

USE AND MAINTENANCE HANDBOOK

(Presidential Decree no. 459 of 24.07.1996 Annexe 1 point 1.7.4)

FANTASIA 1C

Code : IST007EN (20030200)

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I. SUPPLEMENT TO MACHINE'S DOCUMENTATION

Apart from the USE AND MAINTENANCE HANDBOOK specific for all electronic circular machines produced by SANGIACOMO S.p.A., which contains all the instructions for use, ordinary and extraordinary maintenance, and specific settings for each model/version, this machine is equipped with the following documentation (available on CD and printed, on request).

GENERAL INSTRUCTION HANDBOOK: contains all the instructions for transport and installation of the machine. It also contains safety and accident prevention rules. It applies to all electronic circular machines produced by SANGIACOMO S.p.A.

USER MANUAL FOR THE MACHINE DISPLAY: this manual contains all the electronic and graphic pages and functions available onboard the machine for the SANGIACOMO electronic machines, with a description of the hardware.

USER MANUAL FOR THE ELECTRIC AND ELECTRONIC EQUIPMENT MOUNTED ON SANGIACOMO MACHINES: this manual contains all the information required for the use and maintenance of the electric and electronic equipment.

SPARE PARTS CATALOGUE: this contains all the information regarding coding and position references for replacing every machine component with original spare parts.

USER MANUAL REGARDING OPTIONAL DEVICES: manuals supplied by sub-suppliers.

THE MANUFACTURER RESERVES THE RIGHT TO MODIFY AT ANY TIME AND WITHOUT PRIOR NOTICE THE MACHINE DESCRIBED IN THIS HANDBOOK. THE MANUFACTURER SHALL NOT BE HELD LIABLE OF DAMAGES CAUSED BY THE USE OF NON-ORIGINAL SPARE PARTS, MODIFICATIONS MADE WITHOUT THE MANUFACTURER'S PRIOR AUTHORISATION, SCALING, CORROSION, POLLUTION, OXIDATION, DUST, WEAR AND TEAR AND GRADUAL DETERIORATION, THE USE OF RAW MATERIALS AND AUXILIARY MATERIALS OTHER THAN THOSE SPECIFIED IN THE PROJECT.

II. INTRODUCTION

II.1. INTRODUCTION

This manual contains instructions for correct operation of the machine, with the aim of facilitating the customer during start up and assist him when servicing the machine.

This manual is for use by Sangiacomo machine operators. Thoroughly read and get familiar with the instructions contained herein before connecting or using any electric, electronic or mechanical part. For any technical problem, contact our nearest dealer or contact Sangiacomo directly.



CAREFULLY READ THE FOLLOWING INSTRUCTIONS TO AVOID ANY INCONVENIENCES DUE TO FAILURE TO COMPLY WITH THE RULES SPECIFIED HEREIN.

- ❑ THIS MANUAL IS INTENDED TO ACT AS A GUIDE FOR THE USER AND PROVIDE DETAILS OF THE HAZARDS AND RESIDUAL RISKS OF THE MACHINE UNDER NORMAL OPERATING CONDITIONS.
- ❑ INSTRUCTIONS FOR THE OPERATOR ARE NOW A LEGAL REQUIREMENT UNDER ART. 37 OF DECREE LAW no. 626/94 AND SUBSEQUENT MODIFICATIONS (Decree Law no. 359 of 4.8.99).
- ❑ THIS MANUAL MUST BE USED AS A MEANS FOR INSTRUCTING THE OPERATOR ON HOW TO RUN THE MACHINE.
- ❑ REQUESTS FOR ADDITIONAL INFORMATION OR DETAILS OF INDUSTRIAL HYGIENE AND SAFETY IN CONNECTION WITH THIS MACHINE SHOULD BE SENT TO THE HEAD OF PREVENTION AND SAFETY AT SANGIACOMO S.p.A.

Via Bormioli, 60/62 – 25135 Brescia – Italy –



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II.2. A DESCRIPTION OF THE SYMBOLS SHOWN IN THE MANUAL

If a symbol is shown next to a section of text, it refers to its specific function, which may be important notes, a more general description or maintenance operations.

SYMBOL	DESCRIPTION
	This symbol indicates important information or instructions that must be complied with in order to prevent damage or injury.
	This symbol indicates further details on matters that have already been dealt with and compliance to this prescription aims at a correct behaviour by the operator and correct use of the machine.
	This symbol indicates a series of operations required for routine or extraordinary maintenance and a description of the safety devices. When there is another symbol next to it, this refers to the qualification required to carry out these operations.

II.3. QUALIFICATION OF OPERATORS

The operator in charge of running or servicing the machine must possess professional qualifications specific to each operation. He must be properly trained and have a thorough knowledge of the tasks entrusted to him and for which he is responsible. Below is a definition of the various categories of machine operator.

II.3.1. UNSKILLED WORKER

Someone without any specific skills who is only qualified to perform simple tasks as instructed by a more qualified person.

II.3.2. OPERATOR OF HOISTING AND HANDLING MEANS

Someone qualified to operate means for hoisting and handling materials and the machine – always following the manufacturer's instructions to the letter – in compliance with the applicable laws in the country in which the machine is used.

II.3.3. FIRST-LEVEL MACHINE OPERATOR

A person without any specific skills who is able to perform simple tasks, such as running the machine using the control pad, and loading and unloading materials used for production, with all the safety devices installed and operational. When the machine is in jog mode, this type of operator is not allowed to run it with the guards open or the safety devices deactivated.

II.3.4. MECHANIC

A person qualified to run the machine under normal conditions, even with the guards open and the safety devices deactivated, and to regulate, service and repair the mechanical parts. He is not qualified to service live electrical parts.

II.3.5. PERSON INFORMED (ON ELECTRIC MATTERS)

A person duly informed or assisted by a person trained on electric matters so as to make him/her aware of the risks and avoid any electric hazard.

II.3.6. PERSON TRAINED (ON ELECTRIC MATTERS)

A person with a thorough knowledge and experience to perceive risks and avoid any danger associated with electricity.

II.3.7. ELECTRICIAN

A person trainer or a person qualified to run the machine under normal conditions, even with the guards open and safety devices deactivated, and to regulate, service and repair the electrical parts. He is qualified to service live parts inside the control cubicles and junction boxes.

II.3.8. THE MANUFACTURER'S ENGINEER

A qualified technician provided by the manufacturer to perform complex operations in particular situations or for interventions agreed jointly with the user.

WITH THE EXCEPTION OF THE MANUFACTURER'S ENGINEER, THE ABOVE HIERARCHY IS NOT FIXED AND MAY VARY WITH THE TYPE OF MACHINE. OPERATOR MAY ALSO HAVE THE NECESSARY KNOW-HOW TO COMBINE MORE THAN ONE SKILL.

II.4. CONFORMITY WITH LEGAL REQUIREMENTS AND THE RULES OF GOOD PRACTICE

LAW	DESCRIPTION (1)
Pres. Decree no. 303 o 19.03.1956	General Rules for Industrial Hygiene
Pres. Decree no. 547 o 27.04.1955	General Rules for Accident Prevention in the Workplace.
Decree Law no. 277 o 15.01.1991	Enactment of the European Directives on Prevention against Exposure to Lead, Noise and Asbestos Cement.
Decree law no. 626 o 19.09.1994	Outline Law on Occupational Health and Safety.
Decree law no. 242 o 06.05.1996	Modifications to the Outline Law.
Min. Decree dated 10.03.1998	Measures preventing Fires in the Workplace
Decree law no. 475 o 04.12.1992	Enactment of the European Directive on Personal Protection Devices.
Decree law no. 645 o 25.11.1996	Maternal Welfare for Workers

(1) Title summarised by SANGIACOMO S.p.A.

LAW	DESCRIPTION
LAW no. 791 / 77 of 18 th October 1977, no. 791	“Enactment of EC directive no. 73/23 regarding safety of the electric material for use within a few voltage limits (Official Gazette no. 298 of 2 nd November 1977)”.
Pres. Decree no. 447/91 of 6 th December 1991, no. 447.	“Enactment regulation of law no. 46 of 5 th March 1990 on the safety of equipment”.
Pres. Decree no. 459/1996 of 24 th July 1996, no. 459.	“Enactment regulation of EC directives 89/392, 91/368, 93/44 and 93/68 regarding the approach of the laws of member States on machinery (Official Gazette no. 209 of 6 th September 1996)” – see note.
Decree Law no. 615 / 1996 of 12 th November 1996, no.615.	“Enactment of EC committee directive 89/336 of 3 rd May 1989 regarding the approach of the rules of the member States on electromagnetic compatibility, modified and integrated by EC Committee Directive 92/31 of 28 th April 1992, Directive 93/68 of 22 nd July 1993 and Directive 93/97 of 29 th October 1993”.
Decree Law no. 626 / 1996 of 25 th November 1996, no.626.	“Enactment of EC Directive 93/68 regarding the CE marking on electric material to be used within set voltage limits”.
Decree Law no. 277 / 1997 of 31 st July 1997, no.277.	“Modifications to law decree no. 626 of 26 th November 1996 on the enactment of EC Directive 93/68 on CE marking of electric material for use within set voltage limits”.
LAW no. 46 / 90 of 5 th March 1990, no. 46.	
The machines equipped with Sangiacomo electronics comply with European specifications CEI EN 60204 (44-5).	

AS PROVIDED BY ANNEXE I TO PRESIDENTIAL DECREE NO. 459/96, AN ANALYSIS OF COMPLIANCE WITH THE MACHINE'S BASIC SAFETY AND HEALTH REQUIREMENTS AS PRESCRIBED BY TECHNICAL SPECIFICATIONS IS CONTAINED IN THE TECHNICAL FOLDER THAT IS KEPT AND AVAILABLE AT THE MANUFACTURER'S.

II.5. MARKING

Any signs or writings to identify the type of element, device or machinery, and any type of certification marking affixed by the manufacturer must not be removed.

II.6. PROPER AND IMPROPER USE OF THE MACHINE

The machine is designed and built so to prevent any foreseeable improper use.

However, there is the highly improbable - yet predictable – risk during maintenance or when fitting the reels on the creel of operators standing on the base of the machine instead of using the footrests provided.

Therefore safety inspectors are required to carry out the necessary surveillance as required under art. 4 of the Presidential Decree 547/55 and Decree Law 626/94 and subsequent amendments.

II.6.1. COMMUNICATION WITH THE SALES DEPARTMENT



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II.7. USE OF PERSONAL PROTECTION EQUIPMENT (PPE)

Current rules prescribe the use of PPE when there are risks that cannot be prevented by technical means or modifications to the organisation of the workforce.

After assessing the various possible risks (art. 43, Decree Law 626/94 and amendments thereto), the employer must determine suitable PPE to be used. As a result of the risk analysis made at the design stage, the manufacturer recommends the following PPE be adopted:

	❑ GLOVES must be worn during unwrapping to avoid injury. ❑ GLOVES and GOGGLES must be worn when handling and topping up lubricants to prevent oil coming into contact with the skin ❑ CAPS must be worn when loading reels to prevent long hair from getting caught up in the moving parts. ❑ SLEEVES must be gathered at the wrists to prevent them from getting caught up in the moving parts.
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The manufacturer of the machine states that running the machine does not involve any operations prohibited for workers who are pregnant or breastfeeding (see Annexe II to Decree Law 645/96).

However, it may be necessary to adopt safety measures in connection with the risks specified in Annexe I to this decree (noise, manual handling of loads, movements and working positions). These risks must be assessed by the employer in compliance with art. 2, point 4 of Decree Law 626/94 and amendments thereto.

	KNITTING MACHINES ARE FREQUENTLY OPERATED BY FEMALE WORKERS. PLEASE NOTE THAT DECREE LAW NO. 645 OF 25 NOVEMBER 1996 LAYS DOWN RULES FOR ASSESSING RISKS CONNECTED WITH WORKERS WHO ARE PREGNANT OR BREASTFEEDING.
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GOVERNMENT DECREE LAW NO. 532 OF 26.11.1999 LAYS DOWN SPECIFIC RULES ON NIGHT WORK.

III. MACHINE START-UP AND INSTALLATION

III.1. ELECTRIC POWER AND COMPRESSED AIR SUPPLY

III.1.1. VOLTAGE

The supply voltage at a steady rate can increase or decrease by 1.1 or 0.9 times the rated value:

VOLTAGE	200V - 220V – 380V – 420V / $\pm 10\%$
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III.1.2. FREQUENCY

The frequency may increase or decrease by 0.99 or 1.01 times the rated value:

FREQUENCY	50Hz – 60Hz / $\pm 1\%$
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III.1.3. HARMONIC DISTORTION

The harmonic distortion due to the sum of harmonic values from the second to the fifth must not exceed 10% of the actual total voltage between active conductors. A further distortion is admitted for the sum of harmonic values from the sixth to the thirtieth, equal to 2% of the actual value of the total voltage between active conductors.

III.1.4. VOLTAGE UNBALANCE

The reverse sequence and the zero sequence component of the three-phase supply voltage must not exceed 2% of the voltage direct sequence.

III.1.5. VOLTAGE CUTOUT

The supply voltage must not be cut out or drop to zero for more than 3 ms at any time of the current wave. At least 1 s must elapse between two successive cutouts.

III.1.6. VOLTAGE DROPS

Voltage must not drop more than 20% of the supply peak voltage for more than one cycle. At least 1 s must elapse between two successive cutouts.

III.1.7. AMBIENT TEMPERATURE

The electrical equipment can operate correctly at ambient temperatures ranging from +5°C and +40°C.

III.1.8. HUMIDITY

The electrical equipment can operate correctly at a relative humidity not exceeding 50% and at a maximum temperature of +40°C.

III.1.9. ALTITUDE

The electrical equipment can operate correctly at altitudes up to 2000 m above sea level.

III.1.10. TRANSPORT AND STORAGE

This machine has been designed to withstand temperatures of -25°C to +55°C during transport, and for exposure less than 24 hours up to +70°C.

III.1.11. COMPRESSED AIR

Pressure in the compressed air supply system must range between 7 and 12 bar. Air must be filtered and de-humidified.

III.1.12. NOISE LEVEL

The acoustic pressure is as follows:

- at 1 metre distance = 82 dB (A).

III.2. WIRING SYSTEM CONNECTIONS

The machine comes with four metres of cable with free (not connected) ends and a tag showing the wiring features. It is up to the Customer's qualified personnel or engineering department to decide on the type of system and electrical material to use in making the connections between the machine and the site power supply mains. An electrically-welded screw marked with P.E. is available at the rear of the machine for connections to any supplementary wires.

General features of the supply cable:

- Flame-retardant cable to CEI 20 - 22 / II Ed, 20-22 / III Ed.
- Cable cross section 4X2.5 FLAMEPROOF

The machine comes with overcurrent safety devices. As the manufacturer cannot know the type of system to which the machine will be linked, it is up to the user to earth the machine properly. The same goes for overcurrent protection up to the input terminals.

The figure below shows an example of the rating plate provided for 380V – 50Hz.



ONLY QUALIFIED, PROPERLY TRAINED PERSONNEL IS ALLOWED TO WIRE UP THE MACHINE. ALWAYS REFER TO THE WIRING DIAGRAMS INSIDE THE ELECTRIC BOX OR THE WIRING AND ELECTRONIC SYSTEM HANDBOOK FOR SANGIACOMO MACHINES SCS2000.



FOR VOLTAGES OTHER THAN THOSE SPECIFIED IN THE PREVIOUS PARAGRAPHS, PLEASE CONTACT SANGIACOMO SERVICE DEPARTMENT.



IF FOR ANY REASON WHATSOEVER THE MACHINE WERE TO BE CONNECTED TO POWER MAINS WITH VOLTAGE AND FREQUENCY OTHER THAN THE RATING SHOWN ON THE PLATE, REFERENCE SHOULD BE MADE TO THE WIRING SYSTEM DIAGRAM INSIDE THE ELECTRIC BOX UNDER THE HEADING “CHANGING VOLTAGE”.



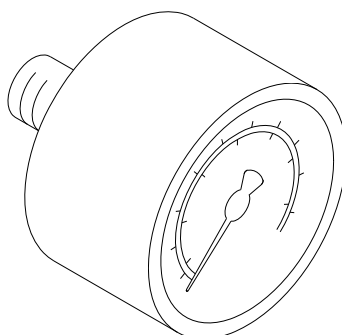
ALL SANGIACOMO MACHINES COME WITH AN ELECTRONIC DEVICE TO CHECK THE POWER SUPPLY SEQUENCE. IF THE MESSAGE “ATTENTION – CHANGE THE THREE-PHASE SUPPLY SEQUENCE” IS DISPLAYED, TURN OFF THE MACHINE IMMEDIATELY AND INVERT THE TWO CABLE-PLUG PHASES (SEE THE WIRING DIAGRAM). DO NOT MODIFY ANYTHING IN THE ELECTRIC BOX.

III.3. PNEUMATIC SYSTEM CONNECTIONS

- ❑ The maximum operating pressure of the machine is 7 bar.
- ❑ For values lower than 5 bar, the pressure switch cuts and stops the machine.

	AT VALUES HIGHER THAN THE MAXIMUM OPERATING PRESSURES, SOME MECHANICAL PARTS OF THE MACHINE WILL OPERATE AT HIGHER SPEED, BUT THIS DOES NOT CAUSE A HAZARD.
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A pressure reducer and filter with automatic condensate discharge are mounted at the air intake. The operating pressure can be read at any time on the gauge .



A manual control of easy access is provided at the rear of the machine, as part of the filter reducer unit, to “shut down” the compressed air system prior to maintenance.

	RELIEVE THE PNEUMATIC SYSTEM BEFORE CARRYING OUT ANY MAINTENANCE WORK, SIMPLY BY OPERATING THE SLIDE VALVE OF THE FILTER REDUCER UNIT.
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	TO PREVENT FORMATION OF CONDENSATE, WHICH MIGHT AFFECT OPERATION OF VALVES, IT IS ADVISABLE TO SUPPLY THE MACHINE WITH DE-HUMIDIFIED AIR, BY INSTALLING A DRYING SYSTEM IMMEDIATELY AFTER THE CENTRALISED AIR COMPRESSOR.
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III.4. LUBRICATION SYSTEM

For correct sliding of the knit formation elements, such as needles, jacks, etc., lubrication must be continuous.

An automatic pneumatically-controlled lubrication system is provided. The quantity of oil delivered through the nipples can be adjusted from the control panel.

Once every three months, check for oil leaks inside the base of the machine.

Cloths soaked in oil, paper or any materials used to mop up oil are a fire hazard and should be removed from the work area immediately after use.



WHEN THE GAUGE ON THE CONTROL PANEL INDICATES LOW LEVEL, THE PUMP TANK NEEDS TO BE REPLENISHED.



PROTECTIVE GLOVES AND GOGGLES MUST ALWAYS BE WORN WHEN FILLING THE TANK WITH OIL.



ANY OIL LEAKS OR DRIPS MUST BE ELIMINATED PROMPTLY. - PHOSPHOROUS ETHER (<1%) AND POLYGLYCOL ETHER (< 3%) ARE ADDED TO THE MINERAL OIL USED FOR LUBRICATION. THESE SUBSTANCES ARE IRRITANTS.

THE USER MUST GET FROM THE LUBRICANTS' MANUFACTURER A SAFETY SHEET AS REQUIRED BY LAW .

A COPY OF THIS SHEET SHOULD BE MADE AVAILABLE TO THE FACTORY FIRST AID AND FIRE PREVENTION TEAMS AND MEDICAL DOCTOR.

III.5. GENERAL SHEET FOR THE SAFETY AND HEALTH IN THE WORKPLACE

III.5.1. PRODUCT IDENTIFICATION

The lubricant must have the following features:

- ❑ Kinematic viscosity in cSt at 40°C: 22 to 46.
- ❑ Viscosity index ranging between 40 and 100°C: > 95.
- ❑ Flash point: > 150° C.
- ❑ Pour point: < 15° C.

Moreover, it must be resistant to wear, oxidation, corrosion, biodegradable and washable, foam-resistant and have a low volatility index. It must be compatible with the fibres used in production (elastomers and lycra in particular).

The degree of viscosity must be chosen depending on the type of machine and cylinder gauge.

Indicatively, the following grades can be used for the different types of circular knitting machines:

- ❑ Men's and children's socks: 32-46 cSt.
- ❑ Women's stocking: 22-32 cSt.
- ❑ Knitwear (seamless): 22-32 cSt.

The lubricant must be stored in a dry aired place using steel containers. Do not use PVC containers.



SANGIACOMO MAY NOT BE HELD LIABLE FOR DAMAGES OCCURRING ON THE MACHINE AND DUE TO IMPROPER USE OF LUBRICANTS OF GRADES OTHER THAN THOSE SPECIFIED ABOVE. PLEASE CONTACT THE MAIN LUBRICANT MANUFACTURER OR DEALER THAT IS ABLE TO OFFER THE BEST SERVICE AND PRODUCT THAT BEST SUITS YOUR OPERATING CONDITIONS.

Below is a description of the general safety and prevention rules recommended by **SANGIACOMO S.p.A.**.

III.5.2. PHYSICAL AND CHEMICAL PROPERTIES

The information provided above are to be considered generic for lubricants. For further details, contact the supplier or refer to the safety sheet supplied with the machine.

III.5.3. PRIMARY FIRST-AID AND PERSONAL PROTECTION MEASURES

- ❑ Eye protection: refer to common practices used in industry for protecting the eyes.
- ❑ Contact with the eye: thoroughly wash with water for ten minutes keeping the eyelids open. Consult a doctor in the case of irritation.
- ❑ Skin protection: follow proper personal hygiene practices. Consult a doctor in the case of irritation.
- ❑ Ingestion: **DO NOT PROVOKE VOMITING** – Wash your mouth with water and consult a doctor in the case of abnormal symptoms.
- ❑ Inhalation: if toxic substances may have been inhaled, immediately consult a doctor.

III.5.4. FIRE-PREVENTION MEASURES

- ❑ Fire extinguishers: chemical and extinguishing chemicals. Carbon dioxide, sand or earth can only be used for small-scale fires. **DO NOT USE JETS OF WATER.** Halon extinguishers must be avoided to reduce pollution of the environment.
- ❑ Protective equipment: extinguisher operators must wear respiratory protective means and safety goggles.

	INHALED AIR CONTAINS SMALL PARTICLES OF LUBRICANTS AND DUST. THE AIR PIPE MUST BE CONNECTED TO A DUCT DISCHARGING AIR OUTSIDE THE WORKPLACE. THIS RULE IS SPECIFICALLY PRESCRIBED BY ARTICLE 20 OF PRESIDENTIAL DECREE 303/56 AS MODIFIED BY DECREE LAW 626/94.
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ANY DEPOSIT OF DUST ON THE MACHINE MUST BE FREQUENTLY SUCKED UP (NOT BLOWN) TO PREVENT IT FROM SPREADING AROUND OR BEING INHALED BY THE OPERATORS.

III.6. STARTING UP THE MACHINE

Proceed as follows:

- ❑ Mount the vertical creel.
- ❑ Thread the yarn through the relevant thread guides.
- ❑ Make the main electrical connections and load the software for the product required.
- ❑ Perform the necessary adjustments and checks..



ADJUSTMENTS MUST B E MADE WITH THE CYLINDER ON MANUAL FEED (HANDLE) OR SLOW AUTOMATIC FEED (INCH).

The operator must be properly trained how to thread the yarn and must be aware of the need to wear clothes with sleeves that are close fitting at the wrist.

Training takes about one week and must be properly recorded for future evidence.

III.7. LOADING THE REELS ON THE CREEL

When positioning the reels, it is necessary to proceed as specified in section V of Decree Law 626/94 and subsequent amendments on the manual handling of loads.

The operator must be fully instructed on how to load reels safely (art. 49).



IF THE STEP LADDER IS NOT POSITIONED ON A PERFECTLY STABLE BASE FOR LOADING REELS, THERE IS THE RISK OF THE OPERATOR FALLING AND BEING SERIOUSLY INJURED – STOOLS WITHOUT A FEET SAFETY PLATFORM OR ANY CAUSAL AND UNSTABLE SUPPORT MUST NEVER BE USED - ALL EQUIPMENT MUST COMPLY WITH SECTION III OF DECREE LAW 626/94 AND ANY TYPE OF LADDER COMPLYING WITH UNI 131 – ALWAYS CARRY OUT THE OPERATIONS WITH EXTREME CAUTION.

III.8. RUNNING THE MACHINE

Prior to delivery the machine is tested at the factory, The manufacturer also produces samples to customer specification.

On completion of all erection, connection, loading and setting up operations, the machine is ready to be started up.

The man-machine interface control panel at the front is equipped with an illuminated display that provides full instructions on how to start up and run the machine.

At either lower side of the machine (R-H or L-H depending on the model), a low-voltage supply socket is provided to illuminate the area during setting or checking operations requiring particularly intense direct light.

There is a lever (handle) on the side of the machine, which in automatic mode does not create any hazard because it does not project from the machine. When fitted in position conveniently, it is used for operating the cylinder manually.



THERE IS MECHANICAL STOP PREVENTING THE LEVER FROM BEING USED IN AUTOMATIC MODE FOR SAFETY REASONS. THERE IS ALSO A MICROSWITCH THAT PREVENTS THE CYLINDER FROM BEING OPERATED AUTOMATICALLY WHEN THE LEVER IS BEING USED.



FOR FURTHER INFORMATION, REFER TO THE HANDBOOKS AVAILABLE FROM SANGIACOMO.

IV. GENERAL DESCRIPTION

IV.1. FEATURES OF THE FANTASIA 1C

The **FANTASIA 1C** by **SANGIACOMO** is a single-cylinder machine for making quality socks with multi-colour patterns with a wide range of gauges. It is possible to make socks with patterns featuring 5 colours plus background in the same course, for a total of 16 colours. These patterns can be made on the whole sock, including the double welt and the elastic. Socks with 3-dimensional patterns can also be made. This machine uses a proprietary patented reciprocating 4-picker system patented by **SANGIACOMO** that reduces the cylinder rotation angle, which involves considerable time saving when knitting the heel and toe.

The **FANTASIA 1C** comes in the following versions: Lin-Toe Ready and Assembled.

IV.1.1. TECHNICAL FEATURES

The machine has one feed to 6 thread guide units connected to 6 selection units. There is a total of 7 selection units for needle-by-needle selection in any part of the sock.

Thread guides: 6 single plus 1 double in the main feed station.

Colour: 3 for each of the 5 colour feeds. One for the elastic.

Knit adjustment by means of stepping motors.

Diameters: 3.1/4" and 3.3/4"

Number of needles: 72 to 240.

Weight: 350 kg - Weight with Lin To device: 430 kg.

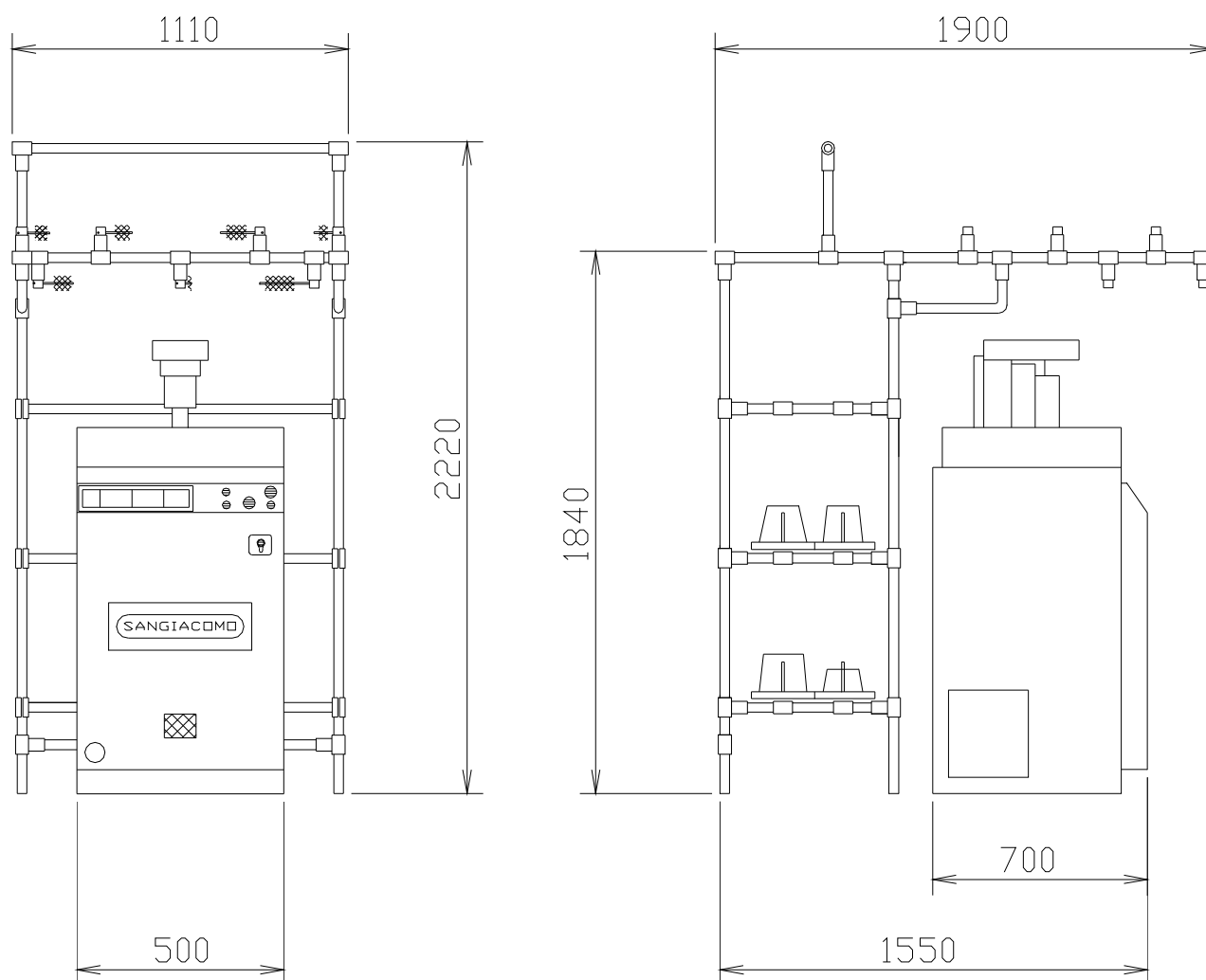
IV.1.2. PRODUCTION FEATURES

- ☐ Socks made with plain knit, normal terry and plated terry with 5 colours plus background;
- ☐ Possibility of 5-colour patterns plus background on the same course, up to a total of 16 colours;
- ☐ Possibility of 3-dimensional patterns.
- ☐ Possibility of weft patterns plus 5 colours;
- ☐ Needle-by-needle elastic selection for mock rib with a possibility of 5-colour patterns on double welt and the elastic, too
- ☐ Tuck double welt plus 5-colour pattern;
- ☐ Tucked and open work knit;

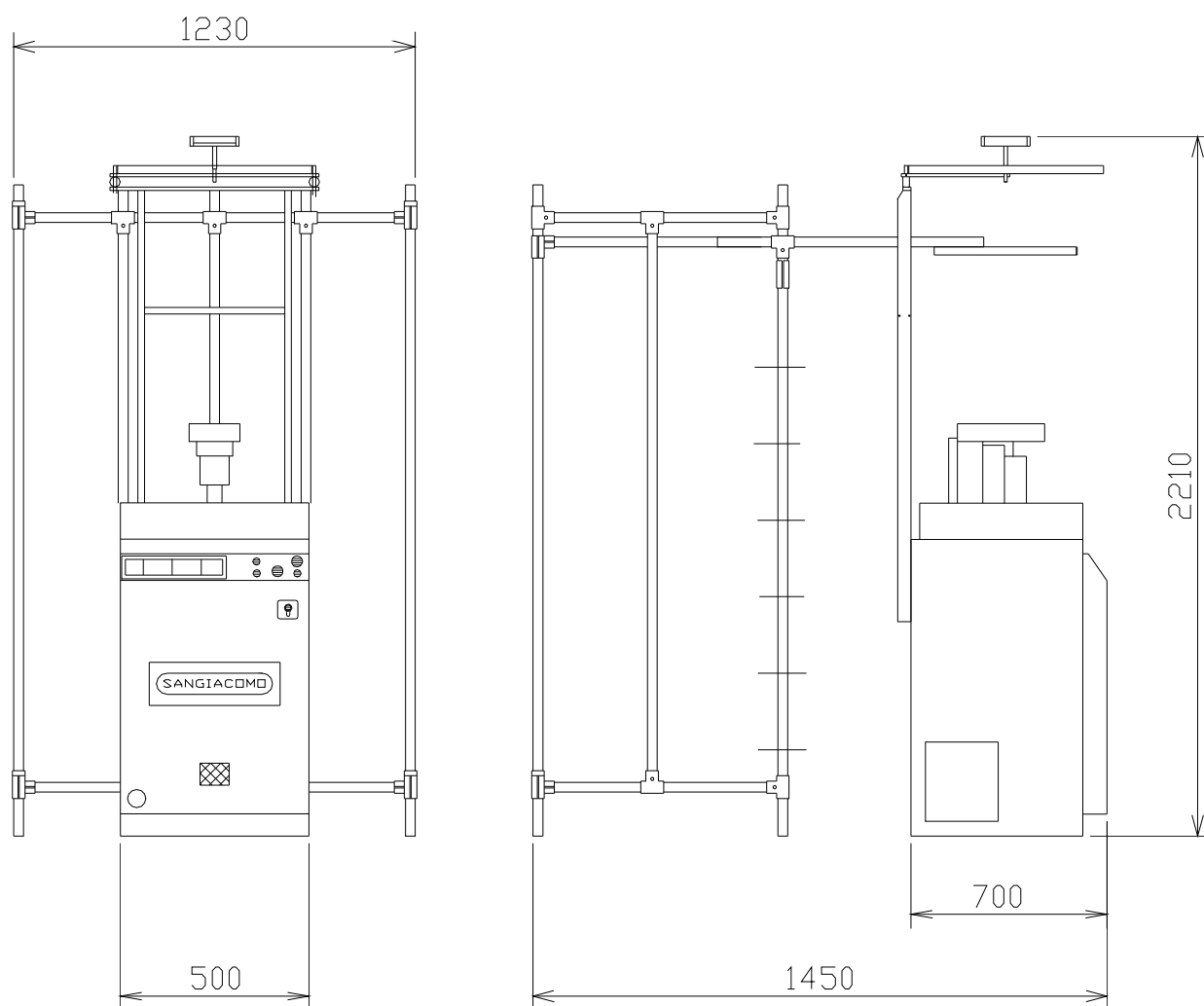
IV.1.3. OPTIONALS

- ☐ IRO device - BTSR device;
- ☐ Tubular tensioner (standard) or conventional tensioner;
- ☐ Automatic sock turner;
- ☐ LIN TOE device;
- ☐ 6th colour.

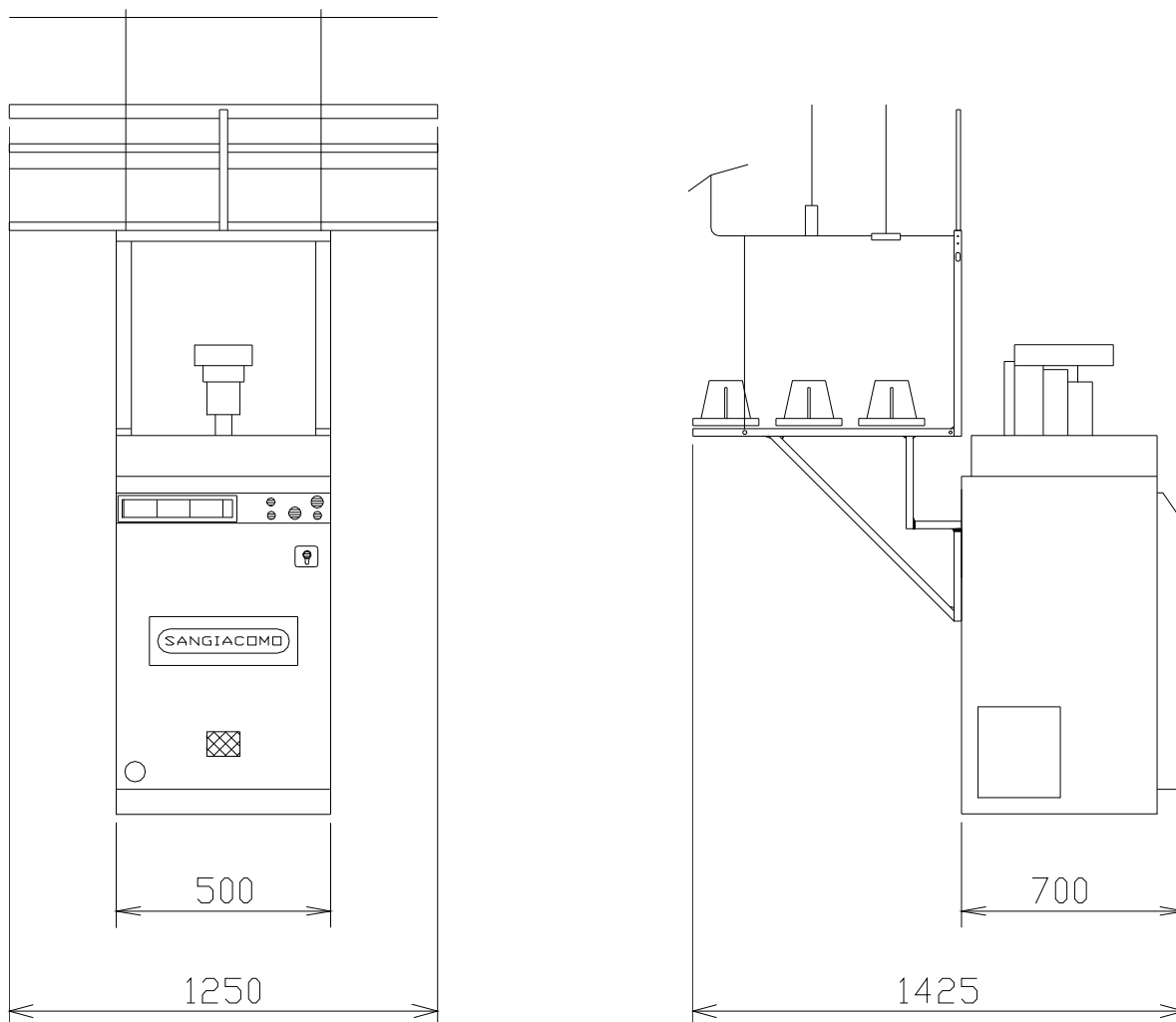
IV.2. DIMENSIONS WITH FEED CREEL



IV.3. DIMENSIONS WITH TAPERED CREEEL



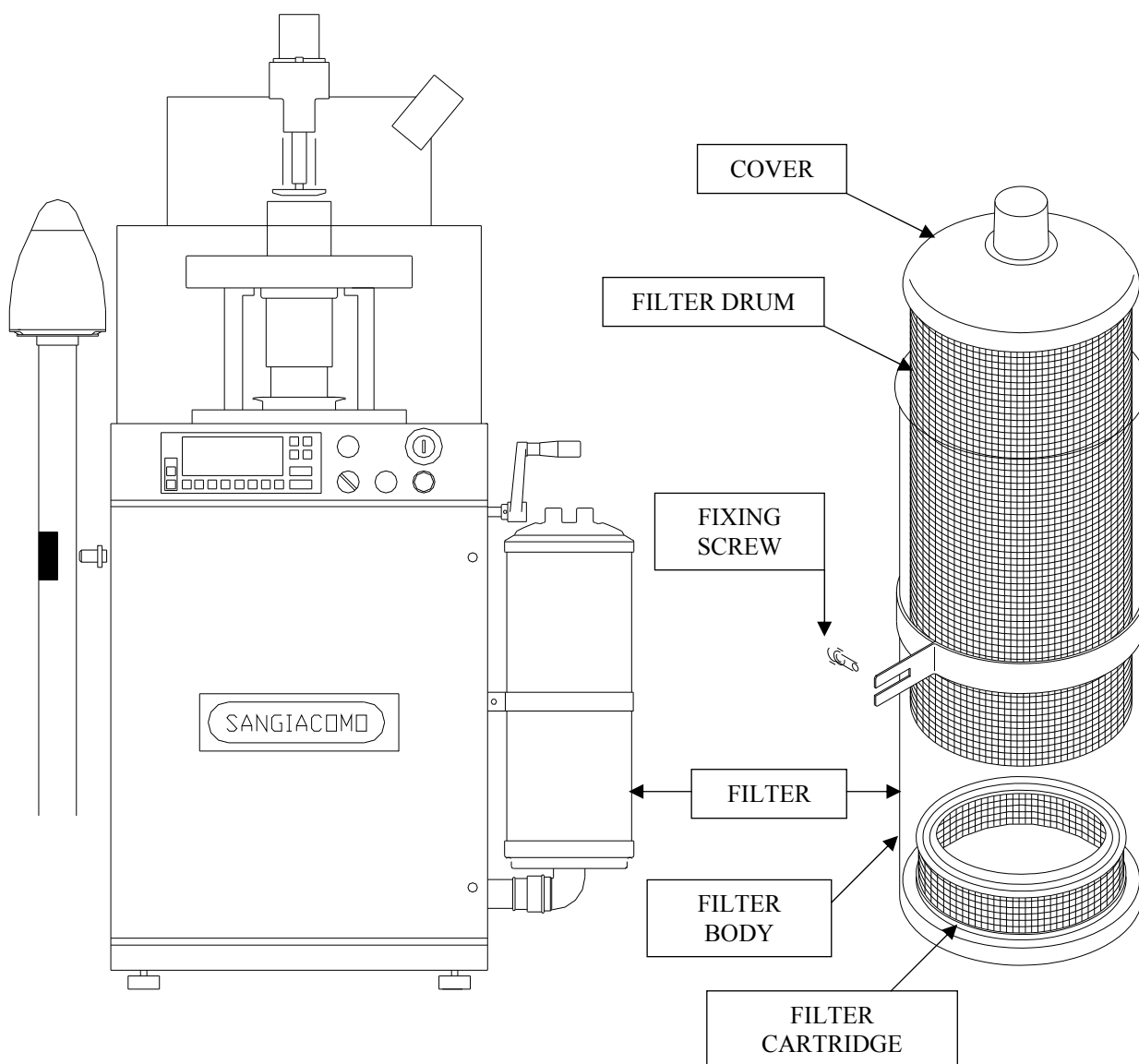
IV.4. DIMENSIONS WITH CONVENTIONAL TENSIONER (TENSA)



V. ASSEMBLING THE SEPARATE PARTS OF THE MACHINE

V.1. SUCTION FILTER

After positioning the machine on the ground, assemble the tensioner and reel stands as shown in the diagrams (see attached tables) and the suction filter.



V.1.1. CLEANING THE SUCTION FILTER

The frequency at which the suction filter should be cleaned cannot be determined in advance as it depends on the environmental conditions, the type of work and the type of yarn used.

The suction filter normally fills up with pieces of yarn from the dial.

Proceed as follows to clean the filter drum.

- ❑ Press the **STOP** button on the main panel.
- ❑ Remove the cover
- ❑ Remove the drum and clean it.
- ❑ Replace the drum and cover.
- ❑ Press the **START** button on the main panel.

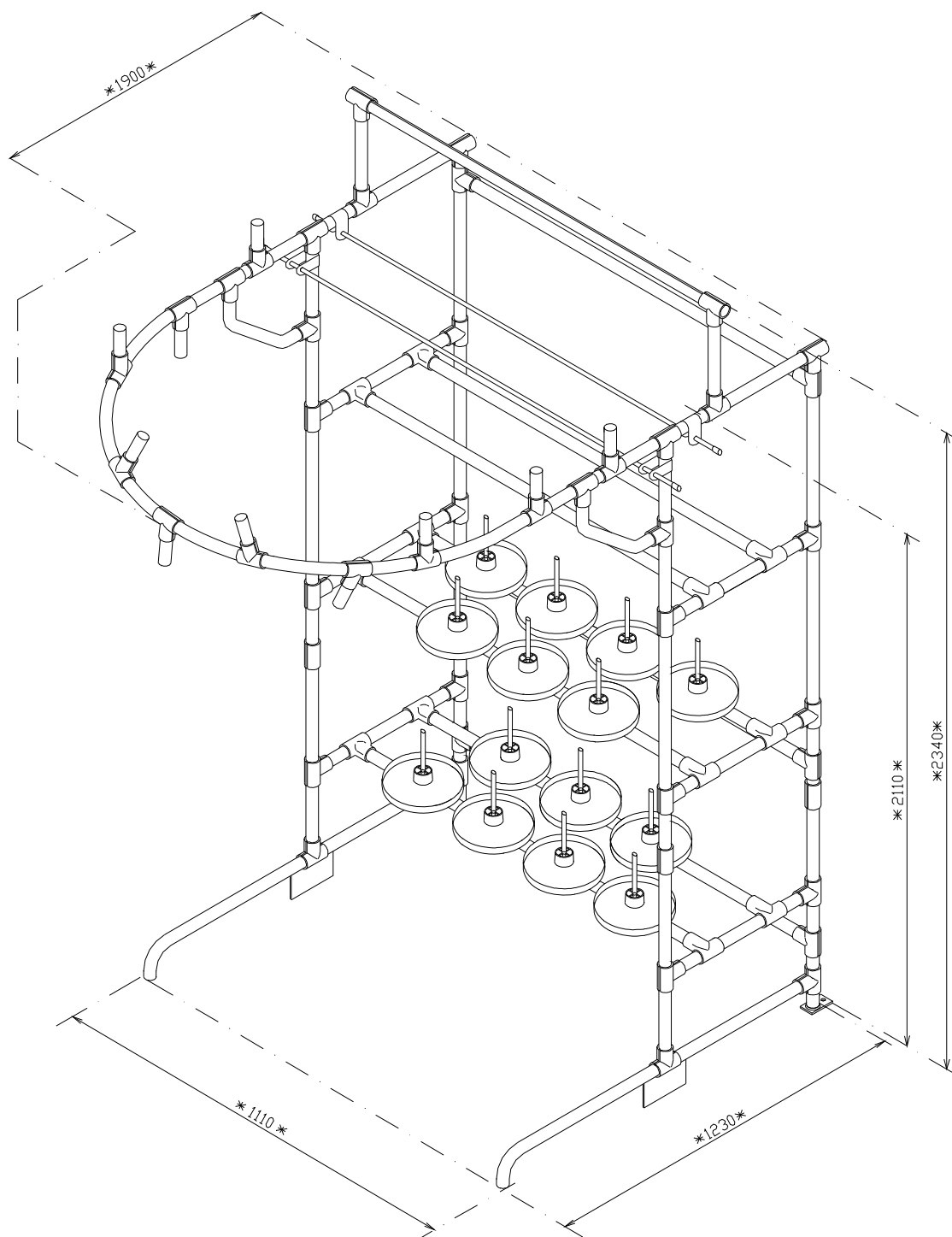
If suction efficiency is reduced, clean the cartridge with a blast of compressed air.



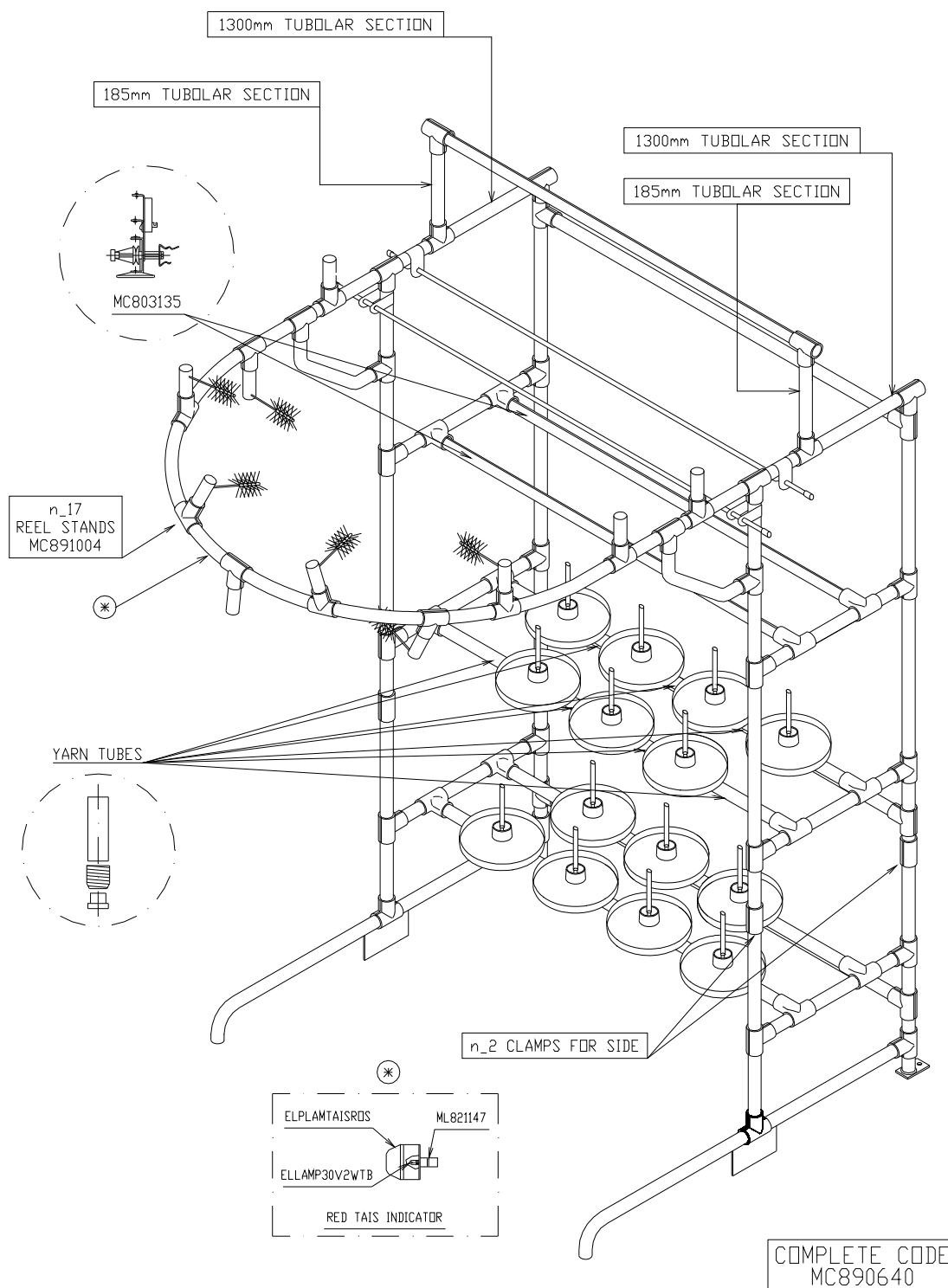
THE METAL LUG IN THE FILTER BODY MUST ALWAYS BE IN CONTACT WITH THE DRUM TO PREVENT ELECTROSTATIC DISCHARGE WHEN CLEANING THE FILTER.

V.2. FEED CREEL

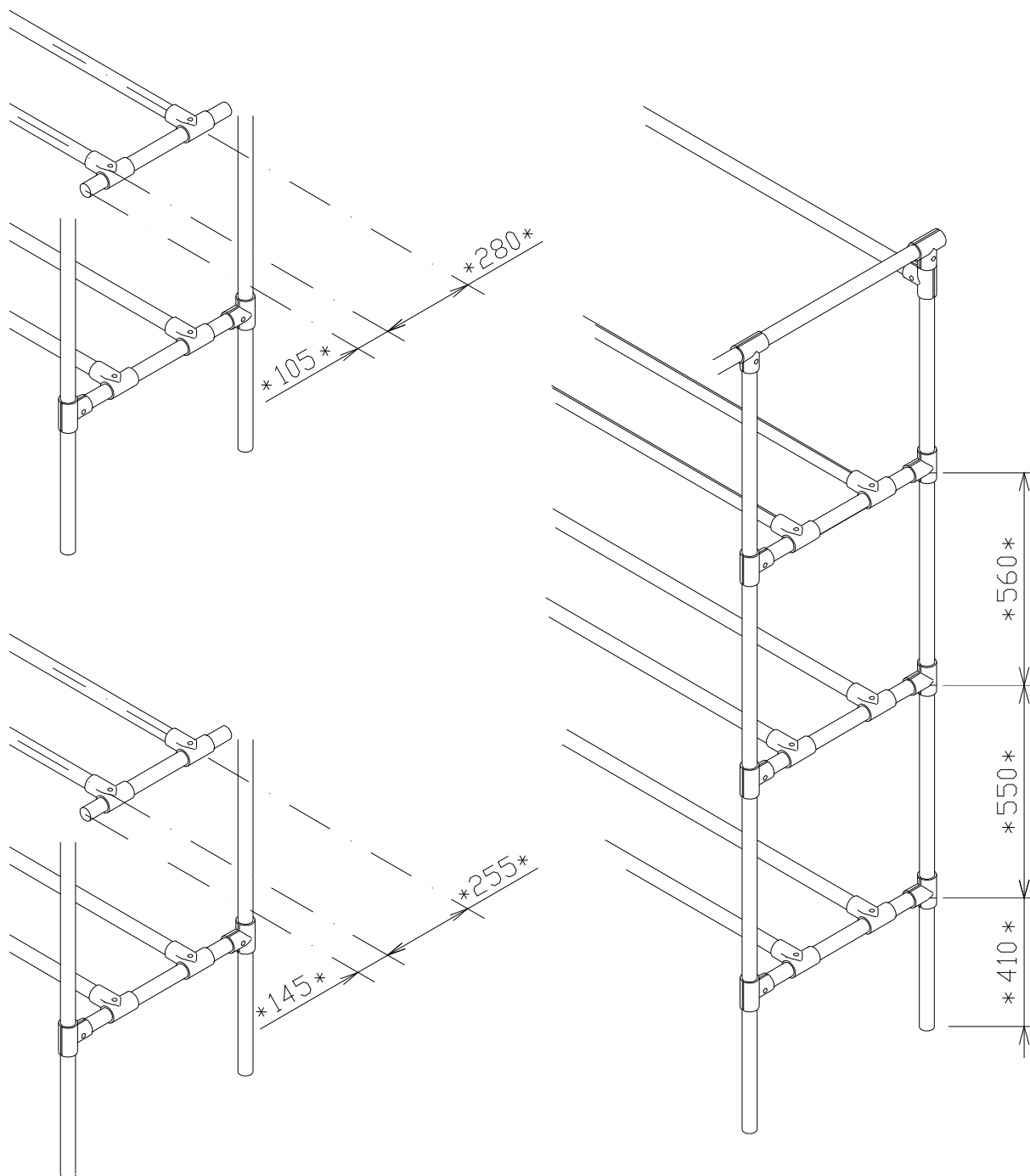
V.2.1. DIMENSIONS



V.2.2. COMPLETE

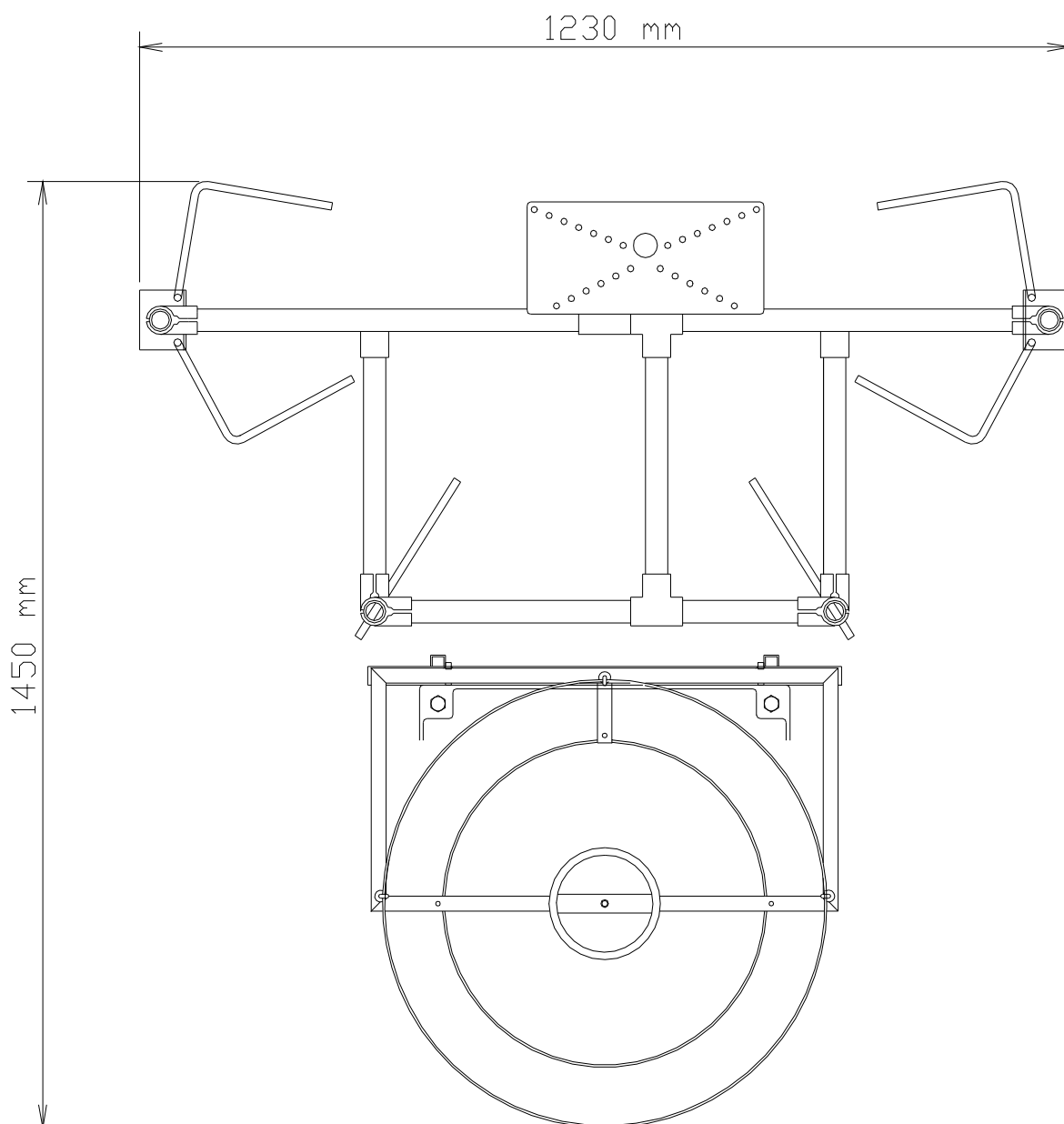


V.2.3. REEL STAND TUBE POSITION



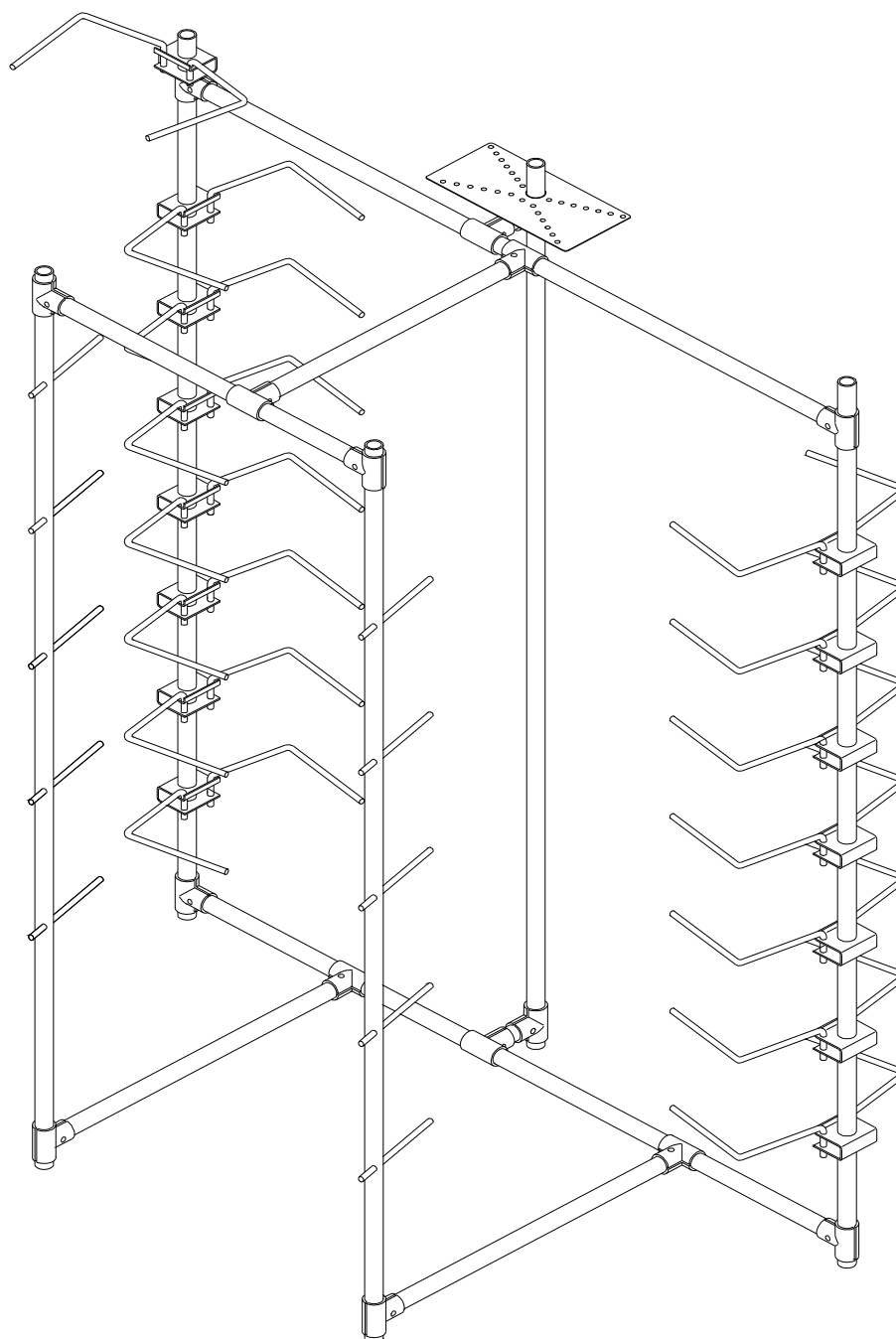
V.3. TAPERED CREEL

V.3.1. DIMENSIONS



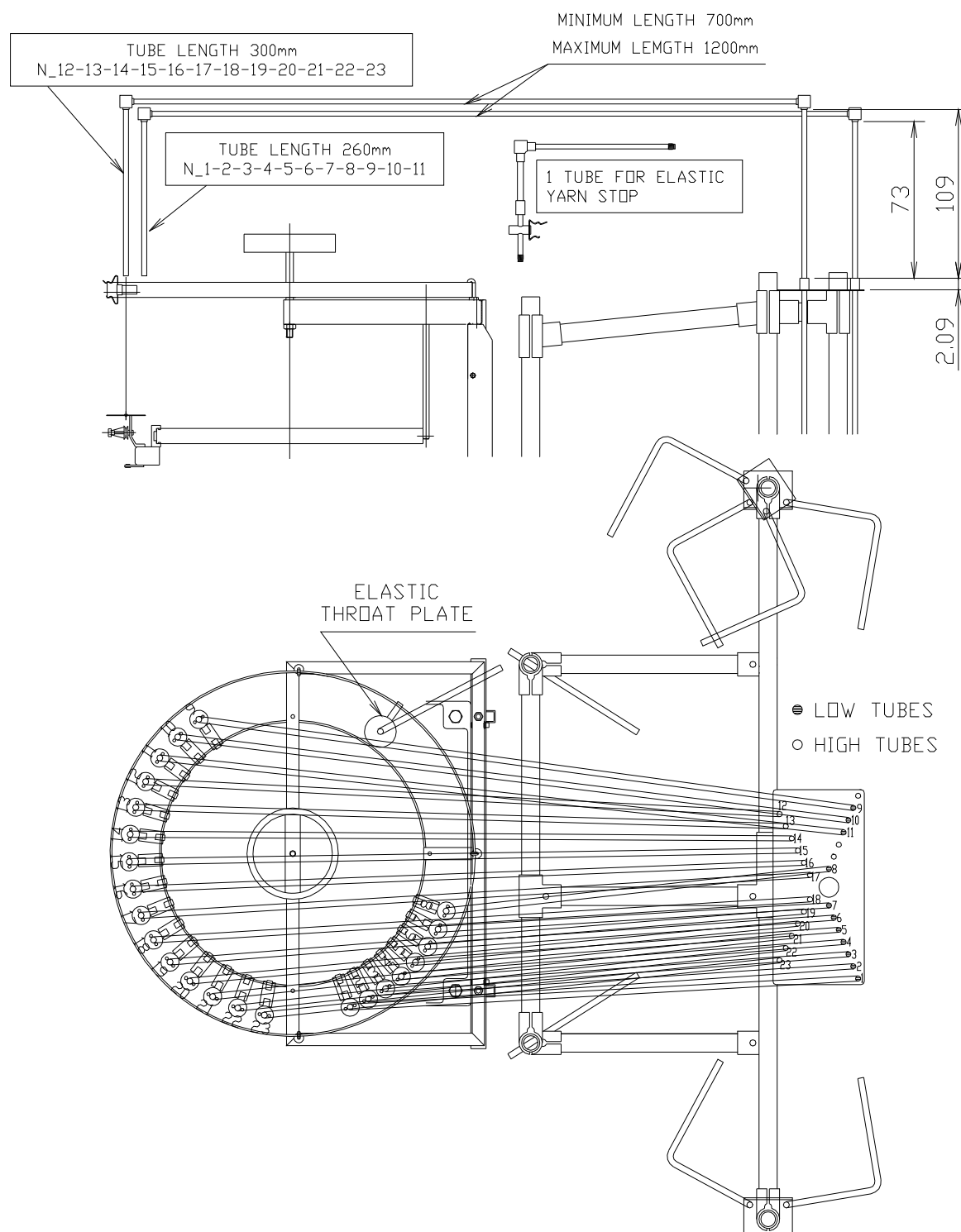
$h = 2210 \text{ mm. with and without I.R.O.}$

V.3.2. COMPLETE



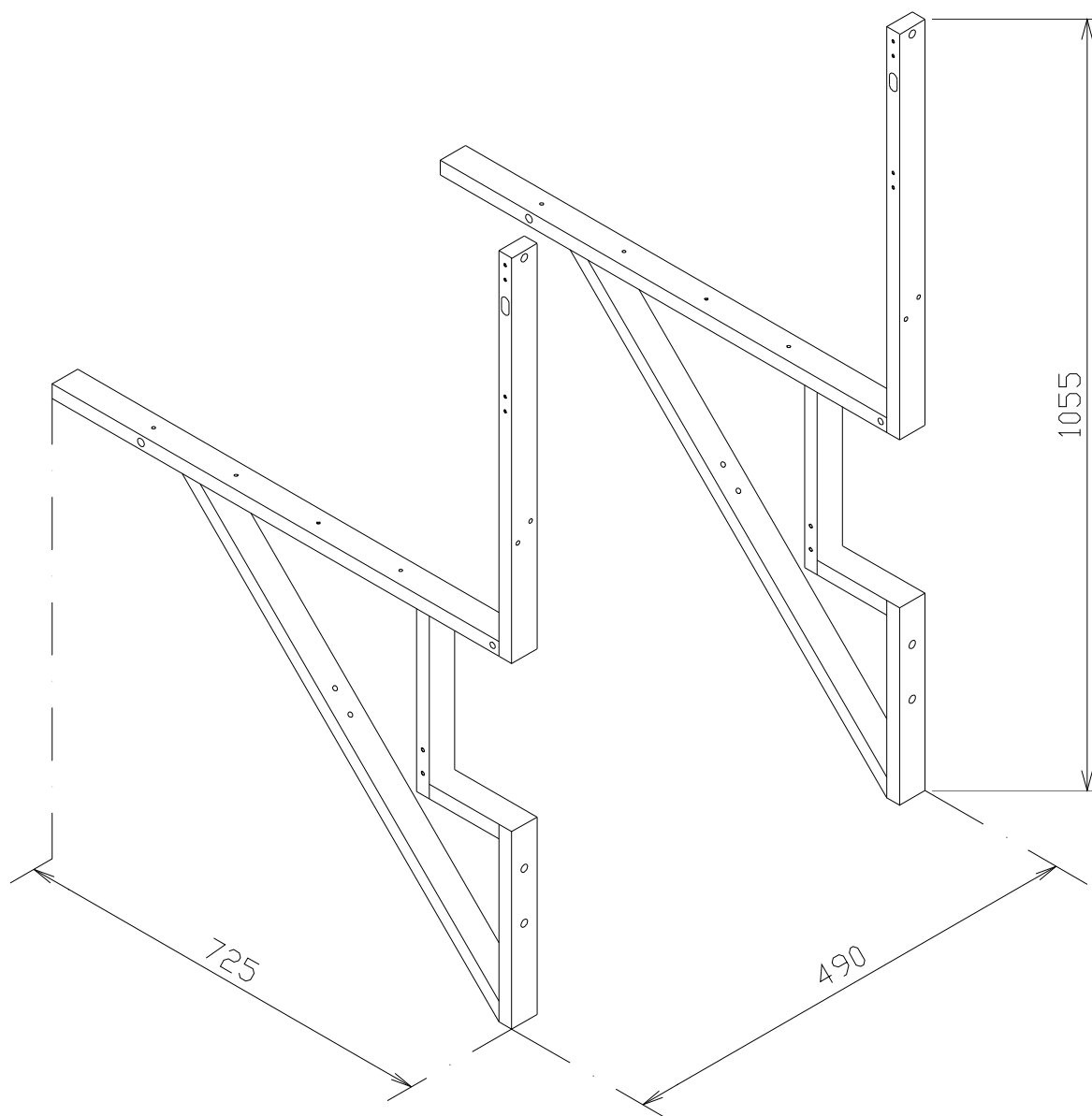
Complete code MC851434

V.3.3. TUBE LAYOUT

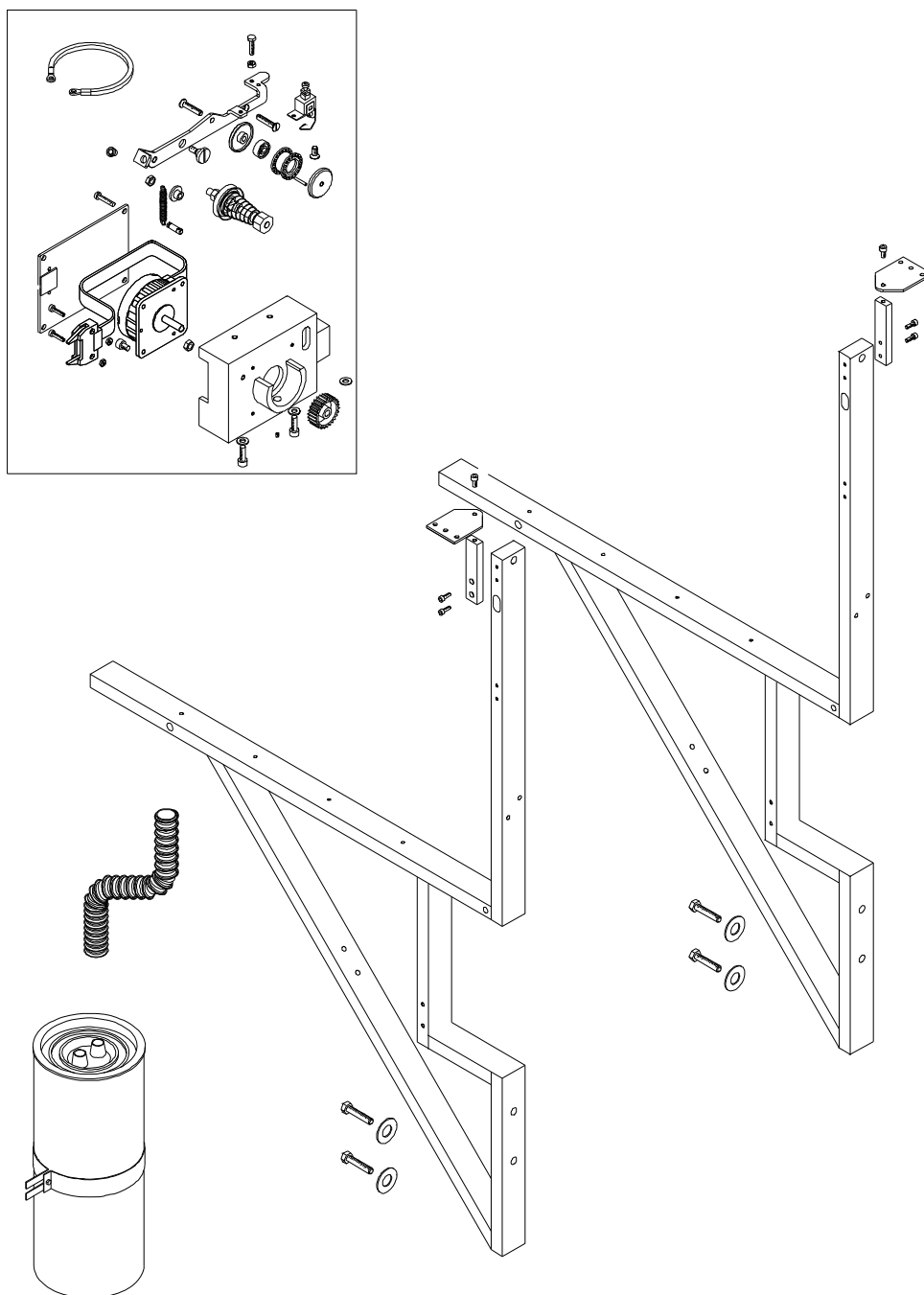


V.4. SANGIACOMO CONVENTIONAL TENSIONER

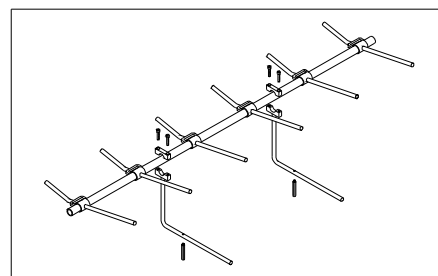
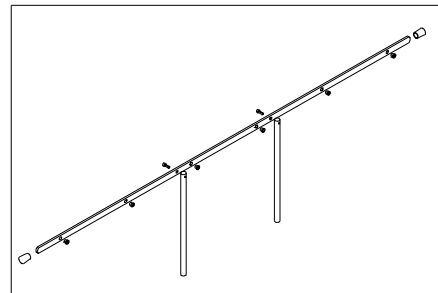
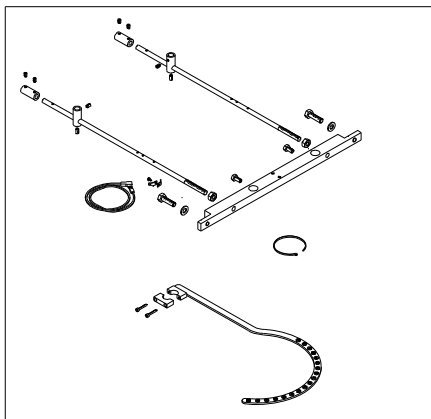
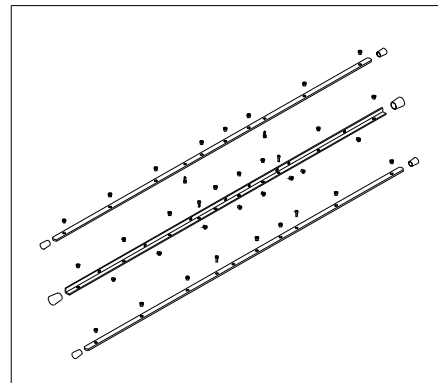
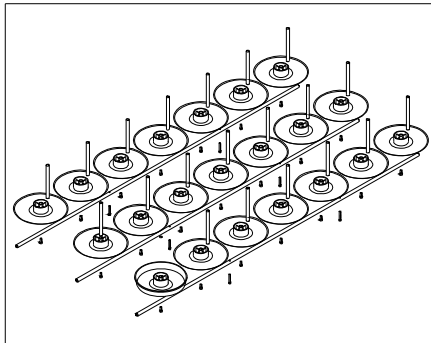
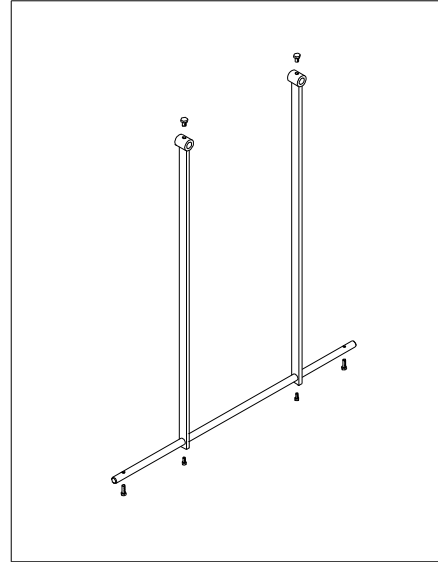
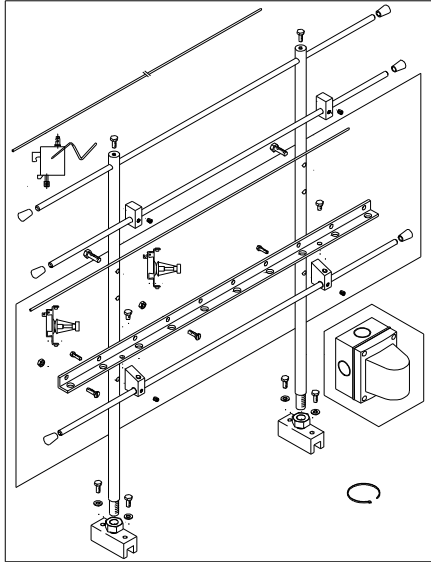
V.4.1. DIMENSIONS



V.4.2. GROUPS

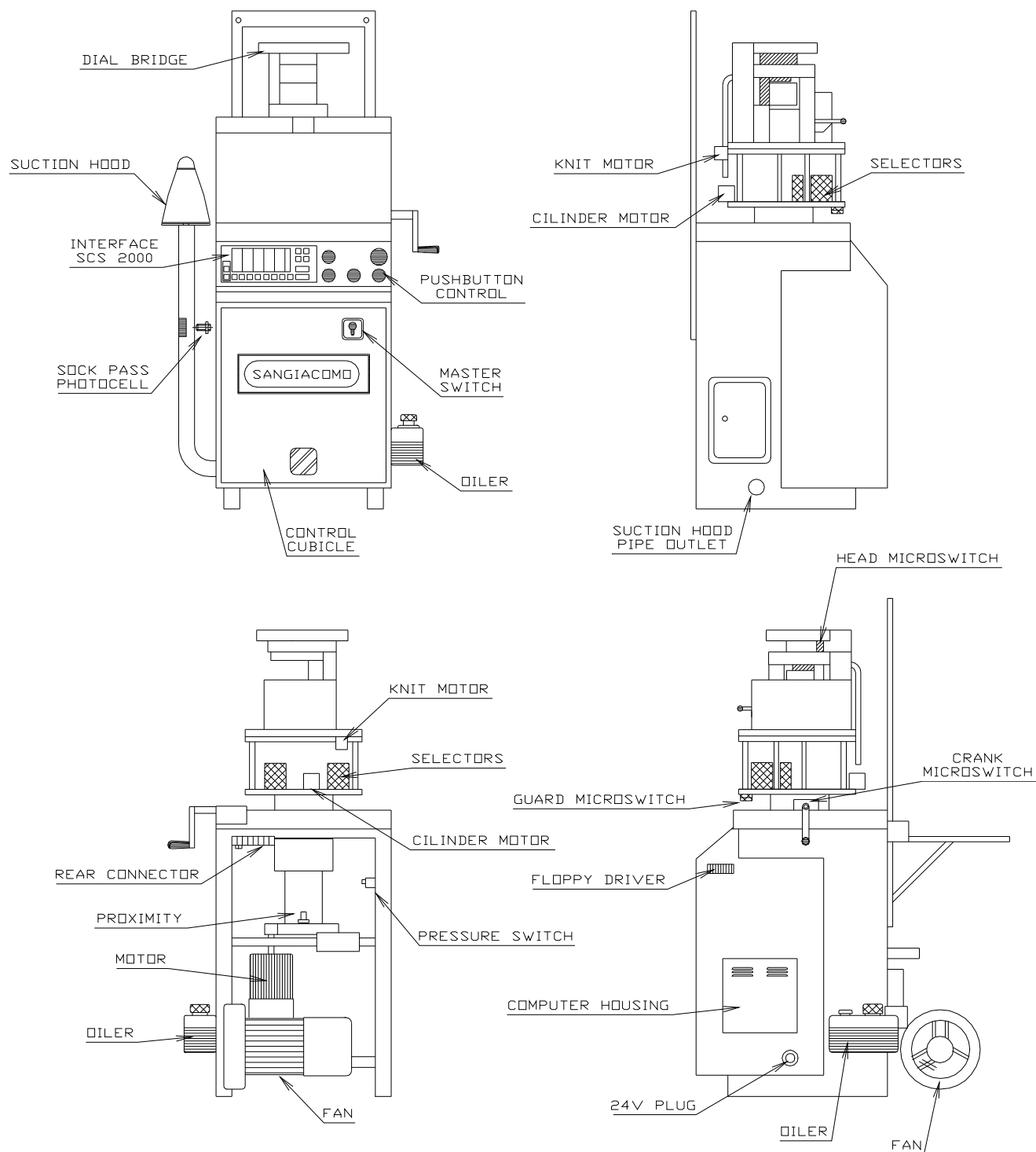


USE AND MAINTENANCE HANDBOOK - FANTASIA 1C

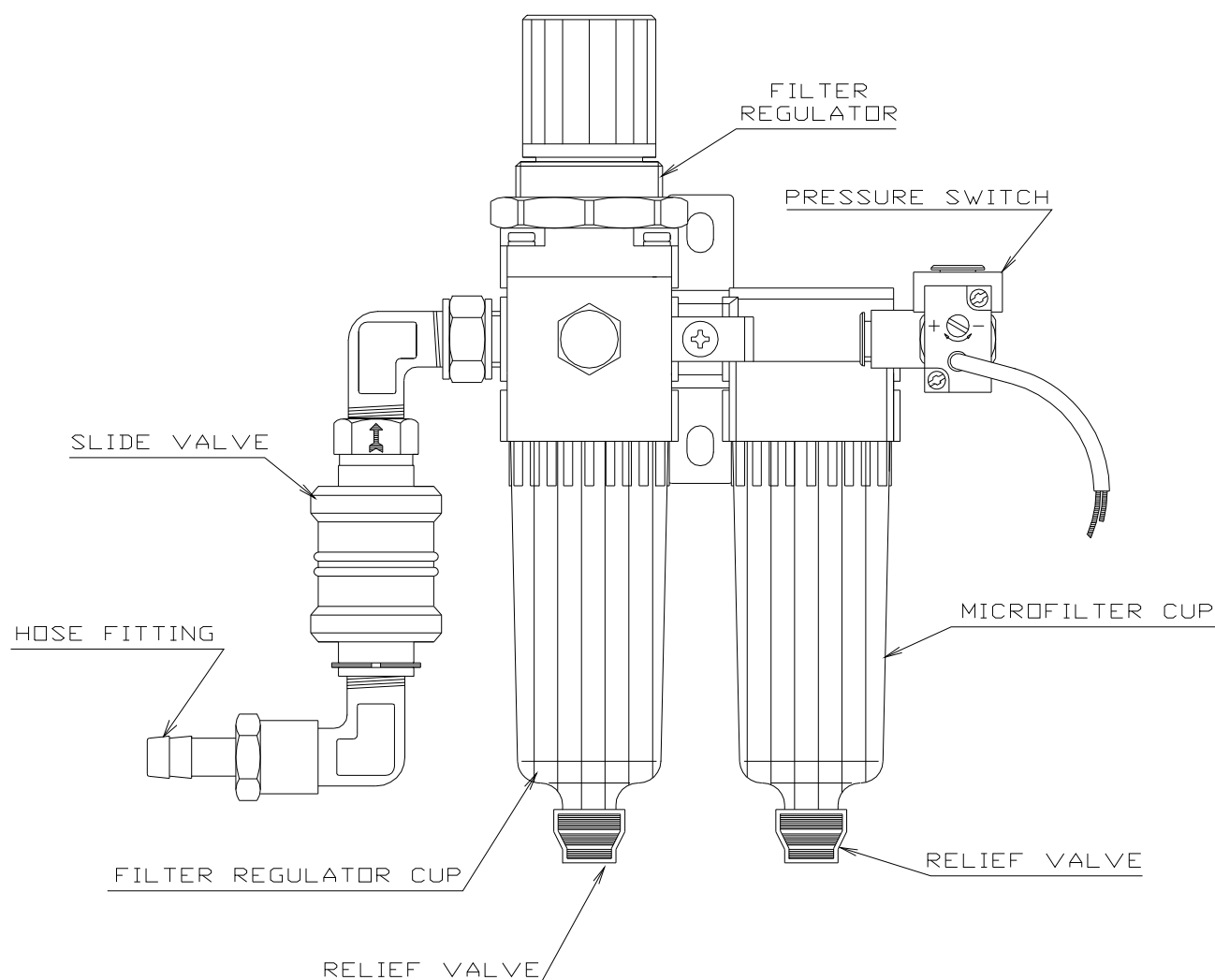


VI. DEVICES ON THE MACHINE

VI.1. MACHINE DEVICES



VI.2. FILTER REDUCER UNIT



VI.2.1. CONNECTING THE MACHINE TO THE COMPRESSED AIR SYSTEM

Proceed as follows to connect the machine to the central compressed air system:

Insert the rubber pipe into the hose fitting applied to the slide valve which is connected to the pressure reducer filter unit. The rubber pipe must be **8-9 mm** in diameter. Secure the pipe to the fitting by means of a metal clip.

Pressurise the system and then regulate the slide valve.

Check that the pressure read on the pressure gauge on the right-hand side of the machine is 7 bar, otherwise operate the regulator knob to adjust the value.



A DRYING SYSTEM SHOULD BE PROVIDED AT THE COMPRESSOR OUTLET TO DEHUMIDIFY THE AIR AND PREVENT THE FORMATION OF CONDENSATE.

THE MACHINE IS EQUIPPED WITH A PRESSURE SWITCH THAT STOPS OPERATION WHEN THE PRESSURE DROPS BELOW THE SAFETY VALUES.

NEVER MODIFY THE SETTING OTHERWISE THIS MAY CAUSE A MALFUNCTION OR SERIOUS DAMAGE TO THE MACHINE.

VI.2.2. DRAINING CONDENSATE FROM THE AIR TREATMENT CUPS

The regulator filter and microfilter CUPs must be drained of condensate when it reaches the highest level. Check it at least once a week.

The condensate draining valve fitted to each CUP is semiautomatic, which means that when you depressurise the system, the condensate is drained automatically. The valve closes automatically as the pressure in the system increases.

You can simply operate the slide valve to drain condensate from the CUPs.

Whenever you operate the slide valves situated below the CUPs, you can drain the condensate manually by moving the CUPs upwards without the need to depressurise the system.

VI.3. LUBRICATION SYSTEM

VI.3.1. PNEUMATIC PUMP

The correct sliding of the knit formation elements, such as needles, jacks, etc., the machine is equipped with an electrically/pneumatically-driven pump for automatic intermittent lubrication.

Irregular operation of the pump due to low oil level in the tank or reduced pressure in the lubrication system may cause the machine to stop. The machine can be restarted only after restoring normal working conditions.

This pump is used to deliver oil through the nipples that operate continually throughout the machine cycle.

The capacity of the tank is **1.7 litres** and the air pressure is max **8 bar**.

	WHEN THE GAUGE ON THE CONTROL PANEL INDICATES LOW LEVEL, THE PUMP TANK NEEDS TO BE REPLENISHED.
--	--

	PROTECTIVE GLOVES AND GOGGLES MUST ALWAYS BE WORN WHEN FILLING THE TANK WITH OIL.
---	--

VI.3.2. TYPE OF LUBRICANT

When filling the tank in the pump, only use non-toxic mineral or synthetic lubricants with the following features:

- ❑ Kinematic viscosity in cSt at 40°C: 22 to 46.
- ❑ Viscosity index ranging between 40 and 100°C: > 95.
- ❑ Flash point: > 150° C.
- ❑ Pour point: < 15° C.

Moreover, it must be resistant to wear, oxidation, corrosion, biodegradable and washable, foam-resistant and have a low volatility index. It must be compatible with the fibres used in production (elastomers and lycra in particular).

The degree of viscosity must be chosen depending on the type of machine and cylinder gauge. Indicatively, the following grades can be used for the different types of circular knitting machines:

- ❑ Men's and children's socks: 32-46 cSt
- ❑ Women's stocking: 22-32 cSt
- ❑ Knitwear (seamless): 22-32 cSt

IMPORTANT: SANGIACOMO may **NOT** be held liable for damages occurring on the machine and due to improper use of lubricants of grades other than those specified above. Please contact the main lubricant manufacturer or dealer that is able to offer the best service and product that best suits your operating conditions.

KLUBER	VICKERS
SHELL	WYNN'S
TOTAL FINA	ZELLER+GMELIN

VI.3.3. MAINTENANCE

The lubricating pump only requires the following maintenance operations:

- ❑ Periodic checks and oil filling
- ❑ Periodic cleaning of the used oil inlet filter
- ❑ Replacement of the pump filter every **6** months and after the first **3** months of operation.

VI.3.4. MANUAL LUBRICATION

All mechanical component parts, such as gearings and bearings, must be lubricated with a jet of oil or a specific manual pump greaser.

Lubricate all the sliding parts at least once a week using the same lubricant used with the automatic pump for lubricating knit formation component parts.

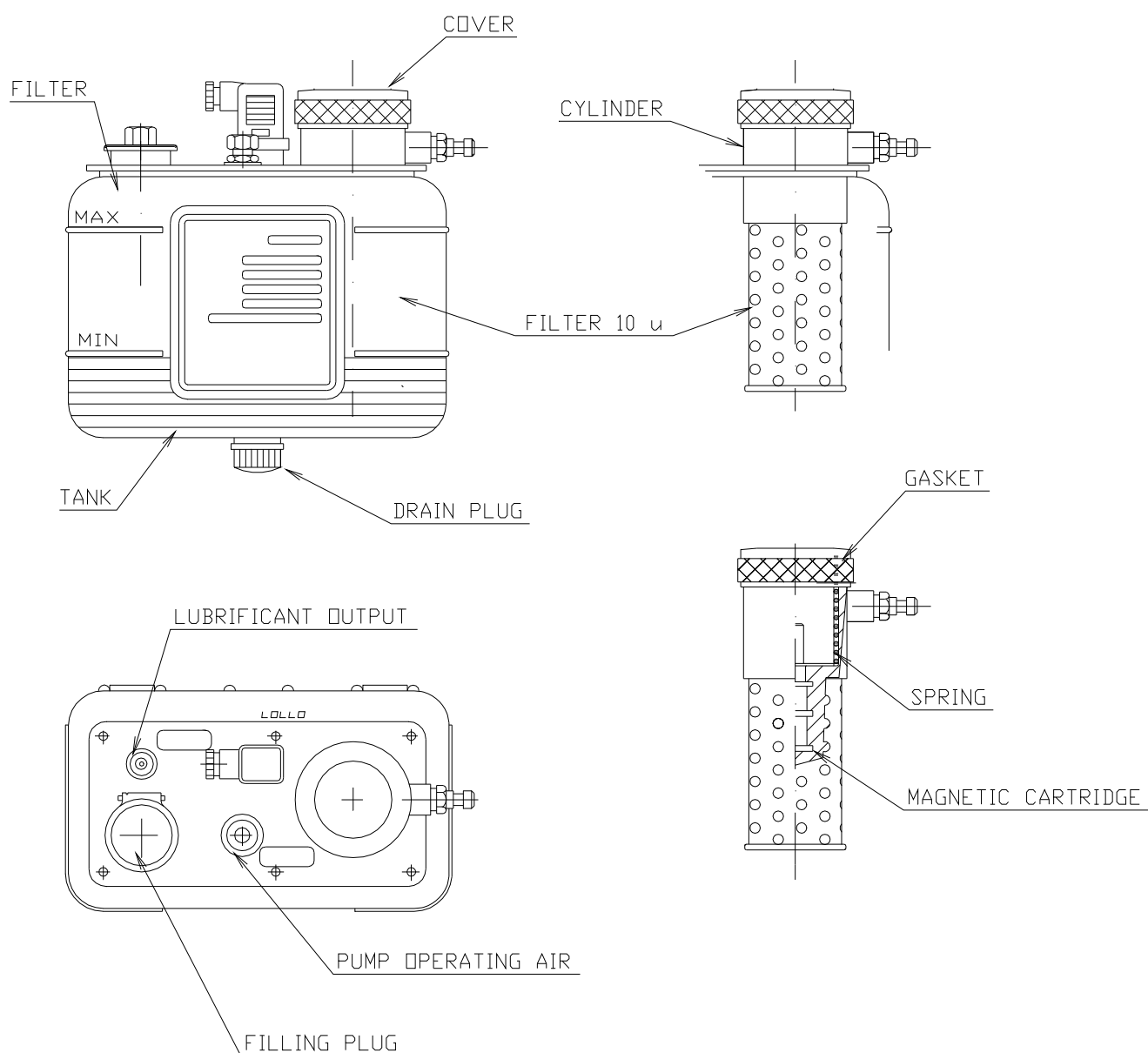
Lubricate all moving parts, such as gearings and bearings, using grease with grade of consistency **2** (DIN 51818) and the following characteristics: presence of lithium, water resistant, wear resistant, anti-oxidant, anticorrosion, perfect adherence and free from any **EP** additives.

Pneumatic pistons must be lubricated every **6 months** and the gaskets or other components must be checked for wear, and must be replaced, if necessary.

The following products must be used:

- ❑ POLIMER 400 TECNOLUBE Grease
- ❑ PARKER Grease

Or alternative products in the class of consistency **2 (DIN 51818)** specific for use in pneumatic systems.



VI.3.5. PROBLEMS

INCONVENIENCES	POSSIBLE CAUSES	REMEDIES
The pump does not supply any oil or the quantity supplied is incorrect	The oil in the tank is below the MIN. level The suction filter is dirty or clogged. The pump solenoid valve does not relieve	Fill with oil but do not exceed the MAX. level. Remove the pump from the tank. Unscrew the hex. cap, wash the filter and clean it with a blast of compressed air. Then reassemble everything. Check that the pump solenoid valve is the three-way type and normally relieves compressed air from the pump pneumatic chamber when the air is supplied.
The pump does not supply oil	The inner fittings are loose.	Remove the top plate of the tank and carefully tighten all the fittings, making sure there are no leaks.
The pump does not supply oil at the required pressure	Insufficient compressed air pressure	Bring the compressed air pressure to the value required to get the oil at the preset pressure.

VI.3.6. REPLACING OR CLEANING THE FILTER

Used oils must be replaced every **5000** hours of service. When doing this, also wash the magnetic column with petrol and dry with a blast of compressed air.

Proceed as follows to access the filtering column and filter:

- ❑ Relieve the oil pressure from the machine's lubricating system;
- ❑ Unscrew the drain plug to discharge any deposits and oil into a collection tank.
- ❑ Unscrew the cover, remove the spring and magnetic cartridge.
- ❑ Then pull out the filter and remove the relevant gasket.
- ❑ Mount a new filter following the same procedure in the reverse order and taking care to position the gasket properly.
- ❑ Fill the tank with fresh oil up to the **MAX** level.



**DO NOT FILL THE PUMP WITH USED OIL UNLESS IT HAS BEEN PROPERLY FILTERED.
RESTORE THE CORRECT PRESSURE IN THE MACHINE LUBRICATING CIRCUIT.**

VII. OTHER ON-BOARD DEVICES

VII.1. FAN

The FAN creates the negative pressure required for the sock being knitted in order to maintain a constant tension.

In sock plants with central suction, this device is not mounted on the machine and must be turned **OFF**.

The fans used are **SIEMENS 23BH15 - 50 Hz or 60 Hz**, depending on the supply voltage.

VII.2. COMPUTER HOUSING

The COMPUTER HOUSING contains the computer rack integrated in a board called **ETSK005501**.

It contains all the main electronic functions.

Above this board there is another one, **ETSK005504**, for selector control.

Apart from the selection units, the latter board also has other outputs for the solenoid valves.

The functions and links of these boards will be examined in detail in the Technical Documentation Handbook **SCS 2000** delivered with the machine.

VII.3. MOTOR

This turns the machine cylinder via a set of timing belt pulleys.

It is controlled by the drive in the control cubicle.

There are two types of motor:

- ❑ **ELMTACMO1** for standard machine;
- ❑ **ELMTRCV70830** for special machine with the **LIN TOE** device.

VII.4. 24V PLUG

The 24V plug, situated at the bottom of the control cubicle, is used for quick plug-in of the hand lamp during maintenance operations.

VII.5. PRESSURE SWITCH

This measures the pressure of the compressed air to the machine's pneumatic devices. It is connected to the machine via a contact. When the pressure goes below **6 Atm** (value set at the factory), the pressure switch immediately stops the machine.

VII.6. REAR CONNECTOR

The knit and cylinder stepping motors, the **TRS** cooling fan (**RIB** machines), the **IROs**, the **STOP** light and the cable for the microswitches arranged at the top of the machine are all linked to this connector.

VII.7. PROXIMITY MICROSWITCH

This controls the actual position of the cylinder with respect to the drive resolver signals and determines machining timing by means of a sector situated on the pulley mounted on the cylinder.

It is linked to the **JP3** connector of the control cubicle.

VII.8. MASTER SWITCH

The master switch can be used to disconnect the machine from the mains supply.

It turns the machine on and off.

In the presence of electrical noise in the mains, it is advisable to power off the machine via the master switch in order to avoid unnecessary stress on the electrical components.

VII.9. CONTROL CUBICLE

The control cubicle contains the master switch, transformer, power supply, stand-by battery, the **ETSK005199** board, the suction fan remote contactor and thermal relay, the drive and machine's main power devices.

VII.10. FLOPPY UNIT

This comprises a **floppy disk** driver for machine program **input and output**.

For the models equipped with **a hard disk** for drawing storage, this unit is situated inside the computer housing, below the floppy driver.

VII.11. KNIT MOTOR AND CYLINDER MOTOR

The knit and cylinder motors are used to adjust the knit gauge.

The register adjustment values are set onboard the machine, while the programming of the register indexes is set in the sock pattern.

VII.12. SOCK PASS PHOTOCELL

This device checks that the sock has come out of the suction hood pipe correctly. If there is an unexpected sock pass in the suction hood pipe, the photocell sends a signal to the computer which will stop the machine and the message **UNEXPECTED SOCK PASS** will be displayed.

Conversely, if the sock does not pass when it is expected to leave the cylinder, the machine will stop and the message **UNDETECTED SOCK PASS** will be displayed.

If you want to run a machine cycle **without yarn**, you must de-activate the photocell from the MANUAL screen displayed.

The sock pass photocell is linked to the **P4** connector of the **ETSK005201** board.

VII.13. GUARD MICROSWITCH AND CRANK MICROSWITCH

These two safety guards ensure safe operation and maintenance of the machine.

The crank microswitch activates automatically whenever the machine cylinder is moved manually via the side crank.

Should the machine start button be accidentally pressed with the crank activated, the computer prevents the machine from starting up and displays **CRANK ACTIVATED**.

If you want to access the selector housing, you must remove the machine guard.

In this case the flashing message **GUARD OPEN** will appear.

In these conditions, the machine can only run at a low speed (**max. 15 rpm**).

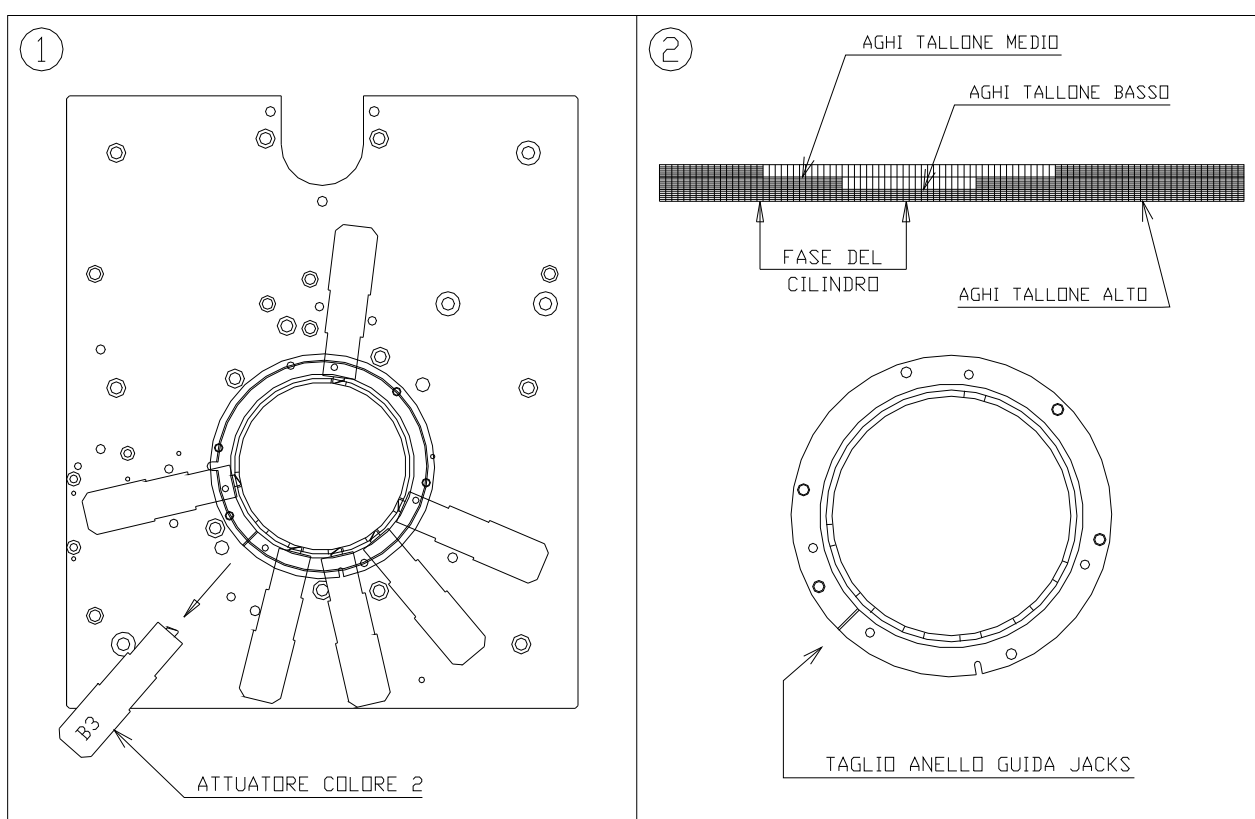
The microswitches are linked to the **P5** connector of the **ETSK005201** board.

VIII. SETTINGS

VIII.1. MACHINE TIMING

Machine timing procedure:

1. Remove the **COLOUR 2 ACTUATOR** (**B3** as shown in the programming manual).
2. Position the cylinder phase (shown on the cylinder diagram accompanying the machine) at the notch on the jack ring, which is only visible after completion of step 1.



Diciture disegno:

Attuatore colore 2 = Colour 2 actuators

Aghi talone basso = Low heel needles

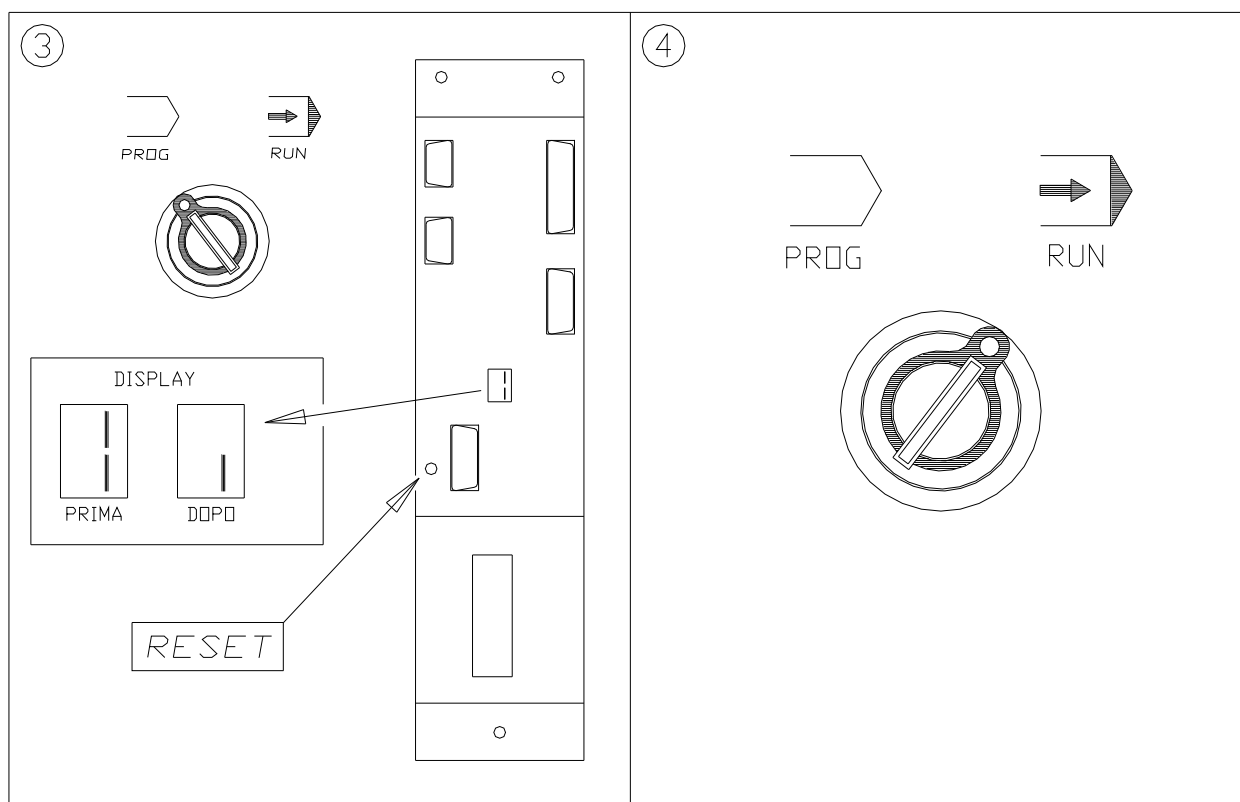
Aghi tallone medio = Medium heel needles

Aghi tallone alto = High heel needles

Fase del cilindro = Cylinder phase

Taglio anello guida jacks = Slot in jack ring

3. Turn the **KEY-OPERATED SWITCH** to **PROG** to access machine setting.
4. Open the control box and check that number **1**, comprising two illuminated segments, is displayed.
 - ❑ Press the **RESET** button and hold it down until the upper segment disappears.
 - ❑ Close the control box door and turn the **KEY-OPERATED SWITCH** to **RUN**.



Diciture disegni:
Prima = before
Dopo = after

VIII.2. ADJUSTING THE CYLINDER HEIGHT

Proceed as follows to adjust the cylinder height:

- ❑ Loosen the screws **A** and **B** to adjust the **minimum** and **maximum** height of the cylinder.
- ❑ Loosen the screws securing part **D**.
- ❑ Press the RESET button of the KNIT REGISTER TEST.
- ❑ Operate the **MOVE** key to bring the cylinder raising motor to the **maximum** position.



- ❑ Position the gauge and adjust the **MAXIMUM** height of the cylinder moving by hand the hexagon **C** situated at the top of the screw controlled by the cylinder raising motor.
- ❑ Position the safety screw **B** at **0.2 mm** from the cylinder raising lever and lock it in position using the nut.
- ❑ Operate the **MINIMUM POSITION** key to bring the cylinder-raising motor to the **MINIMUM** position.

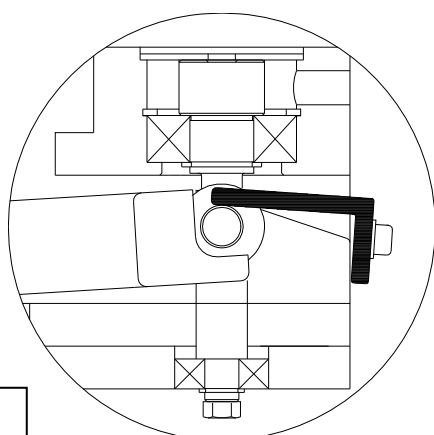
TEST REGISTRI MAGLIA	
MAGLIA POS : 999 CILINDRO POS : 999 	Etc Ritorna Gruppo registri ok
- + MAGLIA CILINDRO GLOBAL MUOVE POSIZ MINIMA AZZERA	



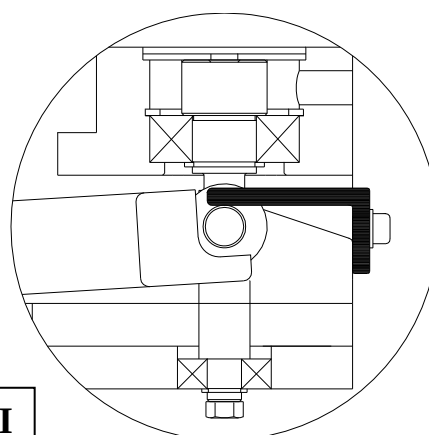
- ❑ Position the gauge and screw **A** to adjust the **minimum** height of the cylinder.
- ❑ Bring the stop bracket **D** in contact with the pawl **E** and lock it in position.



IN DOING THIS, MAKE SURE BEFORE TIGHTENING THE SCREWS FIXING THE BRACKET D THAT THE BRACKET SURFACE PERFECTLY ADHERES TO THE SUPPORT.



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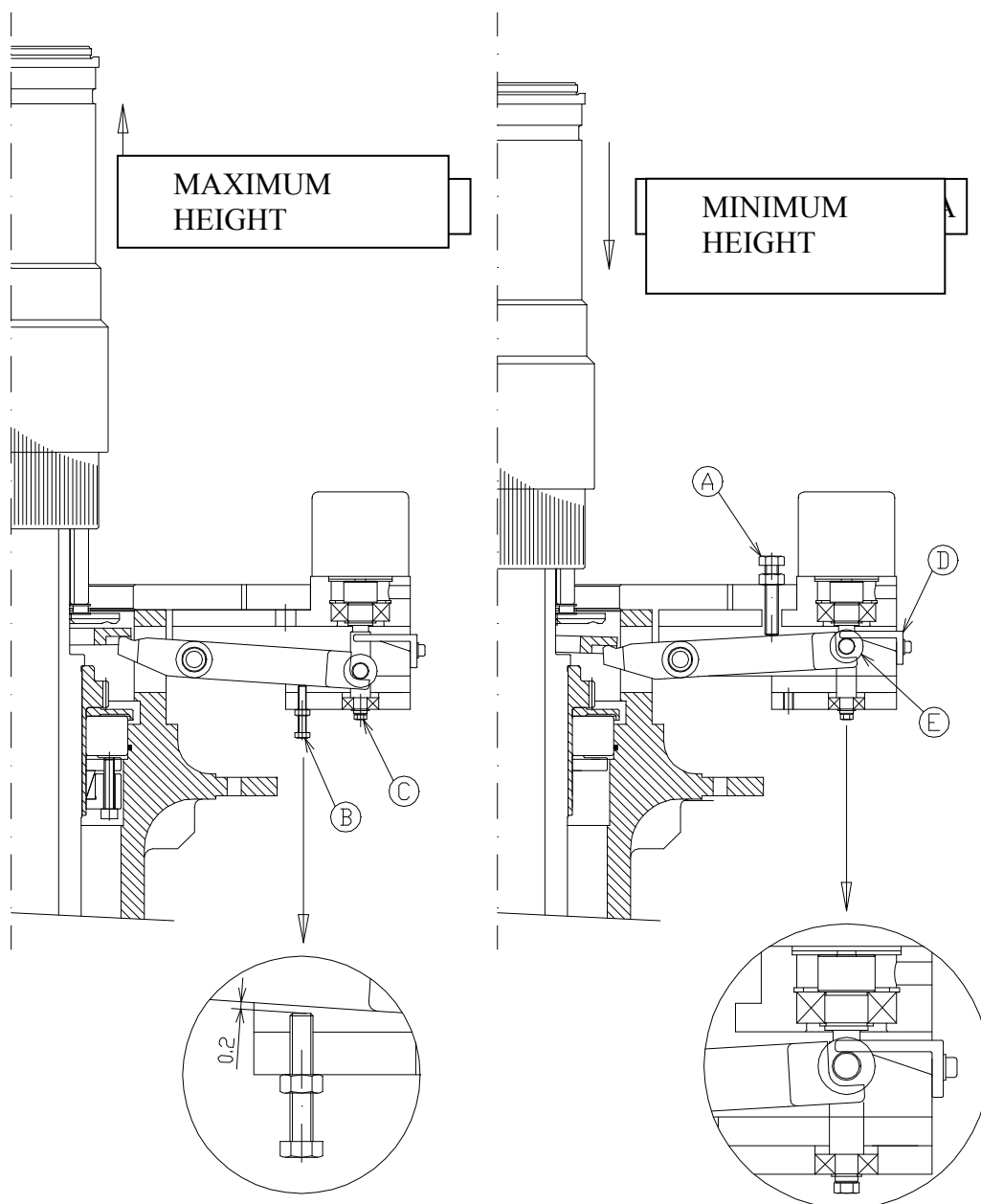


SI

- Press the **MOVE** and **RESET** keys and check both the **minimum** and **maximum** positions are correct.

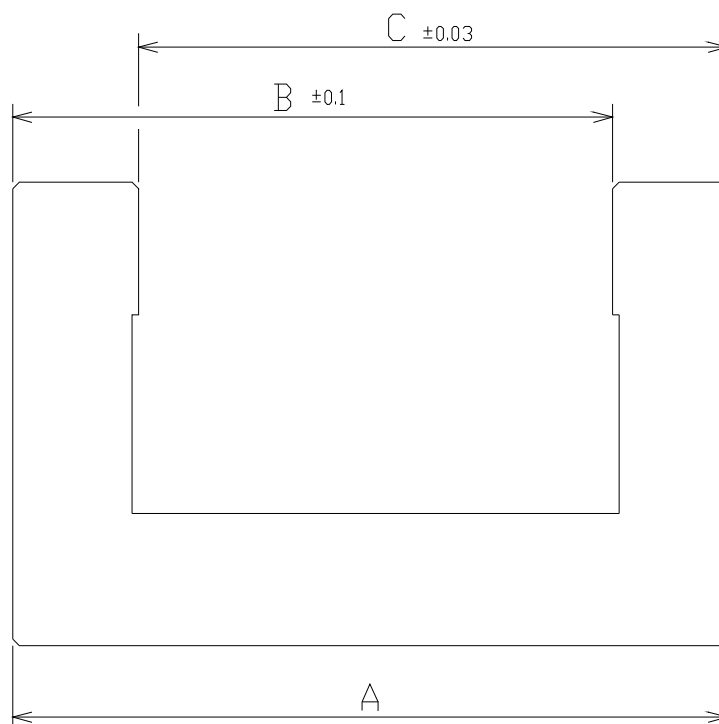


THE DIFFERENCE BETWEEN THE MINIMUM POSITION BUTTON AND THE RESET BUTTON IS THAT THE FIRST CONTROLS THE MOTOR AS FAR AS THE ELECTRONIC ZERO, WHICH IN CASE OF A MALFUNCTION MAY NOT COINCIDE WITH THE MECHANICAL ZERO. THE RESET BUTTON GIVES THE MOTOR ABOUT 20 IMPULSES OVER ZERO TO RESET THE MACHINE AS WELL.



VIII.2.1. CYLINDER HEIGHT GAUGES

MACHINE MODEL	A	B	C	CODE
Fantasia 3"1/4 Single sinker	108.9	91.4	89.7	1115881
Fantasia 3"3/4 Single sinker				
Fantasia 3"1/4 PUNCH Single sinker	129.7	112.2	110.5	1115887
Fantasia 3"3/4 PUNCH Single sinker				
Fantasia 3"1/4 Plated Terry	108.9	90.7	89.7	1115880
Fantasia 3"3/4 Plated Terry				
Fantasia 3"1/4 PUNCH Plated Terry	129	115.5	110.5	1115883
Fantasia 3"3/4 PUNCH Plated Terry				
Fantasia 3"1/4 Plain Knit	109.2	91.7	89.7	1116001
Fantasia 3"3/4 Plain Knit				
Fantasia 3"1/4 PUNCH Plain Knit	130	112.5	110.5	1115829
Fantasia 3"3/4 PUNCH Plain Knit				



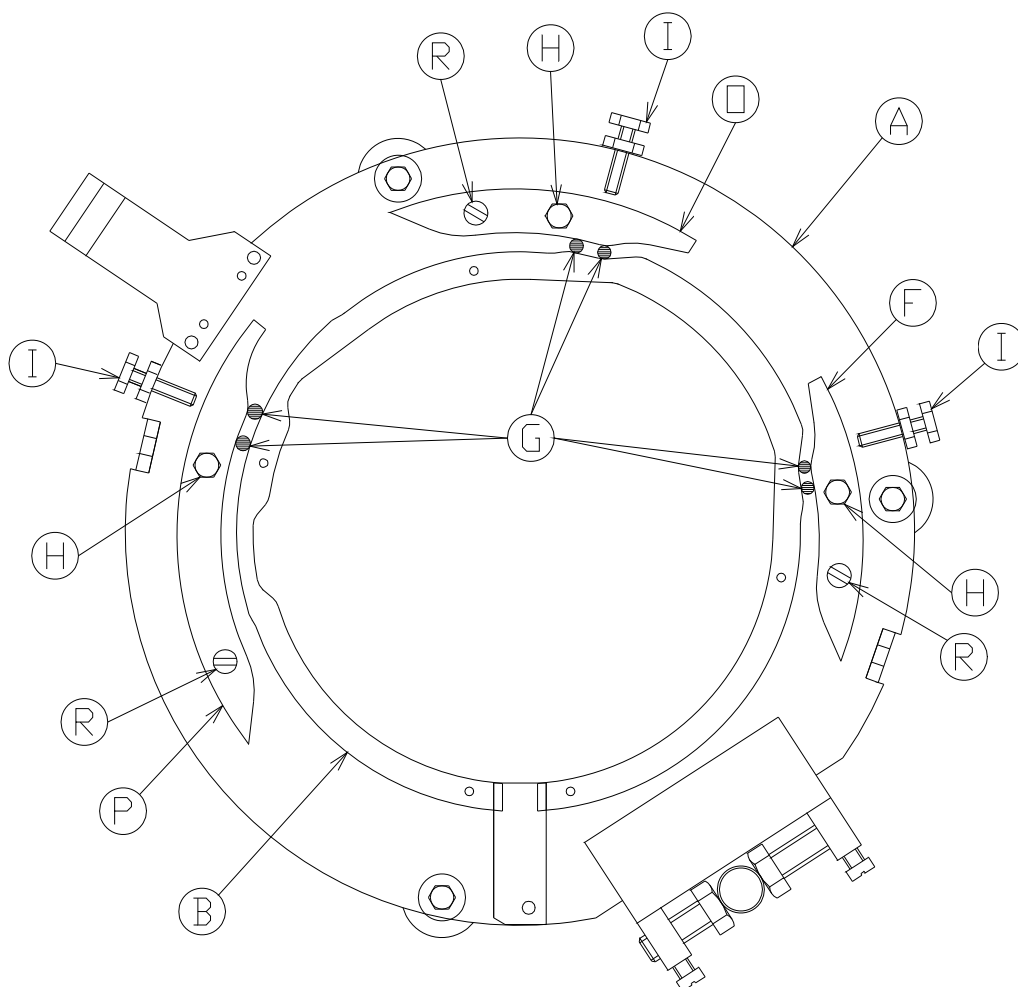
VIII.3. ADJUSTING THE SINKER CAM CAP - PLAIN KNIT

The sinker cam cap **A** is situated on the outer crown of the cylinder and secured to it by two brackets that allow the cylinder to move and hold the cap cam in position at the same time.

The sinker cam cap is made up of an inner guide cam **B** and adjustable outer cams **O**, **F** and **P** that allow the sinkers to move in synchronisation with the needles. The inner guide cam is fixed onto the cap by means of screws and pins. The outer cams can move slightly horizontally and are adjusted as follows:

- ❑ Loosen screws **H** and **R**;
- ❑ Insert gauge **G**, set to **3.6**, between inner guide cam **B** and outer cam **F** (**butt**);
- ❑ Use screw **I** to push cam **F** against the gauge and move it slightly along a short section and check it moves smoothly;
- ❑ tighten screws **H** and **R**.

This operation must be repeated on all the outer cams.

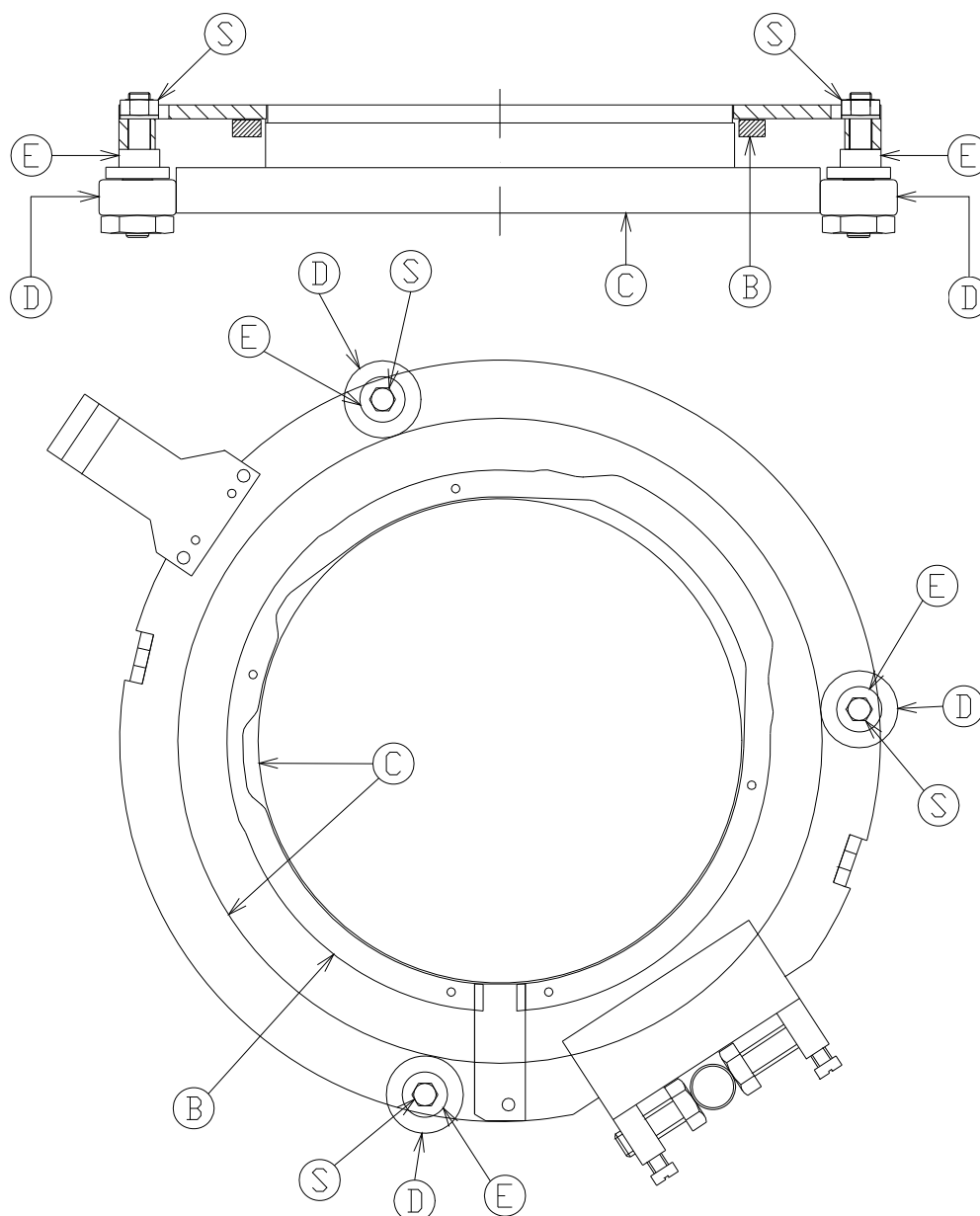


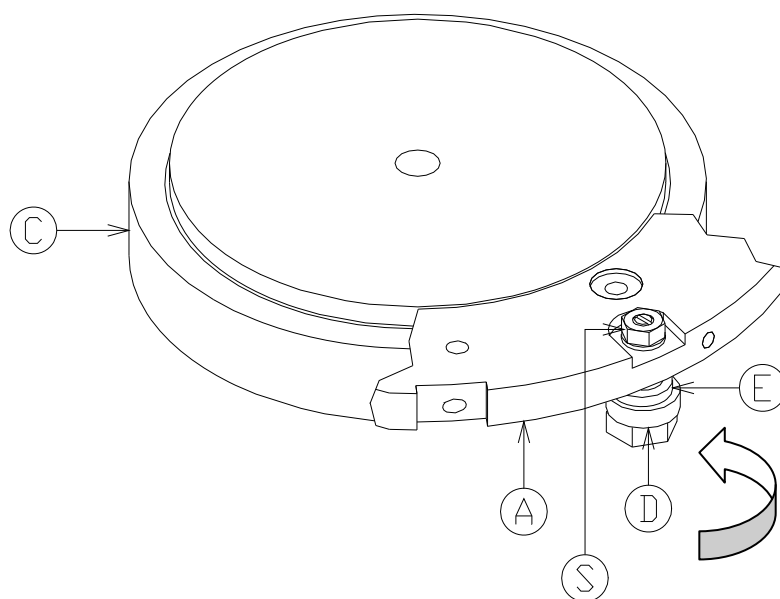
VIII.3.1. ADJUSTING THE BEARINGS

This operation is very easy because bearings **D** are mounted on eccentric pins **E** that can be rotated to put them closer to or away from gauge **C** which has been previously centred to the inside diameter of the cam cap. To position the bearings correctly, unscrew nut **S** and rotate the bearing anticlockwise until it comes into contact with the gauge.

Check that each bearing is perfectly in contact with the larger diameter of gauge **C** so as to allow the cam cap to slide freely without any end play, and to prevent the bearings from being forced.

This operation must be repeated for all the other bearings.

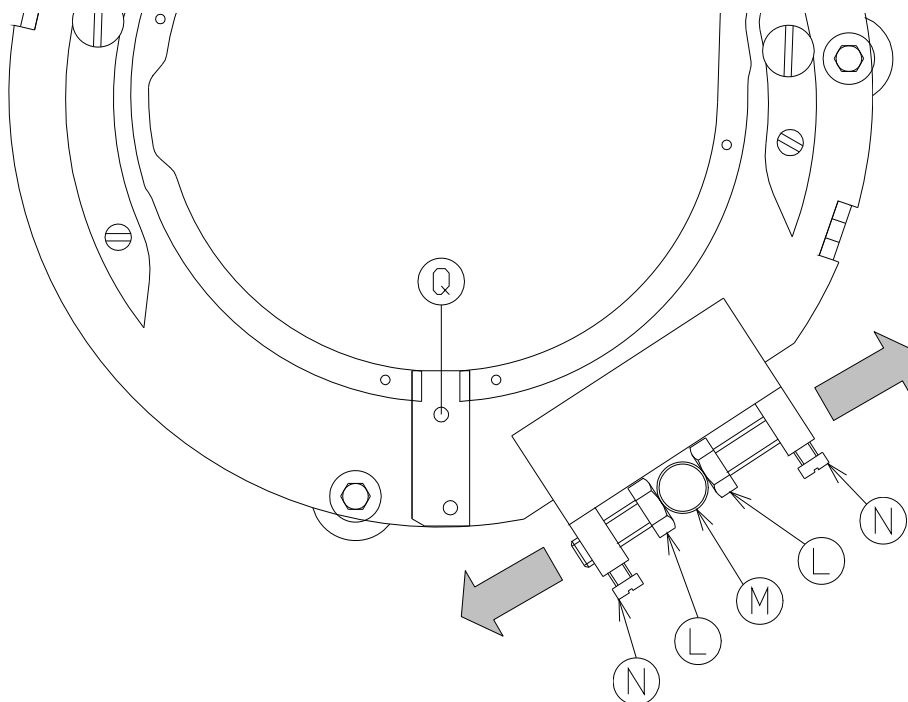




VIII.3.2. ANGULAR ADJUSTMENT OF THE SINKER CAP

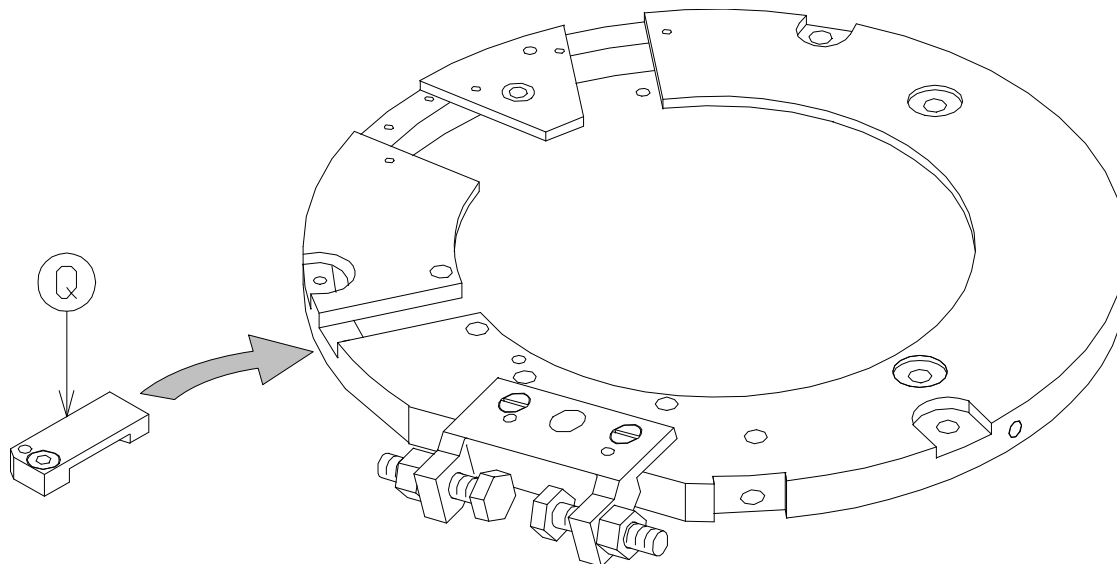
To do this, loosen nuts **N** and turn the cap rotation screws **L** to get the correct angle when the in-edge of the sinkers comes into contact with the up-edge of the needles when they are on the knit formation counter cam.

When screws **L** are in contact with pin **M**, tighten the screws **N**.

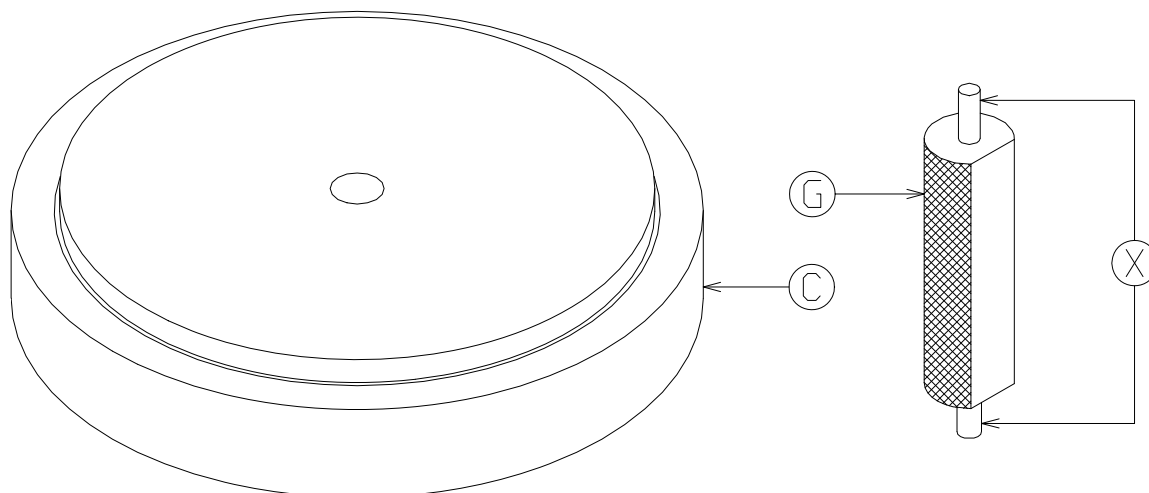


VIII.3.3. REPLACING THE SINKERS

In the top of the cap is a removable wedge **Q**, which is used when replacing broken sinkers.



VIII.3.4. SINKER CAP GAUGES – PLAIN KNIT



CYLINDER DIAMETER	GAUGE C CODE
D82	1115879
D95	1115878

REGISTER X VALUE	GAUGE G CODE
4.1	1115637
3.6	

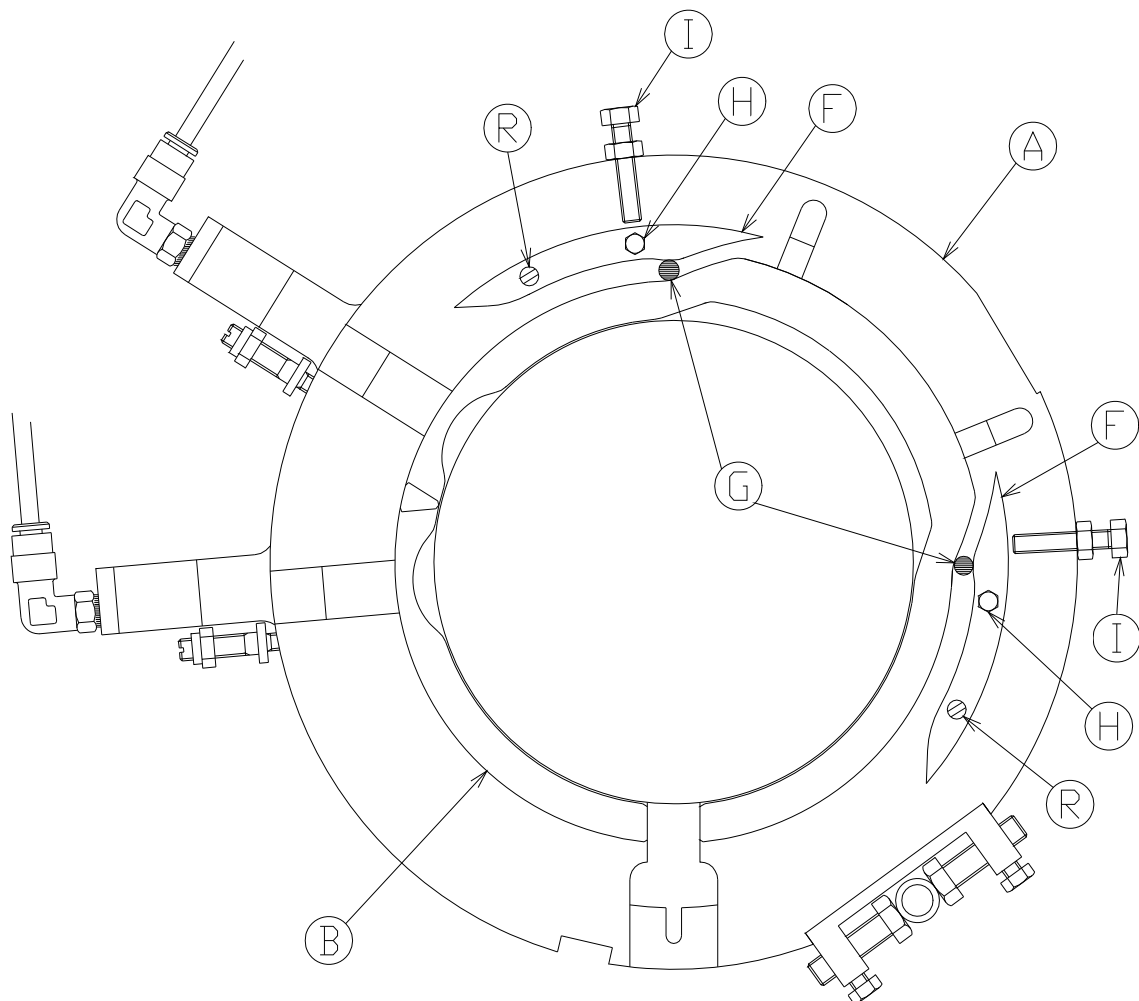
VIII.4. ADJUSTING THE SINKER CAM CAP – PLATED TERRY

The sinker cam cap **A** is situated on the outer crown of the cylinder and secured to it by two brackets that allow the cylinder to move and hold the cap cam in position at the same time.

The sinker cam cap is made up of an inner guide cam **B** and adjustable outer cams **F** that allow the sinkers to move in synchronisation with the needles. The inner guide cam is fixed onto the cap by means of screws and pins. The outer cams can move slightly horizontally and are adjusted as follows:

- ❑ Loosen screws **H** and **R**;
- ❑ Insert gauge **G**, set to **3.6**, between inner guide cam **B** and outer cam **F (butt)**;
- ❑ Use screw **I** to push cam **F** against the gauge and check it moves smoothly;
- ❑ tighten screws **H** and **R** to secure the outer cam in position.

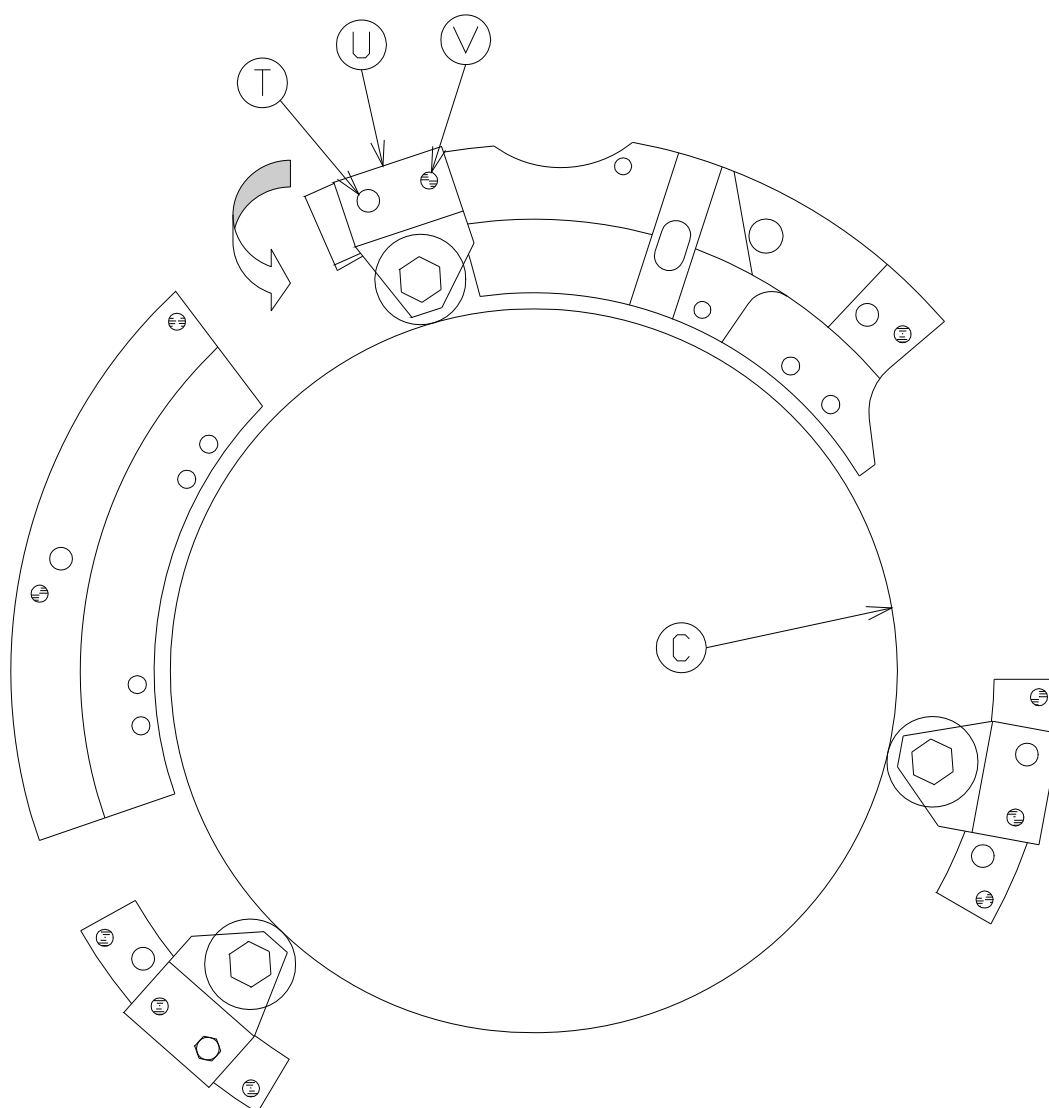
This operation must be repeated on all the outer cams.

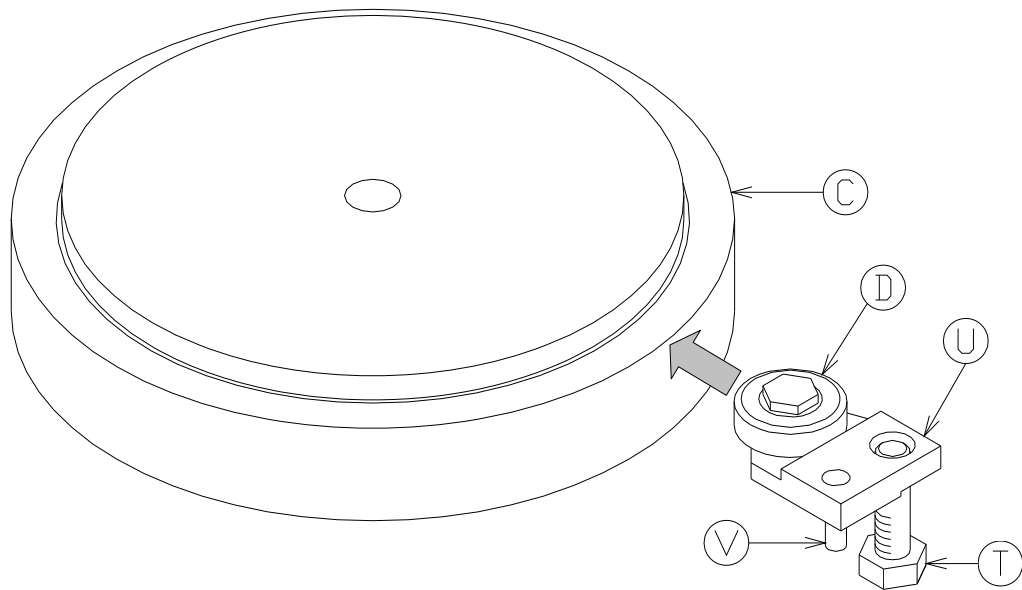


VIII.4.1. ADJUSTING THE BEARINGS

Bearings **D** can be adjusted by loosening screw **T** and rotate the plate **U** hinged to pin **V** until the bearing are in contact with gauge **C** so as to allow the cam cap to slide freely without any end play, and to prevent the bearings from being forced.

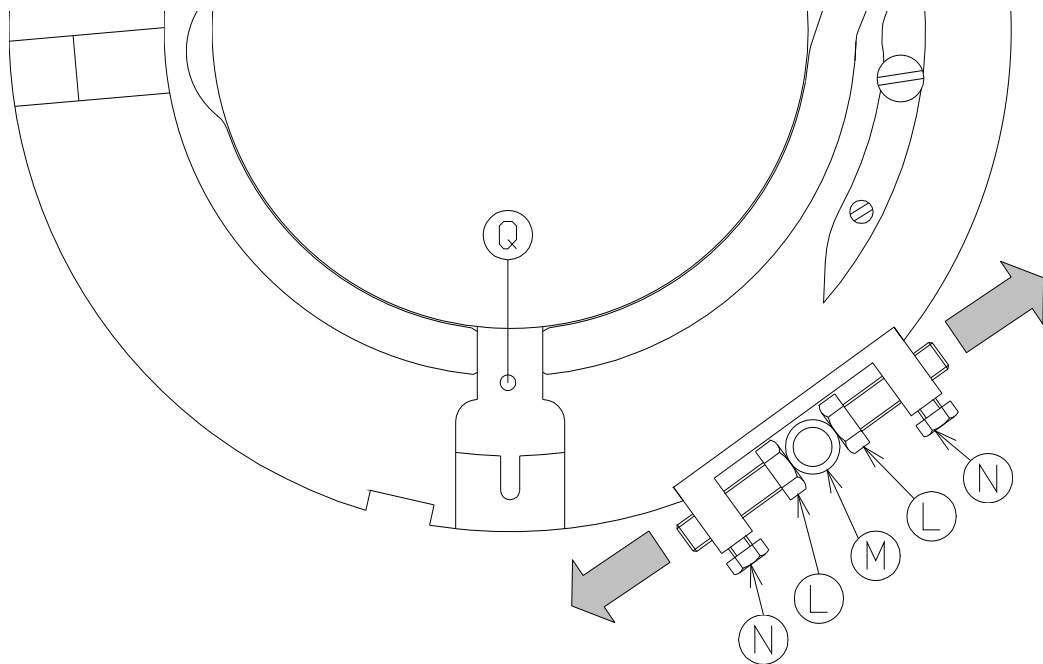
This operation must be repeated for all the other bearings.





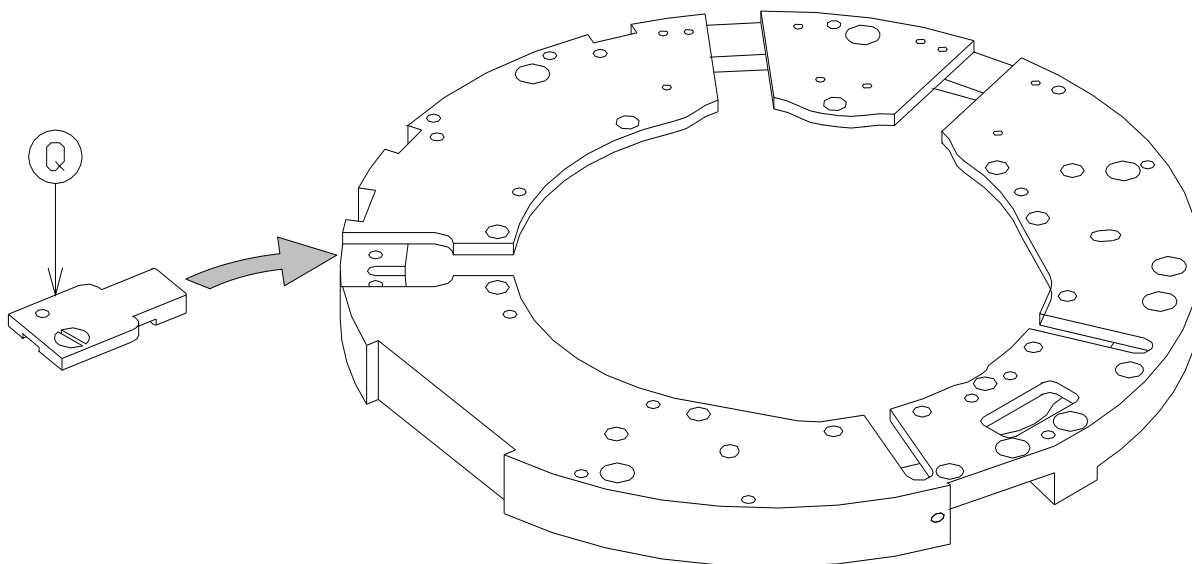
VIII.4.2. ANGULAR ADJUSTMENT OF THE SINKER CAP

To do this, loosen nuts **N** and turn the cap rotation screws **L** to get the correct angle when the in-edge of the sinkers comes into contact with the up-edge of the needles when they are on the knit formation counter cam. When screws **L** are in contact with pin **M**, tighten the screws **N**.



VIII.4.3. REPLACING THE SINKERS

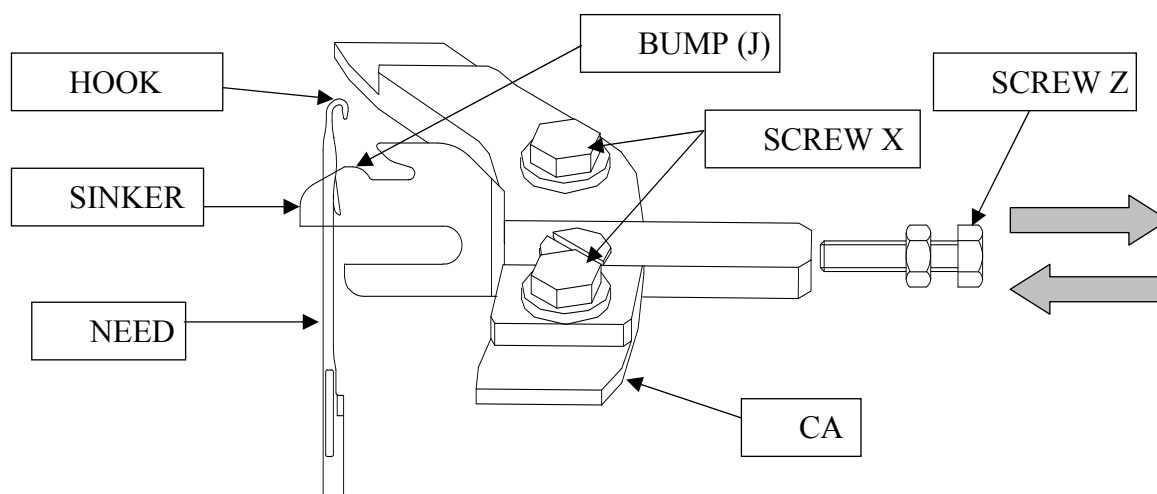
In the top of the cap is a removable wedge **Q**, which is used when replacing broken sinkers.

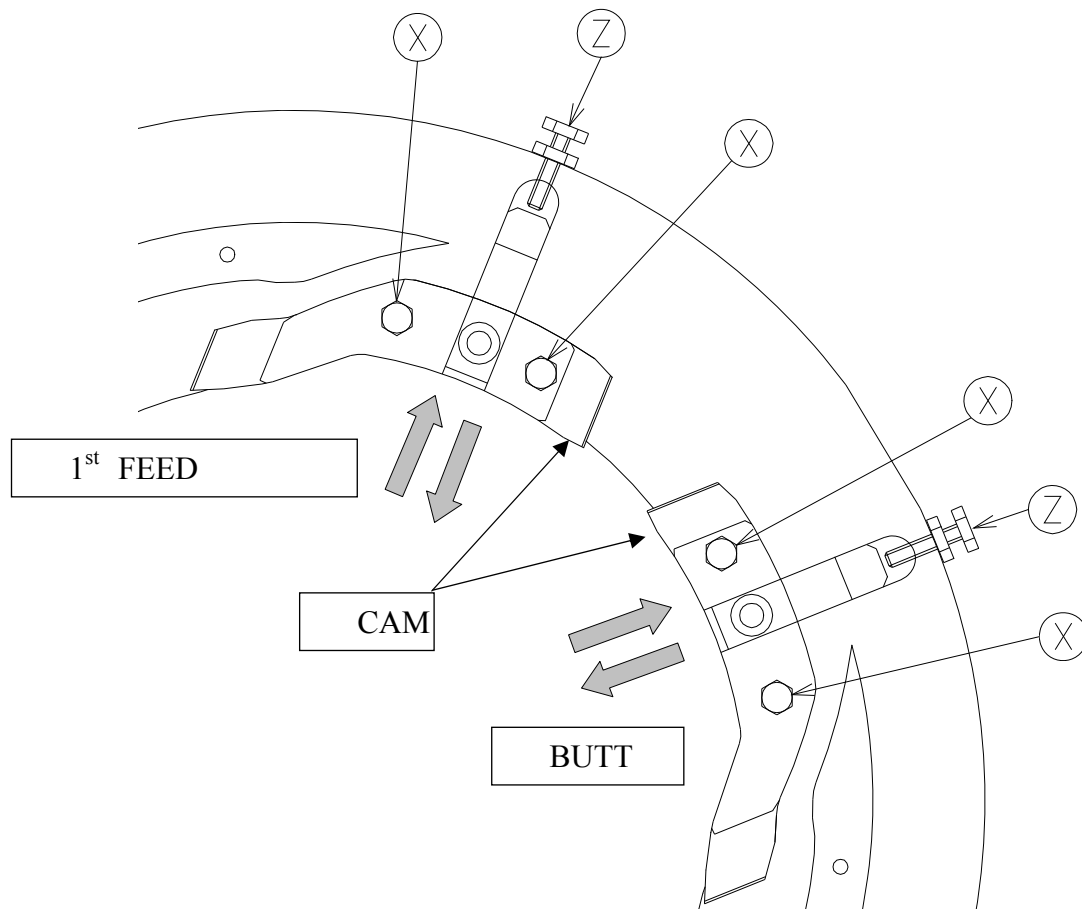


VIII.4.4. ADJUSTING CAMS FOR KNIT SINKERS

The cams that set the correct position of the knit sinkers can be adjusted by loosening screws **X** and, by adjusting screws **Z**, “bump” **J** of the sinker at the needle “hook” **W** is lowered until it reaches the knit formation position.

This operation must be repeated for both the 1st feed cam and butt cam.

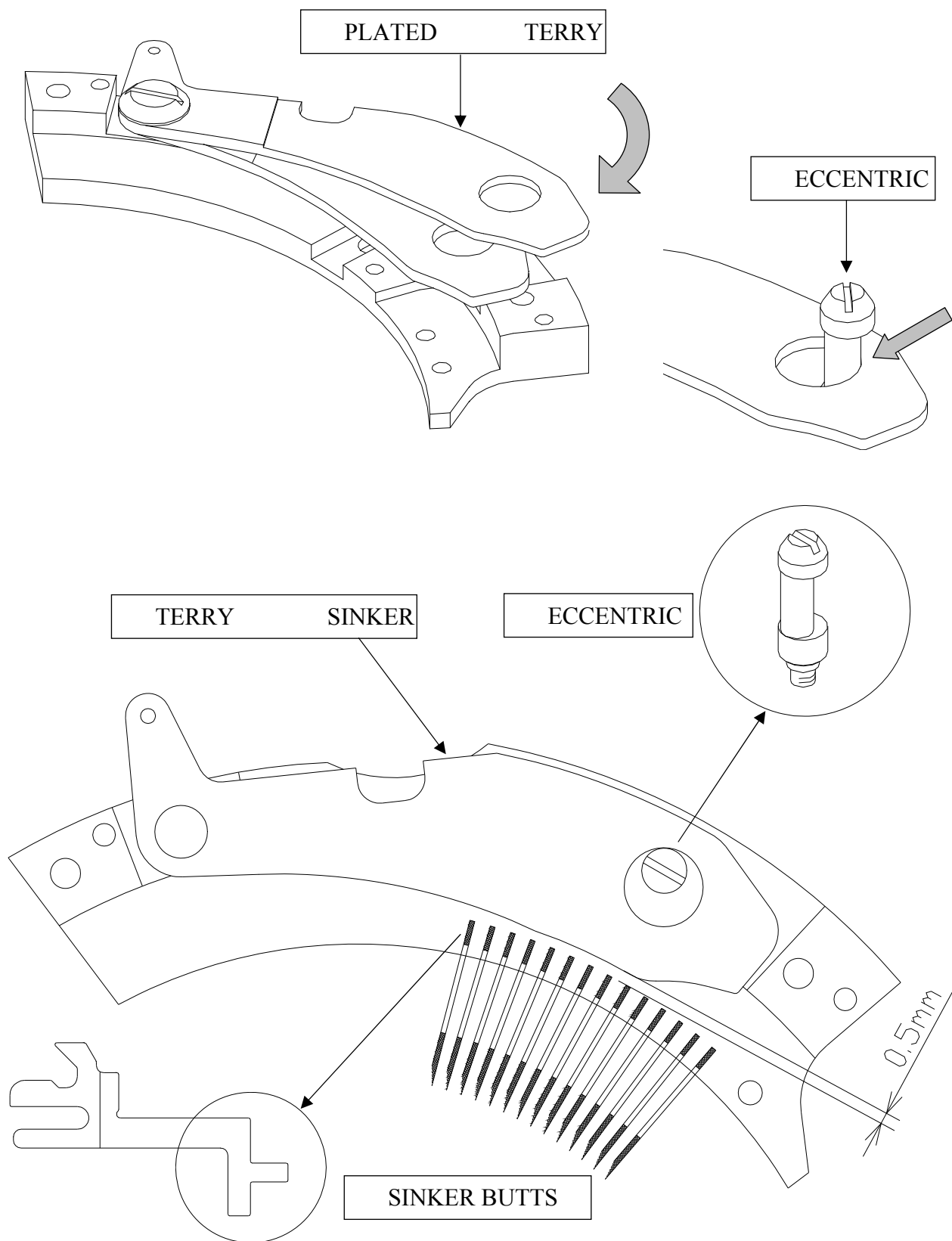




VIII.4.5. ADJUSTING THE SINKER LEVERS – PLATED TERRY – 1ST FEED

The levers that determine the correct positioning of the terry sinkers can be adjusted as follows:

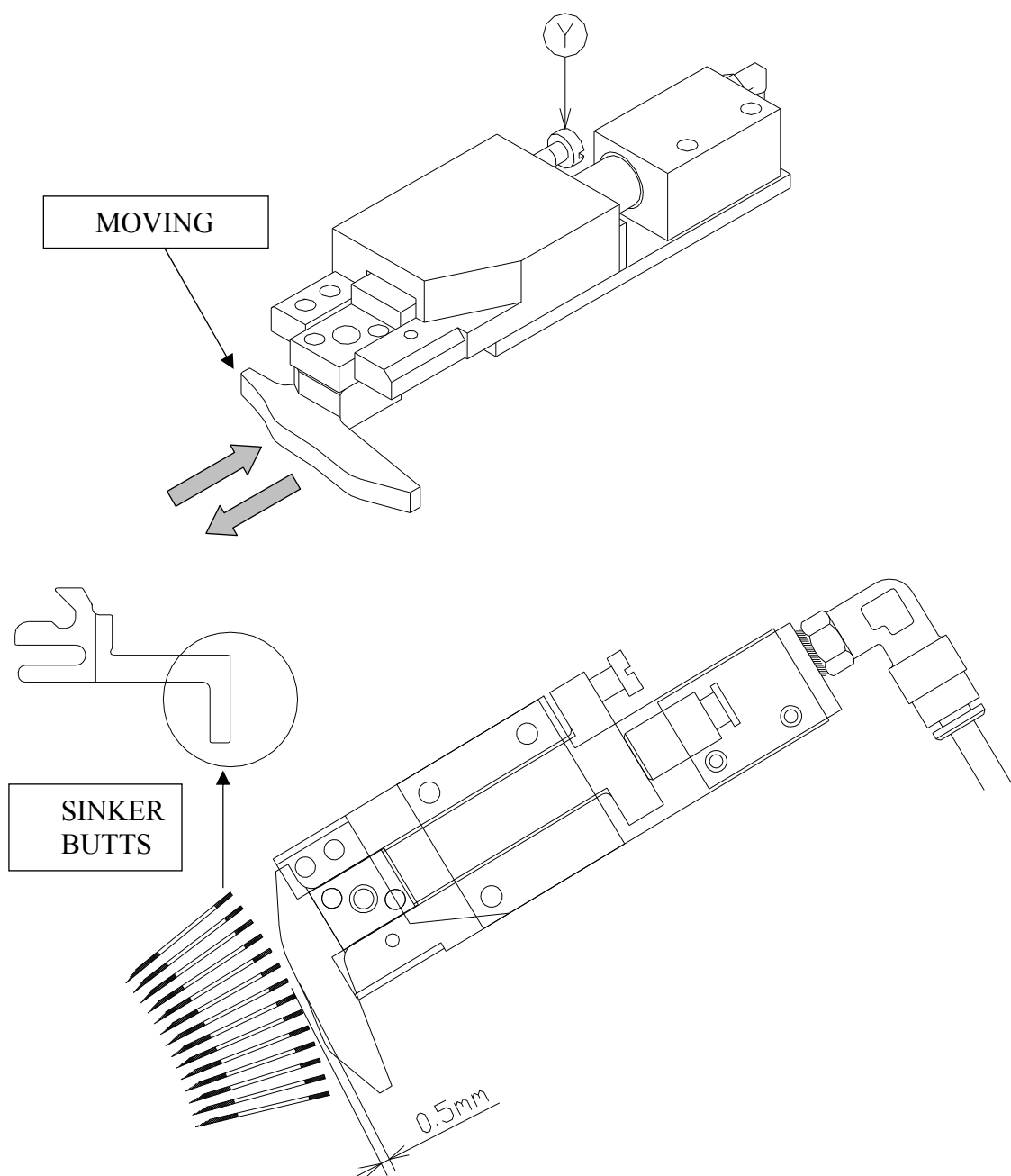
- ❑ adjust the terry levers using the on-board control and moving them against the eccentric cam;
- ❑ rotate the eccentric cam until the levers are in contact with the sinker butts;
- ❑ now rotate the eccentric cam anticlockwise to create a clearance (**approx. 0.5 mm**) between the levers and sinker butts.



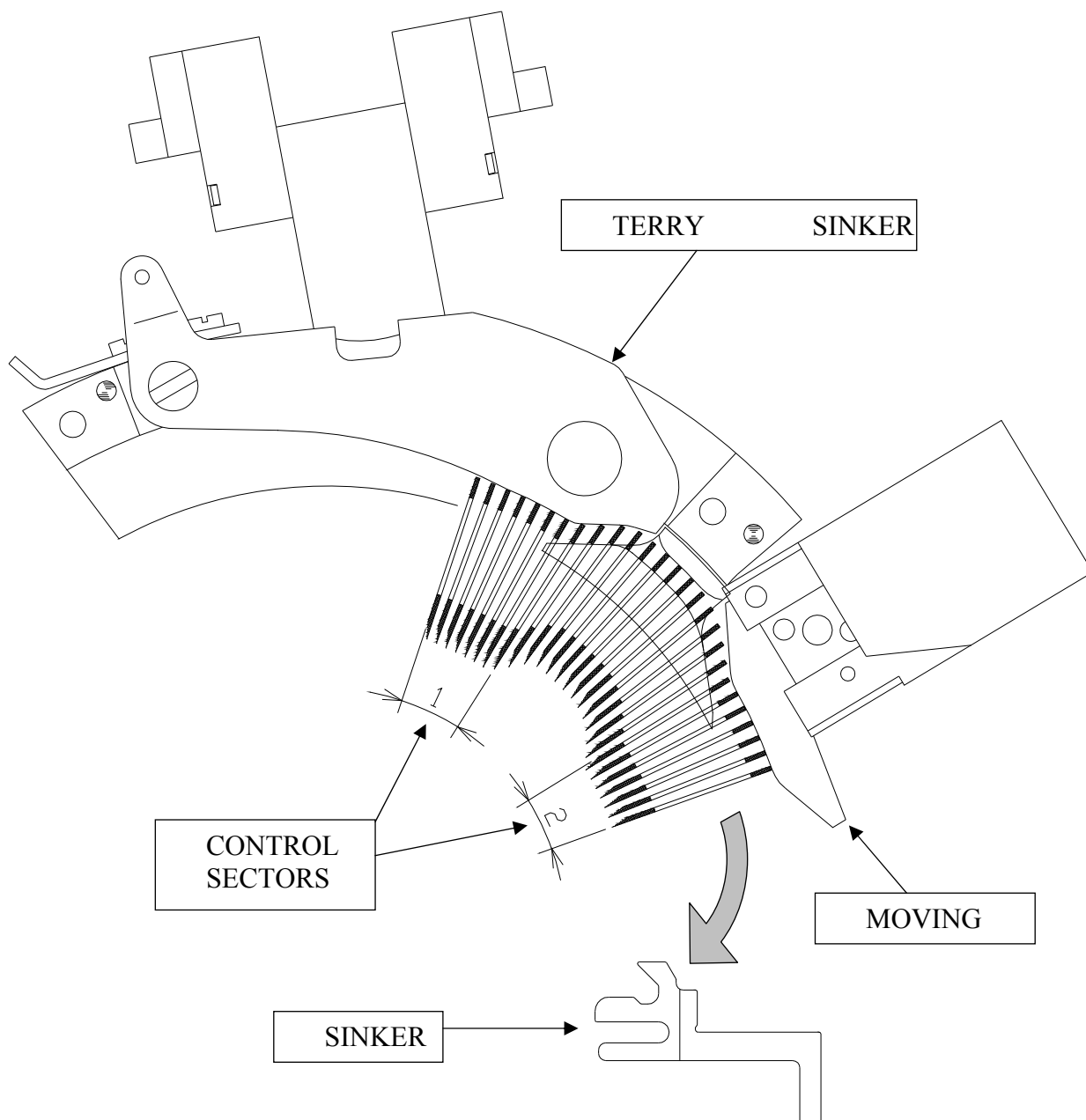
VIII.4.6. ADJUSTING THE BUTT MOVING CAM

The moving cam that determines the correct positioning of the terry sinkers (butt) in reciprocating motion can be adjusted as follows:

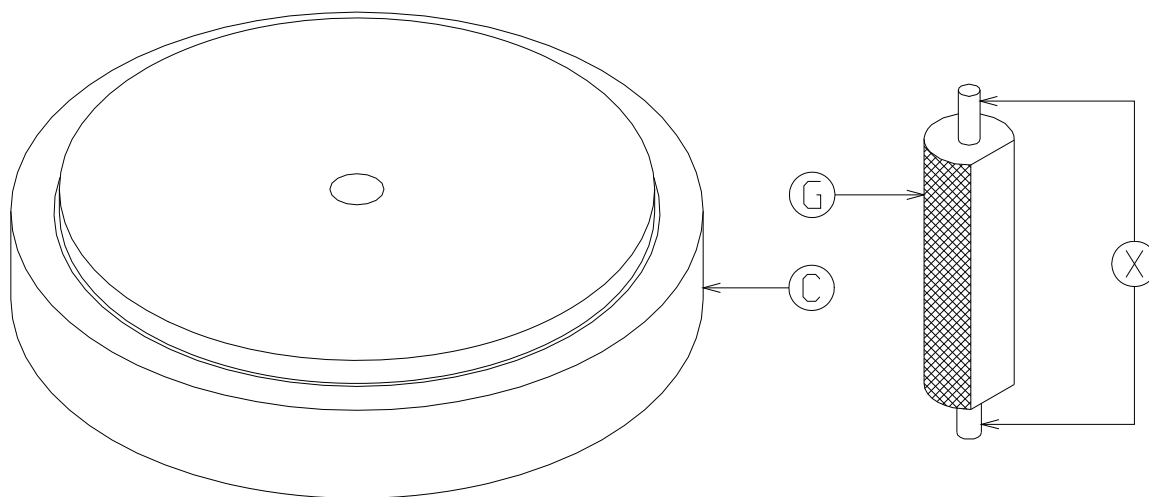
- ❑ use screw **Y** to move the moving cam against the sinker butts;
- ❑ when fully in position, move it back slightly to create a certain clearance between the cam and sinker butts (approx. 0.5 mm).



In order to check correct adjustment of the 1st feed levers and moving cam, run the machine on reciprocating motion (butt) to see whether sinker sectors (1 and 2) are equally retracted towards the cylinder in the knit formation position.
If it is not so, rotate the cap (as described in point 4.2) to equalise the situation and get a better working condition.



VIII.4.7. GAUGES FOR CENTERING THE PLATED TERRY SINKER CAP



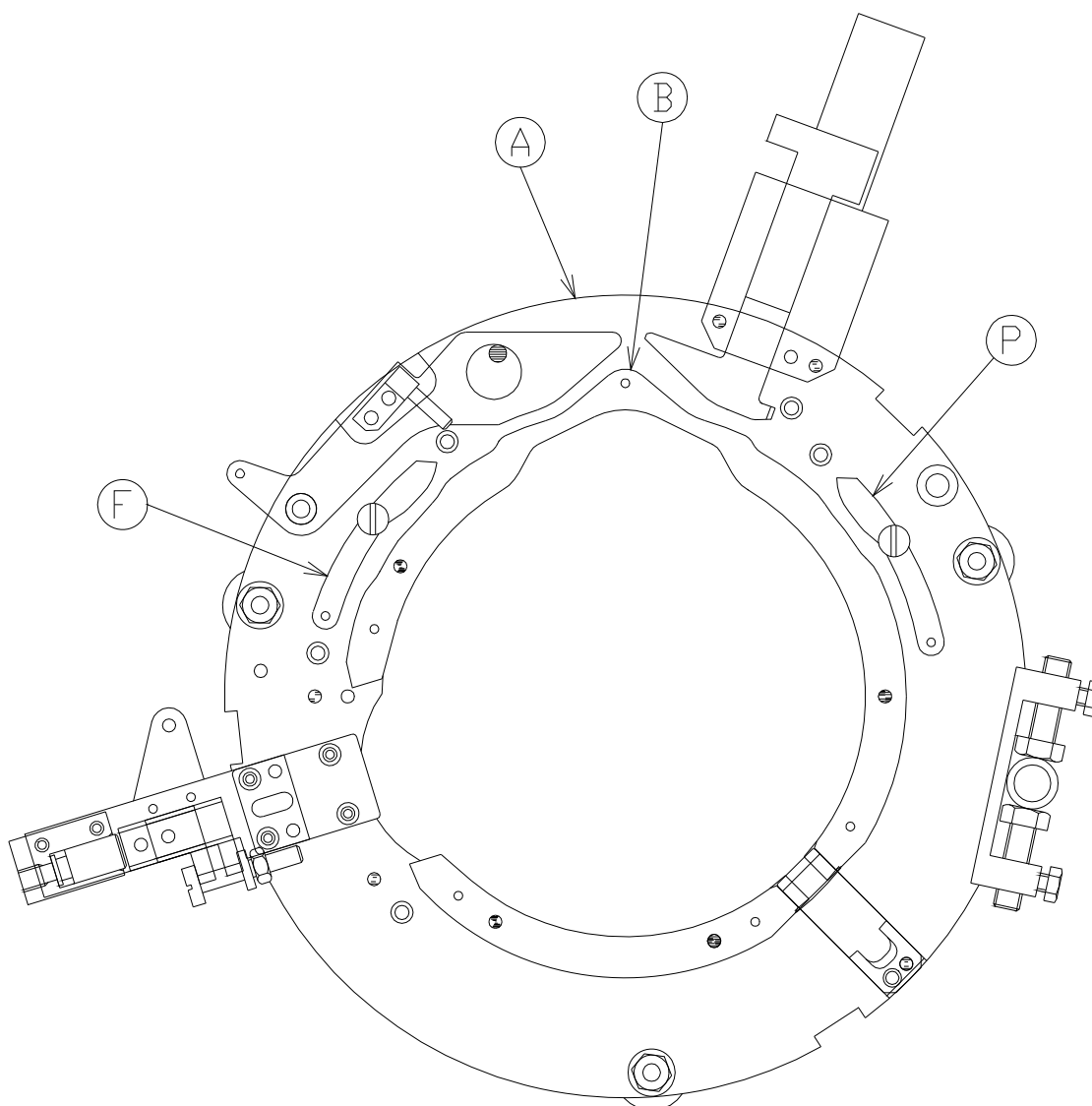
CYLINDER DIAMETER	GAUGE C CODE
D82	1115895
D95	1115894

REGISTER X VALUE	GAUGE G CODE
4.1	1115637
3.6	

VIII.5. ADJUSTING THE SINKER CAM CAP - PLAIN KNIT SINGLE SINKER

The sinker cam cap **A** is situated on the outer crown of the cylinder and secured to it by two brackets that allow the cylinder to move and hold the cap cam in position at the same time.

The sinker cam cap is made up of an inner guide cam **B** and adjustable outer cams **F** and **P** that allow the sinkers to move in synchronisation with the needles. The inner guide cam is fixed onto the cap by means of screws and pins. The outer cams can move slightly horizontally. The outer cams can be adjusted differently according to the machine gauge, the type of yarn used and the type of knit. These adjustments improve quality of the knitting and are generally made on the machine during production.

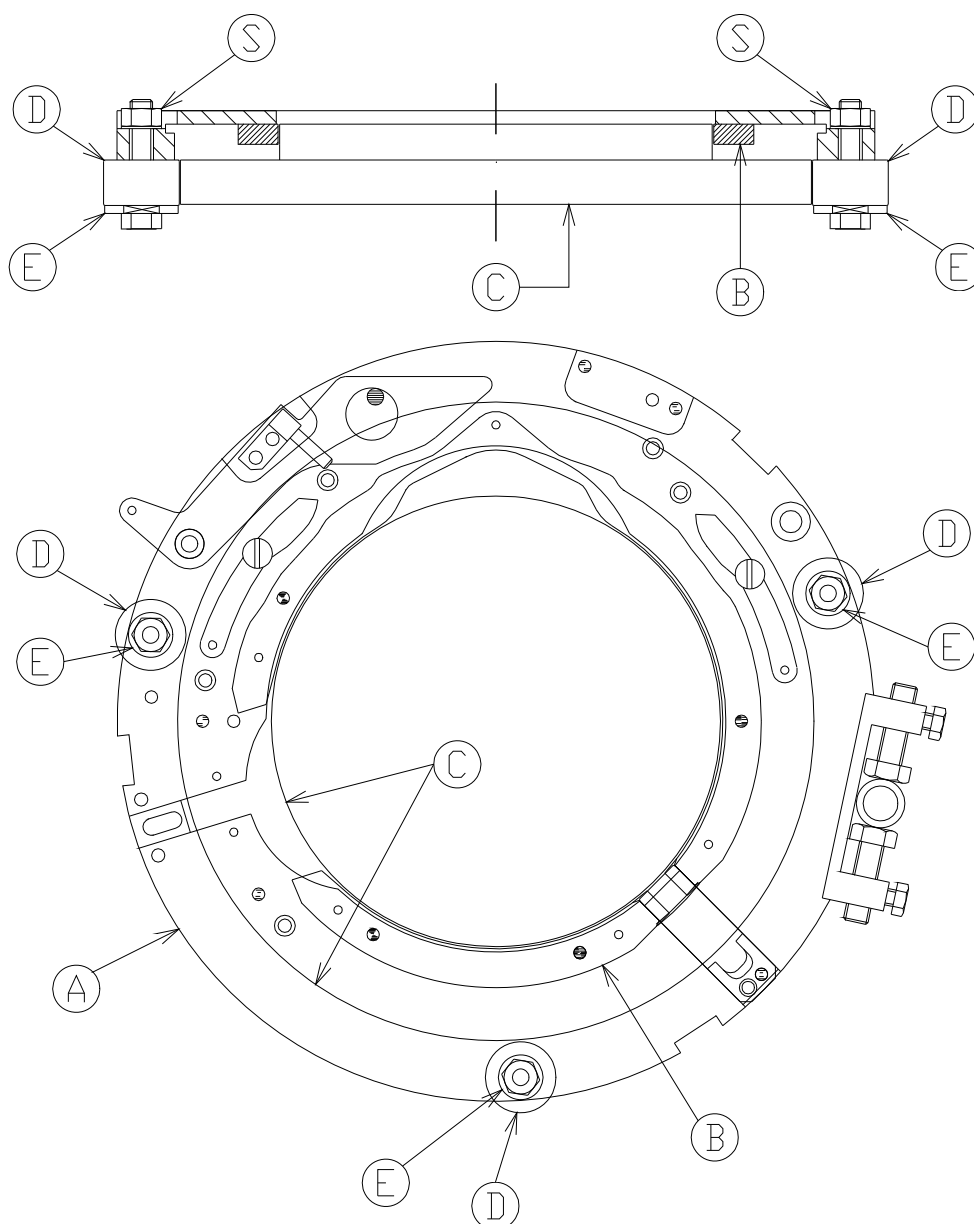


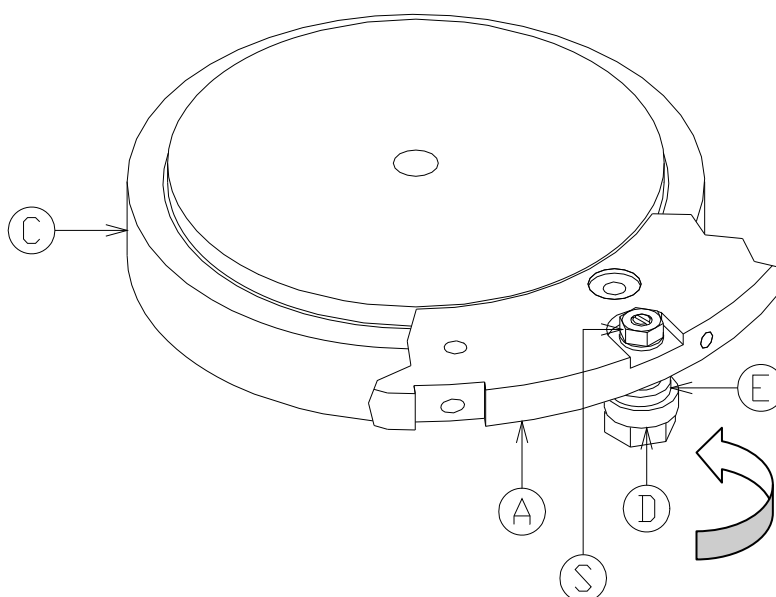
VIII.5.1. ADJUSTING THE BEARINGS

This operation is very easy because bearings **D** are mounted on eccentric pins **E** that can be rotated to put them closer to or away from gauge **C** which has been previously centred to the inside diameter of the cam cap. To position the bearings correctly, unscrew nut **S** and rotate the bearing anticlockwise until it comes into contact with the gauge.

Check that each bearing is perfectly in contact with the larger diameter of gauge **C** so as to allow the cam cap to slide freely without any end play, and to prevent the bearings from being forced.

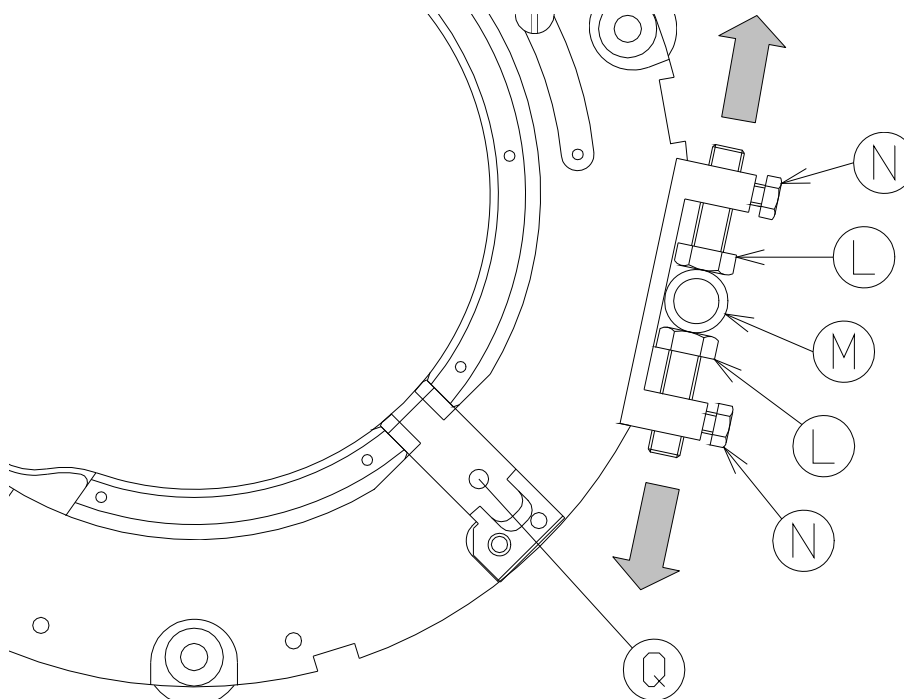
This operation must be repeated for all the other bearings.





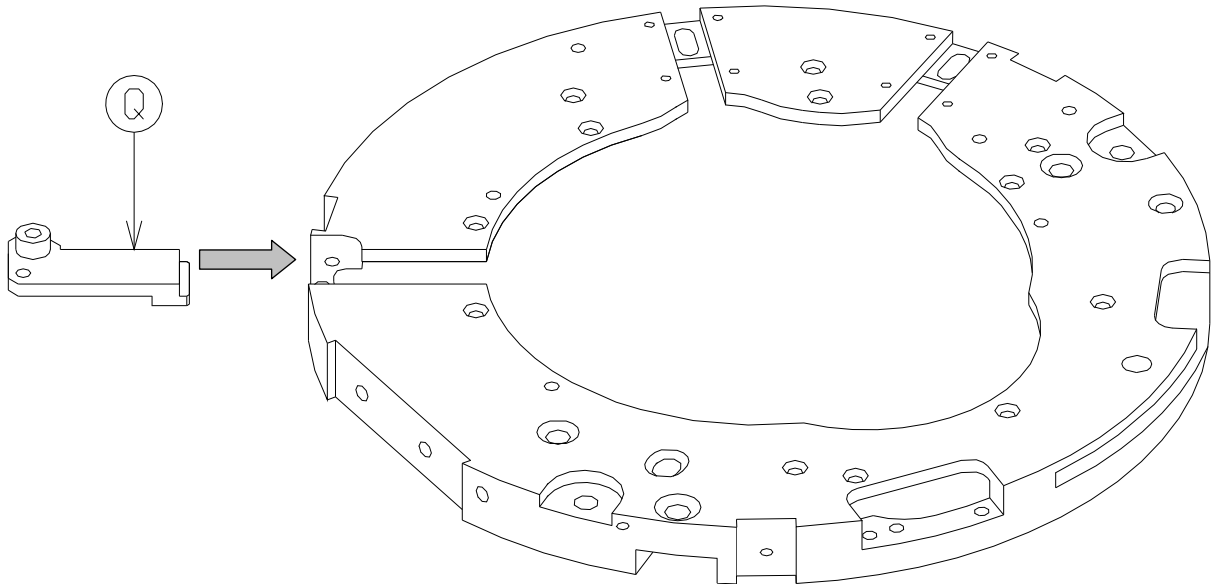
VIII.5.2. ANGULAR ADJUSTMENT OF THE SINKER CAM CAP

To do this, loosen nuts **N** and turn the cap rotation screws **L** to get the correct angle when the in-edge of the sinkers comes into contact with the up-edge of the needles when they are on the knit formation counter cam. When screws **L** are in contact with pin **M**, tighten the screws **N**.



VIII.5.3. REPLACING THE SINKERS

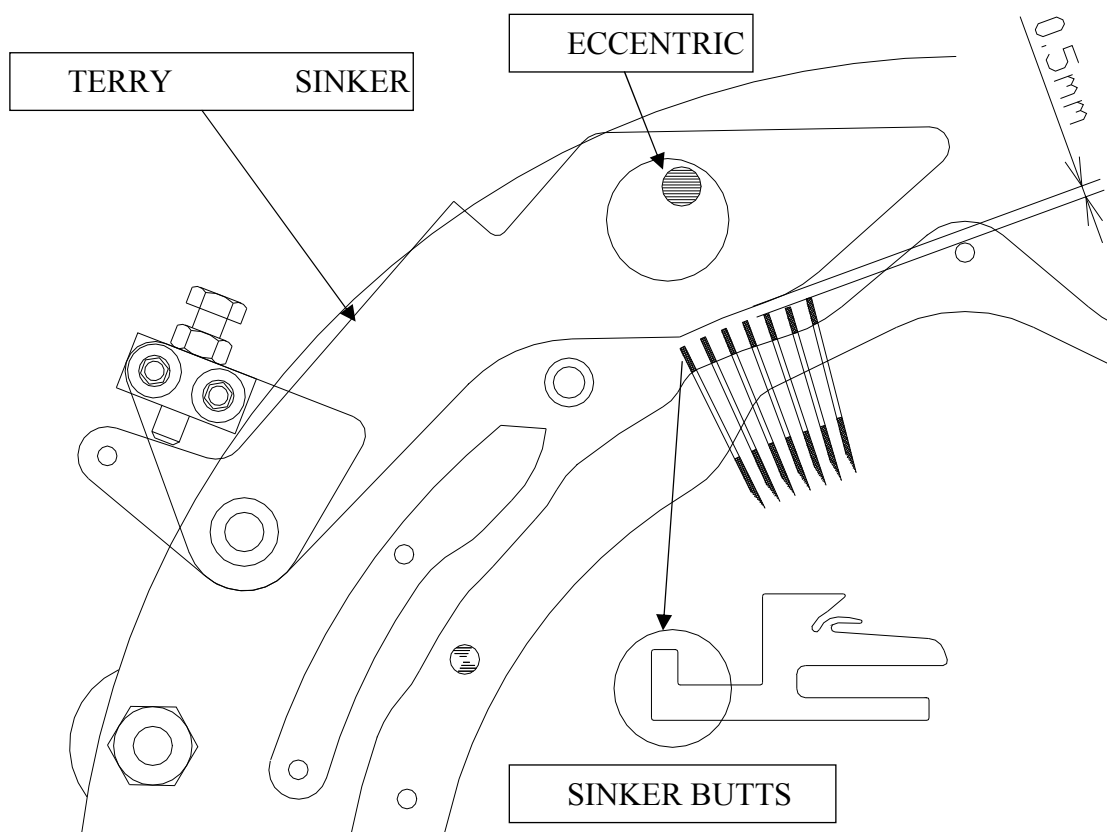
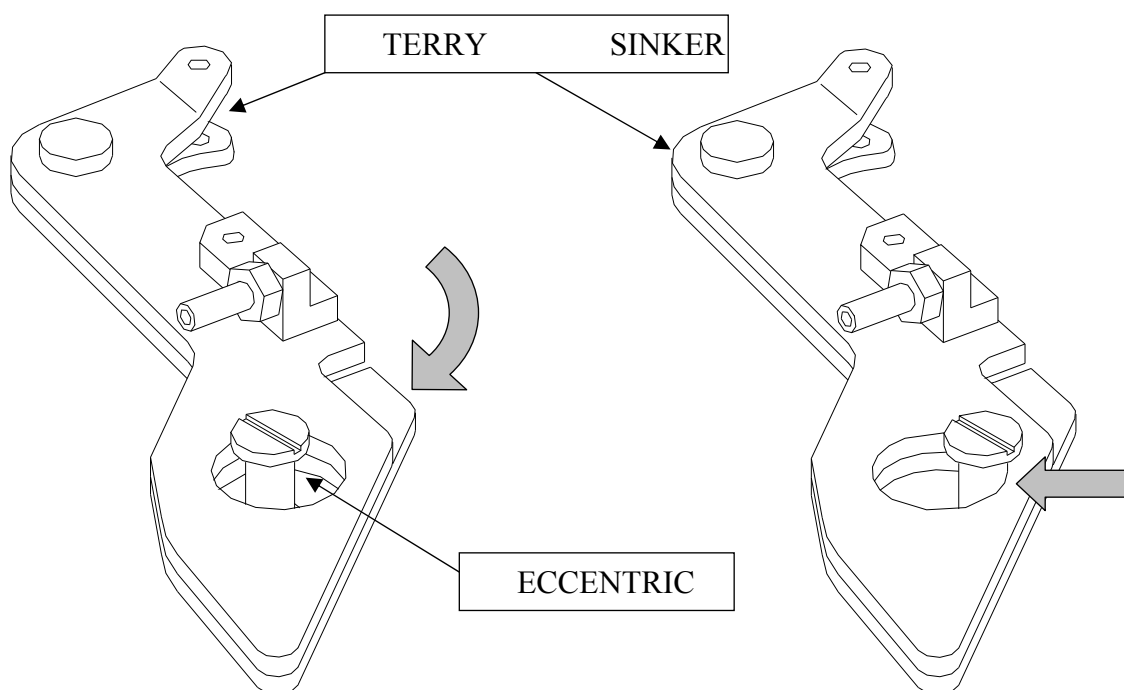
In the top of the cap is a removable wedge **Q**, which is used when replacing broken sinkers.



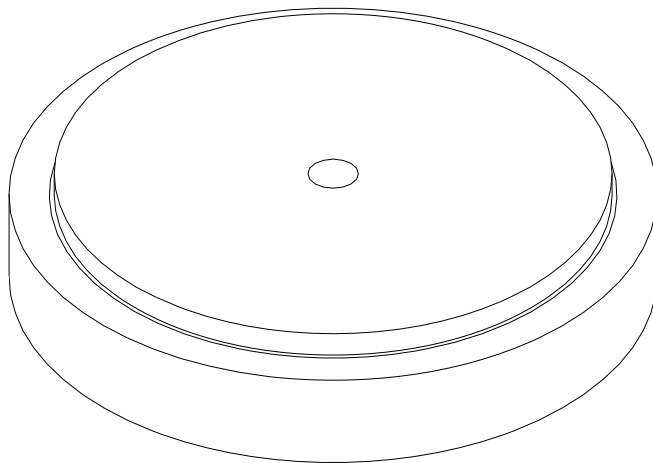
VIII.5.4. ADJUSTING THE SINKER LEVERS – PLATED TERRY – SINGLE SINKER

The levers that determine the correct positioning of the terry sinkers can be adjusted as follows:

- ❑ adjust the terry levers using the on-board control and moving them against the eccentric cam;
- ❑ rotate the eccentric cam until the levers are in contact with the sinker butts;
- ❑ now rotate the eccentric cam anticlockwise to create a clearance (**approx. 0.5 mm**) between the levers and sinker butts.



VIII.5.5. GAUGES FOR CENTRING THE SINKER CAM CAP – PLATED TERRY SINGLE SINKER



CYLINDER DIAMETER	GAUGE CODE
D95	1115767
D82	1115877

VIII.6. ADJUSTING THE STITCH CAMS

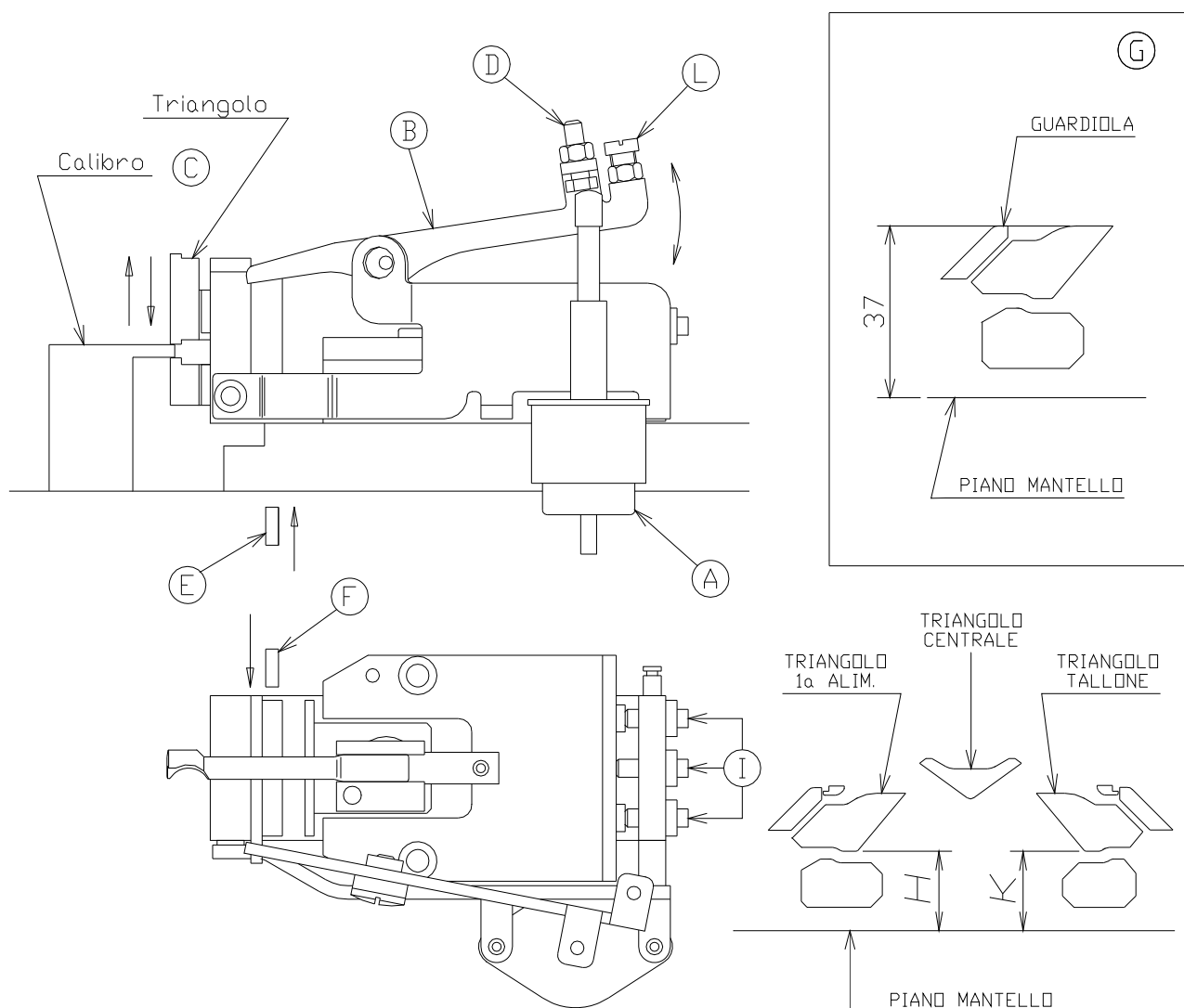
Proceed as follows to adjust the stitch cams:

1. Lower the stitch cam and counter-cam using lever **B** controlled by the register motor **A**.



REFER TO CHAPTER “KNIT REGISTER MOTOR TEST” OF THE MACHINE DISPLAY INSTRUCTION HANDBOOK TO ACCESS THE REGISTER MOTOR FUNCTIONS

2. Position gauge **C** as shown in the figure and bring the stitch cam to the set value (depending on the yarn gauge and type of work) using the adjusting screw **D**. To reduce the play of the stitch cam, use grub screw **E** at the base of the stitch cam holding slide, lock it using the grub screw **F** situated at the side of the slide.
3. Move lever **B** to its original position and cut out the adjusting motor **A**. Position the gauge on the upper slide surface as shown in figure **G**, using screw **L**.
4. The grub screw and screws **I** are used to adjust the maximum stroke entering the stitch cam towards the cylinder. The stitch cam must be adjusted at a minimum distance of **0,2 mm** from the cylinder.



Calibro: GAUGE
 Triangolo: STITCH CAM
 Guardiola: THROAT PLATE
 Piano mantello: SKIRT SURFACE

Triangolo centrale: CENTRAL STITCH CAM
 Triangolo 1a alim.: 1st FEED STITCH CAM
 Triangolo tallone: HEEL STITCH CAM
 Piano mantello: SKIRT SURFACE

1 st FEED STITCH CAM		
YARN GAUGE	H	GAUGE
24 ML	19	1115629
36 ML	20.5	1115743
48 ML	19.5	1115630
24 SV-MP	18	1115817
36/48 SV-MP	19.5	1115630

BUTT STITCH CAM		
YARN GAUGE	K	GAUGE
24 ML	19	1115629
36 ML	20.5	1115743
48 ML	19.5	1115630
24 SV-MP	18	1115817
36/48 SV-MP	19	1115629



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