REVISION BOARD

INDICES	DATES	MODIFICATIONS
A	03/12/02	Creation
B	15/03/04	Width of wire mesh
C	13/07/05	Addition of photos

1. SUBJECT

This mode of operation describes the directions that a pot scourers knitter has to follow.

2. APPLICATION FIELD

These directions include all operations likely to be executed by the knitter in the knitting workshop.

3. PHOTOS

See pages N° 2 to 11

4. PROCESS

Bench of 16 knitting heads
Knitting workshop VOCO France Sàrl

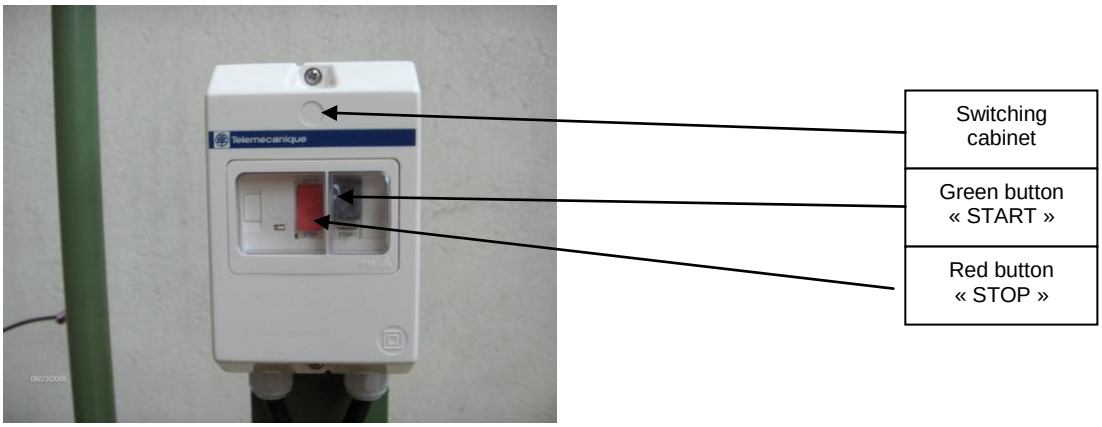
Bench of 2 knitting heads

Bench of 16 knitting heads

Fig. 1

Bench of 2 knitting heads

Fig. 2



Bench of 2 knitting heads

Fig. 3

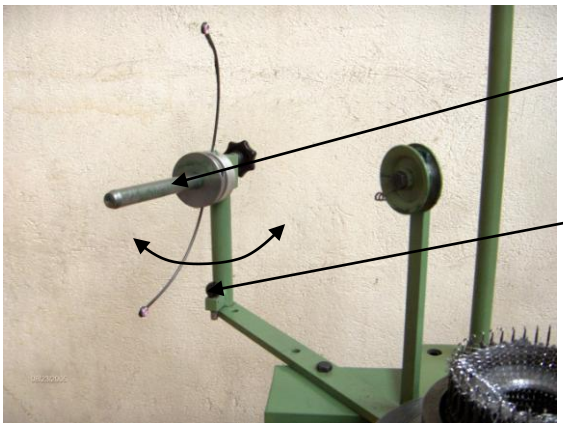
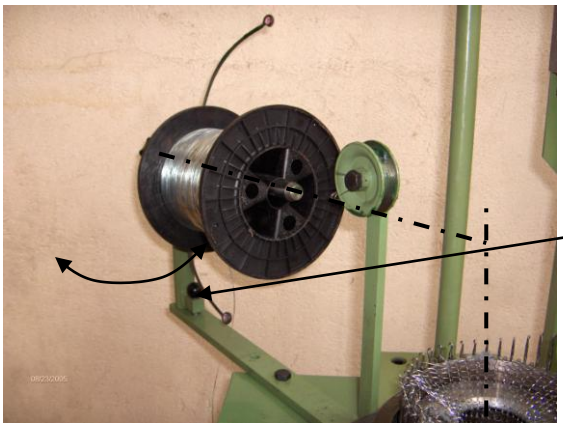


Fig. 4



Bench of 2 knitting heads

Fig. 5

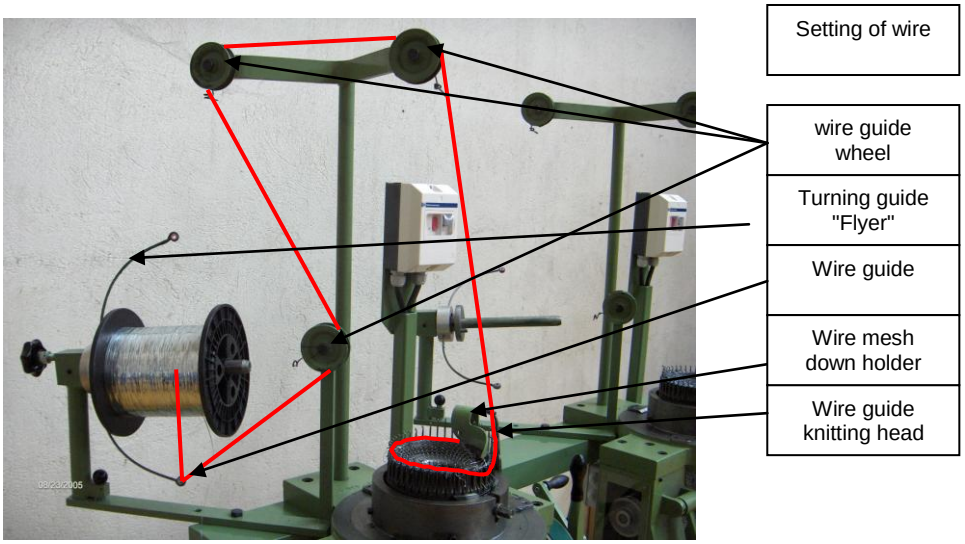
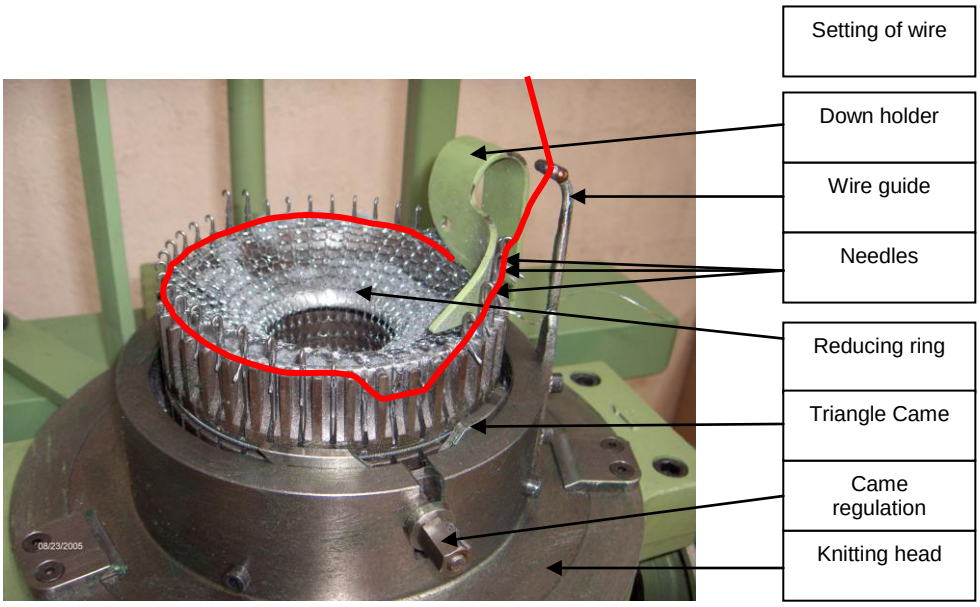


Fig. 6



Bench of 2 knitting heads

Fig. 7

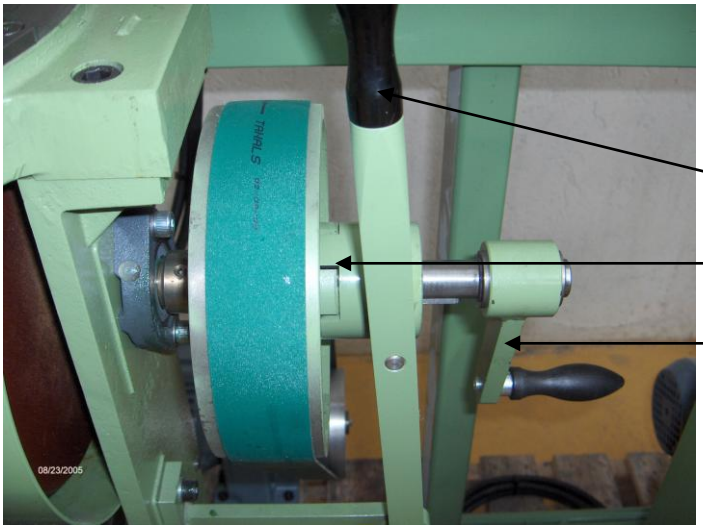
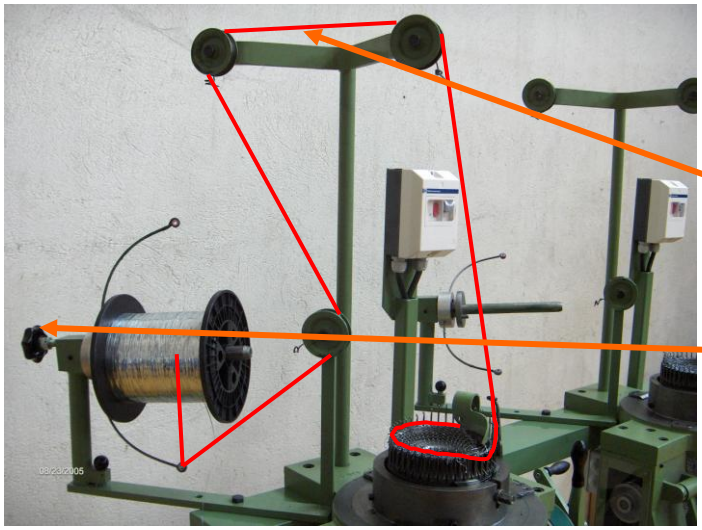


Fig. 8



Bench of 2 knitting heads

Fig. 9

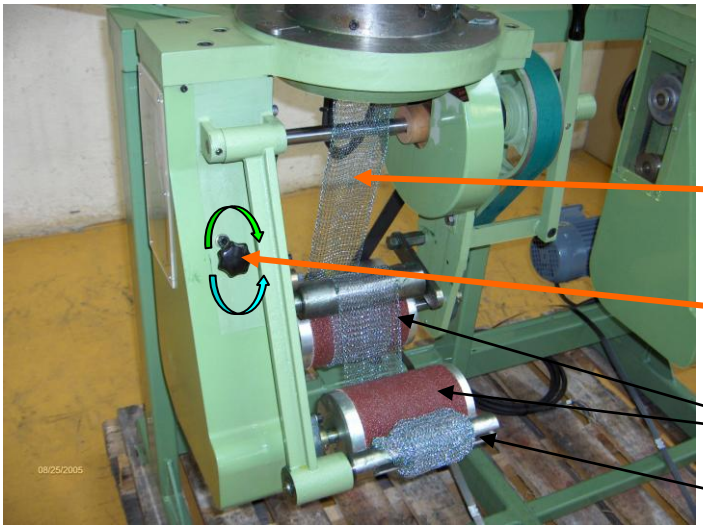
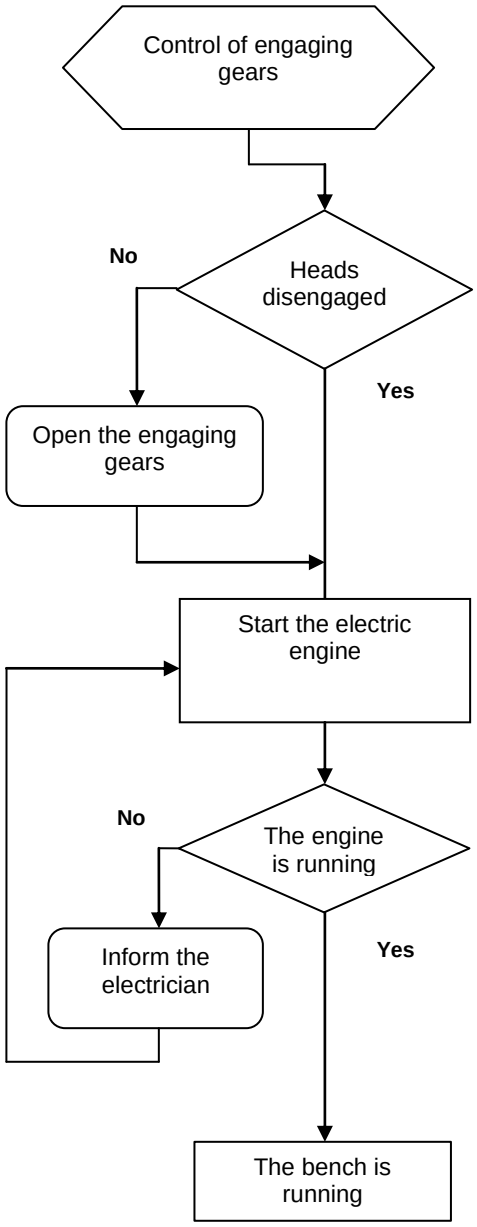
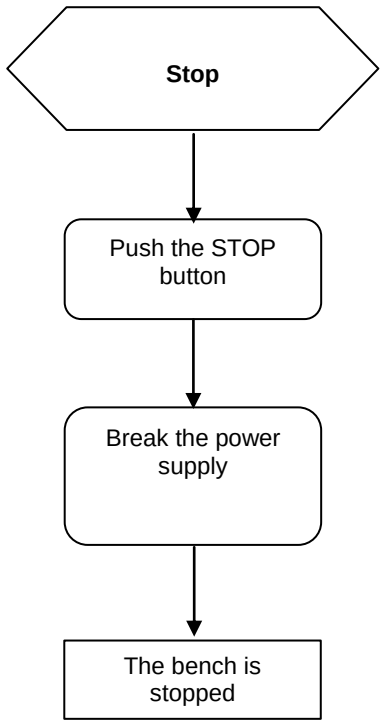


Fig. 10

4.1- Setting of the knitting bench

WHO? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter  	At the beginning After each stop You do not succeed in starting the engine	Visual control Pull the engaging handle to the right **Fig. 7** Connect the voltage by using the general switcher. Push the START button of the switching cabinet **Fig. 1** **Fig. 2** Inform the electrician that is the only one to be qualified to open the switching cabinet.	

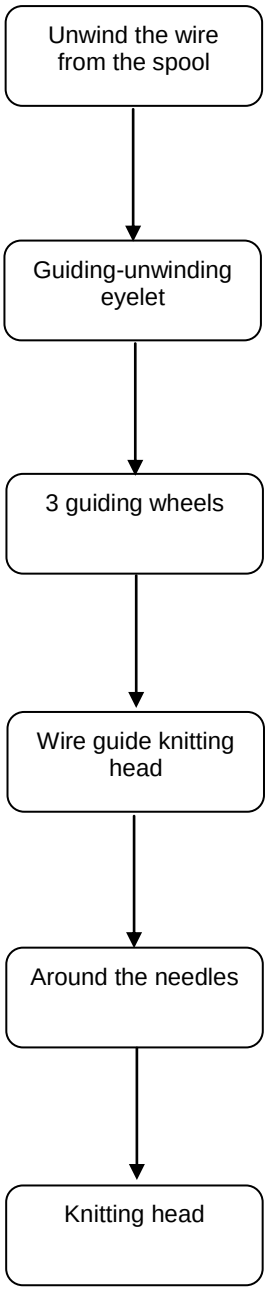
4.2- Stop of the knitting bench

WHO ? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter 	At the end In case of problems	Push the STOP button of the switching cabinet **Fig. 1** **Fig. 2** Break the power supply by pulling the handle of the switcher downwards. **Fig. 1** (bench 16 heads)	

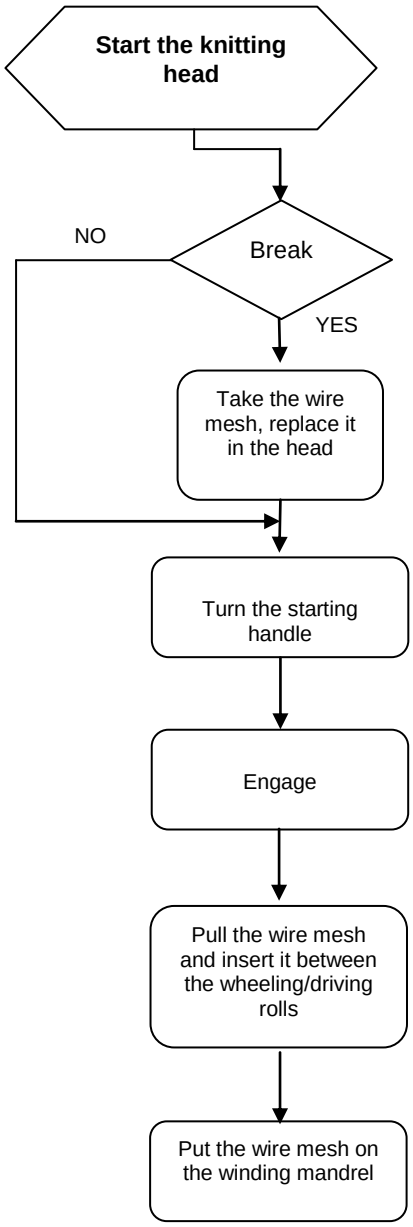
4.3- Setting of the flat wire spool

WHO ? WHAT?	WHEN ?	HOW ?	DOCUMENT
Knitter Unlock the spool support ↓ Take away the empty spool ↓ Set the wire spool on the support ↓ Lock the support in work position ↓ Put the control sticker	Empty spool	**Fig. 3 et 4** Pull the locking button upwards. Unlock the spool support to make it accessible. Take away the empty spool. Put the empty spool on the bench on the right of the knitting head. Take a flat wire spool on the pallet. Set the spool on the mandrel of the spool support. Take away the protection wrapping. Set the support in work position and lock. Put the control sticker of the spool.	

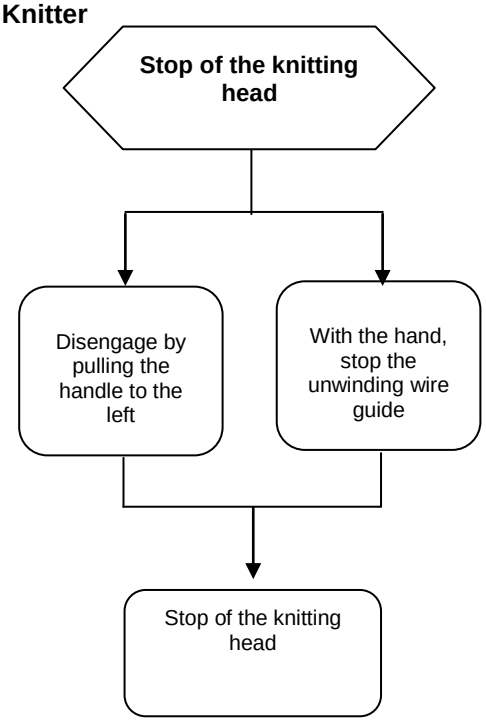
4.4- Setting of the flat wire

WHO ? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter 	After the spool change After a wire break	**Fig. 5 et 6** Unwind the wire from the spool Thread/pass the wire in: 1. the eyelet of unwinding wire guide 2. the 3 wheels by passing in the spring guides 3. Wire guide knitting head 4. Around the needles 5. Pass in the knitting head	

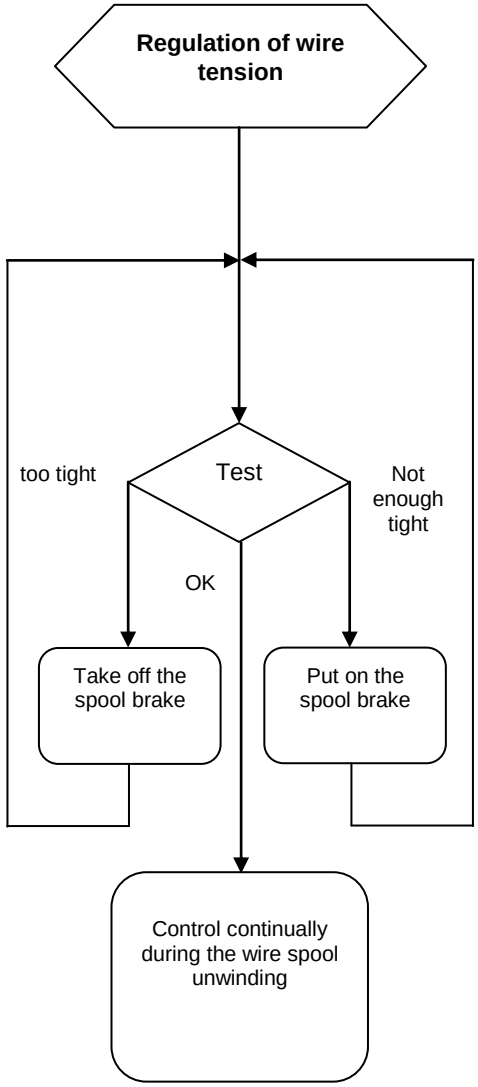
4.5- Starting of the knitting head

WHO ? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter  	At the beginning After wire break. After spool change After stop	Restart after wire break, replace the wire mesh in the knitting head, wind it around the needles, or do the action 4 – 4 with the wire again. **Fig. 7** Turn the starting handle to make the knitting head turn. Engage by pushing the handle to the left. Release the starting handle and the engaging handle. Grab the beginning of wire mesh under the knitting head by pulling it moderately. Pass it between the driving rolls. **Fig. 9** Put the beginning of wire mesh on the winding mandrel.	

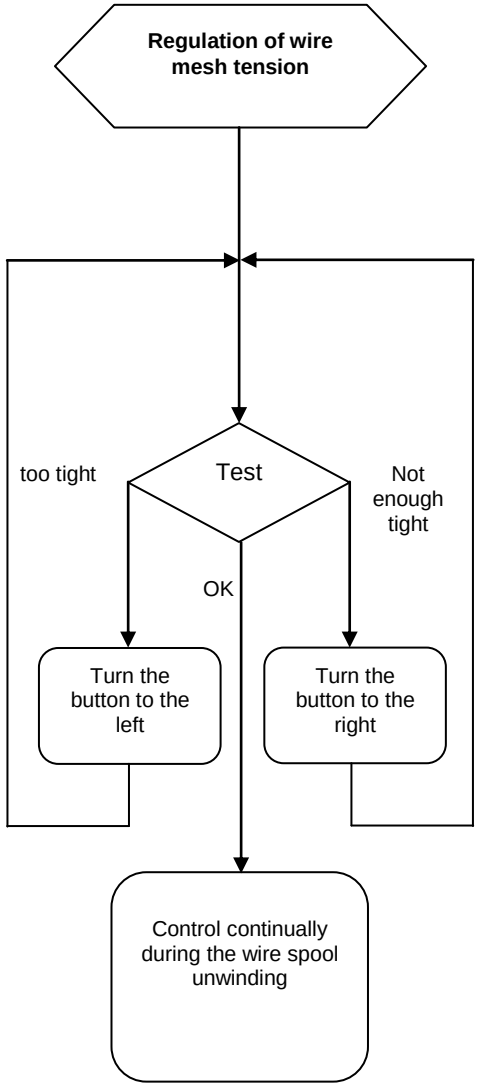
4.6- Stop of the knitting head

WHO ? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter  	At the end Spool end Wire break	**Fig. 7** Disengage and stop simultaneously the unwinding guide at the time of the knitting head stopping.	

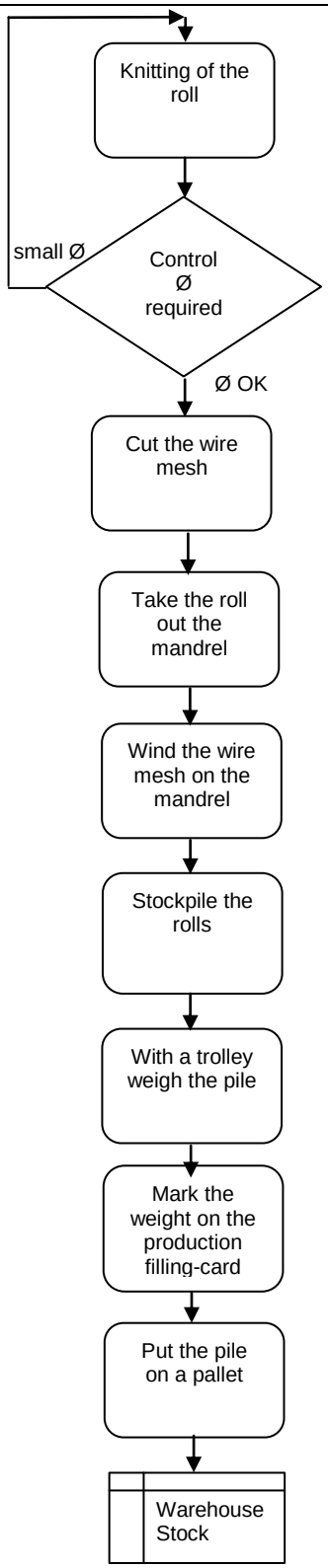
4.7- Regulation of wire tension

WHO ? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter  	At each change of wire mesh spool After each wire break If the wire mesh presents spun stitches If the wire mesh drops on the needles. During the wire unwinding, the tension changes with the decreasing of the spool diameter.	**Fig. 8** Regulation of spool brake. Test manually the wire tension between the both upper small wheels. Put on the brake to increase the tension Take off the brake to decrease the tension.	

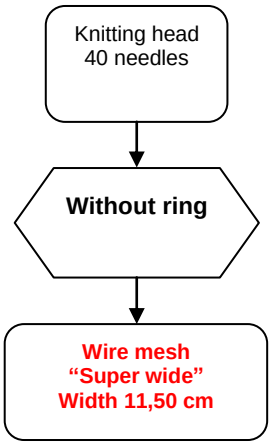
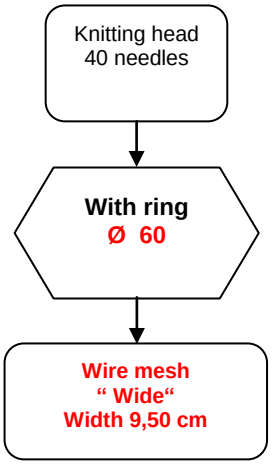
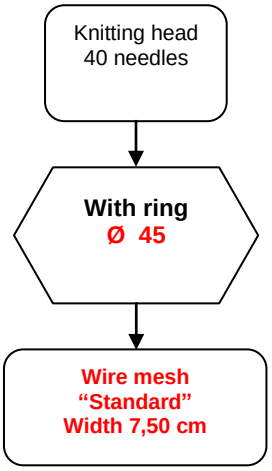
4.8- Regulation of the wire mesh tension

WHO? WHAT ?	WHEN ?	HOW ?	DOCUMENT
Knitter  	At each change of wire mesh spool After each wire break If the wire mesh presents spun stitches. If the wire mesh drops on the needles. During the wire unwinding, the tension changes with the decreasing of the spool diameter	**Fig. 9** Regulation of the wire mesh winding speed Test manually the wire mesh tension at its going out under the knitting head Turn the button to the right to increase the tension Turn the button to the left to decrease the tension	

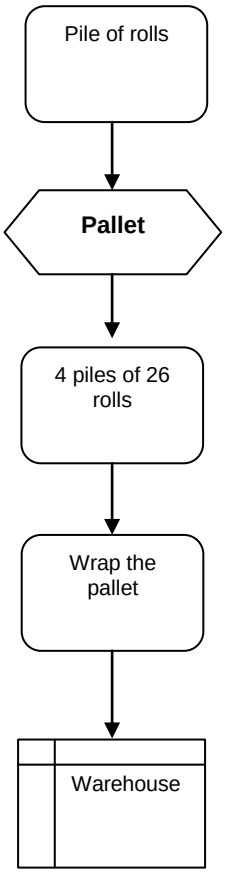
4.9 – Change of wire mesh spool

WHO ? WHAT?	WHEN ?	HOW ?	DOCUMENT
	The wire mesh roll has to be changed when : 1. the maximum passage diameter between the frame is reached 2. the required diameter is reached	Visual control for the roll destined for the manufacturing Control with a small rule for the required diameters Cut the wire mesh with scissors , take the roll out the mandrel, put it near bench. Wind the wire mesh going out from the knitting head around the winding mandrel Stockpile the rolls and be careful not to let the zinc dust fall in the rolls. Put the pile with the trolley on the balance Mark the weight on the production filling-card Put a stick with material colour and reference number The piles have to be ranged carefully on a pallet. The rolls have to be wrapped manually to be sure that the whole is stable.	

4.10 – Wire mesh size

WHO ? WHATI ?	WHEN ?	HOW ?	DOCUMENT
	On customer request Wire Ø 0.22 Wire Ø 0.24	The knitting head operates without reduction ring. The wire mesh is called “super wide” The denomination is **SUPER WIDE**	
	On customer request Wire Ø 0.22 Wire Ø 0.24	The knitting head operates with a reduction ring Ø 60 The wire mesh is called (Normal or wide) The denomination is **WIDE**	
	Standard knitting Wire Ø 0.22	The knitting head operates with a reduction ring Ø 45 The wire mesh is called “8cm” The denomination is **STANDARD**	

4.11 – Packing of the wire mesh rolls on pallet

WHO ? WHAT ?	WHEN ?	HOW ?	DOCUMENT
	Customer request	**Fig. 10** The pile of knitted rolls have to be put carefully on pallets. 4 piles of 26 rolls for the galvanised wire mesh. 4 piles of 25 rolls for the copper-coated wire mesh. The whole has to be wrapped to assure the stability. Different pallet sizes are used: 1200 x 1200 1000 x 1000 1000 x 800 The pallets are stocked in the knitting workshop.	

4.12 – Usual problems

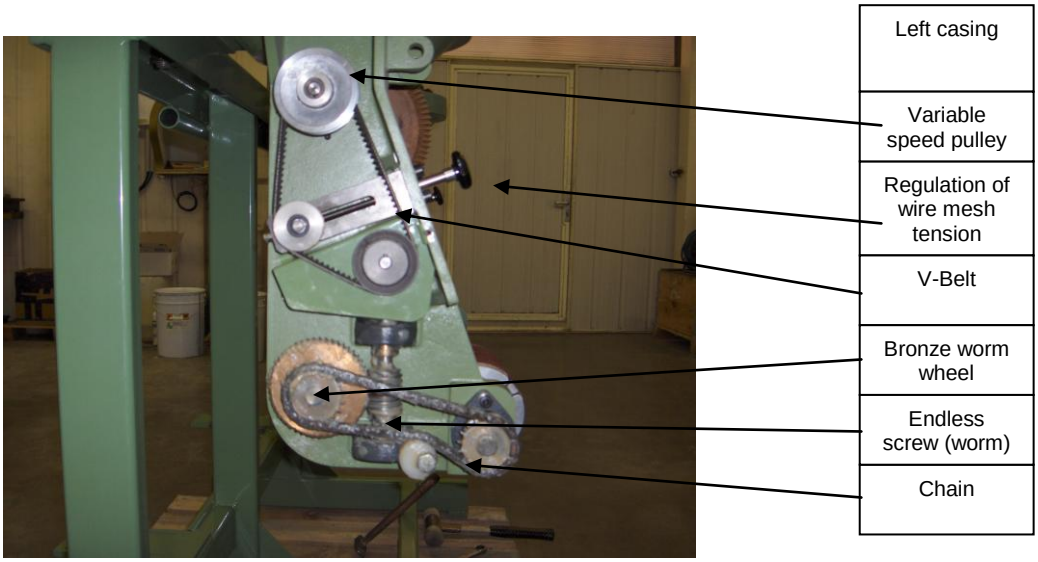
DESIGNATION	CAUSES - RESOLUTIONS	INTERVENER
Circuit break of the bench motor	Knitting heads gummed up: disassembling + cleaning	Maintenance Knitter
Wire break during the unwinding	Wire too laminated Width < 0,05mm : regulation of the rolling mills, see N° Wire not correctly winded : wire-drawer see N° Wire tension : regulation	 Foreman Foreman Knitter
Wire break in the knitting head	Wire too laminated Width > 0,70mm : regulation of the rolling mills : check the die Ø 0,216 Wire tension : regulation Wire mesh tension : regulation	 Foreman Foreman Knitter Knitter
Spun stitches	Wire tension : regulation Wire mesh tension : regulation Position of the triangle cam : regulation Position of wire guide of knitting head : regulation	Knitter Knitter Knitter Maintenance Knitter Maintenance
Wire break at the starting of the knitting head	Check the wire guide position fixed on the turning part. The wire has to pass in the crochet –needle in upper position in order that the stitches take form when the needles go down in the wire mesh. The wire guide has to be positioned by deforming the mild steel pin of the support.	Knitter
Wire break	Check the wire guides The wire abrades the guide, turn or change the used guide.	

4.13 – Usual maintenance

DESIGNATION	PERIODE	OPERATION	INTERVENER
Knitting bench	Week	Complete cleaning	Knitter
Knitting head	Day	Lubrication of : needles triangle cam guiding wheels	Knitter
Knitting head	3 months	Disassembling for complete cleaning	Maintenance
Ground	Day	Sweeping	Knitter
Ground	3 months	Cleaning	Knitter
Needles	Day	Replace of the broken needles. Check the needle heels	Knitter
Left casing Fig. 11 page 20	3 months	Open the casing Lubricate the screw and the worm wheel Check the V-Belt Lubrication of the chain	Maintenance

Bench of 2 knitting heads

Fig. 11



4.14 – Work place security

WHO ? WHAT ?	WHEN ?	HOW ?
WIRE DRAWER		Have a good posture to carry the wire spools (of 15 KG each) on the supports to avoid backaches.
	Wire setting Flat wire	The wire mesh is manufactured from very thin flat wire. Its thickness is 0,05mm and its width 0,70mm so this wire is sharp. Be very careful when you manipulate this wire in order to avoid cuts. The protection gloves are obligatory.
	Knitting head	The knitting head is a turning element. In its circumference 40 needles have an alternate downward movement. During the knitting process, do not touch the needles !
	Starting of wire mesh	Machine stopped and disengaged The wire has to be winded around the cylinder in order to grip it in the needles. 1. Turn the starting handle to make several turns 2. Pass the wire mesh in the knitting head 3. Pull it down 4. Engage by keeping on pulling moderately on the wire mesh 5. Pass the wire mesh in the driving cylinders 6. Put the wire mesh on the driving mandrel If wire mesh is present in the machine, replace the wire mesh on the needles, turn the starting handle and engage and repeat from N°3.
	Lubrication	After lubrication of knitting head, you have to clean the oil traces on the ground to prevent somebody to slide.
	Noise	The knitting workshop is very noisy. It is recommended to have auditory protections.
	Security shoes	The wire spool weigh 15 KG It is obligatory to have security shoes.
URGENCY STOP	In case of problems	On the whole bench length at the top you will find a red covering cable. This cable is an urgency stop, when you set this cable in motion, it breaks the bench motor.