

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

S3717NG

**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.



Starrett®



Starrett Indústria e Comércio Ltda.
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REV. NEW - APR/25

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**ATTENTION! RISK OF ACCIDENTS:**

- BEFORE STARTING any kind of operation on the **S3720** machine, READ CAREFULLY ALL instructions contained in this instruction manual, so that the user becomes familiar with the equipment;
- OBSERVE carefully the INSTRUCTIONS FOR TRANSPORT AND STORAGE ([Chapter 6](#));
- OBSERVE carefully the INSTALLATION AND COMMISSIONING INSTRUCTIONS ([Chapter 7](#)). OBSERVE the voltage (Volts) of the machine being delivered;
- All operations of TRANSPORT, INSTALLATION, USE, MAINTENANCE, ASSEMBLY, DISASSEMBLY, and REPAIR must be carried out by QUALIFIED, TRAINED, and AUTHORIZED for these types of services;
- **Starrett** will provide all Assistance and Technical Support to the user or the company owning the machine whenever requested in writing;
- OBSERVE and UNDERSTAND all signs on the machine;
- If the standard machine, delivered to the user, is modified or its technical characteristics are changed without **Starrett's** prior knowledge and approval, in addition to the loss of all WARRANTY, civil and criminal liabilities will fall on the owner of the machine.

The L.S. Starrett Company Ltd.

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1. DECLARATION OF CONFORMITY:

DECLARAÇÃO DE CONFORMIDADE CE EC DECLARATION OF CONFORMITY

**Starrett Indústria e Comércio Ltda.
Av. Laroy Starrett, 1880
13306-900 – Itu – SP – Brazil**



Declara que os produtos Máquina de Serra Fita, modelos:
Declares that the products Band Saw machine, models:

S3717 NG

estão em conformidade com os requisitos essenciais de segurança das Diretivas Europeias relevantes:
are in conformity with the essential safety requirements of the relevant European Directives:

2006/42/EC	Diretiva de máquinas (até 13/01/2027);
2023/1230/EC	Regulamento (a partir de 14/01/2027);
2014/30/EU	Diretiva de compatibilidade eletromagnética.

Pessoa que compilou o arquivo técnico estabelecido na UE:
Person that who compile technical file established within the EU:

The L. S. Starrett Company Ltd.
Oxnam Road Industrial Estate, Jedburgh, Scotland, TD8 6LR, UK

As instruções de montagem e conexão definidas em catálogos e arquivos técnicos de construção devem ser respeitadas pelo usuário.

Mounting and connecting instructions defined in catalogues and technical construction files must be respected by the user.

Eles são baseados nas seguintes normas técnicas:
They are based on the following 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.

IEC 60204-1:2016,
Safety of machinery – Electrical equipment of machines, part 1 : General requirements

ISO 13849-1:2015,
Safety of machinery – Safety-related parts of control systems Part 1: General principles for design

EN 50370-1:2005,
Electromagnetic compatibility (EMC) - Product family standard for machine tools - Part 1: Emission.

EN 50370-2:2003,
Electromagnetic compatibility (EMC) - Product family standard for machine tools - Part 2: Immunity.

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)

Itu/SP, abr de 2025 / Apr/2025th. Por **Starrett** / By **Starrett**:

Cláudio Guarnieri
Industrial Director

2. SGS CERTIFICATION:



CERTIFICATE OF COMPLIANCE
Certificate No. MDC 2411

SGS Reference:	CST275564/1				
Date of Issue:	8 th January 2020	Issue No.:	1	Expiry Date:	6 th January 2025
Client/Applicant:	Starrett Ind & Com Ltda Av. Laroy S. Starrett, 1880- Pinheirinho Ltu, SP 13306-900-Brasil				
Manufacturer:	WAY TRAIN INDUSTRIES CO., LTD No. 1008 Hou Chuang Rd, Taichung, Taiwan				
Scope of certification:	Full technical file assessment according to Annex VII 2006/42/EC				
Description of Equipment	Band saw machine				
Type/Series:	S3120, S3125, S3715, S3720, S4220, S4230, S4260				
Serial Number(s):	-				
Trade Mark/Name:					
Assessment Performed:	Assessed for compliance with the requirements of Annex VII of the Machinery Directive 2006/42/EC				
Conclusion:	In the opinion of SGS United Kingdom Limited the submitted technical file referenced as CST275564/1 satisfies the requirements of the Machinery Directive 2006/42/EC				
Authorised Signature					Page 1 of 1
Anthony Garrett					
Senior Machinery Engineer					

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

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SGSPAPER
19794699



DU-CST-MA-032 Rev 1 (07/03/2019)

3. TECHNICAL STANDARDS REFERENCES:

European Parliament and of the Council:

Directiva 2006/42 /CE - *Machines;*

Directiva 2014/30/UE - *Eletromagnetic Compatibility;*

Directive 2014/35/UE - *Electrical equipment designed for use within certain voltage limits.*

INTERNATIONAL 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;

IEC 60204-1:2016 -

Safety of machinery - Electrical Equipment of Machines - General Requirements;

ISO 13857:2008 -

Safety Distances to Prevent Danger Zones being reached by Upper and Lower Limbs;

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);

ISO/TR 14121-2:2012 -

Safety of machinery - Risk assessment - Part 2: Practical guidance and examples of methods.

4. MACHINE IDENTIFICATION:

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

The figure below shows the design of the **Starrett** Identification Plate.

	Modelo/Modelo Model/Modèle	<input type="text" value="S3717NG"/>
	N° de série/ N° de serie Serial Number/N° de série	<input type="text" value="S-0130325/CH-S"/>
The L. S. Starrett Company Ltd. Oxnam Road, Jedburgh, Scotland TD8 6LR Tel.: +44 (0)1835 863501 www.starrett.co.uk/	Código/Código Code/Code	<input type="text" value="S3717NG-Q2"/>
	Ano de fabricação/Año de fabricacion Manufacturing date/Année de Fabrication	<input type="text" value="2025"/>
	Peso/Peso/Weight/Poids	<input type="text" value="195"/> kg
	Potência/Potencia/Power/Pouvoir	<input type="text" value="2/1.5"/> hp
	Tensão/Tension/Voltage/Tension	<input type="text" value="400"/> V <input type="text" value="50"/> Hz

(ILLUSTRATIVE DATA)

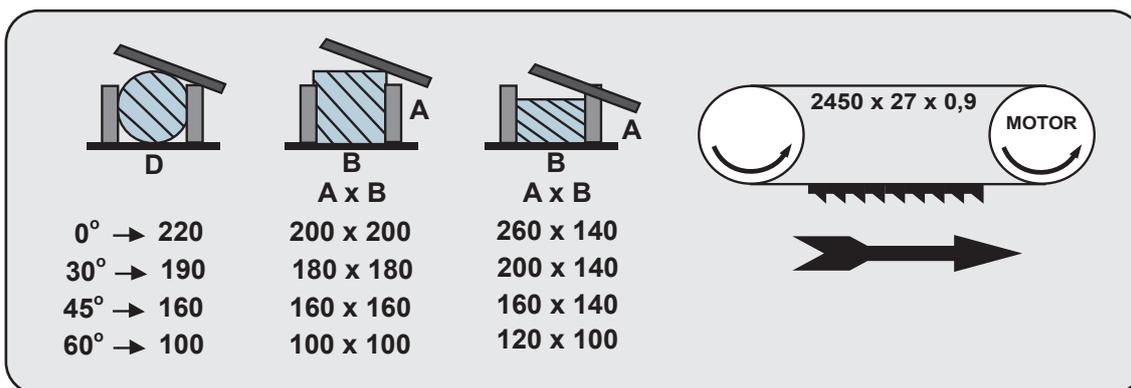
5. TECHNICAL DATA:

Starrett	S3717NG
Net Weight (kg):	195
Gross Weight (kg):	235
Package dimensions (mm):	1.35 x 0.6 x 1.0 (height)
Band Saw Blade Motor power (hp / kW):	2.0 / 1.5
Coolant Pump Motor power (W):	25
Band Saw Blade dimensions (mm):	2 450 (± 2) x 27 x 0.9
Cutting Angle:	0°, 30°, 45° and 60°
Cutting Speed (m/min):	37 and 75 (to 50 Hz - 3 ph)
	75 (to 50 Hz - 1 ph)
Available voltage (V) ^{(1) (2)} :	230 V (1 ph) or 400 V (3 ph)
Operation frequency of electric grid (Hz) ⁽²⁾ :	50 or 60

(1) TENSION defined according to customer request

(2) See Requirements and Conditions for Machine Installation in 10.2 of these Instructions Manual

ALLOWED CUTTING DIMENSIONS (mm)



Noise emitted by the machine

Sound Pressure Level = 79,2 dB A

Sound Power Level = 74,2 dB A

SOUND INTENSITY OF THE MACHINE:

The values quoted are the machine’s sound intensity levels. These values do not correspond to the sound intensity level of the working environment where the equipment is installed. The working environment’s values must be measured per current legislation (ANNEX I of NR-15). Although there is a correlation between this source (machine) and exposure levels, other sources (adjacent machines, factory environment, etc.) contribute to the increase in the local sound intensity level to which the operator is exposed. To this end, additional protection measures prescribed by an Occupational Medicine and/or Safety professional or by the owner company’s should be considered, defining the best type of ear protection to be used.

5.1. STANDARD ITEM:

Starrett Band Saw Blade

5.2. PARTS AND COMPONENTS REFERENCES:

POS.	PART / COMPONENT
01	CABINET
02	GENERAL SWITCH - QS1
03	EMERGENCY BUTTON - SB3
04	BOW
05	SAFETY WARNING PLATE
06	CONTROL PANEL
07	CUTTING TABLE
08	HYDRAULIC CYLINDER
09	SPRING SET
10	BAND SAW BLADE
11	-----
12	SHUT-OFF VALVE
13	DRIVEN FLYWHEEL
14	DRIVER FLYWHEEL
15	GEARBOX
16	TENSIONING SYSTEM (CART)

continuation:

POS.	PART / COMPONENT
17	WISE SET
18	BACK COVER
19	HANDLEWHEEL
20	QUICK THIGTEN LEVER
21	BOW SHAFT
22	FEEDING SPEED REGULATOR VALVE
23	-----
24	COOLANT PUMP - M2
25	BAND SAW MOTOR - M1
26	CONTACTOR - KM
27	CIRCUIT BREAKER - QS2
28	-----
29	BACK COVER SAFETY SWITCH - SQ1
30	FIXED GUIDE SUPPORT
31	MOBILE GUIDE
32	FIXED GUIDE
33	LATERAL BEARING
34	REAR INSERT
35	HARD METAL INSIDE INSERT
36	SIDE BEARING FIXING SCREW
37	MOBILE GUIDE SUPPORT
38	LOCK LEVER
39	FEEDING LEVER
40	SPEED SELECTOR SWITCH - SA1
41	START BUTTON - GREEN - SB1
42	STOP BUTTON - RED - SB2
43	PILOT SIGNAL (GREEN) - HL1 - MACHINE ON OPERATION
44	BOW LIMIT SWITCH - SQ2
45	MOTOR THERMIC PROTECTION - FR
46	ARM

continuation:

POS.	PART / COMPONENT
47	ELECTRIC BOX
48	PILOT SIGNAL (WHITE) 24 V - HL2
49	TANK
50	-----
51	TENSIONING NUT
52	CUTTING CAPACITY PLATE
53	PRESSURE GAUGE
54	-----
55	-----
56	-----
57	TAP
58	STOPPER PIN
59	COOLING LIQUID DISTRIBUTOR
60	BACK COVER KNOB
61	MOBILE GUIDE EXTERNAL GUARD
62	MOBILE GUIDE INTERNAL GUARD
63	TENSIONING HANDLE
64	-----
65	BOW LOCK LEVER
66	ANGULAR SCALE
67	POINTER
68	BRUSH
69	INPUT ROLLER TABLE
70	OUTPUT ROLLER TABLE
71	-----
72	-----
73	-----
74	-----
75	TRANSFORMER - TC
76	TRANSFORMER INPUT PROTECTION FUSE - FU1 (2,0 A)

continuation:

POS.	PART / COMPONENT
77	TRANSFORMER INPUT PROTECTION FUSE - FU2 (2,0 A)
78	TRANSFORMER OUTPUT PROTECTION FUSE - FU3 (2,0 A)
79	MEASURING ROD
80	STOPPER
81	LOCK HANDLE
82	-----
83	-----
84	HANDLE
85	ECCENTRIC SHAFT FIXING SCREW
86	GUIDE HEIGHT ADJUSTMENT SCREW
87	FIXED GUIDE SUPPORT
88	FIXED GUIDE GUARD



FIGURE 5.1 - GENERAL VIEW - VERSION 400 V, 3-PHASE

6. 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.



In 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 Federal Regulatory Standard of each country.

OBSERVE obligatorily:

- **ONLY QUALIFIED** and **TRAINED** persons and expressly **AUTHORIZED** may operate and maintain this machine. These people shall be trained regarding occupational safety standards of each country;
- Without express authorization, it is strictly forbidden to perform changes or modifications to machine components that may compromise user or machine safety, exposing the operator in unnecessary risk. For the changes or modification mentioned above, shall be requested, mandatorily, authorization and written approval by **Starrett Technical Support**;
- All problems with the machine must be immediately reported to the **Starrett Technical Support**;
- **ONLY AUTHORIZED** persons by the company that owns the machine can handle, operate, place and position the material to be cut on the Cutting Table, prepare the cut, perform maintenance, remove mobile parts, change permanent components, replace components in the periodic maintenance, for example: oil, filter, bearings, coolant liquid, etc.;
- In order to carry maintenance, modifications, repair, replacement of components in the Electric System of the machine, the responsible and authorized person by the owner company, shall be **TRAINED** and **QUALIFIED** for this purpose, according to relevant legislation. It is implicit that only **QUALIFIED** and **TRAINED** technician must connect the machine to the electric power supplier and perform any works 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 General Switch (02) in **OFF**, that is, **DISCONNECT** the power grid when there is maintenance intervention or any other work on it, is necessary. This way, there is no risk of electric shock;

- **OBSERVE** and **ENSURE** that the responsible person for handling, to operate, to put material to be cut, to prepare the cut, to maintain, to repair, to remove mobile parts, to change permanent components, to replace the components of machine, that **DOES NOT** work under the influence of drugs, alcohol or drugs that influence the central nervous system of the user or operator;
- **DO NOT OPERATE** the machine if there is any problem or doubt regarding the operation of the machine. **CONTACT** the **Starrett Technical Support**;
- **PRESS** the **EMERGENCY** Button (03) quickly, in case of accident, problem or danger;
- To avoid irregularities with the operation of the machine, it is necessary that the operator is well informed and trained on the operation of the machine before start the operation;

**ATTENTION!****RISK OF AMPUTATION OR SEVERE INJURY!**

- The use of this machine **IS NOT** authorized, under **ANY CIRCUMSTANCES**, by **CHILDREN** or by person(s) **NOT** trained and skilled;
- During cutting operation, **IT MUST NOT BE USED** by operator, **UNDER ANY CIRCUMSTANCES**: lab coat or shirt or any type of long-sleeved tracksuit, chain (s) or necktie or scarf, loose long hair, rings on any finger, or any other object on the body that could pull the operator against the machine;
- **OBSERVE** all the signs that are on the Bow (04) and the Cabinet (01) of the machine. It is very important that the operator is familiarized with these indications;
- **DO NOT DAMAGE** the Technical Plate and the Warning Labels on the machine;
- **NEVER TOUCH** with the hands or other body part on the mobile parts of the machine when it is in operation;
- **KEEP** the machine and the close areas always clean. In this way, accidents can be avoided, for the operator and also for people who pass by the machine;
- **POSITION** the General Switch (02) in **OFF** and **PRESS** the **EMERGENCY** Button (03), before starting the cleaning of machine or its maintenance;

- ▶ **NEVER REMOVE** the chips of material and the 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 weight limit and appropriate dimensions, for safe and ergonomic work. This operation must be performed by responsible and trained people;
- DO NOT TOUCH** any part of the machine, when it is operation; 
- USE** always the Personal Protective Equipment (PPE), with the duly certified according to the safety legislation of each country, such as safety glasses and hearing protectors;



- USE** Leather Gloves, only when replacement of the Band Saw Blade (10);



ONLY when replacing the Band Saw Blade

- OBSERVE** the choice of the type of Band Saw Blade (10), such as the teeth, feed and cutting speed, suitable for the type of material to be cut, to avoid problems during the cutting operation (SEE [Clause 8 of this Manual](#));
- OBSERVE** the Safety Recommendations, in case of machine maintenance (SEE [Clause 13 of this Manual](#));
- OBSERVE** all Safety Recommendations for changing the speed of the Band Saw Blade (10);
- USE** always new and original spare parts. Other spare parts or works not approved by the manufacturer, that present risks or cause accidents and damage are not under **Starrett** responsibility;
- ENSURE** a sufficient free area (minimum of 1.5 m) around the machine, aiming at space for work and the passage of people;

- **DO NOT PLACE** or **LEAVE** tools or other objects on parts of the machine;



- **USE** hydraulic oils recommended in this manual. Its 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 Heavy Load Falling



WARNING NOTICE:
Risk of Cut



WARNING NOTICE:
Risk of Tools or Objects Falling



MANDATORY ACTION:
READ the Instruction Manual



MANDATORY ACTION:
USE Safety Shoes



MANDATORY ACTION:
USE Safety Glasses



MANDATORY ACTION:
USE Safety Helmet



MANDATORY ACTION:
USE Safety Gloves



MANDATORY ACTION:
USE Safety Clothing



MANDATORY ACTION:
USE Ear Protector



MANDATORY ACTION:
MAKE Preventive Maintenance



FORBIDDEN ACTION:
SWITCH OFF the machine



FORBIDDEN ACTION:
DO NOT TOUCH



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



FORBIDDEN ACTION:
DO NOT GO UP in the
machine



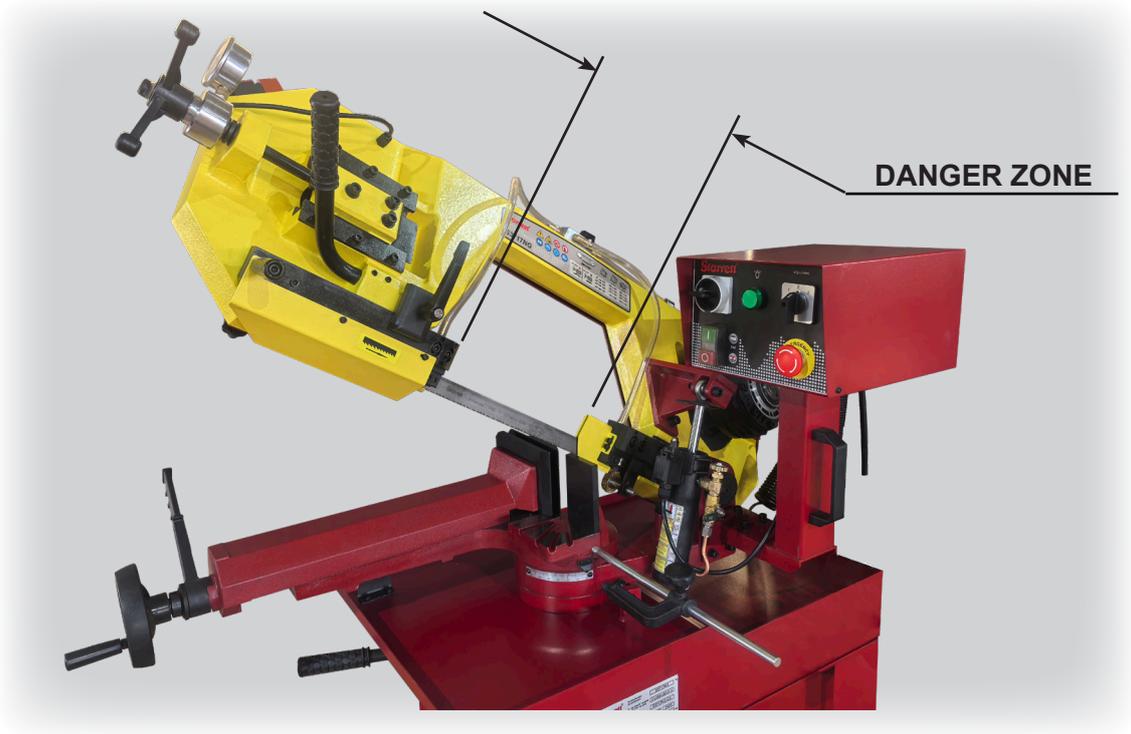
ATTENTION!
RISK OF ACCIDENT:

DEFINITION OF THE POSITION OF THE MACHINE OPERATOR:

During the cutting process, the operator **MUST** be in front of the Control Panel (06), paying attention to the main cutting parameters settings, and with his free hand to immediately access the EMERGENCY Button (03).

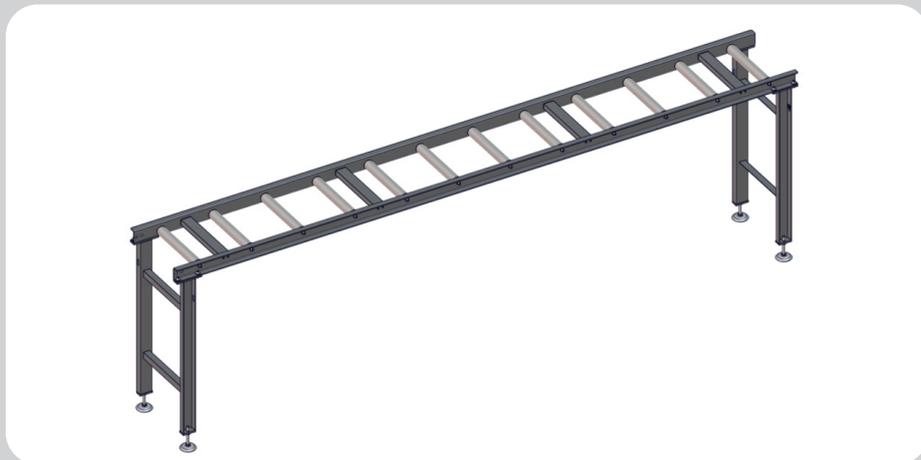


ILLUSTRATIVE FIGURE



**ATTENTION!
RISK OF ACCIDENT:**

USE roller tables for cutting long materials.





ATTENTION!: RISK OF ACCIDENT:

SAFETY RECOMENDATIONS for Maintenance:

When any maintenance operation occurs ([SEE Clause 15 - MAINTENANCE](#)), the user must:

- ISOLATE the area as shown below;
- IDENTIFY that the machine is being maintained by means of an WARNING LABEL (LOTO System) placed on the EMERGENCY Button (03) on the Control Panel (06) (figura 6.1).



FIGURA 6.1 - WARNING LABEL (LOTO SYSTEM)

**ATTENTION! RISK OF ACCIDENT:****SAFETY RECOMMENDATIONS WHEN REPLACING ELECTRICAL COMPONENTS:**

- Any electrical components in the power, control and safety circuits that are replaced **MUST** be replaced by one of the same make and reference.
- Any change in specification can lead to the loss of the respective safety functions, generating additional risks and compromising operator safety.

7. GENERAL DESCRIPTION:

The **STARRETT HORIZONTAL BAND SAW – S3717NG** machine was developed according to the criteria of quality, safety, modernity, and technology, to meet the needs of its user, following the **ISO 16093:2017** and other applicable technical standards.

This machine should only be used for cutting bars or profiles of various shapes and sizes from exclusively metallic materials, i.e., ferrous (steel and its alloys) and non-ferrous (bronze alloys, aluminum, etc.). The physical characteristics of these materials, such as hardness, toughness, and density, should not create any safety issues for the user during the cutting operation.



WARNING!: RISK OF ACCIDENTS:

This machine model is exclusively designed for cutting metallic materials, both ferrous and non-ferrous.

Examples:

- mechanical construction steels;
- alloy steels;
- stainless steels;
- cast iron;
- aluminum alloys;
- carbon steels;
- copper;
- brass.

Its construction consists of a rigid Bow (04) with two Flywheels: one Driven (13) and the other Driver (14). The Flywheel (14) is coupled to a worm-type Gearbox (15) (figure [7.1](#)).

The Driven Flywheel (13) is mounted on the axis of a dynamometer system, called the Tensioning System (Cart) (16) (figure [7.5](#)).

A welded Band Saw Blade (10) is mounted on the two Flywheels (13)(14) and conveniently tensioned by the Tensioning System (16) (figure [7.2](#)).

The Band Saw Blade (10) and Flywheels (13)(14) are protected at the rear of the Bow (04) by a protective Back Cover (18) (figure [7.6](#)).

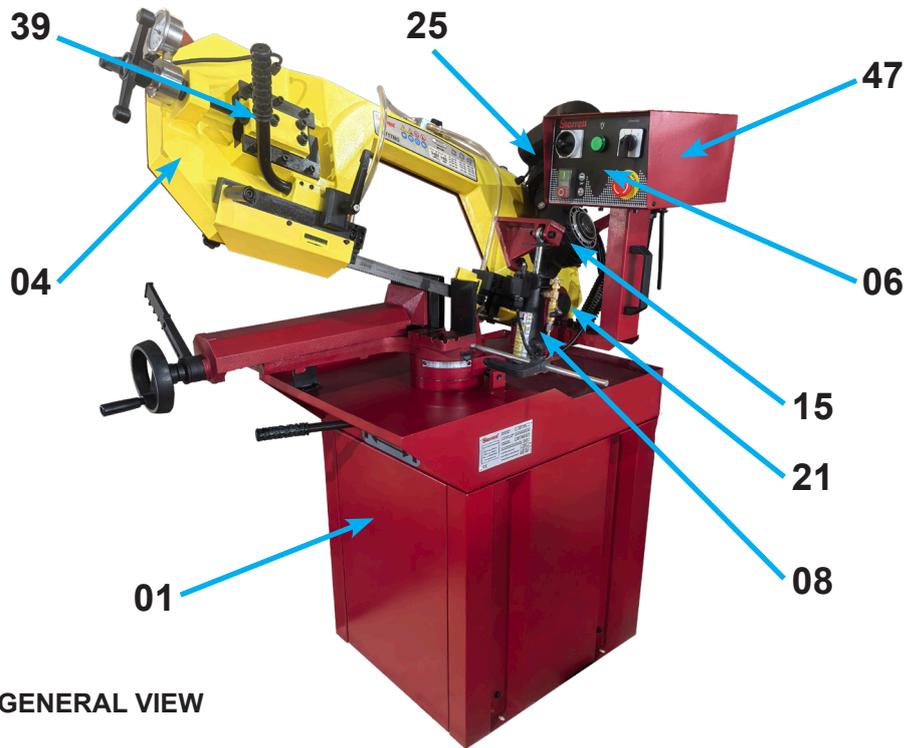


FIGURE 7.1 - GENERAL VIEW

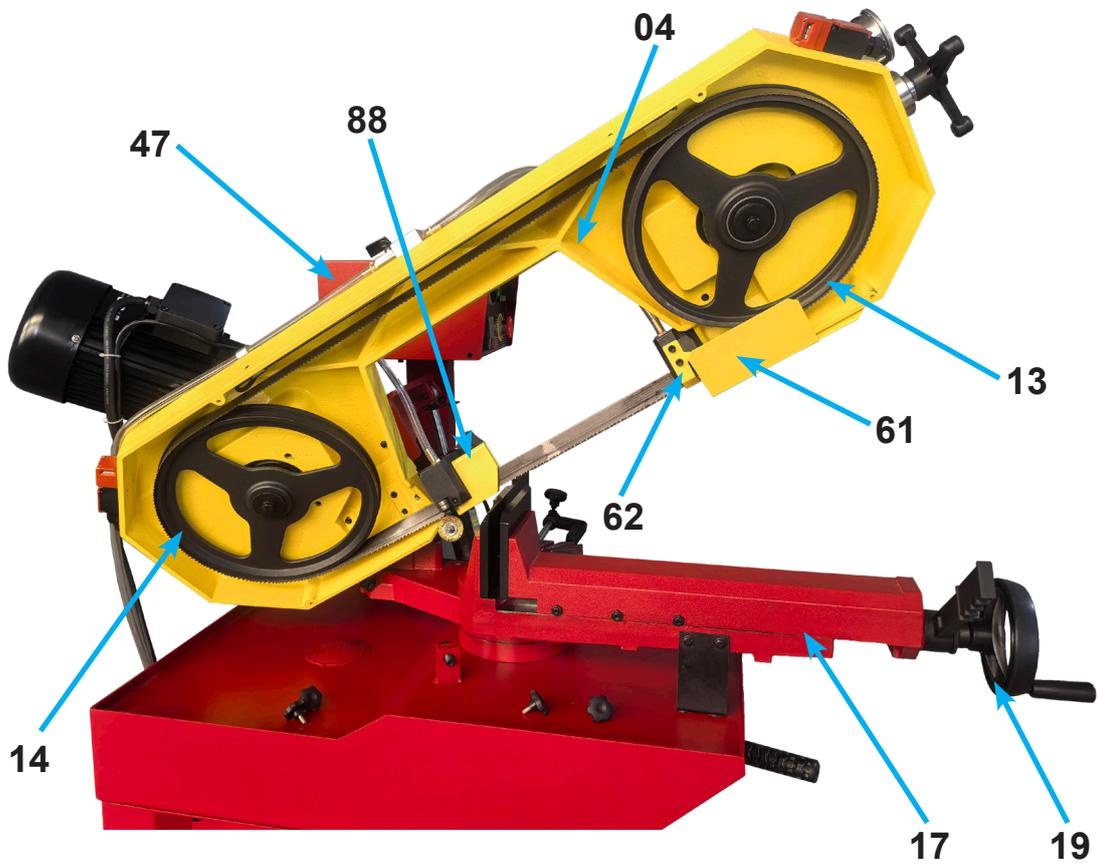
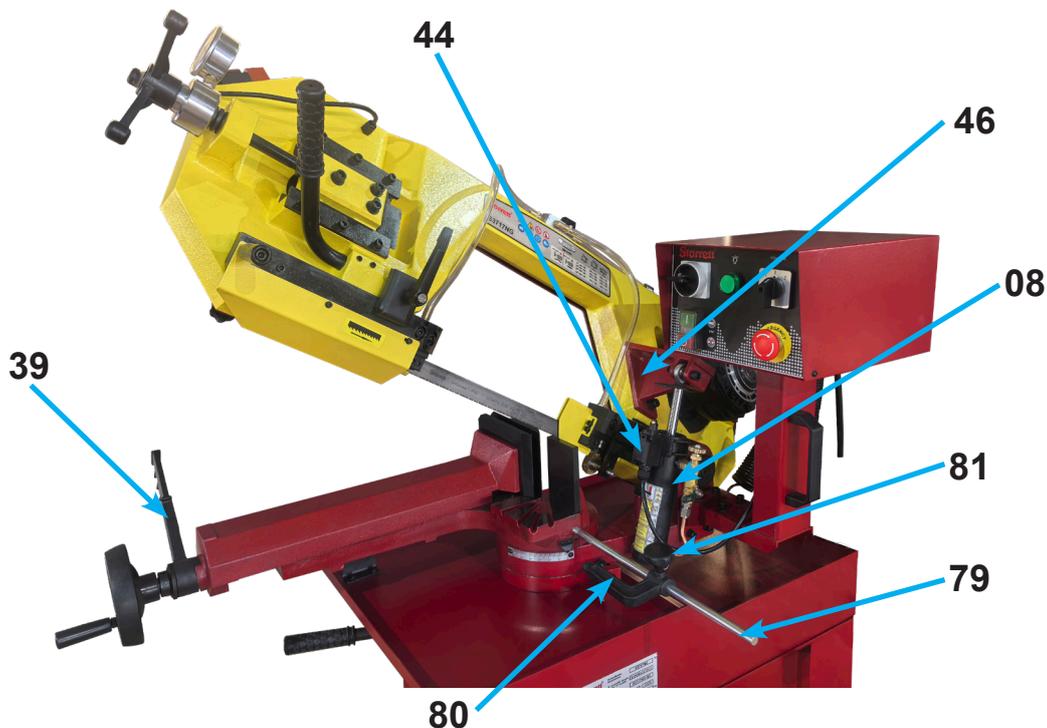


FIGURE 7.2 - FLYWHEELS ASSEMBLY

The Vise Set (17) is responsible for rigidly fixing the material to be cut on the Cutting Table (07). This set has longitudinal movement in the direction of fixing the material, which is manually controlled by the Handwheel (19). The Quick Tighten Lever (20) also controls the tightening or loosening of the same on the material (figures 7.1 e 7.2).

Due to the machine's constructive form, the Bow (04) can rotate on a fixed point of the Vise Set (17), called the Bow Shaft (21) (figure 7.3), on an axis perpendicular to the Cutting Table (07), to allow cuts at angles on the material to be cut.

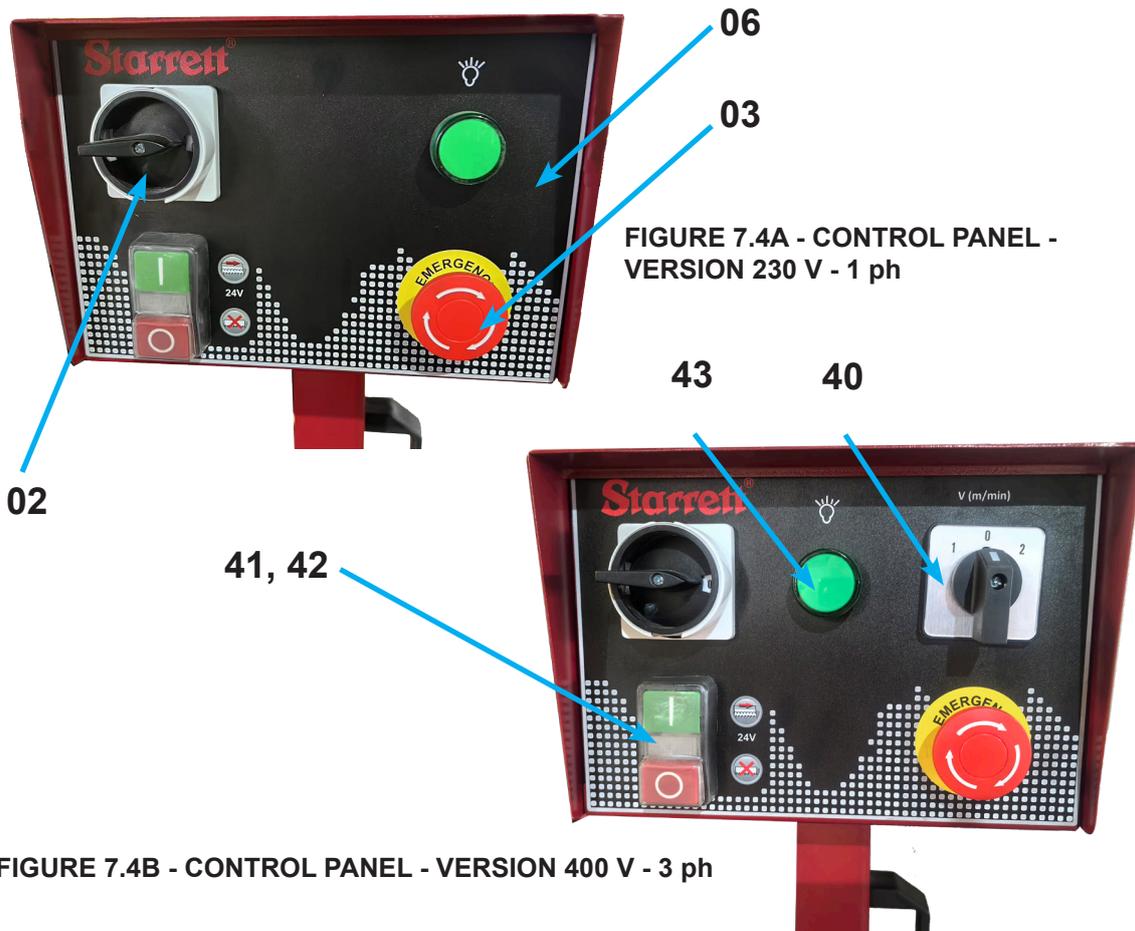
**FIGURE 7.3 -
HYDRAULIC CYLINDER AND MEASURING ROD**



The machine's upper part is supported and fixed on a rigid Cabinet (01) built from sheet metal and steel profiles. A high-weather-resistant paint protects its structure. The Control Panel (06) is coupled to this set and is easily accessible by the operator.

The Electrical System was developed according to the applicable requirements of the technical standards ISO 16093 and IEC 60204-1.

The S3717 NG is offered in two versions: 230 V single-phase (1ph) and 400 V three-phase (3ph) (figures 7.4A and 7.4B). The Electrical System consists of three parts.



The first is the Power Circuit, sized to support the load of the electric motors: M1 (25) of the Band Saw Blade (10) and M2 of the Coolant Pump (24). Both are protected against possible short circuits or overloads by the Thermomagnetic Circuit Breaker QS2 (27) installed internally in the Electric Box (47) (figure 7.5). The Motors M1 (25) and M2 (24) are driven by the Contactor KM (26).

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

The third part makes up the Safety System of the equipment composed of the EMERGENCY Button SB3 (03), the Safety Switch SQ1 (29) of the Back Cover (18).

The Electric Box (47) (figures 7.4A and 7.4B) is in the upper front part of the Cabinet (01). Both versions have a General Switch (02), which cuts the power supply to the Electric Box (47), protecting the user against electric shock in case of maintenance.

The segment of the Band Saw Blade (10) that performs the cutting is supported by the Moving Guide (31) and Fixed Guide (32). These Guides (31) (32) have Lateral Bearings (33) and Carbide Inserts (35) that allow the cutting tool to twist relative to the turning plane of the Flywheels (13) (14), to form the cutting plane (figures 15.3 and 15.4).

OBSERVATION! :



The segment of the Band Saw Blade (10) that performs the cutting [between the Guides (31)(32)] has no protection, and it is up to the machine operator to take all due care.

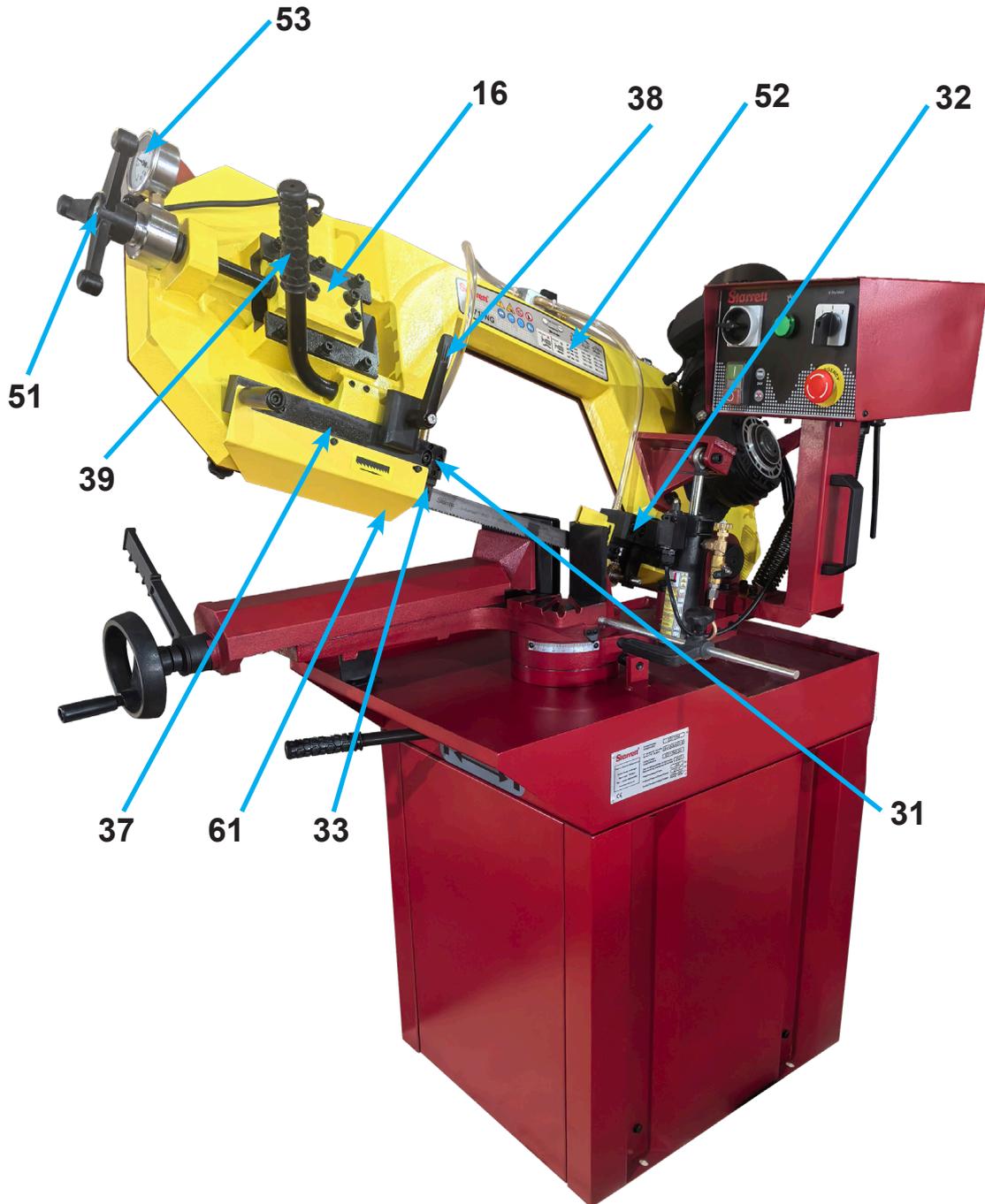


FIGURE 7.5 - MOBILE GUIDE SUPPORT AND TENSIONING SYSTEM

The Mobile Guide Support (37), next to the Driven Flywheel (13), can be adjusted manually, allowing the Mobile Guide (31) to be as close as possible to the material to be cut. For this adjustment, the Lever (38) must be released, and the Mobile Guide Support (37) must be advanced as close as possible to the material to be cut by the Handle (84).

This machine operates in a single mode: **SEMI-AUTOMATIC**. The Hydraulic Cylinder (08) can control the feed speed of the Band Saw Blade (10) over the material (figure 7.3). This element is in solidarity with the whole of the Bow (04).

The forward speed can be controlled by opening and closing the Feeding Speed Regulator Valve (22). The Shut-off Valve (12) allows the Bow (04) to be kept in any position when it is in the CLOSED position (horizontal lever) (figure 12.1). Setting this mode is described in [Clause 11](#).

To start the cutting process, the machine must be adjusted and connected to the user's power grid. The material to be cut must also be properly positioned and locked on the Cutting Table (07).

When positioning the General Switch (02) in the **SWITCH ON** position, the Pilot Signal HL1 (43) (GREEN) should light up, indicating that the machine is energized.

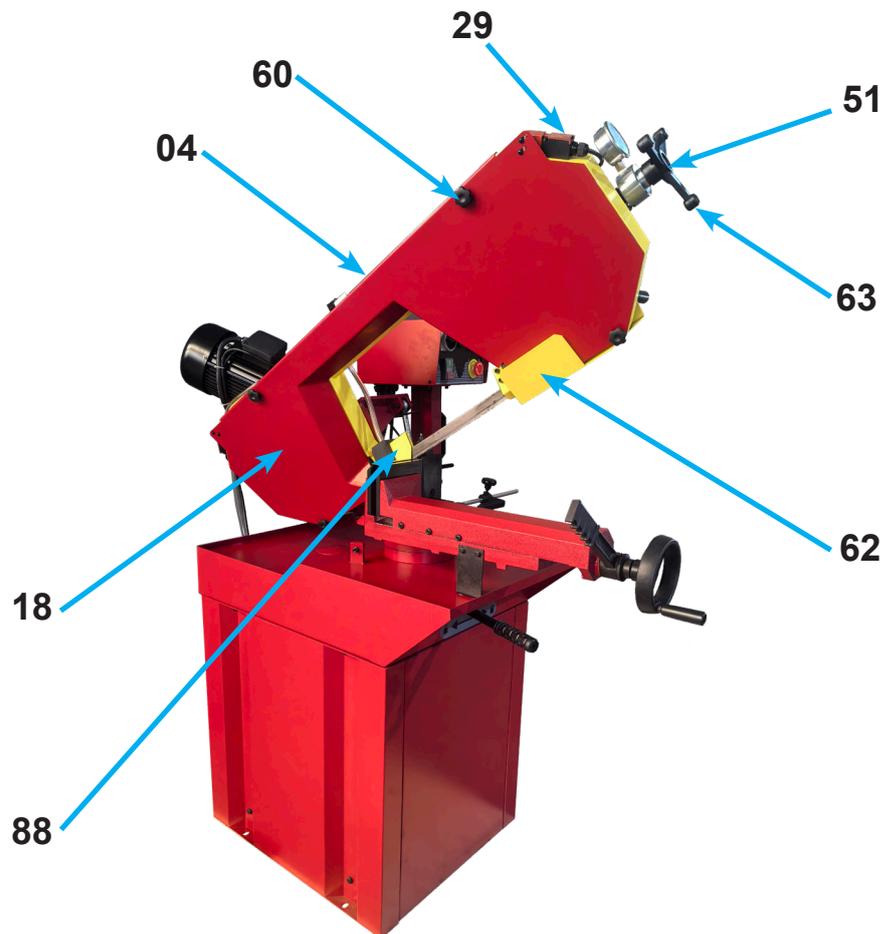


FIGURE 7.6 - TENSIONING SYSTEM

When the START Button (41) is pressed, the GREEN color starts the movement of the Band Saw Blade (10) (Figures (figures [7.4A](#), [7.4B](#) and [7.5](#)).

At the end of the cut, the Limit Switch (44) is activated (figure 7.3), turning off the M1 (25) and M2 (24) Motors.

The 230 V, single-phase (1 ph) version is offered with only one cut-off speed, without the Switch (40) (figure [7.4A](#)). The 400 V version, three-phase (3 ph), has two cutting speeds that can be chosen by the Speed Selector Switch (40), located on the Control Panel (06) (figure [7.4B](#)).

The tensioning of Band Saw Blade (10) is realized on the Flywheels (13)(14) by the Tensioning Handle (63). By displaying the pressure gauge (53) the tension of the Band Saw Blade (10) can be correctly adjusted (figure [7.5](#)).

The safety systems present are:

- Motor Thermic Protection FR (45) protects the M1 Motor (25) of the Band Saw Blade from overloading;
- EMERGENCY Button SB3 (03): Located on the Control Panel (06), for any EMERGENCY STOP needs;
- Back Cover (18): Has the function of mobile protection of the interior of the Bow (04). When removed, it opens the Safety Switch SQ1 (29), disabling the machine's Electrical System;
- Pilot Signal HL 1 (43): Located on the Control Panel (06). Its function is to indicate which machine is in operation;
- Pilot Signal HL2 (48): 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 able to work;
- Thermomagnetic Circuit Breaker QS2 (27): located inside the Electric Box (47), this component protects the Motors M1 (25) and M2 (24) against short circuits and overloads;
- Mobile Guide Guards (61) (62): Located and fixed on the Mobile Guide Support (37) (figure 7.2), which can only be removed by the use of a tool;
- Fixed Guide Guard (88): Located and attached to the Fixed Guide Support (87) (figure 7.6), which can only be removed by the use of a tool.

8. TRANSPORT AND STORAGE:

8.1. SPECIFIC SAFETY RECOMMENDATIONS:



ATTENTION!

RISK OF TIPPING AND ACCIDENTS WITH SERIOUS INJURIES:



- All loading, transportation and unloading of the **Starrett** Band Saw Blade machine must be performed by specialized companies or by **TRAINED** and **AUTHORIZED** professionals.
- Before carrying out any movement of the machine, it is necessary to **CAREFULLY READ** this Instruction Manual, in order to know the specific safety instructions for this type of operation.
- USE Personal Protective Equipment - PPE in the loading and unloading phase of the Band Saw Blade machine.



- **PLANNING** the lifting and transport of the **Starrett** machine, together with the staff of Occupational Health and Safety Service of the company that owns the equipment.
- **AVOID** abrupt movements and turns, and high speeds when transporting the machine by forklift, as there are risks of tipping over and damage to the equipment.
- **ALWAYS CHECK** that the forklift booms are properly seated on the pallet.



8.2. UNLOAD AND TRANSPORT:

The machine when leaving the factory is packed in a wooden crate, fixed on a pallet. This packaging allows transportation by forklift or pallet truck.

To UNLOAD the machine onto a truck, for example, we recommend using a forklift truck, driven by a professional who is TRAINED and AUTHORIZED for this type of operation (figure [8.1](#)).

When using this means of transport and lifting, it advises NOT to REMOVE the wooden crate, leaving the removal of it in the place of installation.

Another option is to use other safe means of removing the machine from the truck and moving it to the installation point. To do this, the professionals involved must be TRAINED and QUALIFIED to avoid accidents and damage to the equipment. The wooden crate's removal must be considered in this process.

If the machine is to be lifted by means of cables or straps, it is advisable to check the load capacity of these elements, which must withstand a load of over 300 kg.



SUSPEND the machine as low as necessary to move it, to avoid the risk of the machine or objects falling from a great height.

During this operation, the specific safety conditions for this type of operation must be respected.

DO NOT USE load lifting belts around the structure or other part of the machine, as this will damage the machine, in addition to the risk of accidents.



OBSERVATION:

1. USE forklift trucks with a load capacity of over 300 kg, using it in accordance with figure 8.1;
2. CHECK the integrity of the wooden gear before lifting and/or moving the machine;
3. MAKE SURE that the machine is well balanced during the lifting phase;
4. LIFT the machine as low as necessary to allow it to be moved;
5. DO NOT ALLOW the machine to swing while moving.

ILLUSTRATIVE FIGURE

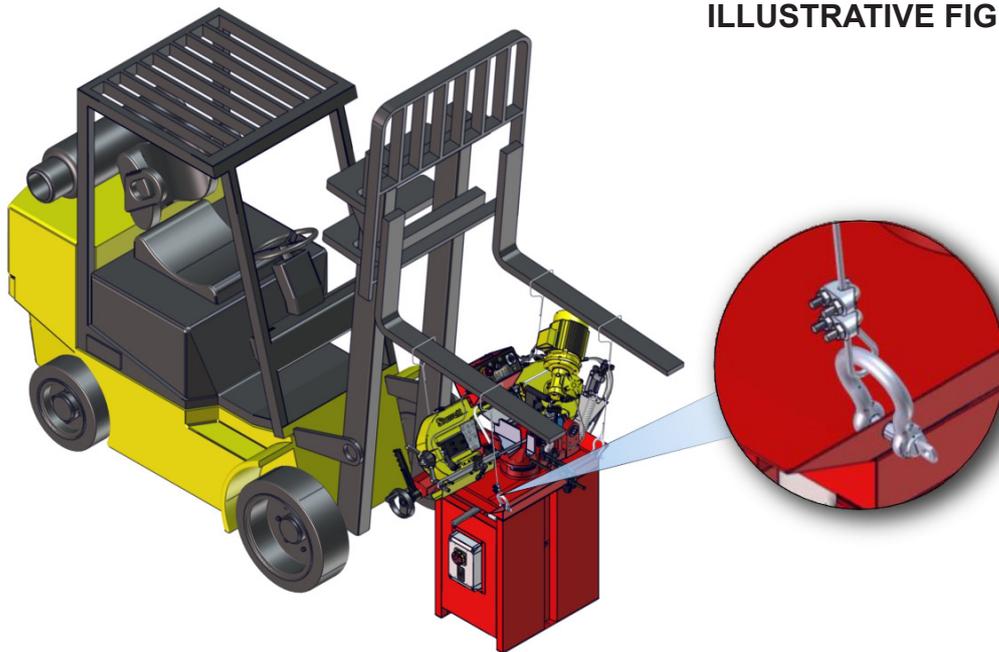


FIGURE 8.1: EXAMPLE OF LIFTING THE MACHINE

8.3. STORAGE:

It may happen that the area intended for installation is not free or available to install the **Starrett** Band Saw machine.

However, there may be a chance that this equipment is ready and delivered to the owner in advance, without finalizing the operating location.

In this case, depending on the storage time, some necessary prior care must be observed and performed.

PROCEDURES for Storage:

1. UNLOAD the Band Saw machine in one place:

- clean;
- plan;
- with resistant floor capable of supporting the weight of the machine;
- covered to protect from:
 - rain and other sources of water and moisture;
 - of dust; and
 - air flow.
- free of passage or permanence of persons strangers to the place of storage;
- with adequate power supply, if necessary, to connect it electrically to inspect and /or perform some type of preventive maintenance during storage.



2. CHECK on the arrival of the machine, if it is in accordance with the Order or Purchase Order of the owner company;

3. CHECK also the items described in the invoice of **Starrett** or distributor are in accordance with the material received;

4. INSPECT if the machine is intact, without dents, deep scratches, oxidation of parts, or with damage to components or lack of them;

5. USE desiccant and dehumidifying elements, such as sachet or Silica Gel bag, if the storage time is above 10 days, leaving it on the machine.

9. INSTALLATION AND COMMISSIONING:

9.1. SPECIFIC SAFETY RECOMMENDATIONS:



ATTENTION!

ACCIDENTS WITH SERIOUS INJURIES:



- All the installation procedures for the Band Saw **Starrett** machine must be performed by specialized companies or by TRAINED and AUTHORIZED professionals.
- Before executing any movement of the machine, it is necessary to READ this Instruction Manual CAREFULLY, in order to know the specific safety instructions for this type of operation.
- USE Personal Protective Equipment - PPE during loading and unloading of the Band Saw machine.



- PLAN the machine installation operation **Starrett**, together with the personnel from SESMT - Safety and Occupational Medicine Service of the company that owns the equipment.
- CERTIFY that the user's power supply network is rated to support the machine's workload, and the grounding is adequate. This operation must be carried out under the supervision of a legally HABILITATED professional.
- DO NOT INSTALL this machine in environments where there is a risk of explosions or fire. AVOID explosive environments.



9.2. INSTALLATION:

The machine must be installed in a normally lit working environment, on an industrial-type floor of sufficient strength to support the machine's own weight plus the weight of the material to be cut.

The fixation must be done by means of "anchor" bolts to the floor, as illustrated in the figure 9.1, especially when handling long and heavy materials. These fixings must be by the support points.

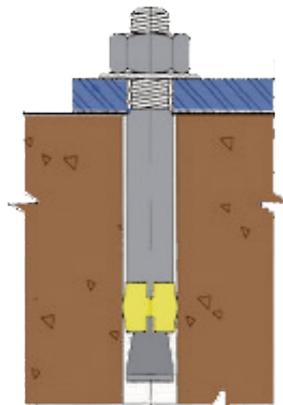


FIGURE 9.1: FIXING BY MEANS OF ANCHOR BOLTS

In cutting processes where there are long materials to be cut with large dimensions, i.e., long bars, the operator must be properly SUPPORTED using INPUT (69) and OUTPUT (70) trestles and/or roller tables, as shown in figures [9.2](#) and [9.3](#). For materials below 630 mm, MAINTAIN the use of the Support Stand as an option.

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



ATTENTION! RISK OF CRUSHING:

USE the Roller Table system for materials to be cut into long lengths, long bars or various shapes.

Materials over 630 mm long USE Roller Tables (69) and/or (70).



FIGURE 9.2: EXAMPLE OF AN INPUT ROLLER TABLE

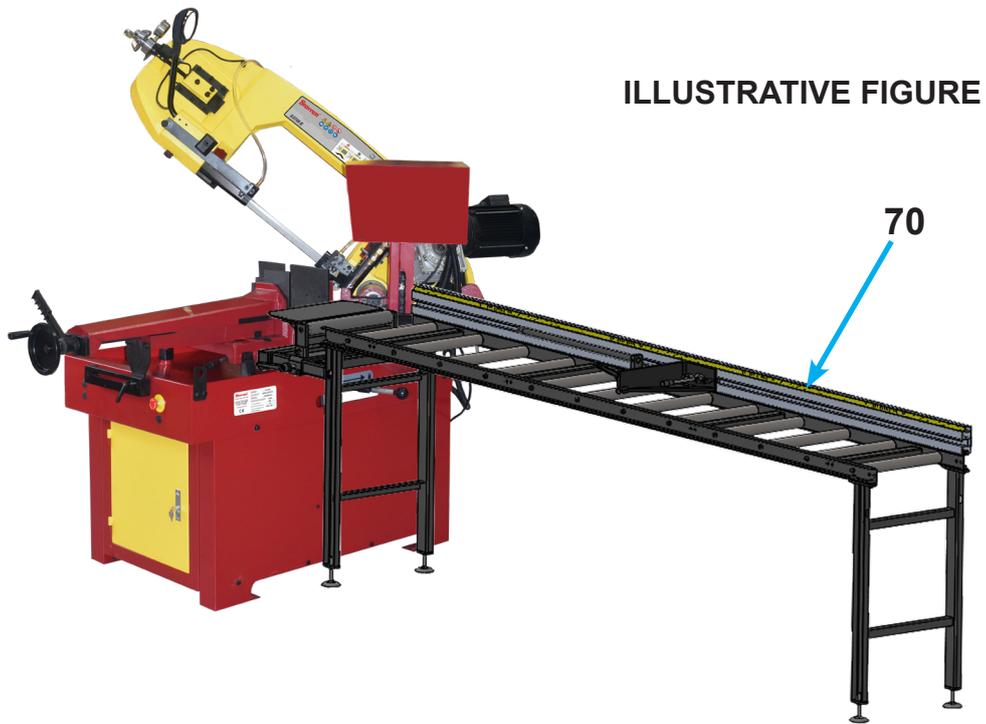


FIGURE 9.3: EXAMPLE OF AN OUTPUT ROLLER TABLE

When the machine installation is done, the installer or whoever did the installation must CHECK:

- Whether all parts of the machine are perfectly intact, such as no dents, cracks, or any other defects;
- If the EMERGENCY Button (03), the Speed Selector Switch (40) (version 400 V three-phase version), Motor (25), Gearbox (15), Coolant Pump (24), Vise Set (17), and Vise Handwheel (19) are intact and working;
- The status of the Cabinet (01), Mobile Guide (31) and Control Panel (06) etc.;
- The machine complies with the manual and your order (options), especially the electronic Invoice.

**OBSERVATION:**

Should any parts NOT be intact or NOT conform to the order and/or the manual, it is the user's (installer's) responsibility to immediately notify **Starrett**, in writing, to receive clarification, also in writing, as to what should be done to resolve the problem.

However, once a problem has been found, the installer **MUST NOT** proceed with the installation until the problem is resolved and cleared up.

9.3. REQUIREMENTS AND CONDITIONS NEEDED TO INSTALL THE MACHINE:

ENVIRONMENTAL CONDITIONS:

- working temperature: from -10 to +50 °C.;
- relative humidity: lower than 90%;
- The installation of the machine to the client's electrical network **MUST** be done by professionals **QUALIFIED** for this type of service;
- **OBSERVE** the electrical diagram, in this Manual, so that the electrical connection is made correctly;
- **OBSERVE** the position of the Control Panel (06) about 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 mains supply, PERFORM:

PRELIMINARY PROCEDURE:

1. CHECK that the electrical conductor supplied with the machine is intact in its extension;
2. CHECK that the user's main electrical network has the same voltage (Volts) and frequency (Hz) as specified on the machine.



OBSERVATION:

If the voltage and/or frequency are not compatible with the end user's main electric network, **due to the buyer's mistake**, **Starrett** must be informed immediately. Components may be exchanged under warranty or not, at Starrett's discretion and decision.



The user's electrical network must use cables or wires whose cross-sectional area is equal to or greater than 2.5 mm² or more.

After the PRELIMINARY PROCEDURE above the integrity of the conductor cable, REALIZE the electrical connection of the machine to the mains.

This operation must be performed by a **QUALIFIED** and **AUTHORIZED** professional, under the supervision of a legally **HABILITATED** professional.

PROCEDURE OF THE ELECTRICAL CONNECTION:



1. CERTIFY that the user's power supply is OFF;
2. CONNECT the electrical conductor end of the machine to the external Circuit Breakers Board, or MOUNT a 4-pin plug, 3 of which are used for the phases **R, S, T** and the fourth pin for the **GROUND**;
3. OBSERVE the plug manufacturer's recommendations and specifications, if this option is adopted;
4. NOTE if the connection to **GROUND** is adequate;
5. CHECK all connections are properly tightened.

Once the machine has been electrically connected to the user's mains, CHECK:

PROCEDURE FOR CHECKING THE ELECTRICAL CONNECTION:

1. POSITION the General Switch (02) in the **ON** position;
2. OBSERVE that the HL1 PILOT Signal (43) (GREEN) on the Control Panel (06) is lit, indicating that the machine is switched on;
3. TURN the Speed Selector Switch (40) to position "1" or "2";
4. PRESS Stop Button (42) momentarily;
5. CHECK if the Band Saw Blade (10) is rotating in the direction indicated on the Plate (52) placed on the Bow (04) (figura [7.6](#)).



ATTENTION!



RISKS OF ACCIDENTS AND ELECTRIC SHOCK:

- CHECK that the Band Saw Blade (10) is moving in the same direction as indicated on the Plate (52), located on the Bow (04). If the direction of rotation is the opposite of that indicated, swap 2 of the 3 phases (cables) in the socket that connects the machine to the user's mains.
- Any change in the electrical connection of the machine to the user's network must be performed by QUALIFIED and AUTHORIZED professionals.

MACHINE ELECTRIC POWER SUPPLY REQUIREMENTS (Alternating Current (According to 4.3 of the ISO IEC 60204-1:2020):

- **Voltage:** Voltage in permanent regime: 0.9 to 1.1 of the nominal voltage;
- **Frequency:** 0.99 to 1.01 of the nominal frequency on a permanent basis;
0.98 to 1.02 of short duration.
- **Harmonics:** Harmonic distortion of no more than 12% of the total effective voltage on energized conductors, considering the sum of the 2nd through the 30th harmonics.
- **Voltage Interruption:** Power supply interrupted or at zero voltage for no more than 3 ms in any random period of the power cycle with more than 1 s between successive interruptions.

- **Voltage sinking:** Voltage sinking not exceeding 20 % of the effective supply voltage for more than one cycle with more than 1 s between successive sinking.
- **Maximum impedance for GROUNDING:** 10 Ω



ATTENTION! RISK OF ELECTRIC SHOCK:



- USE the color codes or numbering, for connecting the machine cable to the electrical network:

OPTION 1 (*)	OPTION 2 (*)	Cables Function (*)
GREEN / YELLOW	GREEN / YELLOW	Ground
BROWN	BLACK 1	R
BLUE	BLACK 2	S
BLACK	BLACK 3	T

(*) SEE electrical diagrams in Section 14 - SYSTEMS of each version offered.

- CHECK that the earthing conductor is properly connected and does NOT have a common connection with the NEUTRAL of the user's mains supply;
- (400 V - 3 ph version) CONNECT the machine's conductor cables to an independent 25 A remote three-pole circuit-breaker and a 40 A three-pole RCD with 0.3 A sensitivity at 400 V;
- (230 V - 1 ph version) CONNECT the machine's conductor cables to an independent 25 A remote bipolar circuit breaker and a 40 A three-pole RCD with 0.3 A sensitivity at 230 V.
- The GROUNDING should be in accordance with the Technical Standard **ISO 5410**;
- CONSULT a legally HABILITATED professional for such installation.



**ATTENTION!****RISK OF ACCIDENTS and MACHINE DAMAGE:****IMPORTANT WARNING!**

- NEVER carry out any welding operation (electrode, MIG or TIG) with the band saw machine **ON**, i.e. connected to the mains, with the General Switch (02) in **ON**, PILOT HL1 (GREEN) (43) on.
- DO NOT USE the band saw machine itself as the GROUDING point of the welding equipment. Even with the Band Saw machine turned off, DO NOT DO ANY welding on it.
- NEVER WELD any type of material to be cut on the Band Saw machine under any circumstances, as this can cause irreparable electrical damage, which is NOT covered under warranty.

**ATTENTION! RISK OF ACCIDENT:****SAFETY RECOMMENDATIONS WHEN REPLACING ELECTRICAL COMPONENTS:**

- Any electrical components in the power, control and safety circuits that are replaced **MUST** be replaced by one of the same make and reference.
- Any change in specification can lead to the loss of the respective safety functions, generating additional risks and compromising operator safety.

10. BANDSAW BLADE SELECTION:

10.1. LIMITS AND RECOMMENDATIONS:

Prior to beginning any kind of work with the machine, CHECK that the job to be carried out is within the limits specified in table and Technical Data ([SEE Clause 5](#)). If it is out of the specified values, it's recommend that an inquiry in writing be addressed to **Starrett** on the possibility of changing some technical specification. The Starrett will answer in writing the appropriate solution.



ATTENTION!

RISK OF DAMAGE TO THE BAND SAW BLADE:

Starrett cannot be held liable for any damage to persons or property. The machine operator **MUST** carefully assess the characteristics of the material being cut to avoid any risk to themselves or others.

If it is within the specified capabilities of the machine, selection of the band is now another important aspect for the good performance of the job to be carried out.

10.2. CRITERIA FOR BANDSAW BLADE SELECTION:

When choosing a saw for a particular application, several factors must be taken into account, such as the type of material, its hardness, the cutting section, machine capacity, and more.

There are four fundamental variables to consider when selecting a saw:

1. Blade Type;
2. Types of Teeth;
3. Tothing;
4. Feeds and Cutting Speeds.



Starrett Bandsaw
Blade Catalog

10.2.1. TOOTHING:

The teeth or number of teeth per inch (25.4 mm) should be chosen according to the cutting section.

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

10.2.2. FEED AND CUTTING SPEEDS:

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

Starrett provides a slide chart for the quick and easy selection of band saws, along with recommended feeds and speeds for cutting each material.

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



OBSERVATION!

The ideal cutting conditions are 3 to 12 teeth in contact at the same time with the material to be cut.

11. INITIAL ADJUSTMENTS:

11.1. INITIAL CHECKS:

Before starting any kind of work with the machine, CHECK:

1. The volume of coolant (oil + water) in Tank (49) is approximately 20 liters approximately. The concentration of oil in the cutting fluid mixture must follow the instructions according to the oil manufacturers' specifications (figure [11.1](#));



ATTENTION!: ENVIRONMENTAL RISKS:

CHECK that the refrigerant oil to be used is not harmful to the user, the environment or the machine itself.

Disposal must comply with current environmental regulations and those of the product manufacturer.

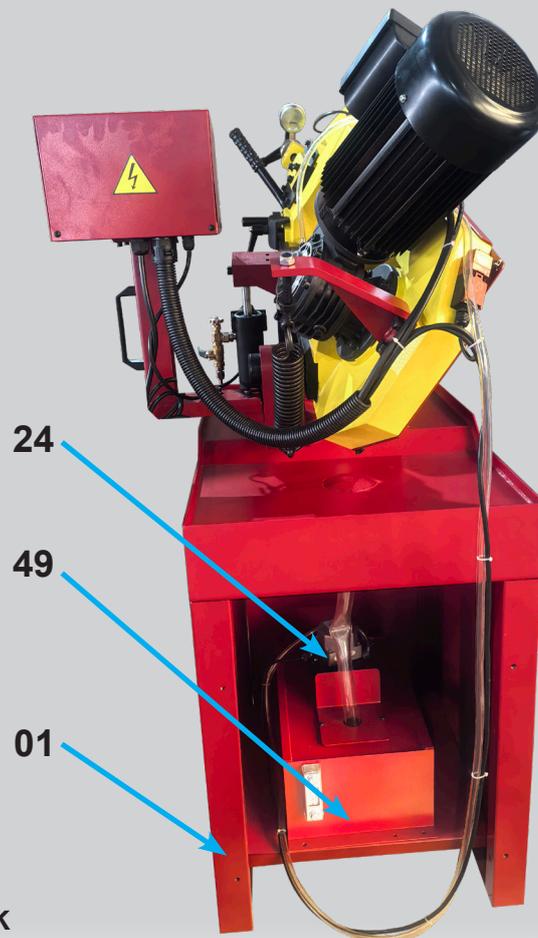


FIGURE 11.1 - COOLANT TANK

2. CHECK the condition of the Band Saw Blade (10), in terms of the integrity of the teeth and its body;
3. CHECK the tension of the Band Saw Blade (10) by turning the Knobs of the Tensioning Nut (51) until the conditions indicated on the Cutting Capacity Plate (52) located on the Bow (04) (figures 7.5 and 11.2) are present. TURN the Tensioning Handle (63) until the pointer on the Pressure Gauge (53) reaches the GREEN band, as shown in the figure below.

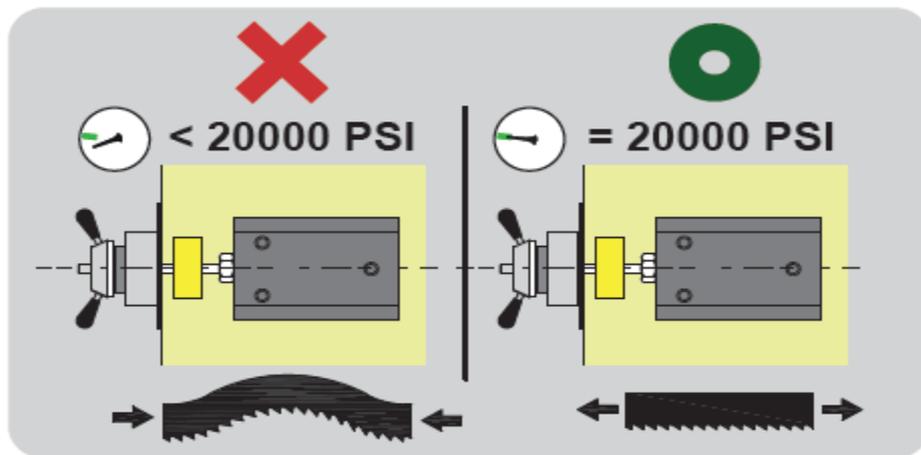
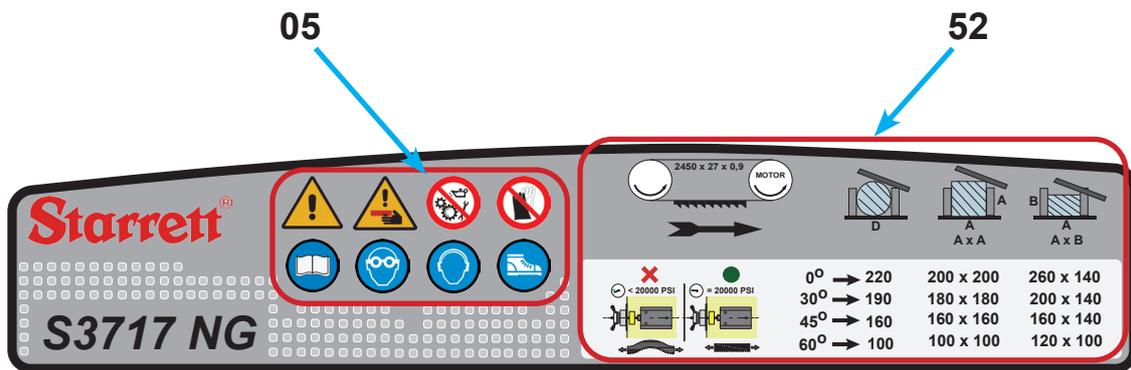


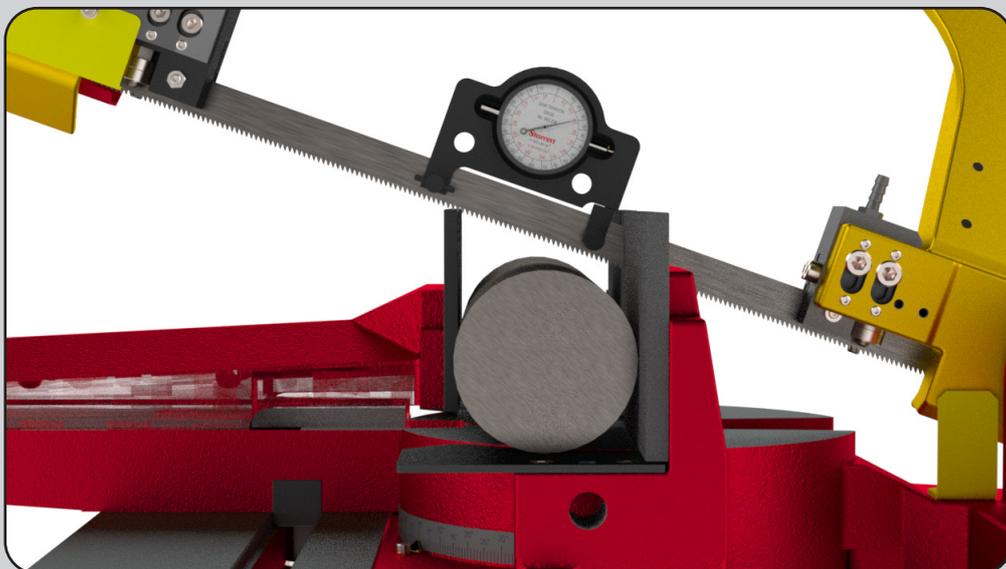
FIGURE 11.2 - CUTTING CAPACITY



WARNING!
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 a **Starrett 682 EMZ tension gauge (EDP 57075 – SAW TENSION GAUGE)** monthly, as shown below, in order to check the factory adjustment of the tensioning set.



4. CHECK if the tooth type is the most suitable for the cut to be made. CHECK if the selection is in accordance with the Criteria for Saw Blade Selection in Chapter 10.
5. OBSERVE that the cutting speed selection (m/min) is compatible with the characteristics of the material to be cut. SELECT the cutting speed via the Speed Selector Switch (40), located on the Control Panel (06). As a guide, the Table of Cutting Recommendations can be used Starrett.
6. CHECK that the material to be cut is correctly positioned on the Cutting Table (07), i.e. properly supported on the entire surface. SEE [11.4](#).

11.2 INITIAL ADJUSTMENTS:

1. ADJUST the position of the Mobile Guide (31) relative to the material to be cut:
 - POSITION the Band Saw Blade (10), WITHOUT TOUCHING THE TEETH, as close as possible to the material to be cut, keeping a distance of 10 mm above it;
 - RELEASE the Lock Lever (38) (figure [7.5](#));
 - SLIDE the Mobile Support (37) so that the distance between the Guides (31) (32) is as small as possible;
 - LOCK the Mobile Guide Support (37) again by the Lever (38).

2. ADJUST the cutting speed using the Speed Selector Switch (40) (ONLY 400 V, 3-ph version) (figure [7.4](#)):
 - “ 1 ” (cutting speed = 35 m/min) for hard materials;
 - “ 2 ” (cutting speed = 70 m/min) for soft materials.

11.3 CONSIDERATIONS ABOUT THE BANDSAW BLADE:

Some advice for maintaining the good performance of the Band Saw Blade (10):

1. TENSION the Band Saw Blade (10) correctly, as instructed in [item 3 of subclause 11.1](#);
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 (hardness) of the material to be cut;
4. USE good quality Bandsaw Blades (10) with correct and intact teeth (no broken teeth);
5. USE the recommendations for the First Cuts in [subclause 12.4](#);
6. CLEAN the Guides (31) (32) frequently - with the machine stopped, USE **Starrett** M1 Micro Oil to clean the Lateral Bearings (33) and Rear Insert (34);
7. CHECK the state of conservation of the Bearings (33);
8. CHECK periodically the clearances between the Bearings (33) (0.95 mm), and the distance between the back of the Bandsaw Blade (10) and the Rear Insert (34), as shown in figure [15.3](#).

**OBSERVATION!**

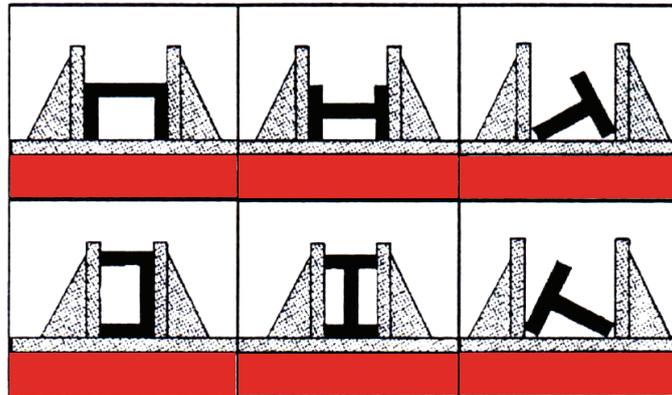
In order to get the most out of the Band Saw Blade (10), it is recommended that it be honed when new and installed in the machine.

Softening is a practice designed to allow the cutting edges of the teeth to settle before the saw is subjected to full work.

Conditioning consists of making the Band Saw Blade (10) to work for twice as long as necessary for cutting and at an appropriate speed, according to the **Starrett** Cutting Recommendations Table.

AVOID LETTING THE BAND SAW BLADE TEETH SLIDE OVER THE MATERIAL WITHOUT REMOVING CHIPS.

(AVOID VIBRATIONS)

11.4 RECOMMENDATIONS FOR THE BEST WAY TO SECURE THE MATERIAL TO BE CUT:**OBSERVATION!**

The cutting operation must be carried out at a forward speed and cutting speed suitable for the teeth of the Band Saw Blade (10), to the thickness of the material to be cut and to the wear of the cutting tool itself.

It is very important to maintain cutting conditions within the parameters established by **Starrett**. This will result in greater performance and longer blade life. For proper machine operation, it is important to keep the Guides (31) (32) clean at all times and ensure that both receive an abundant flow of cutting fluid. To increase or decrease the flow of cutting fluid, simply OPEN or CLOSE the valve located on the Distributor (59), which is installed on the Bow (04) (figure [11.5](#)).

11.5. BANDSAW BLADE REPLACEMENT AND ADJUSTMENT PROCEDURES:

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

1. POSITION the General Switch (02) in the OFF position, the EMERGENCY Button (03) pressed (locked) (figure [7.4](#));
2. REMOVE the protective Back Cover (18) by removing the 4 Knobs (60) located at the rear of the Bow (04) (figure [11.3](#));
3. REMOVE the Guards (61) and (62) from the Support (37) of the Mobile Guide (31) (figures [11.3](#) and [11.4](#));
4. When the Back Cover (18) is removed, the Safety Switch (29) installed in the Bow (04) keeps the machine's electrical control system disabled, as a safety measure - **UNDER NO HYPOTHESIS NEVER ACTIVATE THE SAFETY SWITCH (29) IN THIS SITUATION** (figure [11.3](#));
5. TURN the Handle (63) to decrease (loosen) the tension on the Band Saw Blade (10) in order to decrease the distance between the centers of the Flywheels (13) (14) (figure [11.3](#));
6. REMOVE the Band Saw Blade (10) carefully, wearing leather gloves, only in this situation, and safety glasses;



7. CAREFULLY CLEAN the surface where the Band Saw Blade (10) touches the 2 Flywheels (13) (14) and the inside of the Guides (31) (32), spraying plenty of M1 Micro Oil between the Lateral Bearings (33) and the Rear Insert (34), before installing a new Band Saw Blade (10);
8. INSTALL the new Band Saw Blade (10), ensuring that the teeth are intact and appropriate for the material to be cut. MAKE SURE the teeth are aligned in the direction indicated on the Cutting Capacity Plate (52);

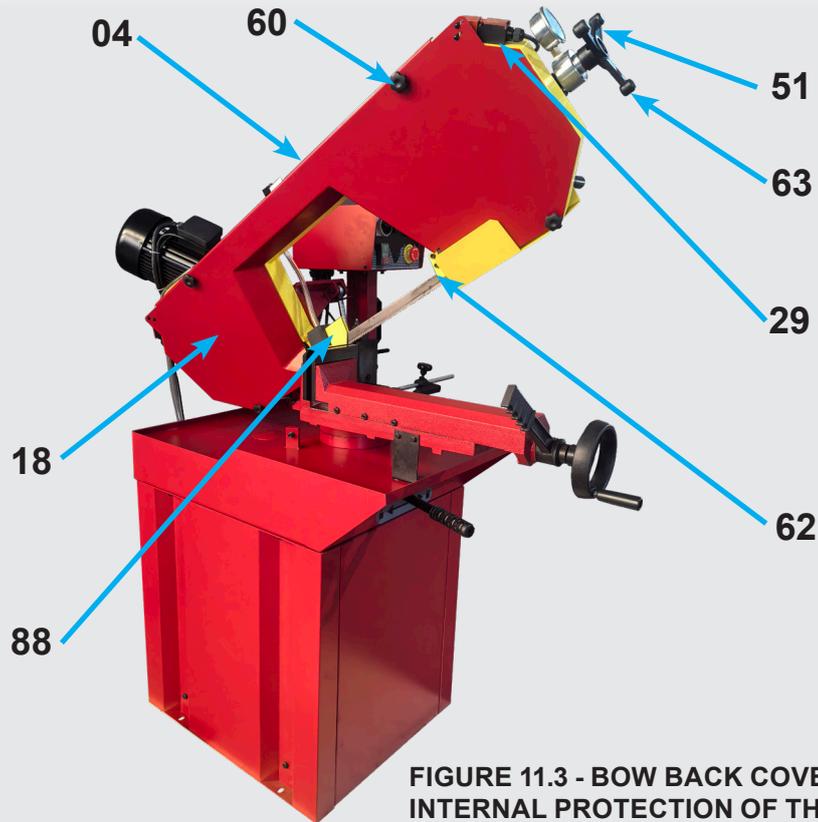


FIGURE 11.3 - BOW BACK COVER AND INTERNAL PROTECTION OF THE MOBILE GUIDE

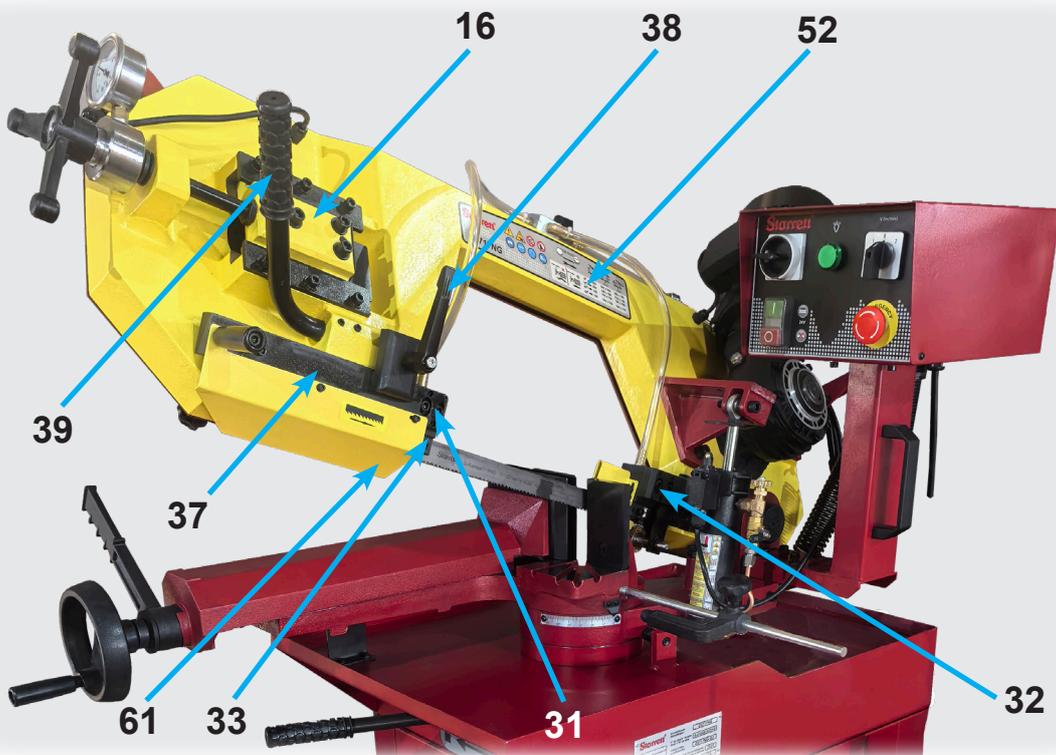


FIGURE 11.4 - FIXED EXTERNAL PROTECTION FOR THE MOBILE GUIDE

9. FIT first into the gap of the Guides (31) (32) [between the Lateral Bearings (33)], then onto the Driver Flywheel (14), and finally onto the Driven Flywheel (13);
10. PERFORM pre-tensioning by turning the Handle (63) in the direction of tensioning the Band Saw Blade (10) (stretch);
11. INSTALL the Back Cover (18), fixing it with the Knobs (60);
12. FIT correctly the actuator attached to the Back Cover (18) to the Safety Switch (29) (figure 11.5);
13. INSTALL the Guard (62) of the Support (37) of the Mobile Guide (31) by its respective screws;
14. SELECT one of the 2 cutting speeds using the Speed Selector Switch (40);
15. RELEASE the EMERGENCY Button (03);
16. POSITION the General Switch (02) to **ON**;
17. PRESS the START Button SB1 (41) to turn the Motor (25) (figure [11.3](#)). PRESS the STOP Button SB2 (42) after 5 seconds;
18. REPEAT this operation 4 to 5 times to seat the Band Saw Blade (10) on the Flywheels (13) (14) and the Guides (31) (32);
19. PERFORM the tensioning of the Band Saw Blade (10) by turning the knobs on the Tensioning Nut (51).

11.6 INSTALLATION PROCEDURE FOR THE MEASURING ROD SYSTEM:

The **S3717 NG** has a standard Measuring Rod system, consisting of a 500 mm, the Rod (79) and a Stopper (80) (figure [11.5](#)).

INSTALLATION PROCEDURE:

INSTALL the end of the Rod (79) on the right side of the Cutting Table (07) assembly.

FIX this end of the Rod (79) by its screw on the right side of the Cutting Table (07) assembly.

USE PROCEDURE:

1. INSTALL the Stopper (80) on the Measuring Rod (79);
2. POSITION the Stopper (80) on the side of the Band Saw Blade (10);

12. NORMAL OPERATION:

12.1. SPECIFIC SAFETY RECOMMENDATIONS:



ATTENTION! RISK OF ACCIDENTS WITH SERIOUS INJURIES



- All cutting operation procedures on the Band Saw machine **Starrett** must be carried out by specialized companies or by **TRAINED** and **AUTHORIZED** professionals.
- Before performing any cutting operation on the machine, it is necessary **READ CAREFULLY** this Instruction Manual in order to know the specific safety instructions for this type of operation.
- USE Personal Protective Equipment - PPE during loading and unloading of the Band Saw machine.



- PLAN every cutting operation before starting it.
- CERTIFY that all safe conditions for the cutting operation are present.
- CERTIFY that all cutting parameters are set ([SEE Clause 11](#)).
- HANDLE the materials to be cut with adequate lifting and transportation devices, for example, hoists, overhead cranes, or other devices with the same efficiency and purpose.
- USE Roller Tables for cutting long material ([SEE 9.2 - figures 9.2 and 9.3](#) and [Clause 06 - General Safety Recommendations](#)).

12.2. STARTING THE MACHINE:

PROCEDURE:

1. OBSERVE if the machine is inoperative, verifying that the General Switch (02) is in the **OFF** position and the EMERGENCY Button (03) is pressed (figure 7.1), before starting any operation;
2. LIFT the Bow (04) to its maximum upper position using the Lever (39);
3. LOCK the Shut-off Valve (12), positioning it horizontally, as shown in figure [12.1](#);
4. CLOSE the Regulator Valve (22), turning it clockwise, until resistance to closing is encountered. This will be safe before handling or adjusting it;
5. APPROXIMATE the Vise Set (17) with the Handwheel (19) to the material to be cut. PLACE the Jaws on the material to be cut (figure [12.2](#));
6. TURN BACK the Handwheel (19) ¼ turn. This will create a small clearance sufficient for the operator to move the part longitudinally. Tightening and loosening the Vise Set (17) on the material will be done manually by rotating the Lever (20) downward (figure [12.2](#));
7. CERTIFY that the material is properly fixed and safe on the Vise Set (17);
8. SELECT the cutting speed using the Speed Selector Switch (40), depending on the characteristics of the material to be cut

12.3 CUTTING OPERATION:

The cutting feeding of the **S3717 NG** is exerted by the weight of the Bow (04), and the operator can control the advance speed using the Regulator Valve (22).

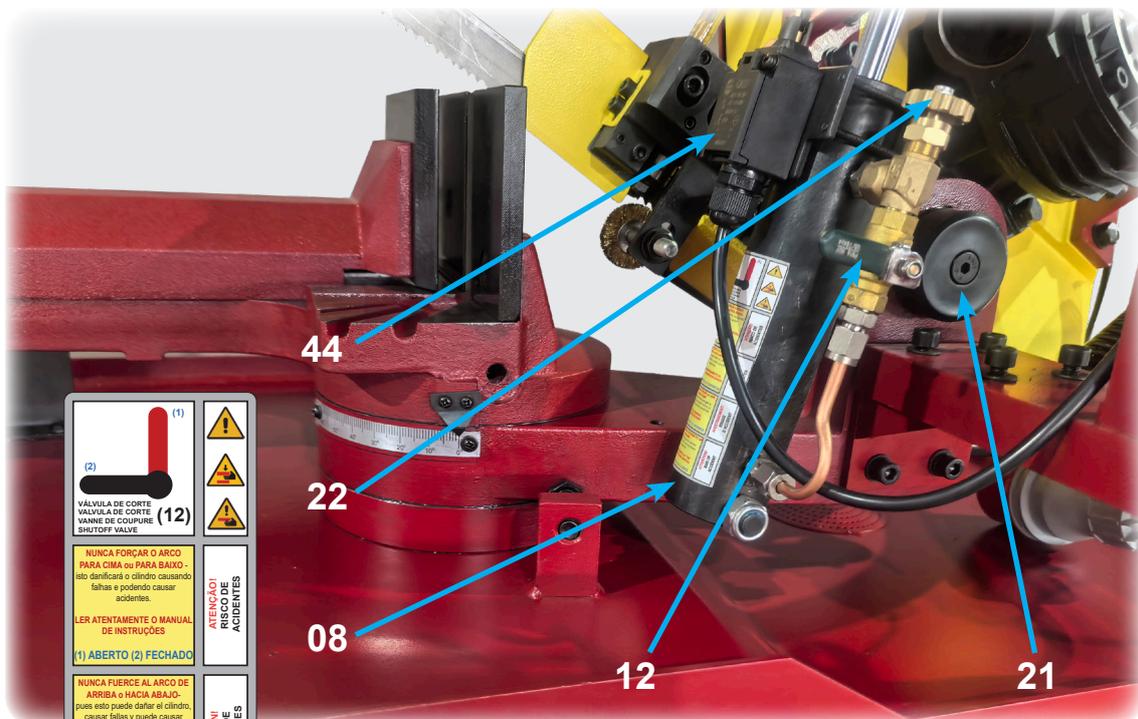
PROCEDURE:

1. LIFT the Bow (04) to the upper position using the Feeding Lever (39);
2. CLOSE the Valves (12) and (22) (figure [12.1](#));
3. POSITION the General Switch (02) in the **ON** position and the EMERGENCY Button (03) unlocked;
4. OPEN the Tap (57) on the Distributor (59) (figure 12.3), if necessary;
5. PRESS the START Button (41) in the Control Panel (06);
6. OPEN the Shut-off Valve (12) slowly and carefully;

7. OPEN the Regulator Valve (22) slowly until a suitable cutting speed is reached. (figure 12.1);
8. OBSERVE the the cutting performance. If there is anything or abnormal noise, stop the cutting process by pressing the EMERGENCY Button (03);

At the end of the cut, the Arm (46) presses the Limit Switch (44), turning off the Motor (25) (figure 7.3). At the same time, the Bow (04) touches the Stopper Pin (58) (figure 12.5).

9. CLOSE the Valves (12) and (22) (figure 12.1);
10. LIFT the Bow (04) to its upper position, using the Lever (39);
11. OPEN the Vise Set (17) by Lever (20) pulling it up;



(1)	⚠
(2)	⚠
(12)	⚠
(1) ABERTO (2) FECHADO	ATENCIÓN! RISQUE ACCIDENTES
(1) ABIERTA (2) CERRADA	ATENCIÓN! RISQUE ACCIDENTES
(1) OUVERT (2) FERMEE	AVVERTIMENTI RISQUE D'ACCIDENT
(1) OPEN (2) CLOSED	ATTENTION! RISQUE ACCIDENT

FIGURE 12.1 - HYDRAULIC CYLINDER

ATTENTION! RISK OF ACCIDENT:



OBSERVE at all times the Operating Instructions for the Cylinder (08), described in the Technical Label on the side, installed on the Bow (04), next to the Motor (25).

12. REMOVE the cutted material;

13. REPOSITION the cutting material for a new cut.

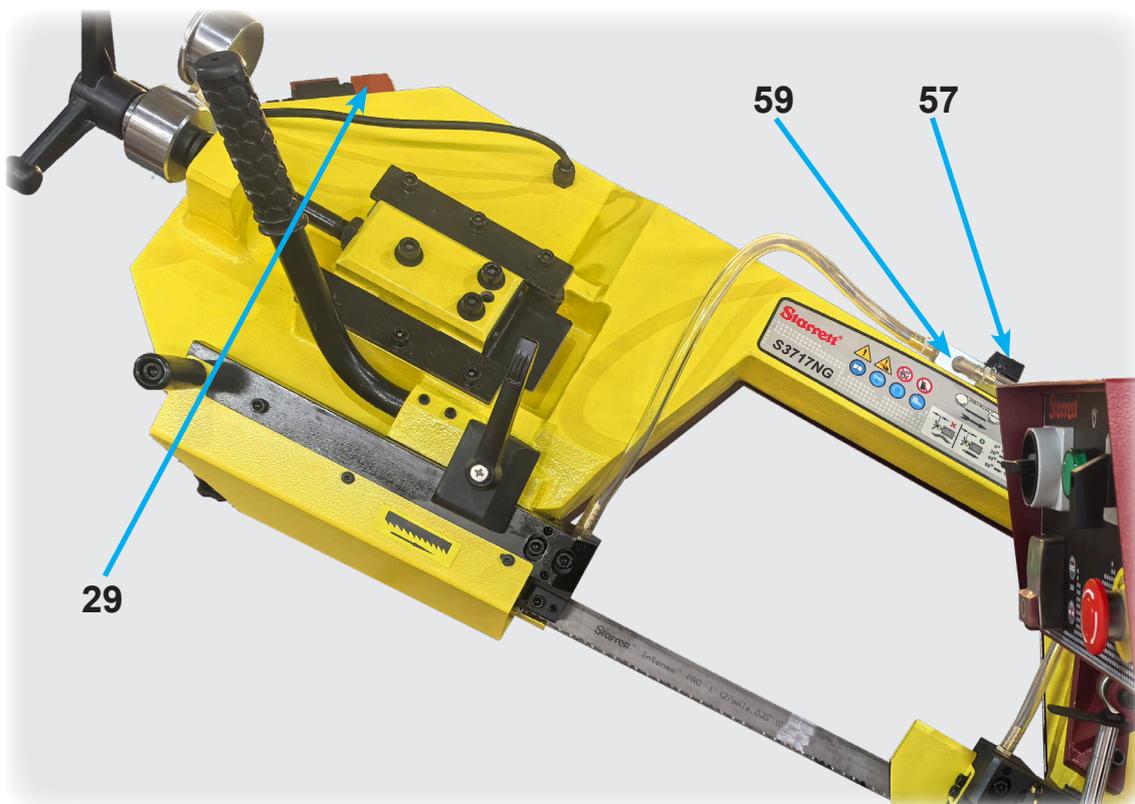
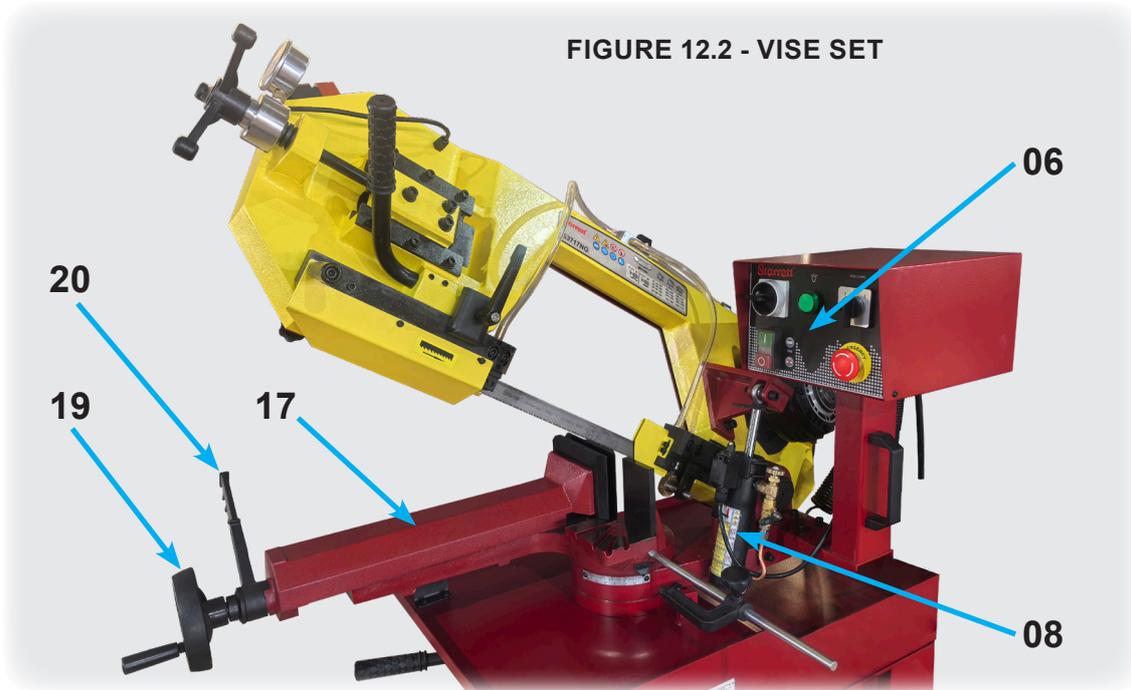


FIGURE 12.3 - COOLING LIQUID DISTRIBUTOR TAP

**ATTENTION! RISK OF DAMAGE TO EQUIPMENT AND ACCIDENTS**

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

ALWAYS CHECK that the Bow (04) is locked by the Lever (65) (figure [12.6](#)).

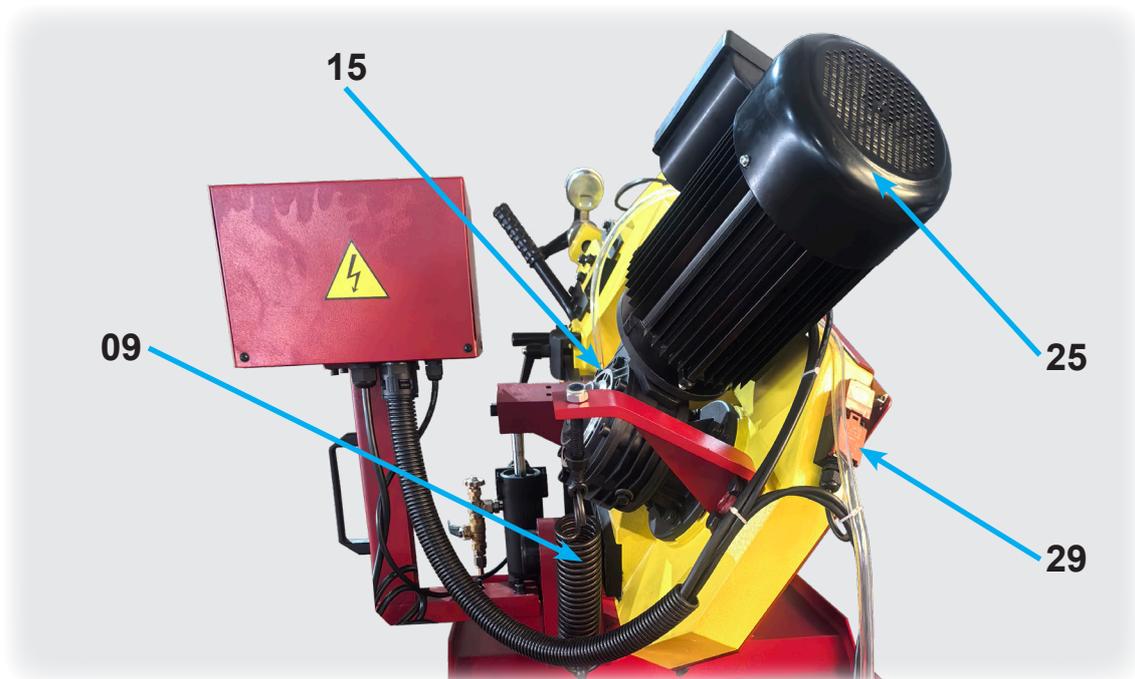


FIGURA 12.4 - SPRING SET

12.3. NORMAL MACHINE STOP:

There are 2 situations in which the machine stops NORMALLY.

The first is at the end of the cut, when the Limit Switch (44) (figure 12.5) is activated, switching off the Motors (25) of the Band Saw Blade (10) and the Coolant Pump (24).

The second case is the operator's action when the STOP Button (42) is pressed.

12.4. RECOMMENDATIONS IN THE FIRST CUTS:

USE low feed rates and, if necessary, increase them with each operation as the cutting performance improves.

If there is any noise abnormal to the process, the operator must stop the operation and CHECK what may be happening.

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

12.5. PROCEDURE FOR CUTTING AT AN ANGLE:

To perform an angled cut ($\neq 0^\circ$) to the operator's right side (from 0° to a maximum of $+60^\circ$), follow the procedure.

PROCEDURE:

1. CHECK that the General Switch (02) is in the **OFF** position and the EMERGENCY Button (03) is pressed (figure 7.4) before starting any operation;
2. PUSH the Bow Lock Lever (65) counterclockwise, in the opposite direction to that shown in figure 12.5;

TURN the Bow (04) to the desired angle shown on the Scale (66) in relation to the Pointer (67) (figures 12.5 and 12.6);

3. PULL the Bow Rotation Lock Lever (65) clockwise (LOCK), as shown in figure 12.5.

For cuts with angles greater than 45° ($>45^\circ$), the rear of the Bow (04) may be positioned along the side of the Cabinet (01).

To better support the material to be cut, it is recommended to install an Input Roller Table, similar to the one shown in figure 9.2. This prevents the material to be cut from falling when the Vise (17) is opened.

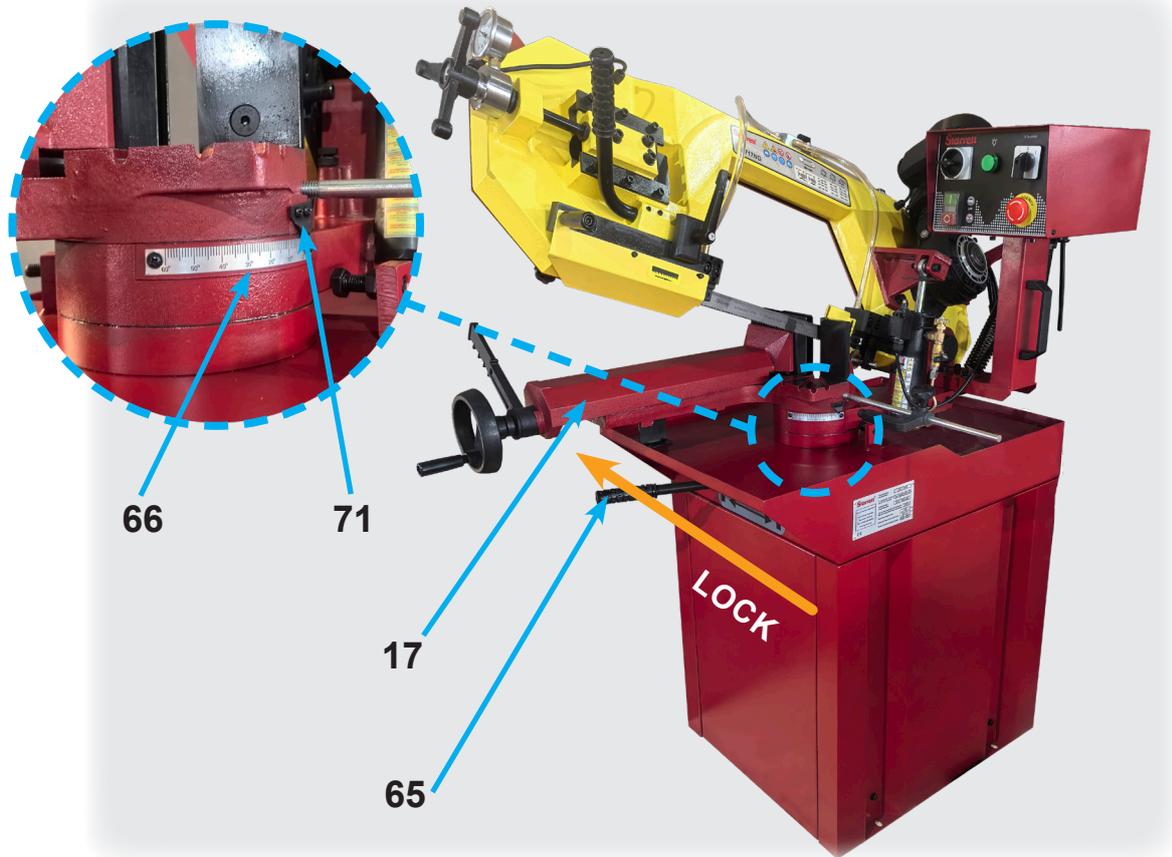


FIGURE 12.5 - BOW LOCK LEVER AND BOW POSITION FOR CUTTING AT 0°

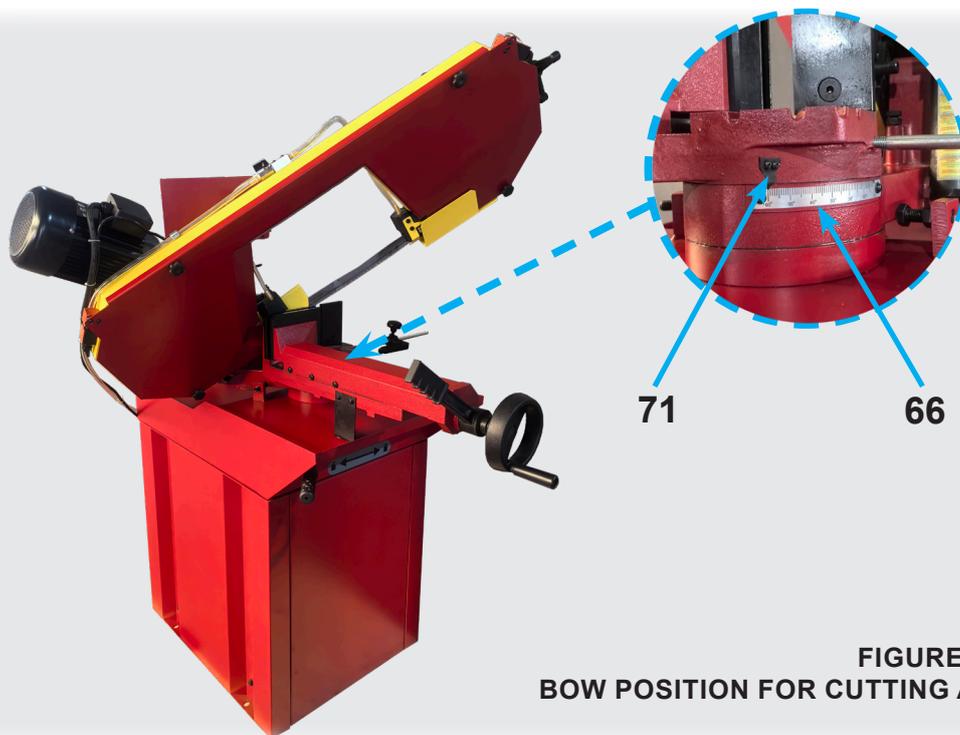


FIGURE 12.6 - BOW POSITION FOR CUTTING AT 60°



**ATTENTION! RISK OF ACCIDENT AND
MACHINE DAMAGE:**

To carry out this procedure, the Bow (04) must be in its maximum upper position. The operator must **PRESS** the **EMERGENCY** Button (03) and **POSITION** the General Switch (02) in the **OFF**, until the adjustment of this item is complete.

CHECK if the Bow (04) is locked by forcing it to turn by the Lever (65) (figure 12.5).

13. EMERGENCY OPERATION:

In the case of an occurrence in which the EMERGENCY Button (03) on the Control Panel (06) needs to be triggered ([figures 13.1A and 13.1B](#)), the operator must follow the procedures below.

PROCEDURE:



1. **EMERGENCY!**: PRESS the EMERGENCY Button (03) located on the Control Panel (06).
2. TURN OFF the machine via the General Switch (02), setting it to **OFF** ([figures 13.1A and 13.1B](#));

First providence:

3. STOP and CHECK what is happening;
4. REQUEST help from a SUPERVISOR or other QUALIFIED person;
5. CHECK and RESOLVE the issue;
6. **DO NOT OPERATE** the machine without first ensuring that the cause of the EMERGENCY has been resolved.

Second providence:

7. VERIFY that the material to be cut is properly secured, that the Band Saw Blade (10) is intact and in position outside the material and secure, and also that there are no other imminent risks that must be removed;
8. POSITION the General Switch (02) at **ON**, as soon as the problem is solved and eliminating the present danger, if necessary;
9. CHECK that the Pilot Signal (43) (GREEN) located on the Control Panel (06) is lit:
 - If the Pilot Signal (43) (GREEN) remains **OFF**, REQUEST assistance from the maintenance team. CHECK what is happening, as there may be an issue with the electrical system preventing the machine from starting.

10. START the machine and CONTINUE the initial work;

11. REPORT and REGISTER the occurrence, if necessary to a supervisor or immediate superior.



FIGURE 13.1A - CONTROL PANEL - 230 V VERSION - 1 ph

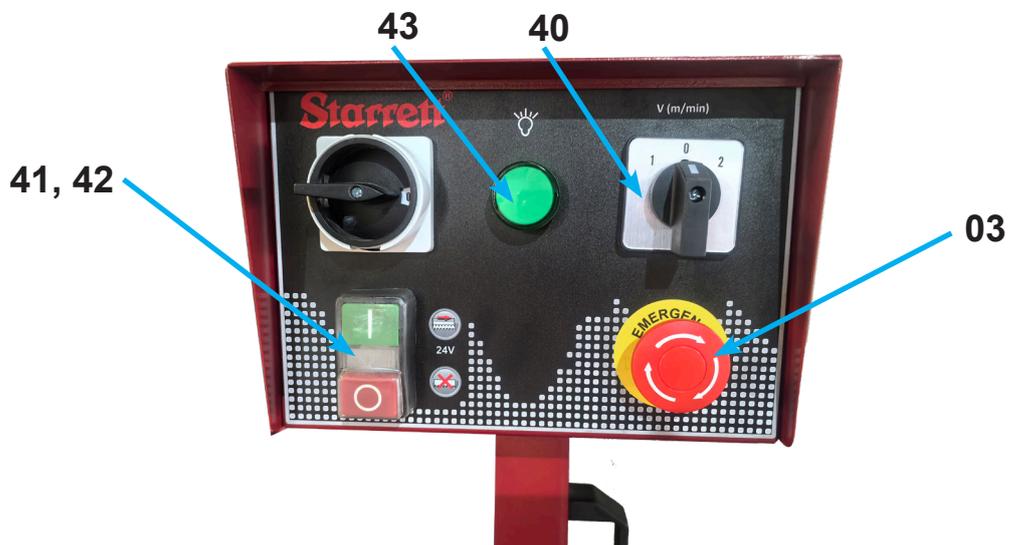


FIGURE 13.1B - CONTROL PANEL - 400 V VERSION - 3 ph

14. SYSTEMS:

14.1. ELECTRICAL SYSTEM:

The electrical system was developed and projected in order to maintain the operator and equipment safety, being in accordance with the requirements of the norms **IEC 60204-1** and **ISO 16093**.

The standard machine is designed to operate with 2 motors: Motor M1 (25), which can be single-phase - 230 V (figure 17.1A) or three-phase - 400 V (figure 14.1B), drives the Band Saw Blade (10). The single-phase Motor M2 (24) drives the Coolant Pump M2 (24). Both Motors M1 and M2 are duly specified according to their load capacity.

A General Switch QS1 (02), of the disconnecter type, is installed at the circuit input to electrically disable the machine when the cover of the Control Panel (06) is opened for maintenance.

A KM Contactor (26) has the function of starting Motors M1 (25) and M2 (24) as soon Start Button SB1 (41) is pressed (figure 7.4 A). SEE figure [14.1](#). When the machine START is triggered, the Pilot Signal (GREEN) HL1 (43) lights up, indicating the machine is on operation.

The M1 Motor (25) single-phase (230 V) version has only one cutting speed.

The version with a three-phase M1 Motor (25) (400 V) has a SA1 3-position switch (1 - 0 - 2) (40), whose function is to change the speed of the M1 Motor (25) according to the operator's choice. In the 0 (ZERO) or neutral position, the Motor (25) will not start. To switch off the machine, press the Stop Button SB2 (42).

In any version, the M1 Motor (25) is protected by the FR Thermal Protection (45). If M1 Motor (25) is overloaded, the Thermic Protection FR (45) will open its contacts and switch off M1 Motor (25). Also, M1 Motor (25) and M2 Motor (24) of the Coolant Pump are protected by the Thermomagnetic Circuit Breaker QS2 (27).

A properly sized TC Transformer (75) is used to reduce the control circuit voltage to 24 VAC, in extra-low voltage. The short-circuit protection for this component is provided by 2 fuses FU1 (76) and FU2 (77) at the input and 1 fuse FU3 (78) at the output. When the General Switch QS1 (02) is in the **ON** position, the PILOT Signal HL2 (WHITE) (48) lights up, indicating that the machine is energized.

The Safety Switch SQ1 (29) interlocks the Back Cover (18).

In the 400 V, three-phase version, there is a 2-position Selector Switch SA1 (23) that serves to select the cutting speed. A Limit Switch SQ2 (44), installed on the Hydraulic Cylinder (08), automatically turns off the machine at the end of the cut, i.e., when the Bow (04) reaches the lower position.

The cables for Motors M1 (25) and M2 (24) are black and have the gauge as specified in the following Electrical Schematics. The control cables are red. All cables are identified according to the attached electrical diagram.

LIST OF ELECTRICAL COMPONENTS:

SIGLA	Description:	Specification	Qty,	
QS1	GENERAL SWITCH	LW26-20	01	
QS2	THERMOMAGNETIC CIRCUIT BREAKER	(230 V version - 1 ph)	DZ47-63/2P-D10	01
		(400 V version - 3 ph)	DZ47-63/3P-D6	01
M1	BAND SAW BLADE MOTOR		01	
M2	COOLING PUMP MOTOR		01	
KM	CONTACTOR	CJX2-1210	01	
SA1	SPEED SELECTOR SWITCH (400 V - 3 ph version)		01	
SB1	START BUTTON (GREEN)	Y090/24V	01	
SB2	STOP BUTTON (RED)	Y090	01	
SB3	EMERGENCY BUTTON	Y090-11ZM	01	
SQ1	ELECTROMECHANICAL SAFETY SWITCH	QKS8	02	
SQ2	LIMIT SWITCH	QKS7	01	
FR	M1 MOTOR THERMAL PROTECTION		01	
HL1	PILOT SIGNAL (GREEN) - MACHINE ON		01	
HL2	PILOT SIGNAL (WHITE) - 24 V		01	
TC	TRANSFORMER (220 Vac/24Vac)	BK50	01	
FU1	FUSE - TRANSFORMER TC INPUT	M4/8 SF 2A	01	
FU2	FUSE - TRANSFORMER TC INPUT	M4/8 SF 2A	01	
FU3	FUSE - TRANSFORMER TC OUTPUT	M4/8 SF 2A	01	

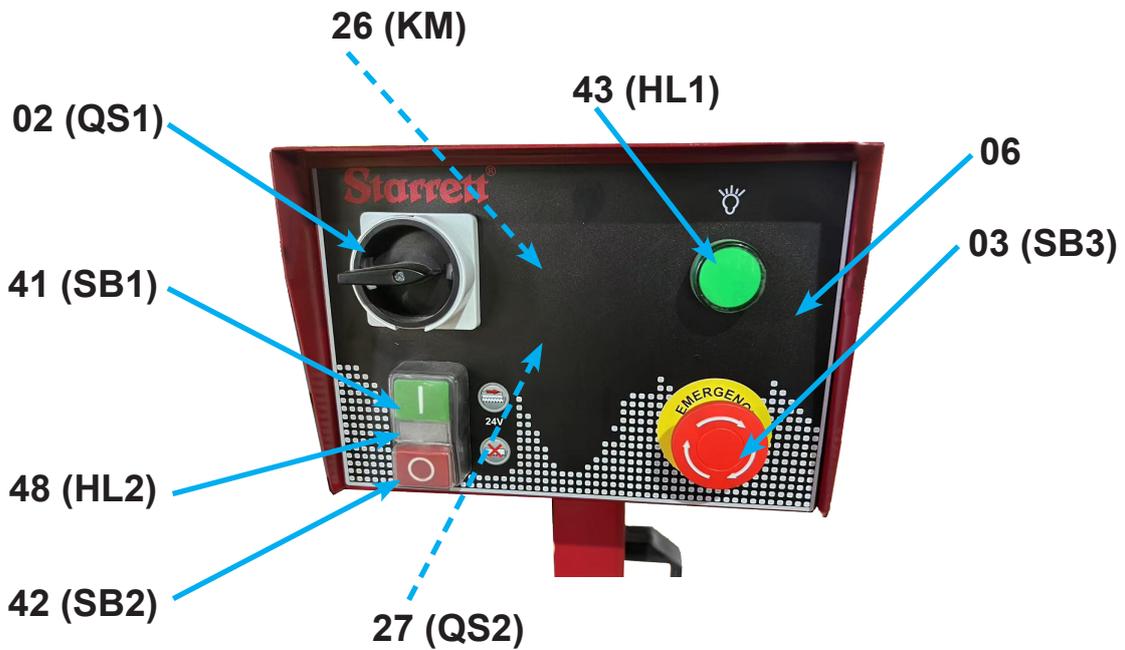
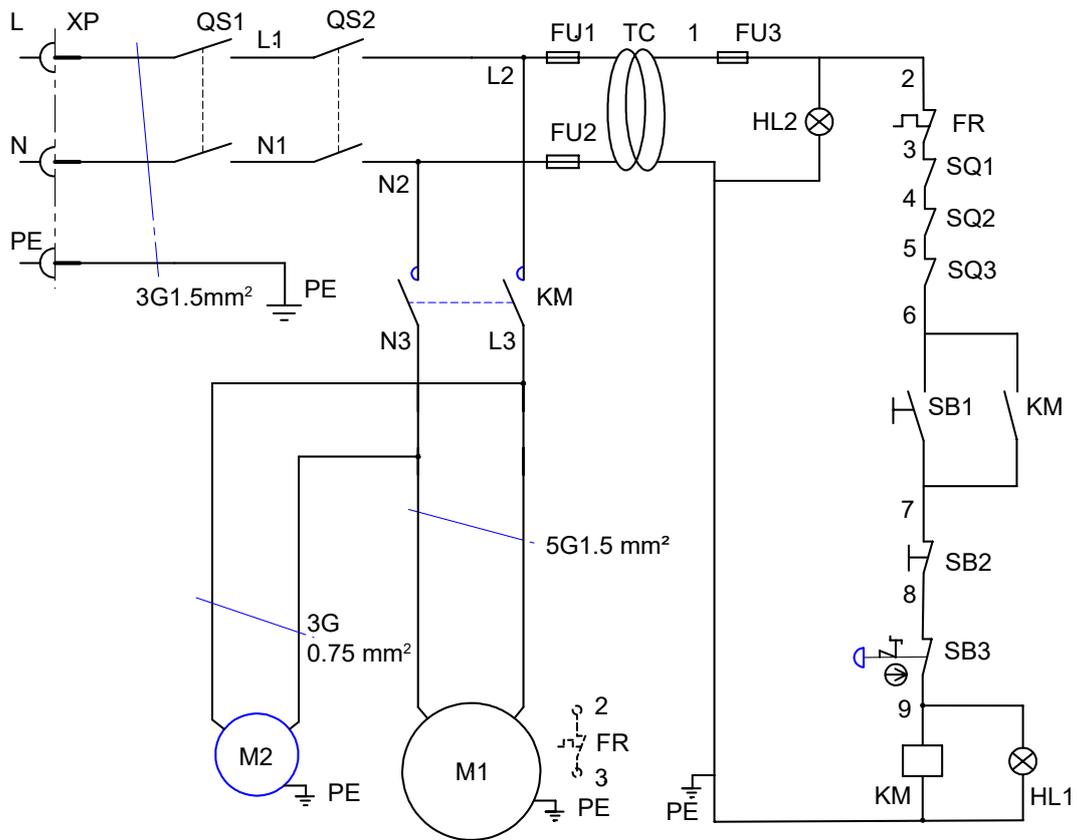


FIGURE 14.1A - WIRING DIAGRAM – CONTROL PANEL – 230 V / 1 ph

14.2. MACHINE SAFETY SYSTEMS:

This machine is equipped with the following safety devices:

- Motor Thermic Protection FR (45) protects the M1 Motor (25) of the Band Saw Blade from overloading;
- EMERGENCY Button SB3 (03): Located on the Control Panel (06), for any EMERGENCY STOP needs;
- Back Cover (18): Has the function of mobile protection of the interior of the Bow (04). When removed, it opens the Safety Switch SQ1 (29), disabling the machine's Electrical System;
- Pilot Signal HL 1 (43): Located on the Control Panel (06). Its function is to indicate which machine is in operation;
- Pilot Signal HL2 (48): 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 able to work;
- Thermomagnetic Circuit Breaker QS2 (27): located inside the Electric Box (47), this component protects the Motors M1 (25) and M2 (24) against short circuits and overloads;
- Mobile Guide Guards (61) (62): Located and fixed on the Mobile Guide Support (37) (figure 7.2), which can only be removed by the use of a tool;
- Fixed Guide Guard (88): Located and attached to the Fixed Guide Support (87) (figure 7.6), which can only be removed by the use of a tool.

14.3. MEASURE ROD SYSTEM:

The **S3717NG** features a standard Measuring Rod system, consisting of a 500 mm Measuring Rod (79) and a Stopper (80) (figure [14.2](#)).

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

14.4 GEARMOTOR:

The 400 V, three-phase version of the **S3717NG** was developed for 2 cutting speeds, in order to cut different types of materials. The selection of these speeds is done electronically through the 3-position Selector Switch (40) (speeds "1", "2", and "O" – OFF), which controls an assembly consisting of the Gearbox (15) and the Motor (25) (figures 14.3).

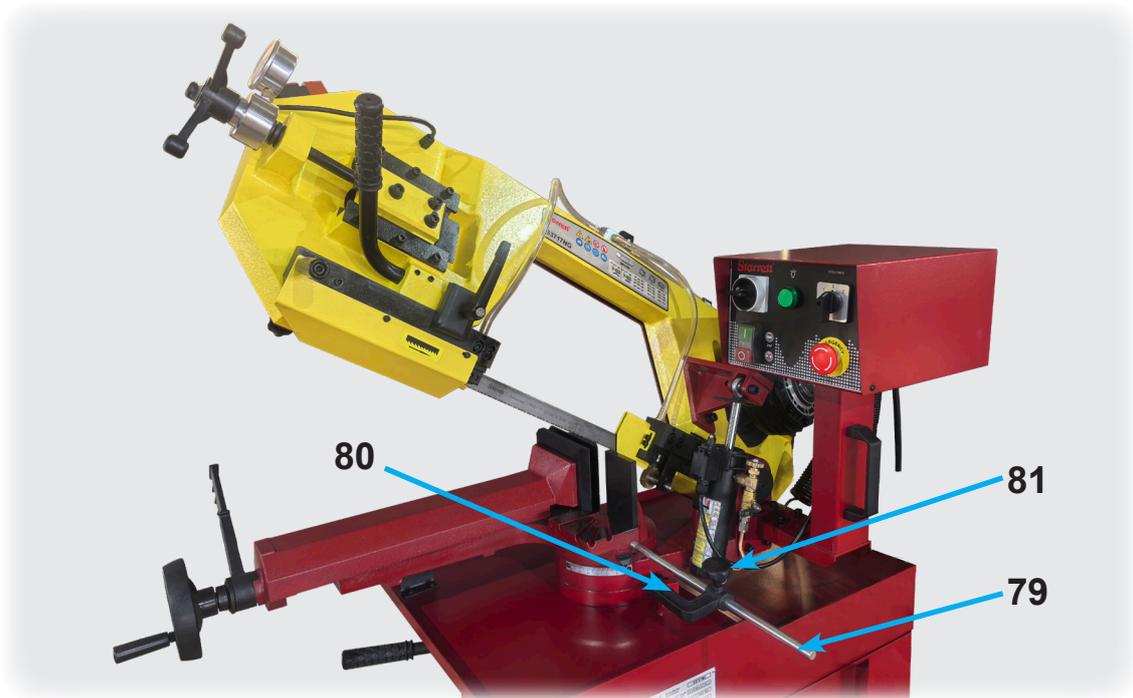


FIGURE 14.2 - MEASURING ROD SYSTEM

14.4.1. PRINCIPLE OF FUNCTIONING:

The Gearbox (15) is of the WORM type, with permanent lubrication. The Motor (25) is coupled to this Gearbox (15). In the 230 V version, this Motor (25) has a single-phase power supply, producing only 1 single cutting speed. In the 400 V version, the Motor (25) installed is of the DAHLANDER type, with 2 speeds, that is, 4 and 8 poles, with three-phase power supply at a frequency of 50 Hz.

In cases of prolonged operation in hot environments, the WORM-type Gearbox (15), due to its characteristics, can operate at temperatures ranging from 60 to 80 °C. In this temperature range, neither its performance nor that of the Motor (25) is affected.



FIGURE 14.3 - GEARMOTOR SYSTEM

15. GENERAL MAINTENANCE:

15.1. SPECIFIC SAFETY RECOMMENDATIONS



ATTENTION!:

ELECTRICAL SHOCK HAZARDS AND ACCIDENTS WITH SERIOUS INJURIES.



- Any intervention on the Starrett Band Saw Machine, as for maintenance, must be performed by **QUALIFIED** professionals, and **AUTHORIZED** by the owner company.
- USE Personal Protective Equipment - PPE during all maintenance phases. READ CAREFULLY the Maintenance instructions contained in this Instruction Manual.



- PLAN all maintenance, lubrication, and periodic inspection operations in advance. PREPARE all the necessary tools and materials for this operation.
- KEEP the electrical schematics handy for possible consultation during maintenance, lubrication, and inspection of the machine.
- CERTIFY that the General Switch (02) is in the **OFF** position, to avoid risk of electrical shock. If necessary, LOCK the General Switch (02) with a padlock or a locking device (figure 15.1), when there are accident risks.



- USE Maintenance Warning Label (figure 13.2) (TAGOUT) positioned and/or fixed on the General Switch (02) and at the locations where maintenance is taking place on the machine (LOTO procedure).

- DO NOT CLIMB, under any circumstances, on the machine. USE recommended and authorized means of access for work at height.



- ISOLATE the area around the machine to be serviced with signs and barriers, and PROVIDE suitable lifting and transport devices.



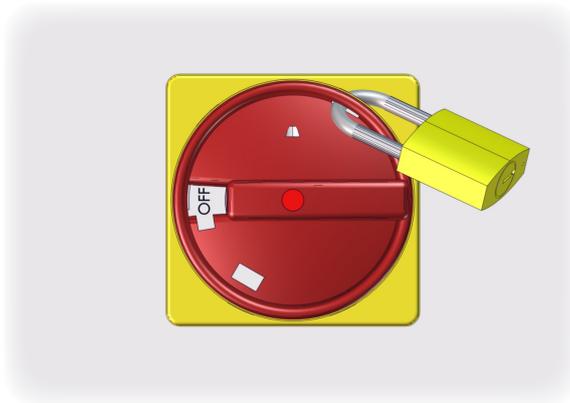


FIGURA 15.1 - GENERAL SWITCH LOCK WITH PADLOCK

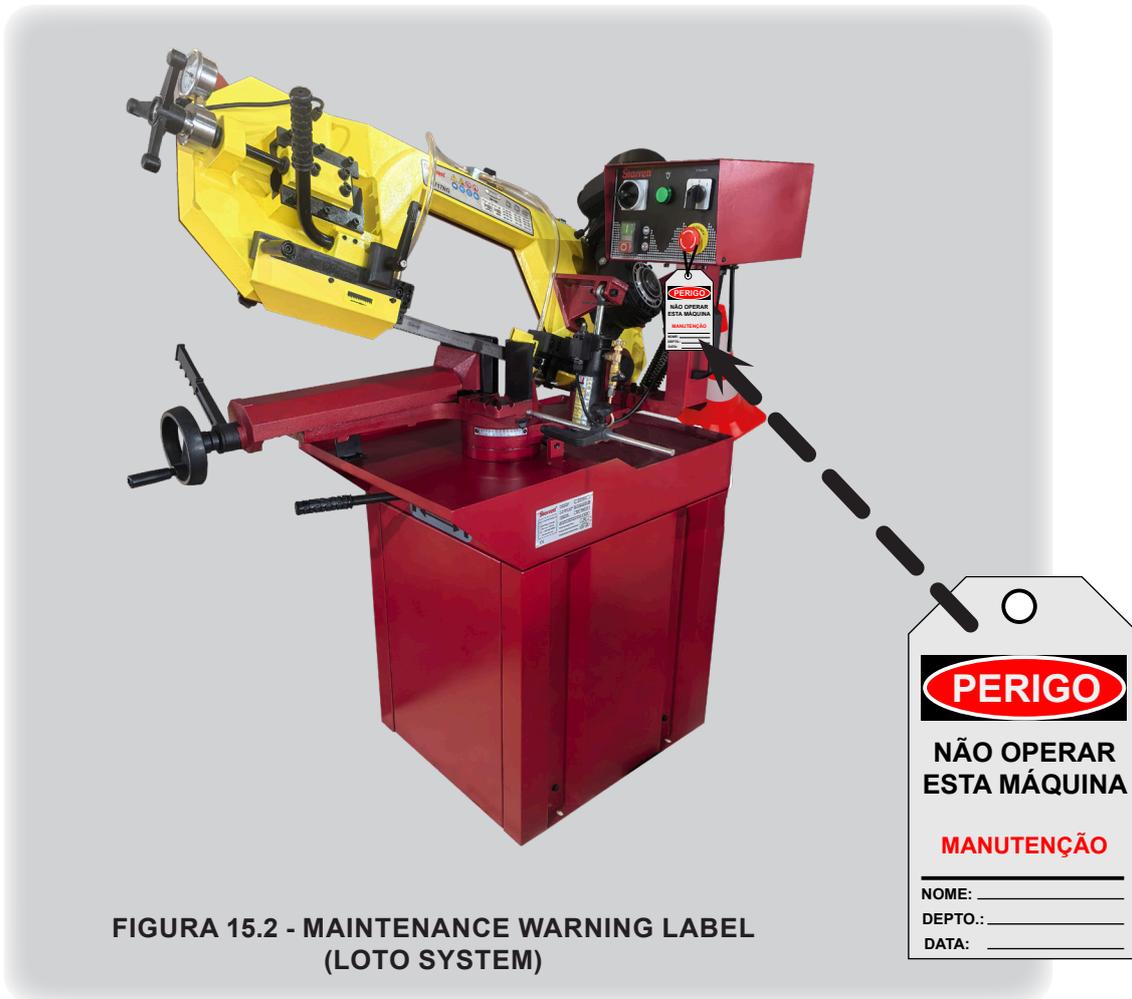


FIGURA 15.2 - MAINTENANCE WARNING LABEL
(LOTO SYSTEM)

This Chapter aims to describe the main systems that compose this machine, as well as the main corrective and preventive maintenance procedures. Keeping periodic inspections up to date allows the machine to always obtain good overall performance.

15.2. CLEANING:

It is very important:

- PERFORM the cleaning and removal of chips from the Flywheels (13)(14) and the Guide Set (31)(32) daily;
- CLEAN periodically (at least once a week) the Tank (49) and refill or replace, if necessary, the coolant cutting fluid mixture in the Tank (49), and maintain the proper level;
- REMOVE chips from the Vise (17) and the Cabinet (01) at specific intervals during the day;
- CLEAN periodically and carry out proper inspection of the conductor cables of the entire electrical system (“harnesses”).



ATTENTION! RISK OF INJURY TO THE EYES:

When using compressed air or equivalent systems for cleaning, the operator **MUST WEAR APPROPRIATE SAFETY GLASSES** to prevent potential injuries and ensure compliance with safety regulations.



15.3. CORRECTIVE MAINTENANCE:

15.3.1. GUIDE SET ADJUSTMENTS:

The Guide Set (31)(32) must periodically be adjusted for optimum cutting performance.

a.) DAILY CLEANING:

1. CLEAN these 2 sets daily using the cooling mixture itself (water + cutting oil), with the Bow (04) in the lower position and no material placed 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 coolant fluid to clean the Guides (31)(32);
3. WASH the interior of the Guide Sets (31)(32) thoroughly with cooling fluid, allowing it to drain with the Tap (57) fully open.

An alternative method for daily cleaning these assemblies 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) under pressure with **Starrett** Micro Oil M1;
4. REMOVE any dirt present on these Guide Sets (31)(32) using a clean brush.

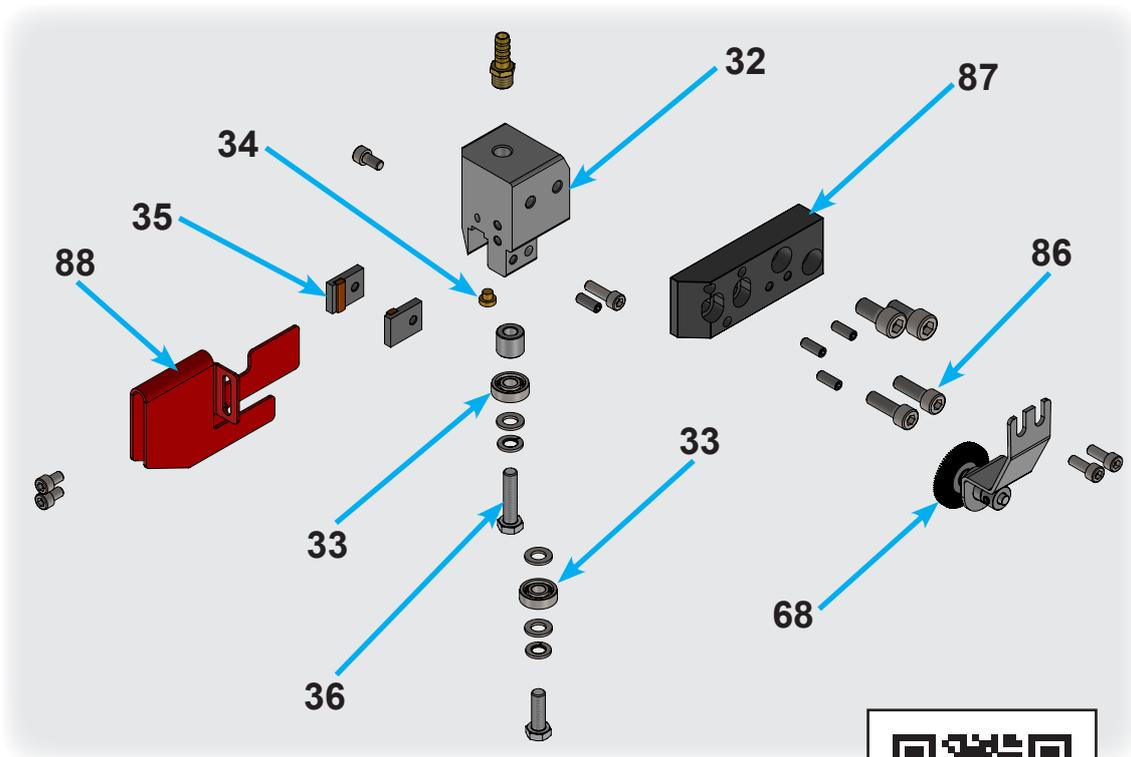


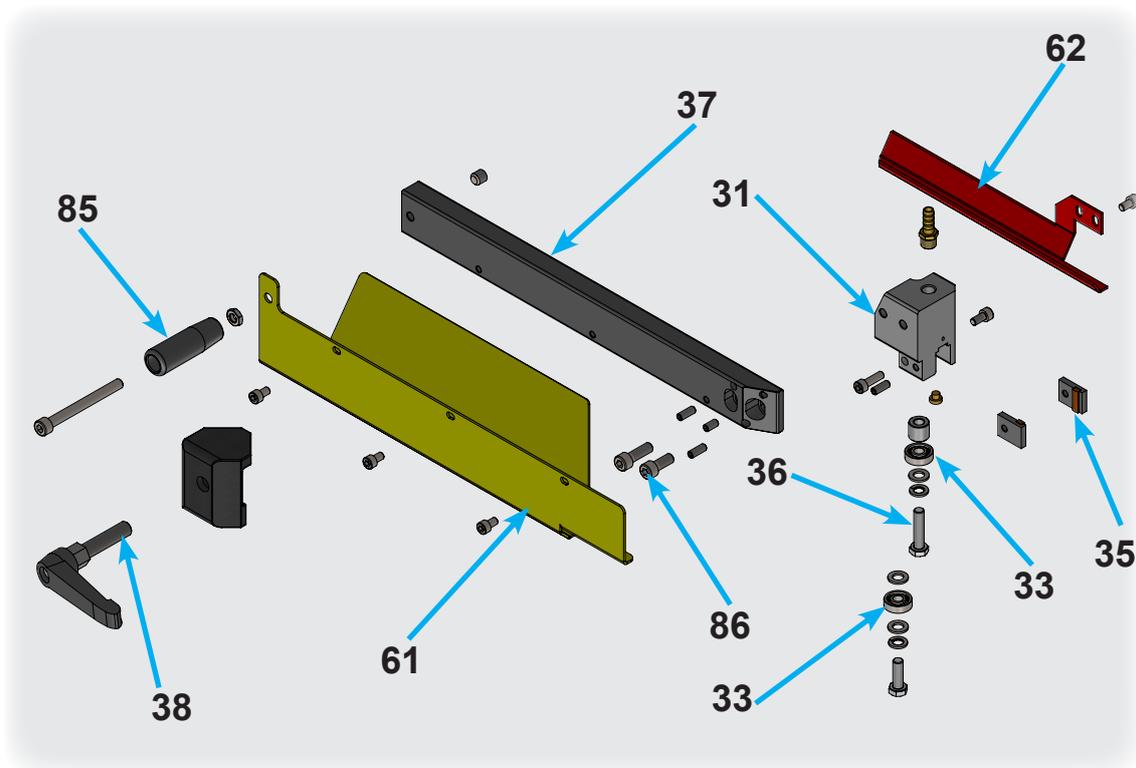
FIGURE 15.3 - LATERAL BEARING ADJUSTMENT

VIDEO 15.1



c.) ADJUSTMENT OF THE LATERAL BEARINGS (33): (figures [15.3](#) and 15.4)**PROCEDURE:**

1. POSITION the Bow (04) in the upper position;
2. CLOSE Valves (12) and (22) (figure [12.1](#));
3. RELIEVE the tension of the Band Saw Blade (10) ([SEE subsection 11.5](#));
4. CLEAN the Guides (31)(32) under pressure with Micro Oil M1 in abundance to remove all dirt;
5. REMOVE the Screws (36) (figure 15.4);
6. CLEAN the Lateral Bearings (33) and the Inserts (35) with Micro Oil M1;
7. INSTALL and TIGHTEN the Screws (36); otherwise, there may be a risk of the screws loosening, leaving the Lateral Bearing (33) free, potentially causing future problems;
8. CHECK the clearance between the Inserts (35), which should be between 0.90 to 0.95 mm.

**FIGURE 15.4 - LATERAL BEARING ADJUSTMENT**

d.) ADJUSTMENT OF THE REAR INSERT (34):

OBSERVE daily the position of the Rear Insert (34) (figure [15.4](#)) in relation to the back of the Band Saw Blade (10). The distance should be between 0.5 to 1.0 mm of clearance.

If the Band Saw Blade (10) is outside the specified limits, FOLLOW the instructions below:

PROCEDURE:

1. LOOSEN the Screws (86) of the Guides (31)(32) (figures [15.5 e 15.6](#));
2. MOVE the Guide Set (31) or (32) up or down, installed in the Guide Supports (37) and (87), respectively.
3. CHECK the height of the Guard (88) of 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 (minimum), ensuring they are not exposed. SEE figure 15.4;
4. CHECK if the Guard of the Mobile Guide (62) (SEE figure [15.4](#)) is not touching the teeth of the Band Saw Blade (10). If it is, ADJUST the position of the Guard (62), moving it away from the teeth of the Band Saw Blade (10) to prevent damage.

15.3.2. DRIVEN FLYWHEEL (13) CAMBER ADJUSTMENT:

The service life of the Band Saw Blade (10) depends on its alignment with the Driven Flywheel (13) and the Driver Flywheel (14).

While rotating on the Driven Flywheel (13) and the Driver Flywheel (14), the Band Saw Blade (10) should make light contact with the ledge (flange) of these Flywheels (figure [15.8](#)).

Adjusting the camber of the Driven Flywheel (13) can reduce the pressure of the Band Saw Blade (10) on the Flywheel flange.

PROCEDURE:

1. POSITION the Bow (04) at its highest upper position;
2. CLOSE the Valves (12) and (22);

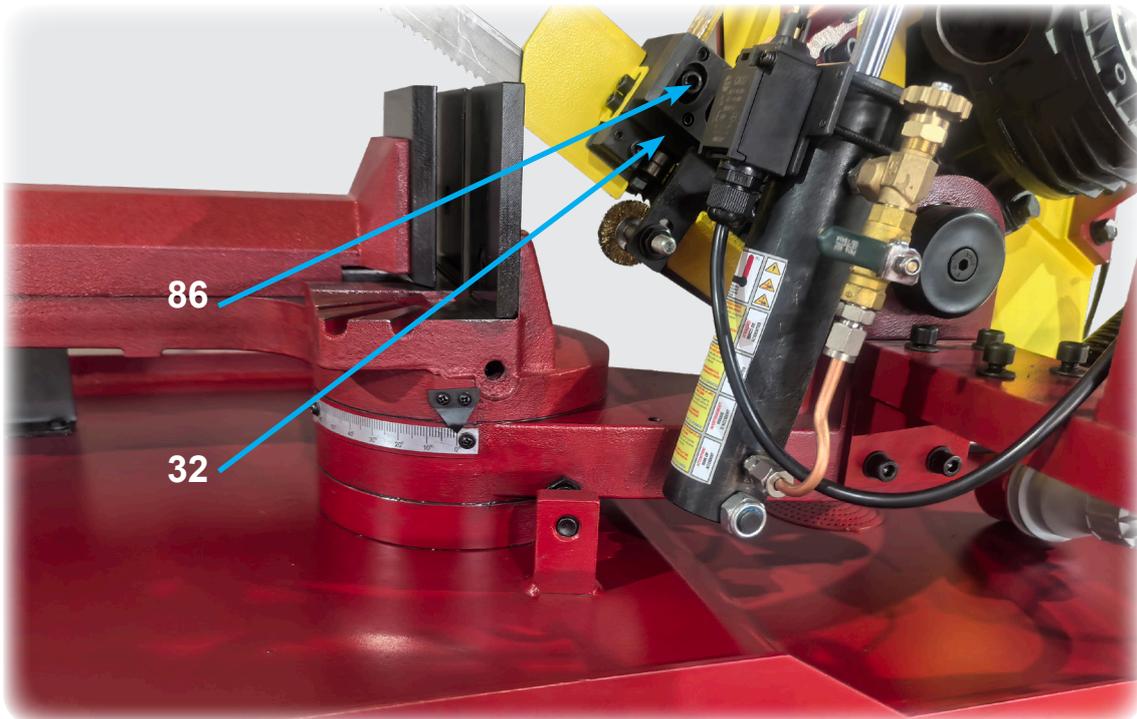


FIGURE 15.5 - STOP BEARING ADJUSTMENT - FIXED GUIDE

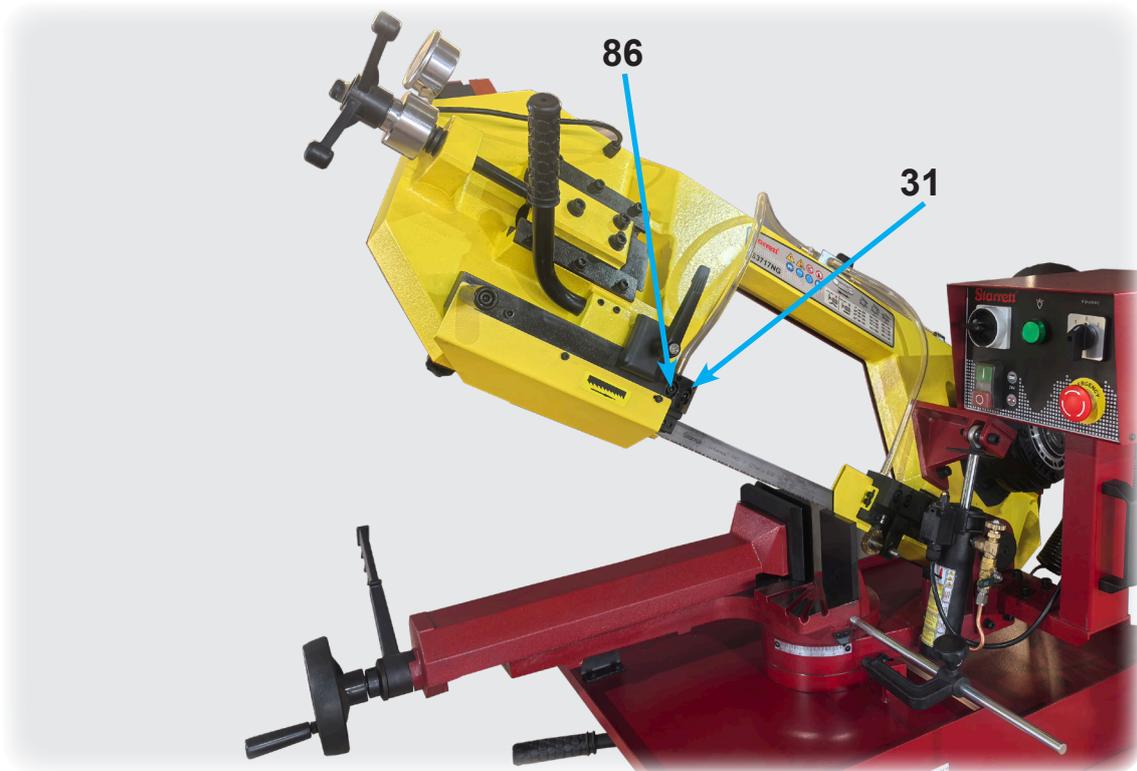
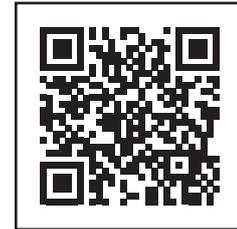


FIGURE 15.6 - STOP BEARING ADJUSTMENT - MOBILE GUIDE

3. CHECK if the General Switch (02) is in the **OFF** position and the EMERGENCY Button (03) is pressed;
4. LOOSEN (relieve the tightness of) Screws **A**, **B**, and **C** without removing them from the Tensioning System (Cart) (16), using a Hex Allen Wrench (figure [15.6](#));



VIDEO 15.2



5. TURN Screw **D** to adjust the camber of the Driven Flywheel (13) as follows:
 - Turning clockwise moves 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 rotation of Screw **D** should be minimal—about 1/4 to 1/3 turn per adjustment—until the ideal condition is reached, meaning the back of the Band Saw Blade (10) is between 0.2 to 0.5 mm away from the flange of the Flywheels (13) and (14). Measure this clearance with a feeler gauge. Also see Video 15.2;
7. RE-TIGHTEN Screws **A**, **B**, and **C**;
8. SET the Speed Selector Switch (40) to speed 1 and to MANUAL mode;
9. TURN ON the machine by setting the General Switch (02) to **ON**;
10. RELEASE the EMERGENCY Button (03);
11. CHECK if the Band Saw Blade (10) tension is correct;
12. PRESS the START Button SB1 (41) to switch on the Motor (25);
13. KEEP running the Band Saw Blade (10) for 5 seconds;
14. PRESS the STOP Button SB2 (42);
15. REMOVE the Back Cover (18) from the Bow (04);
16. CHECK the position of the back of the Band Saw Blade (10) relative to the ledges of the Flywheels (13)(14). As a reference, the blade's back should be 0.2 to 0.5 mm away from the Flywheels (13)(14) ledges;
17. REINSTALL the Back Cover (18) and REPEAT steps 1 through 13 if the measurements are still outside of specification.

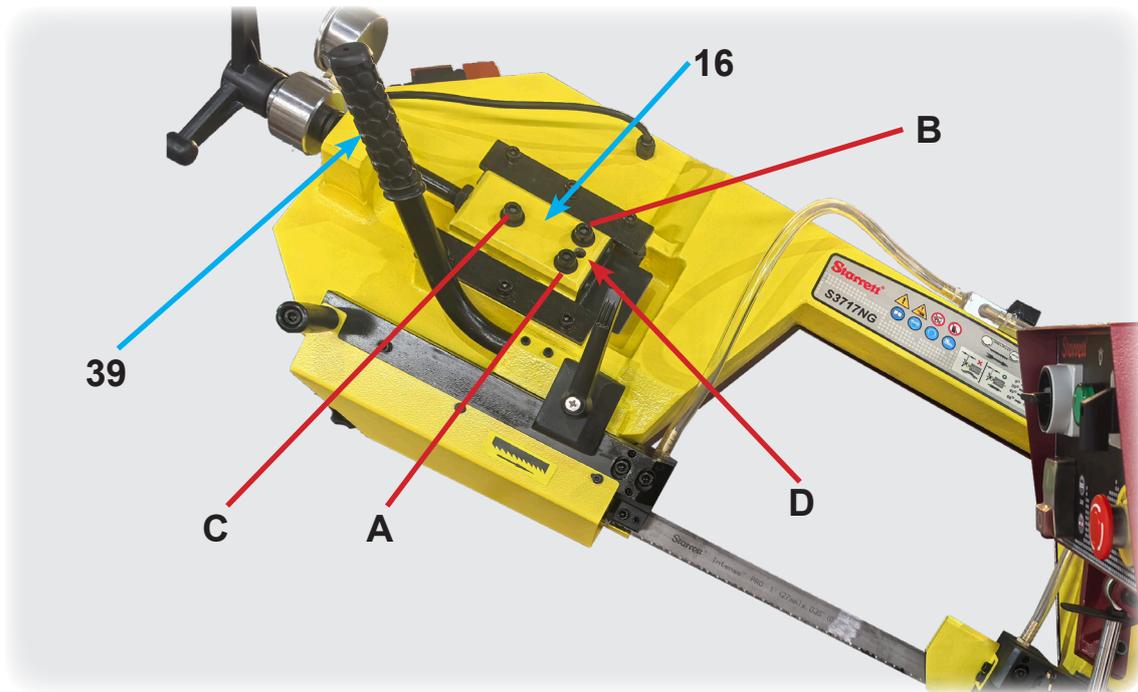


FIGURE 15.7 - POSITIONING OF THE CAMBER ADJUSTMENT SCREWS

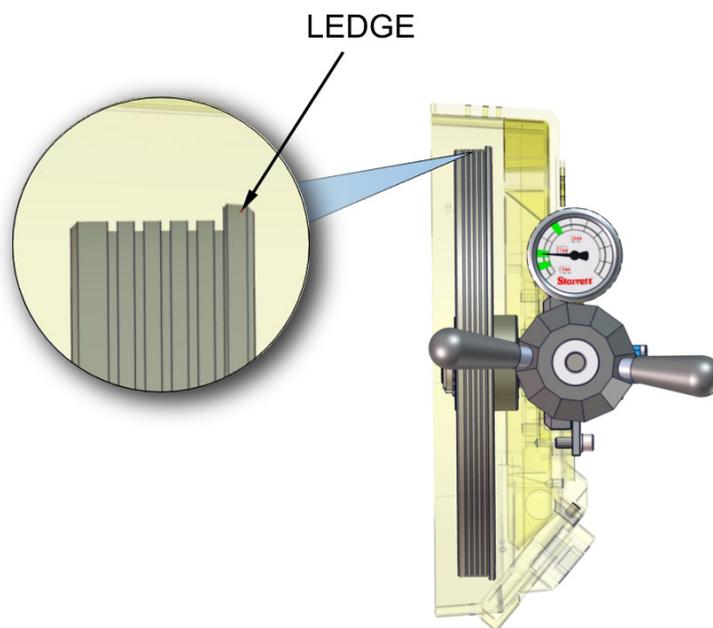
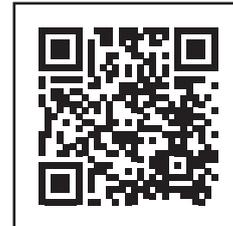


FIGURA 15.8 - FLYWHEELS LEDGE

18. INSTALL the Back Cover (18) permanently if the measurement is within the parameters specified in item 13;
19. ENERGIZE the machine and MAKE IT AVAILABLE for use;
20. PERFORM this procedure MONTHLY or whenever there is a Band Saw Blade (10) breakage or wear on the ledges of the Flywheels (13)(14).

15.3.3. REMOVAL OF THE HYDRAULIC CYLINDER (08) FROM THE BOW

To replace or repair the Hydraulic Cylinder (08), certain safety measures must be taken to avoid any risk to the operator during its removal.



VIDEO 15.3

PROCEDURE:

1. CHECK if the General Switch (02) is in the **OFF** position and the EMERGENCY Button (03) is pressed;
2. POSITION the Bow (04) in the lower position;
3. FULLY RETRACT the rod of the Cylinder (08);
4. REMOVE the Cylinder (08) by unscrewing its mounting bolts;
5. REPLACE the Cylinder (08) with a new one, if necessary;
6. NEVER ATTEMPT to operate the machine without the Cylinder (08) properly installed, as this can pose serious risks to both the operator and the equipment;
7. TURN ON the machine by setting the General Switch (02) to **ON**;
8. RELEASE the EMERGENCY Button (03);
9. TEST the machine and CHECK if its performance is adequate.



15.3.4. REMOVAL OF THE SPRING SET (09):

To replace or repair the Spring Set (09), certain safety measures must be taken to prevent any risk to the operator during its removal.

PROCEDIMENTO:

1. CHECK if the General Switch (02) is in the **OFF** position and the EMERGENCY Button (03) is pressed;
2. POSITION the Bow (04) at its maximum upper position;
3. CLOSE Valves (12) and (22) (figure [12.1](#));
4. PLACE a wooden block to **support** the Fixed Guide Support (87) on the Cutting Table (07), in order to safely keep the Bow (04) in this maximum upper position;
5. ENSURE that the Bow (04) and the wooden block are stable and securely positioned;
6. DISASSEMBLE the Spring Set (09) and REPLACE the necessary part(s);
7. REASSEMBLE the Spring Set (09);
8. ENSURE that the assembly is correct;
9. REMOVE the wooden block under the Fixed Guide Support (87);
10. TENSION the Spring Set (09) to its initial condition;
11. OPEN Valves (12) and (22);
12. TURN ON the machine by setting the General Switch (02) to **ON**;
13. RELEASE the EMERGENCY Button (03);
14. TEST the machine and VERIFY that the performance is satisfactory.



15.3.5. GEARMOTOR REPAIR AND REPLACEMENT:

Assembly and Disassembly of the Gearmotor.

To assemble and disassemble the gear motor, follow the instructions below (figure [15.8](#)).

PROCEDURE:

1. POSITION the Bow (04) in the lower position;
2. DISCONNECT the Motor (25) power cable;
3. LOCK the General Switch (02) with a padlock (figura [15.1](#));

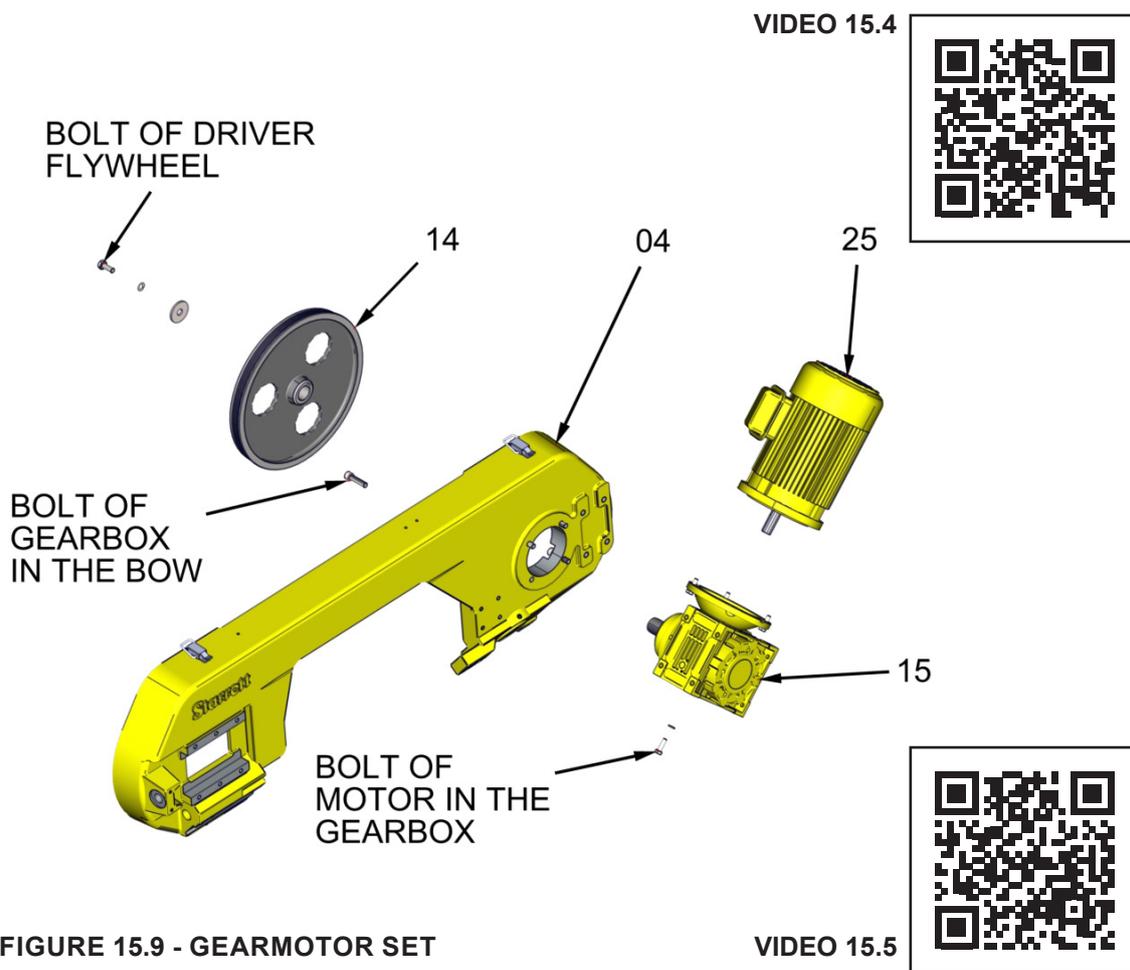


FIGURE 15.9 - GEARMOTOR SET

4. TAG the machine with a maintenance warning label, as shown in figure 15.2;
5. NOTE the wiring diagram on paper to avoid reassembly errors;
6. LOOSEN the screws securing the Motor (25) to the Gearbox (15);
7. REMOVE the Driver Flywheel (14) by loosening the central screw from inside the Bow (04);
8. LOOSEN the screws securing the Gearbox (15);
9. CAREFULLY REMOVE the Gearbox (15) from the Bow (04);
10. PERFORM the necessary maintenance;
11. DRAIN the oil from the gearbox;
12. DO NOT DISPOSE of the gearbox oil into the environment;

13. PERFORM any required maintenance on the Gearbox (15);
14. REASSEMBLE the Gearbox (15), reversing the disassembly steps;
15. MOUNT the Driver Flywheel (14) on the gearbox shaft end;
16. ENSURE the screw securing the Driver Flywheel (14) is tightened properly;
17. MOUNT the Motor (25) onto the Gearbox (15), ensuring all screws are securely fastened;
18. RECONNECT the original electrical wiring;
19. ROTATE the Motor (25) manually in both directions approximately 20 times using the fan, avoiding excessive stress on the shafts;
20. TURN ON the machine by setting the General Switch (02) to **ON**;
21. RELEASE the EMERGENCY Button (03);
22. CHECK that the gear motor assembly [(15) + (25)] operates without any unusual noise. If any abnormal sound occurs, [contact Starrett Technical Support](#).

15.4. PREVENTIVE MAINTENANCE:

POS	DESCRIPTION	FREQUENCY	ACTION
31 and 32	Cleaning the Guide (Lateral Bearings and Rear Insert)	Daily	Clean with Micro-Oil M1, or Cooling Liquid, and/or Compressed Air
33 and 34	Bearing wear verification (clearances)	Monthly	MEASURE with clearance gauge
15	Gearbox Verification	Semiannual	REPAIR if necessary

continuation:

POS	DESCRIPTION	FREQUENCY	ACTION
49	Verification of cooling liquid level in the Tank	Daily	COMPLETE
18, 13 and 14	Cleaning the Back Cover and Flywheels	Daily Weekly	CLEAN, Lubricate the flywheel shafts, injecting grease through the grease fittings
63, 51 and 55	Verification of Band Saw Blade tensioning	Daily	ADJUST
17 and 07	Surface cleaning of the Cutting Table, Vise and other machine surfaces	Daily	CLEAN
63, 51 and 55	Tensioning System	Monthly	REPLACE, if necessary
10	Band Saw Blade	Daily	REPLACE, if necessary



ATTENTION! RISK OF ACCIDENTS:

All periodic and corrective maintenance must be carried out by **QUALIFIED** and **TRAINED** professionals.

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

15.5. PROBLEMS - CAUSES AND SOLUTIONS:

PROBLEM	CAUSES AND SOLUTIONS
Pilot Signal (GREEN) (43) is off	<ul style="list-style-type: none"> CHECK if the General Switch (02) is positionng in SWITCHED OFF;
The Band Saw Blade (10) does not rotate	<ul style="list-style-type: none"> CHECK that the Safety Switch (29) of the Back Cover (18) is disabling the electrical system. INSERT the Back Cover (18) actuator key correctly into the Safety Switch (29); CHECK that the Speed Selector Switch (40) speed is in position 1 or 2; CHECK whether the EMERGENCY Button (03) is pressed or defective; CHECK that the Pilot Signal (GREEN) (43) is off.
The rotation of Bow (04), between angles 0° to 60°, is hard	<ul style="list-style-type: none"> CHECK the Lubrication of the Rotatory Support. REPLACE the cutting oil, as it may be dissolving or removing lubrication from the Rotatory Support and moving parts; CHECK for excessive chips and/or dirt on the machine. REMOVE the chips and/or dirt.
The Band Saw Blade (10) does not tension.	<ul style="list-style-type: none"> CHECK the length of the Band Saw Blade (10). It should be 2 450 ± 2 mm.
The Band Saw Blade (10) comes out of the Flywheel	<ul style="list-style-type: none"> CHECK the tensioning of the Band Saw Blade (10). TENSION according to 11.1, item 3; CHECK the clearance in the Bearings of the Flywheels (13)(14). ADJUST and REGULATE the Flywheels (13) (14) and/or REPLACE the respective Bearings; CHECK the conicity of the Driven Flywheel (13) (must be 0.5°). REMOVE and SEND to Maintenance for recovery. CONTACT Starrett's Technical Assistance before executing any kind of machining service.

continuation:

PROBLEM	CAUSES AND SOLUTIONS
Cooling liquid does not reach the Band Saw Blade (10)	<ul style="list-style-type: none"> • CHECK if there is cooling liquid in the Tank (49). DISPOSE the old coolant liquid, CLEAN the inside of the Tank (49) and FILL with new coolant liquid; • CHECK whether the Tap (57) is closed or open. OPEN the Tap (57) if it is closed; • CHECK that coolant liquid is circulating through the Coolant Pump (24) and Tap (57) hoses. DISOBSTRUCT or REPLACE the hoses, if they are clogged.
Band Saw Blade (10) tooth breakage	<ul style="list-style-type: none"> • CHECK if the tooth pressure is excessive on the material to be cut. REDUCE feed rate by adjusting Regulator Valve (22); • CHECK that the teeth of the Band Saw Blade (10) are correct. CONSULT Clause 10 and/or the Starrett Technical Assistance, if necessary; • CHECK the conditions of the Lateral Bearings. CHECK whether they are broken or not. REPLACE the Bearings (33) and ADJUST as item 15.3.1 c.); • CHECK if the cutting speed is lower than recommended. INCREASE the speed by the Speed Selector Switch (40);
Early wear of the Saw Blade Teeth (10)	<ul style="list-style-type: none"> • CHECK that the Band Saw Blade (10) is suitable for the material to be cut. REPLACE with a Band Saw Blade (10) recommended to Starrett's specification. CONTACT Starrett's Technical Assistance if necessary; • CHECK if the cutting speed is high relative to what is recommended. REDUCE the speed by Speed Selector Switch (40);

continuation:

PROBLEM	CAUSES AND SOLUTIONS
Breakage of the Band Saw Blade (10) at the weld	<ul style="list-style-type: none"> • CHECK if the forward speed is lower than recommended. INCREASE the advance speed by adjusting the Regulator Valve (22); • CHECK the weld of the Band Saw Blade (10) for defects. REPLACE the Band Saw Blade (10) with a new one;
Band Saw Blade (10) breaks away from the weld	<ul style="list-style-type: none"> • CHECK if this problem occurs within a few hours of use. REALIZE machine maintenance and ADJUST the Guides (31) (32) according to 15.3.1; • CHECK if this problem occurs with many hours of use. Wear and natural material fatigue of the Band Saw Blade (10);
Crooked cut	<ul style="list-style-type: none"> • CHECK the condition of the Bearings (33) in the Guide (31) (32) set. ADJUST or REPLACE the Bearings (33); • CHECK the adjustment of the Lateral Bearings (33) (clearance should be 0.95 mm). ADJUST according to item 15.3.1 c.); • CHECK the position of the Mobile Guide Support (37), if it is too far back in relation to the dimension of the material to be cut. POSITION the Mobile Guide Support (37) as close as possible to the material to be cut; • CHECK that the material to be cut is not so uneven as to cause crooked cuts. REDUCE advance speed, and USE new or good condition Band Saw Blades (10); • CHECK that the cutting speed and coolant liquid are appropriate for the type of material being cut. CHECK the hardness of the material. CHOOSE: Band Saw Blade (10), cutting and advance speed, and coolant oil according to the type of material. CONTACT Starrett's Technical Assistance; if necessary.

continuation:

PROBLEM	CAUSES AND SOLUTIONS
Crooked cut (continuation)	<ul style="list-style-type: none"> • CHECK by the Pressure Gauge (53) the tension of the Band Saw Blade (10) (it must be 20.000 PSI). SEE item 3 de 11.1. ADJUST the tension of the Band Saw Blade (10); • CHECK if the roller support brackets are misaligned with the Cutting Table (07) surface. ADJUST the support brackets; • CHECK the advance speed of the Bow (04). REDUCE advance speed by adjusting Regulator Valve (22).

16. DISASSEMBLY AND DEACTIVATION:

16.1. SPECIFIC SAFETY RECOMMENDATIONS:



ATTENTION! RISK OF ACCIDENTS WITH SERIOUS INJURIES:



- All Disassembly and Deactivation procedures for the Starrett Band Saw machine shall be performed by specialized companies or by **QUALIFIED, TRAINED** and **AUTHORIZED** professionals.
- Before carrying out any movement of the machine, it is necessary to **CAREFULLY READ** this Instruction Manual, in order to know the specific safety instructions for this type of operation.
- USE Personal Protective Equipment - PPE in the loading and unloading phase of the band saw machine.



- PLAN the machine Disassembly and Deactivation operation **Starrett**, together with the staff of Occupational Health and Safety Service of the company that owns the equipment.
- CERTIFY that the machine is completely **DISCONNECTED** from the user's power supply.



16.2. DISASSEMBLY AND DEACTIVATION OF THE MACHINE:

16.2.1. DISASSEMBLY:

In the case, if it's necessary to disassembly the machine for some reason, some cares shall be taken:

1. REMOVE and DISASSEMBLE the machine are tasks that shall be carried out by a person duly **SKILLED** and **AUTHORIZED** to do it and having experience and expertise to do that job;

2. DISCONNECT correctly it from user's power grid in a safe way, making sure that the machine is totally powered off;
3. CLEAN the machine completely, removing the coolant liquid (oil + water) from the Cooling System contained in the Tank (49) and about the Cabinet (01). DRAIN all the liquid avoiding throwing it in the environment;
4. REMOVE the chip contained in the Tank (49) and over the Cabinet (01);
5. GREASE with oil to protect all the parts subject to oxidation and which are exposed to bad weather for a long time;
6. For the phase of moving the machine and/or its parts, OBSERVE the instructions contained in [Clause 8 - TRANSPORT AND STORAGE](#);
7. When disassembling the machine or part of it, FOLLOW a sequence that allows, later, to assemble it correctly. To do this, MAKE notes in this manual the operations performed;
8. STORE machine parts as instructed in [Clause 8 - TRANSPORT AND STORAGE](#);
9. If is needed to DISPOSE of machine parts, OBSERVE environmental conditions, avoiding products harmful to environment. FOLLOW the relevant legislation for proper disposal in depending on the type of material discarded.

16.2.2. DEACTIVATION:

There may be a need to disable the machine for some reason, some precautions must be taken:

1. REMOVE and DISASSEMBLE the machine shall be the tasks of suitably SKILLED and AUTHORIZED people for this purpose, and who have experience and competence for this work;
2. DISCONNECT completely and correctly from the user's power grid, safely, making sure that the machine is totally powered off;
3. CLEAN the machine completely, removing the cutting liquid (oil + water) from the Cooling System contained in the Tank (49). DRAIN all the liquid avoiding throwing it in the environment;
4. REMOVE the chip contained in the Tank (49) and over the Cabinet (01);
5. GREASE with oil to protect all the parts subject to oxidation and which are exposed to bad weather for a long time;
6. STORE the machine following the instructions in [Clause 8 - TRANSPORT AND STORAGE](#).

17. SPARE PARTS:

17.1. BOW AND CABINET SET, CONTROL PANEL, HYDRAULIC CYLINDER:

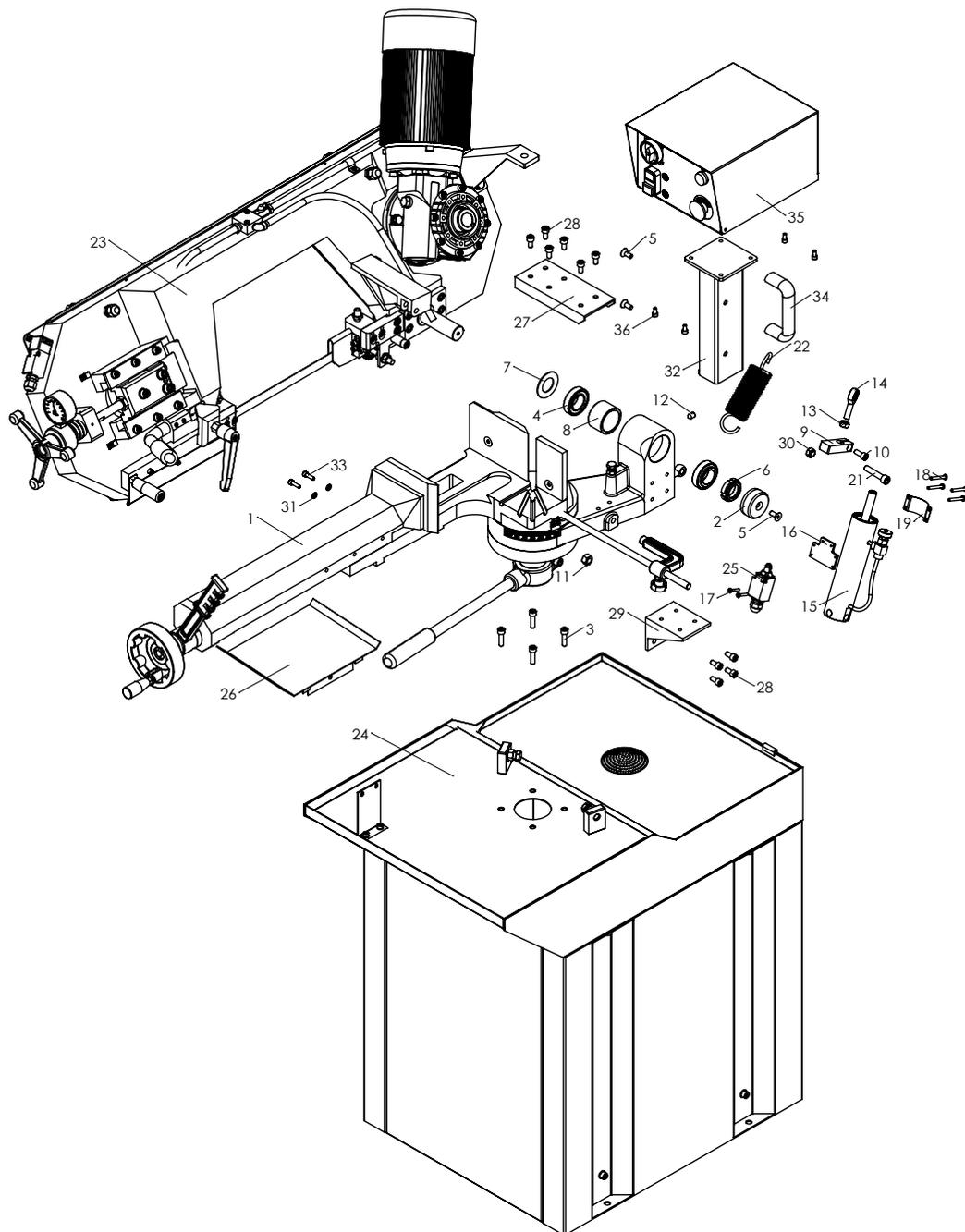


TABLE OF ITEMS BOW AND CABINET SET, CONTROL PANEL, HYDRAULIC CYLINDER:

POS.	DESCRIPTION
1	WISE ASSY
2	END CAP
3	ALLEN HEAD SCREW M8X30
4	TRB BEARING 32006
5	SUNK HEAD CAP SCREW M8X20
6	ROUND NUT
7	WASHER
8	SPACER
9	LIMIT PLATE
10	ALLEN HEAD SCREW M8X20
11	HEX NUT M12
12	SET SCREW M10X15
13	HEX NUT M10
14	BEARING SABJK10S
15	OIL CYLINDER
16	FIX PLATE
17	PAN HEAD SCREW M4X25
18	PAN HEAD SCREW M4X40
19	SWITCH LOCKING PLATE
20	-----
21	ALLEN HEAD SCREW M10X50
22	SPRING
23	SAW BOW ASSY
24	BASE ASSY
25	MICRO SWITCH QKS7
26	BLOCK PLATE
27	MOUNTING PLATE
28	ALLEN HEAD SCREW M8X16
29	BRACKET, CONTROL BOX
30	HEX NUT M10
31	FLAT WASHER M6
32	FIX SEAT, CONTROL BOX
33	ALLEN HEAD SCREW M6X20
34	HANDLE
35	ELECTRIC CONTROL BOX
36	ALLEN HEAD SCREW M6X12

17.2. Bow SET:

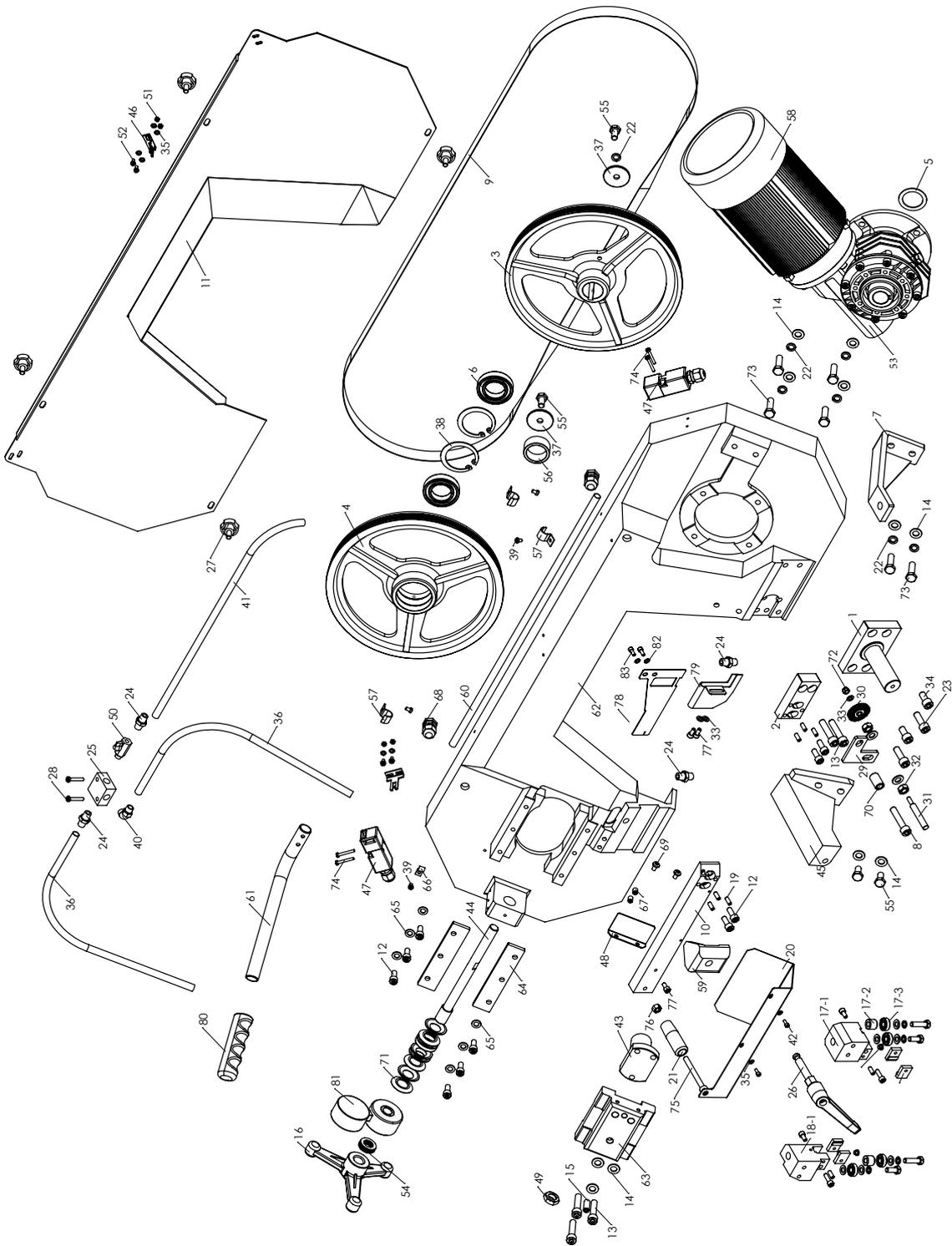


TABLE OF ITEMS BOW SET:

POS.	DESCRIPTION
1	ROTATE SHAFT, SAW BOW
2	GUIDE PLATE
3	DRIVEN WHEEL
4	IDLER WHEEL
5	ADJUSTING WASHER, DRIVEN WHEEL
6	BEARING 6007
7	SPRING HOLDER
8	ALLEN HEAD SCREW M10X50
9	BLADE
10	TENSIONING PLATE, BLADE GUARD
11	SAW BOW COVER
12	ALLEN HEAD SCREW M8X20
13	ALLEN HEAD SCREW M10X45
14	FLAT WASHER M10
15	SET SCREW M10X25
16	STAR HANDLE
17-1	FIXING BLADE GUIDE
17-2	BEARING SLEEVE
17-3	BEARING 608
18-1	MOBILE BLADE GUIDE
19	SET SCREW M6X15
20	BLADE GUARD
21	HANDLE
22	SPRING WASHER M10
23	ALLEN HEAD SCREW M10X30
24	JOINT HEAD 1/4"
25	WATER VALVE
26	RATCHET HANDLE
27	KNOB
28	PAN HEAD SCREW M5X30
29	LOCATING PLATE
30	CHIPS WHEEL
31	SHAFT
32	HEX NUT M10
33	FLAT WASHER M6
34	ALLEN HEAD SCREW M10X20
35	FLAT WASHER M4
36	HOSE B

TABLE OF ITEMS BOW SET (CONTINUATION):

POS.	DESCRIPTION
37	C-RING
38	C-RING 62 mm
39	PAN HEAD SCREW M5X8
40	JOINT HEAD 1/4"
41	HOSE A
42	ALLEN HEAD SCREW M4X6
43	SHAFT, IDLER WHEEL
44	TENSIONING SCREW
45	HYDRAULIC CYLINDER HOLDER
46	KEY, QKS8
47	MICRO SWITCH QKS8
48	PROTECTION PLATE
49	HEX NUT M16
50	VALVE
51	HEX NUT M4
52	PAN HEAD SCREW M4X10
53	GEAR BOX
54	BEARING 51103
55	HEX HEAD BOLT M10X20
56	BEARING SLEEVE
57	PRESSING PLATE, HOSE
58	MOTOR
59	PRESSING PLATE
60	PROTECTION HOSE, CABLE
61	HANDGRIP ROD
62	SAW BOW
63	SEAT, IDLER WHEEL
64	PRESSING PLATE
65	FLAT WASHER M8
66	PRESSING PLATE, CABLE
67	SET SCREW M8X10
68	STRAIN RELIEF M16
69	PAN HEAD SCREW M6X10
70	SPACER
71	BUTTERFLY SPRING 16 mm
72	HEX LOCKING NUT M6
73	HEX HEAD BOLT M10X35
74	PAN HEAD SCREW M4X30
75	ALLEN HEAD SCREW M8X75

TABLE OF ITEMS BOW SET (CONTINUATION):

POS.	DESCRIPTION
76	HEX NUT M8
77	ALLEN HEAD SCREW M6X12
78	BLADE COVER
79	BLADE GUARD
80	HANDGRIP
81	TENSION GAUGE
82	FLAT WASHER M5
83	ALLEN HEAD SCREW M6X15

17.3. CABINET SET:

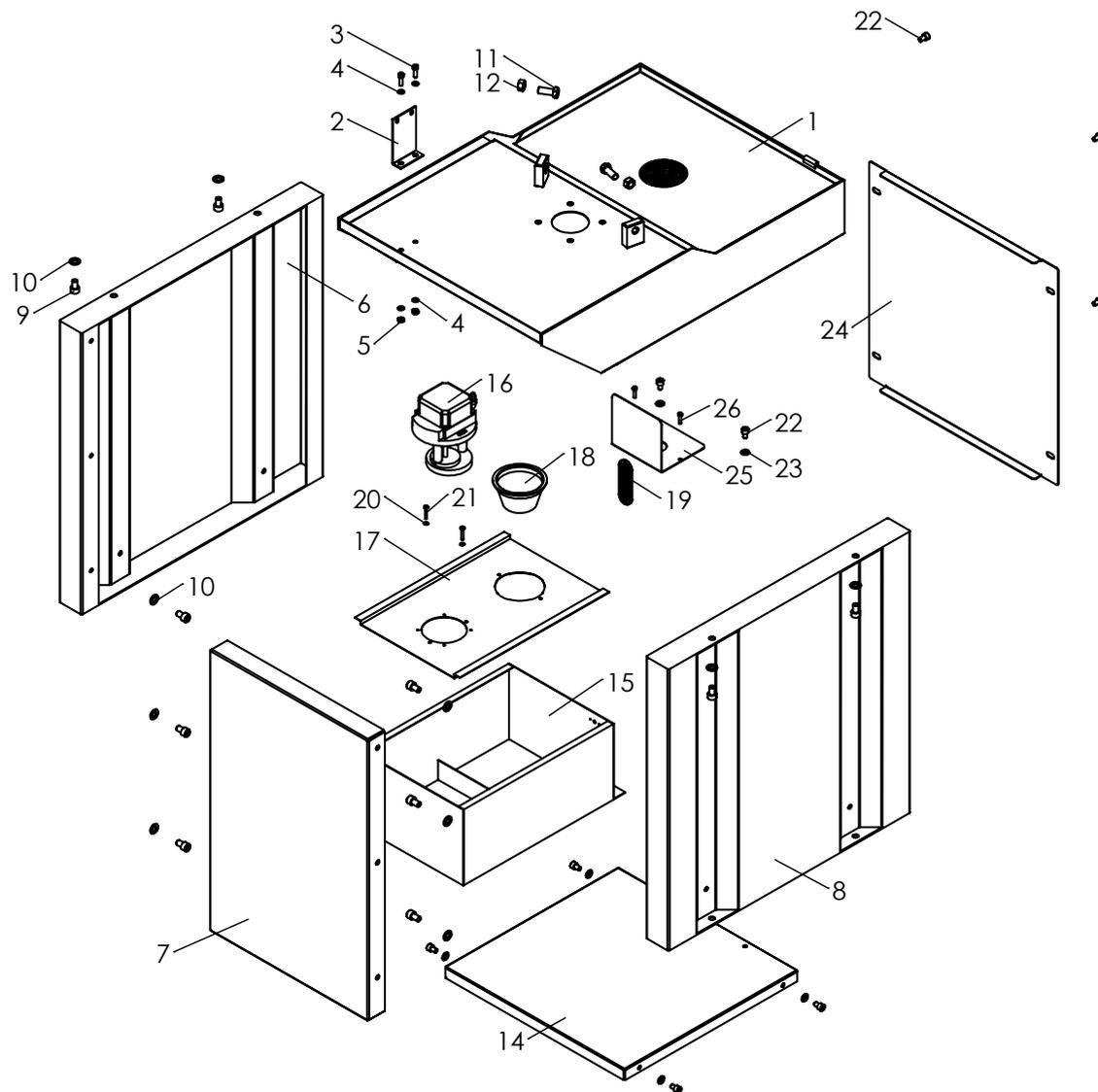


TABLE OF ITEMS CABINET SET:

POS.	DESCRIPTION
1	BASE ASSY
2	SUPPORT PLATE
3	ALLEN HEAD SCREW M6X20
4	FLAT WASHER M6
5	HEX NUT M6
6	SIDE PANEL
7	SIDE PANEL
8	SIDE PANEL
9	ALLEN HEAD SCREW M10X16
10	FLAT WASHER M10
11	HEX HEAD BOLT M12X30
12	HEX NUT M12
13	-----
14	BOTTOM PLATE
15	WATER TANK
16	WATER PUMP
17	TANK COVER
18	FILTER
19	COOLANT GAUGE
20	FLAT WASHER M4
21	PAN HEAD SCREW M4X25
22	ALLEN HEAD SCREW M8X12
23	FLAT WASHER M8
24	BACK PANEL
25	WATER RETAINING PLATE
26	PAN HEAD SCREW M5X20

17.4. VISE SET:

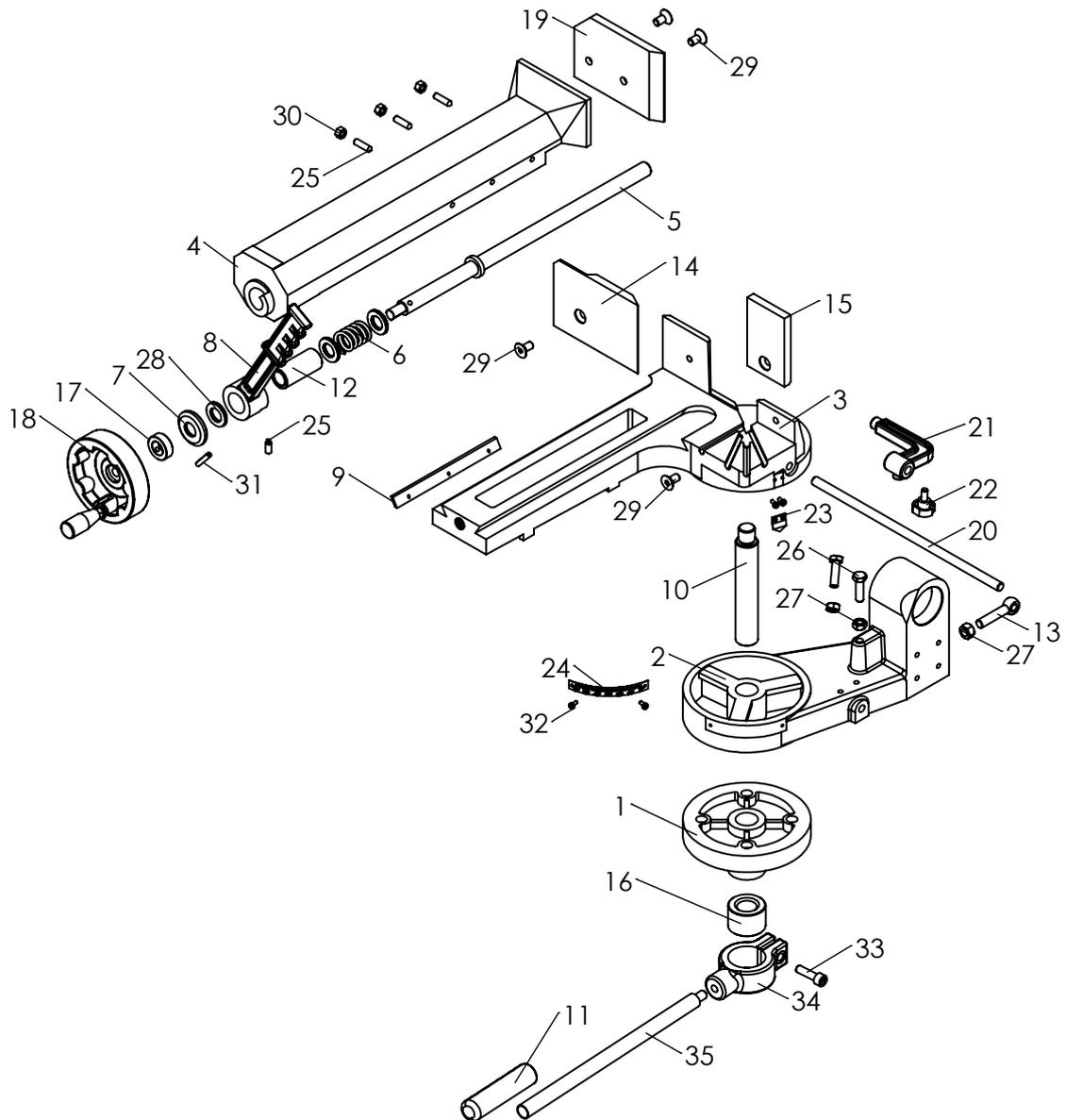


TABLE OF ITEMS VISE SET:

POS.	DESCRIPTION
1	SWIVEL DIAL
2	SWIVEL BASE
3	WISE BASE
4	ADJUSTABLE JAW, WISE
5	SCREW ROD
6	SPRING
7	BEARING COVER
8	KNOB, WISE
9	GIB
10	ROTATE SHAFT
11	HANDLE SLEEVE
12	SCREW ROD SLEEVE
13	POTHOOK, SPRING
14	COUNTER WISE JAW
15	WISE JAW
16	LOCKING SCREW
17	RING
18	HANDLE WHEEL
19	ADJUSTABLE WISE JAW
20	LOCATING ROD
21	LIMIT ROD
22	KNOB
23	POOINTER
24	SCALE
25	SET SCREW M8X20
26	HEX HEAD BOLT M10X35
27	HEX NUT M10
28	BEARING AXK2035
29	SUNK HEAD CAP SCREW M10X20
30	HEX NUT M8
31	PIN 6X35
32	PAN HEAD SCREW M4X10
33	ALLEN HEAD SCREW M10X35
34	LOCKING MOUNT
35	LOCKING ROD

18. WARRANTY:



[Starrett Indústria e Comércio Ltda.](http://www.starrett.com.br)

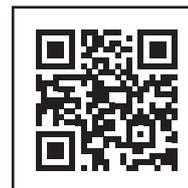
Av. Laroy S. Starrett 1880

Itu - SP - Brazil – CEP 13306-900

Centro de Atendimento Starrett: 0800 702 1411

falecom@starrett.com.br

www.starrett.com.br



STARRETT WARRANTY

WARRANTY CERTIFICATE

The machines manufactured and marketed by **Starrett Indústria e Comércio Ltda.** are covered by **12 months** warranty from the issuance of invoice, regardless of the use of equipment.

During the warranty period, the Technical Support of **Starrett** provided will lose its free characteristic if the defect allegation is unfounded.

The replacement of parts or components, which are proven to have factory defects, shall be free of charge. It's not included the labor required.

There is NO Warranty for parts that suffer natural wear and tear caused by use, such as bearings, seals, lamps, carbide inserts, band saw blade etc.

There will be no Warranty coverage when:

- Inappropriate and / or improper handling for the purposes for which the product is intended;
- Transport, falls, collisions, shocks, or improper storage;
- Supply or usage of improper electric power;
- Nature agents (lightning, floods, fires, etc.);
- Lack of observance of the instruction manual;
- Interventions performed by third parties without **Starrett Indústria e Comércio Ltda.**;
- Extended lack of product usage.

They are NOT included in these Terms of the Warranty regular machine maintenance, such as adjustment, cleaning, change of saw blades tapes.

Parts or equipment, eventually replaced during the performance of this Warranty, will be the property of **Starrett Indústria e Comércio Ltda.**

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

Starrett Indústria e Comércio Ltda.

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