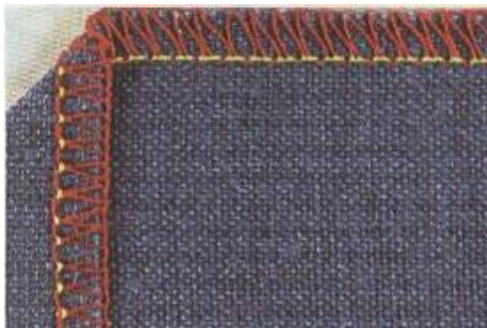
$$n_3 = 2$$



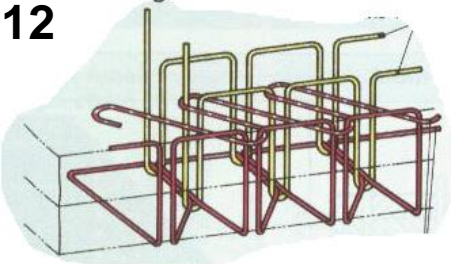
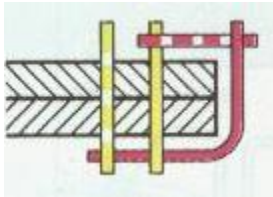

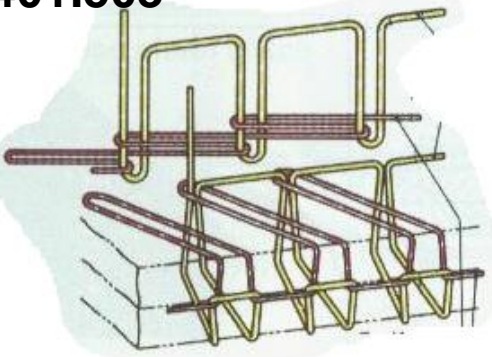
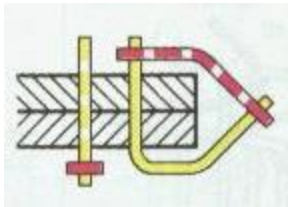

Uporaba: robljenje tkanin in pletenin ter vseh sestavljanje vseh vrst usnja

Tip vboda 504

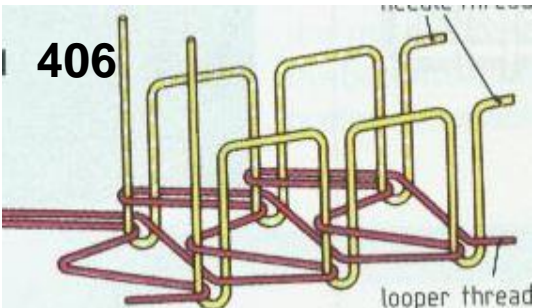
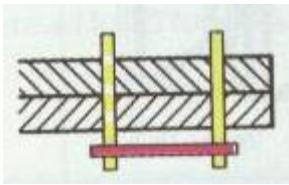

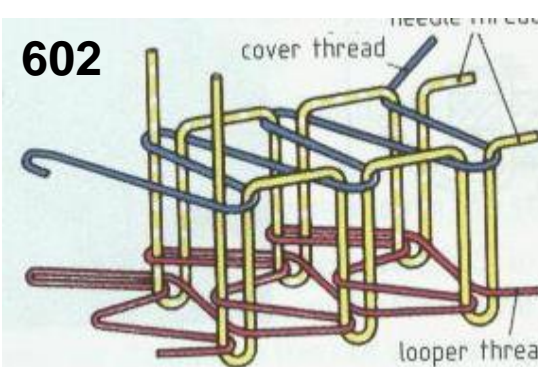
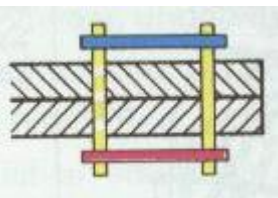

$$\begin{aligned} n_1 &= 3 & n_4 &= 4 \\ n_2 &= 2 \\ n_3 &= 2 \end{aligned}$$



Kombinirani vbodi

Tip vboda	Prečni prerez	Izgled šiva z vbodom
<p>512</p>  A 3D perspective diagram of a sewing needle labeled 512. The needle is shown with its eye and a curved, hook-like tip. The diagram illustrates the needle's path through a fabric layer, showing how the thread forms a loop that catches the fabric fibers.	 A cross-sectional diagram of needle 512. It shows the needle's eye on the left, a central shaft, and a curved tip on the right. The diagram highlights the specific shape of the tip and how it interacts with the fabric fibers during stitching.	 A close-up photograph of a blue fabric edge with a red thread. The stitching is a decorative, wavy pattern. The needle 512 is visible at the top, showing its curved tip and how it forms the characteristic loops of the stitch.
<p>401.503</p>  A 3D perspective diagram of a sewing needle labeled 401.503. The needle has a more complex, multi-part tip structure compared to needle 512. The diagram shows the needle's path through a fabric layer, illustrating how the thread forms a loop that catches the fabric fibers.	 A cross-sectional diagram of needle 401.503. It shows the needle's eye on the left, a central shaft, and a complex, multi-part tip on the right. The diagram highlights the specific shape of the tip and how it interacts with the fabric fibers during stitching.	 A close-up photograph of a blue fabric edge with a red thread. The stitching is a decorative, wavy pattern. The needle 401.503 is visible at the top, showing its complex tip and how it forms the characteristic loops of the stitch.

Kritni vbodi

Tip vboda	Prečni prerez	Izgled šiva z vbodom
<p>406</p>  <p>Diagram showing the needle thread arrangement for stitch 406. It features a yellow needle thread forming a series of vertical loops. A red looper thread is shown passing through these loops. Labels include 'needle thread' and 'looper thread'.</p>	 <p>Diagram showing the cross-section of the needle thread arrangement for stitch 406. It illustrates two vertical yellow threads (needle threads) and a horizontal red thread (looper thread) passing through the loops.</p>	 <p>Photograph showing the appearance of the stitch 406 on a blue fabric. The red looper thread forms a series of loops that are held together by the yellow needle threads.</p>
<p>602</p>  <p>Diagram showing the needle thread arrangement for stitch 602. It features a yellow needle thread forming a series of vertical loops. A blue cover thread is shown passing through these loops. A red looper thread is also shown. Labels include 'cover thread' and 'looper thread'.</p>	 <p>Diagram showing the cross-section of the needle thread arrangement for stitch 602. It illustrates two vertical yellow threads (needle threads), a horizontal blue thread (cover thread) passing through the loops, and a horizontal red thread (looper thread) passing through the loops.</p>	 <p>Photograph showing the appearance of the stitch 602 on a blue fabric. The red looper thread forms a series of loops, and the blue cover thread is visible as a horizontal line passing through the loops.</p>

4. Naloga

- Izračunaj finočo v tex in metričnem sistemu dvonitnega sukanca iz opredene preje, če je masa sukanca dolžine 1m enaka 0,035 g.

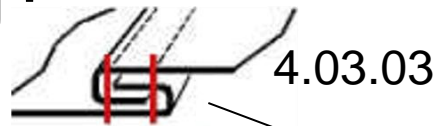
$$T_t = \frac{0,035 \text{ g} \cdot 10^3}{1 \text{ m}} = 35 \text{ tex}$$

$$N_m = \frac{1000}{35 \text{ tex}} = 28,6 \text{ m/g}$$

Sukana preja iz dveh enakih komponent-
to je značilno za sukance, ki se uporabljajo
za šivanje.

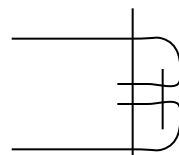
5. Naloga

- Označi šiva na moški srajci. Pri katerih šivih lahko pričakujemo največje nabiranje šiva in zakaj?

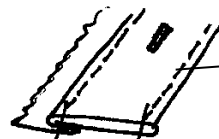


Večje nabiranje šiva lahko pričakujemo pri večfaznih šivih kot so:
4.03.03 (ploščati šiv) in 2.02.03 (enkrat pošit spojni šiv)

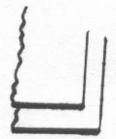
2.02.03



1.06.02



1.01.01



6.02701



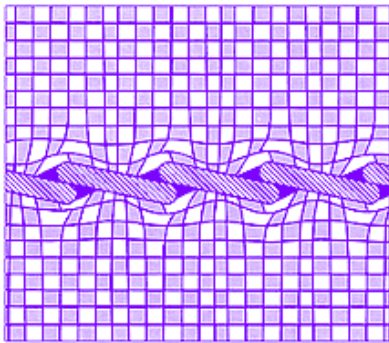
Ponovitev:

Skupine šivov po ISO 4916

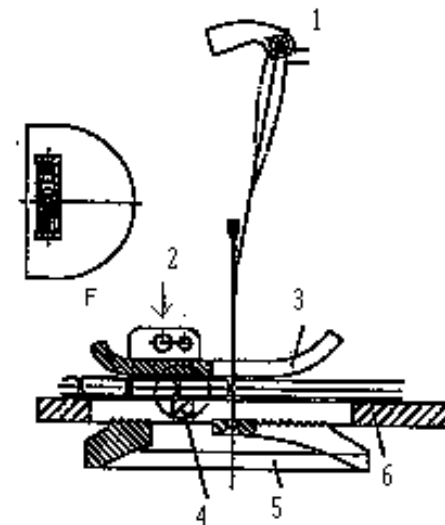
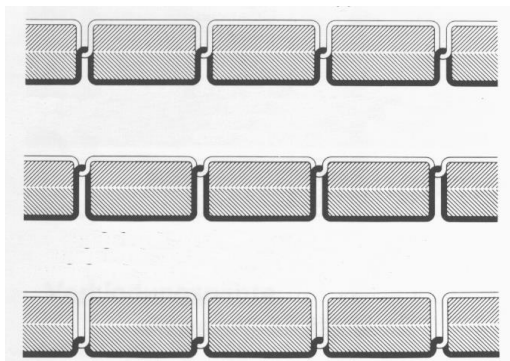
OBLIKA SLOJA ŠIVANCA	SKUPINA ŠIVOV							
	1	2	3	4	5	6	7	8
	2 ali več	1 ali več	1 ali več	1 ali več	0 ali več	1	1	-----
	----- ---	1 ali več	----- --	+ 1 ali več				-----
	----- ---	----- --	----- --	----- --	1 ali več	----- ---	----- --	-----
	0 ali več	0 ali več	1 ali več	0 ali več	0 ali več	----- --	1 ali več	1 ali več
Minimalno število slojev	2 ali več	2 ali več	2 ali več	2 ali več	1 ali več	1 ali več	2 ali več	1 ali več
Osnovna razporeditev slojev šivanca								

Zakaj nastane nabiranje šiva?

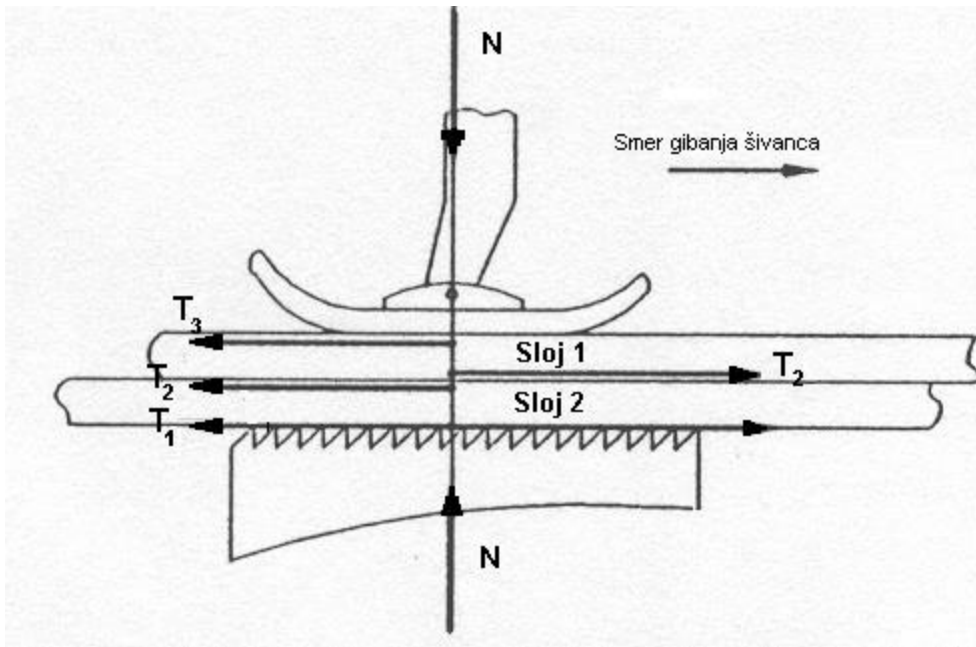
- Zaradi odtrivanja niti vezave



- Napetostno nabiranje šiva



- Transportno nabiranje šiva



6. Naloga

- Izračunaj pomožni čas pri šivanju ovratnika na navadnem šivalnem stroju, če je operativni čas šivanja 40 s, stroj šiva s 4000 vb/min, dolžina šiva je 35 cm. En vbod ima dolžino 2,5 mm.

$$t_o = t_t + t_p$$

$$t_p = t_o - t_t$$

$$t_{ts} = \frac{1 \cdot g_v \cdot 60}{n}$$

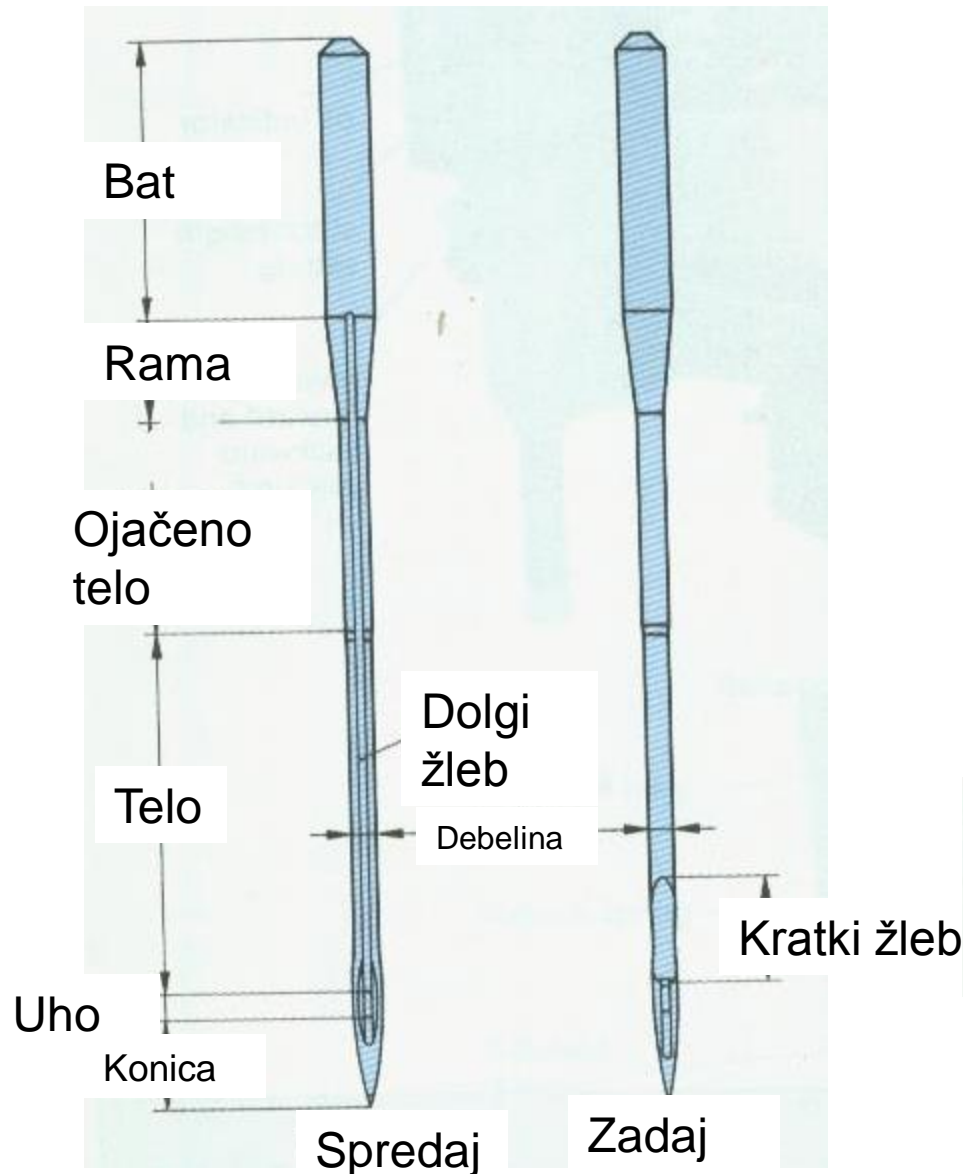
$$t_t = \cancel{t_{tR}} + \cancel{t_{tSR}} + t_{tS}$$

$$t_{ts} = \frac{35\text{cm} \cdot 4\text{vb} / \text{cm} \cdot 60 \cdot \text{s} / \text{min} \cdot \text{min}}{4000\text{vb}} = 2,1\text{s}$$

$$t_p = t_o - t_t$$

$$t_p = 40 \text{ s} - 2,1 \text{ s} = 37,9 \text{ s}$$

Šivalna igla



Označevanje:

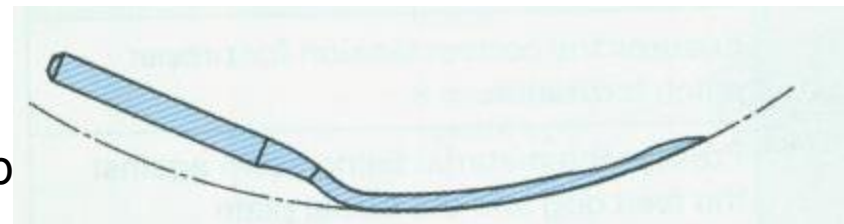
Finost igle Nm, ki pomeni
100 x debelina.

Npr. Nm 70, $d = 0,7$ mm

Tanka igla: do Nm 70

Srednja igla: do Nm 90

Debela igla: nad Nm 100



Ukrivljena oblika igle
Za izdelavo slepega vboda
(tip vboda 103).

7. Naloga

- Izračunaj število strojev in število delavcev za dnevno kapaciteto 450 ženskih kril.
- **Plan tehnoloških operacij:**
 1. *Izdelava všitkov, $t_i = 80$ s, NŠS*
 2. *Obšivanje sprednjega, zadnjega dela in pasu, $t_i = 420$ s, SŠS*
 3. *Šivanje sprednjega in zadnjega dela, $t_i = 150$ s, NŠS*
 4. *Vstavljanje zadrge v stranski šiv, $t_i = 120$ s, SŠS*
 5. *Šivanje pasu na krilo, $t_i = 350$ s, NŠS*
 6. *Zapiranje pasu, $t_i = 80$ s, NŠS*
 7. *Izdelava gumbnice, $t_i = 45$ s, A*
 8. *Prišivanje gumba, $t_i = 45$ s, A*
 9. *Končno likanje, RD (ne upoštevamo pri izračunu)*

$$t_{NŠS} = 660 \text{ s} = 11 \text{ min}$$

$$t_{SŠS} = 540 \text{ s} = 9 \text{ min}$$

$$t_A = 90 \text{ s} = 1,5 \text{ min}$$

$$t_i = 21,5 \text{ min}$$

Izračuni:

Dnevna kapaciteta proizvodne enote: $C_d = \frac{T_d \cdot D}{t_i} = 450 \text{ kosov}$

Število delovnih sredstev : $K_{Nšs} = \frac{C_d \cdot t_{Nšs}}{T_d} = \frac{450 \cdot 11 \text{ min}}{450 \text{ min}} = 11 \text{ strojev}$

$$K_{sšs} = \frac{C_d \cdot t_{sšs}}{T_d} = \frac{450 \cdot 9 \text{ min}}{450 \text{ min}} = 9 \text{ strojev}$$

$$K_A = \frac{C_d \cdot t_A}{T_d} = \frac{450 \cdot 1,5 \text{ min}}{450 \text{ min}} = 2 \text{ stroja}$$

Število delavcev: $D = \frac{C_d \cdot t_i}{T_d} = \frac{450 \cdot 21,5 \text{ min}}{450} = 22 \text{ delavcev}$

Dnevna kapaciteta na delavca: $C_{d_d} = \frac{C_d}{D} = \frac{450}{22} = 21 \text{ kosov/delavca}$

$$t_{Nšs} = 660 \text{ s} = 11 \text{ min}$$

$$t_{sšs} = 540 \text{ s} = 9 \text{ min}$$

$$t_A = 90 \text{ s} = 1,5 \text{ min}$$

$$t_i = 21,5 \text{ min}$$

8. Naloga

- Iz česa sestoji maloprodajna cena izdelka?