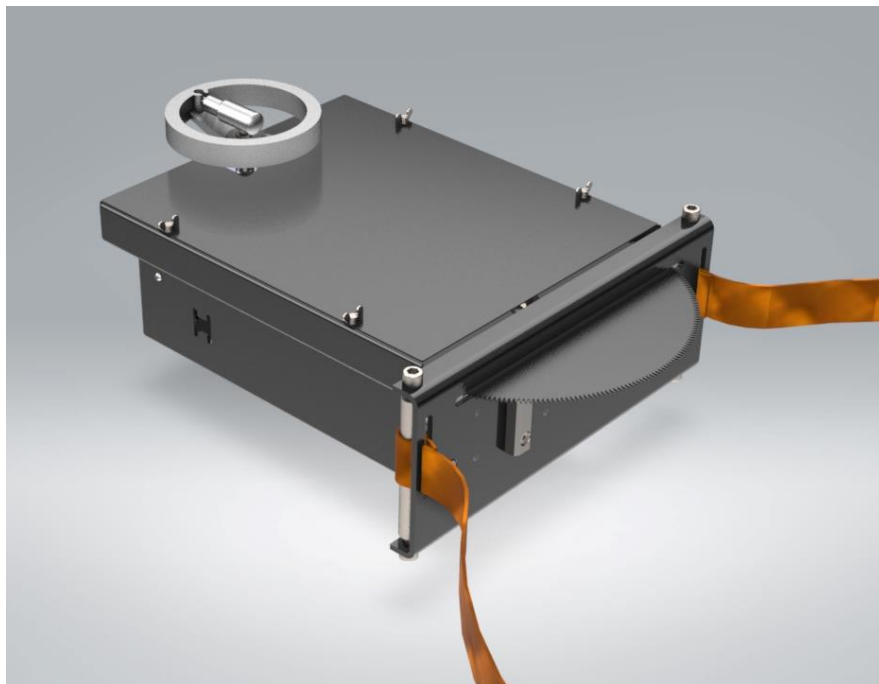




**normaco**

Portable Machining Tools

## Flange Bolt Cutting Saw



## Operating Manual

## Foreword

Dear customer,

After receiving the product please check if the delivered product is delivered according to what is listed in delivery note. Also make sure that it has not been damaged during transport. Damages are compensated only in case of immediate reclamation.

Before taking into use it is necessary to read through this manual, especially the safety instructions.

In case of questions you are welcomed to contact us.

Normaco Tools

## DECLARATION OF CONFORMITY

**Name of Manufacturer:** Normaco Tools OÜ

**Address:** Sinikivi tee 12  
Rae Vald 75306

**Country of Origin:** Estonia

**Description of Product:** Flange Bolt Cutting Saw

**In accordance with the following regulations:**

2006/42/EC The Machinery Directive

EN ISO 12100-1

EN ISO 12100-2

EN 1005-2:2003+A1:2008

**Place of issue:** Tallinn, Estonia

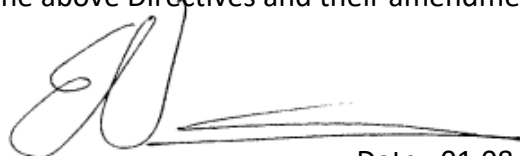
**Notes:** This declaration is only valid for the equipment supplied Normaco Tools

**Name of authorized representative:** Erno Nieminen

**Position:** Managing Director

**Declaration:**

I declare that as the authorized representative, the above information in relation to the supply / manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of the above Directives and their amendments.



Signature of authorized representative..... Date...01.08.2020.

**Contents**

- Foreword .....2
- DECLARATION OF CONFORMITY .....3
- Contents .....4
- 1 About the Manual.....6
  - 1.1 General .....6
  - 1.2 Warnings and Symbols .....6
- 2 Safety .....7
  - 2.1 Obligation and responsibility .....7
  - 2.2 Manufacturers responsibility .....7
  - 2.3 Intended Use .....8
  - 2.4 Safe Work Area.....8
  - 2.5 Safe Operation and Service .....8
  - 2.6 Potential Hazards .....9
  - 2.7 Safety Equipment and Labels .....9
  - 2.8 Noise Level .....10
- 3. About the Equipment .....11
  - 3.1 General .....11
  - 3.2 Design and Components .....11
  - 3.3 Standard Equipment .....12
  - 3.4 Manufacturer, service address.....13
- 4. Machine Setup.....14
  - 4.1 Lifting of the Machine and its parts. ....14
  - 4.2 Tension belt operating instructions .....15
    - 4.2.1 Closing and tensioning the belt.....15
    - 4.2.2 Releasing the Belt.....15
  - 4.3 Setup.....16
    - 4.3.1 Adjusting the Mounting Feet .....16
    - 4.3.2 Mounting the Flange plate .....17
  - 4.4 Mounting the Main Unit.....18
- 5. Operation .....19
  - 5.1 Cutting .....19
  - 5.3 Removing the Machine .....20
- 6. Service .....21
  - 6.1 Service guidelines .....21

6.2 Removing the saw blade .....22

6.3 Mounting the saw blade .....23

7. Troubleshooting .....24

8. Drawings.....25

## 1 About the Manual

### 1.1 General

This operating manual is supplied as non-separable part of the Normaco Flange Bolt Cutting Saw (The Machine). It contains important information that allows the user to safely and successfully operate and maintain the machine. Also, the manual helps in using the machine economically ensuring maximum performance and lifetime. Prior commencing work or maintenance on the machine, the operation manual must be familiarized with. During the operation of the machine, the manual must be kept readily available for the operators and service personnel who use the machine.

### 1.2 Warnings and Symbols

Attention to these symbols and warnings helps to avoid dangers, decrease repair costs and down-time and to increase the reliability and life span of the Machine.

There are different warning signs on the machine and in the user manual.

Following marking is used to emphasize sections that directly affect machines integrity or users' safety:



This is a warning sign, which is used to emphasize dangerous situations that may cause possible injuries material loss. Instructions following the sign must be followed to avoid possible injuries or death.



**DANGER**

DANGER marks **hazardous situations that cause** serious injuries, death or significant material loss.



**WARNING**

WARNING marks **hazardous situations that may cause** serious injuries, death or significant material loss.



**CAUTION**

CAUTION marks **hazardous situations that may cause** minor injuries, or insignificant material loss.

**NOTICE**

NOTE marks specific mounting, handling or service instructions, that are important but do not involve any hazard to personnel of material.

## 2 Safety

### 2.1 Obligation and responsibility



#### WARNING

**IF THE FOLLOWING INSTRUCTIONS ARE DISREGARDED, IT MAY CAUSE SERIOUS INJURIES, DEATH OR SIGNIFICANT LOSS OF MATERIAL.**

**Owner or operations management must ensure that:**

- All personnel working with this machine have passed safety instruction and are aware of important safety rules.
- All personnel working with this machine have read and understood this user manual.
- All stickers and signs on this machine are readable.
- Worn out stickers and signs are replaced.
- This manual is stored in a location easily accessible for the operators (Machine crate).

Operators are obliged to:

- Follow safety rules.
- Read and follow all the safety rules of this manual.
- Familiarize oneself with the design and operating methods of this machine before use.

**This machine is meant for use only by qualified engineers and metalworkers.**

#### NOTICE

Upon reception of this machine it must be inspected, and supplier must immediately be notified of all damages or missing parts.

### 2.2 Manufacturers responsibility

The machine is designed and manufactured following best practices and applicable legislation to ensure the safety of it.

#### NOTICE

The manufacturer is not responsible for damage if it is caused by:

- Misuse of the machine.
- Improper handling, mounting and servicing of this machine.
- If the machine is used with malfunctioning or broken safety and security devices.
- If safety rules of this manual are not followed.

- In case of unauthorized reconstruction of this machine or its parts.
- In case of repairing this machine with spare parts not accepted by manufacturer.
- In case of harm caused by foreign objects or force majeure.

### 2.3 Intended Use

The Normaco Flange Bolt Cutting Saw is designed for on-site **Cutting of bolts on a flange.**

It is strictly forbidden to use the machine for any other purpose beyond the intended use and limits of the machine.

### 2.4 Safe Work Area

- Keep work site clean. Remove non-essential tools, cables and materials from the work area
- Keep the work area well lit.
- Make sure there is adequate space around the work area.
- Keep non-essential personnel away from the work area.

### 2.5 Safe Operation and Service

- Make sure machine is disconnected from power source before setup, mounting maintenance.
- Make sure that machine is assembled properly, and all parts are securely fixed.
- Make sure to support the workpiece, in case there is a possibility that the workpiece can move during or after the machining.
- Before switching on the Machine remove all adjusting tools and wrenches.
- Use brush to keep machine clean from metal shavings.
- While cleaning the machine, wear safety gloves.
- While operating the machine always wear eye protection.
- Only original spare parts are to be used with the Machine.
- Maintenance and service must be done only by qualified and properly trained personnel.
- While operating always wear safety gloves and hearing protection.
- Never wear loose clothing or jewelry, which can get caught in the machine.
- Tooling can get extremely hot during machining operation; do not touch the tool before it has cooled down.
- Only engage the tool, after the Machine achieved full speed.
- Never reach into the working area with hands!
- Never run the machine unattended or without qualified supervision.
- Ensure machine has come to full stop, before disconnecting the power source.
- Do not use the machine if it is faulty!









## 2.6 Potential Hazards

Normaco Flange Bolt Cutting Saw has been designed to maximize the work safety. However there remain hazards that the operator must consider during the work.

- **Lifting the machine**– Use proper lifting methods when working with the machine.
- **Unexpected start-up** – Always disconnect the machine from power source before maintenance, setup or adjustment. **Use the machine only with supplied Air Safety device.**
- **Noise** – Machine operation generates noise. Always wear hearing protection.
- **Flying debris** - Machine operation may create flying chips. Always wear eye protection.
- **Machine movements** – Machine must be securely fastened using the belt before commencing work.
- **Rotating tools and spindle** - Keep clear of moving parts! Avoid entanglement of clothing!
- **Tools and chips** - Beware of sharp edges and hot tools and materials!
- **Workpiece** - Secure workpiece properly, including the fall-off-piece!
- **Loss of balance** – While working on elevated locations it is necessary to use stable platforms. Working while standing on a ladder is not allowed.

## 2.7 Safety Equipment and Labels

	<p><b>Safety glasses</b></p> <p>Wear eye protection throughout the work, to protect eyes from metal fragments, chips and hydraulic liquid.</p>
	<p><b>Read the instructions!</b></p> <p>Operator should read instructions before use of the machine.</p>
	<p><b>Safety gloves</b></p> <p>Wear hand protection throughout the work, to protect hands from sharp and hot items.</p>
	<p><b>Hearing protection</b></p> <p>Use suitable ear protection while working.</p> <p><b>Noise level 90 dB (A)</b></p>
	<p><b>Steel toe boots</b></p> <p>Safety boots with steel toe caps must be worn during the work and setup.</p>

	<p><b>Disengage from a power source</b></p> <p>Before maintenance or adjustment, the machine must be disconnected from the power source.</p>
---	--

### 2.8 Noise Level

The noise emitted by the Normaco Flange Bolt Cutting Saw was measured according to DIN 45635.

Noise level of the Machine (with Pneumatic Motor) is **90 dB (A)**

**Always wear ear protection while machine is operated!**

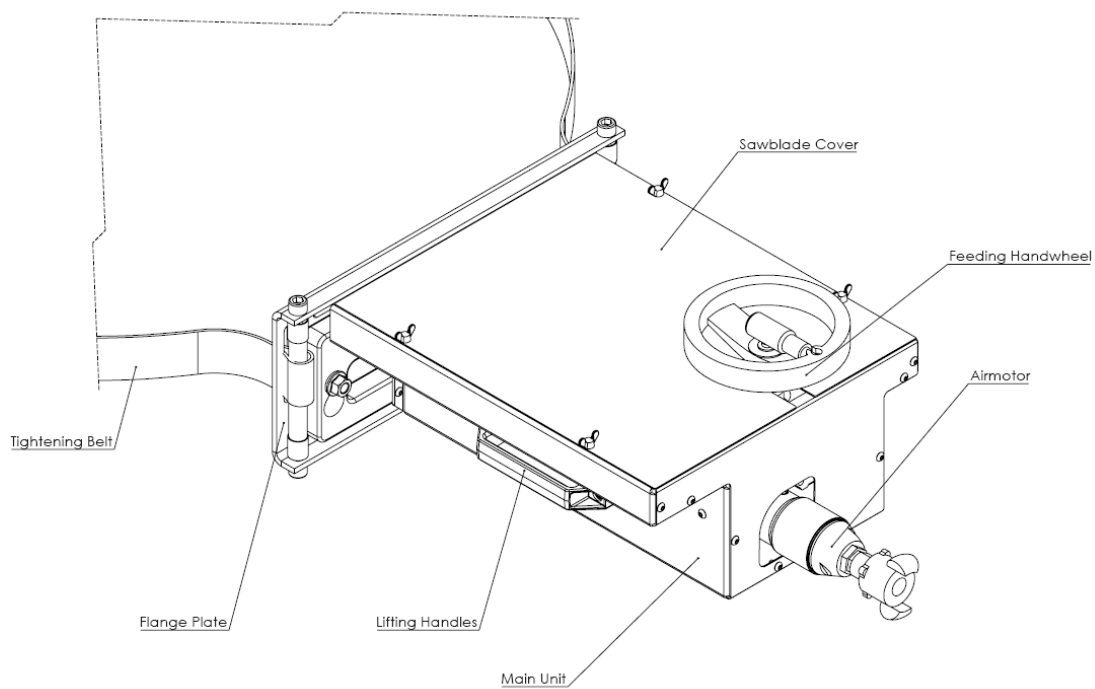
### 3. About the Equipment

#### 3.1 General

Normaco Flange Bolt Cutting Saw is a portable saw designed to cut off bolts on flanges.

#### 3.2 Design and Components

The Normaco Flange Bolt Cutting Saw comprises of subunits with each weighing less than 30 kg. The units are Flange Plate, Main unit, Belt and tensioner.



**Fig. 1.** Flange Bolt Cutting Saw components

**Note:** the machine must always be used with Normaco Air Safety device to ensure safety of the operator and the air motor lifetime.

**Table 1.** Main parameters of the Machine

Length	655 mm
Height	260 mm
Width	450 mm
Weight (fully assembled)	39 kg
Mounting base	5 kg
Main unit w/o motor	27 kg
Motor	4 kg
Tensioning belt	2 kg
<b>Drive</b>	
Blade Rotation speed	47 rpm
Motor Power	0.8 kW
Pressure	4-5 bar
Air flow	1600 l/min
Saw blade ID	32 mm
Saw blade max OD	350 mm
<b>Feeding</b>	
Feed per handwheel rotation	1.25 mm/rev

### 3.3 Standard Equipment

Normaco Flange Bolt Cutting Saw is delivered with following equipment

- Normaco Flange Bolt Cutting Saw
- Transportation box
- Set of hand tools

The machine must be used only with Normaco safety air device.  
Use without the Safety air device can cause serious injury.

**3.4 Manufacturer, service address**

Normaco Tools OÜ  
Sinikivi tee 12  
Lehmja küla, 75306  
ESTONIA  
Phone +372 6003704  
[normaco@normaco-tools.com](mailto:normaco@normaco-tools.com)  
[www.normaco-tools.com](http://www.normaco-tools.com)

## 4. Machine Setup

### 4.1 Lifting of the Machine and its parts.



#### WARNING

**Lifting heavy weights in uncomfortable positions may cause serious injuries.**

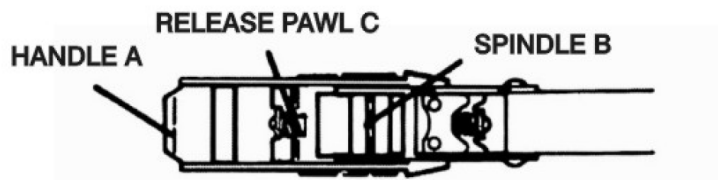
Normaco Flange Bolt Cutting Saw is designed for work on different construction sites. As its total weight exceeds weight that may be lifted in working situation by an operator, the Machine is designed to be assembled on the working place.

If possible, use lifting equipment (simple hoister) for positioning the Machine or its parts.

Never try to lift the machine alone.

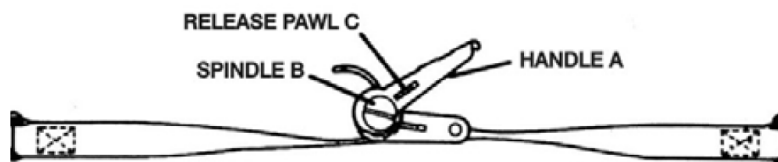
## 4.2 Tension belt operating instructions

### 4.2.1 Closing and tensioning the belt



1. With Handle (A) in “closed” position, take end of long strap and slip through slot in Spindle (B). Take up excess slack between hooks by hand.
2. Tighten strap by ratcheting Handle (A) back and forth until load is secure. **CAUTION !** To avoid damage, Do not over tighten.
3. To lock ratchet always leave Handle in the “ closed” position.

### 4.2.2 Releasing the Belt



1. Hold ratchet cupped in one hand. With other hand pull back on Release Pawl (C ) located on Handle (A). This will allow Handle (A) to be opened without tightening.

While holding Release Pawl (C ) back, open Handle (A) to “wide open” position until load releases. **CAUTION!** Load will release at this point.

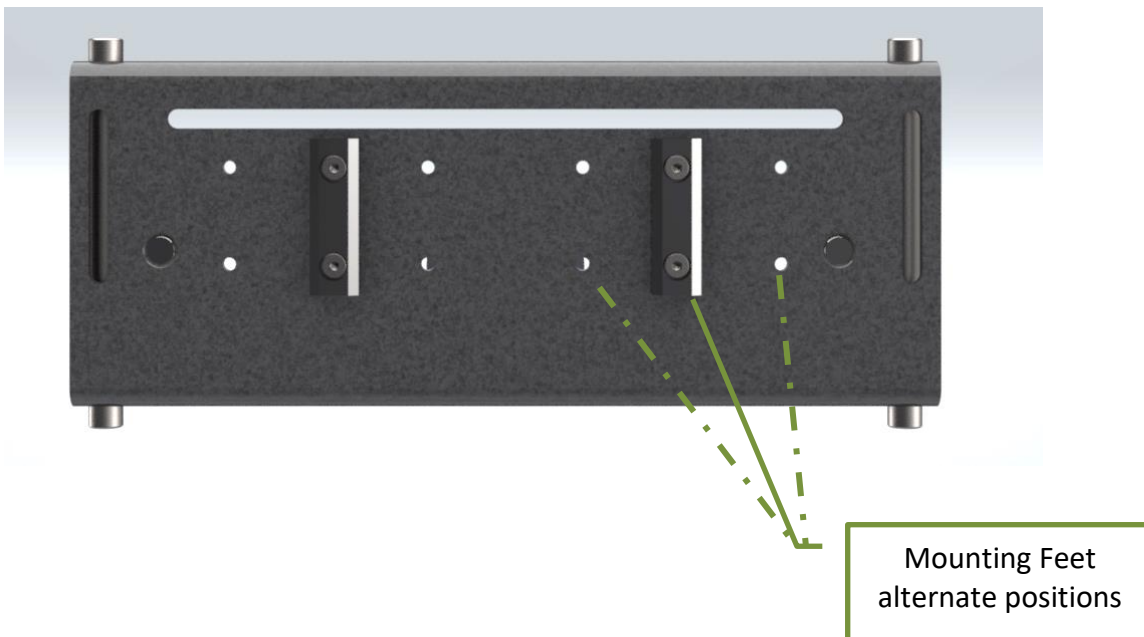
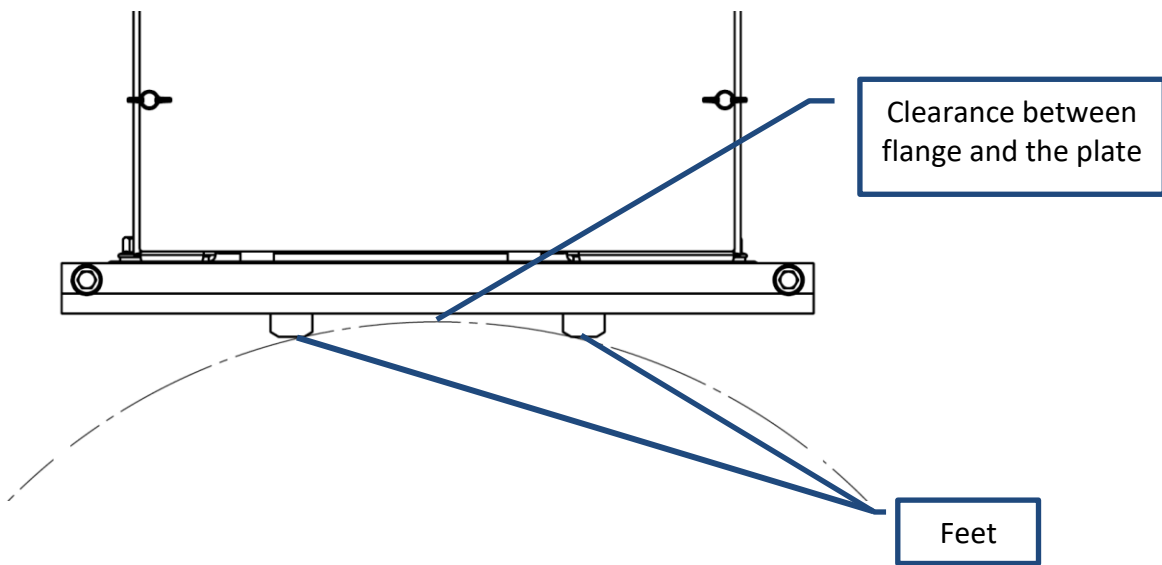
2. To loosen strap, pull on ratchet and side strap out of Spindle (B).

### 4.3 Setup

#### 4.3.1 Adjusting the Mounting Feet

The mounting Feet must be adjusted based on the diameter of the flange.

Feet must be positioned so that when the flange plate is mounted on the flange, the Flange plate rests on the feet against the flange and there is small clearance between the flange plate and the flange.





### 4.3.2 Mounting the Flange plate

The Machine is attached to the working part via Flange plate and tensioning belt.

Insert the belt end thru the slots on the Flange plate

Insert the belt pins thru the belt loops.

Secure the belt pins in place with the bolts.

Place the belt around the flange and tighten the belt following the belt tensioner instructions.  
(chapter 4.2)



**Before every use, check that the belt is not damaged or show signs of excessive wear.**

**In case belt is damaged, discontinue use and replace the belt.**

Adjust the Flange plate so that the center of the plate is in the middle of the bolt to be cut, and the saw blade opening is in the center of the flange clearance.

Wrap the belt around the flange and use the belt tensioner to tighten the belt around the flange, securing the Flange plate in place.

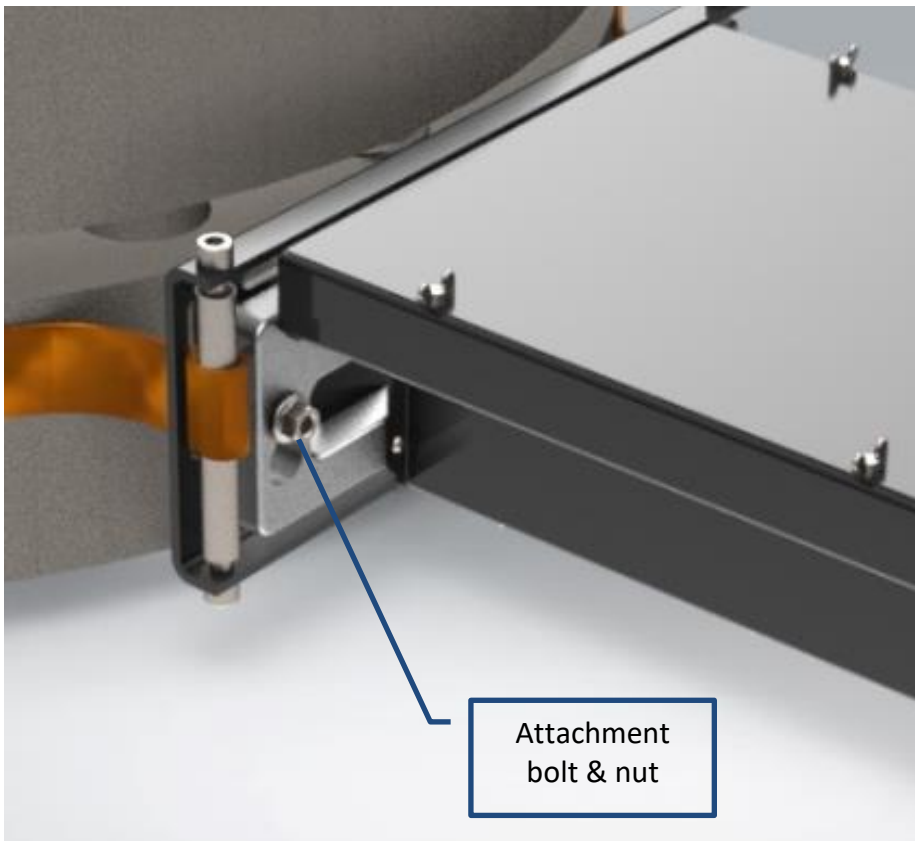


#### 4.4 Mounting the Main Unit

After the Flange plate is installed, and secured at place, the Main unit can be attached.

Before attaching the Main unit, make sure the saw blade is fully retracted.

Lift the main unit on to the Flange plate such that the attachment bolts meet the slots of the main unit. Tighten the nuts.



 **CAUTION**

**Make sure to support the main unit until both securing bolts are properly tightened.**

## 5. Operation

### 5.1 Cutting

**WARNING**

**The machine must be used only with Normaco safety air device. Use without the Safety air device can cause serious injury.**

Rotate the handwheel counterclockwise to feed the saw blade in. each rotation of the saw blade equals 1.25mm. Turn the handwheel slowly and keeping the speed constant. If the blade stops and the air motor stalls, slowly rotate the handwheel to opposite direction to let the blade clear and resume.

Apply general purpose cutting coolant to the cutting blade to prolong the lifetime of the blade.

**CAUTION**

**Avoid stalling the motor, as this can shorten the lifetime of the internal gears. Turn the handwheel slowly and with constant speed.**

**WARNING**

**When operating the machine keep clear of the machine to avoid injury from sudden movements of the machine and/ or workpiece.**

**WARNING**

**Make sure to secure the workpiece(flange/pipe) to prevent it from moving during the cutting operation.**

### 5.3 Removing the Machine

After the job has been completed, power must be turned off and power source disengaged. Return the blade back to the starting position by rotating the handwheel.

While supporting the main unit, unfasten the nuts of the Flange plate.

Lift the main unit away from the flange.

While supporting the Flange plate, release the belt by pulling the release lever on the tensioner.

See chapter 4.2.2 for instructions how to release the belt.

Remove all swarf and dirt from the machine.

The machine and its equipment should be returned to the storage box.

## 6. Service



**Disconnect Machine from the power source before commencing with the service!**



**Make sure all screws and nuts are properly re-tightened after the service!**

### 6.1 Service guidelines

#### Every time before work:

1. The Machine must be inspected to make sure that the machine is in full working order.
2. Test the guides and feeding system that they move freely and without excessive play.
3. Check and tighten all bolts if necessary.
4. Make sure that hoses to the drive motors are not damaged

#### After work:

1. Clean the machine from all debris.
2. Guide bars must be cleaned and oiled after each use.
3. If the machine will not be used for longer period – oil all unpainted steel surfaces.

#### Lubricating

The machine is provided with all bearings and transmissions lubricated.

Linear guides and feed screw must be cleaned and oiled after each use.

Recommended lubricant; general purpose rust protectant and lubricant such as WD-40

For spare parts, contact the Manufacturer.

Annually a general overhaul must be performed on the Machine in which all tear and wear parts must be inspected and replaced if necessary. In addition to this, machine needs to be tested for functionality.

## 6.2 Removing the saw blade

**CAUTION**

**Disconnect Machine from the power source before proceeding!**

Set the machine on a steady surface, with the Flange plate removed.

To change the saw blade, remove the four wing screws on the top of the Machine and lift off the top plate.

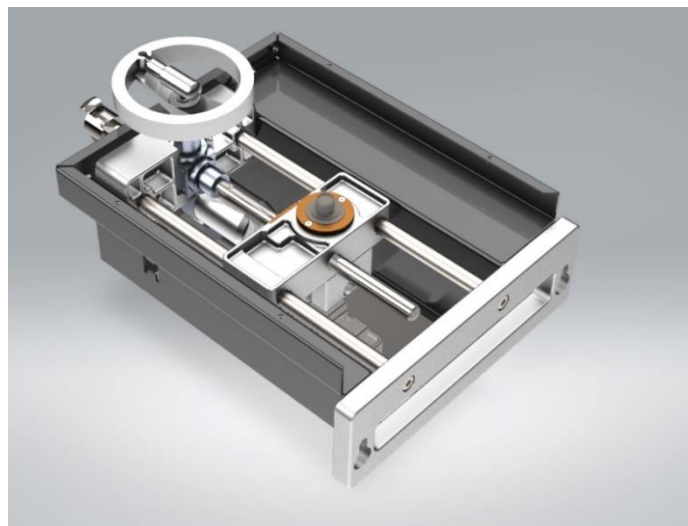
By attaching the pin wrench to the holes on the saw blade, prevent the blade from rotating.

Open the saw blade retaining nut by turning it counter-clockwise using a 26mm socket wrench, at the same time making sure that the pinwrench keeps the blade from rotating.

**CAUTION**

**The Saw blade retaining nut can be very tight, Exercise caution when opening the nut**

After the nut is removed, the blade can be taken off the blade shaft.



### 6.3 Mounting the saw blade

Place the saw blade on the blade shaft observing the rotation direction of the saw blade (counter-clockwise).

Screw the nut on to the shaft

By attaching the pin wrench to the holes on the saw blade, prevent the blade from rotating.

Tighten the nut with the 26mm socket wrench by rotating clockwise.

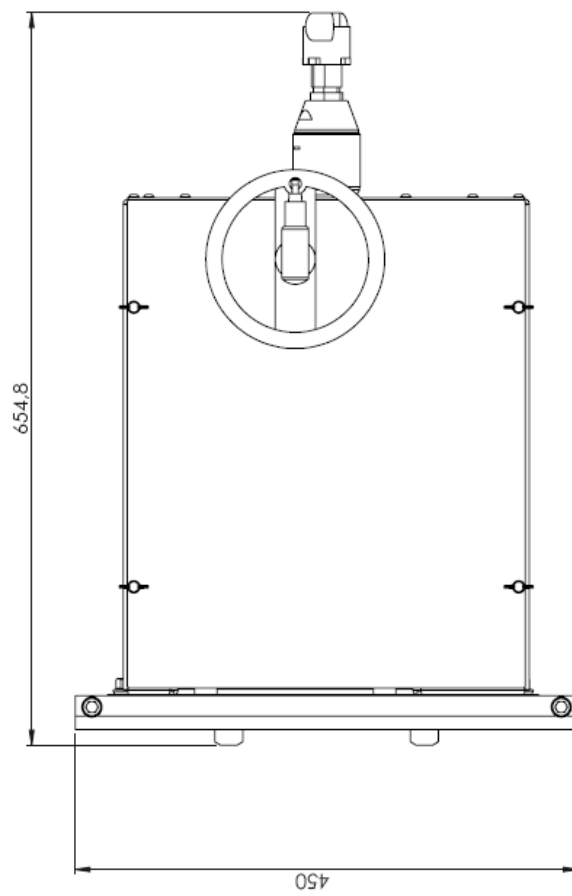
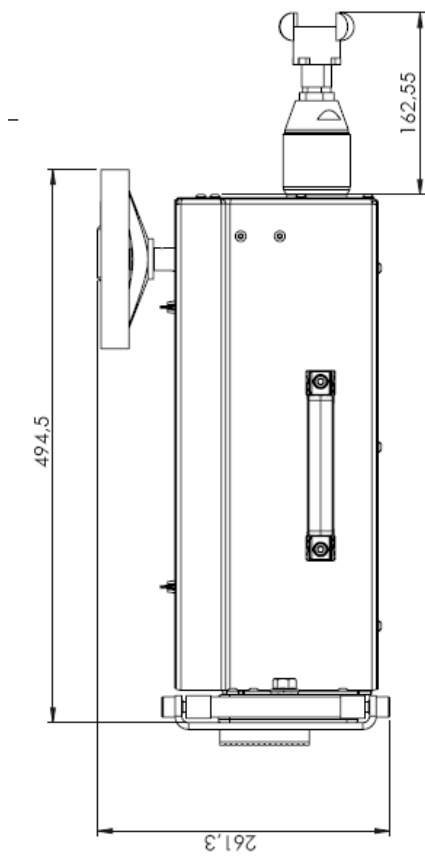
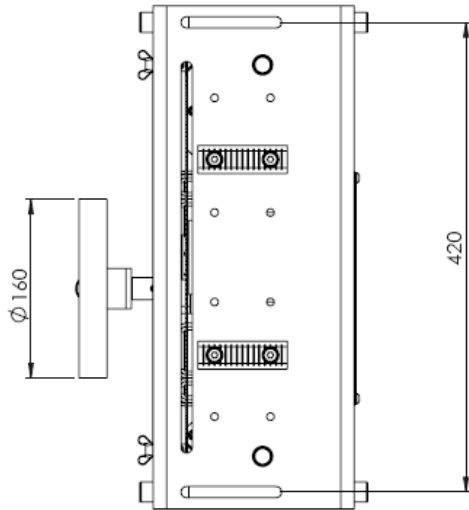


**7. Troubleshooting**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
<b>Saw Blade does not rotate</b>	No air supply	Check air supply
	Valve is closed	Check and open valve
	Faulty motor Vanes	Replace vanes
	Air supply is below the minimum required.	Check Air supply
	Faulty air hose	Check connecting hoses
	Internal gears are damaged	Contact the manufacturer
<b>Handwheel does not rotate</b>	Gearbox is damaged	Contact the manufacturer
	Saw blade is jammed	Make sure the saw blade can move freely
<b>Excessive vibration during cutting</b>	Machine is poorly secured	Check and tighten tensioning belt
	Depth of cut too deep	Reduce the depth
	Saw blade is dull or damaged	Replace or sharpen the blade
	Worn guide rails or bushes	Adjust or replace



8. Drawings





**Modtec air motors – 10 series**  
**Quick start instruction manual**

**IMPORTANT: Carefully read this quick start instruction manual before installing and / or using a Modtec air motor**

**1 - Safety Instructions**



Before any installation and use of the motor,  
 Make sure that all appropriate safety rules are respected.

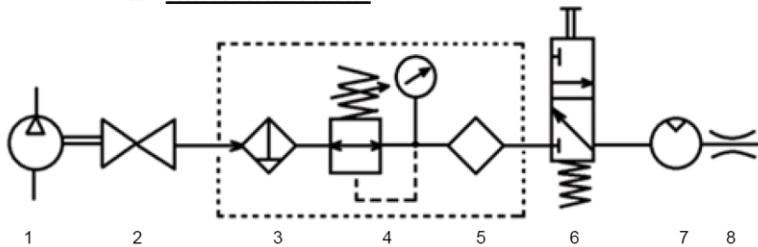


**2 - Installing the motor**

- Air pressure should not exceed the maximum working pressure of the motor (6.2 bars)
- Air flow must be sufficient for the motor : see table below
- A Filtration, Regulation and Lubrication unit (FRL) must be installed upstream from the motor, with a 40 µm air filtration and an adequate lubrication (see table below).
- Temperature range : -30 and +150°C

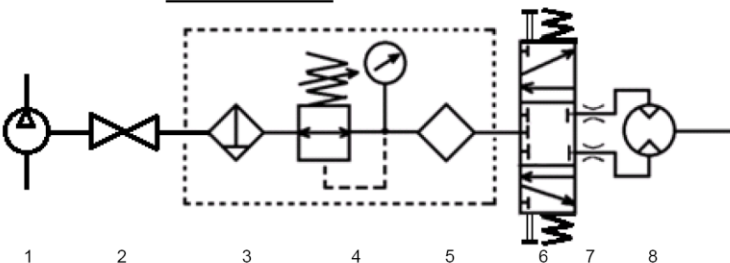
**3 - Installing the motor**

a. Non reversible motor



1. Compressor
2. Isolating valve
3. Filter 40µm
4. Pressure regulator
5. Lubrication system
6. 3/2 valve (not required for motors equipped with a handle Nxxx)
7. Non reversible motor
8. Air flow controller (option)

b. Reversible motor

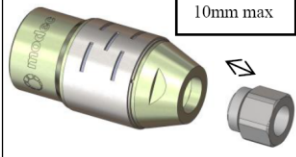


1. Compressor
2. Isolating valve
3. Filter 40µm
4. Pressure regulator
5. Lubrication system
6. 5/3 valve (not required for motors equipped with a handle Nxxx)
7. Air flow controller (option)
8. Reversible motor

In case of a "lubrication free" air motor, a simple filter / pressure regulator shall be used.

	Non reversible		Reversible	
Distributor mini. flow	1600 NI/min		2000 NI/min	
Lubrication	4.7 drops/min		5.8 drops/min	
Minimum fitting diameter	7.5 mm	0.30 in	8.2 mm	0.32 in
Minimum pipe diameter	10 mm	0.39 in	12 mm	0.47 in

**For MT10XT**

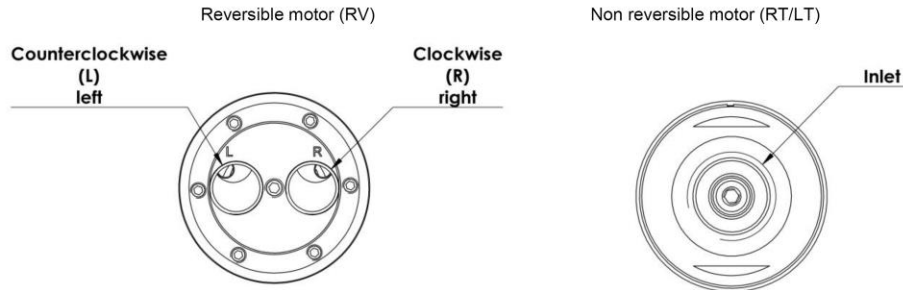


10mm max

G3/4 connection thread length should not exceed 10mm



c. Motor connection and rotation direction :



The motor shaft rotation direction is determined when looking from the back of the motor.  
For a reversible motor, when the air supply feeds the left air inlet ("L"), the right ("R") air inlet must be connected to exhaust, and vice versa.

**4 - Motor running in**

Modtec motors will deliver their full power only after about one hour (motor running in period). Before starting a new motor or a motor that's been stored for a long period, insert 3 to 5 oil drops directly into the inlet orifice. Connect it to a properly lubricated air supply and make successive air pulses. Run it with 6 bars air supply during 5 to 10 minutes before getting "normal" performances.

**5 - Motor maintenance**



Regular maintenance operation must be carried out at least once per year depending on working conditions for an optimal performance. Use Modtec maintenance kits and parts only.

**6 - Quick diagnosis**

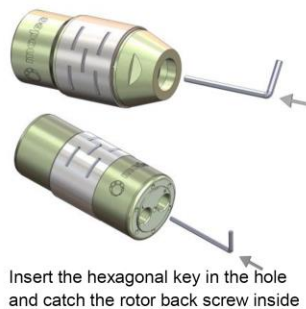
Symptoms	Causes	Corrective actions
No rotation of the output shaft	<ol style="list-style-type: none"> <li>Insufficient air supply</li> <li>Excessive load on the shaft</li> <li>Jamming inside the motor / blades blocked</li> </ol>	<ol style="list-style-type: none"> <li>Check air supply Check hose connection</li> <li>Check and reduce load applied</li> <li>Pulse air inside the motor) Rotate the shaft manually or with a plier without exceeding the motor maximum torque Rotate the rotor directly (see diagram below)</li> </ol>
Insufficient power, torque or speed	<ol style="list-style-type: none"> <li>Lack of pressure</li> <li>Lack of air flow</li> <li>Exhaust counter-pressure</li> <li>Lack of lubrication</li> </ol>	<ol style="list-style-type: none"> <li>Check air pressure</li> <li>Check air flow</li> <li>Check that the muffler / silencer is clean, adequate and properly fitted For a reversible motor, check that the orifice opposite to air inlet and/or exhaust orifice are connected to exhaust</li> <li>Insert 3 to 5 oil drops in the motor inlet orifice</li> </ol>
Wrong rotation direction	Wrong hose connection	Reverse inlet and outlet Check air connections

**To rotate the rotor :**

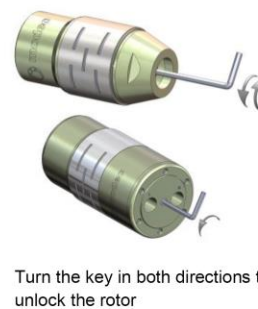
**LT/RT :**

**RV :**

Remove the back center screw with a hexagonal key (RV only)



Insert the hexagonal key in the hole and catch the rotor back screw inside



Turn the key in both directions to unlock the rotor



**normaco**