# Instruction Manual for Installation and Maintenance of the Model Band Saw Machine:

# S3120NG

## The Original Manual was written in Portuguese

***serial number:***

***date:***

***Before installing or performing any operation, carefully read this Instruction Manual for the use of this machine. For further information or clarification, contact Starrett.***


***The L.S Starrett Company Ltd.***
***Oxnam Road, Jedburgh,***
***Scotland, TD8 6LR***
***Call Center Starrett: 01835 863501***
***sales@starrett.co.uk***
***www.starrett.co.uk***



**rev. 01 - MAY/25**

# SUMMARY:

## ATTENTION! RISK OF ACCIDENTS:

- BEFORE BEGINNING ANY OPERATION ON THE **S3120NG** machine, READ CAREFULLY ALL the instructions contained in this instruction manual, so that the user is familiarized with the equipment.
- CAREFULLY OBSERVE the instruction for TRANSPORTATION AND STORAGE (Section 7).
- CAREFULLY OBSERVE the instructions for INSTALLATION AND COMMISSIONING (Section 8). NOTE the voltage (Volt) of the machine being delivered.
- All TRANSPORT, INSTALLATION, USE, MAINTENANCE, ASSEMBLY, DISASSEMBLY and REPAIR must be carried out by be carried out by QUALIFIED, CAPACITIED and AUTHORIZED for these types of services.
- ***Starrett*** will provide all assistance and technical help to the user or the company that owns the machine whenever requested in writing.
- OBSERVE and UNDERSTAND all the signs on the machine.
- If the standard machine delivered to the user is modified or alter its technical characteristics without Starrett's prior knowledge and without Starrett's prior knowledge and approval, in addition to the loss of all WARRANTY, civil and criminal liability will fall on the owner of the machine.

**The L.S Starrett Company Ltd.**
Oxnam Road, Jedburgh,
Scotland, TD8 6LR
Call Center Starrett: 018035 863501
sales@starrett.co.uk
www.starrett.co.uk

# 1. DECLARATION OF CONFORMITY:

## C E R T I F I C A T E

of Conformity
EC Council Directive 2006/42/EC
Machinery

**Registration No.:** AM 50676947 0001

**Report No.:** 17702316 005

**Holder:** Starrett Industrial E Comercio Ltda
AV. Laroy S.Starrett, 1880 Caixa Postal 171
ITU-SP - SP
13306-900
Brasil

**Product:** Band saw
*(Metal Band Saw)*

**Type designation and serial number are listed on the next page(s)**

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

**Certification Body**

**Date:** 2025-05-12

Ming Shan

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

® TÜV, TUEV and TUV are registered trademarks. Utilisatio n and application requires prior approval.

**TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg**

**The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with.**

www.tuv.com

TÜVRheinland®
Precisely Right.

# C E R T I F I C A T E

## of Conformity
## EC Council Directive 2006/42/EC
## Machinery

**Registration No.:** AM 50676947 0001

**Product:** Band saw
*(Metal Band Saw)*

**Identification:** Type Designation
S3120NG S3717NG
Serial No.:
FT20250001 FT20250002
Remark:
Refer to test report 17702316 005 for details.

® TÜV, TUEV and TUV are registered trademarks . Utilisatio n and application requires prior approval.

**TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg**

**The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with.**

www.tuv.com

TÜVRheinland®
Precisely Right.

# 2. NORMATIVE REFERENCES:

***Do Parlamento Europeu e do Conselho:***

**Directive 2006/42 /EC –** Machinery.

**Directive 2014/30/EU –** Electromagnetic Compatibility.

**Directive 2014/35/EU –** Electrical equipment intended for use within certain voltage limits**.**

***INTERNATIONAL and EUROPEAN TECHNICAL STANDARDS:***

**ISO 16093:2017 –** *Machine Tools - Safety - Sawing machines for cold metal;*

**ISO 12100:2010 –** *Safety of machinery - General principles for design - Risk assessment and risk reduction;*

**ISO 14120:2015 –** *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards;*

**IEC 61000-4-2: 2009 –** *Electrostatic discharge (ESD);*

**IEC 61000-4-4: 2012 –** *Electrical fast transient/burst requirements (EFT/Burst);*

**IEC 61000-4-6: 2014 –** *Immunity to conducted disturbances, induced by radio-frequency fields (CS);*

# 3. MACHINE IDENTIFICATION:

Every ***Starrett*** machine can be identified by its nameplate attached to the Cabinet (01). Information such as Model, Year of Manufacture, Serial Number, Power (kW / hp), Voltage (V), Frequency (Hz) and Weight (kg) are all engraved.

The figure below shows the shape of the ***Starrett*** nameplate.

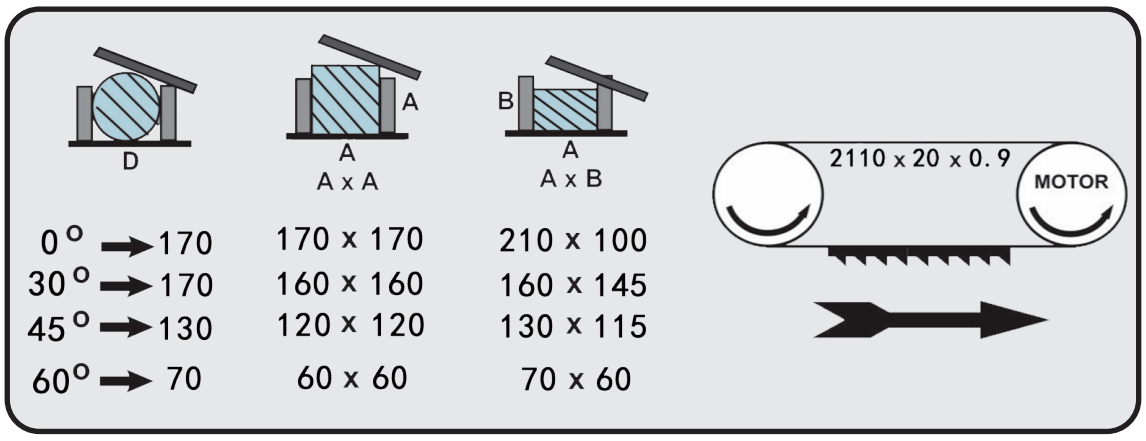

**(ILLUSTRATIVE INFORMATION)**

# 4. TECHNICAL DATA:

| Characteristic | Specification |
|---|---|
| **Net Weight (kg):** | 152 |
| **Dimensions (mm):** | 1,200 x 600 x 1,000 (height) |
| **Band Saw Blade Motor Power (hp / kW):** | 1.0 / 0.75 |
| **Coolant Pump Motor Power (hp / kW):** | 0.05 / 0.03 |
| **Band Saw Blade Dimensions (mm):** | 2,110 (± 2) x 20 x 0.9 |
| **Cutting Speed (m/min):** | 35 and 70 (at 60 Hz) |
| **Available Voltage (V) (1)(2):** | 220–230 V or 380–400 V |
| **Electrical System Operating Frequency (Hz) (2):** | 50 or 60 |

(1) TENSION set according to customer request.
(2) See Requirements and Conditions necessary for machine Installation in Subsection 8.2 of this Instruction Manual.

### *CUTTING DIMENSIONS ALLOWED (mm)*




| Noise emitted by the machine |
|---|
| **Sound Pressure Level = 79.2 dB(A)** |
| **Sound Power Level = 74.2 dB(A)** |

## *NOISE DECLARATION: (6.3 OF ISO 16093:2017):*

*The values quoted are emission levels and are not necessarily safe working levels. Whilst there is a correlation between the emission and exposure levels, this cannot be used reliably to determine whether further precautions are required. Factors that influence the actual level of exposure of the workforce include characteristics of the workforce, the other sources of noise, etc. i.e. the number of machines and other adjacent processes. Also, the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk."*

## 4.1. Dimensions:

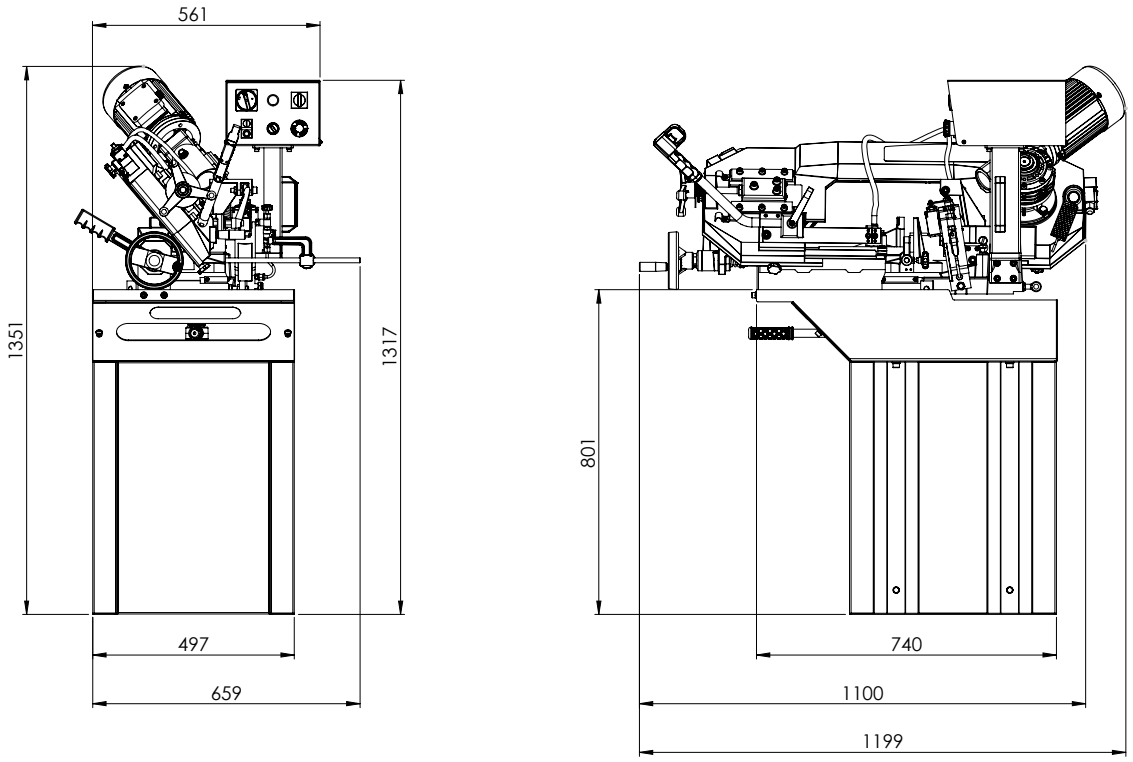



**FIGURE 4.1 - MAIN DIMENSIONS**

## 4.2. Standard item:

***Starrett*** Band Saw Blade.

## 4.3. References of Parts and Components::

| POS. | PART / COMPONENT |
|---|---|
| **01** | CABINET |
| **02** | MAIN SWITCH - QS1 |
| **03** | **EMERGENCY** BUTTON - SB1 |
| **04** | BOW |
| **05** | SAFETY WARNING SIGN |
| **06** | CONTROL PANEL |
| **07** | CUTTING TABLE |
| **08** | HYDRAULIC CYLINDER |
| **09** | SPRING SET |
| **10** | BAND SAW BLADE |
| **11** | TRIGGER - START BUTTON - SB2 |
| **12** | CUTTING VALVE |
| **13** | IDLE FLYWHEEL |
| **14** | DRIVE FLYWHEEL |
| **15** | REDUCER |
| **16** | TENSIONER SYSTEM |
| **17** | VISE SET |
| **18** | BACK COVER |
| **19** | VISE ADVANCE CRANK |
| **20** | QUICK TIGHTENING LEVER |
| **21** | BOW SHAFT |
| **22** | REGULATING VALVE |
| **23** | MANUAL/SEMIAUTO SELECTOR SWITCH - SA2 |
| **24** | COOLANT PUMP - M2 |
| **25** | BLADE MOTOR - M1 |
| **26** | CONTACTOR - KM1 |
| **27** | CONTACTOR - KM2 |
| **28** | SAFETY RELAY - KS1 |
| **29** | SAFETY SWITCH - SQ1 |
| **30** | RESET BUTTON - SB3 |

continuation:

| POS. | PART / COMPONENT |
|---|---|
| 31 | MOBILE GUIDE |
| 32 | FIXED GUIDE |
| 33 | SIDE BEARING |
| 34 | BACK BEARING |
| 35 | ---------- |
| 36 | ECCENTRIC SHAFT |
| 37 | MOBILE GUIDE SUPPORT |
| 38 | MOBILE GUIDE SUPPORT LOCK LEVER |
| 39 | ADVANCE LEVER |
| 40 | SPEED SWITCH - SA1 |
| 41 | START BUTTON - GREEN - SB1-1 |
| 42 | STOP BUTTON - RED - SB1-2 |
| 43 | PILOT LIGHT 24 V - WHITE - HL1 |
| 44 | LIMIT SWITCH - SQ2 |
| 45 | THERMAL RELAY - FR1 |
| 46 | ARM |
| 47 | ELECTRICAL BOARD |
| 48 | --------- |
| 49 | RESERVOIR |
| 50 | --------- |
| 51 | TENSIONER NUT |
| 52 | CUTTING CAPACITY SIGN |
| 53 | --------- |
| 54 | -------- |
| 55 | STOPPER SCREW |
| 56 | -------- |
| 57 | DISTRIBUTOR TAP |
| 58 | STOPPER PIN |
| 59 | COOLANT LIQUID DISPENSER |
| 60 | BACK COVER FIXING HANDLE |

continuation:

| POS. | PART / COMPONENT |
|---|---|
| 61 | --------- |
| 62 | MOBILE GUIDE PROTECTION |
| 63 | TENSIONER HANDLE |
| 64 | RESET BUTTON LIGHT - BLUE - HL3 |
| 65 | BOW TURN LOCK LEVER |
| 66 | ANGULAR SCALE |
| 67 | SIDE SUPPORT |
| 68 | --------- |
| 69 | INPUT ROLLER TABLE |
| 70 | OUTPUT ROLLER TABLE |
| 71 | POINTER |
| 72 | STOP BUTTON LIGHT - RED - HL2 |
| 73 | FUSE MOTOR COOLANT PUMP PROTECTION - F4 (1 A) |
| 74 | FUSE MOTOR COOLANT PUMP PROTECTION - F5 (1 A) |
| 75 | TRANSFORMER - TR1 |
| 76 | FUSE TRANSFORMER INPUT PROTECTION - F1 (0.5 A) |
| 77 | FUSE TRANSFORMER INPUT PROTECTION - F2 (0.5 A) |
| 78 | FUSE TRANSFORMER OUTPUT PROTECTION - F3 (2 A) |
| 79 | MEASURING ROD |
| 80 | STOPPER |
| 81 | STOPPER HANDLE |
| 82 | ---------- |
| 83 | ---------- |
| 84 | ---------- |
| 85 | ECCENTRIC SHAFT FIXATION NUT |
| 86 | GUIDE HEIGHT ADJUSTMENT SCREW |
| 87 | FIXED GUIDE SUPPORT |
| 88 | FIXED GUIDE PROTECTION |

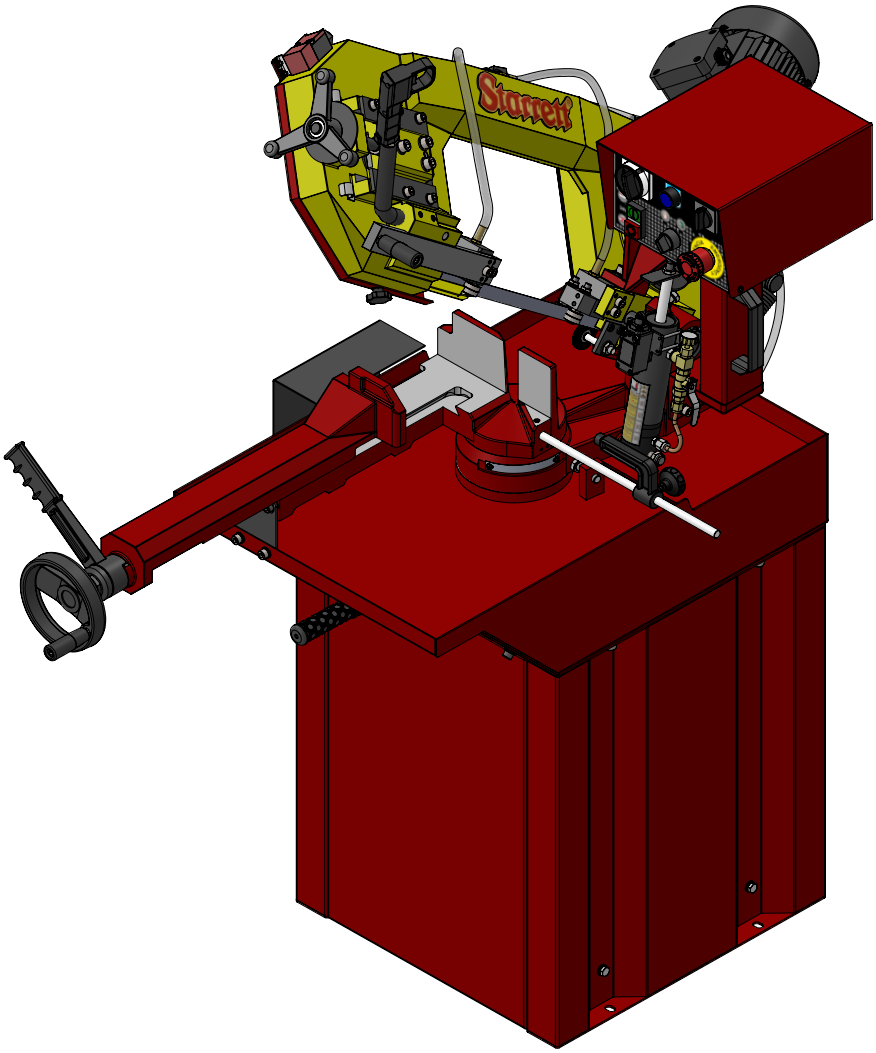



**FIGURE 4.2 - GENERAL VIEW**

# 5. SAFETY RECOMMENDATIONS:

This machine is equipped with various safety devices to protect the user against injuries. However, all safety aspects cannot be summed by this way. Therefore, each user shall pay attention to the configuration, maintenance and repair of the machine, and READ and UNDERSTAND all parts of this Instruction Manual.

IIn addition, it is the duty of the user or owner of the machine to observe the conditions and contexts of risks that the equipment will operate, analyzing through the mandatory requirements of the Federal Regulatory Standard of each country.

OBSERVE obligatorily:

- **ONLY QUALIFIED, TRAINED,** and expressly **AUTHORIZED** personnel may operate and maintain this machine. These individuals must be trained in accordance with the current occupational safety laws and regulations of the country**.**
- It is strictly prohibited, without special authorization, to perform modifications or alterations to the machine components that could compromise the safety of the user or the equipment itself, exposing the operator to unnecessary danger. For the mentioned modifications, written authorization and approval must be requested from ***Starrett Technical Support***.
- **ONLY AUTHORIZED** personnel by the machine's owner company may handle, operate, place, and position the material to be cut on the cutting table, prepare the cut, perform maintenance, remove moving parts, replace permanent components, and replace components during periodic maintenance, such as oil, filters, bearings, coolant fluid, etc.
- To perform maintenance, modifications, repair, and replacement of components in the machine's Electric System, the person responsible, authorized by the owning company, shall be **TRAINED** and **QUALIFIED** for this purpose, according to relevant legislation. It is implicit that only **QUALIFIED** and **TRAINED** technicians must connect the machine to the electric power supplier and perform any work for this purpose. In each country, for industrial electrical installations, it must comply with the international technical standards **IEC** and **ISO**, in particular the **IEC 60204-1** and the relevant local legislation.
- Position the Main Switch (02) to **OFF**, that is, disconnect from the power supply, when performing maintenance or any other work on the equipment. This way, there is no risk of electric shock.

- CHECK and ENSURE that the person responsible for handling, operating, preparing materials for cutting, performing the cut, carrying out maintenance, repairs, removing moving parts, replacing fixed components, and substituting machine parts is **NOT** under the influence of medication, alcohol, or substances that affect the operator's central nervous system.
- DO NOT OPERATE the equipment if there is any problem or doubt about its operation. **CONTACT *Starrett Technical Support***.
- Quickly press the **EMERGENCY** Button (03) in case of an accident, problem, or danger.
- To avoid irregularities in the machine's operation, the operator must be well-informed and properly trained in its functionality before starting operation.

**ATTENTION!**

**RISK OF AMPUTATION OR SERIOUS INJURY!**

- Under NO CIRCUMSTANCES is the use of this machine authorized by CHILDREN or by individuals who are NOT properly trained and qualified.
- During cutting operations, the operator MUST NOT WEAR, UNDER ANY CIRCUMSTANCES: lab coats, shirts or any type of clothing with long sleeves, chains, ties or scarves around the neck, loose long hair, rings on any finger, or any other object on the body that could pull the operator toward the machine.
- PAY ATTENTION to all safety signs placed on the Bow (04) and the Cabinet (01) of the machine. It is very important that the operator is familiar with these indicators.
- DO NOT DAMAGE the Safety Warning Sign (05) or the Technical Plate present on the machine.
- ALWAYS KEEP the machine and surrounding area clean. This helps prevent accidents for both the operator and others passing near the machine.
- TURN the Main Switch (02) to **OFF** and PRESS the **EMERGENCY** Button (03) before starting any cleaning or maintenance of the machine.

▶

- NEVER REMOVE the material chips and other residues with the machine in operation. DO NOT ALLOW chips and other residues to accumulate on or around the machine, as this may cause accidents or serious damage.
- USE lifting and transport devices to handle materials for cutting according to the appropriate weight limits and dimensions, for safe and ergonomic work. This operation must be performed by responsible and trained personnel.
- DO NOT TOUCH any part of the machine when it is in operation.

- ALWAYS WEAR Personal Protective Equipment (PPE), properly certified according to the safety regulations of each country, such as safety glasses, hearing protectors, safety footwear, and protective clothing.

- USE Leather Gloves **only when replacing the Band Saw Blade** (10).

**ONLY when replacing the Band Saw Blade**

- OBSERVE the choice of the Band Saw Blade (10) type, such as the tooth design, feed, and cutting speed, suitable for the type of material to be cut, to avoid issues during the cutting operation (SEE Section 9 of this Manual);
- FOLLOW the Safety Recommendations in case of machine maintenance (SEE Section 14 of this Manual);
- FOLLOW all Safety Recommendations for changing the Band Saw Blade (10) speed.
- ALWAYS USE new and original spare parts. Other spare parts or work not approved by the manufacturer, which could cause or provoke accidents and damages, will not be the responsibility of Starrett.
- ENSURE a sufficient clear area (minimum distance of 1.5 m) around the machine to provide space for work and passage of personnel.

- DO NOT place or leave tools or other objects on the machine parts.

- USE the hydraulic oils recommended in this manual. Their disposal must follow the relevant legislation..

**ATTENTION NOTICE:**
Risk of Accident

**WARNING NOTICE:**
Risk of Explosion

**WARNING NOTICE:**
Risk of Electric Shock

**WARNING NOTICE:**
Mandatory Grounding

**WARNING NOTICE:**
Risk of Tipping

**WARNING NOTICE:**
Risk of Falling Load

**WARNING NOTICE:**
Risk of Cutting

**WARNING NOTICE:**
Risk of Falling Tools or Objects

**MANDATORY ACTION:**
READ Instruction Manual

**MANDATORY ACTION:**
WEAR Safety Footwear

**MANDATORY ACTION:**
WEAR Safety Glasses

**MANDATORY ACTION:**
WEAR Helmet

**MANDATORY ACTION:**
WEAR Safety Gloves

**MANDATORY ACTION:**
WEAR Protective Clothing

**MANDATORY ACTION:**
WEAR Hearing Protection

**MANDATORY ACTION:**
PERFORM Preventive Maintenance

**FORBIDDEN ACTION**:
DO NOT TURN ON
the machine

**FORBIDDEN ACTION**:
DO NOT TOUCH

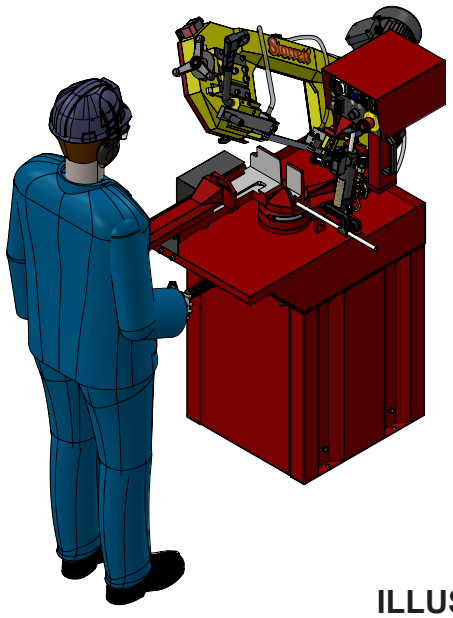
**FORBIDDEN ACTION**:
DO NOT LEAVE tools and
objects on the machine

**FORBIDDEN ACTION**:
DO NOT CLIMB on
the machine

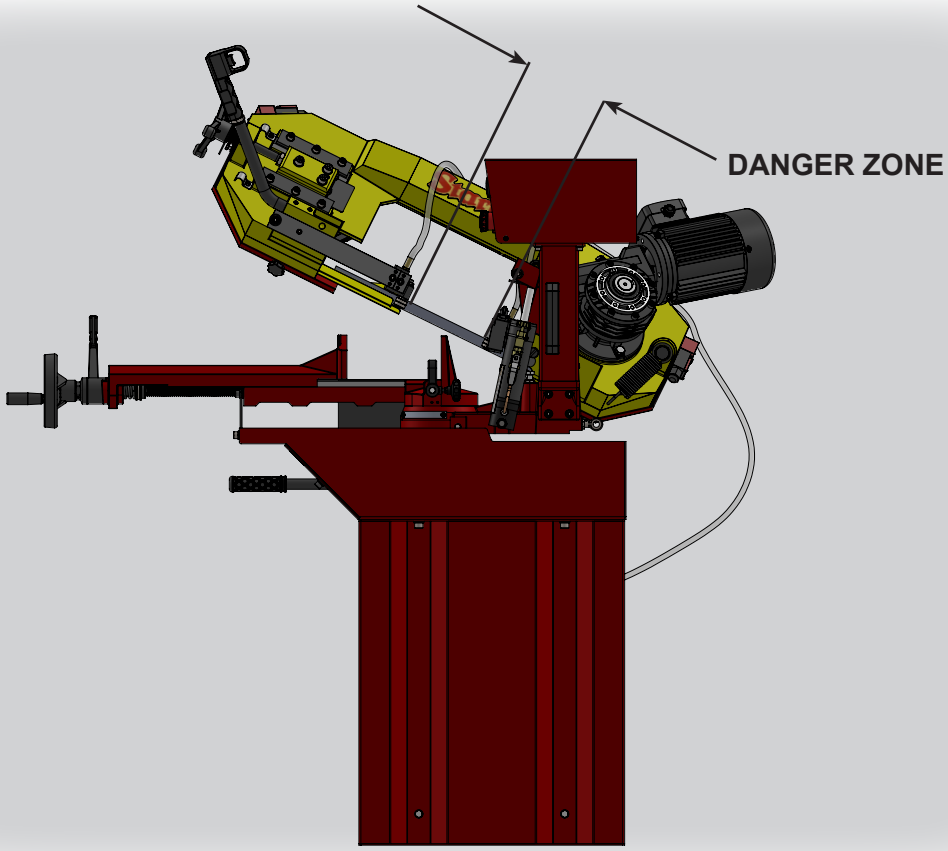
## ATTENTION!
## RISK OF ACCIDENT!

### DEFINITION OF THE MACHINE OPERATOR'S POSITION:

During the cutting process, the operator **MUST STAND** in front of the Control Panel (06), paying attention to the main cutting parameter settings and keeping one hand free to immediately access the **EMERGENCY** Button (03).

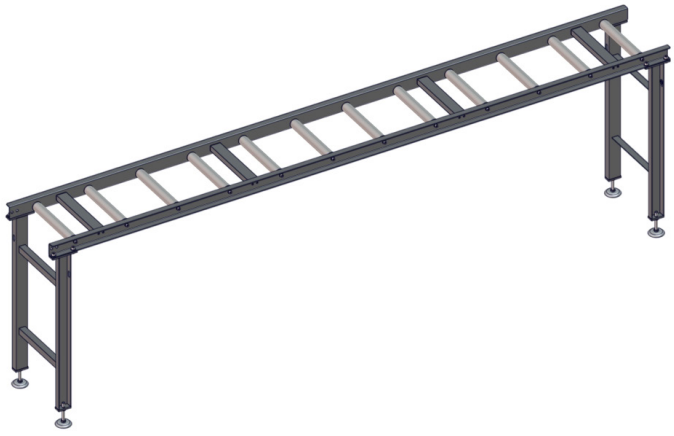


**ILLUSTRATIVE FIGURE**




**ATTENTION!**
**RISK OF ACCIDENT!**

USE Roller Tables for cutting long materials.



**ATTENTION!**

**RISK OF ACCIDENT!**

## SAFETY RECOMMENDATIONS FOR REPLACING ELECTRICAL COMPONENTS:

When any maintenance activity occurs (SEE Section 14 - Maintenance), the user should:

- ISOLATE the area with cones and chains or other effective means.
- INDICATE that the machine is under maintenance by using a WARNING LABEL (LOTO System) placed on the **EMERGENCY** Button (03) installed on the Control Panel (06) (figure 5.1).

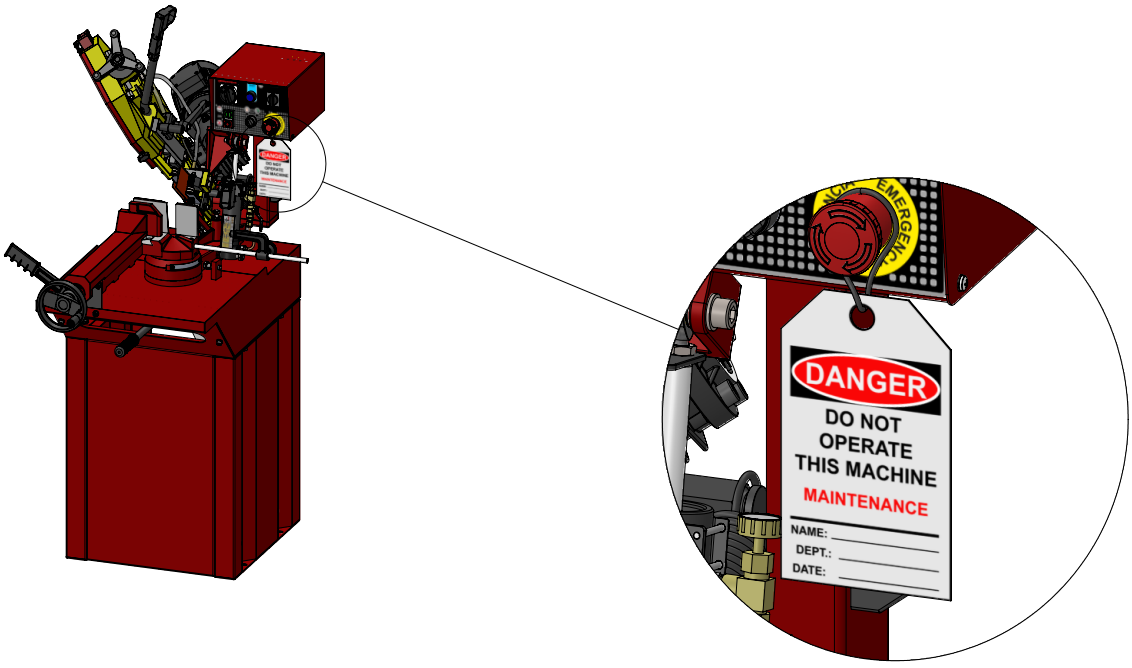



**FIGURE 5.1 - WARNING LABEL (LOTO SYSTEM)**

**ATTENTION!**

**RISK OF ACCIDENT!**

## SAFETY RECOMMENDATIONS FOR REPLACING ELECTRICAL COMPONENTS:

- Any electrical component in the power, control, and safety circuits that needs to be replaced MUST be changed by another of the same reference and manufacturer.
- Any change in specifications may result in the loss of the respective safety functions, create additional risks, and compromise the operator's safety.

# 6. GENERAL DESCRIPTION:

The **STARRETT HORIZONTAL BAND SAW – S3120NG** machine was developed with criteria of quality, safety, modernity, and technology, to meet the needs of its user, in accordance with the technical standard **ISO 16403:2015** and others applicable, besides the regulatory norms.

This machine should only be used for cutting bars or profiles of various shapes and dimensions of metallic materials exclusively: ferrous (steel and its alloys) and non-ferrous (bronze alloys, aluminum, copper, etc.). The physical characteristics of these materials, such as hardness, toughness, and density, should not pose any safety risk to the user during the cutting operation.

**ATTENTION!**
**RISK OF ACCIDENT!**

This machine model is intended exclusively for cutting ferrous and non-ferrous metallic materials.

Examples:

- structural steels
- alloy steels
- stainless steels
- cast iron
- aluminum alloys;
- carbon steels
- copper
- brass

It consists of a rigid Bow (04) that has 2 Flywheels: one Idle (13) and the other Drive (14). The Drive Flywheel (14) is coupled with a Reducer (15) of the WORM type (figure 6.1).

The Idle Flywheel (13) is mounted on the shaft of a dynamometric system, known as the Tensioner (16) (figure 6.5).

A welded Band Saw Blade (10) is mounted on the two Flywheels (13) (14) and is tensioned properly by the Tensioner (16) (figure 6.2).

The Band Saw Blade (10) and the Flywheels (13) (14) are protected at the rear of the Bow (04) by a protective Back Cover (18) (figure 6.6).

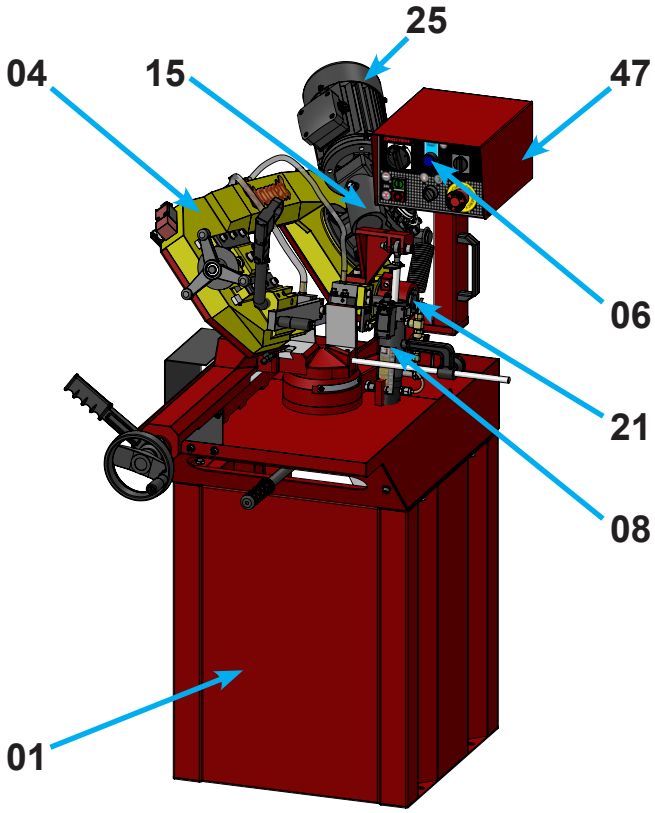



FIGURE 6.1 - GENERAL VIEW

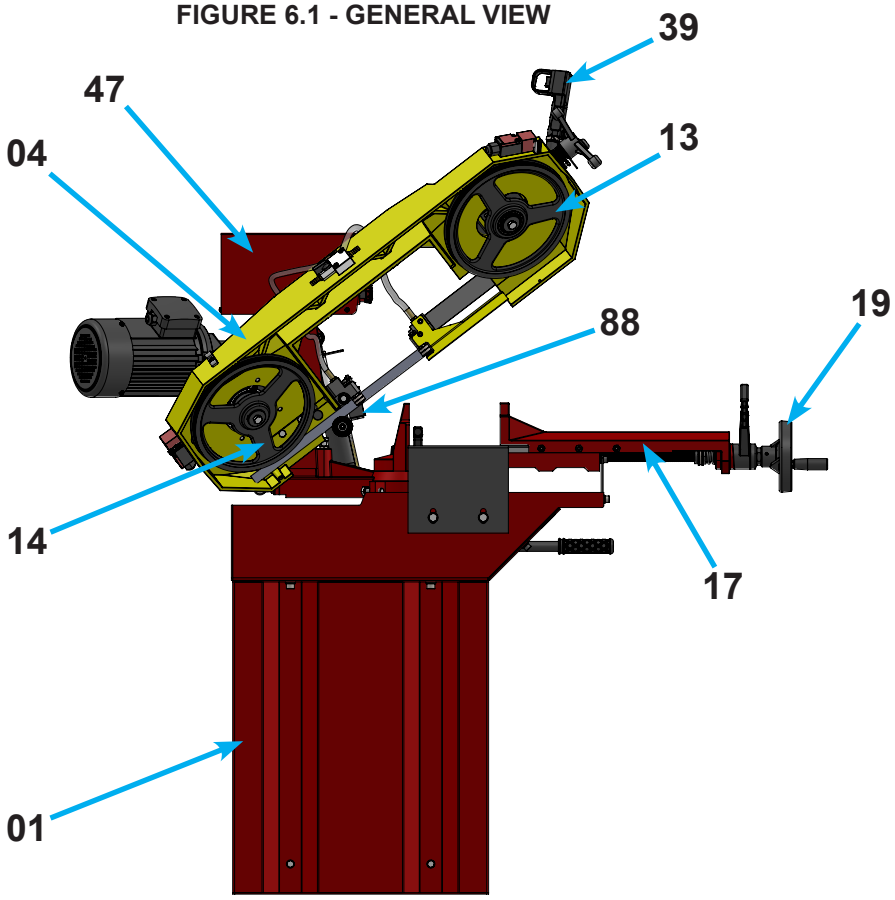



FIGURE 6.2 - FLYWHEELS SET

The Vise Set (17) is responsible for rigidly securing the material to be cut onto the Cutting Table (07). This set has a longitudinal movement in the direction of clamping the material, which is manually controlled by the Crank (19). The tightening or loosening of the vise on the material is also manually controlled by the Quick Tightening Lever (20) (figures 6.1 and 6.2).

Due to the machine's design, the Bow (04) can rotate around a fixed point on the Vise Set (17), called the Bow Shaft (21) (figure 6.1). In other words, it rotates around an axis perpendicular to the Cutting Table (07), allowing angled cuts to be made on the material.

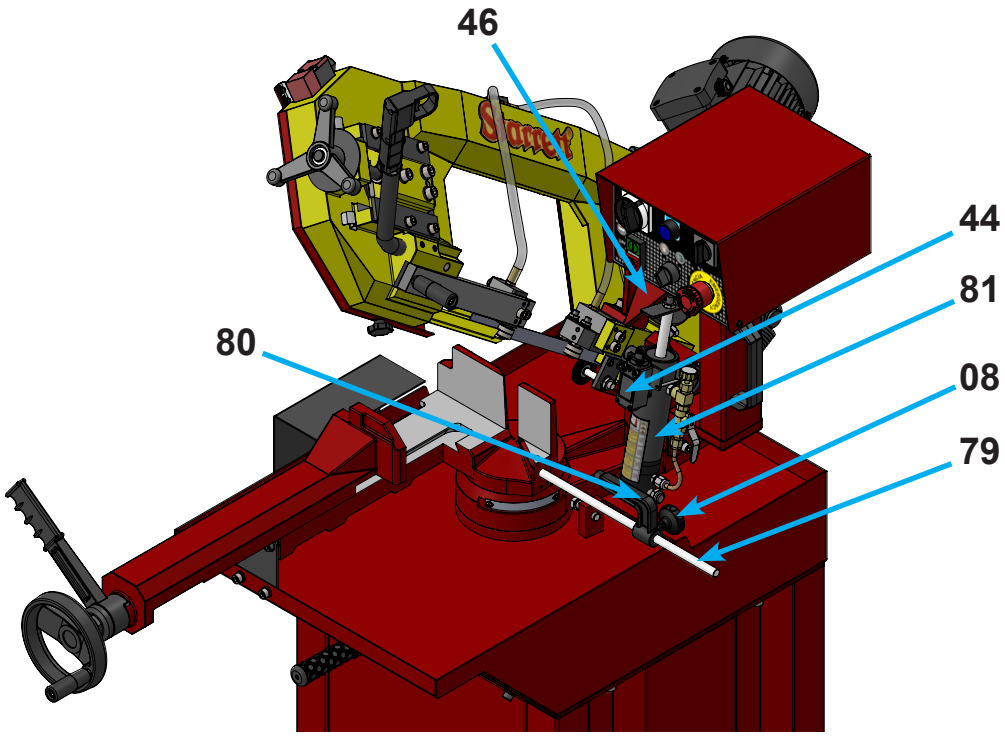



**FIGURE 6.3 - HYDRAULIC CYLINDER AND MEASURING ROD**

The upper part of the machine is supported and fixed onto a rigid Cabinet (01), built from steel sheets and profiles. Its structure is protected by a high-resistance weatherproof coating. Attached to this set is the Control Panel (06), which is easily accessible to the operator.

The Electrical System was developed in accordance with the applicable requirements of the technical standards. This system is composed of three parts.

The first is the Power Circuit, which is sized to handle the load of the electric motors: M1 (25) for the Band Saw Blade (10) and M2 for the Coolant Pump (24), both of which are protected against possible short circuits or overloads.

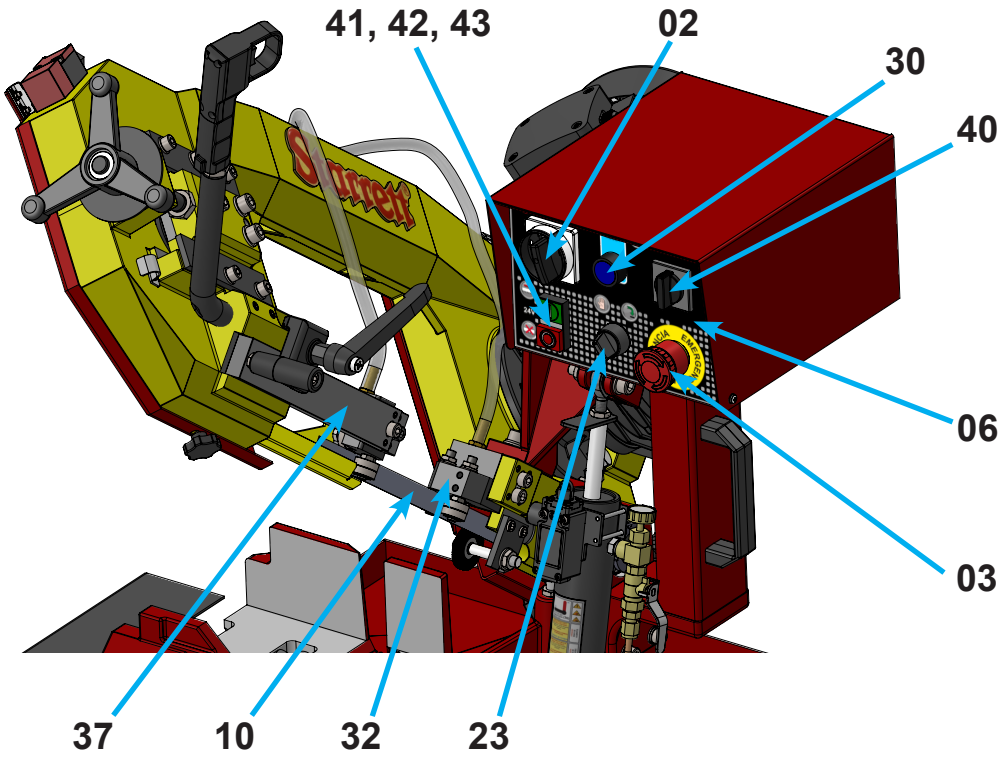



**FIGURE 6.4 - CONTROL PANEL AND MAIN SWITCH**

Motor M1 (25) is activated by two Contactors, KM1 (26) and KM2 (27), as part of the Safety System.

The second part is the machine's Control Circuit, which operates at 24 VAC, meaning extra-low voltage.

The third part comprises the equipment's Safety System. The monitoring function is performed by the Safety Relay – KS1 (28), which oversees the **EMERGENCY** Button – SB1 (03), the Safety Switch – SQ1 (29) on the Back Cover (18), and the Contactors KM1 (26) and KM2 (27). A RESET Button – SB3 (30) is added to the Safety System to prevent any accidental startup after the machine exits **EMERGENCY** mode (figure 6.4).

Located on the Control Panel (06) (figure 6.4), there is a Main Switch (02) that protects the user during maintenance by completely disabling the Electrical System.

**OBSERVATION!**

The segment of the Band Saw Blade (10) that performs the cutting, located between Guides (31) and (32), is not protected. Therefore, it is important that the machine operator takes all necessary precautions when using it.

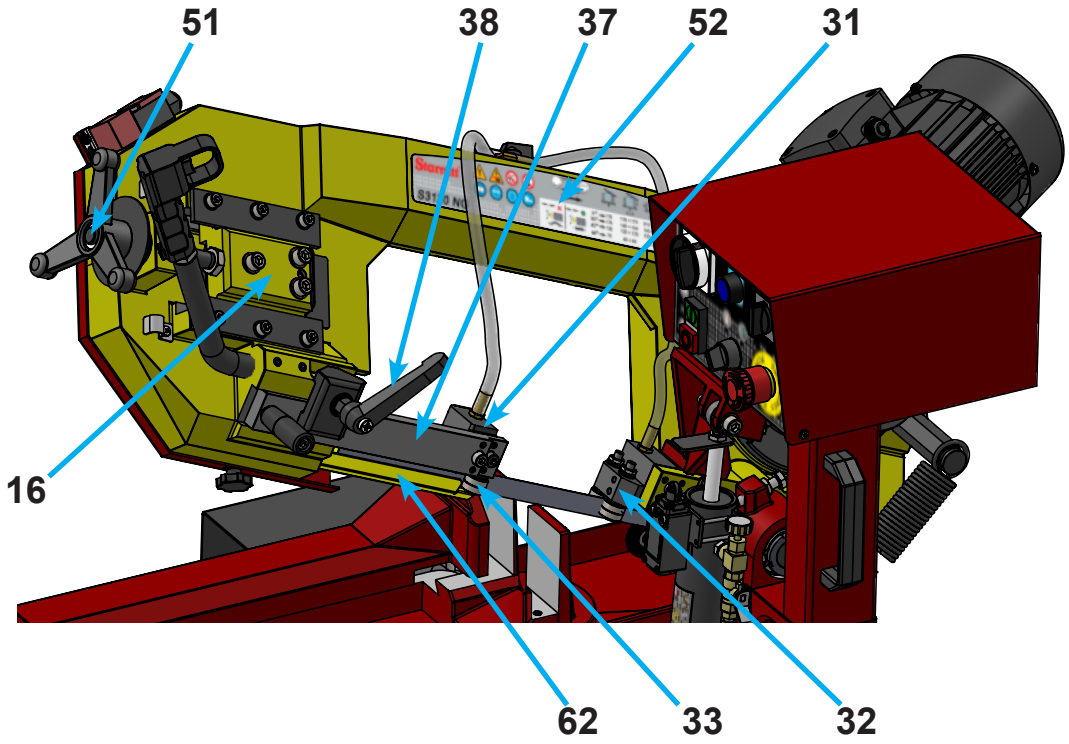



**FIGURE 6.5 - MOBILE GUIDE SUPPORT AND TENSIONER SYSTEM**

The cutting segment of the Band Saw Blade (10) is supported by two Guides (31) and (32). These Guides (31) and (32) have Side Bearings (33), which allow the cutting tool to twist relative to the rotation plane of the Flywheels (13) and (14), to form the cutting plane (figures 6.5 and 6.6).

The Mobile Guide Support (37), located near the Idle Flywheel (13), can be manually adjusted by loosening the Lever (38), allowing the distance between the guide and the material to be cut to be properly set (figure 6.5).

This machine features two operating modes: **MANUAL** and **SEMI-AUTOMATIC**.

In MANUAL mode, the feed rate is controlled by the operator using the Lever (39). The setup for this mode is described in Section 11.

In SEMI-AUTOMATIC mode, the feeding rate of the Band Saw Blade (10) over the material is controlled by the closed-circuit Hydraulic Cylinder (08) (figure 6.3), which is integrated with the Bow (04).

By opening or closing the Regulating Valve (22), the feed rate can be adjusted. The Cutting Valve (12) allows the Bow (04) to be held in any position. When in the CLOSED position (lever in the horizontal position) (figure 11.1), the bow is locked in place. The setup for this mode is described in Section 11.

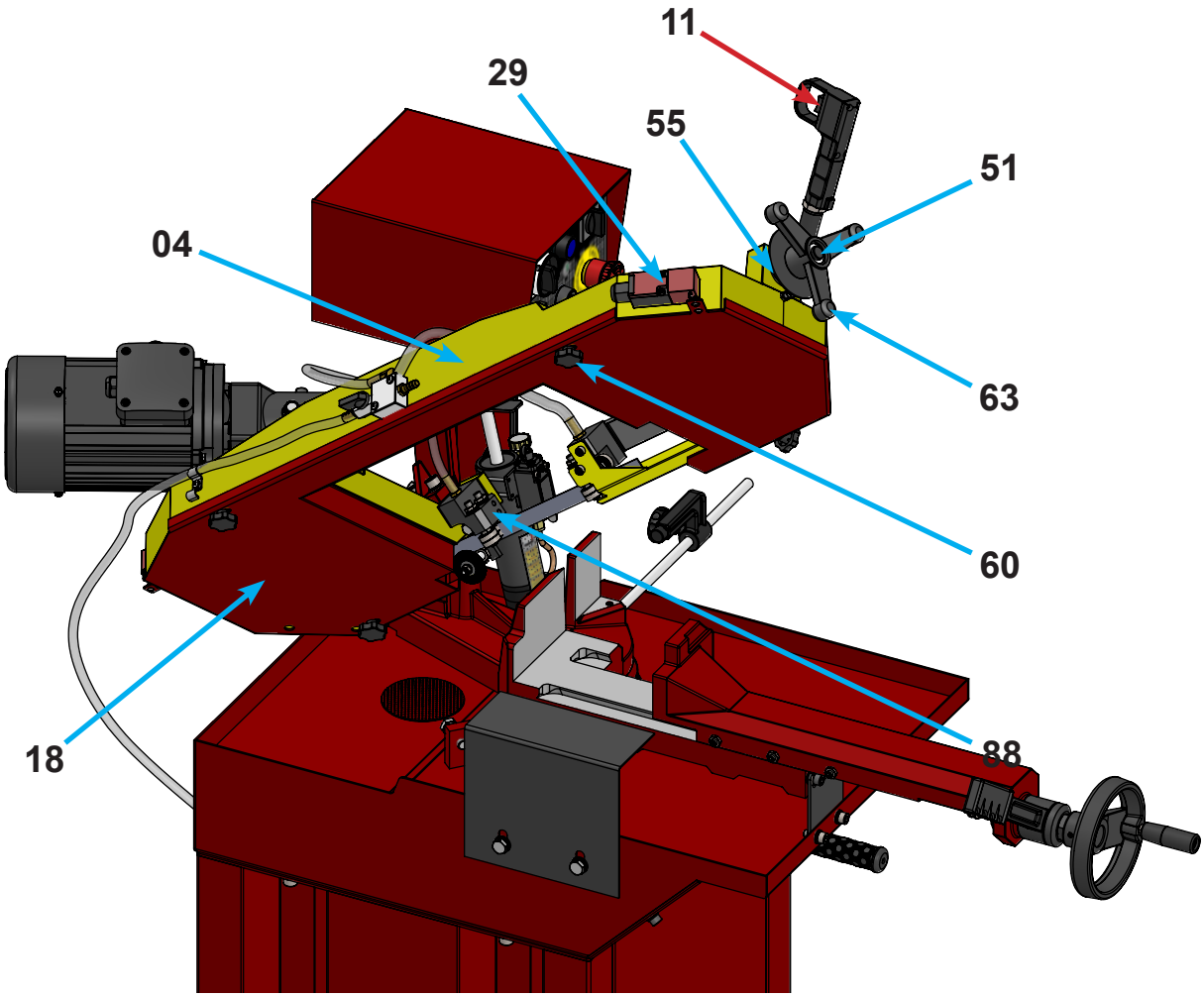



**FIGURE 6.6 - TENSIONER SYSTEM**

To start the cutting process, the machine must be properly adjusted and connected to the user's power supply. Additionally, the material to be cut must be correctly positioned and locked onto the Cutting Table (07).

When the Main Switch (02) is turned to the **ON** position, the WHITE Pilot Light (43) should light up, indicating that the machine is powered on.

By pressing the START Button (41), which is GREEN, or the Trigger (11), the movement of the Band Saw Blade (10) begins.

At the end of the cut, the Limit Switch (44) is activated (figure 6.3), turning off the Electric Motors M1 (25) and M2 (24), when in **SEMI-AUTOMATIC** mode.

This machine has 2 cutting speeds, which can be selected using the Speed Switch (40), located on the Control Panel (06) (figure 6.4).

The tensioning of the Band Saw Blade (10) on the Flywheels (13)(14) is done using the Tensioner Handle (63). The correct tension of the Band Saw Blade (10) can be properly adjusted (figures 10.2 and Subsection 10.1, item 3).

The safety systems present are as follows:

- Thermal Relay - FR1 (45) (thermal protection): Protection for the Motor (25) of the Band Saw Blade (10) against overload.
- **EMERGENCY** Button (03): Located on the Control Panel (06), for **EMERGENCY** stops. This safety function is monitored by the Safety Relay – KS1 (28).
- Back Cover (18): Functions as a mobile protection for the interior of the Bow (04). When removed, it activates the Safety Switch – SQ1 (29), disabling the machine's Electrical System. This safety function is monitored by the Safety Relay – KS1 (28).
- RESET Button – SB3 (30) (BLUE): Located on the Control Panel (06), its function is to prevent the machine from starting unexpectedly.
- Safety Relay – KS1 (28): Located in the Electrical Board (47), its function is to monitor the present safety devices.
- Pilot Light – HL1 (43): Located on the Control Panel (06). Its function is to indicate that the controls are energized at extra-low voltage (24 VAC), making the machine ready to operate.
- Mobile Guide Protection (62): Located and fixed on the Mobile Guide Support (37) (figures 6.5 and 6.6) and can only be removed using a tool.
- Fixed Guide Protection (88): Located and fixed on the Fixed Guide Support (87) (figure 6.2) and can only be removed using a tool.

# 7. TRANSPORT AND STORAGE:

## 7.1. Specific Safety Recommendations:

**ATTENTION!**
**RISK OF TIPPING AND**
**SERIOUS INJURY!**

- All loading, transport, and unloading of the Starrett Band Saw machine must be performed by specialized companies or by TRAINED and AUTHORIZED professionals.
- Before performing any movement of the machine, it is essential to CAREFULLY READ this Instruction Manual to understand the specific safety instructions for this type of operation.
- USE Personal Protective Equipment (PPE) during the loading and unloading phases of the Band Saw machine.

- PLAN the lifting and transport operation of the Starrett machine in coordination with the Occupational Health and Safety Service staff of the company that owns the equipment.
- AVOID abrupt movements, sharp turns, and high speeds when transporting the machine with a forklift, as there is a risk of tipping and equipment damage.

- ALWAYS CHECK that the forklift booms are properly seated and secured under the pallet.

## 7.2. Unloading and Transport:

When leaving the factory, the machine is packaged in a wooden crate and secured onto a pallet. This packaging allows it to be transported using a forklift or pallet jack.

To **UNLOAD** the machine from a truck, for example, it is recommended to use a forklift operated by a **TRAINED** and **AUTHORIZED** professional for this type of operation.

When using this method of transport and lifting, it is advised **NOT TO REMOVE** the wooden crate until the machine is in its final installation location (figure 7.1).

**LIFT** the machine only as much as necessary to move it, to avoid the risk of the machine or any objects falling due to excessive height.

All specific safety conditions for this type of lift must be followed.

**DO NOT USE** lifting straps around the structure or any other part of the machine, as this may damage the equipment and pose a safety hazard.

### OBSERVATION!

1. USE a forklift or pallet jack with sufficient capacity to support the weight of the equipment plus the weight of the pallet and crate.
2. CHECK that the pallet and crate are intact before starting the lifting operation.
3. ENSURE that the forklift or pallet jack forks are in proper condition before lifting the equipment.
4. MAKE SURE the equipment is properly balanced during lifting.
5. LIFT the equipment only as much as necessary to allow movement.
6. DO NOT ALLOW the equipment to sway during transport.

ILLUSTRATIVE FIGURE

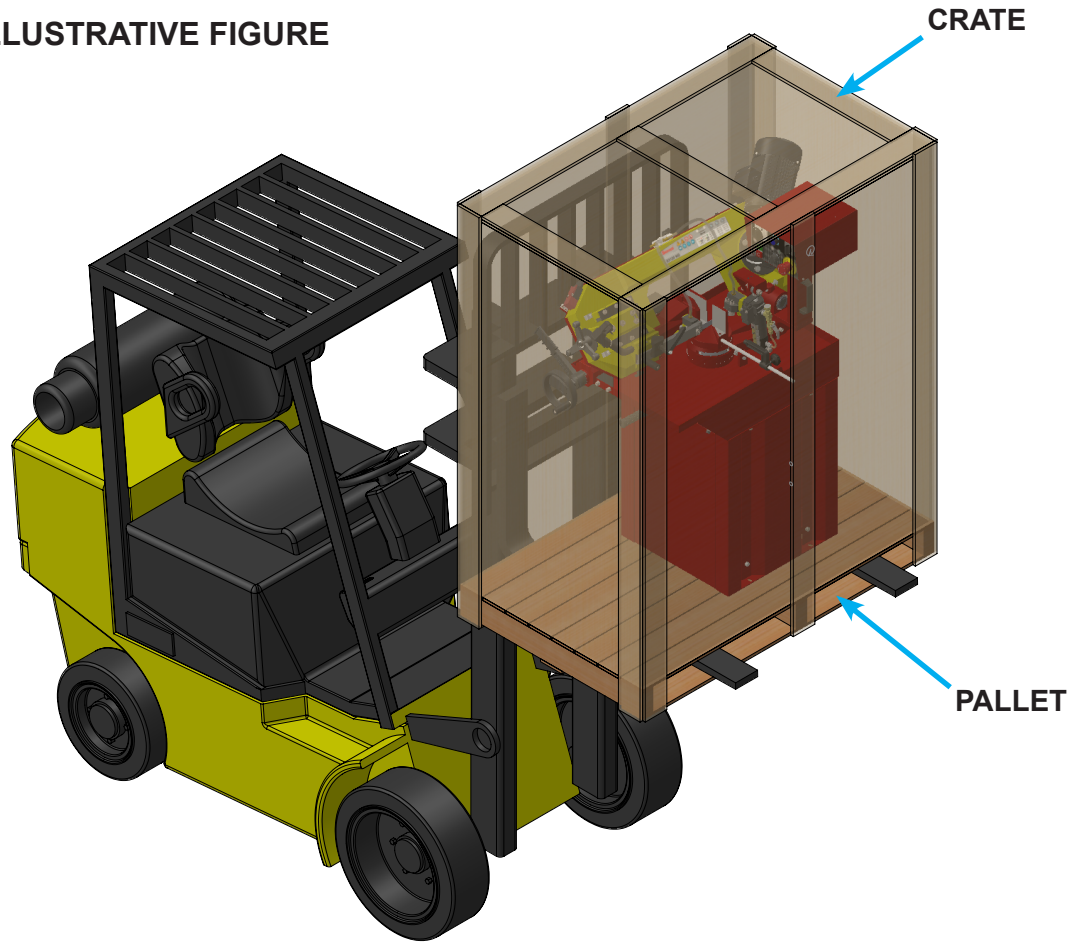



**FIGURE 7.1 - EXAMPLE OF MACHINE LIFTING**

## 7.3. Storage:

It may occur that the area designated for the installation is not free or available for the ***Starrett*** Band Saw machine.

However, there is a possibility that the equipment will be ready and delivered to the owning company in advance, before the installation site is finalized.

In this case, due to the storage time, some necessary precautions should be observed and taken.

## STORAGE PROCEDURES:

1. UNLOAD the Band Saw machine in a location that is:

- clean.
- level.
- with a durable floor capable of supporting the weight of the machine.
- covered to protect from rain, other sources of water and moisture, dust, and drafts.

- free of passage or presence of people not related to the storage area.
- with an appropriate power source, in case it is necessary to connect it electrically for inspection and/or preventive maintenance during storage.

2. CHECK upon the arrival of the machine whether it matches the Order or Purchase Order from the company owning.
3. VERIFY that the items listed on the ***Starrett*** or distributor's Invoice are in accordance with the material received.
4. INSPECT the machine to ensure it is intact, with no dents, deep scratches, rust on parts, component damage, or missing parts.
5. USE desiccants and dehumidifying agents, such as silica gel sachets or bags, if the storage period exceeds 10 days, place them on the machine.

# 8. INSTALLATION AND COMMISSIONING:

## 8.1. Specific Safety Recommendations:

**ATTENTION!**

**SERIOUS INJURY ACCIDENTS!**

- All installation procedures for the **Starrett** Band Saw machine must be carried out by specialized companies or by **TRAINED** and **AUTHORIZED** professionals.
- Before performing any installation activities, it is necessary to **CAREFULLY READ** this Instruction Manual to understand the specific safety instructions for this type of activity.
- USE Personal Protective Equipment (PPE) during the loading and unloading phases of the Band Saw machine.

- PLAN the installation operation of the Starrett machine, together with the personnel from Safety and Occupational Medicine Service of the company that owns the equipment.
- ENSURE that the user's power supply network is properly rated to support the machine's workload, and that the grounding is adequate. This operation must be carried out under the supervision of a legally QUALIFIED professional.

- DO NOT INSTALL this machine in environments where there is a risk of explosions or fires.

## 8.2. INSTALLATION:

The machine must be installed in a well-lit work environment, on an industrial-type floor with the necessary strength to support the weight of the machine, in addition to the weight of the material to be cut.

The fixation should be done using “anchor bolts” on the floor, as shown in figure 8.1. These fixations must be made at the support points.

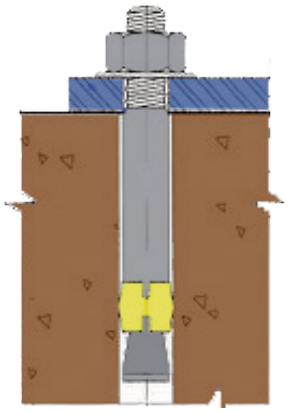


**FIGURE 8-1 - FIXATION USING ANCHOR BOLTS**

In the cutting processes of long materials, the operator must **SUPPORT** the material properly on Input (69) and/or Output (70) Roller Tables, as shown in figures 8.2 and 8.3. For materials with lengths shorter than 630 mm, **MAINTAIN** the use of the Side Support (67) as an option.

Another important factor is the alignment and leveling of the Roller Tables (69) and (70) with the Cutting Table (07) to ensure good results in the cutting activities. If these options are used, it is recommended to use a tray under the rollers to collect any coolant liquid that may leak.

**ATTENTION! RISK OF CRUSHING!**

USE a roller table system for long materials, long bars, or materials with various shapes to be cut.

For materials longer than 630 mm, USE Roller Tables (69) and/or (70).

ILLUSTRATIVE FIGURE

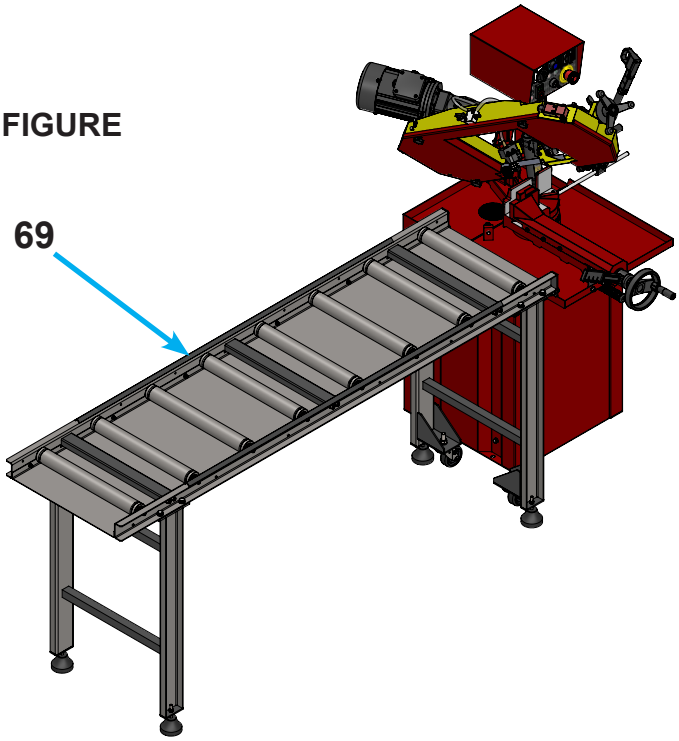



FIGURE 8.2 - EXAMPLE OF INPUT ROLLER TABLE

ILLUSTRATIVE FIGURE

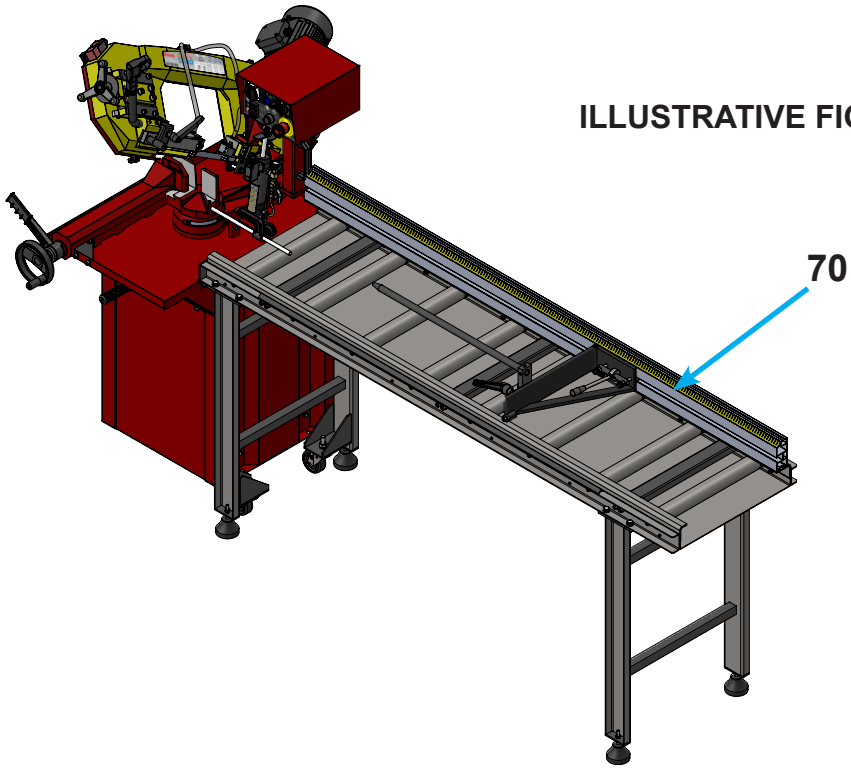



FIGURE 8-3 - EXAMPLE OF OUTPUT ROLLER TABLE

After completing the machine installation, the installer must **CHECK**:

- That all parts of the machine are perfectly intact, with no dents, cracks, fractures, or any other defects.
- That the **EMERGENCY** Button (03), Speed Switch (40), Motor (25), Reducer (15), Coolant Pump (24), Vise Set (17), and Vise Advance Crank (19) are intact and functional.
- The condition of the Cabinet (01), Mobile Guide (31), and Control Panel (06), etc.
- That the machine complies with the specifications in the manual and the purchase order (optional items), especially those listed in the electronic invoice.

**OBSERVATION!**

If any parts are NOT intact or DO NOT comply with the order and/or the manual, it is the user's (installer's) responsibility to immediately notify Starrett in writing to receive written clarification on the appropriate actions to resolve the issue.

However, after identifying the problem, the installer MUST NOT proceed with the installation until the issue has been resolved and clarified.

## 8.3. Requirements and Conditions Necessary for Machine Installation:

**ENVIRONMENTAL CONDITIONS:**

- operating temperature: from -10 to +50 °C.

- relative humidity: less than 90%.

- The machine's connection to the customer's electrical network MUST be carried out by QUALIFIED professionals for this type of service.
- REFER TO the electrical diagram in this Manual to ensure the electrical connection is made correctly.
- CHECK the position of the Control Panel (06) in relation to the machine's Bow (04). The Coolant Pump (24) is located inside the Cabinet (01) and is ready for operation.

Before connecting the machine to the user's electrical network, PERFORM:

8.3.1 PRELIMINARY PROCEDURE:

1. CHECK if the electrical cable supplied with the machine is intact along its entire length.
2. VERIFY that the user's main power supply has the same voltage (V) and frequency (Hz) as specified for the machine.

**OBSERVATION!**

CIf the voltage and/or frequency are not compatible with the end user's main power supply due to a mistake by the buyer, ***Starrett*** must be notified immediately. **The components may be replaced under warranty or not, at the discretion and decision of Starrett.**

**The user's electrical network must use cables or wires with a cross-sectional area equal to or greater than 2.5 mm².**

8.3.2 ELECTRICAL CONNECTION PROCEDURE:

This operation must be carried out by a **QUALIFIED** and **AUTHORIZED** professional, under the supervision of a legally **CERTIFIED** professional.

After completing the Preliminary Procedure (Subsection 8.3.1.), **PROCEED** with the electrical connection of the machine to the electrical network.

1. ENSURE that the user's power supply is **TURNED OFF**.;
2. CONNECT the end of the machine's electrical cable to the external Circuit Breaker Panel, or INSTALL a 4-pin plug, with 3 pins used for phases **R**, **S**, **T**, and the fourth pin for **GROUND**;
3. FOLLOW the recommendations and specifications from the plug manufacturer if this option is adopted.;
4. CHECK that the connection to **GROUND** is properly made.
5. VERIFY that all connections are properly tightened.

### 8.3.3 Electrical Connection Verification Procedure:

After the machine's electrical connection to the user's electrical network is made, VERIFY the following:

1. TURN ON the Main Switch (02) to the ON position.
2. CHECK if the Pilot Light (43) (WHITE) on the Control Panel (06) is on, indicating the machine is powered.
3. TURN the Speed Switch (40) to position "1" or "2".
4. Briefly PRESS the Button (41).
5. VERIFY that the Band Saw Blade (10) is rotating in the direction indicated on the Plate (52), placed on the Bow (04) (figure 6.5).

**ATTENTION!**

**RISK OF ACCIDENTS AND ELECTRICAL SHOCK!**

- VERIFY if the Band Saw Blade (10) is rotating in the same direction as indicated on the Cutting Capacity Sign (52), located on the Bow (04). If the rotation direction is opposite to what is indicated, swap two of the three phases (wires) in the socket that connects the machine to the user's electrical network.
- Any changes to the machine's electrical connection to the user's network must be carried out by QUALIFIED and AUTHORIZED professionals.

### 8.3.4 Electrical Power Supply Requirements for the Machine – Alternating Current:

According to section 4.3 of ISO IEC 60204-1:2020:

- **Voltage**: The permanent operating voltage should be between 0.9 and 1.1 of the nominal voltage.
- **Frequency**: The permanent operating frequency should be between 0.99 and 1.01 of the nominal frequency, and for short durations, it should be between 0.98 and 1.02.
- **Harmonics**: The harmonic distortion must not exceed 12% of the effective voltage in energized conductors, considering the sum of the 2nd to the 30th harmonics.

- **Voltage Interruption**: The supply voltage should not be interrupted or go to zero for more than 3 ms during any random period of the power cycle, with more than 1 second between successive interruptions
- **Voltage Sag**: Voltage sags not exceeding 20% of the effective supply voltage for more than one cycle with more than 1 second between successive sags.
- **Maximum Grounding Impedance**: 10 Ω

**ATTENTION!**

**RISK OF ELECTRIC SHOCK!**

- USE the color codes or numbering for connecting the machine's power cable to the electrical network:

| Option 1 | Option 2 | Cable Function |
|---|---|---|
| Green / Yellow | Green / Yellow | Ground |
| Brown | Black 1 | R |
| Blue | Black 2 | S |
| Black | Black 3 | T |

- VERIFY that the grounding conductor is properly connected and that it is NOT sharing a connection with the NEUTRAL of the user's electrical network.
- CONNECT the machine's power cables to an independent remote three-pole circuit breaker rated at 25 A, and to a three-pole RCD (Residual Current Device) rated at 40 A with a sensitivity of 0.3 A at 220 V.
- GROUNDING must comply with the **ISO 5410 Technical Standard**.
- CONSULT a legally QUALIFIED professional for this type of installation.

## ATTENTION!
## RISK OF ACCIDENTS and MACHINE DAMAGE!

### IMPORTANT WARNING!

- NEVER PERFORM any welding operation (using electrode, MIG, or TIG) while the band saw machine is **ON**, meaning connected to the power supply with the Main Switch (02) in the **ON** position and the PILOT Light (WHITE) (43) illuminated.
- DO NOT USE the band saw machine itself as a GROUNDING point for the welding equipment — even if the band saw machine is turned off.
- DO NOT PERFORM any welding operation on the machine.
- NEVER WELD any material to be cut on the band saw machine, under any circumstances, as this may cause irreparable electrical damage, which is NOT covered by the warranty.

## ATTENTION! RISK OF ACCIDENT!

### SAFETY RECOMMENDATIONS FOR REPLACING ELECTRICAL COMPONENTS:

- Every electrical component in the power, control, and safety circuits **MUST BE REPLACED** exclusively with another of the same reference and manufacturer.
- Any change in specifications may result in the loss of safety functions, create additional risks, and compromise the operator's safety.

# 9. BAND SAW BLADE SELECTION:

## 9.1. Limits and Recommendations:

Before starting any type of work with the machine, VERIFY whether the cut to be performed is within the limits specified in the **Technical Data Table** (SEE Section 4). If it is not, it is recommended to NOTIFY Starrett in writing regarding the possibility of altering any technical specification. ***Starrett*** will provide a written response with the best solution to be adopted.

**ATTENTION!**

**RISK OF DAMAGE TO THE BAND SAW BLADE!**

**Starrett** is not responsible for any damage caused to people or property. The machine operator **MUST CAREFULLY CHECK** the characteristics of the material being cut to avoid all risks to the operator and/or third parties.

When operating within the machine's specified capacities, the correct selection of the band saw blade is another important factor for achieving optimal cutting performance.

## 9.2. Criteria for Choosing the Band Saw Blade:

When selecting the correct blade for a specific application, several factors must be considered: material type, hardness, cutting cross-section, machine capacity, etc.

There are four basic variables in blade selection:

1. Blade Type.
2. Tooth Types.
3. Tooth Pitch;
4. Feed Rates and Cutting Speeds.

***Starrett*** **Band Saw Blade Catalog**

### 9.2.1. Tooth Design:

The tooth design, or the number of teeth per inch (25.4 mm), should be chosen based on the cross-sectional area of the material being cut.

Normal or annealed materials require at least 3 teeth in contact with the material being cut, with the ideal range being between 6 and 12 teeth. In general, materials with a thin cross-section require a saw with a higher number of teeth per inch (25.4 mm), that is, a saw with finer teeth. The opposite is true for materials with a thicker cross-section.

### 9.2.2. Feed Rates and Cutting Speeds:

It is important that the feed rates and cutting speeds are correct.

***Starrett*** provides a slide chart type table for quick and easy selection of band saws, with feed rates and speeds suitable for cutting each material.

The same information is available in the ***Starrett*** Band Saw Blade Catalogs.

**OBSERVATION!**

The ideal cutting conditions are having 6 to 12 teeth in contact with the material being cut at the same time.

# 10. INITIAL ADJUSTMENTS:

## 10.1. Initial Checks:

Before starting any work with the machine, VERIFY:

1. The volume of the coolant liquid (oil + water) in the Reservoir (49) is approximately 20 liters. The oil concentration in the cutting liquid mixture should follow the instructions as per the specifications of the oil manufacturers (figure 10.1);

**ATTENTION! ENVIRONMENTAL RISKS!**

VERIFY if the coolant oil to be used is not harmful to the user, the environment, and the machine itself.

Its disposal must follow the current environmental regulations and the manufacturer's guidelines.

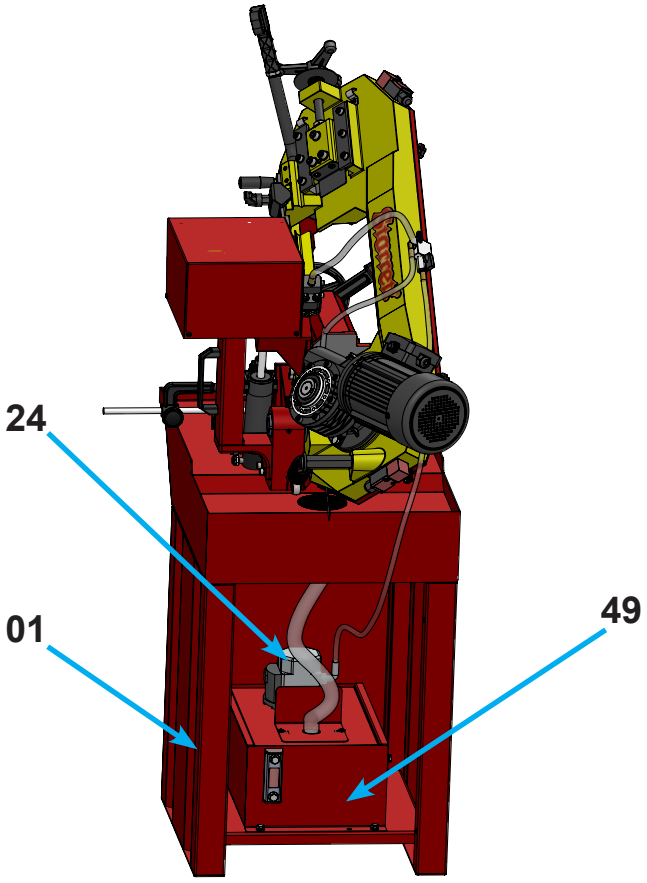
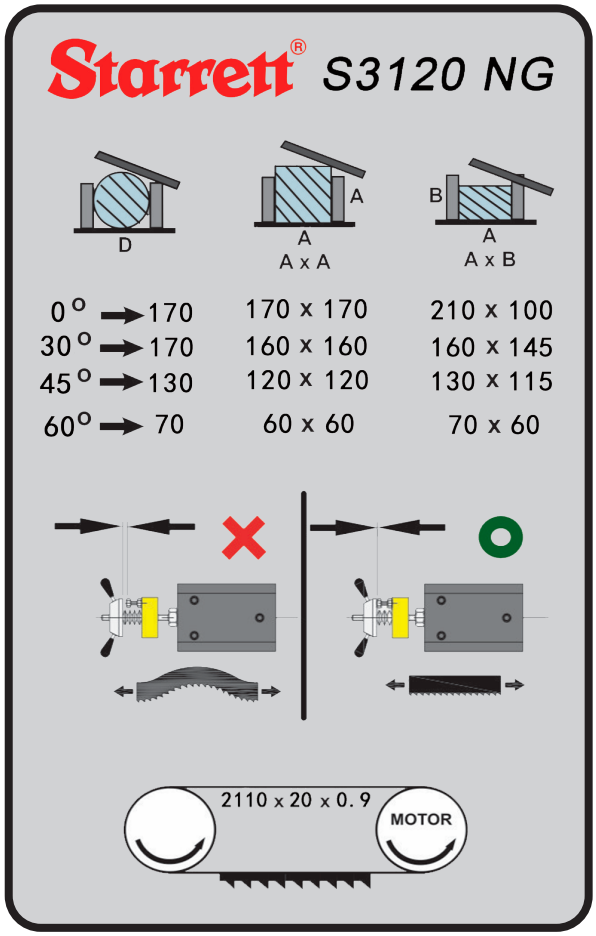



**FIGURE 10.1 - COOLANT RESERVOIR**

2. CHECK the condition of the Band Saw Blade (10), regarding the integrity of its teeth and body.

3. CHECK the tension of the Band Saw Blade (10) by turning the Tensioner Nut's (51) handles until the conditions indicated on the Sign (52) located on the Bow (04) (figures 6.5 and 10.2) are met, that is, the edge of the Tensioner Nut (51) touches the head of the Stopper Screw (55) (figure 6.6).




VIDEO 10.1

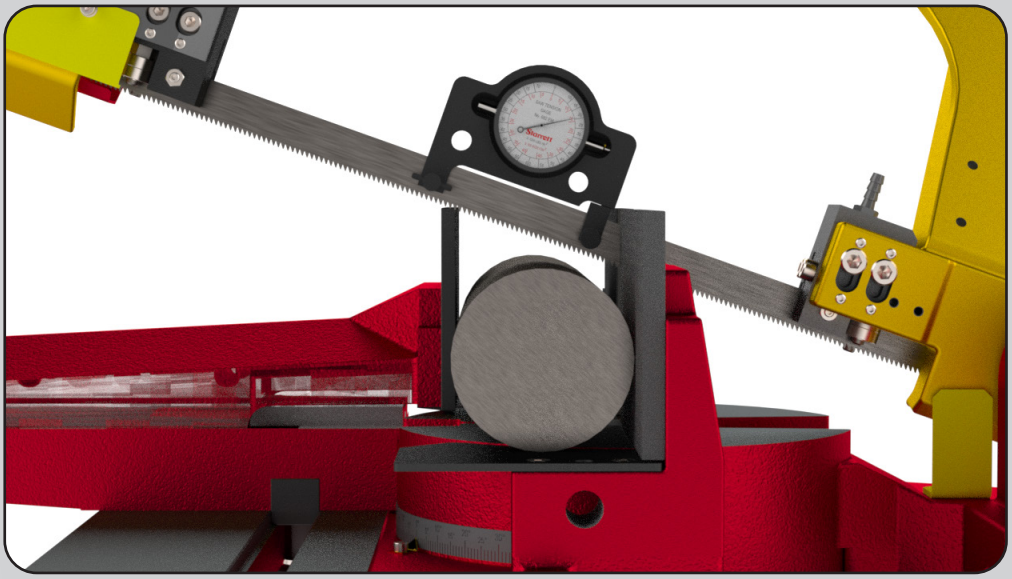
**FIGURE 10.2 - CUTTING CAPACITY**

**ATTENTION!**

**RISK OF DAMAGE TO THE MACHINE!**

The recommended limit is 20,000 lbf/in² (20 kSI) or 1,400 kgf/cm².

It is recommended to USE monthly a ***Starrett*** Tension Gauge 682 EMZ (**EDP 57075** – **SAW TENSION GAUGE**), as shown in the image below, to verify the factory adjustment of the tensioner set.



4. CHECK if the tooth type is the most appropriate for the cut to be performed. VERIFY if the selection complies with the Blade Selection Criteria in Section 9.
5. ENSURE that the selected cutting speed (m/min) is compatible with the characteristics of the material to be cut. SELECT the cutting speed using the Speed Switch (40), located on the Control Panel (06). As guidance, you may refer to the Starrett Cutting Recommendations Table.
6. CHECK that the material to be cut is properly positioned on the Cutting Table (07), meaning it is fully supported across its surface. SEE Section 10.4.

## 10.2. Initial Adjustments:

1. ADJUST the position of the Mobile Guide (31) is related to the material to be cut:

- POSITION the Band Saw Blade (10), WITHOUT TOUCHING THE TEETH, as close as possible to the material, maintaining a 10 mm gap above it.
- RELEASE the Lever (38) (see figure 6.5).
- SLIDE the Mobile Guide Support (37) so that the distance between the Guides (31)(32) is as small as possible.
- LOCK the Mobile Guide Support (37) again using the Lever (38).

2. ADJUST the cutting speed using the Speed Switch (40) (see figure 6.4):

– Set to " **1** " (cutting speed = 35 m/min) for hard materials.

– Set to " **2** " (cutting speed = 70 m/min) for soft materials.

## 10.3. Considerations Regarding the Band Saw Blade:

Here are some recommendations to maintain the optimal performance of the Band Saw Blade (10):

1. CORRECTLY TENSION the Band Saw Blade (10) as described in item 3 of Subsection 10.1.
2. KNOW the physical characteristics of the material to be cut, especially its hardness and homogeneity.
3. USE a cutting speed compatible with the geometry, dimensions, and physical characteristics (for example, hardness) of the material to be cut.
4. USE high-quality Band Saw Blades (10) with the correct and intact tooth profile (no broken teeth).
5. FOLLOW the recommendations for Initial Cuts in Subsection 11.4.
6. CLEAN the Guides (31)(32) frequently — with the machine turned off, USE ***Starrett*** M1 Micro Oil to clean the Side Bearings (33) and Back Bearing (34).
7. CHECK the condition of the Bearings (33)(34) regularly.
8. PERIODICALLY VERIFY the clearance between the Bearings (33) (should be 0.95 mm), and the distance between the back of the Band Saw Blade (10) and the Back Bearing (34), as shown in figure 14.3.

## OBSERVATION!

To ensure better performance and longer life of the Band Saw Blade (10), it is recommended to perform a break-in procedure when the blade is newly installed on the machine.

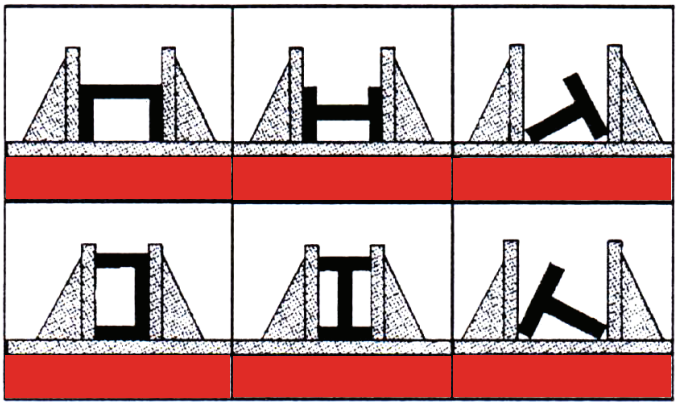
This break-in process is a common practice intended to allow the cutting edges of the teeth to wear in gradually, before the blade is subjected to full operational loads.

The break-in consists of operating the Bandsaw Blade (10) for a longer cutting time (approximately twice the normal time) at a suitable cutting speed, as indicated in the Starrett Cutting Recommendations Chart.

**AVOID LETTING THE BLADE'S TEETH SLIDE OVER THE MATERIAL WITHOUT CHIP REMOVAL.**

**(AVOID VIBRATIONS)**

### 10.4. Recommendations for the Best Way to Clamp the Material to Be Cut:



## OBSERVATION!

The cutting operation must be carried out with feed rate and cutting speed appropriate to the tooth pitch of the Band Saw Blade (10), the thickness of the material to be cut, and the wear condition of the cutting tool itself.

It is very important to keep the cutting conditions within the parameters established by Starrett. This ensures better performance and longer service life of the blade. For optimal use of the machine, it is important to always keep the Guides (31) and (32) clean and ensure that both receive an abundant supply of coolant cutting fluid. To increase or decrease the flow of cutting fluid, simply OPEN or CLOSE the Distributor Tap (57) located on the Coolant Liquid Dispenser (59), which is installed on the Bow (04) (figure 10.3).

## 10.5. Procedure for Replacing the Bandsaw Blade and Adjustments:

To correctly replace the Band Saw Blade (10), it is necessary to keep the Bow (04) in the highest position and at a 0º angle, and then:

1. SET the Main Switch (02) to the OFF position, and press (lock) the **EMERGENCY** Button (03) (figure 6.4).
2. REMOVE the Back Cover (18) by unscrewing the 4 Back Cover Fixing Handles (60) located at the rear of the Bow (04) (figure 10.3).
3. REMOVE the Protection (62) from the Mobile Guide Support (37) (figure 10.3).
4. With the removal of the Back Cover (18), the Safety Switch (29) installed on the Bow (04) keeps the machine's electrical control system disabled as a safety measure — **UNDER NO CIRCUMSTANCES SHOULD THE SAFETY SWITCH (29) BE ACTIVATED IN THIS SITUATION** (figure 10.3);
5. TURN the Tensioner Handle (63) to reduce (loosen) the tension of the Band Saw Blade (10), decreasing the center distance between the Flywheels (13) (14) (figure 10.3).
6. Carefully remove the Band Saw Blade (10) using leather gloves (only in this situation) and safety glasses.


7. Carefully CLEAN the surfaces where the Band Saw Blade (10) contacts the two Flywheels (13)(14) and the inside of the Guides (31)(32), spraying Micro Oil M1 generously between the Side Bearings (33) and the Back Bearing (34), before installing a new Band Saw Blade (10).
8. INSTALL the new Band Saw Blade (10), ensuring that the teeth are intact and suitable for the material to be cut, and that the teeth are oriented in the direction indicated on Sign (52) (figure 6.5).

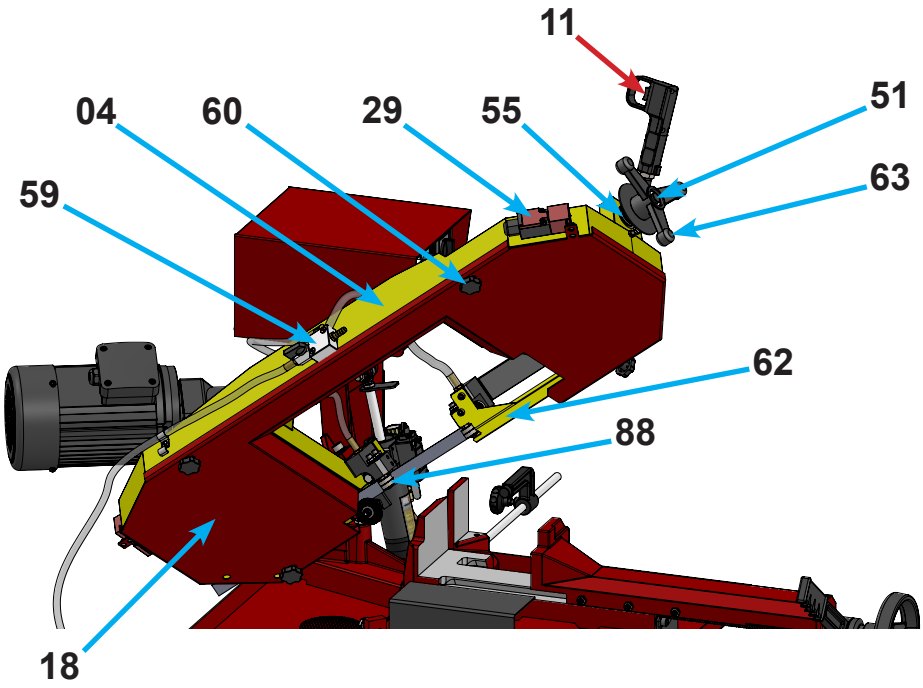



FIGURE 10.3 - BACK COVER AND MOBILE GUIDE PROTECTION

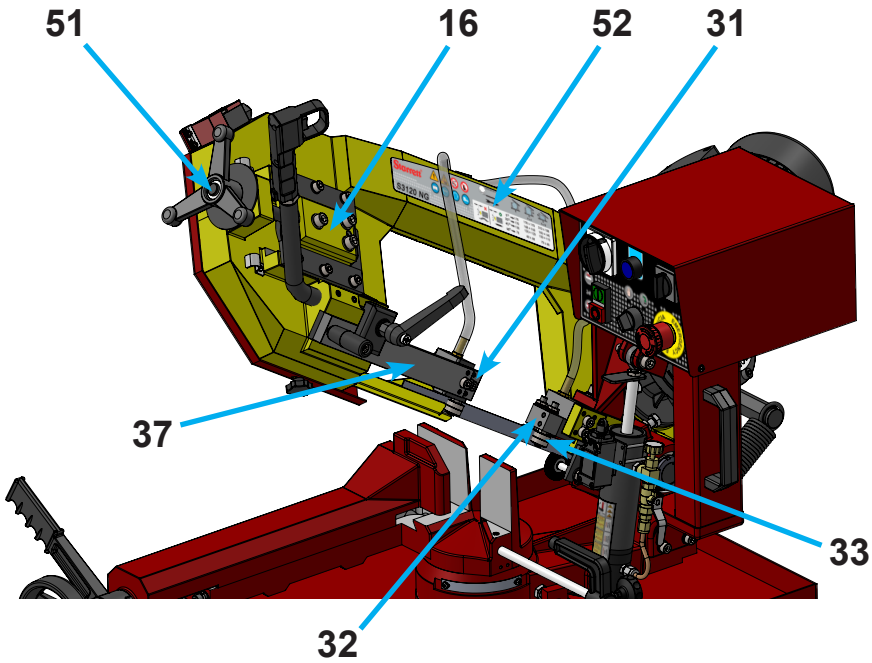



FIGURE 10.4 - FIXED AND MOBILE GUIDES AND TENSIONER SYSTEM

9. FIRST, FIT the Band Saw Blade (10) into the gap of the Guides (31)(32), between the Side Bearings (33), on the Drive Flywheel (14), and finally on the Idle Flywheel (13).
10. PERFORM the pre-tensioning by turning the Tensioner Handle (63) to tension the Band Saw Blade (10) (tighten).
11. INSTALL the Back Cover (18), securing it with the Fixing Handles (60).
12. PROPERLY INSERT the actuator, fixed to the Cover (18), into the Safety Switch (29) (figure 10.5);
13. INSTALL the Protection (62) on the Mobile Guide Support (37) using its respective screws.
14. SELECT one of the 2 cutting speeds using the Speed Switch (40).
15. RELEASE the **EMERGENCY** Button (03).
16. TURN the Main Switch (02) to **ON**;
17. SET the Selector Switch (23) to **MANUAL** mode.
18. PRESS the Trigger (11) briefly to rotate the Motor (25) (figure 10.3);
19. REPEAT this operation 4 to 5 times to seat the Band Saw Blade (10) onto the Flywheels (13)(14) and Guides (31)(32).
20. PERFORM the final tensioning of the Band Saw Blade (10) by turning the Tensioner Handle (63) of the Tensioner Nut (51).

## 10.6 Measurement Rod System Installation Procedure:

The **S3120NG** features a standard Measurement Rod system, consisting of a 500 mm Rod (79) and a Stopper (80) (figure 10.5).

**INSTALLATION PROCEDURE:**

1. INSTALL the end of the Rod (79) on the right side of the Cutting Table (07).
2. SECURE this end of the Rod (79) with the respective screw on the right side of the Cutting Table (07).

**USAGE PROCEDURE:**

1. INSTALL the Stopper (80) onto the Measuring Rod (79);
2. PRESS the Stopper (80) against the side of the Band Saw Blade (10).
3. ADJUST the mark zero on the scale of the Rod (79) using a reference point on the Stopper (80). Then, when you want to cut the material to a specific length, PROCEED:

   - LOOSEN the Stopper Handle (81).

   - POSITION the Stopper (80) at the desired measurement on the scale of the Rod (79).

   - TIGHTEN the Stopper Handle (81).

   - PRESS the material to be cut against the end of the Stopper (80).

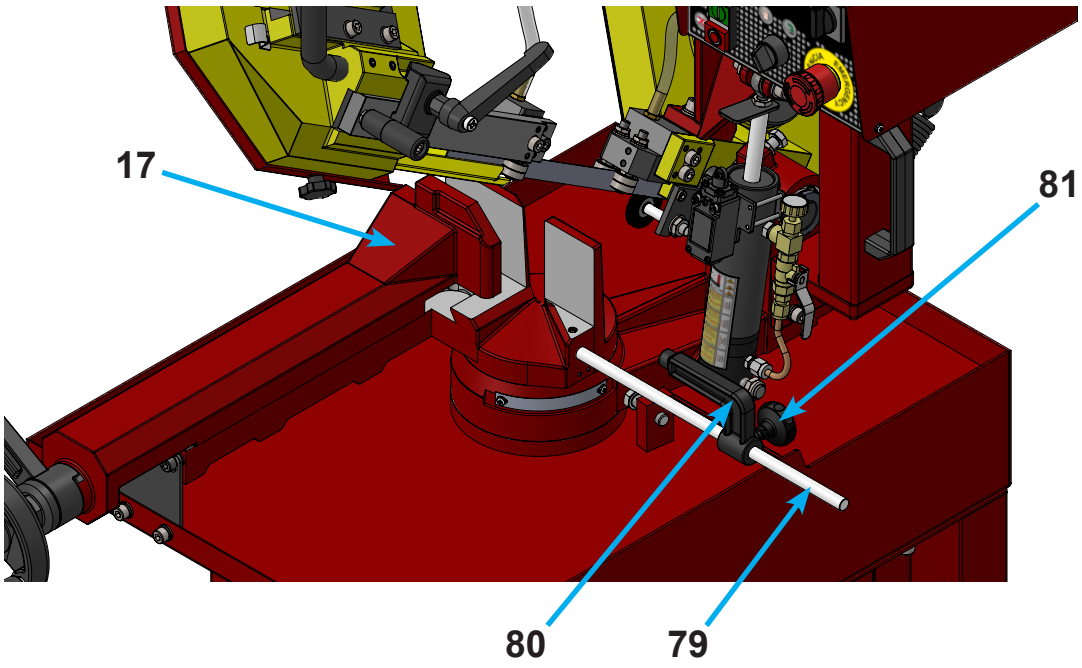



**FIGURE 10.5 - MEASURING ROD SYSTEM**

# 11. NORMAL OPERATION:

## 11.1. Specific Safety Recommendations:

**ATTENTION!**
**RISK OF ACCIDENTS WITH SERIOUS INJURIES!**

- All cutting operation procedures with the Starrett Band Saw machine must be performed by TRAINED and AUTHORIZED professionals.
- Before performing any cutting operation with the machine, it is necessary to **CAREFULLY READ** this Instruction Manual to understand the specific safety instructions for this type of activity.
- • USE Personal Protective Equipment (PPE) during cutting operations with the Starrett Band Saw machine.

- PLAN the Cutting Operation before starting it.
- MAKE SURE all conditions are safe for the Cutting Operation.
- MAKE SURE all cutting parameters are adjusted (SEE Section 10).
- HANDLE materials to be cut with appropriate lifting and transport devices, such as hoists, overhead cranes, or other devices with the same effectiveness and purpose.
- USE Roller Tables for cutting long materials (SEE Section 8.2 - figures 8.2 and 8.3, and Section 5 - General Safety Recommendations).

## 11.2. Machine Start-up

**PROCEDURE:**

1. CHECK that the machine is off, verifying that the Main Switch (02) is in the **OFF** position and the **EMERGENCY** Button (03) is pressed (figure 6.1), before starting any operation.
2. LIFT the Bow (04) to its maximum upper position using the Lever (39) (figure 6.2).
3. LOCK the Cutting Valve (12) by positioning it horizontally, as shown in figure 11.1.
4. CLOSE the Regulating Valve (22) by turning it clockwise until resistance is felt. This ensures the machine is secure before handling or adjustment.
5. MOVE the Vise (17) closer using the Vise Advance Crank (19) until it is near the material to be cut. TOUCH the Jaws to the material to be cut (figure 11.2).
6. TURN the Vise Advance Crank (19) back by ¼ turn. This will create a small gap sufficient for the operator to move the piece longitudinally. The tightening and loosening of the Vise Set (17) on the material will be done manually by turning the Lever (20) down (figure 11.2).
7. VERIFY that the material is properly secured and fixed in the Vise Set (17).
8. SELECT the cutting speed using the Switch (40), according to the characteristics of the material to be cut.
9. SET the operating mode: **MANUAL** or **SEMI-AUTOMATIC** using the Selector Switch (23).

### OPERATION IN MANUAL MODE (FOR CUTTING PROCESS ADJUSTMENT):

(SELECTOR SWITCH (23) - to the LEFT)

In this operating mode, the operator is responsible for applying the feed force and controlling its speed. It is an operation that requires the operator to remain in their work position.

**PROCEDURE:**

1. KEEP the Bow (04) in its fully raised position before starting any cutting operation.
2. CHECK if the Valves (12) and (22) are fully open. Both Valves (12) and (22) must remain OPEN throughout the cutting operation (figure 11.1).
3. SET the Main Switch (02) to the **ON** position and ensure the **EMERGENCY** Button (03) is unlocked.
4. CHECK if the Indicators for the Reset Button (30) (BLUE) and the Pilot Light (43) (WHITE) are lit:
   - If not, CHECK what is wrong because the machine is not in a safe condition to be operated.
   - If yes, PRESS the Reset Button (30) (BLUE).SET the Selector Switch (23) to MANUAL (LEFT).
5. OPEN the Tap (57) of the Coolant Liquid Dispenser (59) (figure 11.3) for the coolant liquid, if necessary.
6. HOLD the Trigger (11) pressed and started the cutting operation by pulling the Lever (39) down until the end of the process.

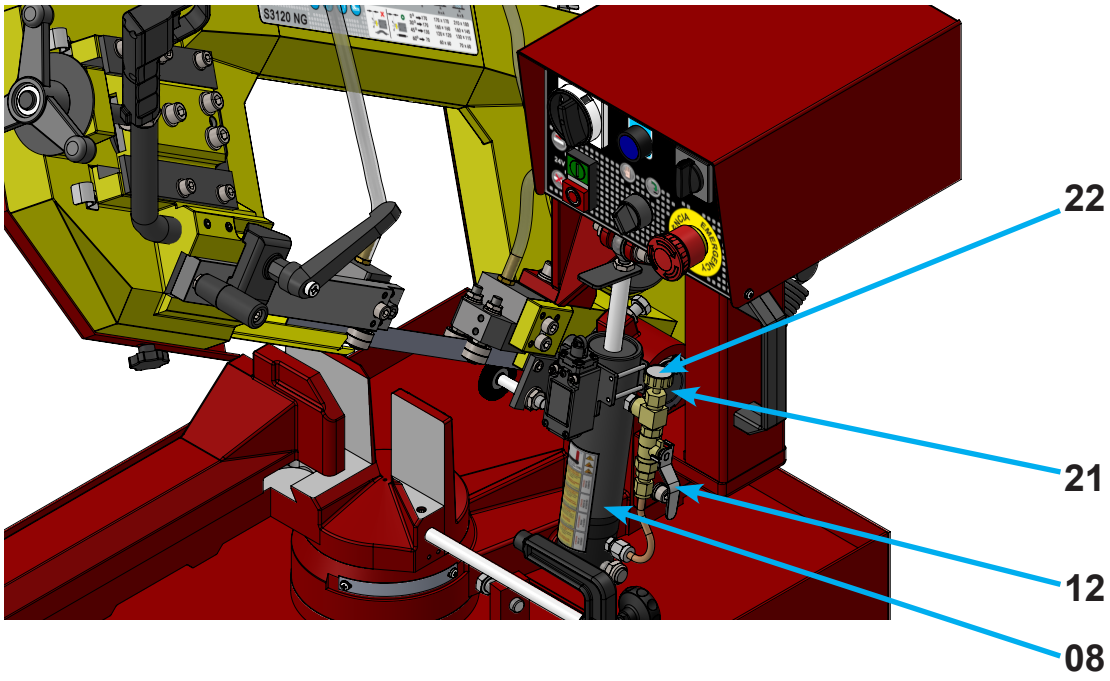



**FIGURE 11.1 - ADVANCE CONTROL CYLINDER**

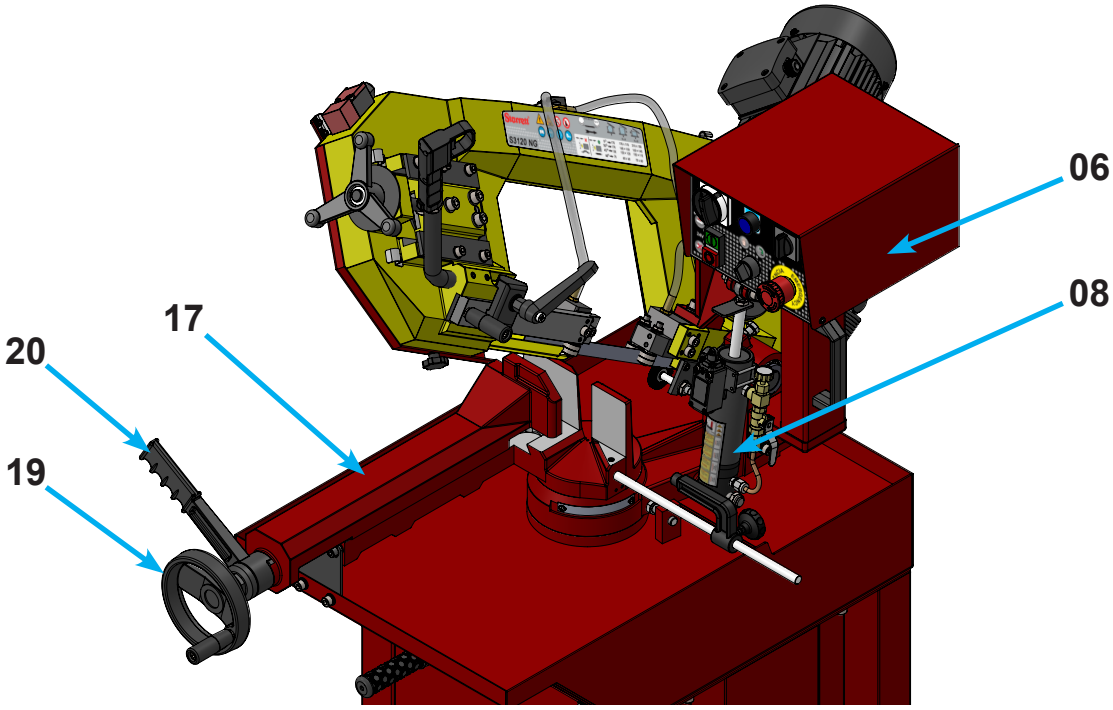



**FIGURE 11.2 - VISE SET**

7. RELEASE the Trigger (11) at the end of the cut.
8. Slowly RELEASE the Lever (39).
9. OPEN the Vise Set (17) by pulling the Lever (20) upwards.
10. REMOVE the cut material.
11. REPOSITION the material to be cut for a new cut.

## OPERATION IN SEMI-AUTOMATIC MODE

(SELECTOR SWITCH (23)
- to the RIGHT)

In this operating mode, the weight of the Bow (04) provides the feed force, with the speed controlled by the Regulating Valve (22).

**PROCEDURE:**

1. KEEP the Bow (04) in the highest position, with the Valves (12) and (22) in the CLOSED positions (figure 11.1).
2. SET the Main Switch (02) to the **ON** position and the **EMERGENCY** Button (03) unlocked.
3. CHECK if the Indicator Lights of the RESET Button (30) (BLUE) and the PILOT Light (43) (WHITE) are on:

   - If not, CHECK what is happening, as the machine is not in a safe condition to be operated.

   - If yes, PRESS the RESET Button (30) (BLUE). SET the Selector Switch (23) to SEMI-AUTOMATIC (RIGHT).
4. OPEN the Tap (57) of the Coolant Liquid Dispenser (59) (figure 11.3) for the coolant liquid, if necessary.
5. PRESS the Start Button (41) on the Control Panel (06).
6. OPEN the Cutting Valve (12) slowly and carefully.
7. OPEN the Regulating Valve (22) slowly until reaching an appropriate cutting speed (figure 11.1).
8. MONITOR the cutting performance. If any abnormal sound or issue arises, stop the cutting process by pressing the **EMERGENCY** Button (03).

At the end of the cut, Arm (46) presses the Limit Switch (44), turning off the Motor (25) (figure 6.3). Simultaneously, the Bow (04) touches the Stopper Pin (58) (figure 11.5).

9. CLOSE the Valves (12) and (22) (figure 11.1).
10. RAISE the Bow (04) to its highest position using the Lever (39).
11. OPEN the Vise Set (17) by pulling the Lever (20) upwards.
12. REMOVE the cut material.
13. REPOSITION the material to be cut for a new cut.

**ATTENTION!**

**RISK OF EQUIPMENT DAMAGE AND ACCIDENT!**

Before starting any cut, CHECK the position of the Vise Set (17) in relation to the Bow (04).

ALWAYS CHECK if the Bow (04) is locked by the Lever (65) (figure 11.6).

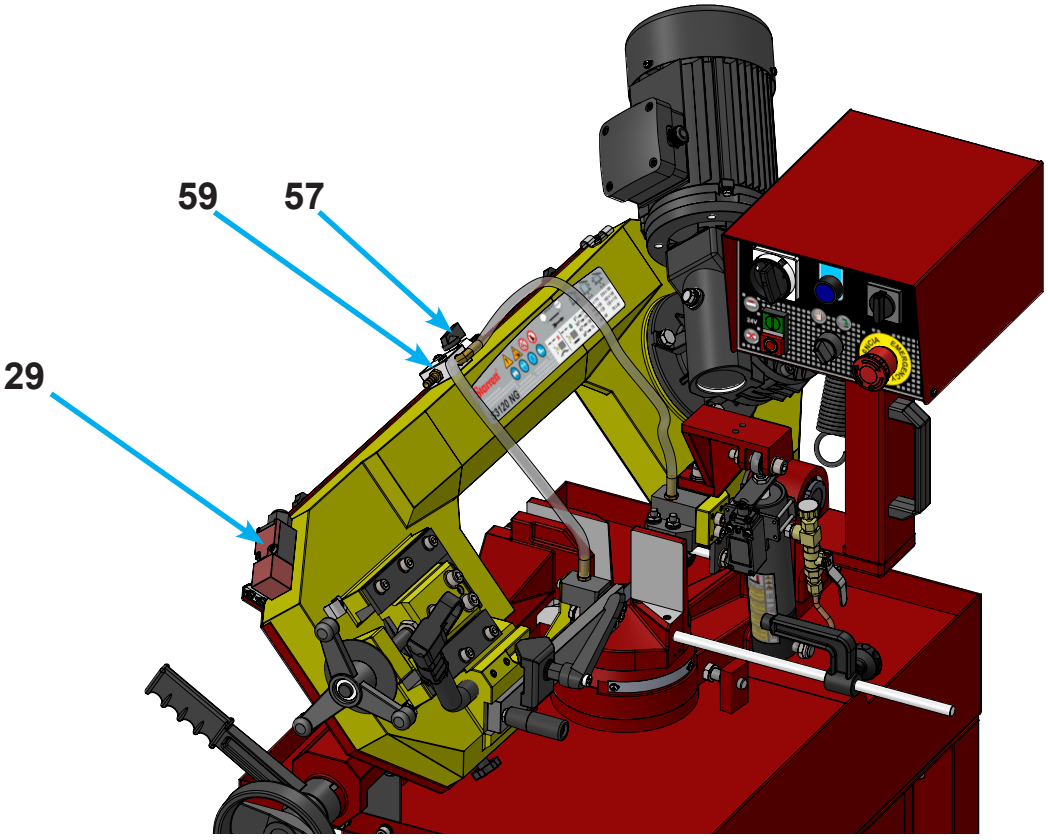



FIGURE 11.3 - COOLANT DISTRIBUTOR TAP


**ATTENTION!**

**RISK OF ACCIDENT!**

Always follow the Operation Instructions for the Cylinder (08), as described in the Technical Label next to the Cylinder (08).

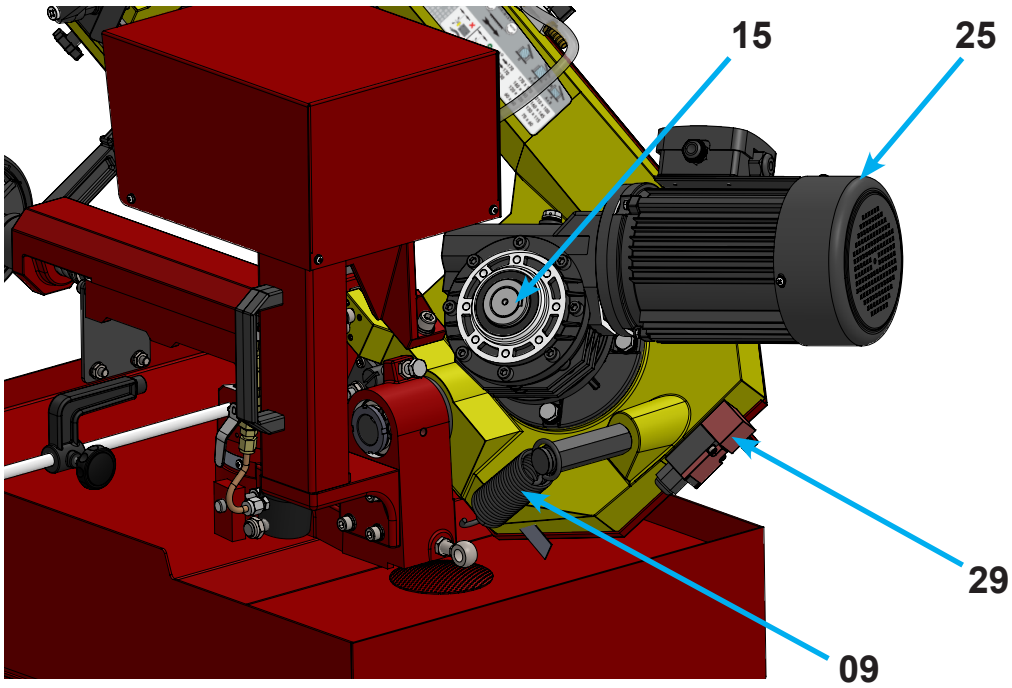



**FIGURE 11.4 - SPRING SET**

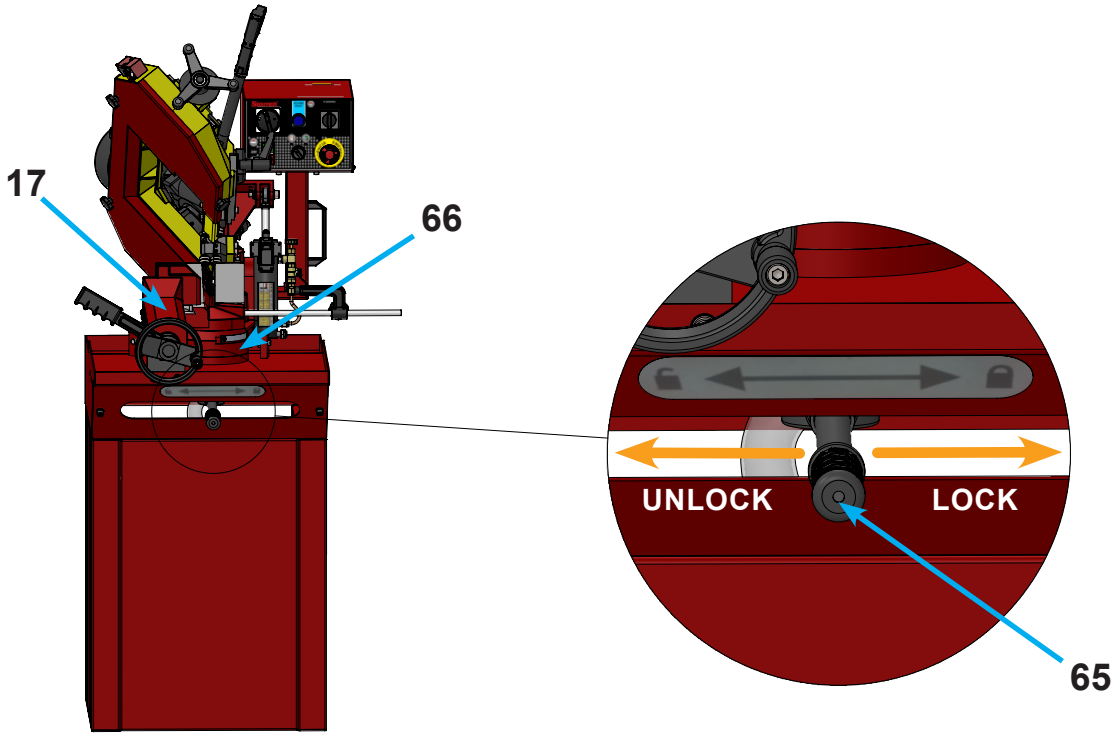



**FIGURE 11.5 - BOW SWITCH LOCK LEVER AND BOW POSITION FOR 0° CUTTING**

## 11.3. Normal Machine Shutdown:

There are two situations in which the machine shuts down in a NORMAL manner.

The first occurs at the end of the cut, when the Limit Switch (44) (figure 6.3) is activated, turning off the Motor (25) of the Band Saw Blade (10) and the Coolant Pump (24).

The second occurs when the operator presses the Stop Button (42).

## 11.4. Recommendations for the First Cuts:

USE low feed speeds and, if necessary, gradually increase them during each operation according to the performance of the cut.

If any abnormal noise occurs during the process, the operator should stop the operation and CHECK what might be happening.

In case of a doubt, Starrett Technical Support can provide all the necessary information to assist.

## 11.5. Procedure for Cutting at an Angle:

When you wish to perform a cut at an angle (≠ 0º) to the right side (0º to +60º) of the operator, follow the procedure below.

**PROCEDURE:**

1. CHECK that the Main Switch (02) is in the **OFF** position and the **EMERGENCY** Button (03) is pressed (figure 6.4) before starting any operation.
2. PUSH the Bow Turn Lock Lever (65) clockwise (UNLOCK), as indicated in figure 11.5.
3. ROTATE the Bow (04) to the desired angle, as shown on the Angular Scale (66) in relation to the Pointer (71) (figures 11.5 and 11.6).
4. PULL the Bow Turn Lock Lever (65) counterclockwise (LOCK), as indicated in figure 11.5.

For cuts at angles greater than 45º (>45º), the rear of the Bow (04) may be positioned against the side of the Cabinet (01).

To better support the material being cut, a removable Side Support (67) can be attached. This helps prevent accidents with the material falling when the Vise (17) is opened (figure 11.7).

**ATTENTION!**
**RISK OF ACCIDENTS AND DAMAGE TO THE MACHINE!**

To perform this procedure, the Bow (04) must be in its maximum upper position. The operator must PRESS the **EMERGENCY** Button (03) and set the Main Switch (02) to the **OFF** position until the adjustment for this item is complete.

ENSURE that the Bow (04) is locked by forcing its rotation using the Lever (65) (figure 11.5).

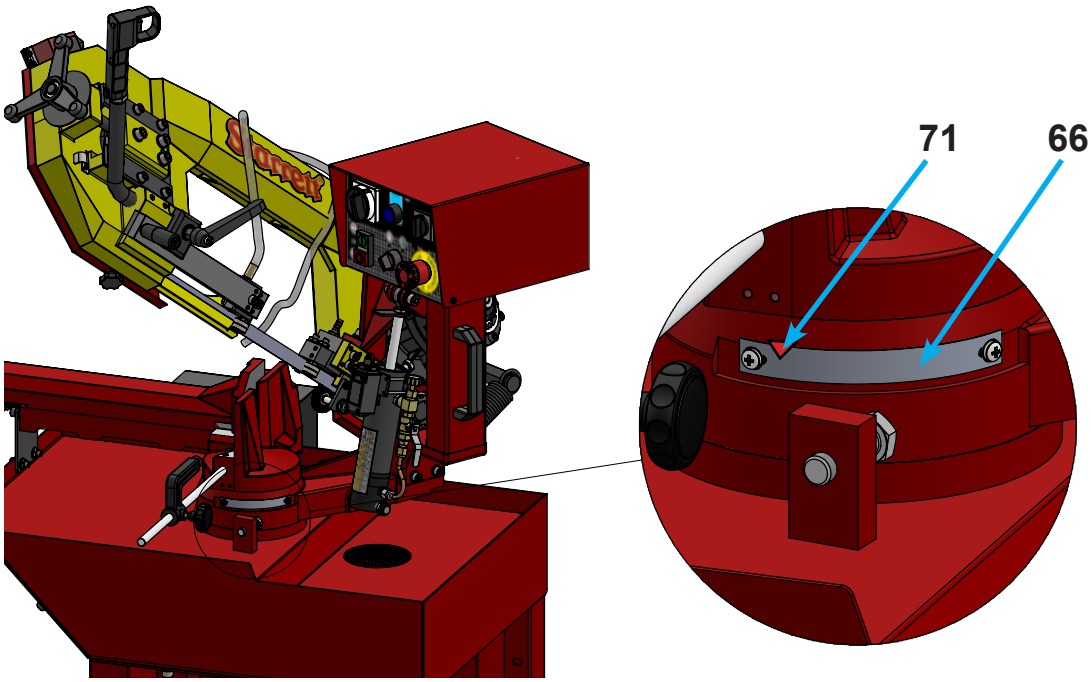



FIGURE 11.6 - BOW POSITION FOR 60° CUTTING

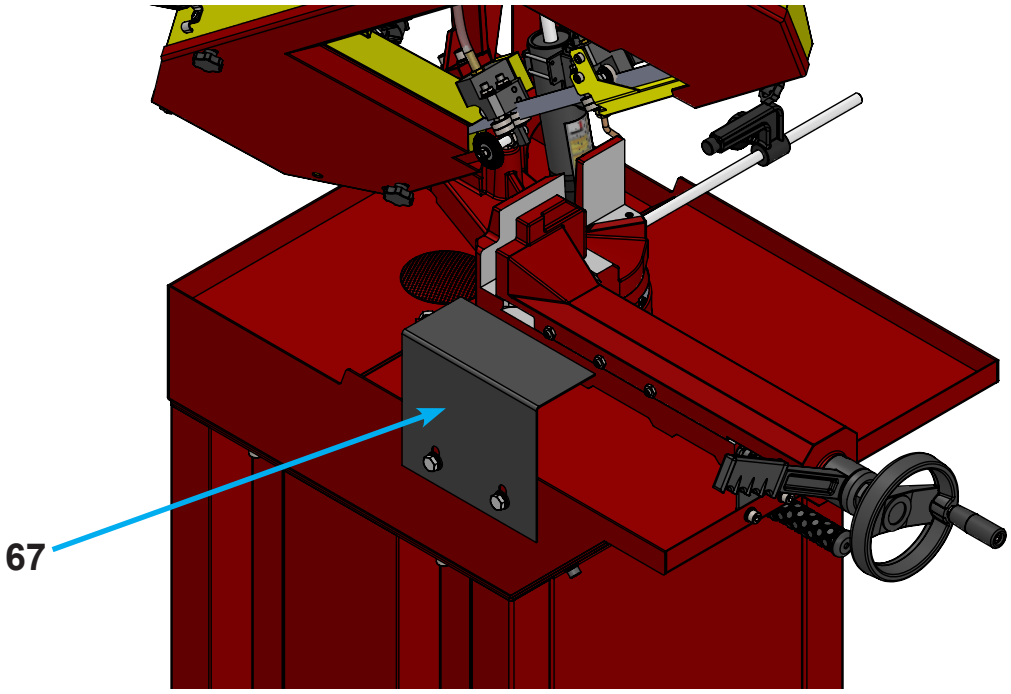



FIGURE 11.7 - SUPPORT POSITION

# 12. EMERGENCY OPERATION:

In case of an incident where it is necessary to press the **EMERGENCY** Button (03) on the Control Panel (06) (figure 12.1), the operator must follow the steps below.

**PROCEDURE:**

1. PRESS the **EMERGENCY** Button (03) located on the Control Panel (06).
2. TURN OFF the machine using the Main Switch (02) by setting it to the **OFF** position (figure 12.1).

**First Action:**

3. STOP and check the occurrence.
4. REQUEST assistance from a supervisor or another QUALIFIED person.
5. ANALYZE and RESOLVE the issue.
6. **DO NOT OPERATE** the machine until you are sure that the cause of the **EMERGENCY** has been addressed.

**Second Action:**

7. CHECK if the material to be cut is properly secured, ensure the Band Saw Blade (10) is intact, in the correct position, away from the material, and secure, and verify that there are no other imminent hazards that need to be removed.
8. TURN ON the Main Switch (02) by positioning it to **ON** once the issue is resolved and the danger is eliminated, if present.
9. CHECK if the White Pilot Light (43) on the Control Panel (06) is illuminated. If the White Pilot Light (43) remains off, request maintenance personnel assistance to investigate the issue. There could be an electrical problem preventing the machine from starting.
10. CHECK if the Blue Light (64) on the RESET Button (30) is on.

11. Press the RESET Button (30). The Blue Light (64) should turn off (figure 12.1):

    - If it does **NOT TURN OFF**, request assistance from maintenance personnel to INVESTIGATE the issue, as there might be an electrical problem preventing the machine from starting.

    - If the Blue Light (64) turns off, PRESS the Start Button – GREEN (41) to resume the initial work.

12. TURN ON the machine and CONTINUE the initial work.

13. COMMUNICATE and RECORD the occurrence, if necessary, to a supervisor or Immediate Superior.

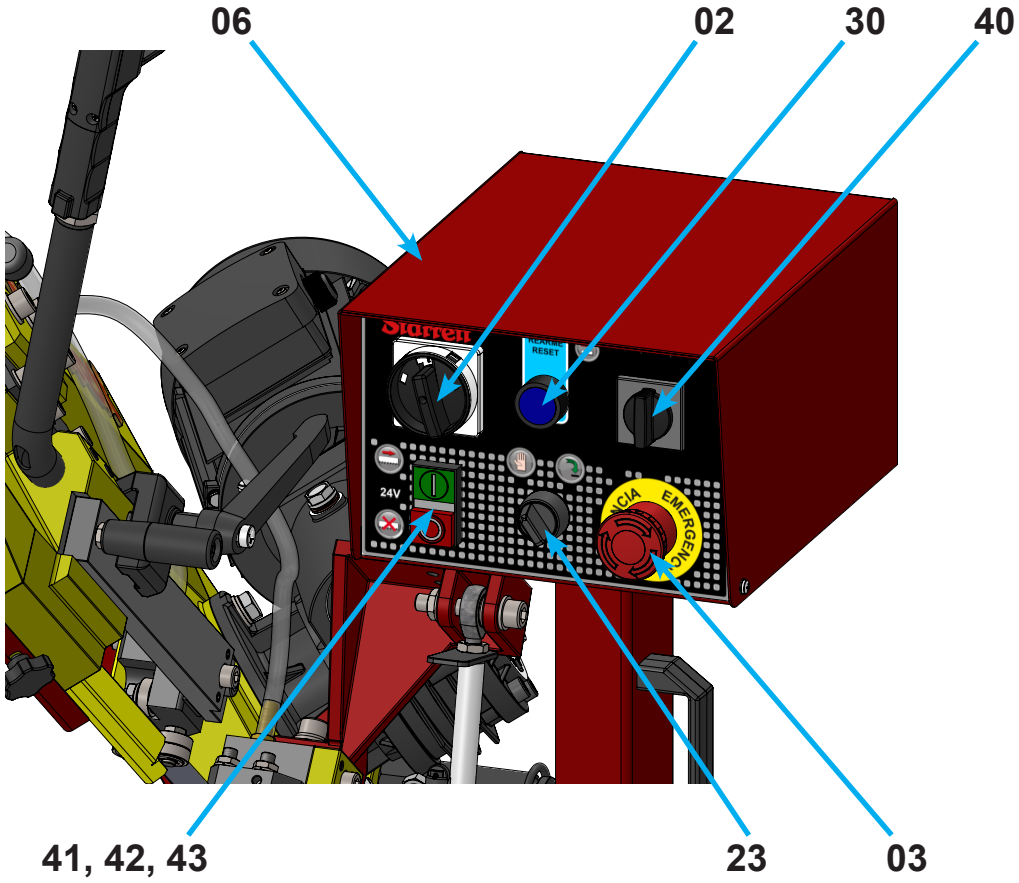



**FIGURE 12.1 - CONTROL PANEL**

# 13. SYSTEMS:

## 13.1. Electrical System:

The electrical system has been developed and designed to ensure the safety of the operator and the equipment, in compliance with the requirements of the **IEC 60204-1** and **ISO 16093** standards.

The standard machine is designed to operate with two motors: Motor M1 (25), a three-phase motor that moves the Band Saw Blade (10), and Motor M2 (24), a single--phase motor that drives the Coolant Pump, both properly specified according to the load capacity of each one.

A Main Switch – QS1 (02), of the disconnector type, is installed at the circuit's entry to electrically disable the machine when the Control Panel (06) cover is opened for maintenance.

A Contactor – KM1 (26) is responsible for powering Motors M1 (25) and M2 (24) when the Trigger – SB2 (11) (figure 6.6) or Start Button – SB1-1 (41) (figure 13.1) are pressed. A second Contactor – KM2 (27), in series with Contactor – KM1 (26), forms part of the redundancy in the motor safety activation system for Motor M1 (25) and additionally powers Motor M2 (24). SEE figure 13.1.

The Speed Switch – SA1 (40), a 3-position type (1 - 0 - 2), functions to change the speed of Motor M1 (25), according to the operator's choice. In the 0 (ZERO) or neutral position, Motor M1 (25) will not start. To stop the machine, simply press the Stop Button – SB1-2 (42).

Motor M1 (25) is responsible for driving the Band Saw Blade (10) and is protected by the Thermal Relay – FR1 (45). If Motor M1 (25) experiences an overcurrent beyond its specification, Thermal Relay FR1 (45) will open its contacts, shutting down the motor. At this point, the RED Indicator Light – HL2 (72) will turn on.

Motor M2 (24), which powers the Coolant Pump, is protected by Fuses F4 (73) and F5 (74).

A Transformer – TR1 (75), properly rated, reduces the control circuit voltage to 24 VAC, which is considered extra-low voltage. This complies with IEC 60204-1. The Transformer (75) is protected by two Fuses F1 (76) and F2 (77) on the input side, and one Fuse F3 (78) on the output side.

As a safety measure, an **EMERGENCY** Button – SB1 (03) is installed in a visible and accessible location for the operator in case of abnormal situations. This button is monitored by a Safety Relay – KS1 (28), installed in the Electrical Board (47) (see figure 6.1), and features redundancy with two contacts.

Additionally, the Safety Switches – SQ1 (29) interlock the Back Cover (18). These safety components feature redundancy and electrical monitoring. The interlocking function can be performed by either an electromagnetic or magnetic safety switch, installed on the front (figure 11.3) and rear (figure 11.4) of the Bow (04).

The Selector Switch – SA2 (23), a two-position switch, serves to select the machine's operating mode: MANUAL or SEMI-AUTOMATIC.

A Limit Switch – SQ2 (44), installed on the Hydraulic Cylinder (08), automatically shuts off the machine at the end of a cut—that is, when the Bow (04) reaches its lowest position. This function is only valid when the Selector Switch – SA2 (23) is set to SEMI-AUTOMATIC mode.

As established by standard **ISO 16093:2023**, the machine's safety functions have been defined in CATEGORY 3.

The cables designated for the motors (power cables) are black and have a cross-sectional area of 1.25 mm². The control cables are red and have a cross-sectional area of 0.75 mm². All cables are identified according to the attached electrical schematic.

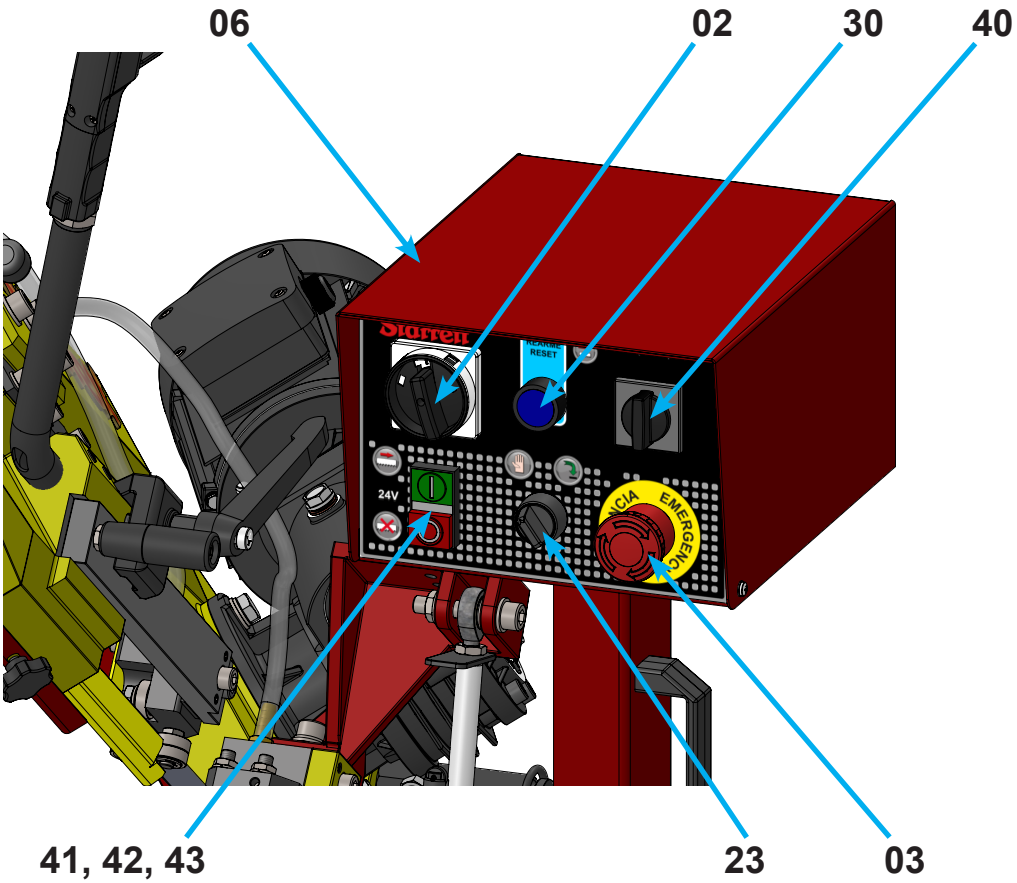
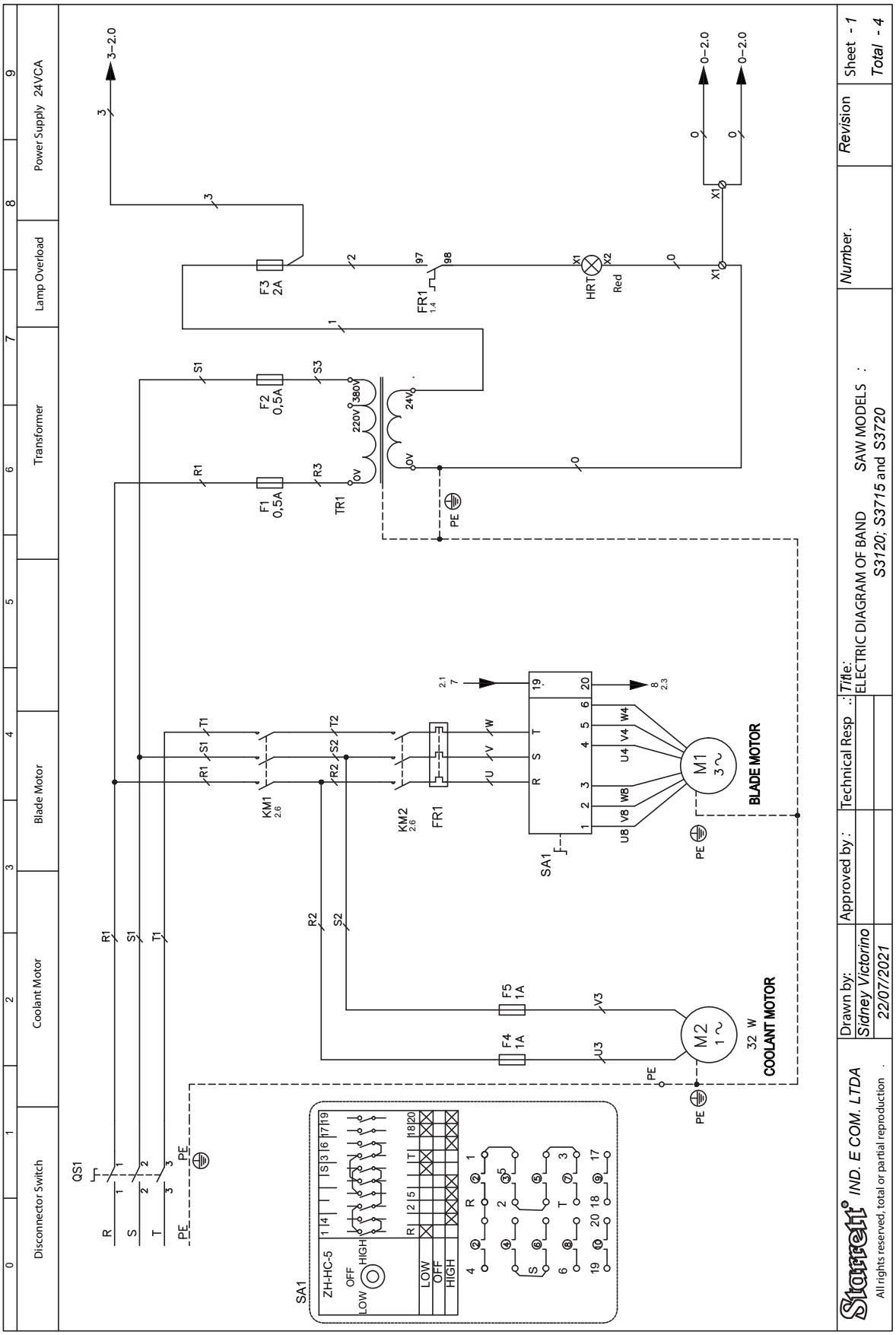
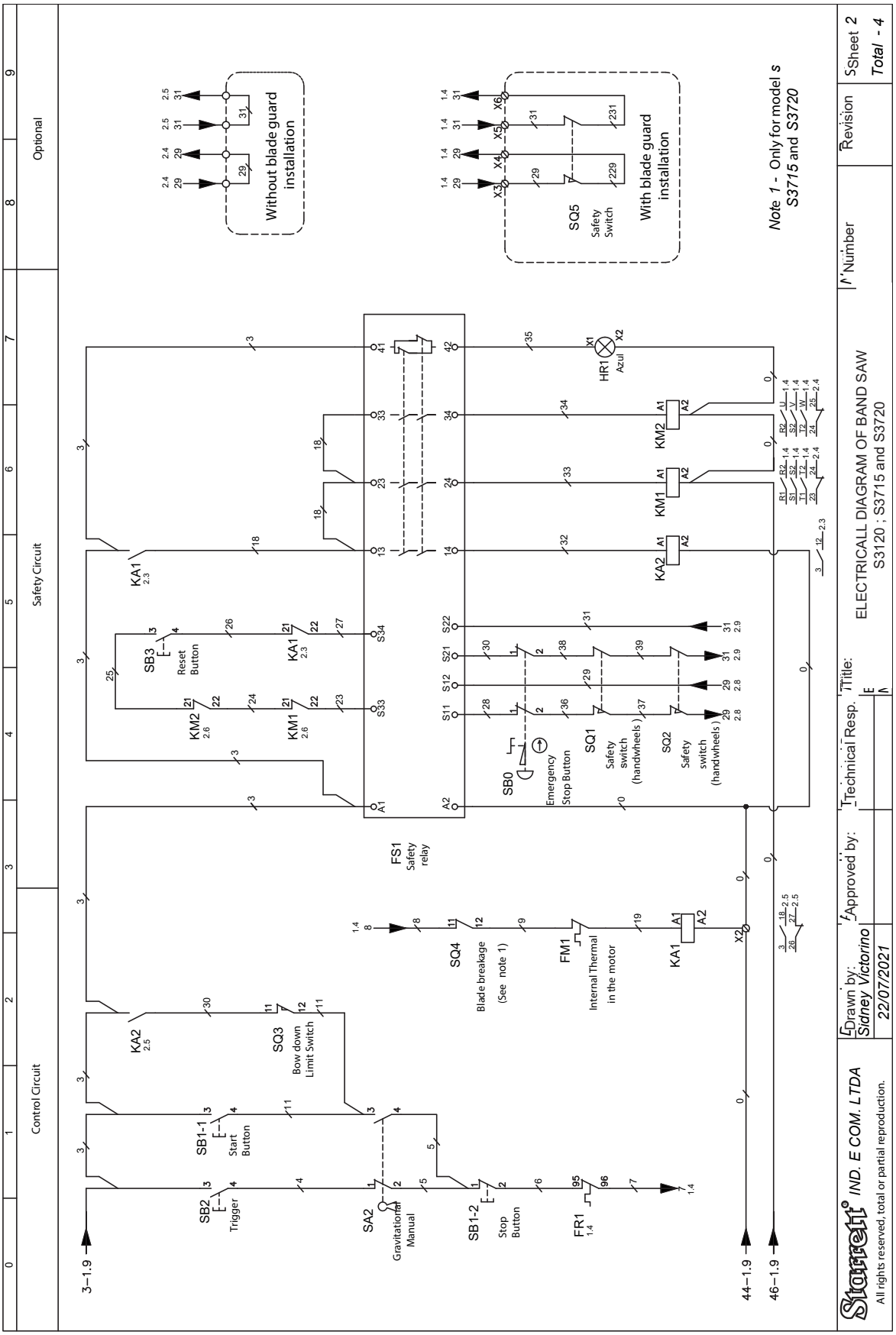



**FIGURE 13.1 - CONTROL PANEL**

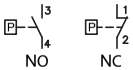
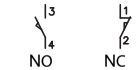
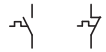
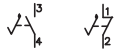
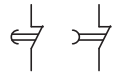
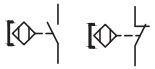
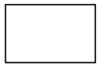
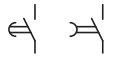
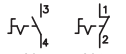
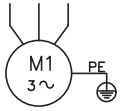
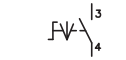
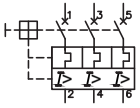
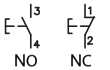
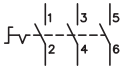
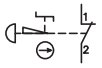
## LIST OF ELECTRICAL COMPONENTS:

| ABBREVIATION | DESCRIPTION |
|---|---|
| M2 | COOLANT MOTOR |
| M1 | BAND SAW BLADE MOTOR |
| F4-5 | 1.0 A FUSE |
| F3 | 2.0 A FUSE |
| F1-2 | 0.5 A FUSE |
| TR1 | TRANSFORMER (46 VA) R17 – 220 – 380 V / 24 V |
| SB3 | RESET BUTTON |
| HL3 | BLUE INDICATOR LIGHT (RESET) |
| SQ2 | LIMIT SWITCH |
| SQ1 | SAFETY SWITCH FOR BACK COVER |
| | MAGNETIC ACTUATOR |
| | SPACER |
| SB1-2 | STOP BUTTON |
| SB1-1 | START BUTTON |
| HL1 | PILOT LIGHT 24 VAC |
| SB2 | TRIGGER – START BUTTON |
| SA2 | MANUAL / SEMI-AUTOMATIC SELECTOR SWITCH |
| SB0 | EMERGENCY STOP BUTTON |
| SA1 | SPEED SWITCH |
| KS1 | SAFETY RELAY |
| QS1 | DISCONNECT SWITCH |
| KM2 | POWER CONTACTOR |
| KM1 | POWER CONTACTOR |
| HL2 | RED INDICATOR LIGHT (THERMAL RELAY) |
| FR1 | OVERLOAD THERMAL RELAY |
| FM1 | INTERNAL MOTOR THERMAL RELAY |


Disconnector Switch
Coolant Motor
Blade Motor
Transformer
Lamp Overload
Power Supply 24VCA
QS1
SA1
ZH-HC-5
OFF
HIGH
LOW
KM1
KM2
FR1
TR1
F1 0,5A
F2 0,5A
F3 2A
F4 1A
F5 1A
HRT
Red
M1 3~
M2 1~
32 W
BLADE MOTOR
COOLANT MOTOR
PE
0–2.0
3–2.0
Starrett IND. E COM. LTDA
All rights reserved, total or partial reproduction .
Drawn by: Sidney Victorino 22/07/2021
Approved by :
Technical Resp ..:
Title: ELECTRIC DIAGRAM OF BAND SAW MODELS : S3120; S3715 and S3720
Number.
Revision
Sheet - 1
Total - 4


Control Circuit
Safety Circuit
Optional
Without blade guard installation
With blade guard installation
SQ5 Safety Switch
Note 1 - Only for model s S3715 and S3720
3–1.9
44–1.9
46–1.9
KA1 2.3
KA2 2.5
KM1 2.6
KM2 2.6
SB0 Emergency Stop Button
SB1-1 Start Button
SB1-2 Stop Button
SB2 Trigger
SB3 Reset Button
SA2 Gravitational Manual
SQ1 Safety switch (handwheels)
SQ2 Safety switch (handwheels)
SQ3 Bow down Limit Switch
SQ4 Blade breakage (See note 1)
FM1 Internal Thermal in the motor
FR1 1.4
FS1 Safety relay
HR1 Azul
Drawn by: Sidney Victorino 22/07/2021
Approved by:
Technical Resp.
Title: ELECTRICALL DIAGRAM OF BAND SAW S3120 ; S3715 and S3720
Number
Revision
Sheet 2 Total - 4
Starrett IND. E COM. LTDA
All rights reserved, total or partial reproduction.

# *Legend* with the most used symbols in this project, based on the standard *IEC - 60617.*

| Symbol | Code | Description | Symbol | Code | Description | Symbol | Code | Description | Symbol | Code | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | FR | Overload Relay |  | K<br>KA | Auxiliar contact of the contactor, relay, button or circuit breaker |  | S | Pressure switch contact |  | SQ | Limit Switch contact mechanical action |
|  | FR | Contact (thermal drive) |  | KT | Time relay timed in the disconnection |  | S | Self reflective Optical sensor |  | SQ | Switch drive by foot |
|  | PE | Grounding protection |  | KT | NC Contact with timed opening |  | S | Inductive action sensor . |  | T | Transforme r |
|  | FU | Thermal-magnetic Tripolar Circuit Breaker |  | KT | Time relay timed in the bonded |  | S | Contact drive by magnetic actuator |  | U<br>KS<br>IN | Devices box Safety Relay, Inverter |
|  | HL | Indicator lampo for sinalization |  | KT | NO Contact with timed closing |  | SA | Button with restraint |  | U | Voltage converter CC Power Supply |
|  | K | Contact coil |  | M | 3 ph Motor with Grouding connection |  | SA | Control Switch with 3 position |  | X | Borne Connector |
|  | K | Contact of power of contactor |  | Q | Motor Circuit Breaker |  | SB | Push Button |  | XF | Fuse Borne |
|  | K | Reversible contact |  | QG | Disconnector Switch |  | SB | EMERGENCY Button punch type, turn to unlock and with NC contact of positive break |  | Y | Solenoid Valve |

| | | | | | |
|---|---|---|---|---|---|
| Starrett® *IND. E COM. LTDA* | Drawn by : | Approved by : | Technical Resp. : | *Title:* ELECTRIC DIAGRAM OF BAND SAW MACHINES MODELS: *S3120; S3715* and *S3720* | *Number.* / *Revision* / Sheet - 3 / *Total* - 3 |
| All rights reserved, total or partial reproduction . | *22/07/2021* | | | | |

CE

## 13.2. Machine Safety Systems:

- Thermal Relay – FR1 (45) (thermal protection): Protects the Blade Motor (25) from overload.
- **EMERGENCY** Button – SB1 (03): Located on the Control Panel (06), it is used in case of non-standard/emergency stops. This safety function is monitored by the Safety Relay – KS1 (28).
- Back Cover (18): Acts as a mobile guard for the inside of the Bow (04). When removed, it triggers the Safety Switch – SQ1 (29), disabling the machine's electrical system. This safety function is also monitored by the Safety Relay – KS1 (28).
- RESET Button – SB3 (30) (BLUE): Located on the Control Panel (06), its function is to prevent unintended startup of the machine.
- Safety Relay – KS1 (28): Installed inside the Electrical Board (47), it monitors all present safety devices.
- PILOT Indicator Light – HL1 (43): Located on the Control Panel (06), this light indicates that the control circuits are energized with extra-low voltage (24 VAC), and the machine is ready to operate.
- Mobile Guide Protection (62): Fixed to the Mobile Guide Support (37) (figures 6.5 and 6.6). This protection can only be removed using a tool.
- Fixed Guide Protection (88): Located and fixed on the Fixed Guide Support (87) (figure 10.3) and can also only be removed using a tool.

## 13.3. Measuring Rod System:

The **S3120NG** is equipped with a standard Measuring Rod system, consisting of a 500 mm Measuring Rod (79) and a Stopper (80) (figure 13.2).

The Measuring Rod (79) is installed on the right side of the Cutting Table (07) and can be safely used in any operating mode.

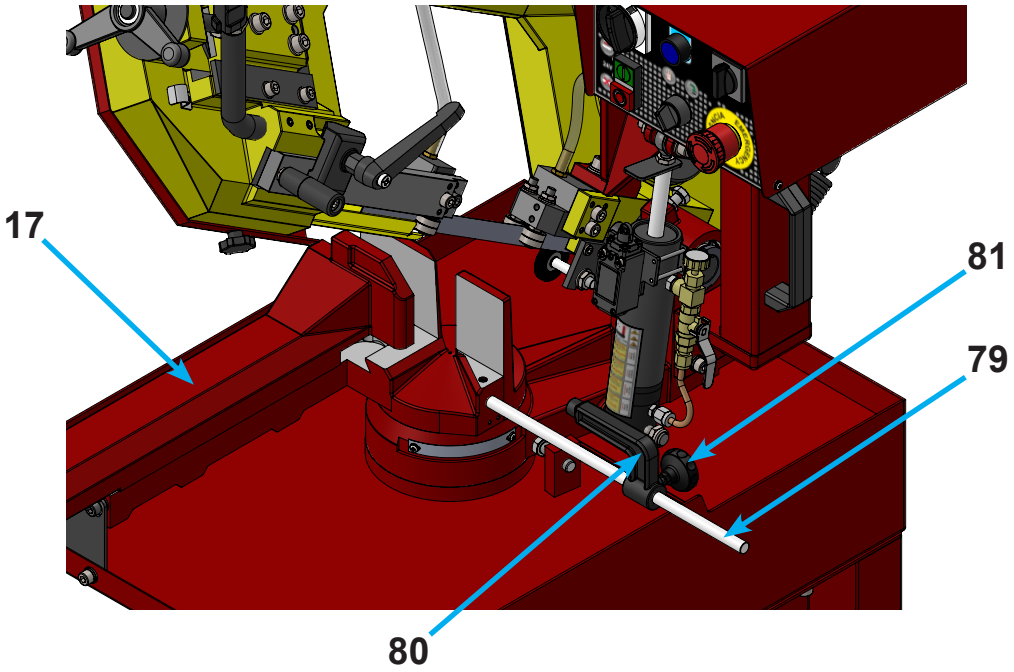



**FIGURE 13.2 - MEASURING ROD SYSTEM**

## 13.4 Gear Motor:

The ***S3120NG*** was designed to operate with two cutting speeds to cut different types of materials. Speed selection is performed electrically using the 3-position Speed Switch (40) (speeds “1”, “2”, and “O” – off), which controls a set composed of the Reducer (15) and the Motor (25) (figure 13.3).

### 13.4.1. Operating Principle:

The Reducer (15) is of the worm type, with permanent lubrication. Coupled to it is a dual-speed, three-phase DAHLANDER-type motor with 4 and 8 poles. The operating voltage must be selected by the user: 220–230 V or 380–400 V, at frequencies of 50 or 60 Hz.

In cases of prolonged operation in hot environments, the worm-type Reducer (15), due to its characteristics, can operate at temperatures between 60 and 80 °C. Within this temperature range, neither its performance nor that of the Motor (25) is compromised.

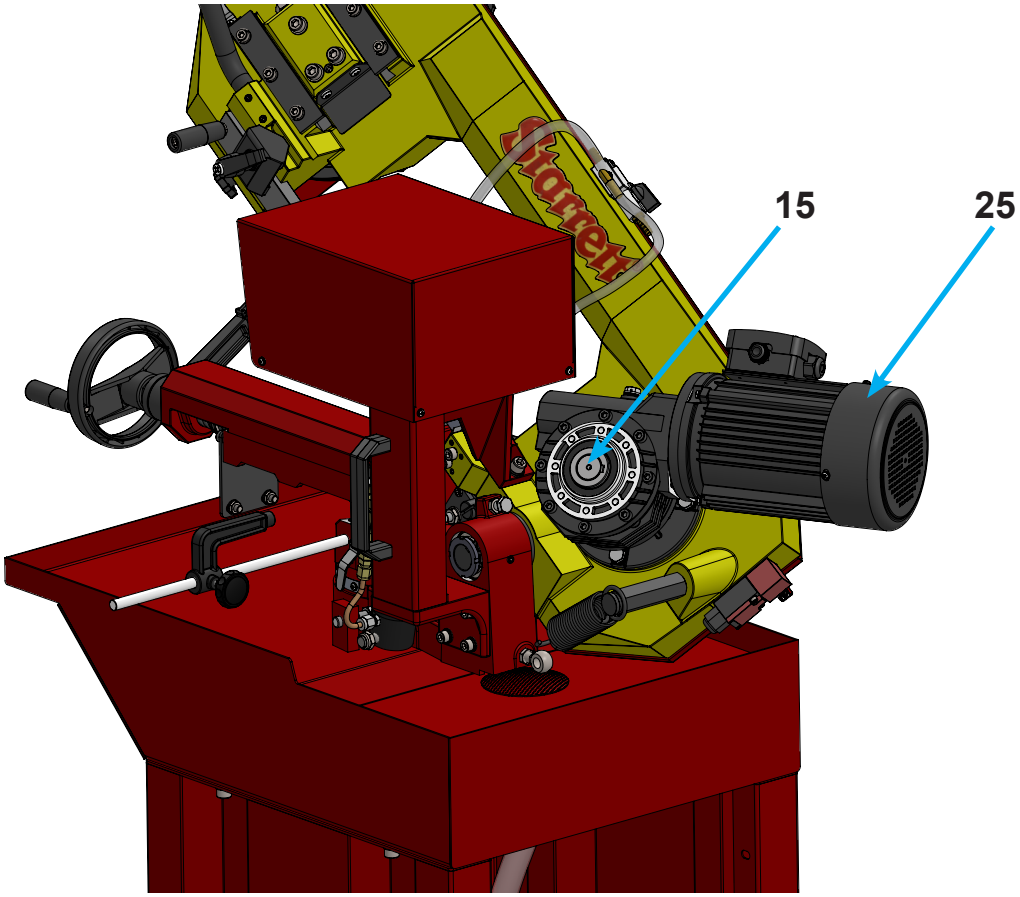



FIGURE 13.3 - GEAR MOTOR SYSTEM

# 14. GENERAL MAINTENANCE:

## 14.1. Specific Safety Recommendations::

**ATTENTION!**

**RISK OF ELECTRIC SHOCK AND ACCIDENTS RESULTING IN SERIOUS INJURY!**

- Any maintenance intervention on the Starrett Bandsaw machine must be carried out by QUALIFIED, TRAINED, and AUTHORIZED professionals from the owning company.
- USE Personal Protective Equipment (PPE) during all phases of maintenance. CAREFULLY READ the Maintenance instructions contained in this Instruction Manual.

- PLAN all maintenance, lubrication, and periodic inspection operations in advance. PREPARE all necessary tools and materials for this operation.
- KEEP electrical diagrams on hand for any consultations during maintenance, lubrication, and inspection of the machine.

- ENSURE that the Main Switch (02) is in the **OFF** position to avoid the risk of electric shock. In case of need, LOCK the Main Switch (02) with a padlock or locking device (figure 14.1), when there are accident risks.

- USE the Maintenance Warning Tag (figure 14.2) (TAGOUT) positioned and/or fixed on the Main Switch (02) and in areas where maintenance is taking place on the machine (LOTO procedure).
- DO NOT CLIMB on the machine under any circumstances. USE recommended and authorized means of access for working at heights.

- ISOLATE the area around the machine being maintained with warning signs and barriers and PROVIDE proper lifting and transport devices.

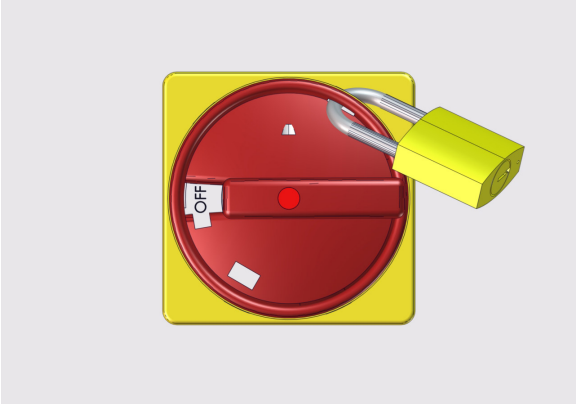



FIGURE 14.1 - LOCKING THE MAIN SWITCH WITH A PADLOCK

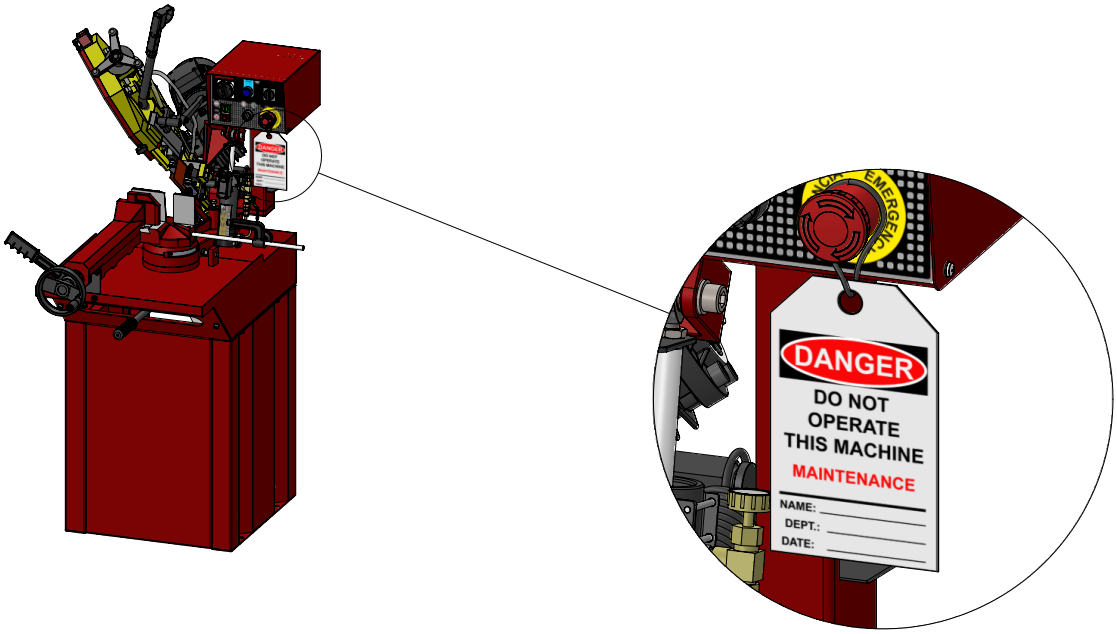



FIGURE 14.2 - MAINTENANCE WARNING LABEL (LOTO SYSTEM)

This section aims to describe the main systems that make up this machine, as well as the key corrective and preventive maintenance procedures. Keeping periodic inspections up to date ensures the machine consistently delivers good overall performance.

## 14.2. Cleaning:

It is very important to:

- CLEAN and remove the chips from the Flywheels (13)(14) and the Guides (31) (32) daily.
- PERIODICALLY CLEAN (at least once a week) the Reservoir (49). TOP UP or REPLACE, if necessary, the cutting fluid mixture in the Reservoir (49) and MAINTAIN the level.
- REMOVE chips from the Vise (17) and the Cabinet (01) at certain intervals throughout the day.
- PERIODICALLY CLEAN and PROPERLY INSPECT the wiring of the entire electrical system (“wiring harnesses”).

**ATTENTION!**

**RISK OF EYE INJURY!**

If the user uses compressed air or equivalent systems for cleaning, they must WEAR SAFETY GLASSES to avoid unnecessary accidents.

## 14.3. Corrective Maintenance:

### 14.3.1. Adjustment of the Guide Set:

The Guide Set should be adjusted periodically to ensure the best cutting performance.

**a) DAILY CLEANING:**

1. CLEAN these 2 assemblies daily with the cutting fluid (water + cutting oil), with the Bow (04) in the lower position, and without any material to be cut on the Cutting Table (07).

2. KEEP the machine running for 5 minutes with the Bow (04) in the lower position, after all cutting operations, to allow the cutting fluid to clean the Guides (31)(32).
3. WASH the interior of the Guide sets (31)(32) thoroughly with the cutting fluid, allowing it to drain with the Tap (57) fully open.

Another way to clean these assemblies daily is to WASH them under pressure with ***Starrett*** Micro Oil M1.

**b) MONTHLY CLEANING:**

1. REMOVE the Band Saw Blade (10).
2. POSITION the Bow (04) in the lower position.
3. WASH the Bearings (33) (34) under pressure with ***Starrett*** Micro Oil M1.
4. REMOVE all types of dirt from these Guide sets (31)(32) with the help of a clean brush.

**c) ADJUSTMENT OF THE SIDE BEARINGS (33):** (figures 14.3 and 14.4)

**PROCEDURE:**

1. POSITION the Bow (04) in the upper position.
2. CLOSE Valves (12) and (22) (figure 11.1).
3. RELIEVE the tension on the Band Saw Blade (10) (SEE Subsection 10.5).
4. CLEAN the Guides (31)(32) under pressure with ***Starrett*** Micro Oil M1 in abundance to remove all dirt.
5. LOOSEN the Fixation Nut (85) of the Eccentric Shaft (36) (figure 14.4).
6. TURN the Adjustment Nut with the help of an Open-End Wrench, ALWAYS clockwise as shown in figure 14.3. The Side Bearings (33) should make full contact with the side of the Band Saw Blade (10). The gap between the Side Bearings (33) should be between 0.90 and 0.95 mm.
7. TIGHTEN the Nut (85) otherwise, it may loosen, leaving the Side Bearing (33) free, which could cause future problems.

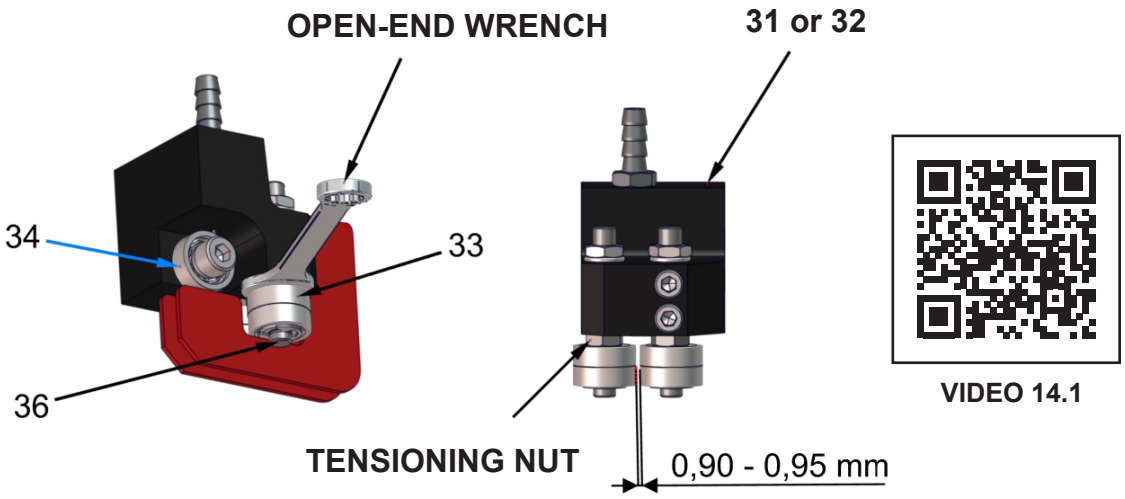



FIGURE 14.3 – ADJUSTMENT OF THE SIDE BEARINGS

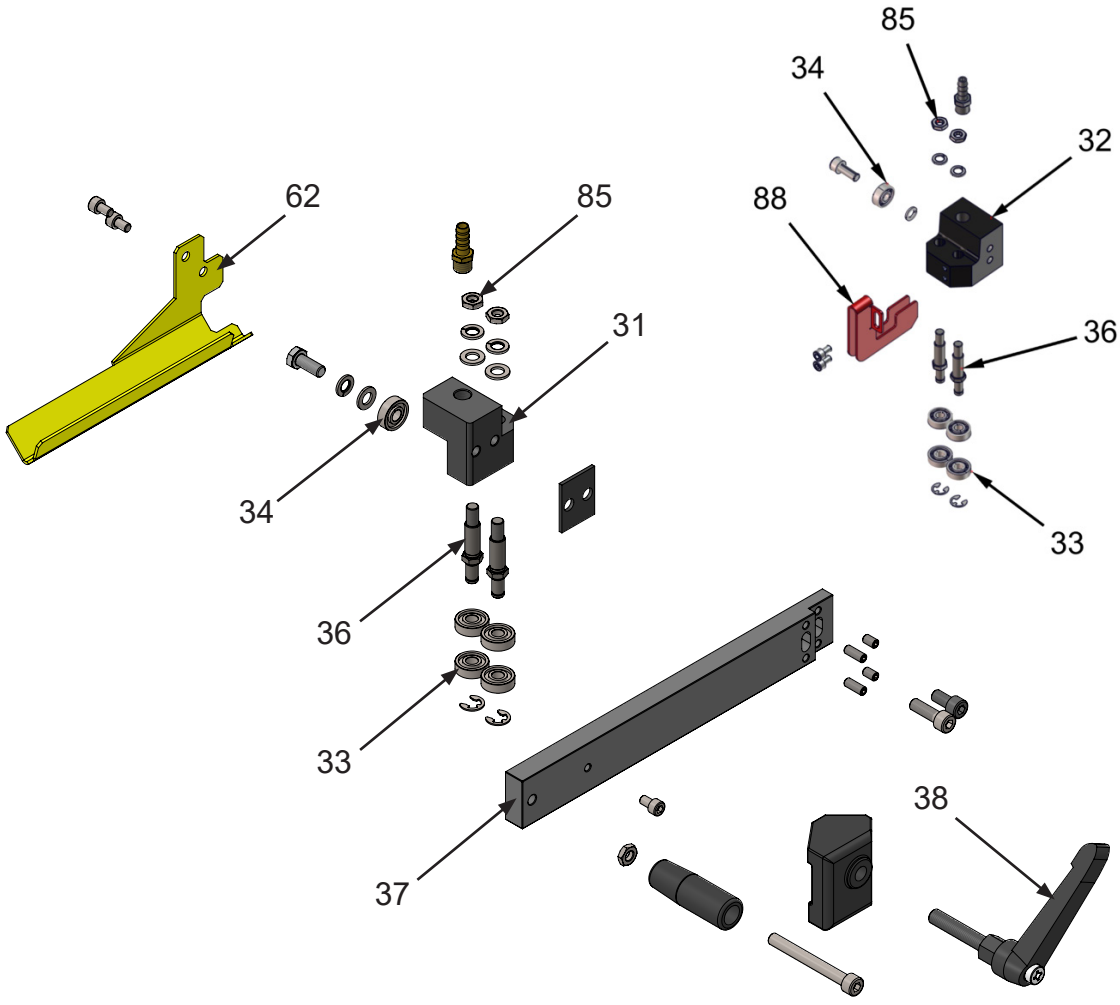



FIGURE 14.4 – ADJUSTMENT OF THE SIDE BEARINGS

The pressure of the Side Bearings (33) against the Band Saw Blade (10) **must not be excessive**, as it can cause premature wear of the Side Bearings (33). Likewise, these Bearings (33) **must not be too far** from the sides of the Band Saw Blade (10), as this can cause cutting deviations

**d.) ADJUSTMENT OF THE BACK BEARING (34):**

DAILY CHECK the position of the Back Bearing (34) (Figure 14.4) in relation to the back of the Band Saw Blade (10). The clearance should be between 0.5 and 1.0 mm.

If the distance between the Band Saw Blade (10) and the Back Bearing (34) is outside these limits, FOLLOW the procedure below.

**PROCEDURE:**

1. LOOSEN the Screws (86) on the Guides (31)(32) (figures 14.5 and 14.6).
2. MOVE the Guides (31) or (32) up or down, as installed on the Guide Supports (37) and (87), respectively.
3. CHECK the height of the Protection (88) on the Fixed Guide (32) in relation to the teeth of the Band Saw Blade (10). The protection must cover (hide) the teeth by at least 2 mm, so they are not exposed. SEE figure 14.4.
4. CHECK if the Mobile Guide Protection (62) (SEE figure 14.4) is not touching the teeth of the Band Saw Blade (10). If it is, ADJUST the position of Protection (62), move it away from the teeth of the Band Saw Blade (10) to avoid damaging it.

### 14.3.2. Idle Flywheel Camber Adjustment (13):

The service life of a Band Saw Blade (10) depends on its adjustment with the Idle Flywheel (13) and the Drive Flywheel (14).

When rotating over the Idle Flywheel (13) and the Drive Flywheel (14), the Band Saw Blade (10) should make light contact with the ledges (raised edges) of these flywheels (figure 14.8).

By ADJUSTING the camber of the Idle Flywheel (13), it is possible to reduce the pressure of the Band Saw Blade (10) against the LEDGE.

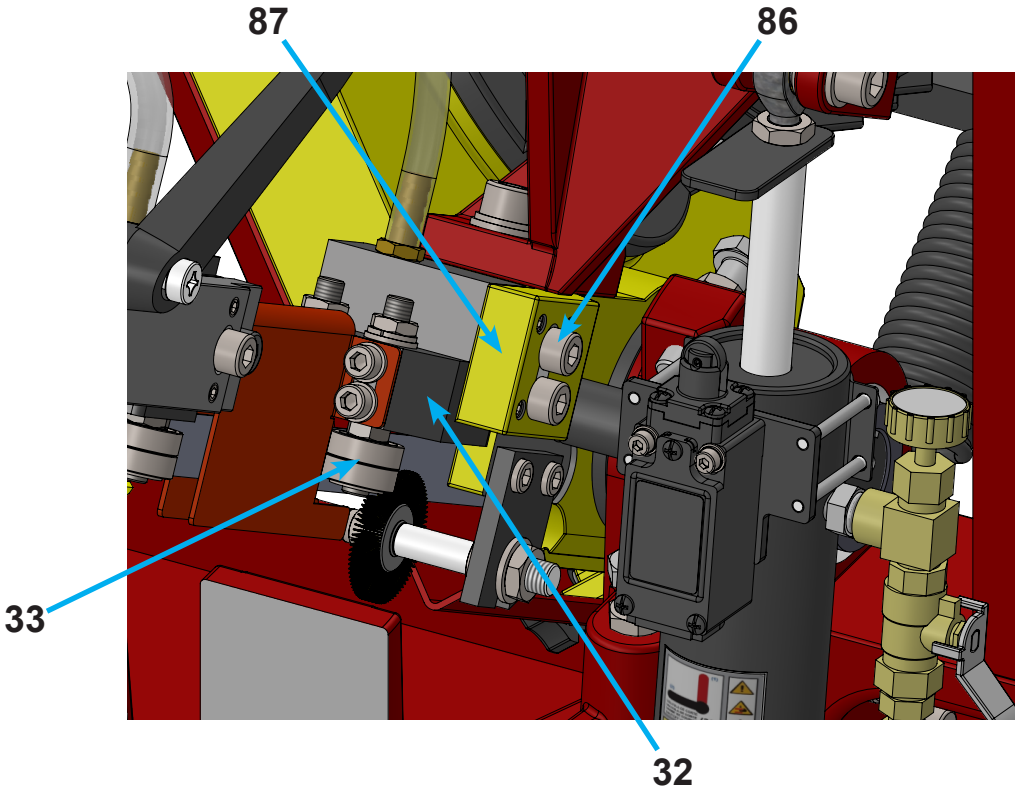



FIGURE 14.5 – BACK BEARING ADJUSTMENT – FIXED GUIDE

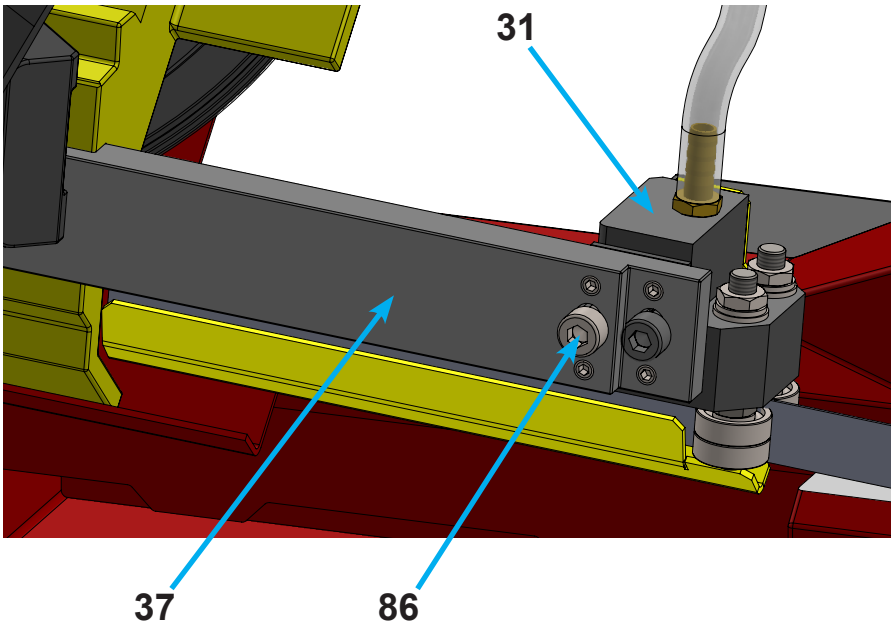



FIGURE 14.6 – BACK BEARING ADJUSTMENT – MOBILE GUIDE

**PROCEDURE:**

1. POSITION the Bow (04) at the maximum upper position.
2. CLOSE Valves (12) and (22).
3. CHECK that the Main Switch (02) is in the **OFF** position and the **EMERGENCY** Button (03) is pressed.

**VIDEO 14.2**

4. LOOSEN (relieve the tension of) Screws **A**, **B**, and **C** without removing them from the Tensioner System (Carriage) (16), using a hex Allen wrench (figure 14.7).
5. TURN Screw D to adjust the camber of the Idle Flywheel (13) as follows:
   - Turning clockwise brings the back of the Band Saw Blade (10) closer to the LEDGE.
   - Turning counterclockwise moves the back of the Band Saw Blade (10) away from the LEDGE.
6. The turning movement of Screw **D** should be small—about 1/4 to 1/3 of a turn per adjustment—until the ideal condition is reached, that is, the back of the Band Saw Blade (10) should be 0.2 to 0.5 mm away from the ledge of the Flywheels (13)(14). Measure this clearance with a feeler gauge. See also Video 14.2.
7. TIGHTEN Screws **A**, **B**, and **C** again.
8. SET the Speed Switch (40) to speed 1 and the Selector Switch (23) to MANUAL mode.
9. TURN ON the machine by switching the Main Switch (02) to **ON**.
10. RELEASE the **EMERGENCY** Button (03).
11. CHECK if the tension of the Band Saw Blade (10) is correct.
12. PRESS the Trigger (11) with light taps to rotate the Blade Motor (25).
13. REMOVE the Back Cover (18) from the Bow (04).
14. CHECK the position of the back of the Band Saw Blade (10) in relation to the ledges of the Flywheels (13)(14). As a reference, the back of the Band Saw Blade (10) should be 0.2 to 0.5 mm away from the ledges of the Flywheels (13)(14).

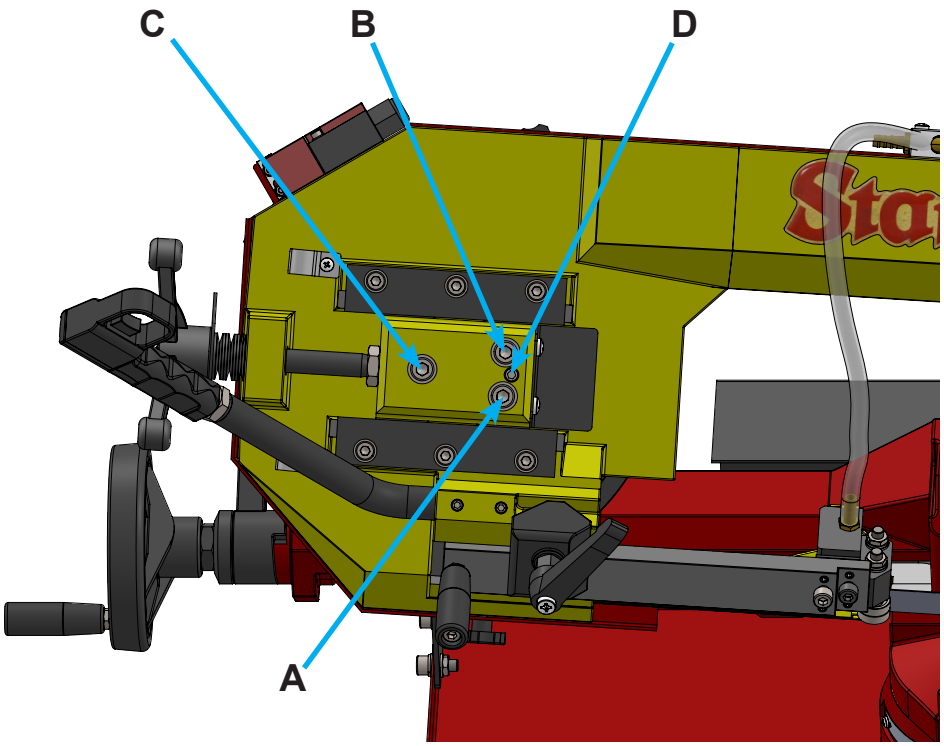



FIGURE 14.7 – POSITIONING OF CAMBER ADJUSTMENT SCREWS

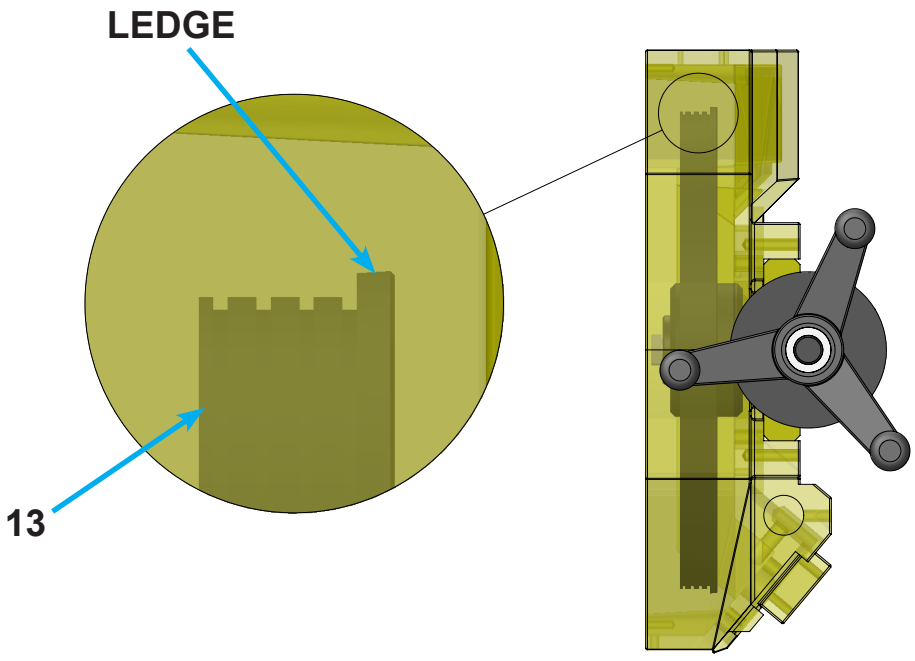



FIGURE 14.8 – FLYWHEEL LEDGE

15. REINSTALL the Back Cover (18). If the measurements are still outside the limits (item 14), REPEAT the procedure from steps 1 to 13.
16. INSTALL the Back Cover (18) permanently if the measurement is within parameters from item 14.
17. ENABLE the machine electrically and MAKE IT AVAILABLE for use.
18. PERFORM this procedure MONTHLY or when there is a problem such as a Band Saw Blade (10) breakage or wear on the Flywheel (13)(14) ledges.

### 14.3.3. Removal of the Hydraulic Cylinder (08) from the Bow:

For the replacement or repair of the Hydraulic Cylinder (08), certain safety measures are required to avoid any risk to the user during its removal.

**VIDEO 14.3**

**PROCEDURE:**

1. CHECK if the Main Switch (02) is in the **OFF** position and the **EMERGENCY** Button (03) is pressed.
2. POSITION the Bow (04) in the lower position.
3. RETRACT the Hydraulic Cylinder (08) rod completely.
4. REMOVE the Cylinder (08) by loosening its respective mounting screws.
5. REPLACE the Cylinder (08) with a new one, if necessary.
6. NEVER attempt to operate the machine without the Hydraulic Cylinder (08) properly installed, as this may pose risks and cause damage to both the operator and the equipment.
7. TURN ON the machine by setting the Main Switch (02) to the **ON** position.
8. UNLOCK the **EMERGENCY** Button (03).
9. TEST the machine and CHECK if the performance is adequate.

### 14.3.4. Removal of the Spring Set (09):

For the replacement and repair of the Spring Set (09), certain safety measures are required to avoid any risk to the user during its removal.

**PROCEDURE:**

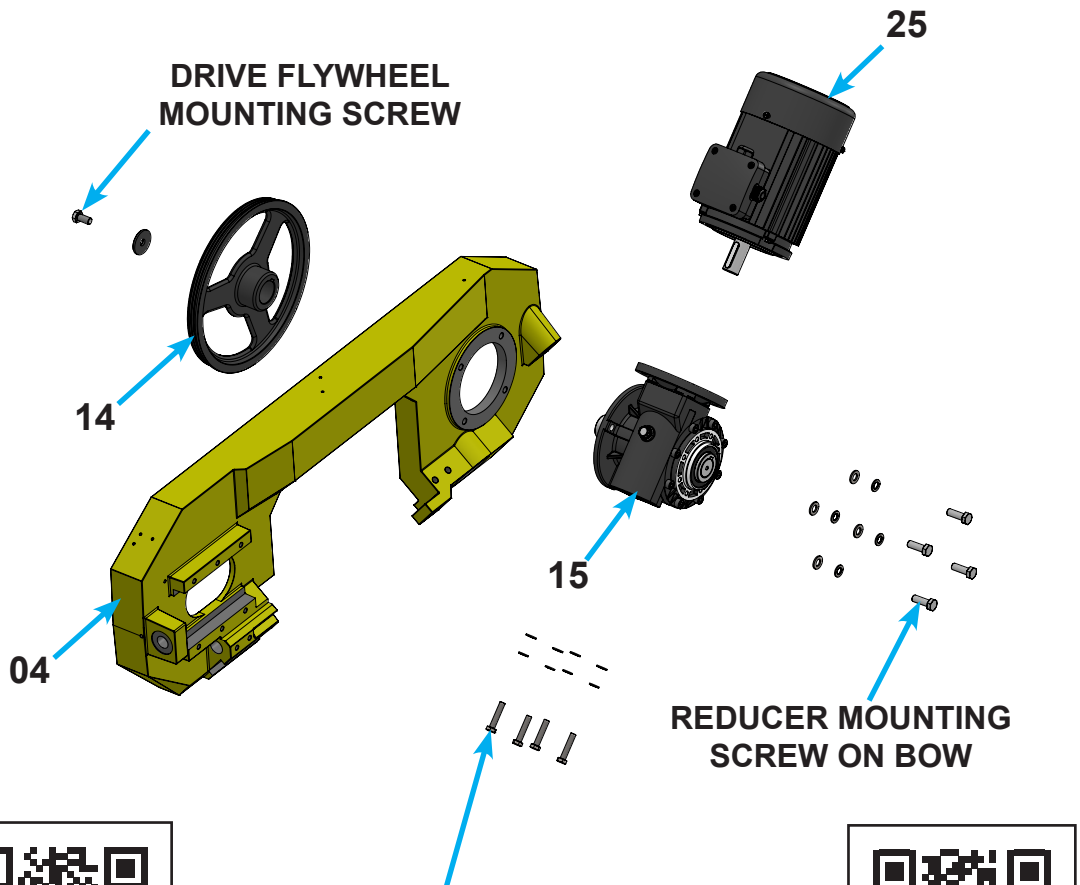
1. CHECK if the Main Switch (02) is in the **OFF** position and the **EMERGENCY** Button (03) is pressed.
2. POSITION the Bow (04) to its maximum upper position.
3. CLOSE Valves (12) and (22) (figure 11.1).
4. PLACE a wooden block to **support** the Fixed Guide Support (87) on the Cutting Table (07), to keep the Bow (04) in this maximum upper position safely.
5. ENSURE that the Bow (04) and the wooden block are secure and stable in this position.
6. DISASSEMBLE the Spring Set (09) and REPLACE the necessary part(s).
7. REASSEMBLE the Spring Set (09).
8. ENSURE the assembly is correct.
9. REMOVE the wooden block from under the Fixed Guide Support (87).
10. TENSION the Spring Set (09) back to the initial conditions.
11. OPEN the Valves (12) and (22).
12. TURN ON the machine by setting the Main Switch (02) to the **ON** position.
13. UNLOCK the **EMERGENCY** Button (03).
14. TEST the machine and CHECK if the performance is adequate.

### 14.3.5. Repairs and Replacement of the Gear Motor:

For the assembly and disassembly of the Gear Motor, the following instructions must be followed (figure 14.9).

**PROCEDURE:**

1. POSITION the Bow (04) in the lower position.
2. DISCONNECT the power cable from the Motor (25).




VIDEO 14.4

VIDEO 14.5

**FIGURE 14.9 - GEAR MOTOR SET**

3. LOCK the Main Switch (02) with a Padlock (figure 14.1).
4. LABEL it with a Maintenance Warning Tag, as shown in figure 14.2.
5. WRITE DOWN the wiring diagram on paper to avoid reassembly errors later.
6. LOOSEN the screws securing the Motor (25) to the Reducer (15).
7. REMOVE the Drive Flywheel (14) by removing the central screw from the inside of the Bow (04).
8. LOOSEN the screws securing the Reducer (15).
9. REMOVE the Reducer (15) from the Bow (04) carefully.
10. PERFORM the necessary maintenance.
11. DRAIN the oil from the gearbox.
12. DO NOT DISPOSE the Reducer (15) oil in the environment.
13. PERFORM the necessary maintenance on the Reducer (15).
14. REASSEMBLE the Reducer (15), reversing the disassembly steps.
15. INSTALL the Drive Flywheel (14) onto the shaft end of the Reducer (15).
16. ENSURE the screw securing the Drive Flywheel (14) is tight.
17. INSTALL the Motor (25) onto the Reducer (15), making sure all mounting screws are tightened.
18. RECONNECT the original electrical wiring.
19. TURN the Motor (25) in both directions approximately 20 times using the fan, to avoid excessive strain on the shafts.
20. TURN ON the machine by setting the Main Switch (02) to **ON**.
21. RELEASE the **EMERGENCY** Button (03).
22. CHECK if the Gearmotor Set [(15) + (25)] is operating with any unusual noise. If so, CONTACT **Starrett** Technical Support.

## 14.4. Preventive Maintenance:

| POS | DESCRIPTION | FREQUENCY | ACTION |
|---|---|---|---|
| 07 & 17 | Cleaning of the Cutting Table, Vise, and other machine surfaces | Daily | CLEAN |
| 10 | Band Saw Blade | | REPLACE, if necessary |
| 31 & 32 | Cleaning of the Guides: Back and Side Bearings | | CLEAN with Micro Oil M1, Coolant, and/or compressed air |
| 49 | Check the coolant level in the Reservoir | | REFILL |
| 51, 55 & 63 | Check blade tension | | ADJUST |
| 13, 14 & 18 | Cleaning of the Back Cover and Flywheels | Daily/Weekly | CLEAN and LUBRICATE the flywheel shafts by injecting grease into the grease fittings |
| 33 & 34 | Check for bearing wear (clearance) | Monthly | MEASURE with a feeler gauge |
| 51, 55 & 63 | Tensioner System | | REPLACE, if necessary |
| 15 | Gear box inspection | Semiannual | REPAIR, if necessary |

**ATTENTION! RISK OF ACCIDENTS!**

All periodic and corrective maintenance must be carried out by **QUALIFIED** AND **TRAINED** professionals for this purpose.

The owner of machine must check all safety laws and standards of each country.

## 14.5. Problems – Causes and Solutions:

| PROBLEM | CAUSES AND SOLUTIONS |
|---|---|
| WHITE PILOT Light (43) is off | • CHECK if the Main Switch (02) is in the **OFF** position. |
| Band Saw Blade (10) does not rotate | • CHECK if the Safety Switch (29) of the Back Cover (18) is disabling the electrical system. PROPERLY INSERT the actuator key of the Back Cover (18) into the Safety Switch (29).<br>• CHECK if the Speed Switch (40) is in position 1 or 2.<br>• CHECK if the **EMERGENCY** Button (03) is pressed or defective.<br>• CHECK if the WHITE PILOT Light (43) is off. |
| Bow (04) is hard to rotate between 0° and 60° | • CHECK the lubrication of the Rotating Support. REPLACE the cutting oil, as it may be dissolving or removing the lubrication from the Rotating Support and moving parts.<br>• CHECK for excessive chips and/or dirt on the machine. REMOVE chips and/or dirt. |
| Band Saw Blade (10) will not tension | • CHECK the length of the Band Saw Blade (10). It should be 2,110 ± 2 mm. |
| Band Saw Blade (10) slips off the flywheel | • CHECK the tension of the Band Saw Blade (10). TENSION according to Subsection 10.1, item 3.<br>• CHECK the clearance of the Flywheel's bearings (13) and (14). ADJUST and ALIGN the Flywheels (13) and (14) and/or REPLACE the respective bearings.<br>• CHECK the taper of the Idler Flywheel (13) (it should be 0.5°). REMOVE and SEND it for service. CONTACT **Starrett** Technical Support before performing any machining service. |

continuation:

| PROBLEM | CAUSES AND SOLUTIONS |
|---|---|
| The coolant does not reach the Band Saw Blade (10). | • CHECK if there is coolant in the Reservoir (49). DISPOSE of the old coolant (SEE Subsection 10.1), CLEAN the interior of the Reservoir (49), and REFILL with new coolant.<br>• CHECK if the Tap (57) is closed or open. OPEN the Tap (57) if it is closed.<br>• CHECK if coolant is circulating through the hoses of the Coolant Pump (24) and the Tap (57). UNCLOG or REPLACE the hoses if they are blocked. |
| Band Saw Blade (10) teeth breakage | • CHECK if the pressure of the teeth is excessive on the material being cut. REDUCE the feed speed by adjusting the Regulating Valve (22).<br>• CHECK if the teeth of the Band Saw Blade (10) are correctly configured. CONSULT Section 9 and/or Starrett Technical Assistance if necessary.<br>• CHECK the condition of the Side Bearings (33). CHECK if they are broken or not. REPLACE the Bearings (33) and ADJUST as per Subsection 14.3.1, item c.<br>• CHECK if the cutting speed is too low compared to the recommended value. INCREASE the speed using the Speed Switch (40). |
| Early wear of the teeth of the Band Saw Blade (10) | • CHECK if the Band Saw Blade (10) is suitable for the material to be cut. REPLACE it with a recommended Band Saw Blade (10) according to the ***Starrett*** specifications. CONSULT **Starrett** Technical Support if necessary.<br>• CHECK if the cutting speed is too high compared to the recommended. REDUCE the speed using the Speed Switch (40). |

continuation:

| PROBLEM | CAUSES AND SOLUTIONS |
|---|---|
| Band Saw Blade (10) breakage at the weld | • CHECK if the feeding speed is lower than recommended. Increase the feeding speed by adjusting the Regulating Valve (22).<br>• CHECK if the weld of the Bandsaw Blade (10) is defective. Replace the Band Saw Blade (10) with a new one. |
| Breakage of the Band Saw Blade (10) outside the weld | • CHECK if this problem occurs after a few hours of use. Perform maintenance on the machine and adjust the Guides (31)(32) as per Subsection 14.3.1.<br>• CHECK if this problem occurs after many hours of use. It may be due to natural wear and fatigue of the Band Saw Blade (10) material. |
| Corte torto | • CHECK the condition of the Bearings (33) in the Guides (31)(32). ADJUST or REPLACE the Bearings (33).<br>• CHECK the adjustment of the Side Bearings (33) (clearance should be 0.95 mm). ADJUST as per Subsection 14.3.1, item c.<br>• CHECK the position of the Mobile Guide Support (37), ensuring it is not too far from the material to be cut. POSITION the Mobile Guide Support (37) as close to the material as possible.<br>• CHECK if the material to be cut is not excessively irregular, which could cause crooked cuts. REDUCE the feed speed and USE new or well-maintained Band Saw Blades (10).<br>• CHECK if the cutting speed and cooling are appropriate for the type of material being cut. CHECK the hardness of the material. SELECT the Band Saw Blade (10), cutting speed, feeding speed, and coolant according to the material type. CONSULT **Starrett** Technical Support if necessary. |

continuation:

| PROBLEM | CAUSES AND SOLUTIONS |
|---|---|
| Crooked cut (continuation) | • CHECK the tension of the Band Saw Blade (10) (it should be 20,000 PSI). SEE Subsection 14.3.1, item 3. ADJUST the tension of the Band Saw Blade (10).<br>• CHECK if the support rollers are misaligned with the surface of the Cutting Table (07). ADJUST the support rollers.<br>• CHECK the feed speed of the Saw Bow (04). REDUCE the feed speed by adjusting the Regulating Valve (22). |

# 15. DISASSEMBLY AND DEACTIVATION:

## 15.1. Specific Safety Recommendations:

**ATTENTION!**

**RISK OF ACCIDENTS RESULTING IN SERIOUS INJURY!**

- All disassembly and deactivation procedures for the Starrett Band Saw machine must be carried out by specialized companies or by professionals who are QUALIFIED, TRAINED, and AUTHORIZED by the owning company.
- Before performing any disassembly or deactivation activities on the machine, it is essential to **CAREFULLY READ** this Instruction Manual to understand the specific safety instructions for this type of operation.
- USE Personal Protective Equipment (PPE) for all dismantling and deactivation activities. **CAREFULLY READ** the dismantling and deactivation instructions contained in this Instruction Manual.

- PLAN the dismantling and deactivation operation of the ***Starrett*** machine in coordination with the company's Occupational Health and Safety Service personnel.
- ENSURE that the machine is completely DISCONNECTED from the user's electrical power supply.

## 15.2. Disassembly and Deactivation of the Machine:

### 15.2.1. Disassembly:

If it becomes necessary to dismantle the machine for any reason, certain precautions must be taken:

1. REMOVING and DISASSEMBLY the machine must be carried out by personnel who are properly QUALIFIED and AUTHORIZED for this purpose, and who possess the necessary experience and competence for the task.
2. DISCONNECT the machine completely and correctly from the user's electrical network, in a safe manner, ensuring that the machine is fully powered off.
3. THOROUGHLY CLEAN the machine by removing the cutting fluid (oil + water) from the coolant system located in Reservoir (49). DRAIN all fluid while avoiding disposal into the environment.
4. REMOVE any metal chips from Reservoir (49) and from the Cabinet (01).
5. COAT all parts subject to oxidation and prolonged exposure to the elements with oil, to protect them.
6. For the movement phase of the machine and/or its parts, FOLLOW the instructions provided in Section 7 – TRANSPORT AND STORAGE.
7. When dismantling the machine or any of its parts, FOLLOW a sequence that will allow correct reassembly later. For that purpose, MAKE NOTES in this manual of all operations performed.
8. STORE the machine parts in accordance with the instructions in Section 7 – TRANSPORT AND STORAGE.
9. In case it is necessary to DISPOSE of any machine parts, FOLLOW applicable regulations for proper disposal based on the type of material being discarded.

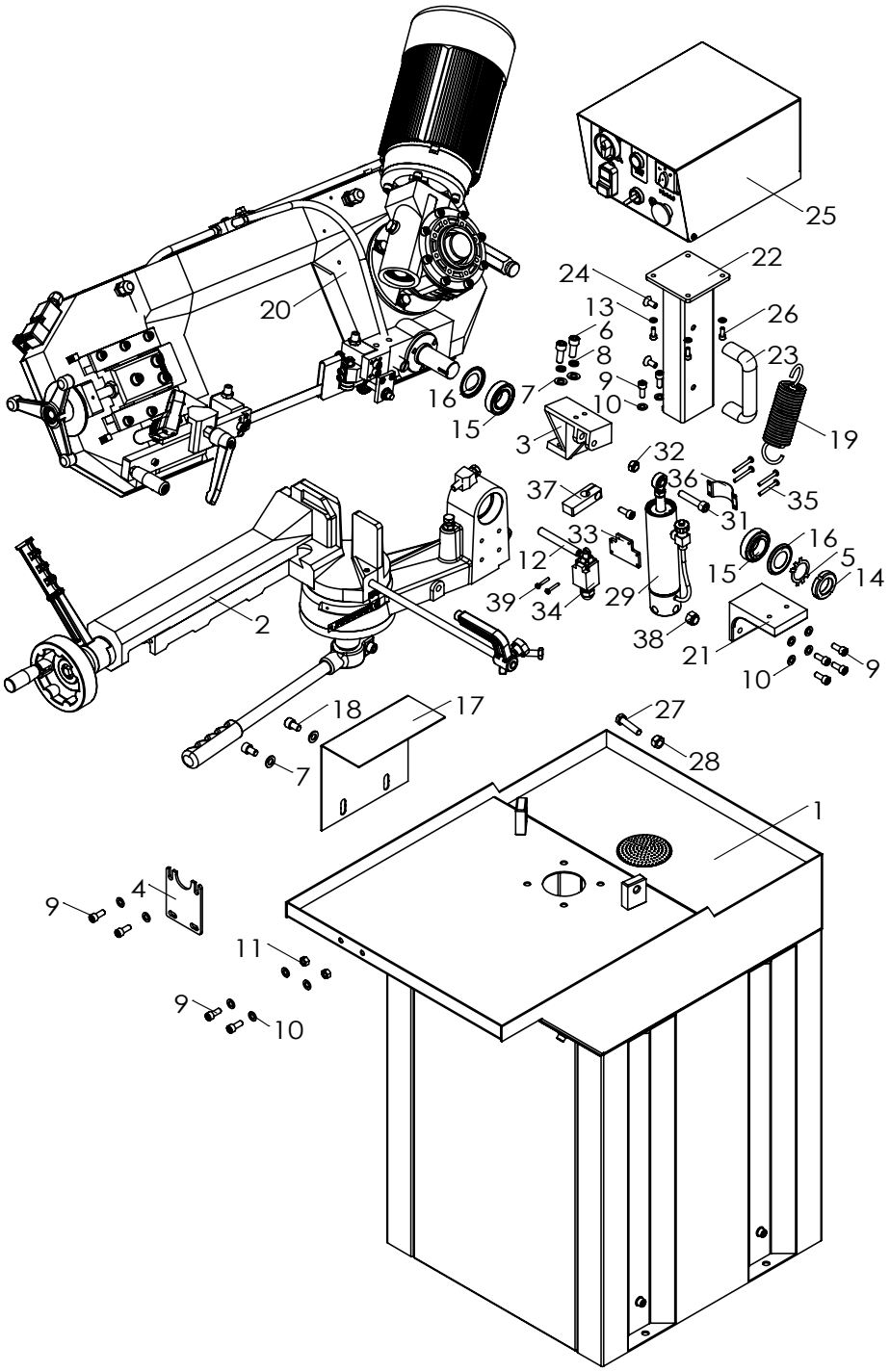
### 15.2.2. Deactivation:

If the machine needs to be deactivated for any reason, certain precautions must be taken:

1. REMOVING and DISMANTLING the machine must be carried out by personnel who are properly QUALIFIED and AUTHORIZED for this purpose, and who have the necessary experience and competence for the task.
2. DISCONNECT the machine completely and correctly from the user's electrical network, in a safe manner, ensuring that the machine is fully powered off.
3. THOROUGHLY CLEAN the machine by removing the cutting fluid (oil + water) from the coolant system located in Reservoir (49). DRAIN all the fluid, avoiding disposal into the environment.
4. REMOVE any metal chips from Reservoir (49) and from the Cabinet (01).
5. COAT all parts subject to oxidation and prolonged exposure to the elements with oil, to protect them.
6. STORE the machine in accordance with the instructions provided in Section 7 – TRANSPORT AND STORAGE.

# 16. SPARE PARTS:

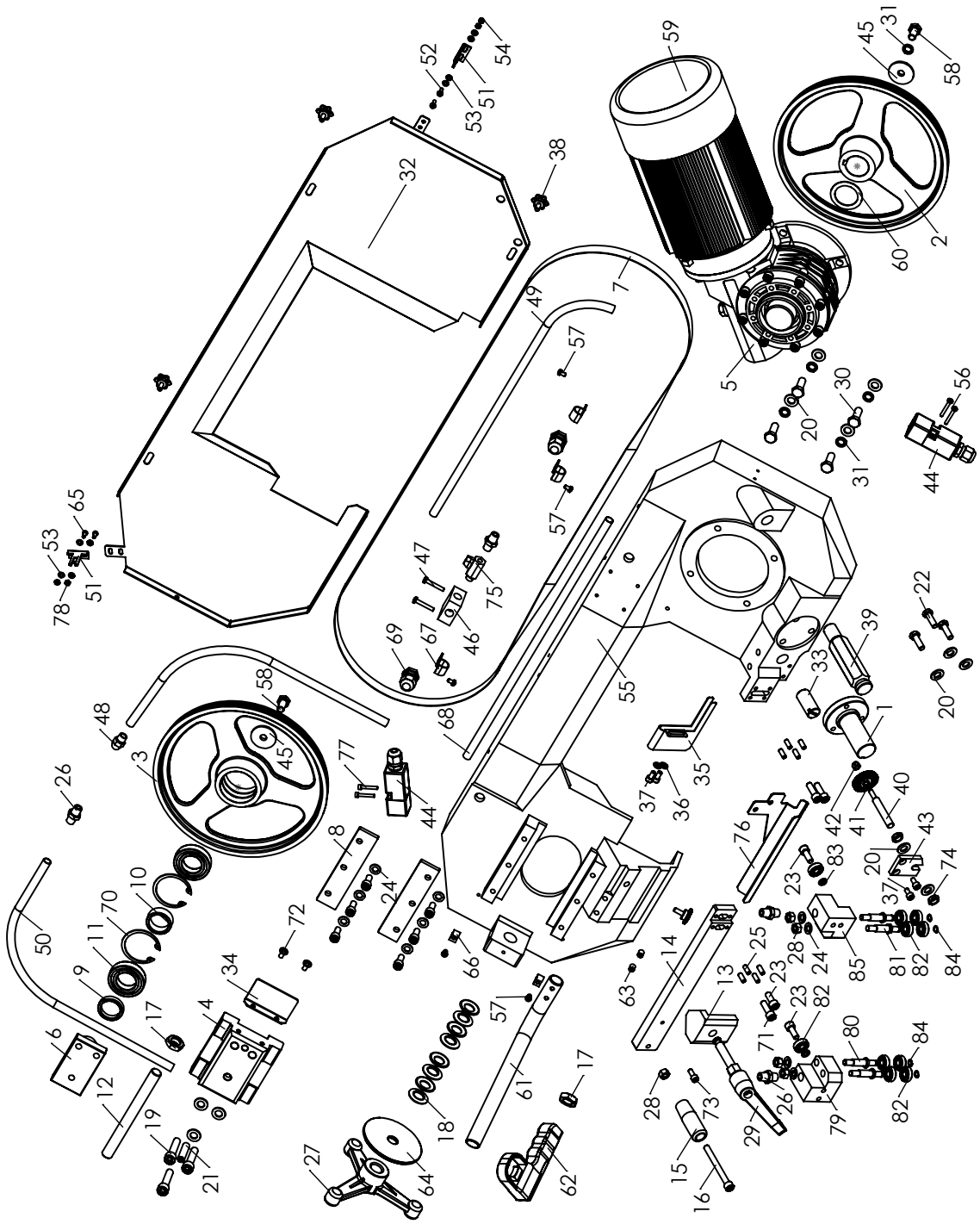
## 16.1. Cabinet and Bow Sets, Control Panel, Hydraulic Cylinder:



## Table of Items for the Cabinet and Bow Sets, Control Panel, Hydraulic Cylinder:

| POS. | DESCRIPTION |
|---|---|
| 1 | CABINET SET |
| 2 | VISE SET |
| 3 | LOWER BASE FOR HYDRAULIC CYLINDER FIXATION |
| 4 | VISE FIXATION SUPPORT PLATE |
| 5 | LOCK WASHER MB 30 mm |
| 6 | HEXAGON SOCKET HEAD CAP SCREW M10 x 25 mm |
| 7 | PLAIN WASHER M10 |
| 8 | SPRING WASHER M10 |
| 9 | HEXAGON SOCKET HEAD CAP SCREW M8 x 20 mm |
| 10 | PLAIN WASHER M8 |
| 11 | HEXAGON NUT M8 |
| 12 | PLAIN PIN |
| 13 | PLAIN WASHER M6 |
| 14 | BEARING LOCK NUT KM M30 x 1.5 mm |
| 15 | TAPERED ROLLER BEARING 32006 |
| 16 | BEARING SEAL |
| 17 | SIDE SUPPORT |
| 18 | HEXAGON SOCKET HEAD CAP SCREW M10 x 16 mm |
| 19 | SPRING |
| 20 | BOW SET |
| 21 | FIXATION SUPPORT |
| 22 | CONTROL PANEL COLUMN |
| 23 | HANDLE |
| 24 | HEXAGON SOCKET HEAD CAP SCREW M8 x 20 mm |
| 25 | CONTROL PANEL BOX |
| 26 | HEXAGON SOCKET HEAD CAP SCREW M6 x 16 mm |
| 27 | HEXAGOM HEAD SCREW M12 x 40 mm |
| 28 | HEXAGON NUT M12 |
| 29 | HYDRAULIC CYLINDER |
| 31 | HEXAGON SOCKET HEAD CAP SCREW M10 x 50 mm |
| 32 | HEXAGON NUT M10 |
| 33 | FIXATION PLATE |
| 34 | LIMIT SWITCH QKS7 |
| 35 | PAN HEAD CROSS RECESS SCREW M4 x 40 mm |
| 36 | LIMIT SWITCH FIXATION PLATE |
| 37 | ACTUATOR PLATE |
| 38 | PREVAILING TORQUE HEXAGON NUT M12 |
| 39 | PAN HEAD CROSS RECESS SCREW M4 x 25 mm |

## 16.2. Bow Set:



## Table of Items for the Bow Set:

| POS. | DESCRIPTION |
|---|---|
| 1 | BOW SHAFT |
| 2 | DRIVE FLYWHEEL |
| 3 | IDLE FLYWHEEL |
| 4 | TENSIONER CARRIAGE |
| 5 | REDUCER |
| 6 | IDLE FLYWHEEL SHAFT |
| 7 | BAND SAW BLADE |
| 8 | PRESSURE PLATE |
| 9 | ADJUSTMENT SLEEVE |
| 10 | BEARING SLEEVE |
| 11 | BALL BEARING 6006-2RS |
| 12 | TENSIONER SPINDLE |
| 13 | MOBILE GUIDE SUPPORT LOCK |
| 14 | MOBILE GUIDE SUPPORT |
| 15 | CABLE |
| 16 | HEXAGON SOCKET HEAD CAP SCREW M8 x 80 mm |
| 17 | HEXAGON NUT M16 |
| 18 | DISC SPRING 16 mm |
| 19 | HEXAGON SOCKET HEAD CAP SCREW M10 x 45 mm |
| 20 | PLAIN WASHER M10 |
| 21 | HEXAGON SOCKET SET SCREW M10 x 45 mm |
| 22 | HEXAGON HEAD SCREW M8 x 25 mm |
| 23 | HEXAGON HEAD SCREW M8 x 20 mm |
| 24 | PLAIN WASHER M8 |
| 25 | HEXAGON SOCKET SET SCREW M6 x 15 mm |
| 26 | UNION NIPPLE 1/4" |
| 27 | TENSIONER HANDLE |
| 28 | HEXAGON NUT M8 |
| 29 | LOCKING HANDWLE M10 x 50 mm |
| 30 | HEXAGON HEAD SCREW M10 x 30 mm |
| 31 | SPRING WASHER M10 |
| 32 | BACK COVER |
| 33 | BOW STOPPER PIN |
| 34 | PROTECTION PLATE |
| 35 | FIXED GUIDE PROTECTION |
| 36 | PLAIN WASHER M6 |
| 37 | HEXAGON SOCKET HEAD CAP SCREW M6 x 12 mm |
| 38 | CRANKCASE FIXING HANDLE |

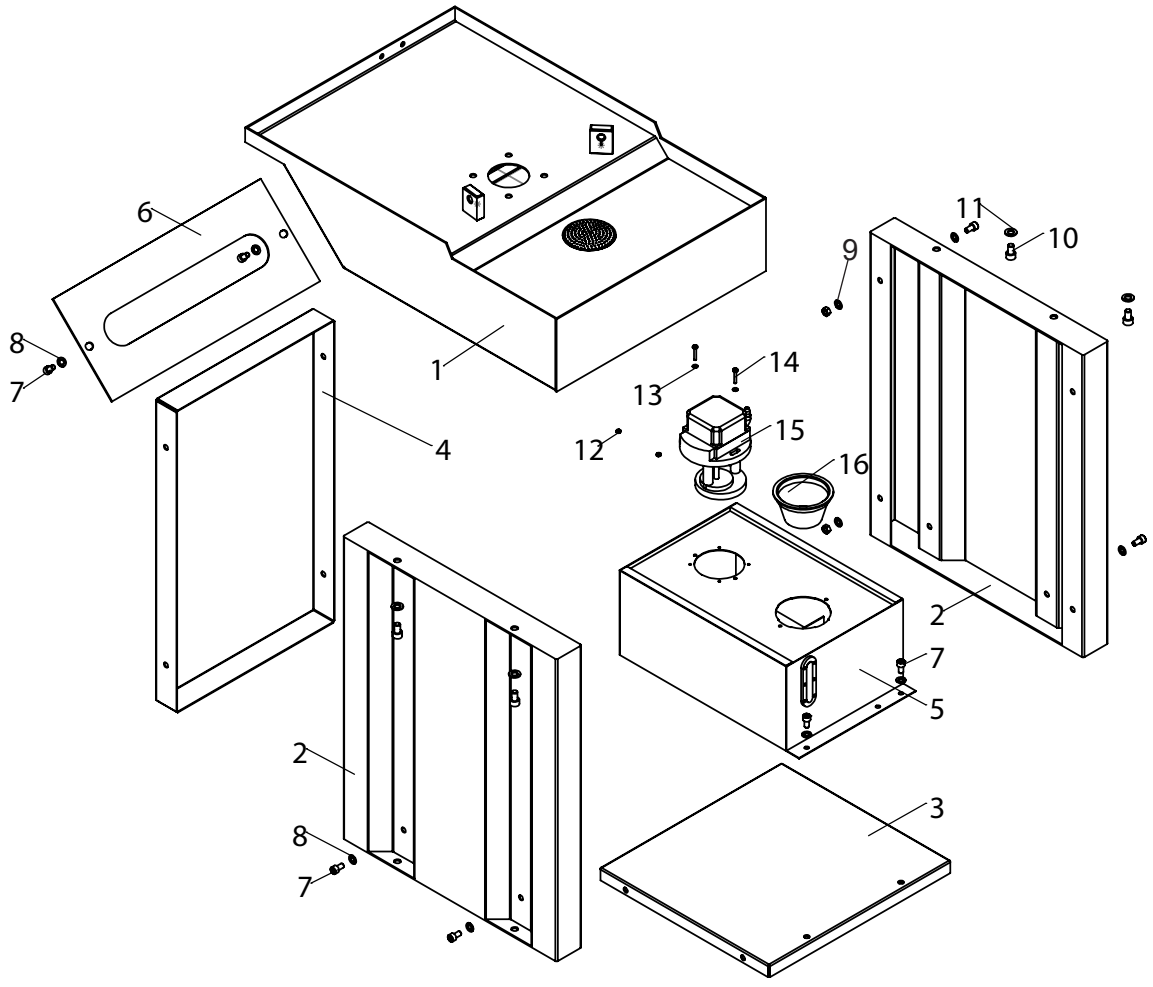
TABLE OF ITEMS FOR THE BOW SET (CONTINUATION):

| POS. | DESCRIPTION |
|---|---|
| 39 | LOWER SPRING FIXATION SHAFT |
| 40 | BRUSH SHAFT |
| 41 | BRUSH |
| 42 | PREVAILING TORQUE HEXAGON NUT M6 |
| 43 | BRUSH SHAFT FIXATION PLATE |
| 44 | SAFETY SWITCH QKS8 |
| 45 | DRIVE WHEEL SHAFT WASHER |
| 46 | COOLANT LIQUID DISPENSER |
| 47 | PAN HEAD CROSS RECESS SCREW M5 x 30 mm |
| 48 | UNION NIPPLE 1/4" |
| 49 | HOSE A |
| 50 | HOSE B |
| 51 | SAFETY SWITCH ACTUATOR QKS8 |
| 52 | PAN HEAD CROSS RECESS SCREW M4 x 12 mm |
| 53 | PLAIN WASHER M4 |
| 54 | HEXAGON NUT M4 |
| 55 | BOW |
| 56 | COUNTERSUNK FLAT HEAD CROSS RECESS SCREW M4 x 30 mm |
| 57 | COUNTERSUNK FLAT HEAD CROSS RECESS SCREW M5 x 8 mm |
| 58 | HEXAGON HEAD SCREW M10 x 20 mm |
| 59 | MOTOR |
| 60 | DRIVE WHEEL ADJUSTMENT WASHER |
| 61 | ADVANCE LEVER |
| 62 | HANDLE |
| 63 | HEXAGON SOCKET SET SCREW M8 x 10 mm |
| 64 | ACTUATOR PLATE |
| 65 | PAN HEAD CROSS RECESS SCREW M4 x 10 mm |
| 66 | CABLE CLAMP |
| 67 | HOSE CLAMP |
| 68 | HOSE GUARD |
| 69 | CABLE GLAND M16 |
| 70 | CIRCLIP 52 mm |
| 71 | HEXAGON SOCKET HEAD CAP SCREW M8 x 25 mm |
| 72 | PAN HEAD CROSS RECESS SCREW M6 x 10 mm |
| 73 | HEXAGON SOCKET HEAD CAP SCREW M6 x 15 mm |
| 74 | HEXAGON NUT M10 |
| 75 | DISTRIBUTOR TAP |
| 76 | MOBILE GUIDE PROTECTION |

TABLE OF ITEMS FOR THE BOW SET (CONTINUATION):

| POS. | DESCRIPTION |
|---|---|
| 77 | HEXAGON SOCKET HEAD CAP SCREW M4 x 25 mm |
| 78 | HEXAGON NUT M4 |
| 79 | MOBILE GUIDE BLOCK |
| 80 | GUIDE SHAFT |
| 81 | GUIDE SHAFT |
| 82 | BALL BEARING 608 |
| 83 | SPRING WASHER M8 |
| 84 | CIRCLIP 8 mm |
| 85 | FIXED GUIDE BLOCK |

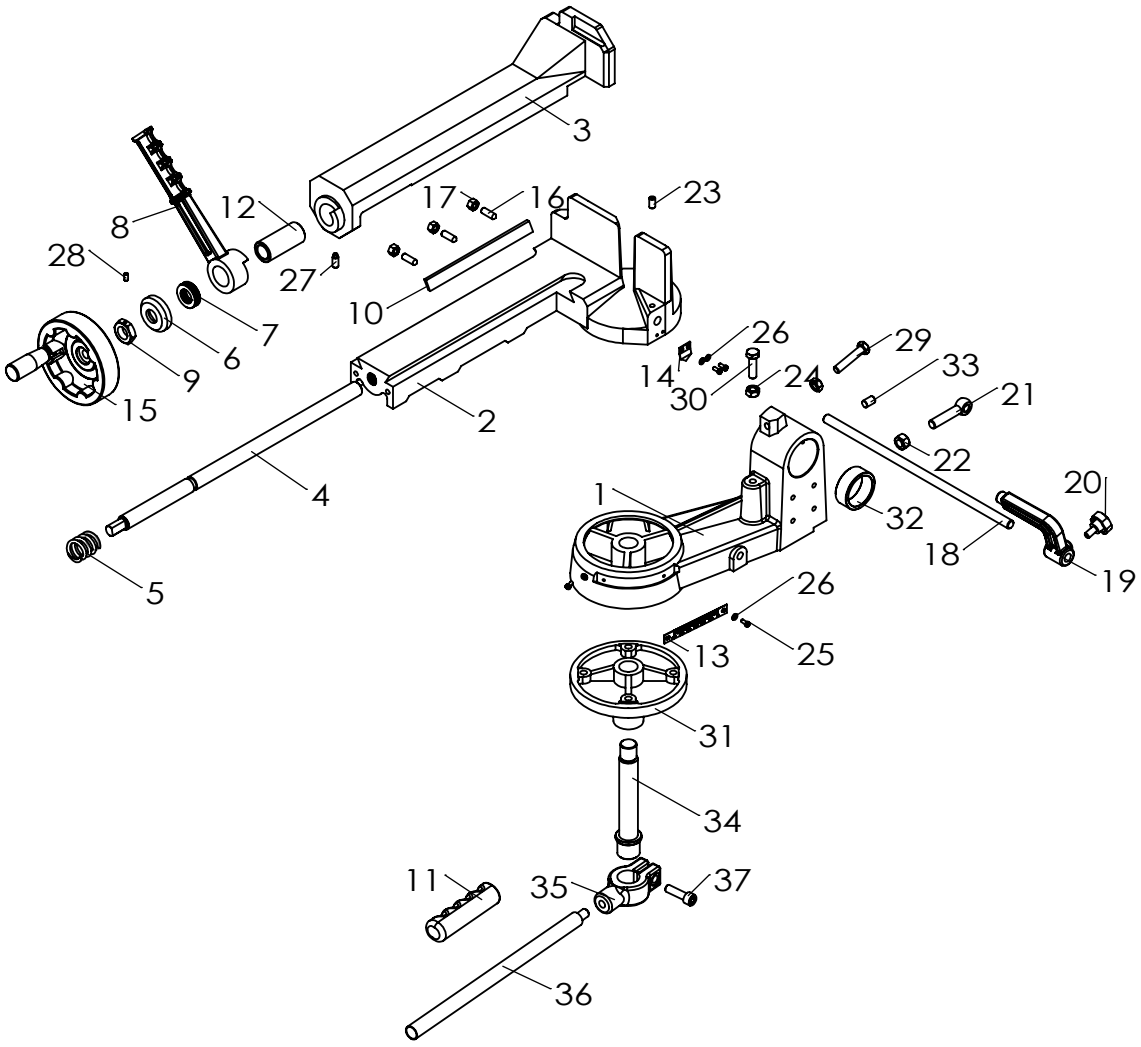
## 16.3. CABINET SET:



## Table of Items for the Cabinet Set:

| POS. | DESCRIPTION |
|---|---|
| 1 | TABLE SET |
| 2 | SIDE PANEL |
| 3 | LOWER INTERNAL PLATE |
| 4 | SIDE PANEL |
| 5 | RESERVOIR |
| 6 | FRONT PLATE |
| 7 | HEXAGON SOCKET HEAD CAP SCREW M8 x 16 mm |
| 8 | PLAIN WASHER M8 |
| 9 | HEXAGON NUT M8 |
| 10 | HEXAGON SOCKET HEAD CAP SCREW M10 x 16 mm |
| 11 | PLAIN WASHER M10 |
| 12 | HEXAGON NUT M4 |
| 13 | PLAIN WASHER M4 |
| 14 | PAN HEAD CROSS RECESS SCREW M4 x 25 mm |
| 15 | PUMP |
| 16 | FILTER |

## 16.4. Vise Set:


3
8
12
17
16
23
28
27
10
7
6
9
15
2
4
5
26
14
30
24
29
33
21
22
1
32
18
20
19
26
13
25
31
34
11
35
37
36

## TABLE OF ITEMS FOR THE VISE SET:

| POS. | DESCRIPTION |
|---|---|
| 1 | ROTARY BASE |
| 2 | VISE BASE |
| 3 | MOBILE JAW |
| 4 | SPINDLE |
| 5 | SPRING |
| 6 | BEARING PROTECTION |
| 7 | THRUST BALL BEARING 51104 |
| 8 | QUICK TIGHTENING LEVER |
| 9 | HEXAGON NUT |
| 10 | ADJUSTMENT RAIL |
| 11 | HANDLE |
| 12 | SLEEVE |
| 13 | ANGULAR SCALE |
| 14 | POINTER |
| 15 | VISE ADVANCE CRANK |
| 16 | HEXAGON SOCKET SET SCREW M8 x 25 mm |
| 17 | HEXAGON NUT M8 |
| 18 | MEASURING ROD |
| 19 | STOPPER |
| 20 | STOPPER HANDLE |
| 21 | LOWER SPRING FIXING EYEBOLT |
| 22 | HEXAGON NUT M12 |
| 23 | HEXAGON SOCKET SET SCREW M8 x 12 mm |
| 24 | HEXAGON NUT M10 |
| 25 | PAN HEAD CROSS RECESS SCREW M4 x 10 mm |
| 26 | PLAIN WASHER M4 |
| 27 | HEXAGON SOCKET SET SCREW M8 x 20 mm |
| 28 | HEXAGON SOCKET SET SCREW M5 x 10 mm |
| 29 | HEXAGON HEAD SCREW M10 x 50 mm |
| 30 | HEXAGON HEAD SCREW M10 x 35 mm |
| 31 | ROTARY SUPPORT BASE |
| 32 | SPACER BUSHING |
| 33 | HEXAGON SOCKET SET SCREW M10 x 16 mm |
| 34 | BOW ROTATION SHAFT |
| 35 | FIXING FORK |
| 36 | BOW TURN LOCK LEVER |
| 37 | HEXAGON SOCKET HEAD CAP SCREW M10 x 35 mm |

# 17. WARRANTY:

The L.S Starrett Company Ltd.
Oxnam Road, Jedburgh,
Scotland, TD8 6LR
Call Center Starrett: 01835 863501
sales@starrett.co.uk
www.starrett.co.uk

## WARRANTY CERTIFICATE

The machines manufactured and sold by ***Starrett Indústria e Comércio Ltda***. are covered by a 12-month warranty (*) from the issuance of the invoice, regardless of whether the equipment has been used or not.

The free service provided by ***Starrett's*** Technical Assistance during the warranty period will be voided if the defect is not consistent with the reported issue for any reason.

Replacement of parts or components that are proven to have manufacturing defects will be free of charge. Labor costs are not included.

There is no warranty for parts that naturally wear out due to use, such as bearings, seals, light bulbs, carbide tips, bandsaw blades, etc.

The warranty is void if any of the following occur:

- Improper or incorrect handling and/or use for purposes other than those intended for the product.
- Transportation, falls, impacts, shocks, or improper storage.
- Inadequate supply or use of electricity.
- Natural agents (lightning, floods, fires, etc.).
- Failure to follow the instructions contained in this Manual.
- Intervention by a third party without the consent of ***Starrett Indústria e Comércio Ltda***.
- Extended periods of product inactivity.

This warranty does not cover regular machine maintenance services, such as adjustment, cleaning, and replacement of bandsaw blades.

Any parts that are replaced during the warranty period will remain the property of ***Starrett Indústria e Comércio Ltda***.

(*) *SEE in:* ***http://starr.in/garantia***

***Starrett Indústria e Comércio Ltda.***

## NOTES

## NOTES

## NOTES


Starrett®