



XCENTRIC CRUSHER

INSTRUCTIONS MANUAL



XCENTRIC RIPPER INTERNATIONAL, S.L. / GRADO CERO SISTEMAS, S.L.U.

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- PROLOGUE -

INTRODUCTION

The *Xcentric Crusher* is a sophisticated grinding tool, produced by *Xcentric Ripper International / Grado Cero Sistemas, SLU* and developed with the latest advances in systems research in the field of crushing. It is designed to produce excellent yields, economization of work and obtaining higher production.

Reading and understanding this manual ensures the correct use of the *Crusher* and obtaining higher yields and in turn, achieve a longer lifetime. It also will provide you with important tips on handling so you can take full advantage of the *Xcentric Crusher's* technic virtues.

Xcentric Ripper International / Grado Cero Sistemas, SLU reserves the right to make changes or additions to this manual.

This document is the original instructions manual of the *Xcentric Crusher*.

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INDEX

PROLOGUE	3
- INTRODUCTION	3
- INDEX	4
- WARRANTY	7
· ACCEPTANCE TEST	8
· MODEL AND EC PLATE	8
· EC DECLARATION	9
· WARRANTY REGISTRATION FORM	10
- TECHNICAL ASSISTANCE	11
SAFETY	12
- REQUIREMENTS FOR THE USER COMPANY	12
- REQUIREMENTS FOR THE WORKER	12
- GENERAL SAFETY INSTRUCTIONS	13
- SAFETY INSTRUCTIONS IN MACHINE	15
- CORRECT AND INCORRECT USE OF THE CRUSHER	17
· PROPER USE	18
· MISUSE	18
- PERSONAL PROTECTION EQUIPMENT (PPE)	19
- SAFETY INSTRUCTIONS STICKERS	20
- WORK, INSPECTION AND SAFETY AREAS	21
· WORKING AREA	21
· SAFETY AREA	21
· DANGER AREA DURING EXCAVATOR OPERATION	21
· DANGER AREA DURING MAINTENANCE, CLEANING, ETC. (EXCAVATOR STOPPED)	21
· MAINTENANCE AREA	22
· RESIDUAL RISKS	22
: HYDRAULIC COMPONENTS	22
: PROLONGED CONTACT WITH HYDRAULIC OIL	22
: HOT SURFACES AND HOT HYDRAULIC OIL	22
: RISK OF HEARING LOSS	22
: CRUSHING HAZARD	22

OPERATION..... 23

- TECHNICAL SPECIFICATIONS.....	23
· GENERAL DESCRIPTION.....	23
- NAME AND SPECIFICATIONS OF COMPONENTS.....	24
· NAMES OF COMPONENTS.....	24
· STANDARD SPECIFICATIONS.....	26
- TOP BRACKET MOUNTING DIMENTIONS.....	27
- INSTALLING AND REMOVING THE CRUSHER.....	32
· INSTALLATION.....	32
: INSTALLATION ON THE EXCAVATOR.....	32
: HYDRAULIC CIRCUIT ADJUSTMENT AND HOSE CONNECTIONS.....	32
: EXCAVATOR HYDRAULICS.....	34
: START UP AND FIRST USE.....	34
: ADJUSTING THE WIDTH OF XCENTRIC CRUSHER.....	35
· REMOVAL.....	63
: REMOVING THE CRUSHER.....	63
- USE.....	64
· INSTRUCTIONS FOR USING THE CRUSHER.....	64
· PRECAUTIONS WHILE OPERATING THE CRUSHER.....	64
· HANDLING THE XCENTRIC CRUSHER.....	64
· WHAT TO DO IN CASE OF BLOCKED MATERIAL.....	65
· MISUSE OF THE XCENTRIC CRUSHER.....	66
· WORK INTERRUPTION.....	66
· CLEANING.....	66
- TRANSPORT.....	67
· LIFTING.....	67
· TRANSPORT WITH THE EXCAVATOR.....	68
· HOW TO FIX THE CRUSHER IN THE TRUCK.....	69
- LONG TERM STORAGE.....	70
· BEFORE A LONG TERM STORAGE.....	70
· STORAGE CONDITIONS.....	70
· HOSE STORAGE.....	70

- TROUBLESHOOTING	71
MAINTENANCE	72
- MAINTENANCE, INSPECTION AND REPAIR	72
· GENERAL WARNINGS	72
· CRUSHER BUCKET MAINTENANCE	74
: DAILY INSPECTION	74
: PERIODIC INSPECTION	75
: REPLACING WEARING PARTS	75
· MAINTENANCE PLAN	76
- LUBRICANTS AND HYDRAULIC SYSTEM	77
· HYDRAULIC OIL	77
: MINERAL OIL	77
: BIOLOGIC OIL	77
· HYDRAULIC EXCAVATOR FILTER	78
· HYDRAULIC MECHANISM LUBRICANT	78
: AVAILABLE MINERAL GREASES	78
: AVAILABLE BIODEGRADABLE GREASES	78
· FILLING ECCENTRIC MECHANISM	79
· VALVE BLOCK SCHEMATIC DRAWINGS	80
: SCHEMATIC PLAN CONTROL VALVE BLOCK XC15 - XC17 - XC20 - XC30	80
: SCHEMATIC PLAN CONTROL VALVE BLOCK XC40 - XC50 - XC60	81
- BOLT TIGHTENING TORQUES	82
· MAX. TIGHTENING TORQUE FOR BOLTS STEEL QUALITY 8.8	82
MANUAL REVISION INDEX	83

WARRANTY

Warranty conditions

From the date of delivery, the CRUSHER carries a warranty of **one year or 1,500 operating hours** (whichever comes first). For this, the following conditions must be fulfilled:

- 1) The warranty duration applies to operation in a single daily shift of eight hours. If the duration of daily operation is above the given value, the warranty period shortens proportionally.
- 2) Depending on the case, specific warranty conditions must be established for special uses.
- 3) Within the warranty period, Xcentric Ripper International/Grado Cero Sistemas, S.L.U. replaces free of charge all components whose damage or failure Xcentric Ripper International/Grado Cero Sistemas, S.L.U. acknowledges as being due to defects in material or design.
- 4) If the installation guidelines for the CRUSHER are not observed, the attachment device's operational safety can be considerably affected. This will result in Xcentric Ripper International/Grado Cero Sistemas, S.L.U. rejecting any sort of warranty claim.
- 5) Replacement of a component during the warranty period does not cause an extension of the total warranty period for the unit.
- 6) For all warranty claims, contact Xcentric Ripper International/Grado Cero Sistemas, S.L.U. with the serial number found in the data on the model plate.
- 7) A CRUSHER warranty claim form must be submitted to Xcentric Ripper International/Grado Cero Sistemas, S.L.U. within seven days from the date of repair. Photographs or video of the failed parts are to be sent with the claim form and a copy of the sales invoice of the Crusher from the dealer to the end user. This allows Xcentric Ripper International/Grado Cero Sistemas, S.L.U. to decide whether or not the affected parts are eligible for warranty.
- 8) Parts that have been replaced free of charge are the property of Xcentric Ripper International/Grado Cero Sistemas, S.L.U. and must be retained by the dealer for a period of one year for possible inspection by a representative of Xcentric Ripper International/Grado Cero Sistemas, S.L.U.
- 9) During the warranty period, transport costs and installation costs of the replacement parts are born by Xcentric Ripper International/Grado Cero Sistemas, S.L.U. Any import duties incurred in the supply of the replacement parts will also be born by Xcentric Ripper International/Grado Cero Sistemas, S.L.U. A copy of the invoice for the import duties must be sent to Xcentric Ripper International/Grado Cero Sistemas, S.L.U. before reimbursement can be made.
- 10) The costs of assembling the parts considered defective will be borne by Xcentric Ripper International / Grado Cero Sistemas, SLU during the warranty period. The costs corresponding to displacements will be borne by the customer.
- 11) The warranty does not apply to parts whose wear, damage or breakages have been caused by faulty operation and/or faulty maintenance of the Crusher.
- 12) The warranty does not apply to parts subject to consumption or wear.
- 13) Only original equipment parts from Xcentric Ripper International/Grado Cero Sistemas, S.L.U. can be used. Infringement automatically voids this warranty.
- 14) All modifications to the device that are made without the prior approval of Xcentric Ripper International result in automatic forfeiture of the warranty.
- 15) The warranty registration must be fully completed during the delivery and installation of Xcentric Crusher and sent to Xcentric Ripper International/Grado Cero Sistemas, S.L.U. within two weeks after delivery. Otherwise, the warranty will be automatically canceled.

NOTICE

The jaws are not subject to warranty.

ACCEPTANCE TEST

When taking delivery of the CRUSHER, the receiver must perform an acceptance inspection. If there is any damage, the transport driver and the transport company must be informed. Furthermore, it is necessary to inform the manufacturer, Xcentric Ripper International/Grado Cero Sistemas S.L.U., and the CRUSHER dealer.

The following documents are delivered with the CRUSHER:

- Instruction manual
- List of replacement parts
- Warranty registration form
- EC declaration of conformity

The warranty registration form must be fully completed and returned to Xcentric Ripper International / Grado Cero Sistemas SLU, within a period of two weeks from the installation of the Crusher. Failure to return this document will imply the loss of warranty.

MODEL AND EC PLATE

The model and EC plate is on the rear upper part of the **bucket**. This plate contains the following data (Examples in the illustration).

The illustration shows a rectangular plate with four mounting holes at the corners. On the left side, there is a large blue 'GO' logo. Below the logo, the text reads: 'C/ARANGUTXI, 15', '01015 VITORIA - GASTEIZ', 'www.gradocero.net', and 'SPAIN'. On the right side, there is a blue box containing white text for the following fields: 'TYPE', 'YEAR', 'WEIGHT KG', 'SERIAL N:', 'WORKING PRESSURE', and 'LOADING CAPACITY (KG)'. Each field has a corresponding white rectangular area for data entry. At the bottom of the blue box, there is a white 'CE' mark.



EC DECLARATION OF CONFORMITY

We, Xcentric Ripper International/Grado Cero Sistemas, S.L.U., declare that the Crusher of the brand and model provided meets the conditions laid down in the European Machinery Directive 2006/42 / EC and the noise emission in the environment by equipment for outdoors use 2000/14 / EC.

Make:.....XCENTRIC CRUSHER
Accessory:.....CRUSHER
Model:.....
Serial No:.....
Year of Manufacture:.....
Sound power level:.....85 dB(A)

The following harmonised standards are applied:

EN ISO 12100 – Safety of machinery

EN ISO 4413 – Hydraulic transmission.

SCOPE AND LIMITATIONS OF THIS EC DECLARATION

This EC declaration covers the Crusher when it is mounted on the machine for which it is designed. In addition, the use of the Crusher must be that anticipated in work for the breakage of materials. It must not be used as a crane for handling loads or for inappropriate work.

Any modification made to this assembly or to any of its components, without express authorisation in writing from XCENTRIC RIPPER INTERNATIONAL/GRADO CERO SISTEMAS, S.L.U., invalidates this EC certification and, therefore, the use in service of the Crusher.

The person authorised to compile the technical file:

Javier Aracama (Manager of the Company)
Xcentric Ripper International/Grado Cero Sistemas, S.L.U
Arriurdina, 15. 01015 Vitoria-Gasteiz (Alava), Spain.

Manufacturer:

Grado Cero Sistemas, S.L.U
Arriurdina, 15. 01015 Vitoria-Gasteiz (Alava), Spain.

Place and date of issue:..... Vitoria
Authorised by:.....Javier Aracama
Signature:

File:
Original for the CUSTOMER



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Warranty registration form

Model:..... Serial number:..... Delivery date:...../...../.....

CUSTOMER DETAILS

* Name:
* Address:
City: Country:.....
Installation date:/...../..... Excavator model:.....
Hour meter:
(* If possible)

INSTALLATION DETAILS

Preset pressure relief valve:		MPa
		psi
Preset oil flow:	L/min	MPa
	US gal/min	psi
Working return back pressure:		MPa
		psi
Working drain back pressure:		MPa
		psi

(Mark with x)

Have you made the presetting by using the compulsory flowmeter? Yes ☐ No ☐

PRE-OPERATION DETAILS

	Yes	No
Was the end user given instructions in the safety and operation of the Crusher?:	<input type="checkbox"/>	<input type="checkbox"/>
Was the end user given instructions in the maintenance and service of the Crusher?:	<input type="checkbox"/>	<input type="checkbox"/>
Did the end user receive a Parts List?:	<input type="checkbox"/>	<input type="checkbox"/>
Did the end user receive an Instruction Manual?:	<input type="checkbox"/>	<input type="checkbox"/>

(Mark with x)

End user

Date:/...../.....

Signature end user:

Dealer

Installed by:

Trained by:

Signature dealer:

This form must be returned to Xcentric Ripper International/Grado Cero Sistemas within 30 days of the installation date. Send to → warranty@xrint.es

Original: End user

First copy: Xcentric Ripper International

Second copy: Dealer

TECHNICAL ASSISTANCE

For any needs related to employment, maintenance or replacement request, customer please apply directly to the nearer authorized dealer, specifying the identifying information of your machine, listed on the nameplate.

We do not recommend any repair or handling not indicated in this manual. All operations requiring disassembly of components, especially the jaw changing operation, must be carried out only by authorized technicians from Xcentric Ripper International / Grado Cero Sistemas, SLU staff.

Only technical staff of the company Xcentric Ripper International / Grado Cero Sistemas, SLU, or formed by them, has the necessary knowledge of the machine and special mechanisms, and the expertise to execute properly and economically any operation.

- SAFETY -

REQUIREMENTS FOR THE USER COMPANY

The user company will give his staff training on operating and maintenance including specific management practice of the machine.

The user company will give its staff specific training on labour risk prevention.

For the operator is recommended the regulatory training for the basic machine operators, e.g. according to: Resolution of 16 October 2014, from the Directorate General for Energy and Mines Policy, by which is modified the technical specification number 08/01/2001 “preventive Training for the job performance of the operator of extracting/loading/roads machines, shovel loaders and crawler hydraulic excavator, in outdoors extractive activities”, from the complementary technical instruction 01.02.02 “preventive Training for job performance”, from the General Regulation of Mine Safety Basic Standards.

The user company will prepare campaigns to raise awareness among staff of their responsibilities, their risks and their securities.

The user company will make the necessary personal protective equipment available to workers to make use of them.

The user company should establish programs for periodic checks to ensure that the hazards control measures remain effective.

The user company will organize the construction site so as to prevent uncontrolled access to the work area.

REQUIREMENTS FOR THE WORKER

Note that the default / failure to observe the safety rules and regulations may have legal consequences of labor law.

In addition to the instructions in this Manual all existing legislation in the prevention of occupational risks and environmental protection must be complied.

Works on the machine shall only be performed by personnel who have received proper training and have proven their competence.

Work only with the Xcentric Crusher in perfect condition.

Do not try to exceed the speeds and reasonable progress; It will not work faster and can cause breakage of the XC causing additional unnecessary dangers to yourself and others.

Use the Xcentric Crusher according to the purpose for which it was designed. Any use beyond the established contravenes the provisions, and not the manufacturer, importer or supplier shall be liable for consequential damages. The risk is assumed solely by the user. (Read misuse of XC p. 50)

Before activating any movement and during normal operation of the XC, the operator must ensure that there is nobody within the danger zone of the machine.

GENERAL SAFETY INSTRUCTIONS

Before beginning work with or on the CRUSHER, it is compulsory reading and understanding this manual before proceeding to work or perform any operation on the Crusher. We decline all liability in case of misuse.

Xcentric Ripper International / Grado Cero Sistemas, SLU assumes no liability if the owner of the Crusher, without the prior written consent from Xcentric Ripper International / Grado Cero Sistemas, SLU, undertakes any modifications to the device or uses it in violation of the instructions in this manual. In both cases the warranty is void.

Place this manual or a copy of it in the excavator's operator cab, so that it is always on hand as a reference for questions and problems. Observe all local laws and regulations applicable to the use and operation of your work equipment.

Because there are various models of the Crusher, it is possible that some illustrations in this manual will not correspond to your attachment device. These illustrations are merely to be taken as examples.

The activities described in the following sections require no special skills; personnel performing them must merely be familiar with the handling of the device.

This instruction manual must be read and understood to ensure that the Crusher is correctly used and provides peak performance and a long life. You will also find important advice on correct handling of the attachment device, so that you can make maximum use of your Crusher's technical advantages.

If the manual is lost or damaged order a new one from your local Xcentric Ripper International distributor.

Observe all relevant safety standards and use your device accordingly.

In order to ensure maximum reliability and safety of operation, Xcentric Ripper International / Grado Cero Sistemas SLU. has made a careful choice of materials and components used in the manufacture of the machine, subjecting it to regular testing before delivery.

The good performance of the machine over time also depends on the proper use and proper maintenance according to the instructions in this manual.

It is necessary that trained service staff regularly perform the prescribed maintenance, inspection and review, to avoid damage.

The malfunctions are due in most cases, to improper maintenance.

If in doubt about the operation, immediately stop the machine!

The machine is built to the current technical level and the existing safety technical rules known.

Failure to follow directions on safety by the operator and recklessness in the use of the machine can cause serious injury to the operator himself or to other people or animals, and can cause damage to the machine or other property.

In this regard we must always remember that the machine is provided with safety devices, to ensure protection against accidents, but if used correctly and according to the safety instructions described in this manual.

BEFORE USING THE MACHINE IT IS COMPULSORY TO READ CAREFULLY THE SAFETY INDICATIONS AND OPERATING INSTRUCTIONS, MAINTENANCE AND OPERATIONS IN THE MACHINE TO SAFEGUARD EVERYONE'S INTEGRITY.

DANGER!

Use the machine with the utmost care and caution, as recklessness is the most frequent cause of accidents. The use of the machine must be performed by an adult and competent person.

ATTENTION!

Before attaching the bucket crusher to the machine, make sure that this is adequate to support all the characteristics and functions for the use expected.

Pay special attention at all times to the safe operation of the machine. Here are some factors listed, important to be taken into account:

- Follow all applicable standards of personal security and fire safety. Do not perform the operations described below without the use of appropriate personal protective equipment (PPE): safety boots, safety glasses, appropriate gloves and ear protection.
- There is a risk of overturning when the Crusher is disengaged during stowing or transportation operations. Deposit always the Crusher on a horizontal surface, level, hard, able to bear weight on their footholds.
- There is a risk of entrapment during handling, transport, assembly and disassembly of Crusher when disengaged, so you should keep a distance considered this.
- You must ensure that the Crusher is installed and properly engaged on the excavator.
- Defective or worn material should always be replaced by another original and new supply.
- The use of spare parts in disrepair, worn, deformed, galling, etc, is not allowed.
- Any operation, inspection, cleaning, repair or inspection shall not be performed while the engine of the excavator is running.
- Do not use tools (hammers, wrenches, etc.) in poor condition that could cause an accident.
- Stay at least 20 meters from the site of action of Crusher while working due to risk of ejection of particles and fragments.

- When opening the hydraulic connections every precaution must be taken. Gloves and goggles are needed since it is possible that the connections are under pressure even with the excavator engine stopped.
- Avoid prolonged, excessive or repeated contact of oil in your skin.
 - + Protect your skin with proper protective gloves or protective products.
 - + Clean the skin areas that are soiled with oil:
 - Wash thoroughly with soap and water.
 - A nail brush is an effective aid.
 - The special hands cleaning means facilitates the proper cleaning of dirty hands.
 - Do not use gasoline, diesel, diluent or solvent.
 - + After cleaning, protect your skin with fat cream.
- Some pieces of the Crusher become very hot during operation, especially the jaws. There is high risk of burns.
- Check the maximum allowable pressure in the hydraulic hoses and proper connection and tightening.
- Wear ear protection while the Crusher is operating.
- Do not wear jewelry or work with long hair undone. The moving parts of the machine could snag hair or jewelry producing serious injury.
- The use of non-original spare parts can cause danger.

SAFETY INSTRUCTIONS IN MACHINE

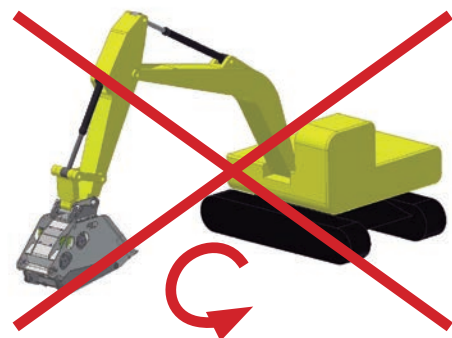
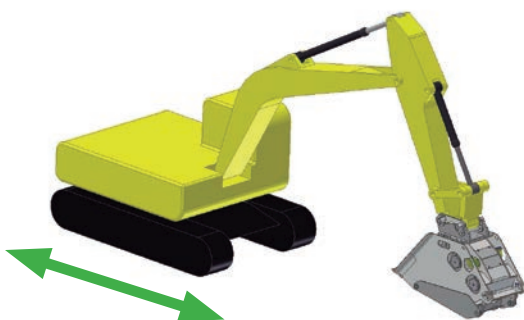
Before connecting the crusher bucket to the operating machine and start it, it is advisable to check that this machine has all the basic requirements listed below to operate in safety, and protecting the health of people.

- The end user must ensure that the weight at full load (bucket weight + loaded material+ Coupling + various accessories) does not exceed the capacity of the operating machine's raised arm specified in the manual; it is necessary to control all positions with which you can work.
- The end user must verify that the capability to overturn of the operating machine is the ideal to the use of the equipment. It is necessary to control all positions with which you can work.
- Respect the applicability of Xcentric Crusher with the operating machine, it is advisable and very important to contact the dealer / seller.
- Only adult and competent personal, trained to work using machines can handle the operating machine for the commissioning of the equipment.
- The Crusher is designed for industrial use and must be used by personnel who have no limited fitness.
- The command to start the Xcentric Crusher must be the ON / OFF type, either switch or pedal type; to launch the bucket is mandatory to have the command pressed, to turn off the bucket releasing the command is sufficient.
- The machine must be equipped with an emergency stop switch capable of stopping the movement of the crusher bucket in the shortest time possible.
- Ensure that the operator has understood the meaning of all controls and operation.

- The operator must know and apply security conditions for the use of the machine in the workplace, according to the law laid down in the country of use.
- When we speak of right, left, front and rear of the machine, it refers to the view from the driving place of the excavator.
- The operator must know and correctly interpret all instructions in this manual and signs placed on the machine: this will help prevent damage to persons, things and to the operating machine.
- Observe mandatorily instructions in the following document and adhere to the rules of EC general accident prevention and the applicable regulations in the country of the user.
- Always use the means of individual protection under the EEC 89/686 and 89/656 EEC directives and everything stated in this manual; also use rules of general accident prevention regulations of the country of the user.
- Carefully read all indications about safety of adhesive labels attached to the machine.
- The operator should avoid using the Xcentric Crusher in unsuitable conditions or under the influence of alcohol or drugs.
- The organization of the work is important to make the fewest transactions based on the work to be performed.
- For safety and health protection is desirable to organize the construction site so that you can position the excavator (with bucket as pictured right), raised regarding the material for grinding, thus reducing the loading radius and prevents fulfilling the maximum opening of the arm.



- For the use of excavators, it is not recommended to perform the phase bucket load with truck placed at 90 ° (see picture below right), this position allows less stability respect to the positioning of the trolley in direct position (see the drawing below left).



- For installation in wheels excavators it is mandatory to set the stabilizers on the ground before connecting and lifting the equipment.
- For installation on operating machines other than wheeled, or tracked, all the above instructions must be taken into account and also those described below for the correct operation, safety, and protection of health.

ATTENTION!

Before starting the machine to operate with, make sure there are no people in its surroundings or in its range of action.

- **Keep away people and animals** during the use of Xcentric Crusher.
- **Do not use** the machine to transport people, animals and things.
- **It is forbidden** to climb on the structure of the machine.
- **It is absolutely forbidden** to approach the machine during operation.

ATTENTION!

It is forbidden the use of the machine in case of anomalies. The company is not liable for damage to people and / or things in case of use of the machine by the operator, when the machine malfunctions.

- The control system of the excavator will have the necessary elements to avoid spontaneous start-up of the Xcentric Crusher when resetting the power supply after an interruption.
- Before dismantling, decommissioning and removal of safety, all pipes and hoses will be drained.
- When hydraulic fluids and lubricants are removed during maintenance operations, decommissioning, dismantling and removal of security, they will be treated as specified in the corresponding safety sheets.
- The user company should establish programs for periodic checks to ensure that the hazards control measures remain effective.

CORRECT AND INCORRECT USE CRUSHER

PROPER USE

The Crusher is an interchangeable equipment that modifies the function of a machine, provided they meet the minimum requirements of weight and characteristics regarding the hydraulic system.

The equipment, to operate, does not need the presence and / or assistance from other different persons other than the operator of the main operating machine. As far as maintenance is concerned, it must be carried out by authorized personnel, as described in this manual.

The Crusher is designed to crush and crumble stone, concrete, asphalt, etc...

Crushing hard materials like granite or porphyry is permitted, provided they are maximum 90% of the inlet of the jaws. Keep in mind that this entry mouth may be modified by means of regulators the machine is provided with. For demolition of high hardness materials, material with a maximum size of 60% of the inlet of the jaws is recommended.

It can also be used to remove the shredded material, and clean the work area.

MISUSE

Any use for which the Crusher was not designed, will be considered misuse. The hydraulic Crusher should not be used exceeding his hydraulic limits.

Any action that goes against personal security measures or legislation on safety and fire, will be considered misuse.

The shredded will always be done with the jaws in good condition.

Please read the section Use of Crusher for its correct use.

Do not use the Crusher in a greater excavator than what is due. You could damage its structure or mechanisms.

Do not use the Crusher on a smaller excavator than what it designed for, there is great danger of tipping. See the manual for the excavator to verify it can operate with the weight of your Crusher.

Do not use the Crusher:

- For excavation or direct extraction.
- As support for positioning the carrier.
- For crushing with temperatures above 100 ° C or below -20 C.
- For the transport of persons, animals and things.
- In the presence of flammable or explosive materials or materials that may generate flammable, explosive, toxic or harmful dust.
- As a lifting tool.

It is also prohibited:

- Approaching the Crusher while operating.
- Climbing on the structure of the machine.
- Carrying out any operation on the crusher bucket while it is running.
- Carry out any operation which affects operator safety or the safety of things or people.
- The use of the crusher bucket in environments with potentially explosive atmospheres.
- Breaking rocks and various materials with the outside of the machine, hammer type use.
- Use the crusher submerged in liquids.
- The use of the Crusher bucket to move material with the outer parts of the bucket, instead of the front.
- The use of the crusher to lever through the arm for the lateral movement of the excavator.
- The use of the crusher bucket with carrier machines which don't have the minimum hydraulic parameters for the correct operation, hydraulic parameters described in the following manual.
- The use of the Xcentric Crusher with the position of the crushing bucket different from the vertical.
- To operate the Xcentric Crusher from outside the cab of the main operating machine.

ATTENTION!

The company Xcentric Ripper International / Grado Cero Sistemas SLU assumes no liability for damages to persons and / or things derived of misuse of the Xcentric Crusher by the customer or third parties.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The operator proposed by the client to operate this machine, prior to starting operations, use, maintenance or other interventions on the machine, must use all personal protective equipment (PPE) required to ensure the protection of the operator itself as provided in the rules of general accident prevention regulations of the country where the machine is put into operation. The personal protective items operators must use are listed below:

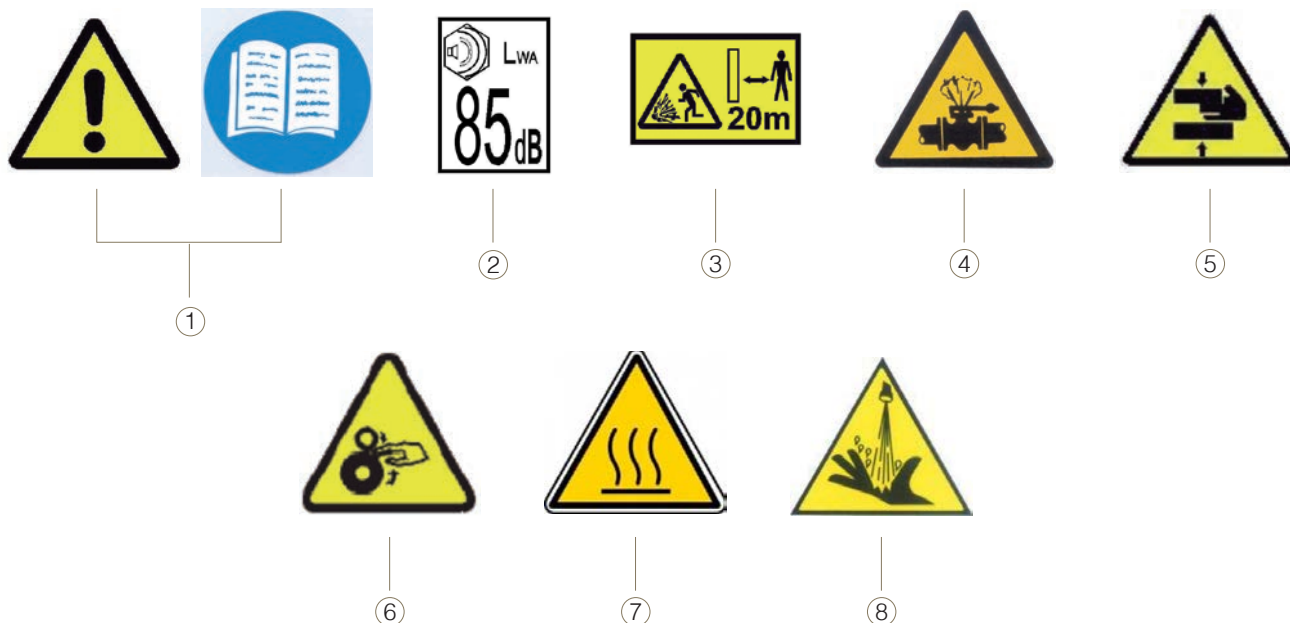
	USE PROTECTIVE CLOTHING		USE PROTECTIVE GLASSES
	USE SAFETY SHOES		USE EARS PROTECTIONS
	USE PROTECTIVE GLOVES		USE PROTECTIVE HELMET

ATTENTION!

The company Xcentric Ripper International / Grado Cero Sistemas SLU can not be held responsible for accidents caused by the operator due to lack of use of personal protective equipment.

SAFETY INSTRUCTIONS STICKERS

Safety stickers are applied on the crusher bucket. All stickers referring to security listed here, should always be in optimum condition and be clearly visible.



1. Attention! Read this manual completely. it is mandatory that all the information is understood.
2. Noise level: 85 dB (A9). Use ears protection.
3. During use, keep at least 20m away from the crusher. Beware of fragments projection.
4. Danger! High pressure system.
5. During commissioning operations there is a risk of crushing between moving parts (jaw) if untimely movements.
6. Risk by which a person or part of it gets caught or trapped by machines mechanisms or between objects, parts or materials.
7. Some component parts of the crusher have high temperatures after working with it. Risk of minor burns exist.
8. In operations of coupling and uncoupling of the hoses could be fluid projection.

WORK, INSPECTION AND SAFETY AREAS

WORKING AREA

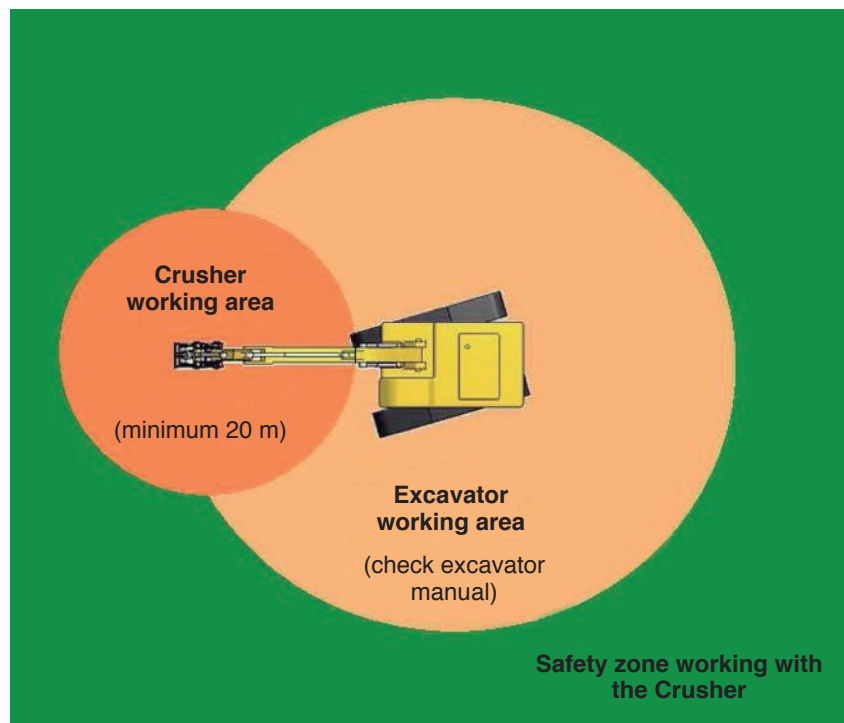
The Crusher can only be controlled from the excavator's operator cab. Always remain outside the working area.

SAFETY ZONE

When the Crusher is operating, maintain at least a 20 m safety distance. When working in high places, the work area expands in relation to the height.

DANGER ZONE DURING EXCAVATOR OPERATION

This includes all distances closer than the safety distance mentioned above. For work in high places, a rollover protection structure and/or protection structure (ROPS/FOPS) may be required.



DANGER ZONE DURING MAINTENANCE, CLEANING, ETC. (EXCAVATOR STOPPED)

The area under the Crusher, when it is still connected to the excavator.

The area in the immediate vicinity of the excavator when it is disconnected from the Crusher, because there is a tilting hazard. Always set the Crusher on a firm, even, horizontal surface that can bear the weight at the support points.

Some of the Crusher's surfaces and components may be very hot after use. Therefore take protective measures to prevent burning.

MAINTENANCE AREA

- The jaws, the mobile support and its mechanism.
- The bucket: the hydraulic block, the top bracket, and turnbuckles or blade.
- Hydraulic hoses.
- Fastening the Crusher to the machine. The Crusher produces vibrations that can loosen or move the bolts or quick-connect coupling, if the machine is equipped with one. Make a regular visual check of that area. Sudden, unintentional or accidental release of the attachment device poses a crushing hazard. Keep the quick-connect coupling system in perfect operating condition, and find out from the manufacturer if the coupling is capable of supporting the Crusher.

RESIDUAL RISKS

The continuous movement that the pivot arms cause in the Crusher can throw pieces, fragments or particles around.

During operation, the machine operator must make sure that no danger is posed to people or materials that are within the safety zone around the machine.

Use personal protective equipment (PPE).

: Hydraulic components

Broken or leaky hydraulic hoses pose a hazard.

Use extra caution when handling all hydraulic connections. Make sure that the machine's engine is stopped and that there is no hydraulic pressure within the system.

: Prolonged contact with hydraulic oil

Prolonged or repeated skin contact with any kind of hydraulic oil leads to loss of fat content in the skin. That can lead to dryness, irritation or skin inflammations. Hydraulic oil also contains dangerous substances that can cause skin cancer. If the basic safety and hygiene standards are observed during work, handling hydraulic oil should not cause health problems.

: Hot surfaces and hot hydraulic oil

Be aware that the hydraulic circuit can get very hot.

After working, some of the Crusher's components get very hot. There is a risk of minor burns.

: Risk of hearing loss

It is mandatory to wear ear protection.

: Crushing hazard

Be especially cautious when installing, removing and handling the Crusher, to prevent it from tipping or falling over.

Not following the instructions can result in an increased risk of trapment.

- OPERATION -

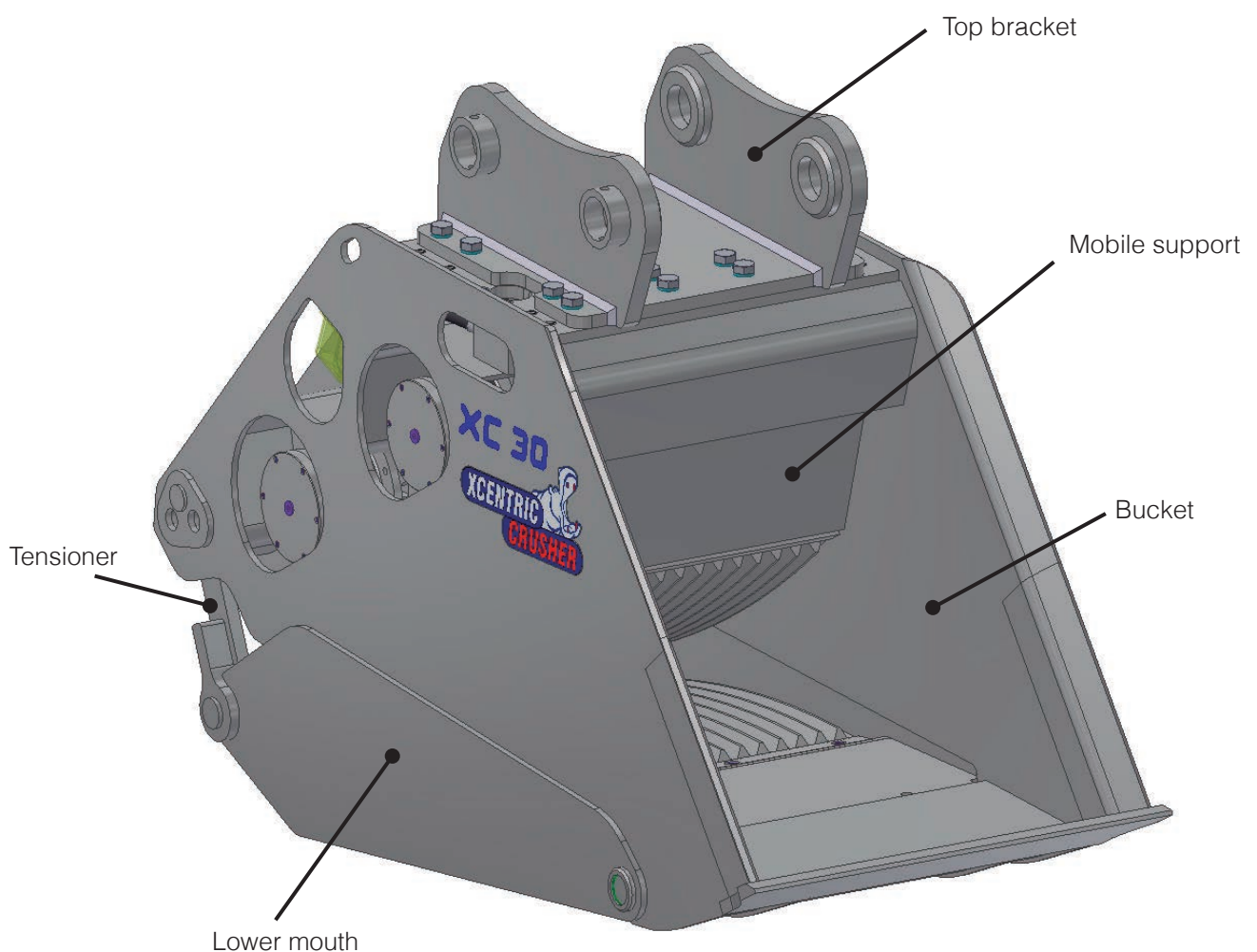
TECHNICAL SPECIFICATIONS

GENERAL DESCRIPTION

The Xcentric Crusher is a milling attachment for excavators developed by Xcentric Ripper International / Grado Cero Sistemas SLU, built entirely of wear-resistant steel.

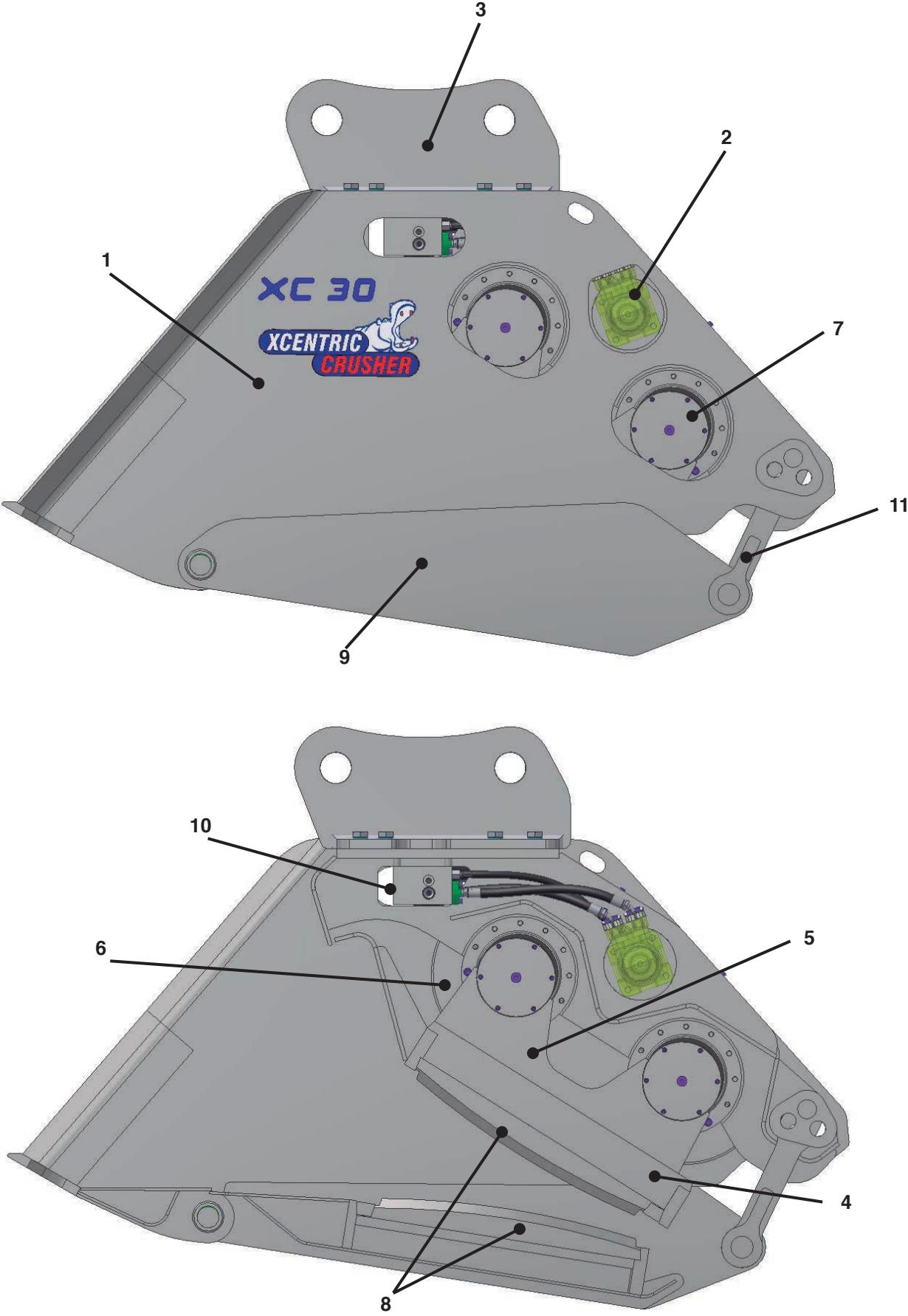
This is a crusher bucket which, by the hydraulic action breaks and crushes any demolition material.

It consists of the following parts:



NAME AND SPECIFICATIONS OF COMPONENTS

NAME OF COMPONENTS



1) Bucket

Covers the whole set of units in the mobile support: shaft-pulleys, crankcase, bridge and jaw. Also has threaded holes where the top bracket it is fixed.

2) Hydraulic motor

Bent-Axis Motor, which provides movement to the movable support.

3) Top bracket

It is the element that bolted to the Xcentric Crusher bucket, sets it to the excavator.

4) Mobile Support

Mobile unit composed of the upper jaw, bridges, pins and crankcase. Is the element that receives the movement from the motors for crushing the material.

5) Bridges

Parts joining the axes to the upper jaw.

6) Crankcase

The crankcase is a metal box that houses and protects the engine operating mechanisms.

7) Axis-pulleys

Set which purpose is to transmit the motion from the motor to the mobile support. Comprises two eccentric pins and a set of pulleys.

8) Jaws

Casting pieces, whose physical properties and geometry are conducive to crushing the material.

9) Lower mouth

Plate where the lower jaw is fixed. It is attached to the bucket by two pins and two adjustable turnbuckles in order to be able to modify the opening of the bucket.

10) Control block

Hydraulic unit that protects and controls the start and stop, and also the motors direction shift.

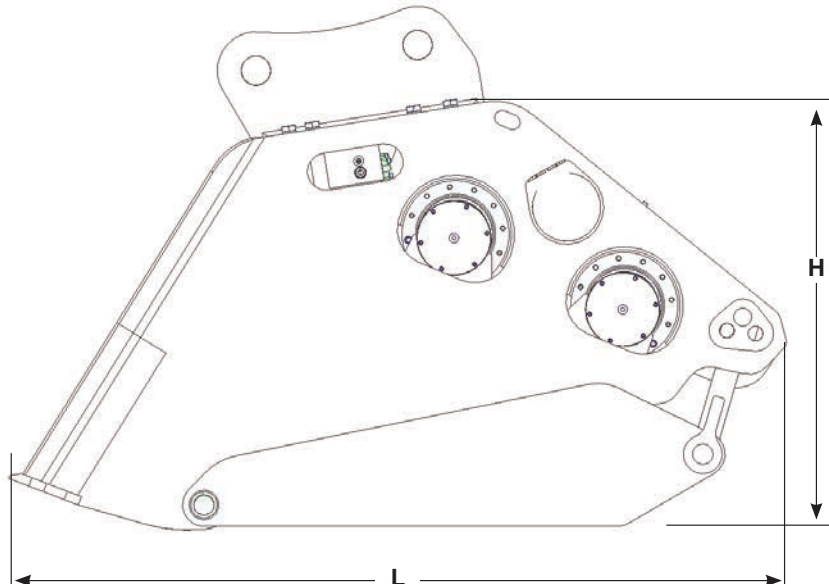
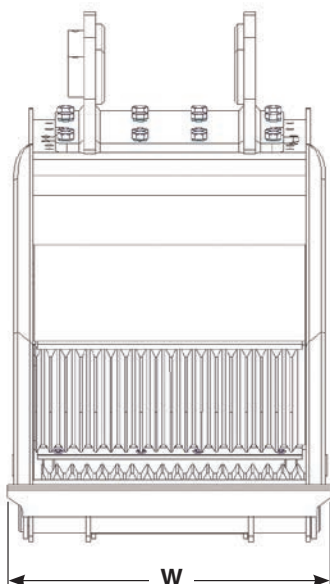
11) Tensioner fork

Adjustable parts that attach the lower mouth to the bucket. Depending on the setting of these elements, a bigger or smaller opening of the bucket exit can be obtained.

STANDARD SPECIFICATIONS

TECHNICAL SPECIFICATIONS		XC15	XC17	XC20
Excavator size	Tons	13 to 15	16 to 20	20 to 25
Weight (without top plate)	kg	2.000	2.000	2.500
Operating pressure	MPa	32	25	25
Operating Flow	L/min	100 - 120	140 - 160	160 - 180
Max. drain pressure	MPa	0,4	0,4	0,4
Hydraulic circuit		Double effect	Double effect	Double effect
Loading capacity	m ³	0,5	0,5	0,8
External width	mm	930	930	930
Internal width	mm	730	730	730
Length	mm	2.050	2.050	2.465
Height	mm	1.200	1.200	1.300
Crushing size	mm	20 – 90	20 – 90	20 – 140
Jaw opening	mm	400	400	420

TECHNICAL SPECIFICATIONS		XC30	XC40	XC50	XC60
Excavator size	Tons	24 to 35	32 to 45	45 to 60	60 to 85
Weight (without top plate)	kg	3.750	5.300	6.250	10.500
Operating pressure	MPa	25	32	32	25
Operating Flow	L/min	180 – 200	300	340	500
Max. drain pressure	MPa	0,4	0,4	0,4	0,4
Hydraulic circuit		Double effect	Double effect	Double effect	Double effect
Loading capacity	m ³	1	1,20	1,5	2
External width	mm	1.070	1.280	1.280	1.535
Internal width	mm	900	1.100	1.100	1.310
Length	mm	2.575	2.840	3.270	3.440
Height	mm	1.400	1.450	1.560	1.900
Crushing size	mm	20 – 140	20 – 140	20 – 210	20 – 210
Jaw opening	mm	420	465	500	500



TOP BRACKET DIMENSIONS

When installing an Xcentric Crusher on a base machine such as a hydraulic excavator, backhoe loader, etc. a top bracket will be required to connect the Crusher to the base machine. This can be ordered from Xcentric Ripper International/Grado Cero Sistemas S.L.U. at the time the Xcentric Crusher is ordered. Details of the type and model of the base machine will be required and if the base machine is equipped with a quick coupler, details of the manufacturer and model number will also be required.

If a top bracket is not ordered or if the Xcentric Crusher is to be mounted on a different base machine than the previous installation, a top bracket will have to be ordered separately from Xcentric Ripper International/Grado Cero Sistemas S.L.U. or manufactured locally.

IMPORTANT!

When manufacturing a top bracket to mount an Xcentric Crusher on an excavator it is very important to follow the guidelines listed below:

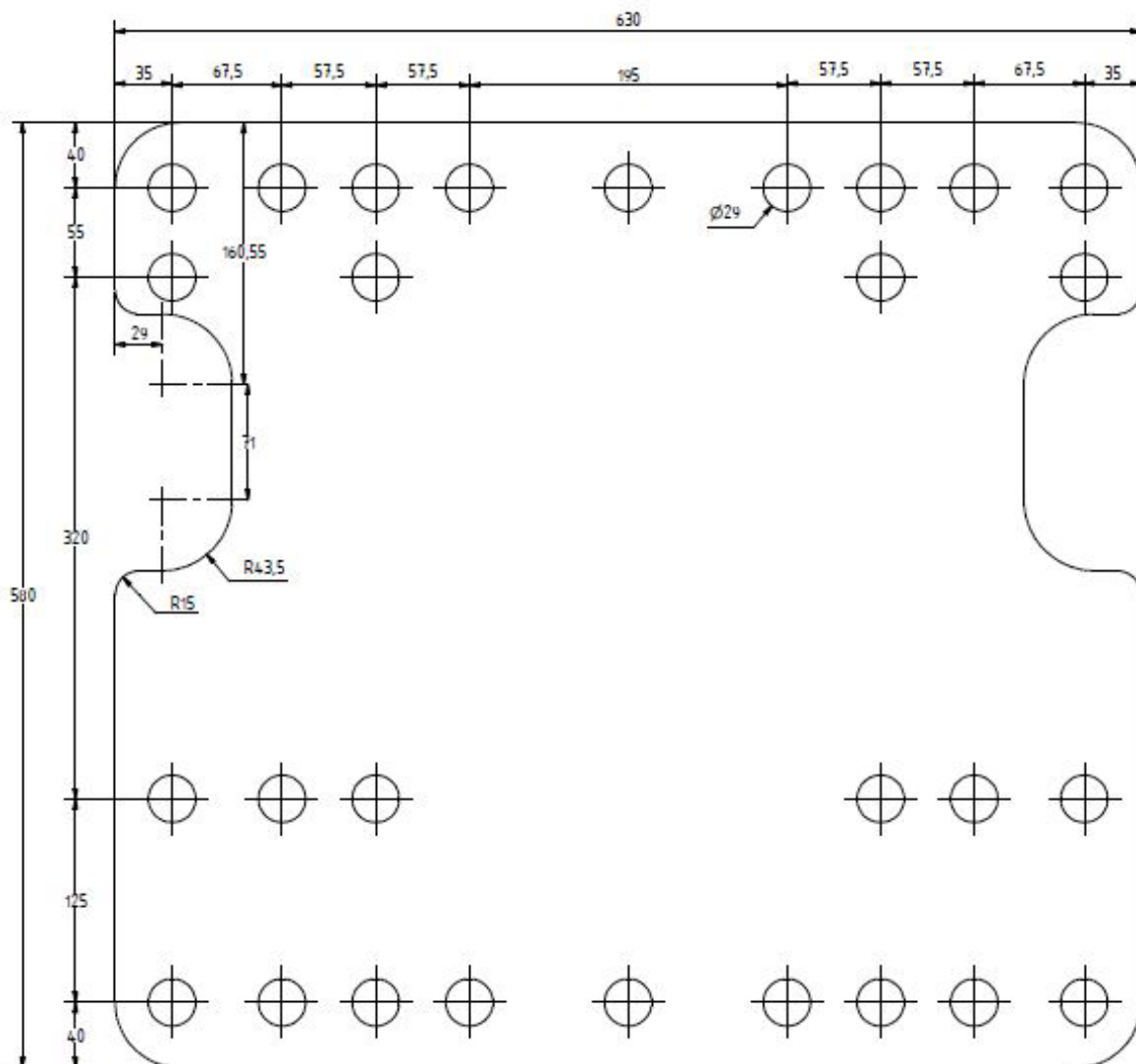
- 1. Cut the plates for the top bracket to the dimensions given in the following drawings.**
- 2. Weld on to the top plate the mounting ears required to mount the Xcentric Crusher on the specific excavator to be used for this Crusher.**
- 3. After the above operations have been carried out the surface of the top bracket plates which will be in contact with the Xcentric Crusher must be milled perfectly flat across the whole of both of the surfaces.**
- 4. Drill the required mounting bolt holes to the dimensions given in the drawings. They must be drilled and use at least the indicated ones for each model.**

It is not allowed to use a top bracket where the mounting surfaces have not been milled perfectly flat.

XC15 - XC17 TOP BRACKET DIMENSIONS

EXCAVATOR SIDE

THICKNESS 25mm

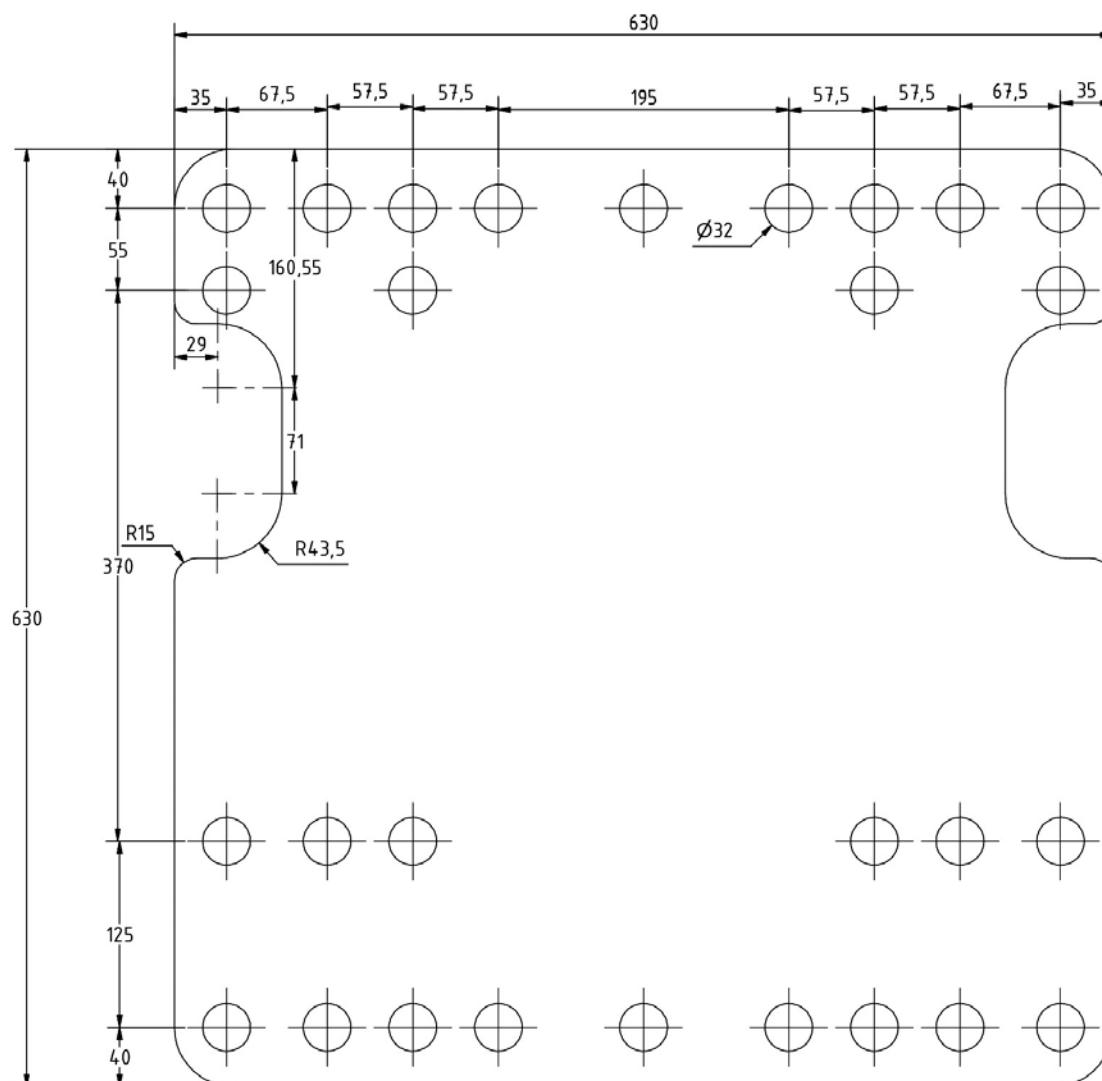


Minimum number of holes	12
Screws dimensions	M27 x 65
Torque	1050 Nm

XC20 TOP BRACKET DIMENSIONS

EXCAVATOR SIDE

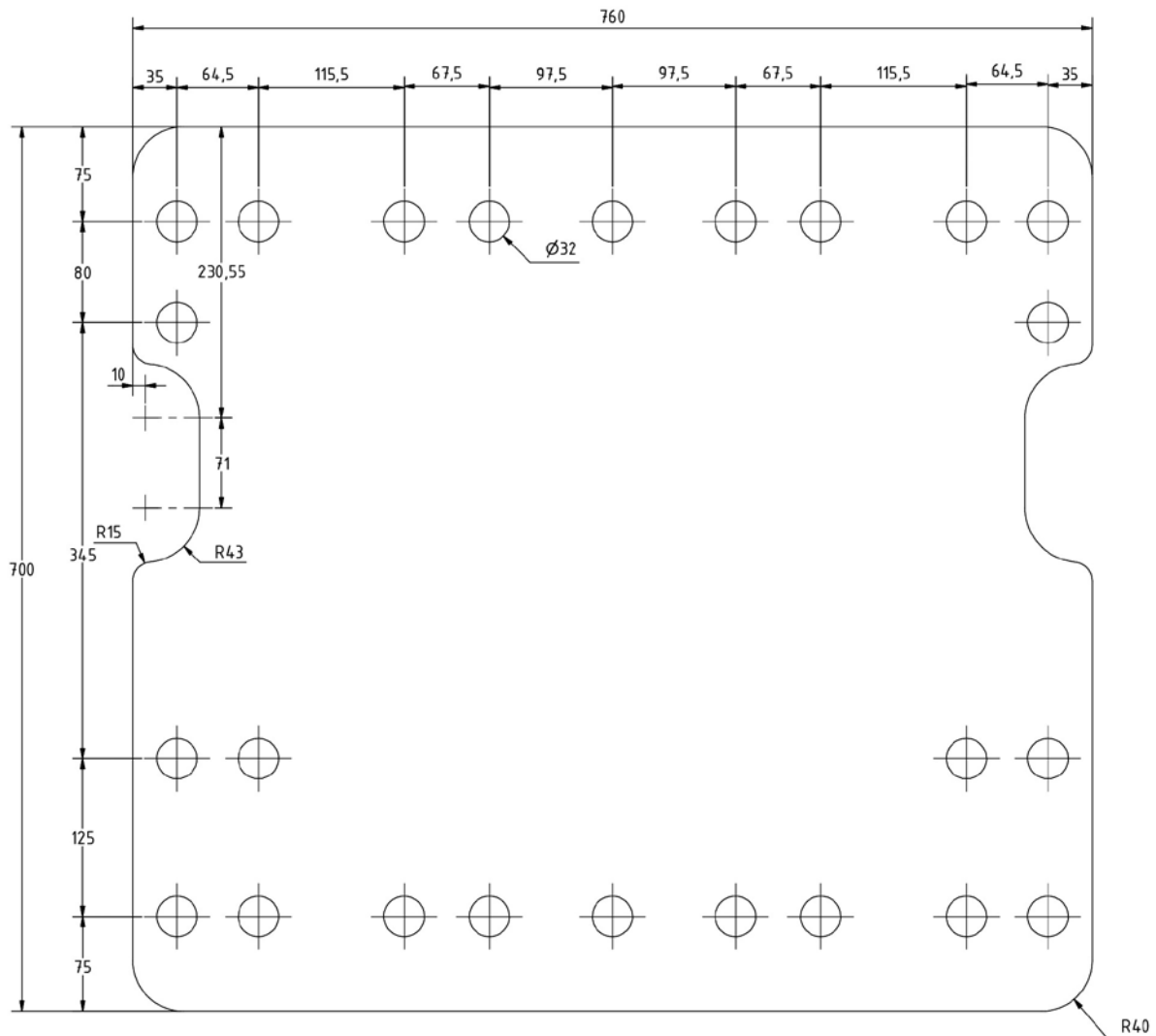
THICKNESS 30mm



Minimum number of holes	12
Screws dimensions	M30 x 65
Torque	1420 Nm

XC30 TOP BRACKET DIMENSIONS

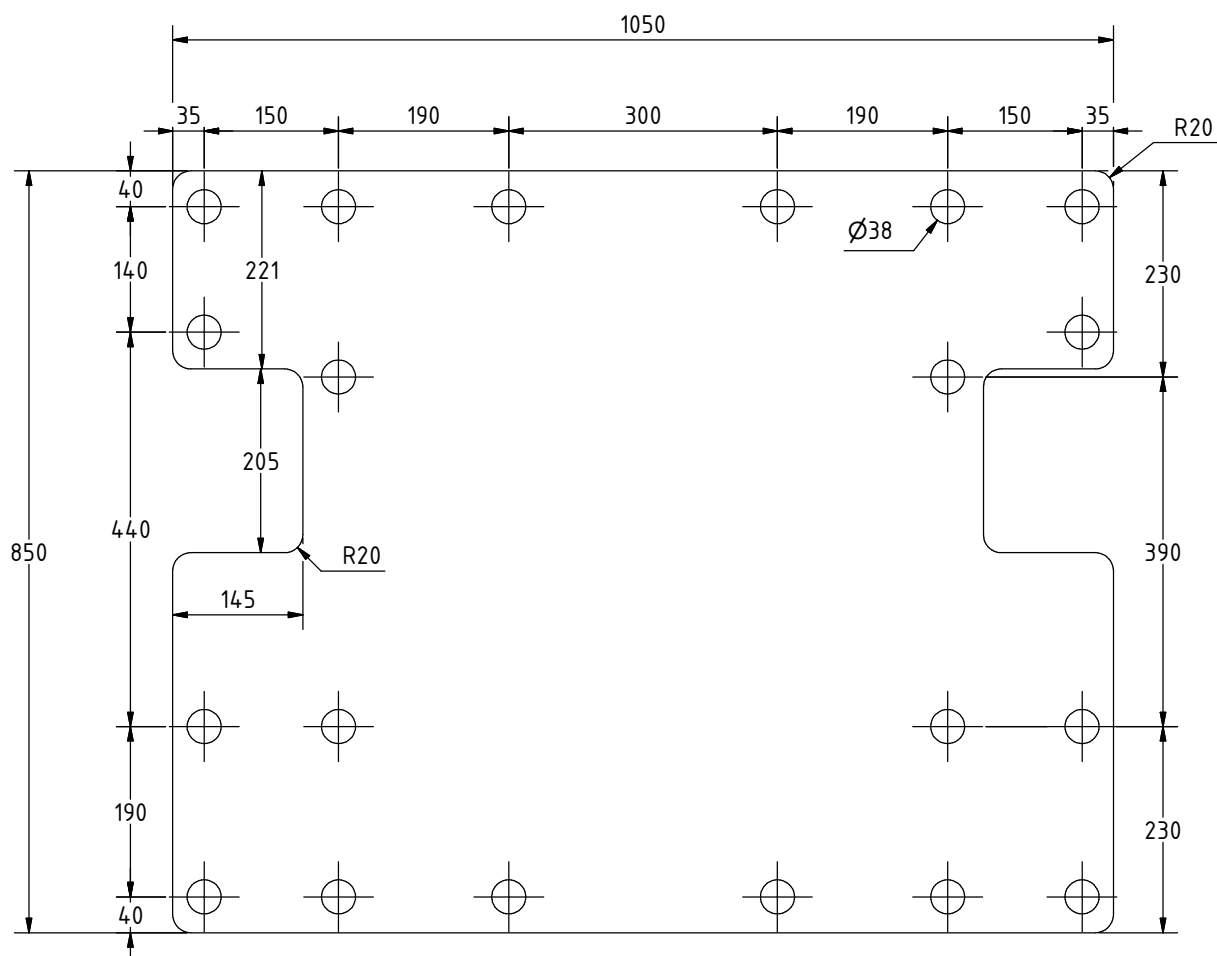
EXCAVATOR SIDE THICKNESS 30mm



Minimum number of holes	12
Screws dimensions	M30 x 65
Torque	1420 Nm

XC40 & XC50 TOP BRACKET DIMENSIONS

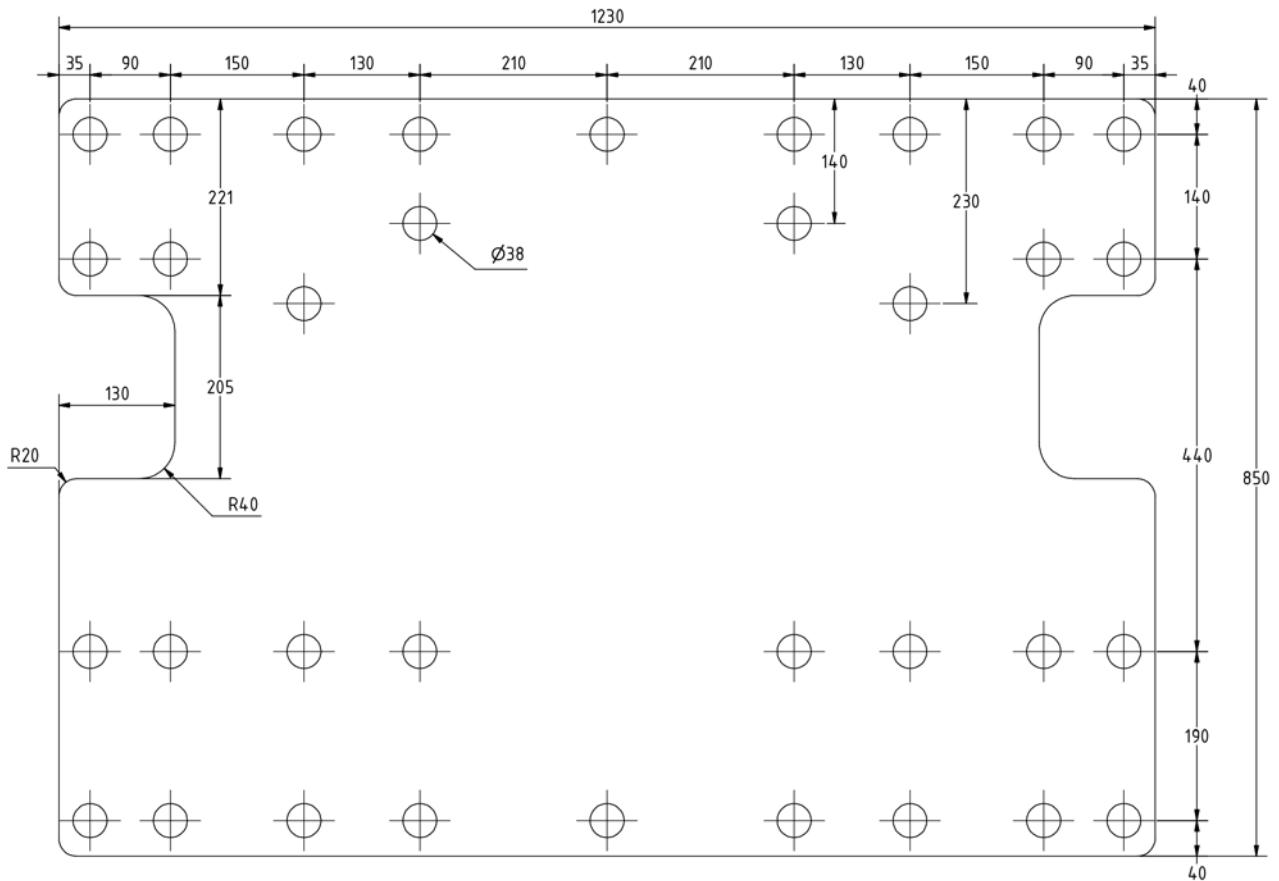
EXCAVATOR SIDE THICKNESS 40mm



Minimum number of holes	20
Screws dimensions	M36 x 90
Torque	2400 Nm

XC60 TOP BRACKET DIMENSIONS

EXCAVATOR SIDE THICKNESS 40mm



Minimum number of holes	34
Screws dimensions	M36 x 90
Torque	2400 Nm

INSTALLING AND REMOVING THE CRUSHER

INSTALLATION

- The operations of assembly and disassembly of the Xcentric Crusher on the base machine should be performed by qualified and prepared for it personnel.
- Only qualified staff who has read carefully the instructions for assembly and disassembly of the Xcentric Crusher on the base machine, as described in the instruction manual, can perform these operations.
- User companies will prepare specific safe work instructions to be observed by its staff.
- The operator of the machine will be personnel who have received proper training and have demonstrated competence.
- Refer to the excavator manual to locate the valves of control at the end of the pressure line and return line on the arm of the base machine.
- Access to the machine will be restricted to authorized personnel while bringing out the assembly, installation and commissioning.
- Personnel in charge of the movements will control that nobody will be affected by the moving element.

: Installation on the excavator

Check to see that the top bracket and the excavator arm fit together. Position the Crusher according to the illustration.

Install the Crusher only on an even surface with the elements to be connected standing across from each other.



Additional adapters or mounting brackets must not be welded to the Crusher. This will void both the warranty and the EC declaration of conformity.

: Hydraulic circuit adjustment and hose connections

Before installing the hoses between the Crusher and the excavator the hydraulic circuit pressures and flow must be set as follows:

1. Install pressure gauges at the end of the pressure and return lines on the excavator arm.
2. Make sure that the excavator circuit is in the “double effect” position (shear or cramp).

3. Ensure that the shut-off valves at the end of the pressure and return lines on the excavator arm are in the closed position, to prevent hydraulic flow from reaching the Xcentric Crusher.
4. Start the engine and raise the hydraulic oil temperature to a minimum of 40°C.
5. Operate the Crusher control valve with the engine running at full r.p.m. and read the pressure on the gauge on both lines. This pressure is the excavator circuit relief valve setting and should be set at the pressure for your specific model of Crusher as listed in the following table:

	XC15	XC17	XC20
Work line	32 MPa (320 bar)	25 MPa (250 bar)	25 MPa (250 bar)
Return line / unlock	150 to 250 bar	150 to 250 bar	150 to 250 bar

	XC30	XC40	XC50	XC60
Work line	25 MPa (250 bar)	32 MPa (320 bar)	32 MPa (320 bar)	25 MPa (250 bar)
Return line / unlock	150 to 250 bar	150 to 250 bar	150 to 250 bar	150 to 250 bar

WARNING!

The above relief valve pressure settings must never be exceeded. Operating a Crusher with excessive pressure can possibly lead to serious damage to the hydraulic motor and control valve block cartridge elements.

6. Stop the engine. Remove the plugs (or caps) from the shut-off valves and install a flow meter. Open the shut-off valves.
7. With the excavator at working regime, ensure that the maximum flow never exceeds these values:

XC 15 - 100-120 l/min / XC 17 - 140-160 l/min / XC 20 - 160-180 l/min
to 4MPa to 4MPa to 4MPa

XC 30 - 180-200 l/min / XC 40 - 300 l/min / XC 50 - 340 l/min / XC 60 - 500 l/min
to 4MPa to 4MPa to 4MPa to 4MPa

8. After ensuring the oil flow is correct, stop the engine, close the shut-off valves and remove the flow meter and hoses.
9. A total of three hoses must be connected from the Crusher to the excavator. The first two hoses, pressure and return, must be designed for a continuous pressure of at least 300 bars and withstand additional pressure peaks. We recommend the use of a 4SH hose for the pressure hoses, and a 2 wire hose for the drain hose. The connections to the Crusher must be of the type SAE 6000 1" for the pressure and return; SAE 6000 ½" for the drainage. It is mandatory the hoses to be sealed with appropriate accessories when the Crusher is not operating.

CAUTION!

The hydraulic hoses are not delivered with the Crusher. Do not use hydraulic quick-connect couplings on the hoses as these can reduce the Crusher's performance and damage the hydraulic motor. Make sure that the bends in the hydraulic hoses in all positions exceed the minimum radius specified by the manufacturer and that the hoses have no contact with other components.

10. Connect the hydraulic hoses between the excavator and the Crusher. The hydraulic hoses are connected as follows:
 - Remove the plugs.
 - Before connecting the hoses, make sure that the connections and hoses are clean.
 - Connect Crusher hoses to the shutoff valves on the arm of the excavator.
 - Connect the XC drain hose to the drain line of the excavator.

CAUTION!

To avoid or reduce damage to the hydraulic motor or its seals, it is mandatory to always install the case drain line from the case drain line connection on the Crusher directly to the hydraulic tank or filter just before the hydraulic tank. Under no circumstances is the drain line of the Crusher to be connected to other case drain lines on the excavator as this can lead to excessive back pressure in the Crusher case drain line.

11. Install a pressure gauge in the case drain line.
12. Open the oil shut-off keys on the excavator towards the bucket. Start with the return line (normally on the right side of the excavator arm but this can differ depending on the excavator's manufacturer, so check which side is the return side before opening) and then open the pressure line.
13. Start the excavator engine.
14. Lift the Crusher off the ground, idle or run the engine at a low RPM and press the Crusher's pedal for about 2 minutes to let the air out of the hydraulic system and at the same time check the system for leaks. If leaks occur, seal them right away.
15. Check the drain line pressure. This pressure should never exceed 0.4 MPa (4 bar) in any case.
16. Stop operating the Crusher.
17. Again check the drain line pressure. This should be at zero. If there is a pressure this is caused by pressure coming back from the excavator circuit. The cause of this has to be found and rectified (check to see if the bucket's drain line is connected to other drain lines from elements on the excavator such as the swing motor or travel motors, if so the bucket's drain line must be connected directly to the tank or filter just before the tank).
18. If the bucket's drain pressure is correct lift the Crusher up and set it in the rest position. Then stop the engine.
19. Remove the pressure gauges fitted in the pressure, return and bucket's drain lines.

: Excavator hydraulics

Check to make sure that the quality of the hydraulic oil and the excavator's filter comply with the manufacturer's specified requirements. **(ISO 4406 purity class 20/18/13).**

: Start-up and first use

Start-up and first operation of the Crusher are always performed by a technician authorized by Xcentric Ripper International/Grado Cero Sistemas, S.L.U.

After all of the previously described tasks have been performed, the Crusher is put into operation as follows:

- Before starting work, you should leave the engine running for a few minutes. If you are going to work in cold climates, it is advisable to leave the Crusher running until a temperature of approximately 40° C (104° F) is reached.
- When the machine is ready, start filling the bucket. After filling the bucket, turn the Crusher to reach the best position to help extraction. Then activate the mechanism slowly and gradually until the maximum number of revolutions are reached.
- When finished shredding the material, repeat the above operation.

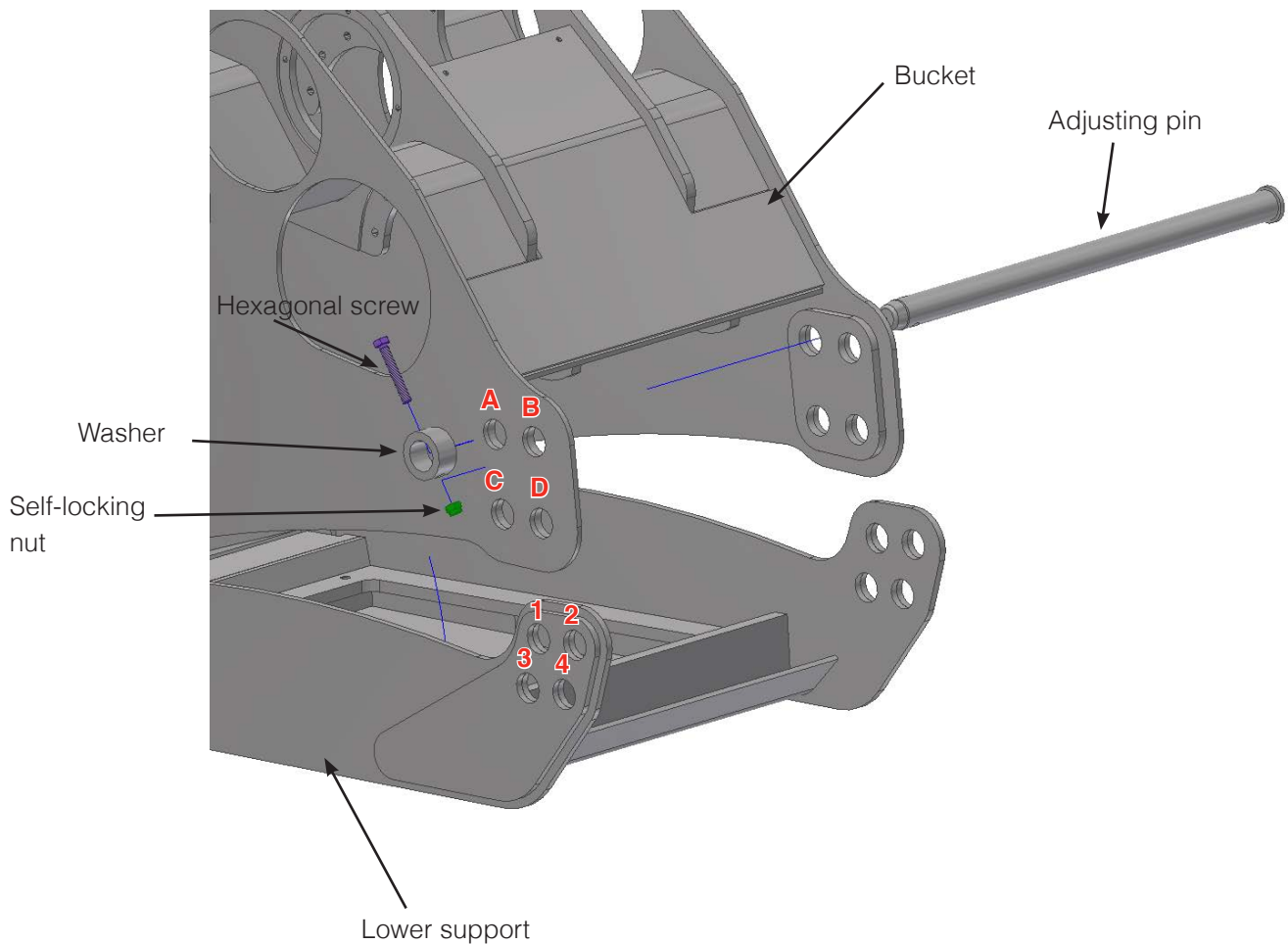
: Adjusting the width of Xcentric Crusher

Opening System Bucket XC15 - XC17

The XC15 and XC17 buckets are designed in a simple but effective and resilient way, so that it has a system of opening and closing jaws to obtain a final product according to the required demands.

It is based on a union of the jaw and the bucket by means of a through-pin, which varies the opening of the jaw, depending on the combination of holes used.

Below cutting of the system shown:



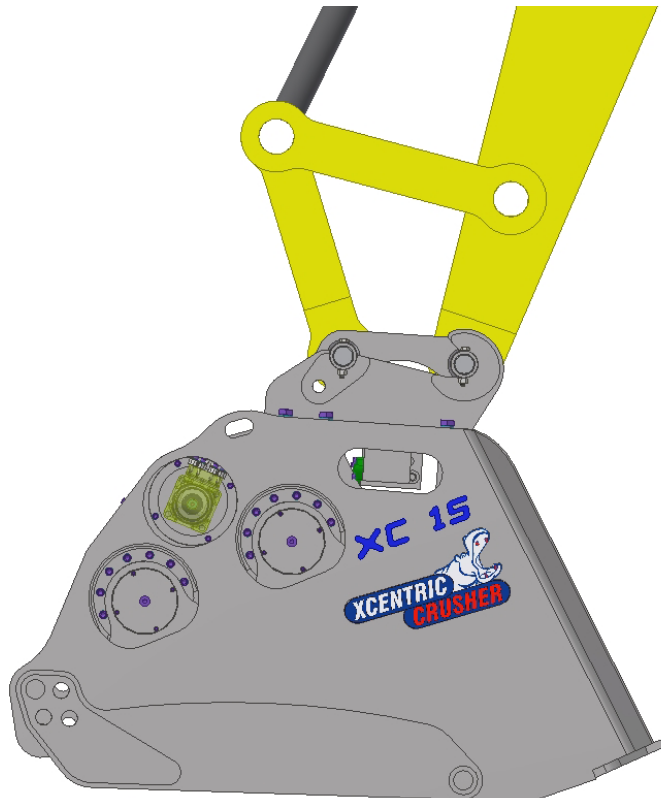
Opening regulation

ATTENTION!

All these operations will be held by **ONE SINGLE** operator and carrying out a number of safety guidelines:

- **Mandatory use of Personal Protective Equipments (PPE): boots, gloves, goggles, etc.**
- **Eliminate any possible start / accidental operation of the excavator.**
- **Eliminate the possibility that someone else starts / operates the excavator while performing the regulation.**

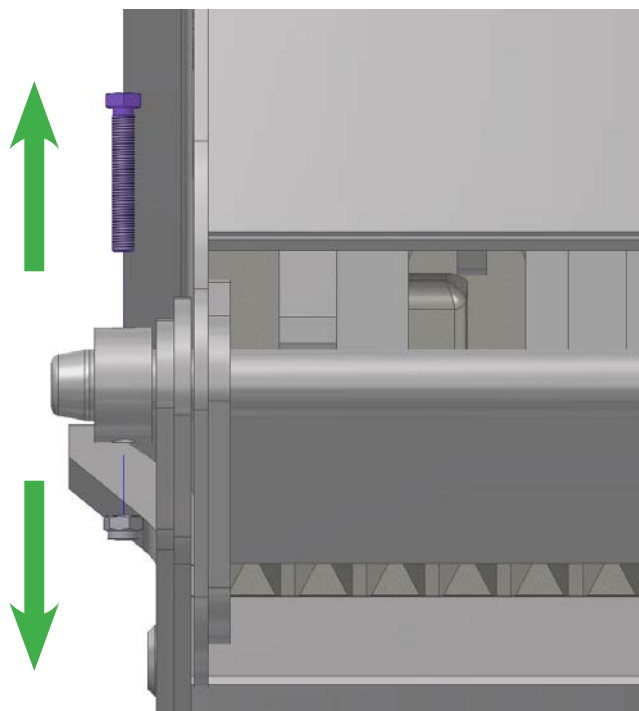
1.- Lean the bucket slightly on a flat, stable surface. Avoid pressure against the surface on the back of the bucket, so that pins can be extracted without difficulty.



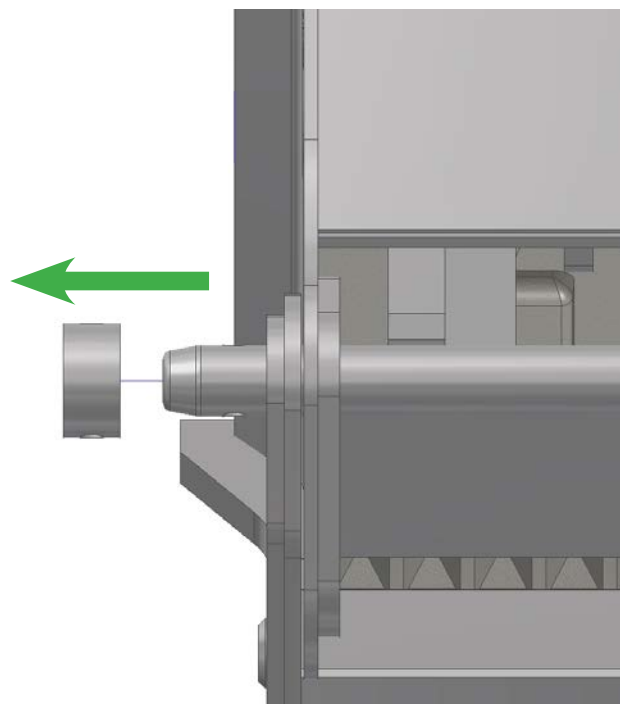
ATTENTION!

Block the excavator and stop the engine by following the instructions in the manual of the excavator itself, prior to the removal of the pin of regulation.

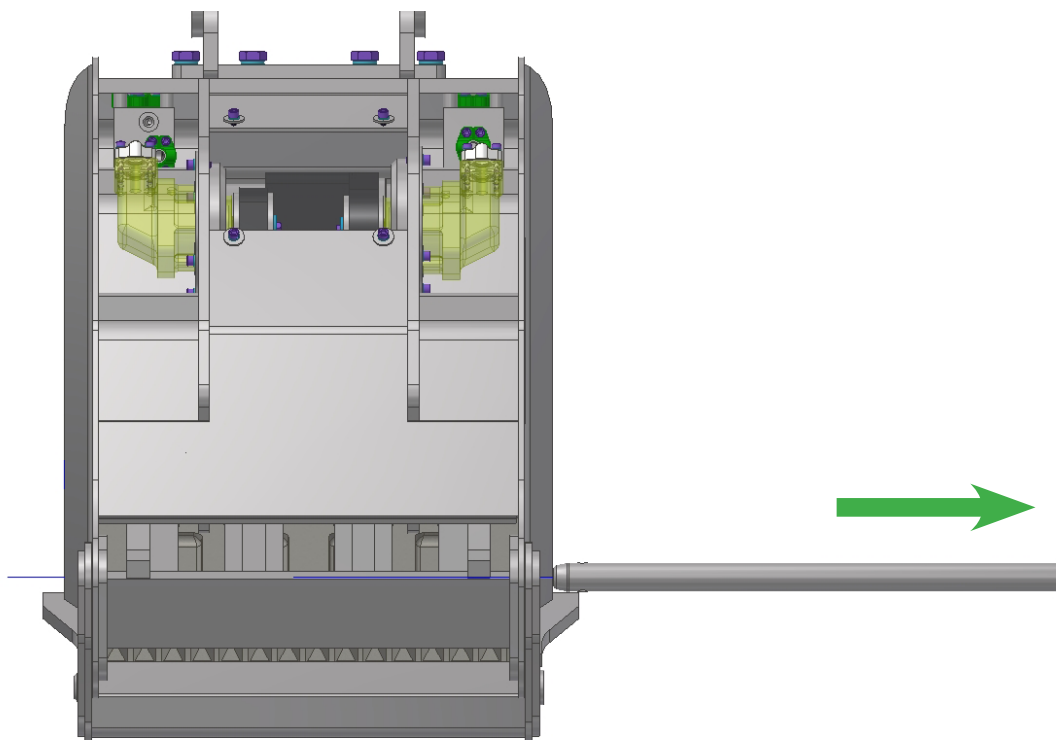
2. Remove the screw-nut system.



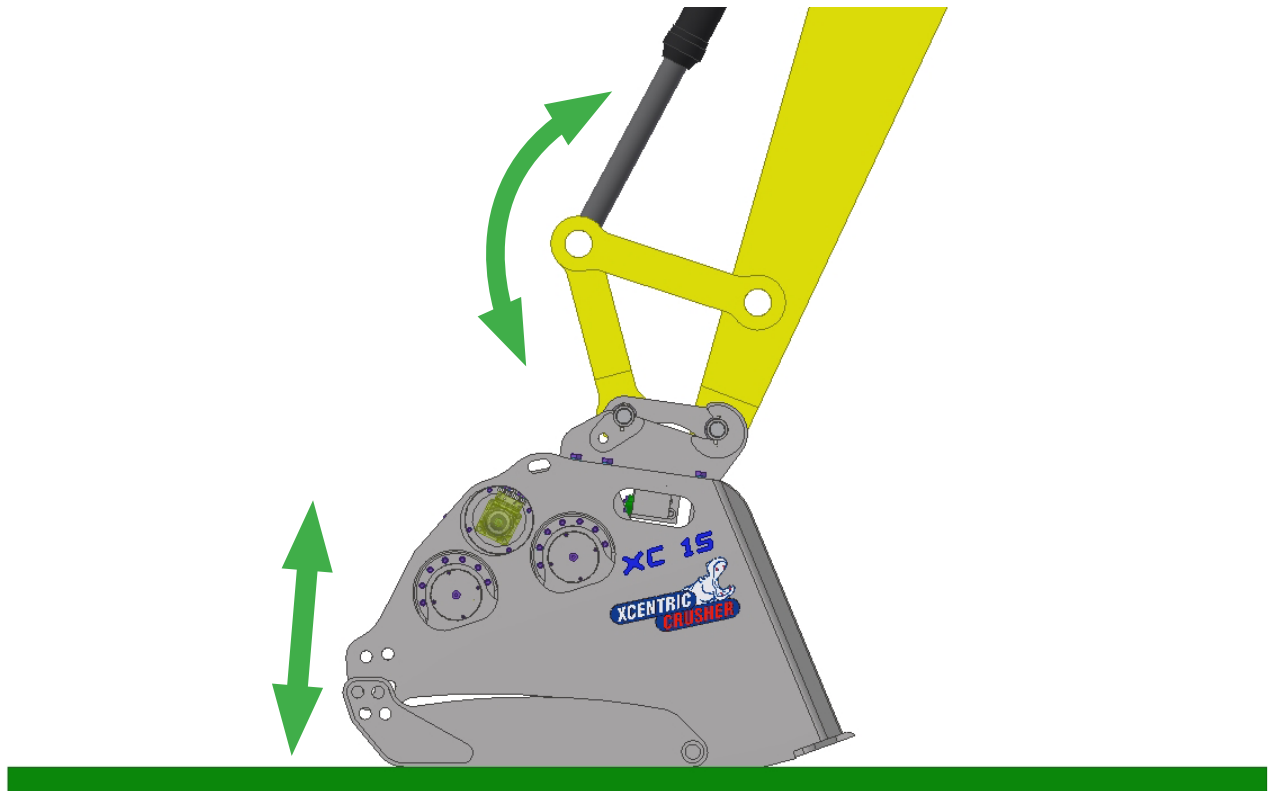
3. Remove the washer.



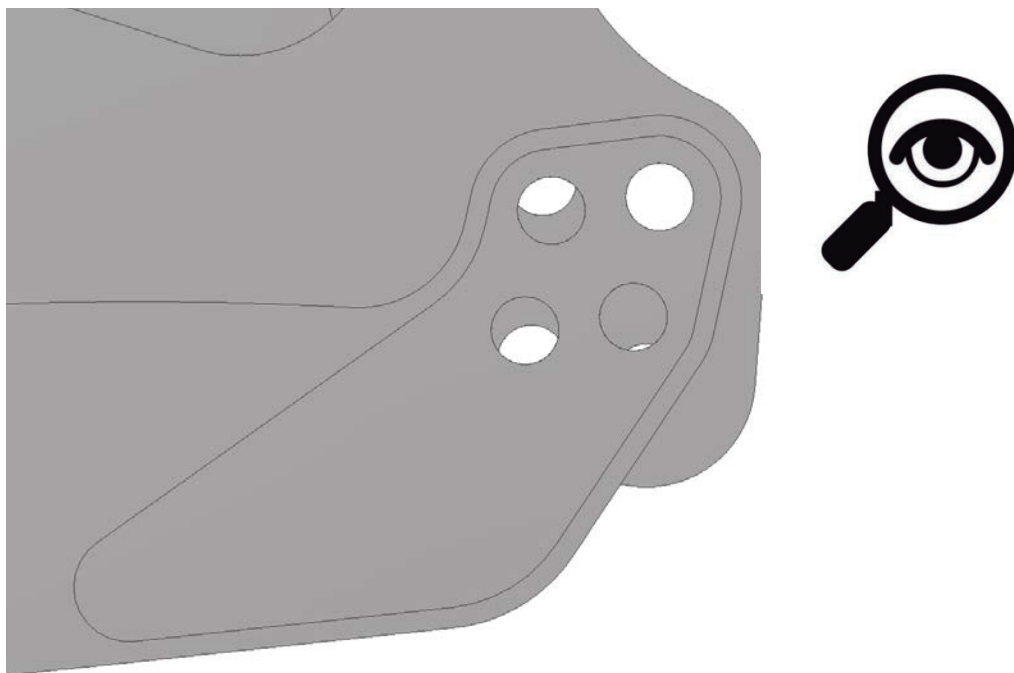
4. Remove the pin.



5. After removing the pin of regulation, get into and the excavator and through the arm movement, open or close the jaw to the desired opening. Lock and stop the excavator again.

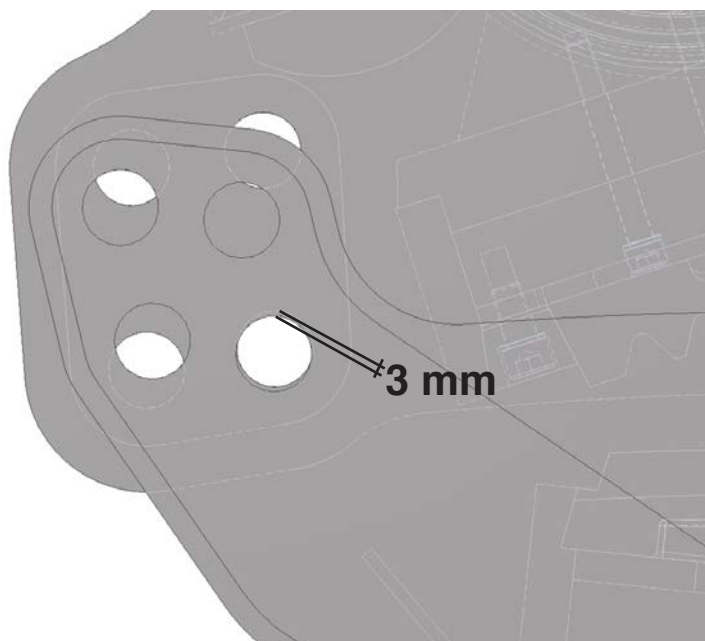


6. Visually inspect which opening correction you will need to do, in order to install again the pin of regulation.



Get into the excavator and make the correction through the arm movement. Lock and stop the engine of the excavator.

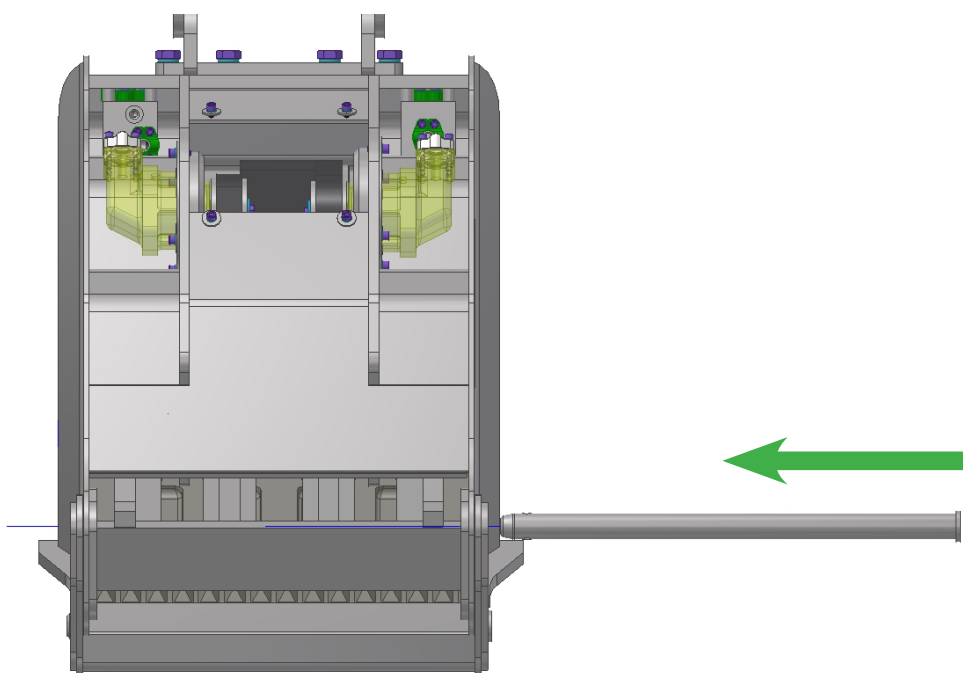
Repeat this step as often as necessary until the alignment of selected holes is within an error less than 3 mm.



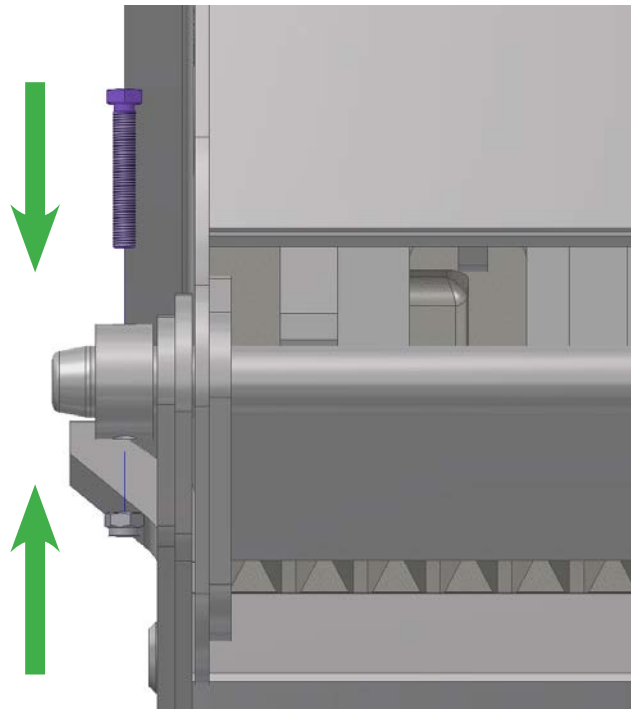
ATTENTION!

This operation must be carried out by the operator of the excavator without the help of another person. There is high risk of unintended entrapment.

7. Introduce the pin of regulation, with the help of a mallet if necessary, having previously cleaned it. Light greasing of the diameter of the pin will facilitate insertion.

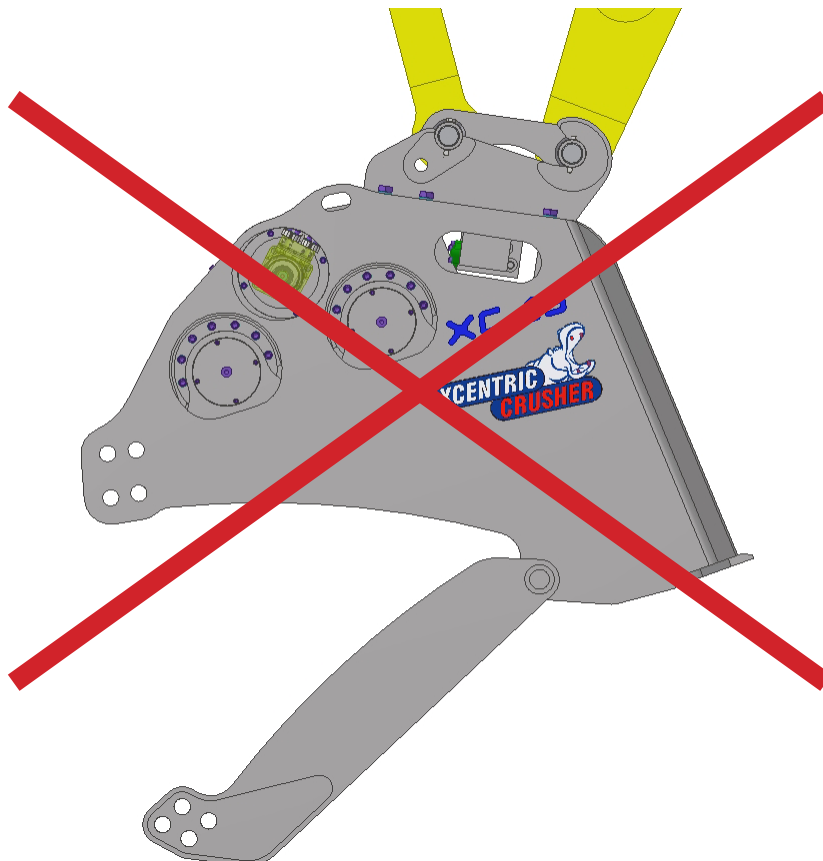


8. Install the screw-nut properly.

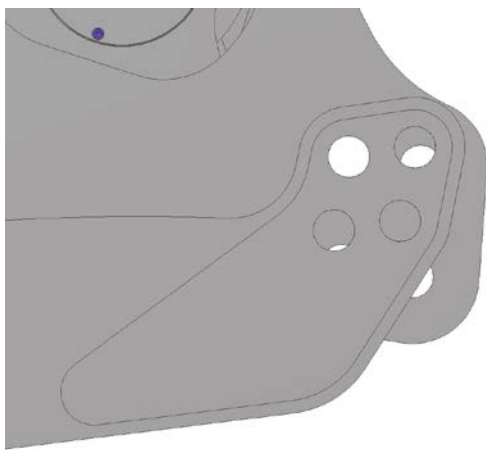


ATTENTION!

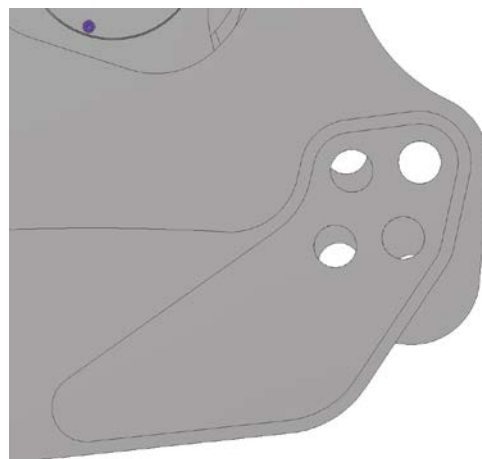
The opening regulation with the bucket suspended in the air is totally prohibited, it exists high risk of entrapment by dropping or involuntary movement.



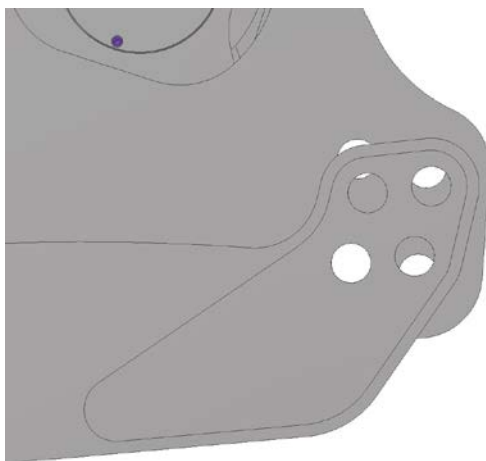
XC15 - XC17



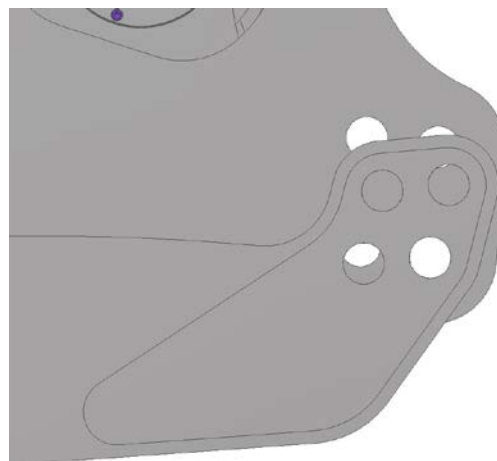
A 1
OUTPUT SIZE $\leq 20 \text{ mm.}$



B 2
OUTPUT SIZE $\leq 40 \text{ mm.}$



C 3
OUTPUT SIZE $\leq 60 \text{ mm.}$



D 4
OUTPUT SIZE $\leq 90 \text{ mm.}$

REMOVAL

: Removing the Crusher

Remove the Crusher as follows:

- Close the valve of the pressure line.
- Close the return line valve.
- Disconnect all hydraulic hoses.
- Attach the appropriate sealing plugs on the Crusher as well as on the excavator hoses.
- Position the Crusher on a horizontal surface to prevent tipping over and to ease subsequent removal.
- Remove the Crusher.

NOTICE

When detaching the Crusher from the excavator, close the hydraulic hoses and connections with plugs to prevent oil from dripping out and dirt from getting into the hydraulic system.

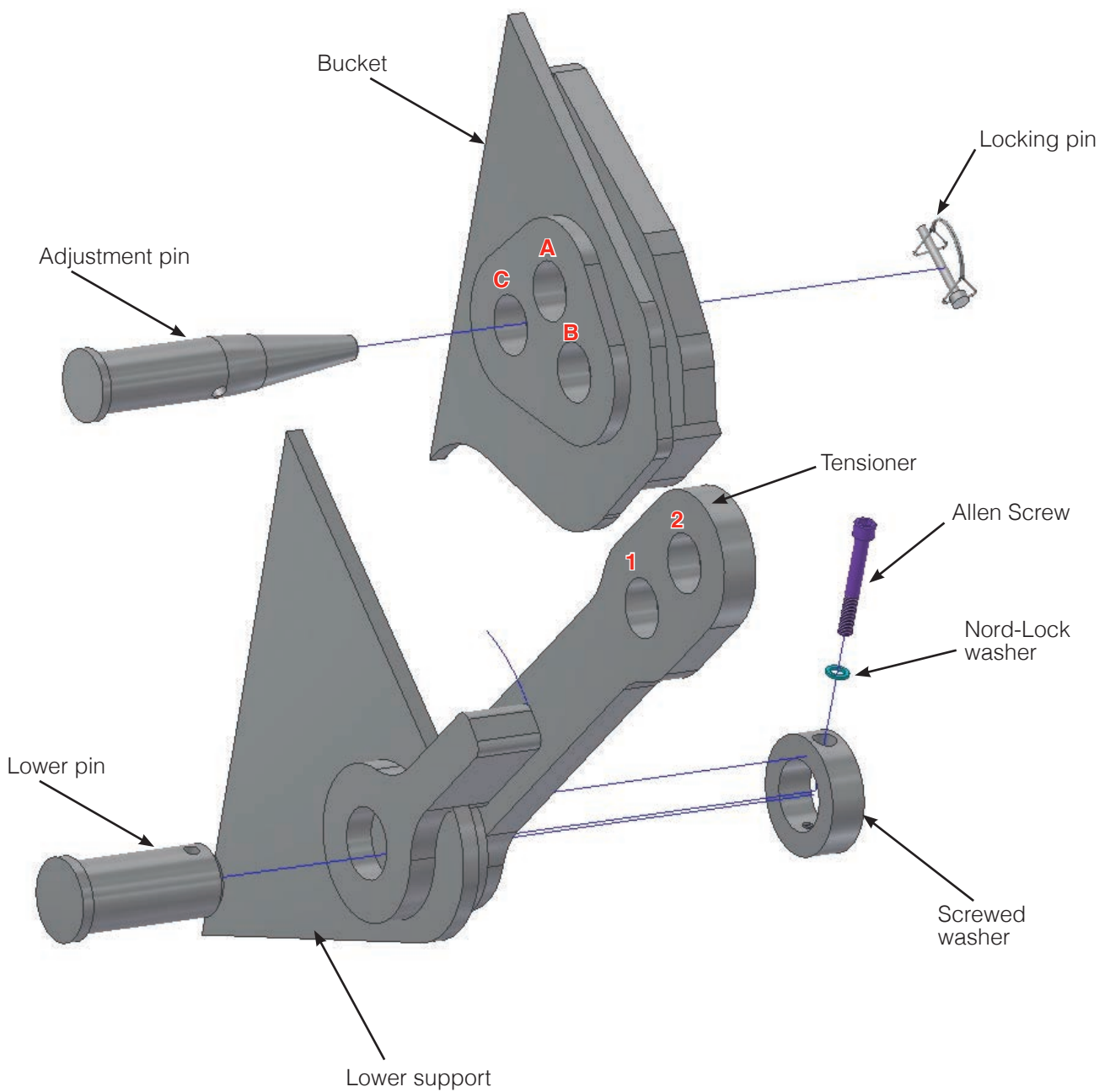
: Adjusting the width of Xcentric Crusher

Opening System Bucket XC20, XC30 & XC40

The XC20, XC30 and XC40 buckets are designed in a simple but effective and resilient way, so that they have a system of opening and closing jaws to obtain a final product according to the required demands.

It is based on a bracket attached to the bucket and a movable lower jaw by bolt-fastening pin, varying the opening of the jaw, according to the combination of holes used.

Below cutting of the system shown:



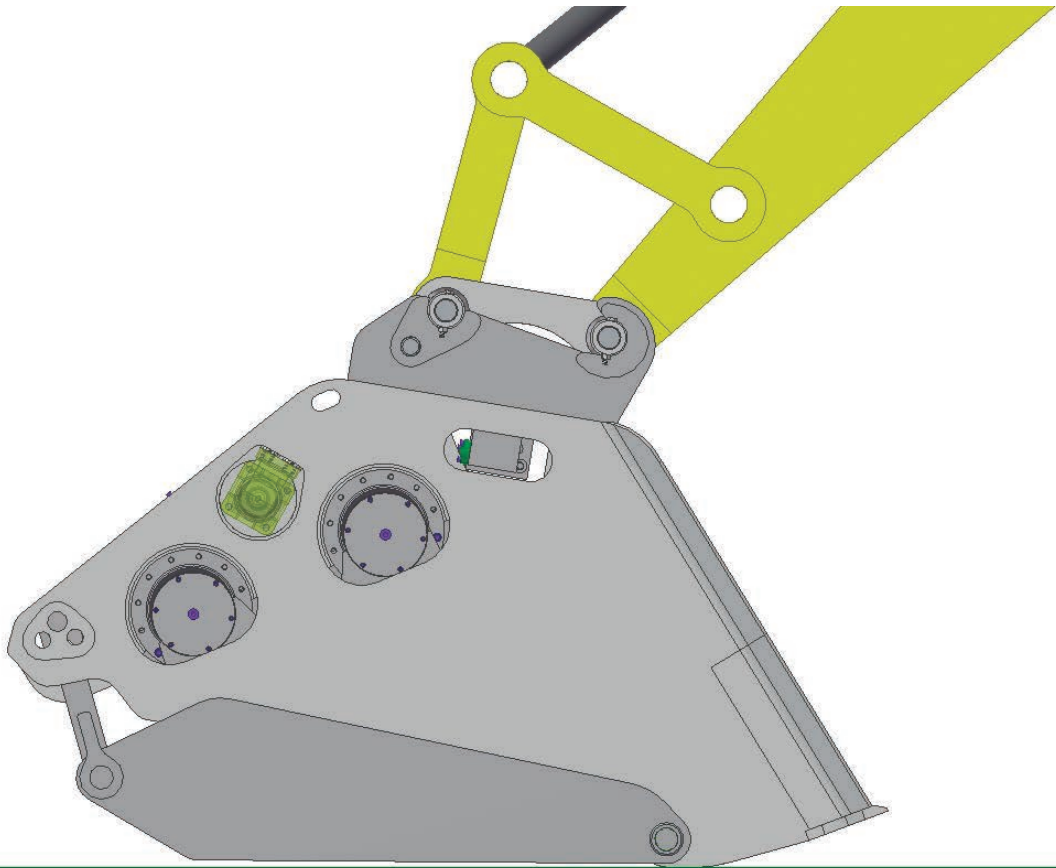
Opening regulation

ATTENTION!

All these operations will be held by ONE SINGLE operator and carrying out a number of safety guidelines:

- Mandatory use of Personal Protective Equipments (PPE): boots, gloves, goggles, etc.
- Eliminate any possible start / accidental operation of the excavator.
- Eliminate the possibility that someone else starts / operates the excavator while performing the regulation.

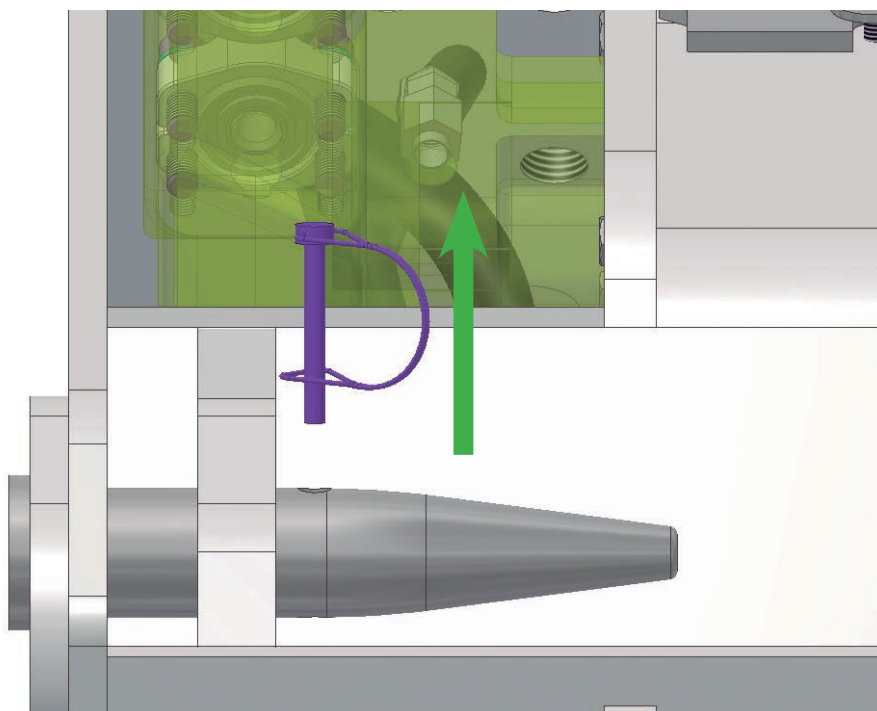
1.- Lean the bucket slightly on a flat, stable surface. Avoid pressure against the surface on the back of the bucket, so that pins can be extracted without difficulty.



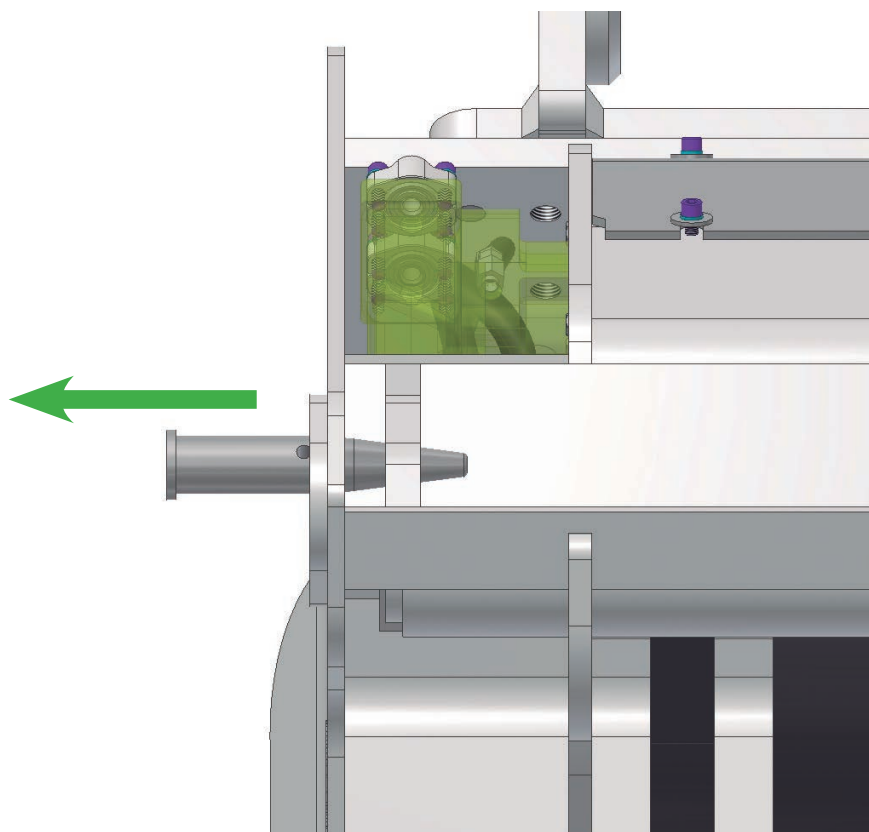
ATTENTION!

Block the excavator and stop the engine by following the instructions in the manual of the excavator itself, prior to the removal of pins of regulation.

2. Remove the retaining pins.



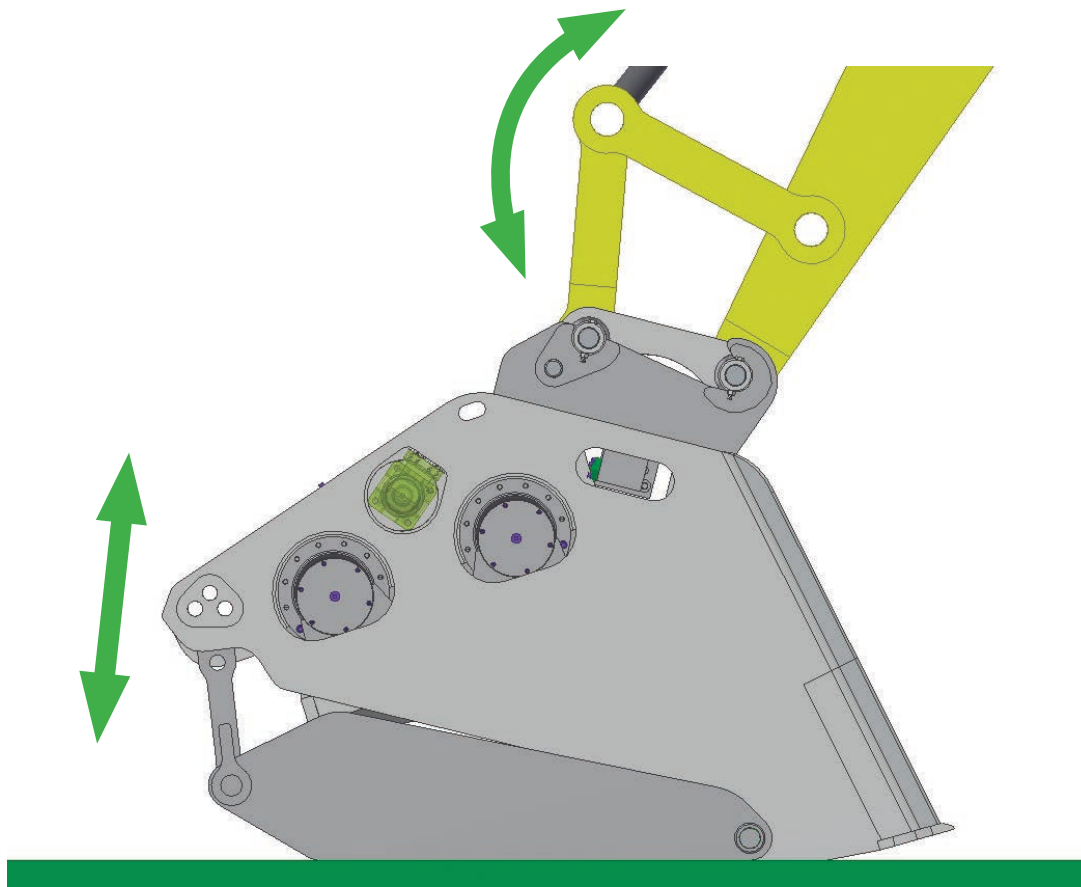
3. Remove pins of regulation, helped by a mallet if necessary.



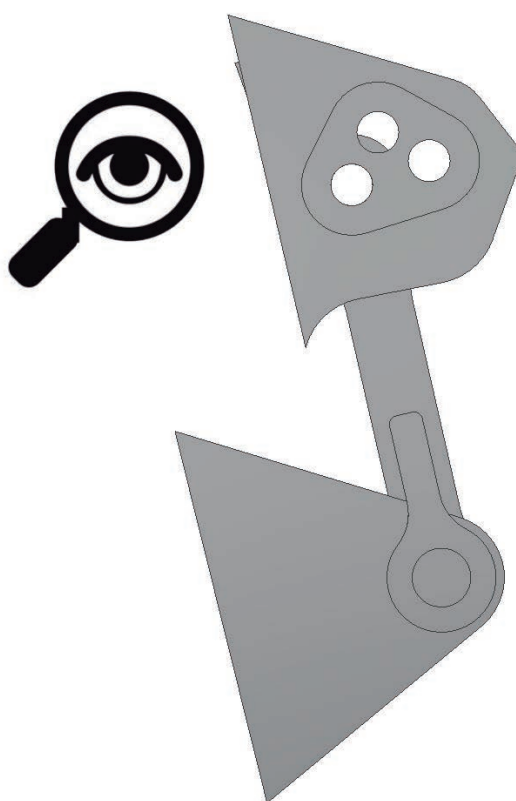
CAUTION!

Caution when removing pins of regulation, because there is a risk of movement of the rods.

4. After removing the pins of regulation, get into and the excavator and through the arm movement, open or close the jaw to the desired opening. Lock and stop the excavator again.

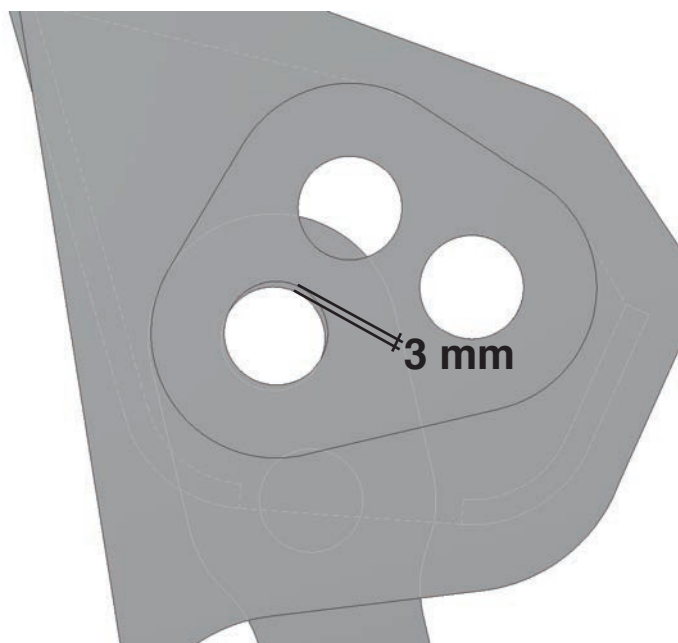


5. Visually inspect which opening correction you will need to do, in order to install again the pins of regulation.



Get into the excavator and make the correction through the arm movement. Lock and stop the engine of the excavator.

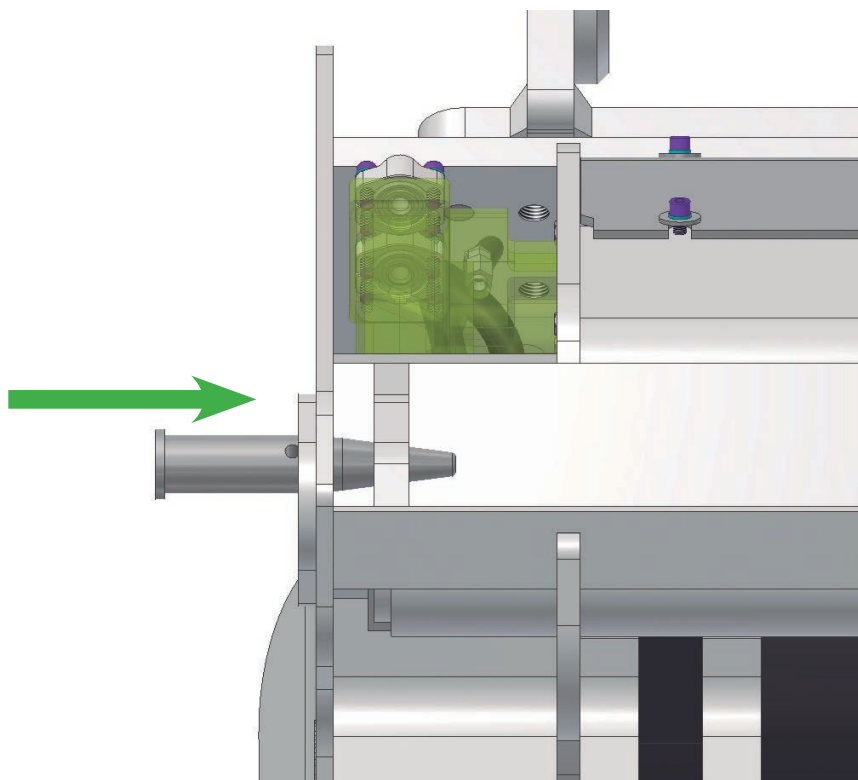
Repeat this step as often as necessary until the alignment of selected holes is within an error less than 3 mm.



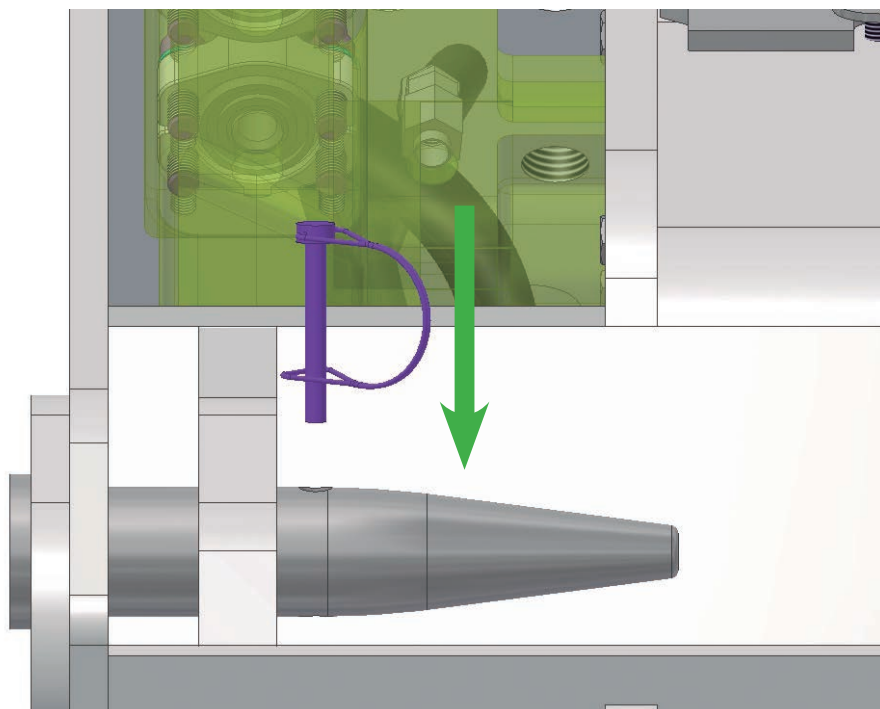
ATTENTION!

This operation must be carried out by the operator of the excavator without the help of another person. There is high risk of unintended entrapment.

6. Introduce the pins of regulation, with the help of a mallet if necessary, having previously cleaned them. Light greasing of the diameter of the pin will facilitate insertion.

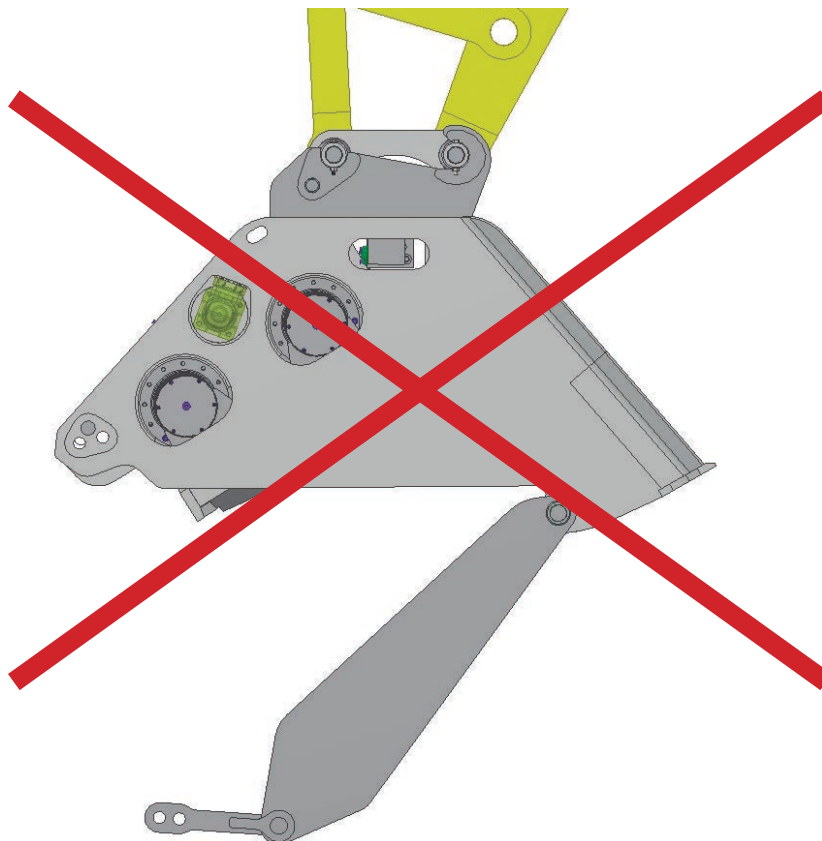


7. Install the locking pins correctly.

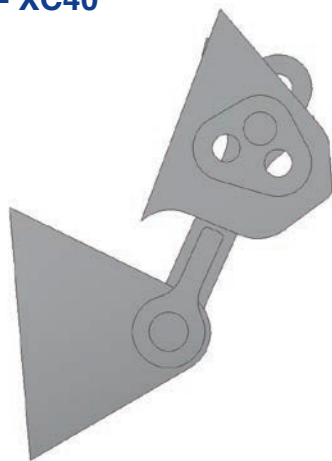


ATTENTION!

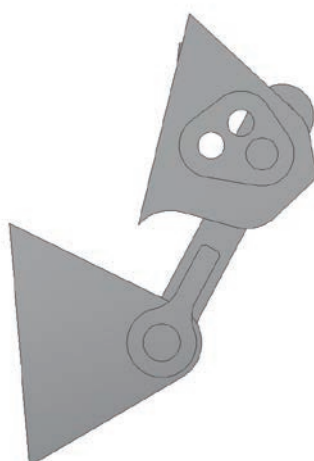
The opening regulation with the bucket suspended in the air is totally prohibited, it exists high risk of entrapment by dropping or involuntary movement.



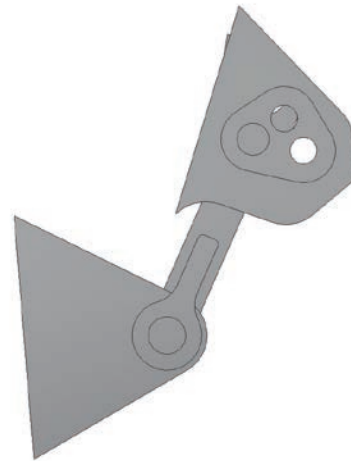
XC20 - XC30 - XC40



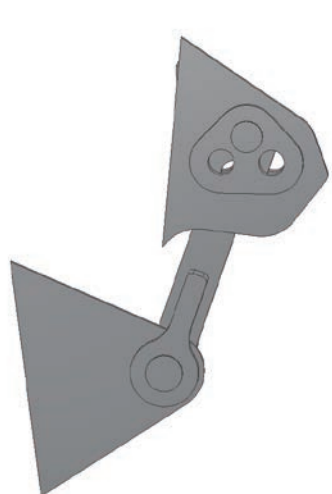
1 A
OUTPUT SIZE ≤ 20 mm.



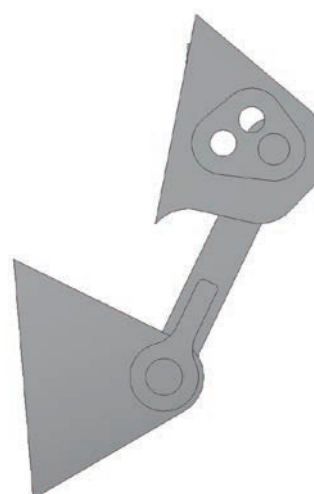
1 B
OUTPUT SIZE ≤ 45 mm.



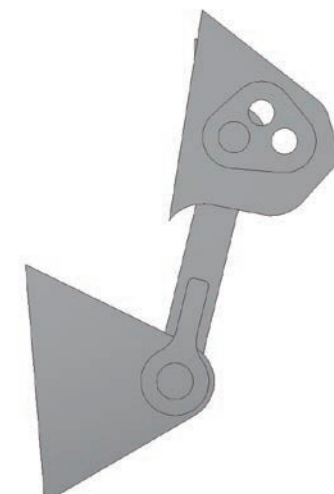
1 C
OUTPUT SIZE ≤ 70 mm.



2 A
OUTPUT SIZE ≤ 95 mm.



2 B
OUTPUT SIZE ≤ 125 mm.



2 C
OUTPUT SIZE ≤ 150 mm.

REMOVAL

: Removing the Crusher

Remove the Crusher as follows:

- Close the valve of the pressure line.
- Close the return line valve.
- Disconnect all hydraulic hoses.
- Attach the appropriate sealing plugs on the Crusher as well as on the excavator hoses.
- Position the Crusher on a horizontal surface to prevent tipping over and to ease subsequent removal.
- Remove the Crusher.

NOTICE

When detaching the Crusher from the excavator, close the hydraulic hoses and connections with plugs to prevent oil from dripping out and dirt from getting into the hydraulic system.

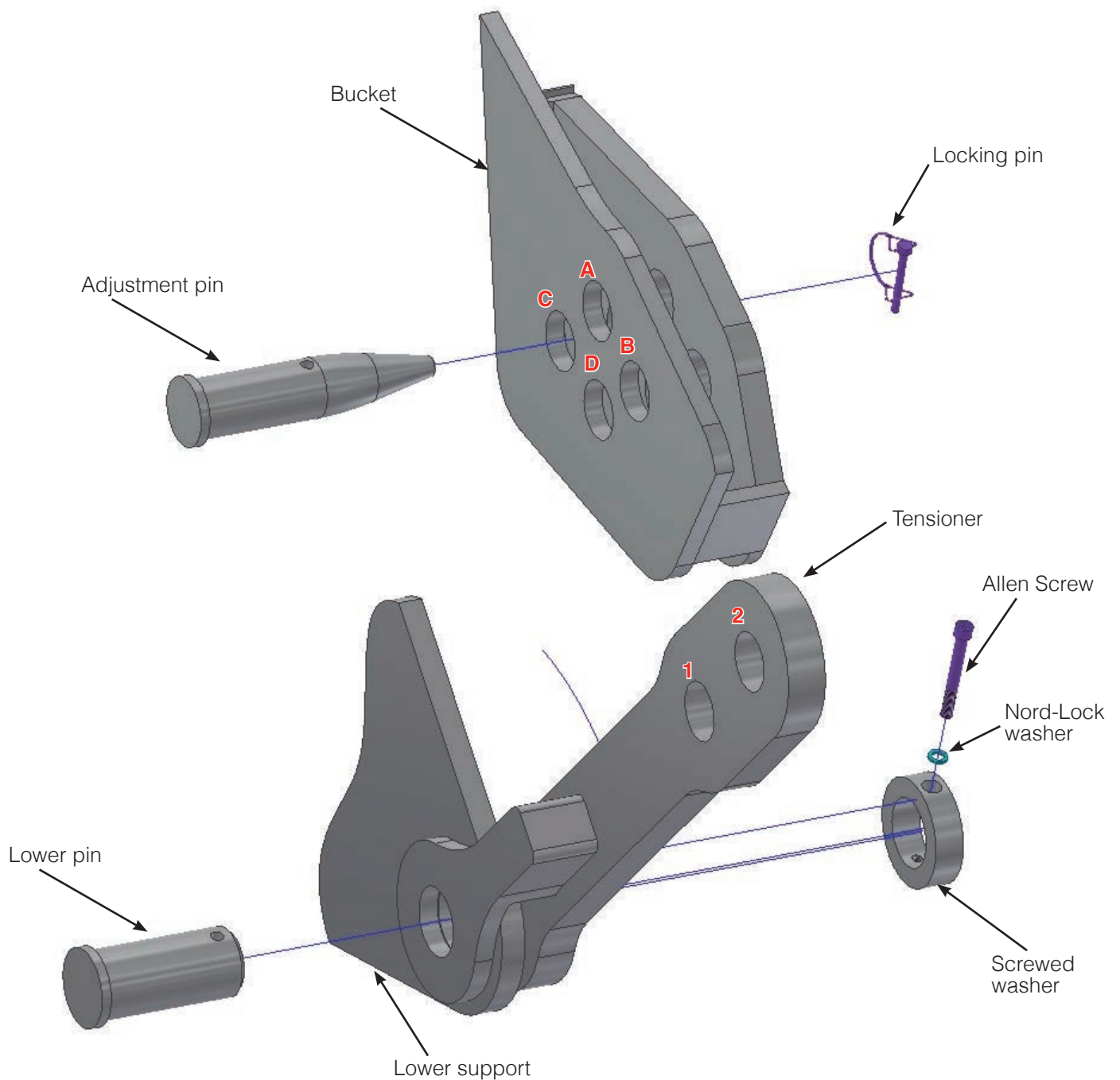
: Adjusting the width of Xcentric Crusher

Opening System Bucket XC50

The XC50 buckets are designed in a simple but effective and resilient way, so that they have a system of opening and closing jaws to obtain a final product according to the required demands.

It is based on a bracket attached to the bucket and a movable lower jaw by bolt-fastening pin, varying the opening of the jaw, according to the combination of holes used.

Below cutting of the system shown:



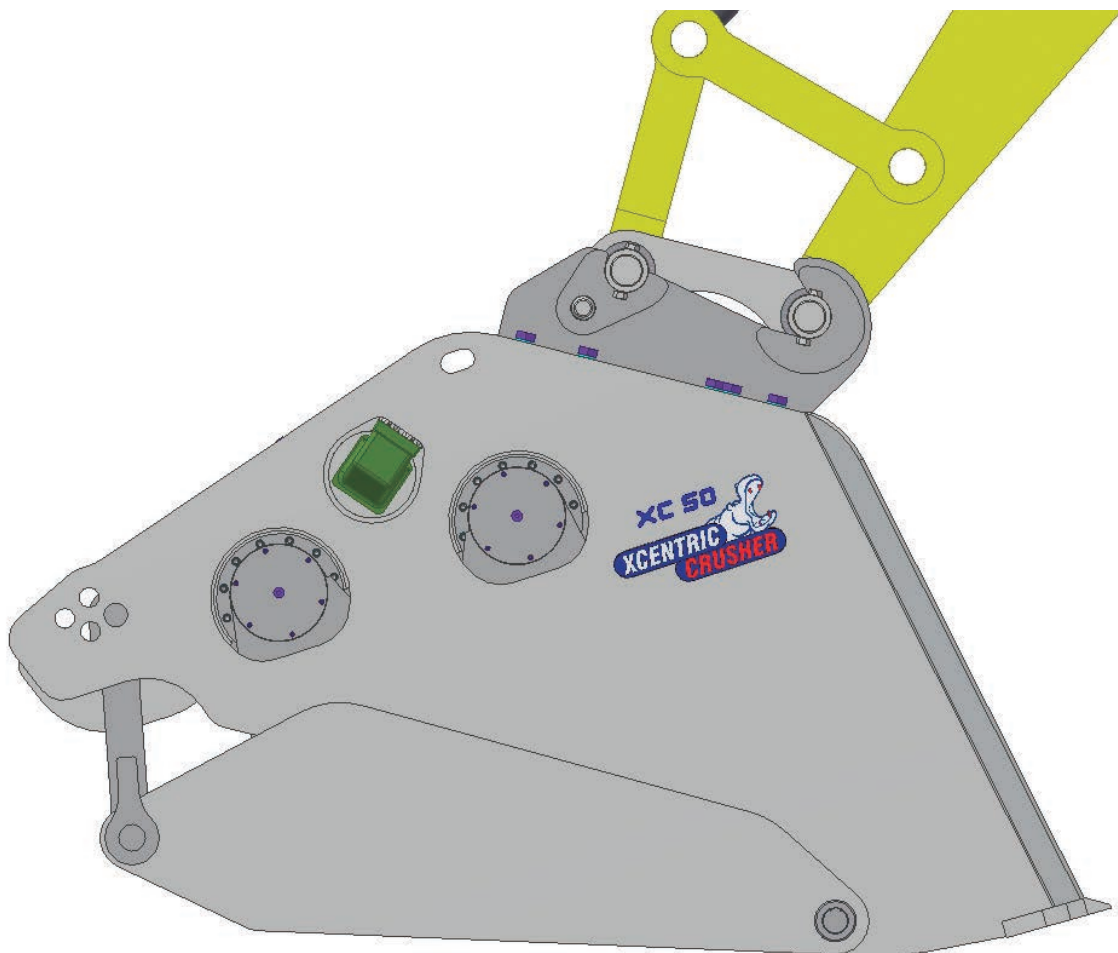
Opening regulation

ATTENTION!

All these operations will be held by ONE SINGLE operator and carrying out a number of safety guidelines:

- Mandatory use of Personal Protective Equipments (PPE): boots, gloves, goggles, etc.
- Eliminate any possible start / accidental operation of the excavator.
- Eliminate the possibility that someone else starts / operates the excavator while performing the regulation.

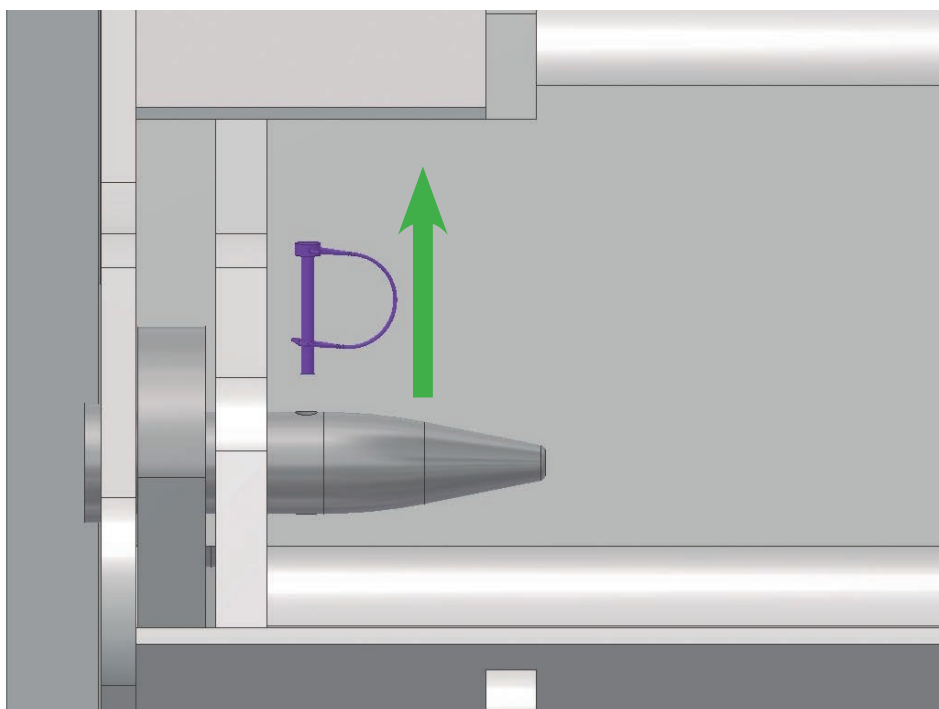
1.- Lean the bucket slightly on a flat, stable surface. Avoid pressure against the surface on the back of the bucket, so that pins can be extracted without difficulty.



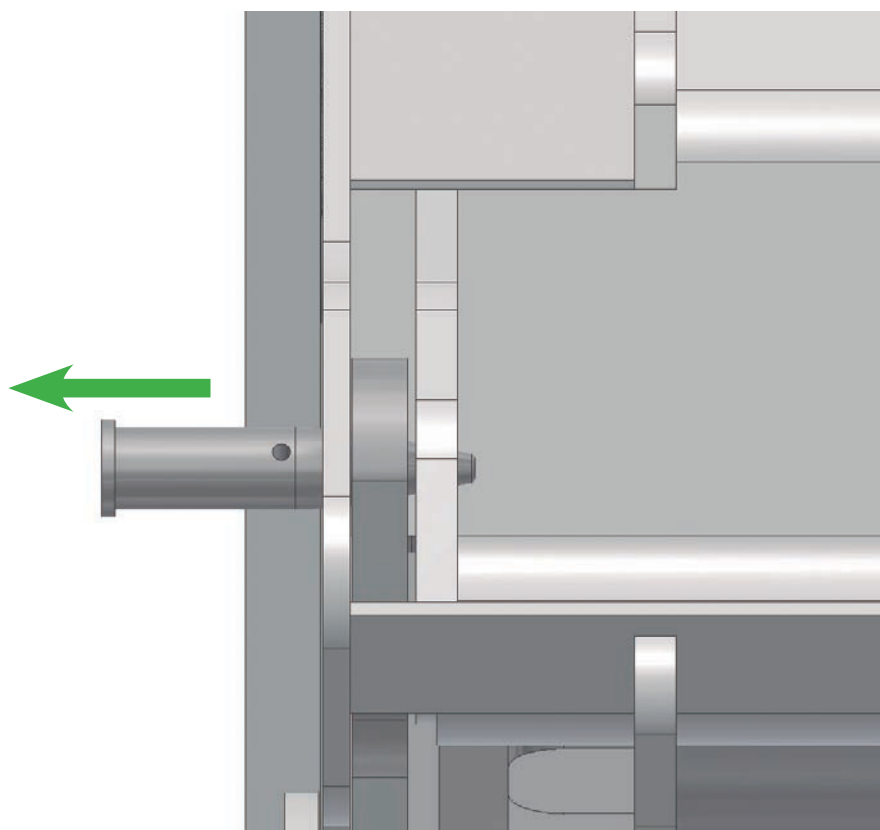
ATTENTION!

Block the excavator and stop the engine by following the instructions in the manual of the excavator itself, prior to the removal of pins of regulation.

2. Remove the retaining pins.



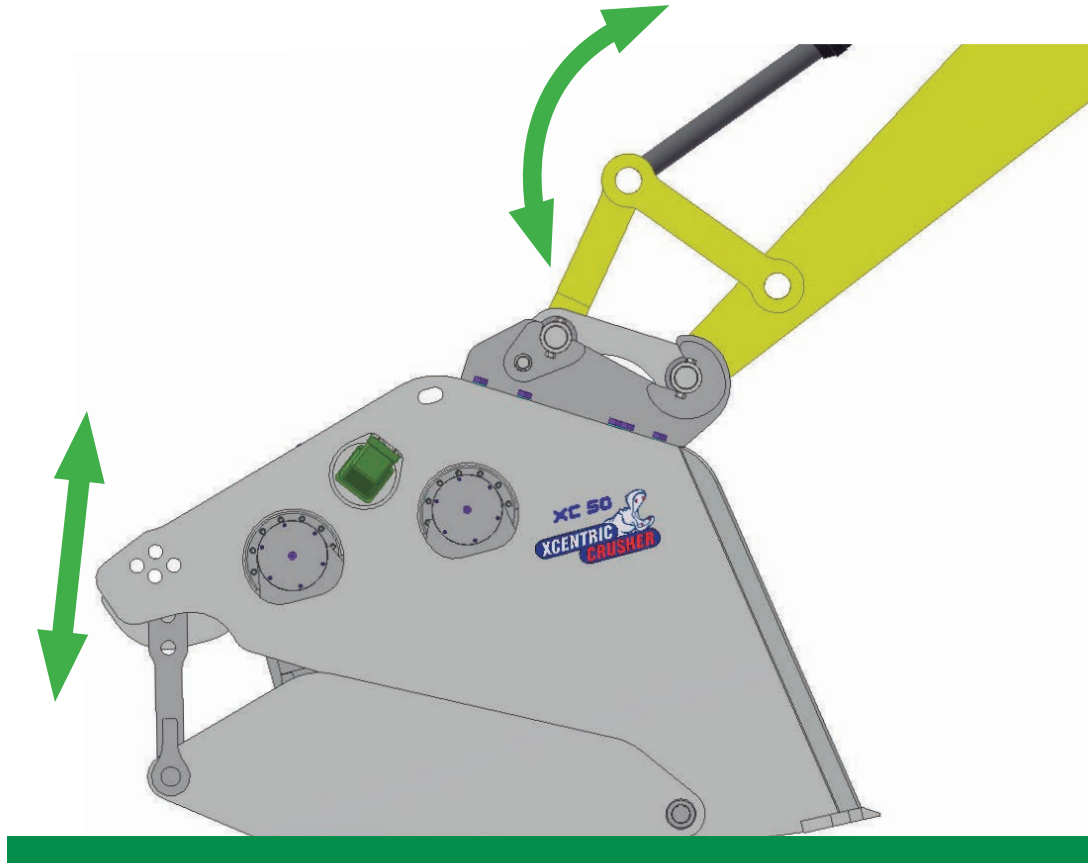
3. Remove pins of regulation, helped by a mallet if necessary.



CAUTION!

Caution when removing pins of regulation, because there is a risk of movement of the rods.

4. After removing the pins of regulation, get into and the excavator and through the arm movement, open or close the jaw to the desired opening. Lock and stop the excavator again.

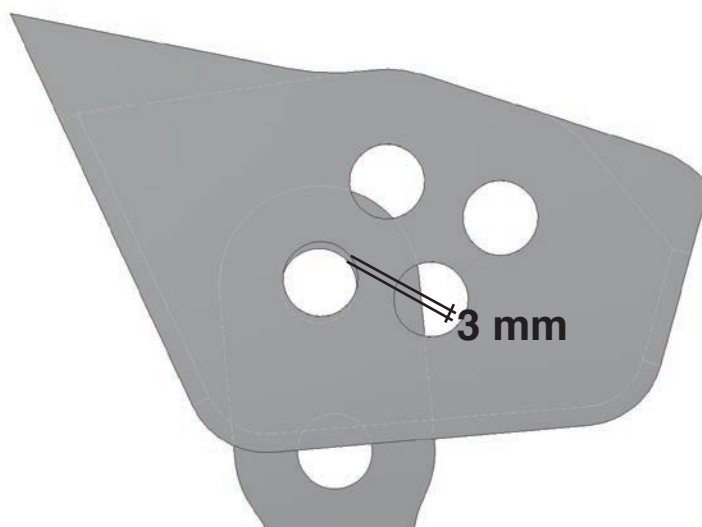


5. Visually inspect which opening correction you will need to do, in order to install again the pins of regulation.



Get into the excavator and make the correction through the arm movement. Lock and stop the engine of the excavator.

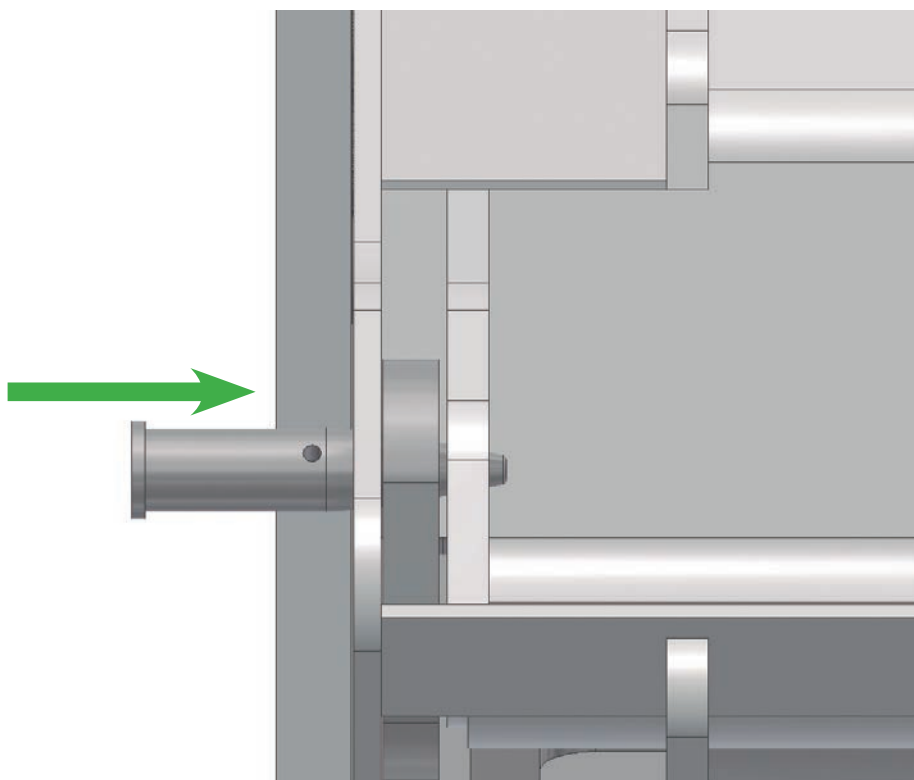
Repeat this step as often as necessary until the alignment of selected holes is within an error less than 3 mm.



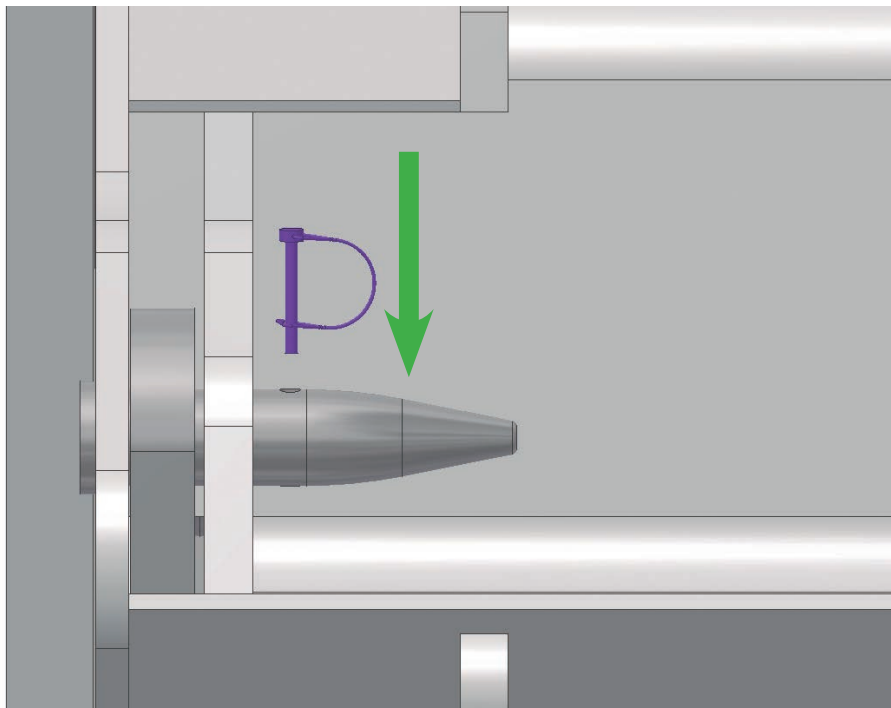
ATTENTION!

This operation must be carried out by the operator of the excavator without the help of another person. There is high risk of unintended entrapment.

6. Introduce the pins of regulation, with the help of a mallet if necessary, having previously cleaned them. Light greasing of the diameter of the pin will facilitate insertion.

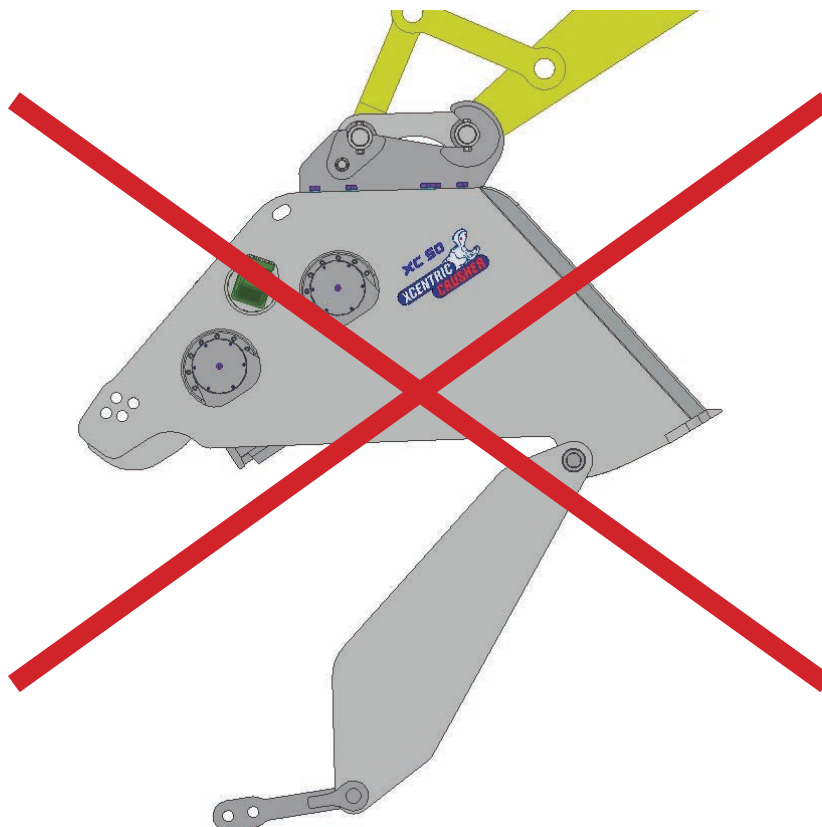


7. Install the locking pins correctly.

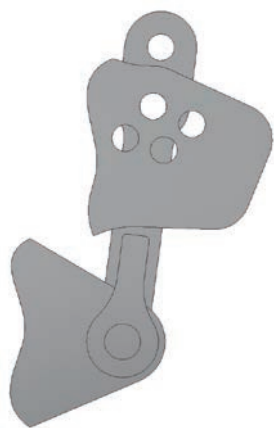


ATTENTION!

The opening regulation with the bucket suspended in the air is totally prohibited, it exists high risk of entrapment by dropping or involuntary movement.



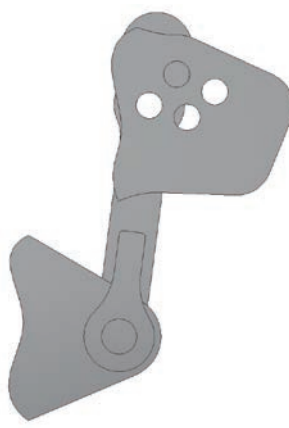
XC50



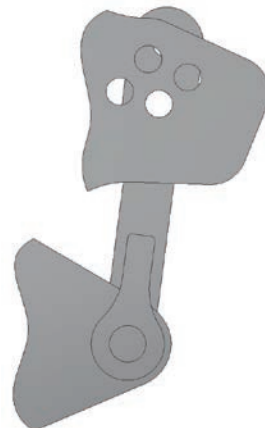
1 A
≤ 20 mm.



1 B
≤ 50 mm.



1 C
≤ 75 mm.

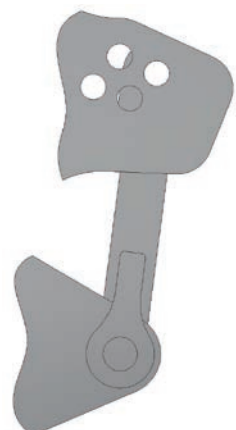


1 D
≤ 100 mm.

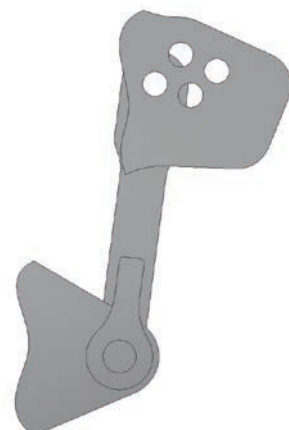
OUTPUT
SIZE



2 A
≤ 125 mm.



2 B
≤ 150 mm.



2 C
≤ 175 mm.



2 D
≤ 210 mm.

OUTPUT
SIZE

REMOVAL

: Removing the Crusher

Remove the Crusher as follows:

- Close the valve of the pressure line.
- Close the return line valve.
- Disconnect all hydraulic hoses.
- Attach the appropriate sealing plugs on the Crusher as well as on the excavator hoses.
- Position the Crusher on a horizontal surface to prevent tipping over and to ease subsequent removal.
- Remove the Crusher.

NOTICE

When detaching the Crusher from the excavator, close the hydraulic hoses and connections with plugs to prevent oil from dripping out and dirt from getting into the hydraulic system.

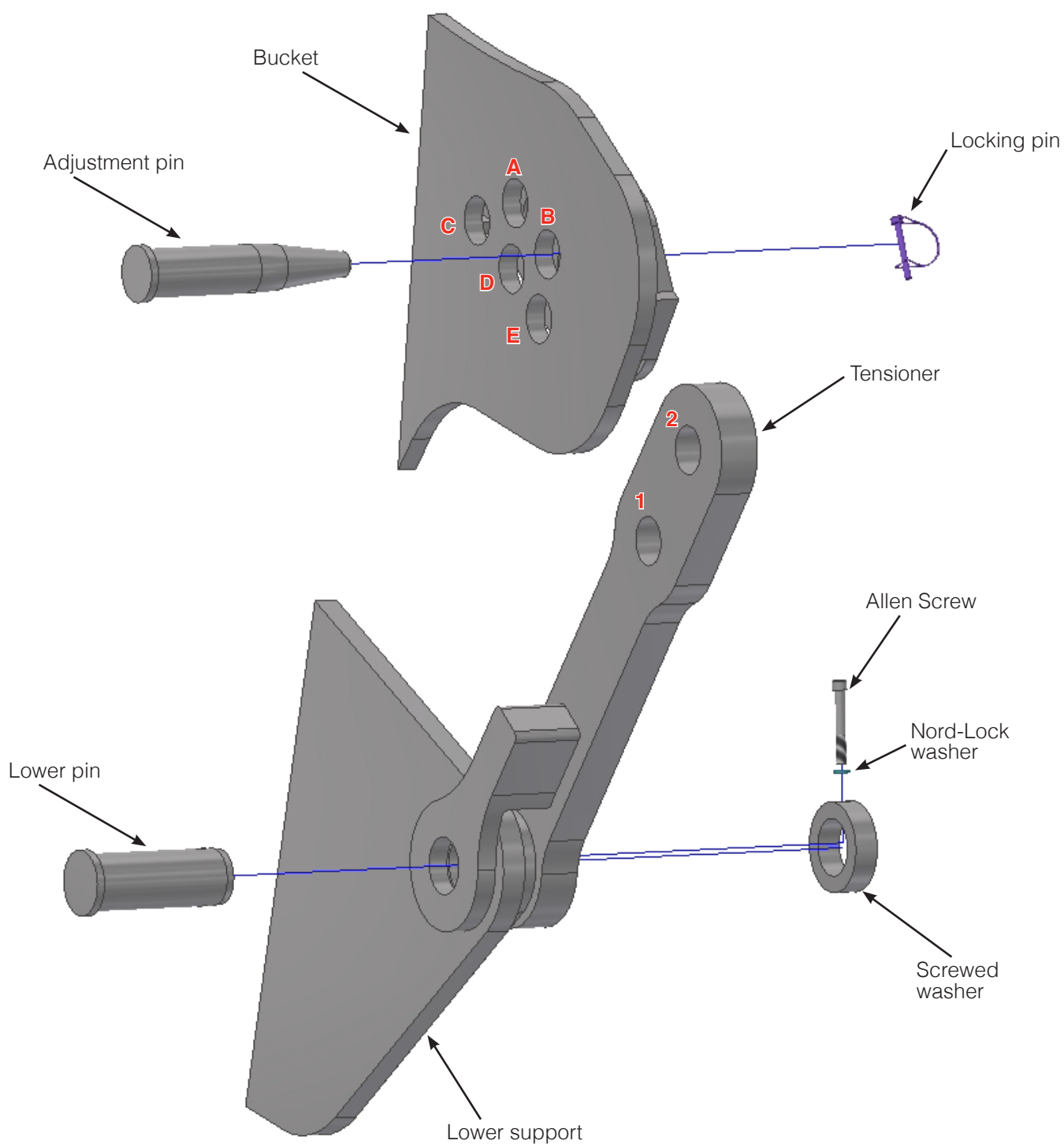
: Adjusting the width of Xcentric Crusher

Opening System Bucket XC60

The XC60 buckets are designed in a simple but effective and resilient way, so that they have a system of opening and closing jaws to obtain a final product according to the required demands.

It is based on a bracket attached to the bucket and a movable lower jaw by bolt-fastening pin, varying the opening of the jaw, according to the combination of holes used.

Below cutting of the system shown:

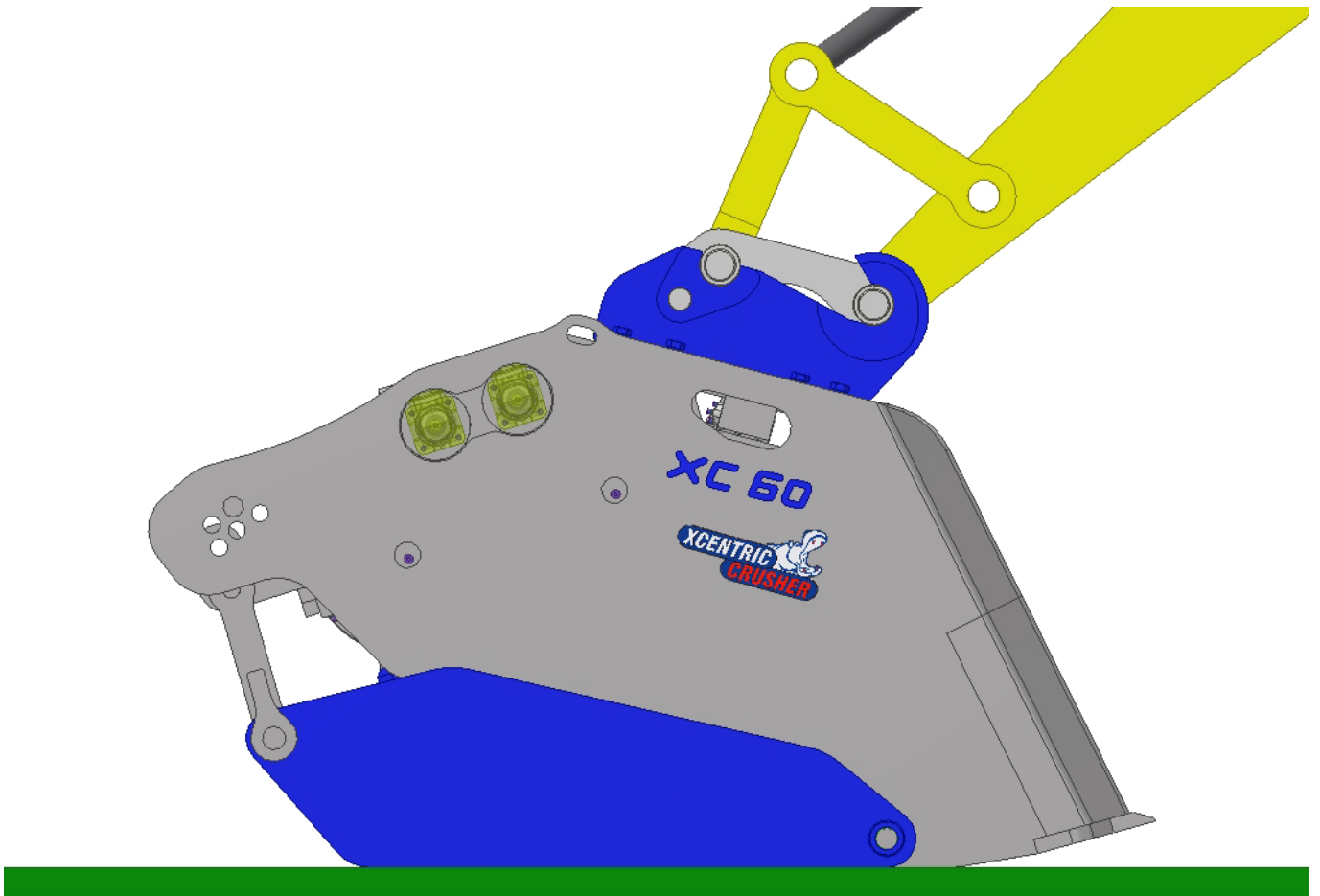


ATTENTION!

All these operations will be held by ONE SINGLE operator and carrying out a number of safety guidelines:

- Mandatory use of Personal Protective Equipments (PPE): boots, gloves, goggles, etc.
- Eliminate any possible start / accidental operation of the excavator.
- Eliminate the possibility that someone else starts / operates the excavator while performing the regulation.

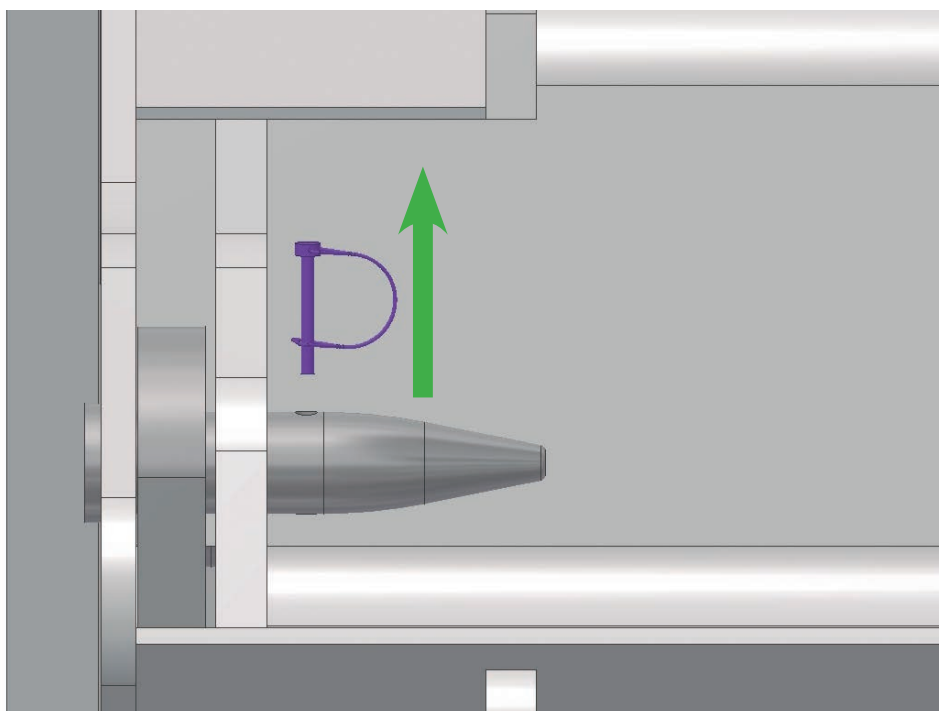
1.- Lean the bucket slightly on a flat, stable surface. Avoid pressure against the surface on the back of the bucket, so that pins can be extracted without difficulty.



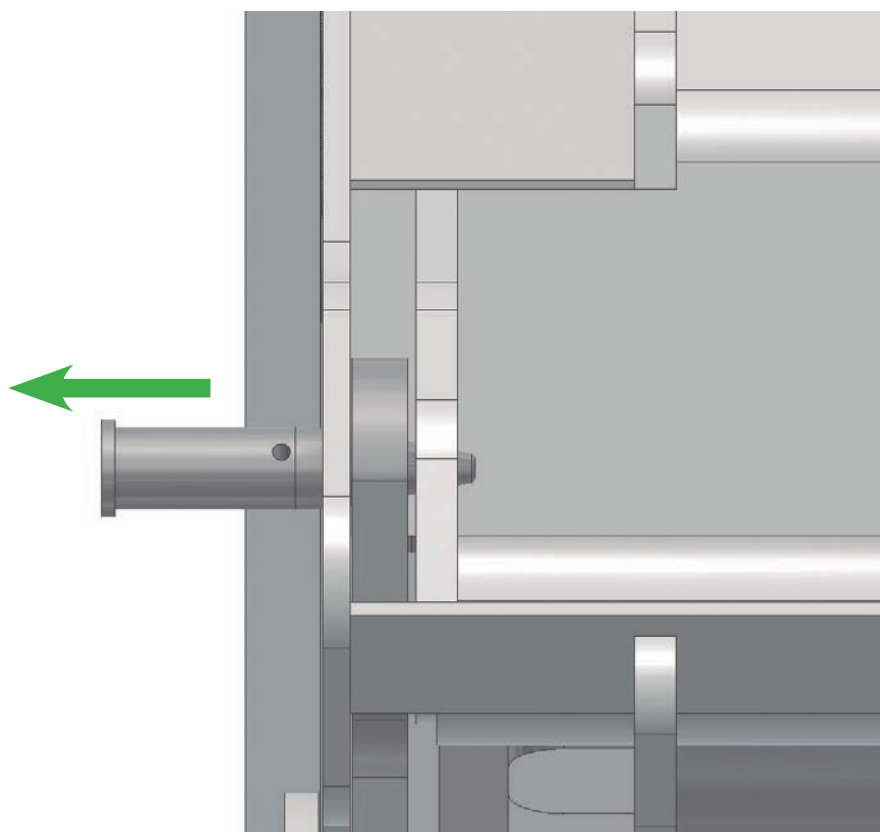
ATTENTION!

Block the excavator and stop the engine by following the instructions in the manual of the excavator itself, prior to the removal of pins of regulation.

2. Remove the retaining pins.



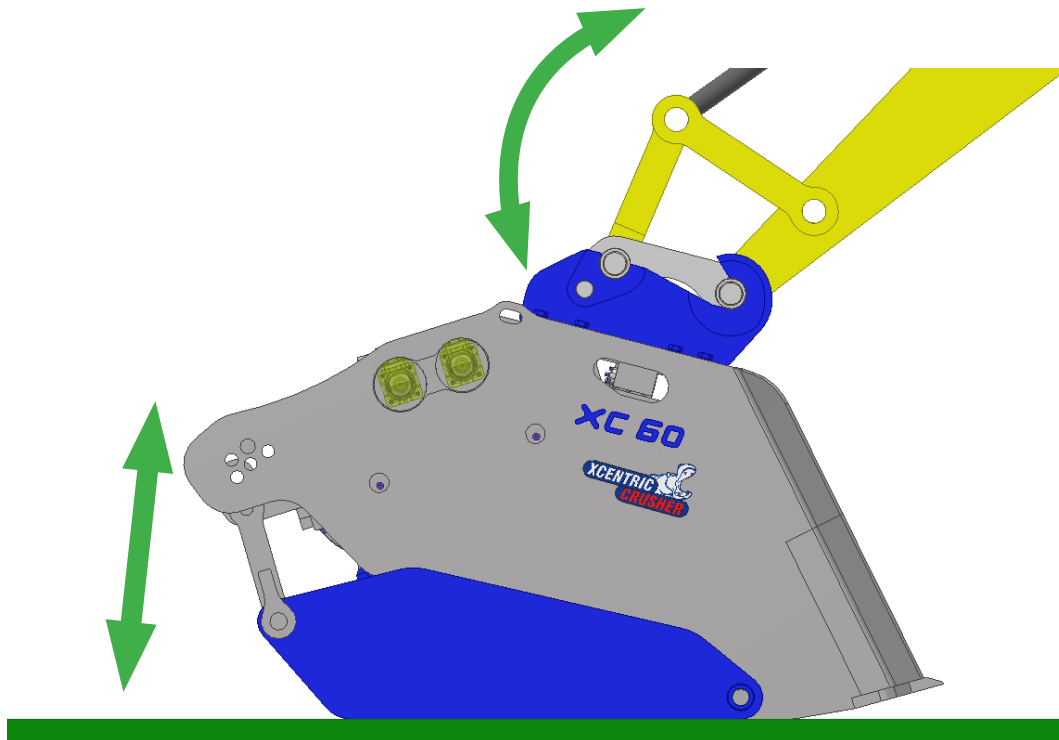
3. Remove pins of regulation, helped by a mallet if necessary.



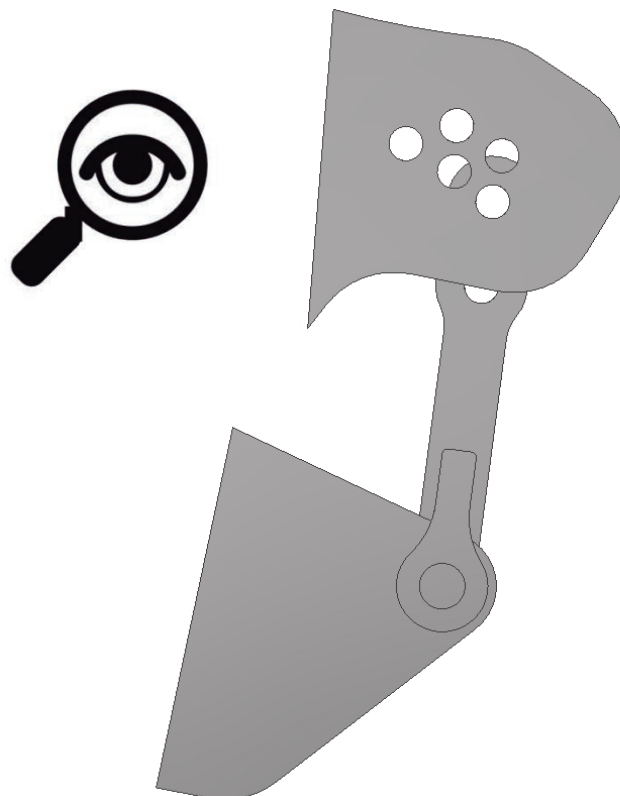
CAUTION!

Caution when removing pins of regulation, because there is a risk of movement of the rods.

4. After removing the pins of regulation, get into and the excavator and through the arm movement, open or close the jaw to the desired opening. Lock and stop the excavator again.

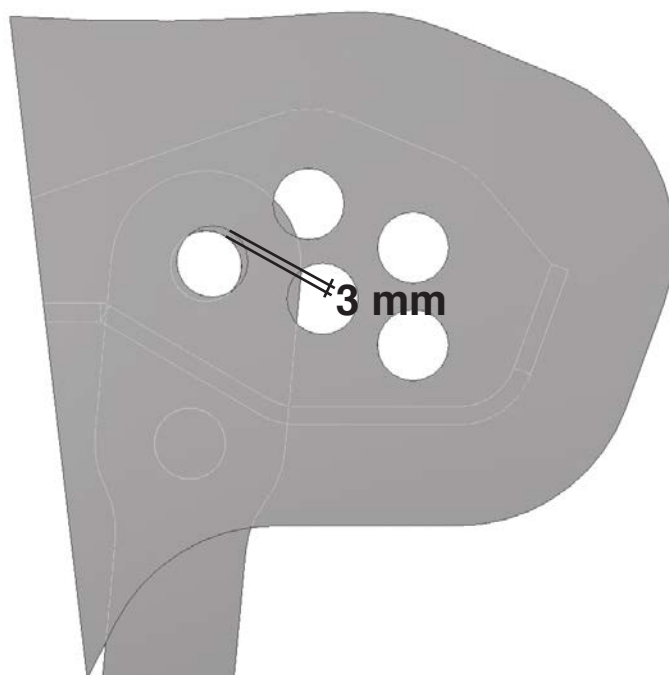


5. Visually inspect which opening correction you will need to do, in order to install again the pins of regulation.



Get into the excavator and make the correction through the arm movement. Lock and stop the engine of the excavator.

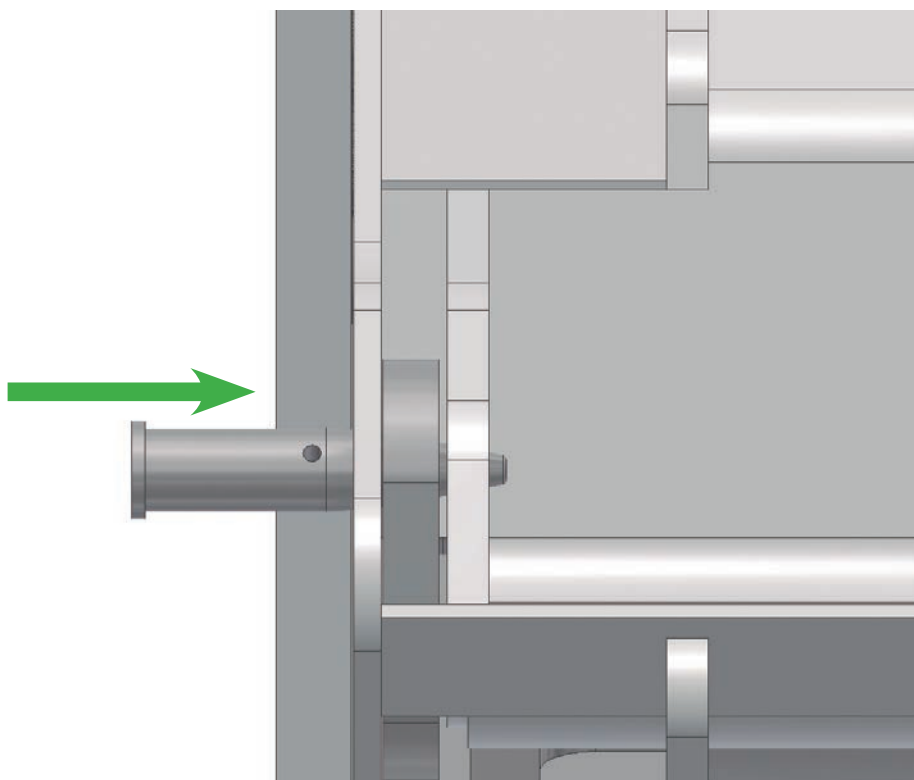
Repeat this step as often as necessary until the alignment of selected holes is within an error less than 3 mm.



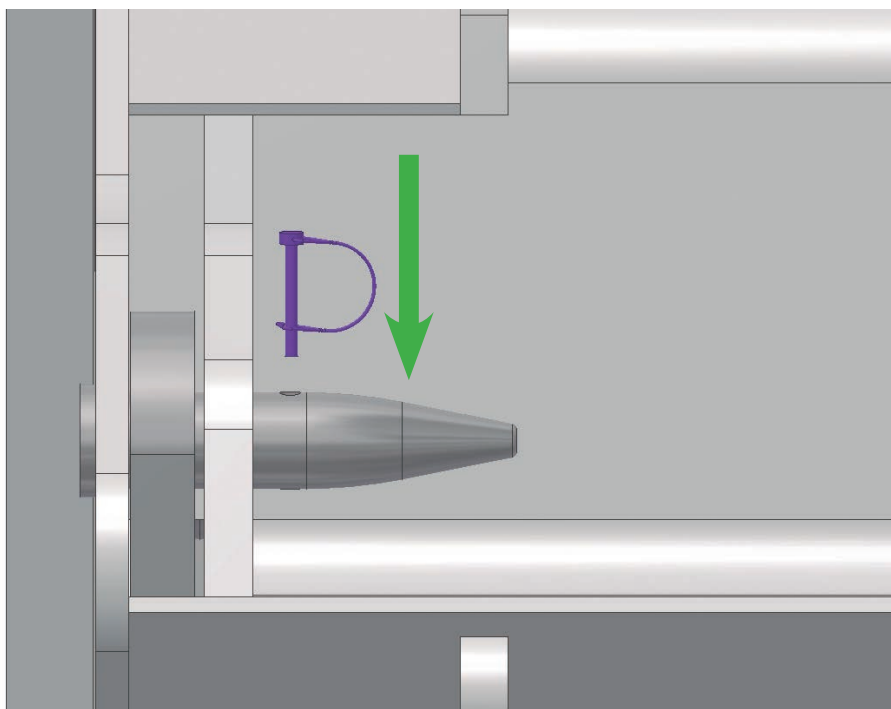
ATTENTION!

This operation must be carried out by the operator of the excavator without the help of another person. There is high risk of unintended entrapment.

6. Introduce the pins of regulation, with the help of a mallet if necessary, having previously cleaned them. Light greasing of the diameter of the pin will facilitate insertion.

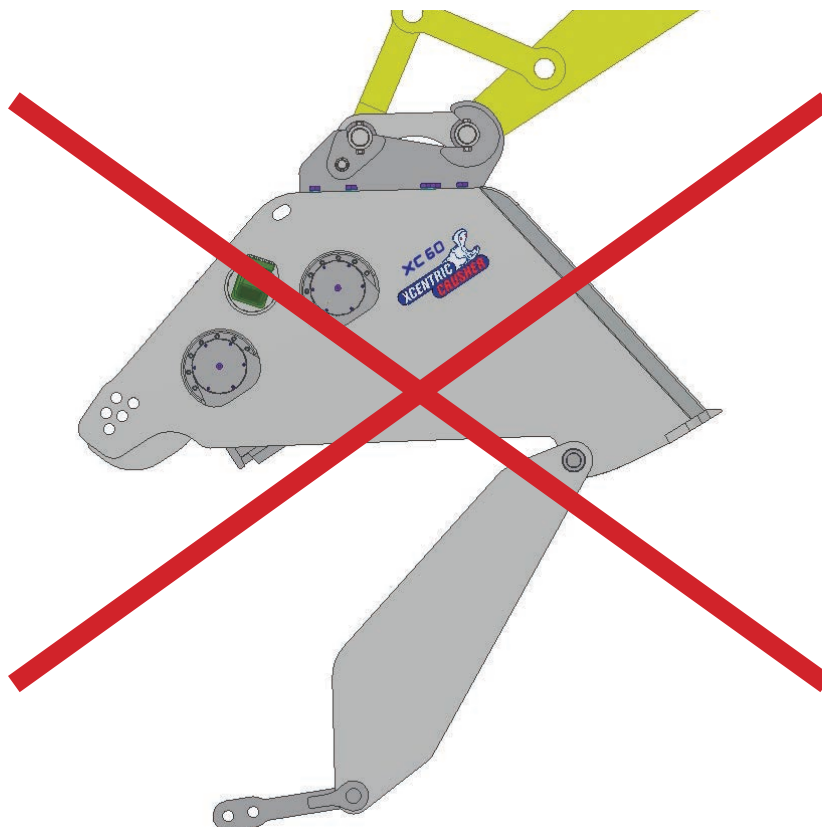


7. Install the locking pins correctly.

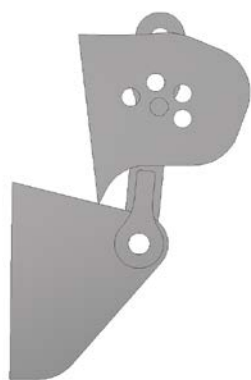


ATTENTION!

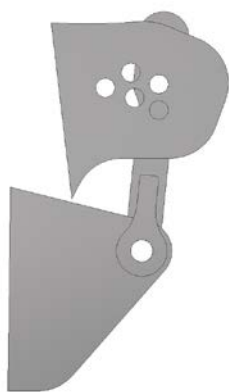
The opening regulation with the bucket suspended in the air is totally prohibited, it exists high risk of entrapment by dropping or involuntary movement.



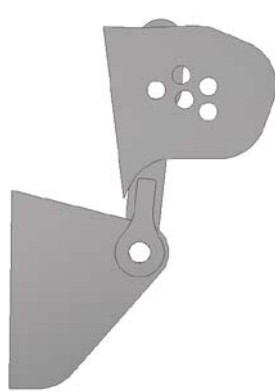
XC60



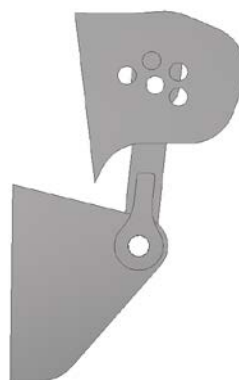
1 A
≤ 20 mm.



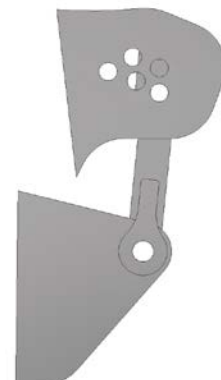
1 B
≤ 45 mm.



1 C
≤ 65 mm.



1 D
≤ 90 mm.



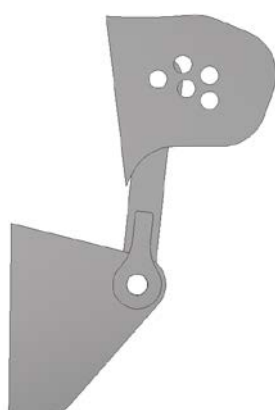
1 E
≤ 120 mm.



2 A
≤ 150 mm.



2 B
≤ 180 mm.



2 C
≤ 180 mm.



2 D
≤ 215 mm.



2 E
≤ 250 mm.

REMOVAL

: Removing the Crusher

Remove the Crusher as follows:

- Close the valve of the pressure line.
- Close the return line valve.
- Disconnect all hydraulic hoses.
- Attach the appropriate sealing plugs on the Crusher as well as on the excavator hoses.
- Position the Crusher on a horizontal surface to prevent tipping over and to ease subsequent removal.
- Remove the Crusher.

NOTICE

When detaching the Crusher from the excavator, close the hydraulic hoses and connections with plugs to prevent oil from dripping out and dirt from getting into the hydraulic system.

USE

INSTRUCTIONS FOR USING THE XCENTRIC CRUSHER

Even though the Crusher requires no daily maintenance, for a long lasting life it must be kept clean and shock free. Before starting work with the Crusher, a daily visual inspection must be made.

PRECAUTIONS WHEN OPERATING THE CRUSHER

The Xcentric Crusher is intended for crushing and demolition materials reduction, so it is possible that a small part of the material to crush is projected during use. It is therefore advisable to respect the safety distance.

Pay attention to the material to be crushed, large portions are not recommended, as they could get stuck in the mouth of the bucket.

The operator in charge of the base machine will control that nobody can be affected by the movements of the Xcentric Crusher.

Only qualified staff who has carefully read the instructions for use of Xcentric Crusher described in the instruction manual can perform such operations.

User companies will prepare specific safe work instructions to be observed by its staff.

User companies, will instruct and observe all mandatory regulations of law enforcement and those relevant to the prevention of occupational risks and environmental protection.

The operator of the machine will be personnel who have received proper training and have demonstrated competence.

The operator of the main operating machine will always remain inside the cab while the Xcentric Crusher is working and being handled by the operator.

HANDLING THE XCENTRIC CRUSHER

The best way to learn to handle the Crusher is to operate it, although the use of it doesn't differ much from a normal crusher, therefore its handling is simple.

The way to use it is as follows:

- Fill the Xcentric Crusher with the material to be ground.
- Rotate the bucket so that the opening of the material outlet is at the bottom.
- Operate the Xcentric Crusher.
- Once you have completely crushed the material deposited in the bucket, repeat the operation.
- The Xcentric Crusher should always run with the crusher bucket upright.
- In the event that the Xcentric Crusher can not begin to process the material in an upright position, the amount of charge to be processed must be reduced.



WHAT TO DO IN CASE OF BLOCKED MATERIAL?

In the case the Crusher is blocked, it is strictly forbidden to remove the obstacle manually.

To unlock the jaws:

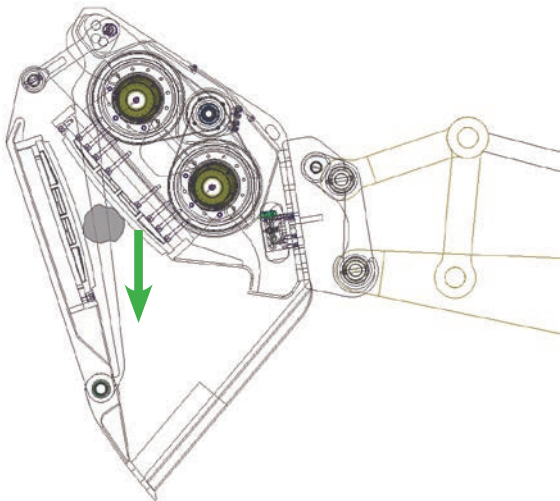
- Stop the Xcentric Crusher.
- Change the direction of movement of the jaws.
- If the jaws are still blocked, place the bucket with the loading mouth looking down and operate the bucket in both directions until it is released.
- If necessary, lightly shake the Crusher.

NOTE

In no case hit the Xcentric Crusher against the ground or any other element in order to unlock it.

ATTENTION!

In case you have to figure out the cause of the machine blockage, it is strictly forbidden to hit the bucket on the floor or against things horizontally. In case of damage caused by this operation the manufacturer is exempt from any liability.



The XC has two rotation directions, one for working and one for unlocking. In the working direction, the jaw pushes the material towards the outlet. In the sense of release, the jaw pushes the material into the inlet making it easier the unlocking operation.



MISUSE OF THE XCENTRIC CRUSHER

The Xcentric Crusher is designed for crushing and reduction of demolition material, so is not authorized for use in performing other tasks such as:

- Excavation or direct removal.
- Lifting Tool.
- Transportation of persons, animals, or any type of object.
- Support to maneuver or position the machine that is coupled to.
- Works with flammable materials, explosives, toxic and / or harmful.
- Work under water or moist material (reduces the life of the jaw).
- Above 100 ° C or below -20 ° C temperatures.

Also prohibited:

- Climb to the machine structure.
- Carry out any type of work on the machine with the Xcentric Crusher operating.
- Perform any operation that impairs the safety of the operator and bystanders.
- Breaking or removing material as if it were a hammer.
- The use of the bucket as a lever for lateral movement of the excavator.
- The use of Xcentric Crusher on machines whose hydraulic installation is not compatible with the minimum requirements described in this manual.
- To use the Xcentric Crusher with the position of the crushing bucket different from the vertical.
- To operate the Xcentric Crusher from outside the cab of the main operating machine.

WORK INTERRUPTION

When interrupting work, place the Crusher on its lower mouth in a horizontal surface. Make the recommended visual inspection. Keep in mind that there are areas that are very hot.



CLEANING

Clean the Xcentric Crusher after operation. Avoid directing the high-pressure water jet from a short distance at the more sensitive parts as hydraulic hoses, seals, and other components, as this may damage them.

TRANSPORT

LIFTING

The lifting, securing, loading and unloading manipulations must be performed by qualified personnel prepared for this purposes.

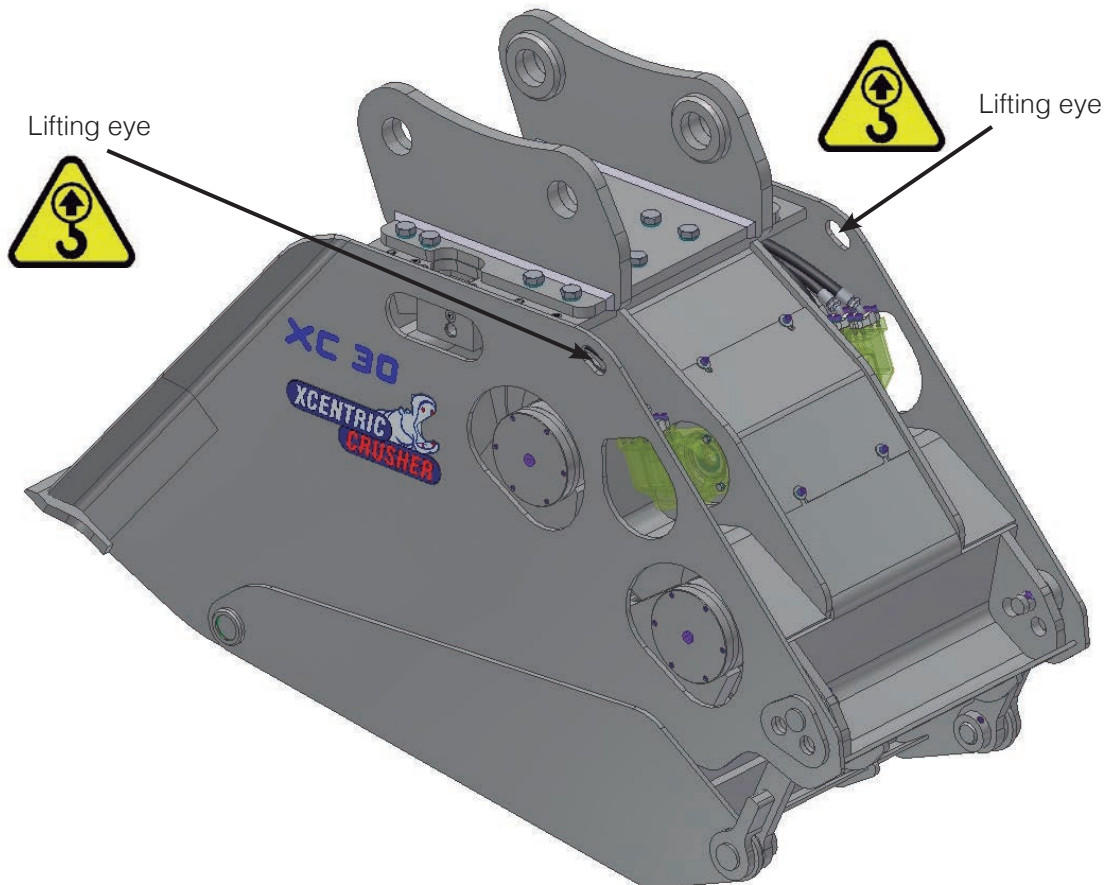
It is recommended to follow a few guidelines:

- Check the lifting elements to be inserted for their maximum allowable load.
- Follow the advice and recommendations of chains and straps manufacturer and ensure the correct labeling of these, as well as having the certificate.
- For lifting the Xcentric Crusher use the lifting eyes provided, which are specifically designed for this purpose.
- The machine is designed so that its geometry allows it to be manipulated using standard lift fittings.
- If you are making a long-distance transport lubricate all machined exposed surfaces.
- Secure properly all loose parts to the machine.
- Before handling parts or items of equipment, check weights and note that transportation and handling are adequate to support the weight of the machine.
- NEVER should attach any sling or strap directly to the moving parts of machines.
- The machine must be properly secured to prevent it from being damaged, tip over or fall of the conveyance during transport.
- The equipment and auxiliary materials, such as cables, chains, shackles, eyebolts, slings, beams, etc., will be selected based on the loads to be lifted, their centers of gravity, pulling angles and forms of the equipment and materials to be lifted.
- The lifting equipment must not carry higher loads than its design.
- The cables, chains, straps, etc. they will only be tied to the points of the equipment specifically provided for this purpose.
- No lifting lugs will be welded to the equipment without the approval of the manufacturer or its representative on site.
- The lifting equipment and auxiliary materials will be verified prior to use to check their perfect state.
- Mooring on axes or axes ends of the Xcentric Crusher for hoisting is not allowed.
- Contact between bare parts of wires with machined surfaces will be absolutely prohibited.
- During the displacement of the machine by mechanical handling equipment, the existence of people in the equipment operating range and displacement area are not allowed.
- Passing the burden above the staff or passageways will be avoided
- Do not allow anyone to perch on the Xcentric Crusher during lifting operations.
- Do not leave the lifting equipment with Xcentric Crusher suspended.
- During lifting, fixing any of the moving parts of the machine it is not necessary.

ATTENTION!

It is strictly forbidden to stand under the load once it is suspended, and in the area of load balancing.

Tying down the Xcentric Crusher and its transport are the responsibility solely of the carrier.



TRANSPORT WITH THE EXCAVATOR

The Crusher can be transported while attached to an excavator if the weight and dimensions of the machine and attachment device are considered and applicable regulations are observed.

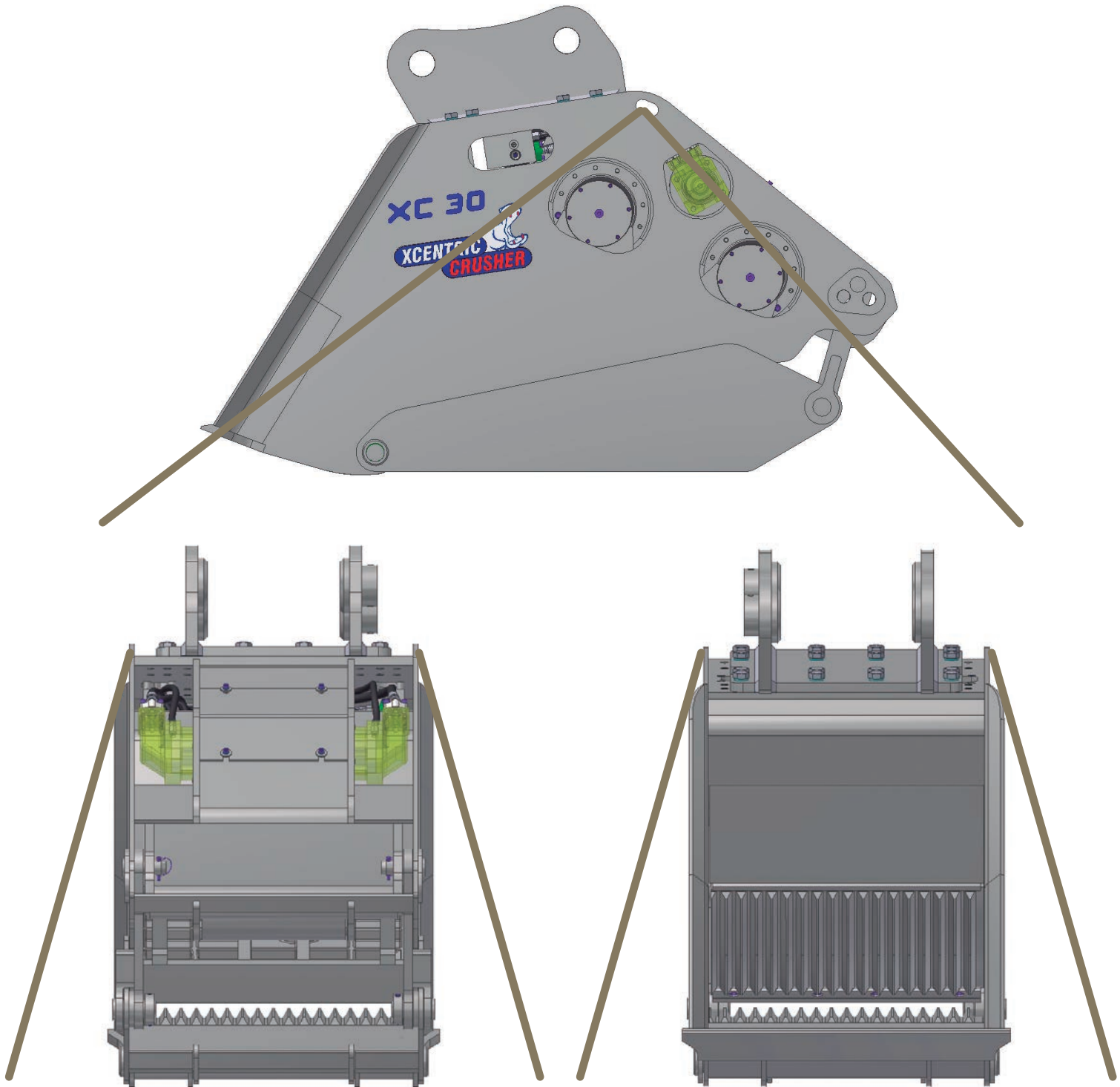
Ensure that the carrier excavator can support the load.

If the excavator is higher, there is a risk of mechanical stress in the XC.

The excavator must be stable at all times.

Read the operation and safety manual of the excavator before attaching the bucket.

HOW TO FIX THE CRUSHER IN THE TRUCK



- Make the transport with a truck capable for the weight of the machine.
- Before starting the loading and unloading works, the truck's handbrake will be in place and the wheels will be immobilized with wedges.
- The loading and unloading of the machine will be held in the right place for that purpose. away from insecure land, prone to subsidence.
- Place the machine on a flat surface to remain stable.
- The truck driver will remain on the outside of the cab during the loading or unloading works.

LONG TERM STORAGE

BEFORE LONG-TERM STORAGE

- Carefully clean and lubricate the Xcentric Crusher.
- Remove rust and paint vulnerable areas.
- Cover all unprotected metal surfaces with a rust inhibitor.
- If possible, store the crusher in a warm, dry place.

STORAGE CONDITIONS

- Temperature: -40°C/+80°C (NOTE! Operating temperature varies from these values.)
- Relative air humidity: below 60

HOSE STORAGE

- Store in a cool, dry place.
- Avoid direct sunlight and moisture.
- Do not store near high power equipment.
- Avoid contact with corrosive chemicals.
- Avoid ultraviolet light.
- Avoid insects and rodents.
- Avoid radioactive materials.
- According to ISO / TR 17165-2 it states that the storing life of the hose made of two or more materials should not exceed 40 quarters (10 years) from the date of manufacture.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	SOLUTION
Low power on Crusher jaws.	The machine does not accelerate properly or transfers little power to Crusher.	Accelerate to a suitable RPM.
	The operating pressure is below the recommended value.	Check the operating pressure at the Crusher connection.
The jaws don't move.	Shut off valves closed.	Open the valves.
	Crusher is connected wrongly.	Check the connections.
	Motor malfunction.	Replace.
	Eccentric gear housing malfunction.	Contact a service technician.
Low crushing productivity.	Jaw is worn out.	Replace.
Strange sound during operation.	Eccentric gear housing malfunction.	Contact a service technician.
Transmission oil leak in the seals.	Soil or wear on the valve seat surfaces. O-ring damaged.	Fill up the oil and notify a service technician.
Leak in the eccentric gear housing.	Defective motor seal ring or damaged seal.	Stop immediately. Contact a service technician.
Leak in the hydraulic motor.	Screws or union nuts loose.	Stop immediately. Contact a service technician.
Cracks in the welding of the Crusher housing and top bracket.	Incorrect use of the Crusher.	Re-weld cracks. Contact a service technician.

- MAINTENANCE -

MAINTENANCE, INSPECTION AND REPAIR

GENERAL WARNINGS

DANGER!

All the maintenance, inspection and repair should only be performed with the machine turned off, the motor of the machine which drives the crusher bucket turned off and remove starter keys from the box.

ATTENTION!

It is absolutely forbidden to remove or manipulate the protections of the machine and perform any maintenance, inspection and repair with the machine on.

ATTENTION!

Before running the maintenance inspection and repair operations, the operator must wear the personal protective equipment (PPE) appropriate to the type of operation to be performed.

ATTENTION!

After any protection break, it must be immediately efficiently repaired or replaced and relocated in place before using the machine.

ATTENTION!

After any breakage or malfunction of a safety component on the machine, it must be immediately replaced.

ATTENTION!

The company Xcentric Ripper / Grado Cero Sistemas SLU prohibits the use of the machine if all guards and safety components of the machine are not present and efficient. The company is not liable for damage to the machine, people and / or things, operations performed by the operator or by third parties against terms above.

ATTENTION!

The person or company to assemble the combination must ensure that this device meets the relevant requirements specified in the instructions for the interchangeable auxiliary equipment.

ATTENTION!

The person or company that assembles The Crusher with earthmoving machinery, changing the original shape or function of the equipment without following the manufacturer's instructions, will assume full responsibility for the machine finally assembled.

ATTENTION!

Before and during cleaning operations, troubleshooting and maintenance, the machine will be stoped, isolated and disconnected of all energy supplies.

ATTENTION!

Before any cleaning operation, troubleshooting, or maintenance, make sure that the hot parts have cooled and wait for them to cool.

ATTENTION!

The identity of the lubricating and greasing fluids will be checked before use.

ATTENTION!

The user company will make available to the staff performing cleaning, troubleshooting, maintenance or safety operations, the fluid lubrication and greasing safety data sheets.

ATTENTION!

Personnel performing cleaning or troubleshooting operations, will know and apply the precepts contained in the safety data sheets of fluid lubrication and greasing.

ATTENTION!

The user company will give his staff training on manual handling of loads.

ATTENTION!

The user company will prepare campaigns to educate the staff of their responsibilities, their risks and their securities.

ATTENTION!

Personnel performing cleaning, troubleshooting, or maintenance operations and machine operators have an obligation to keep clean the floor of the work area and free of objects that might cause slipping or tripping.

ATTENTION!

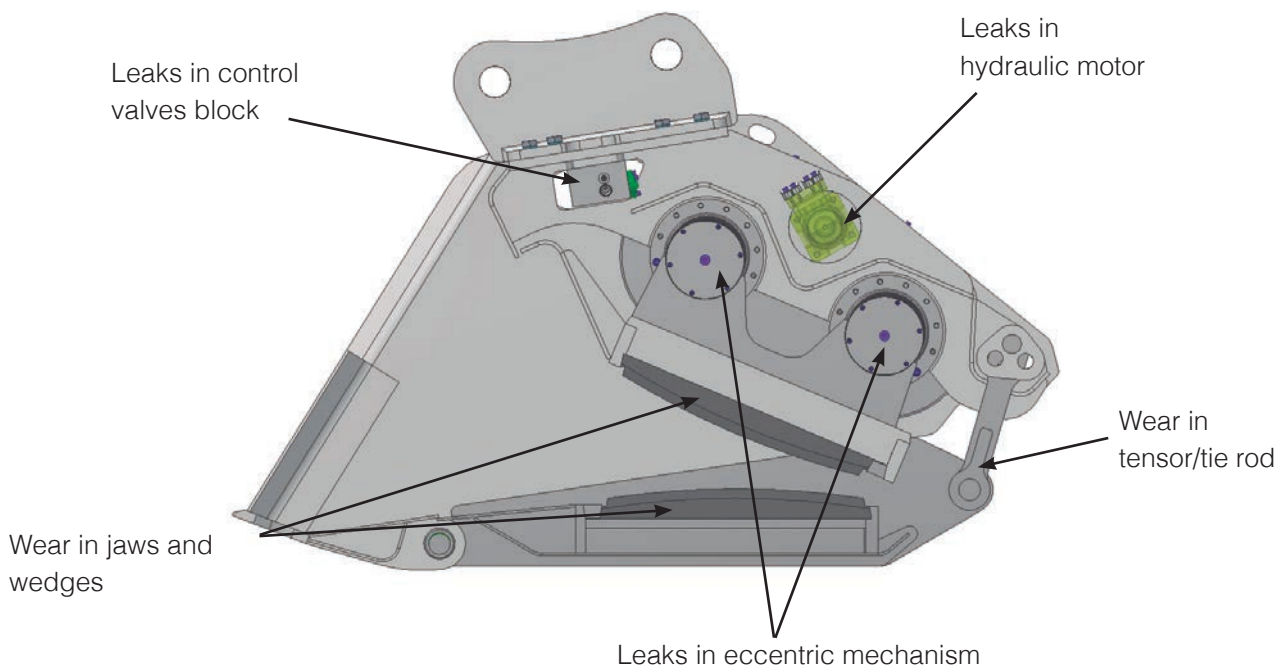
The user company will check via a secure method of work, that the actions taken to consignment have produced the desired effect.

CRUSHER BUCKET MAINTENANCE

: Daily inspection

Before you start working with the Crusher, to perform a daily visual inspection is required to check:

- The absence of oil leaks:
 - Hydraulic motor.
 - Control valves block
 - Eccentric mechanism
- Possible lubricating grease leakage
 - Seals.
- Hoses conditions (no scratches or crushing).
- Wear of the jaws and wedges.
- Wear on the tensioner / lever.
- Fixing of the screws.
- The absence of deformations and cracks.
- The general condition of Crusher.
- The attachment between the Crusher and excavator.
- The state of the lubricants filler caps.



: Periodic inspection

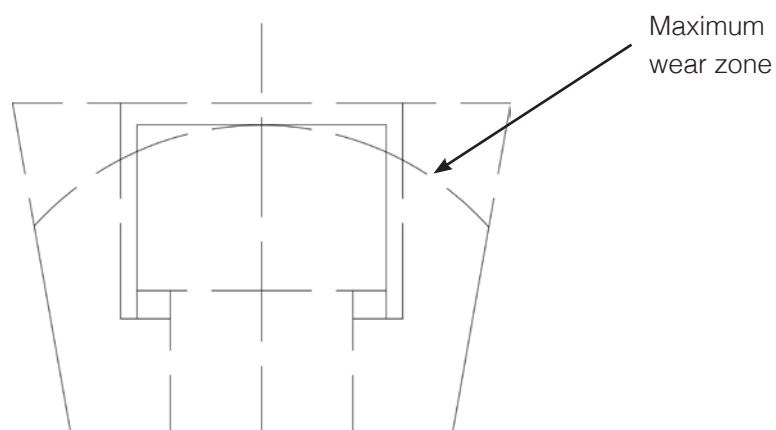
Below are listed in the following table, all the controls the operator has to perform after the first 8 hours work of the machine.

Frecuency	Parties to control	Operations
During the first 50 working hours repeat controls every 8 hours. Then repeat this checks every 50 working hours.	Fixing screws jaws wedges	Control with torque wrench to 450Nm
	Coupler or top bracket mounting bolts	Control with key /air
	Hydraulic instalation	Oil loss control

: Replacing wearing parts

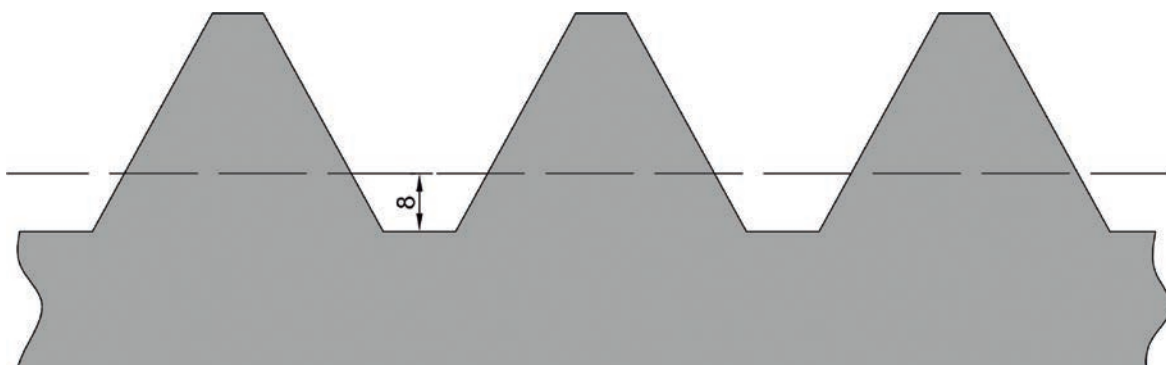
Wedge

Change together with the jaw if the wearing of this one affects the screw head.



Jaw

It is not authorized to change the jaws by the user company. This operation can only be performed by the Technical Service of Xcentric Ripper International / Grado Cero Sistemas, S.L.U. Otherwise, the manufacturer Xcentric Ripper International / Grado Cero Sistemas S.L.U. assumes no liability for damages to people and / or things by the customer or third parties.



MAINTENANCE PLAN

The hours of operation indicated correspond with the operating hours of of the excavator. The values are the maximum in normal operation and normal work environment. If you detect a defect that is not included in the chart above contact Technical Service.

Check the mounting of the Crusher on the excavator.	8 h.					
Check for leaks of fluid from the hydraulic circuit (hoses, motor, control block).	8 h.					
Make sure the seals are not leaking lubricant.	8 h.					
Check for oil leaks in eccentric mechanism.	8 h.					
Check the absence of deformations or breaks in the bucket.	8 h.					
Check the absence of deformations or breaks in the top bracket.	8 h.					
Check the warning stickers.	8 h.					
Check the condition of the jaws and wedges.	8 h.					
Fill with grease the eccentric mechanism. (1)			50 h.			
Make sure there are no traces of rust on the implement.					500 h.	

- 1) When damage is observed in the lubricant closure plugs replace at the earliest.

LUBRICANTS AND HYDRAULIC SYSTEM

HYDRAULIC OIL

The engine manufacturer recommends the use of high quality hydraulic oil based on mineral oil or biological oil, including additives against deterioration, oxidation, blowholes and extreme pressure.

Below the highest values provided by the manufacturer of the hydraulic motors are listed. This values are for hydraulic oil based on mineral oil or high quality biological.

Permissible oil temperature range: -20 / + 80 ° C (depending on the oil used). Allowed oil viscosity: 25cSt - 150cSt.

Ideal oil viscosity: 40cSt - 60cSt.

The Hydraulic fluid based on mineral oil should be selected so that the viscosity in normal working conditions is as close as possible to the ideal viscosity values. If the oil viscosity is below the allowable, engine life will be reduced.

: Mineral oil

OIL TEMPERATURE	VALUE ISO	REPSOL	ESSO	SHELL	MOBIL	CEPSA	BP
20-40°C	32	Telex E32	NUTO H32	TELLUS 37	DTE 24	Hydraulic HM32	HLP32
40-50°C	46	Telex E46	NUTO H46	TELLUS 46	DTE 25	Hydraulic HM46	HLP46
50-60°C	68	Telex E68	NUTO H68	TELLUS 68	DTE 26	Hydraulic HM68	HLP68
60-70°C	100	Telex E100	NUTO H100	TELLUS 100	DTE 26	Hydraulic HM100	HLP100

The Hydraulic fluid based on biological oil should be selected so that the viscosity in normal working conditions is as close as possible to the ideal viscosity values. If the oil viscosity is below the allowable, engine life will be reduced.

If the carrier excavator use a different hydraulic oil, check compatibility.

: Biological oil

OIL TEMPERATURE	VALUE ISO	CASTROL	CEPSA	COGELSA	MOBIL	PANOLIN	REPSOL	SHELL
20-40°C	32	Biobar 32	Bio oil HM-S 32		EAL Hydraulic oil 32			
40-50°C	46	Biobar 46	Bio oil HM-S 46	Ultrapress BIO-46	EAL Hydraulic oil 46	HLP Synth	Bio Telex 46	Naturelle Fluid HF-E 46
50-60°C	68	Biobar 68	Bio oil HM-S 68				Bio Telex 68	
60-70°C	100							

Change the hydraulic oil of the excavator according to the manufacturer's instructions.

HYDRAULIC EXCAVATOR FILTER

The hydraulic motor's manufacturer recommends using filters with a fineness of at least 20 µm, but it is preferable to use 10 µm filters to ensure trouble-free operation.

The filter type and position are shown in the excavator's manual. Replace the hydraulic filter after the first 50 operating hours and then with every oil change.

HYDRAULIC MECHANISM LUBRICANT

Use fluid grease thickened with lithium soap as per the following specifications. It is recommended that you check the grease level every 1,000 operating hours or once per year.

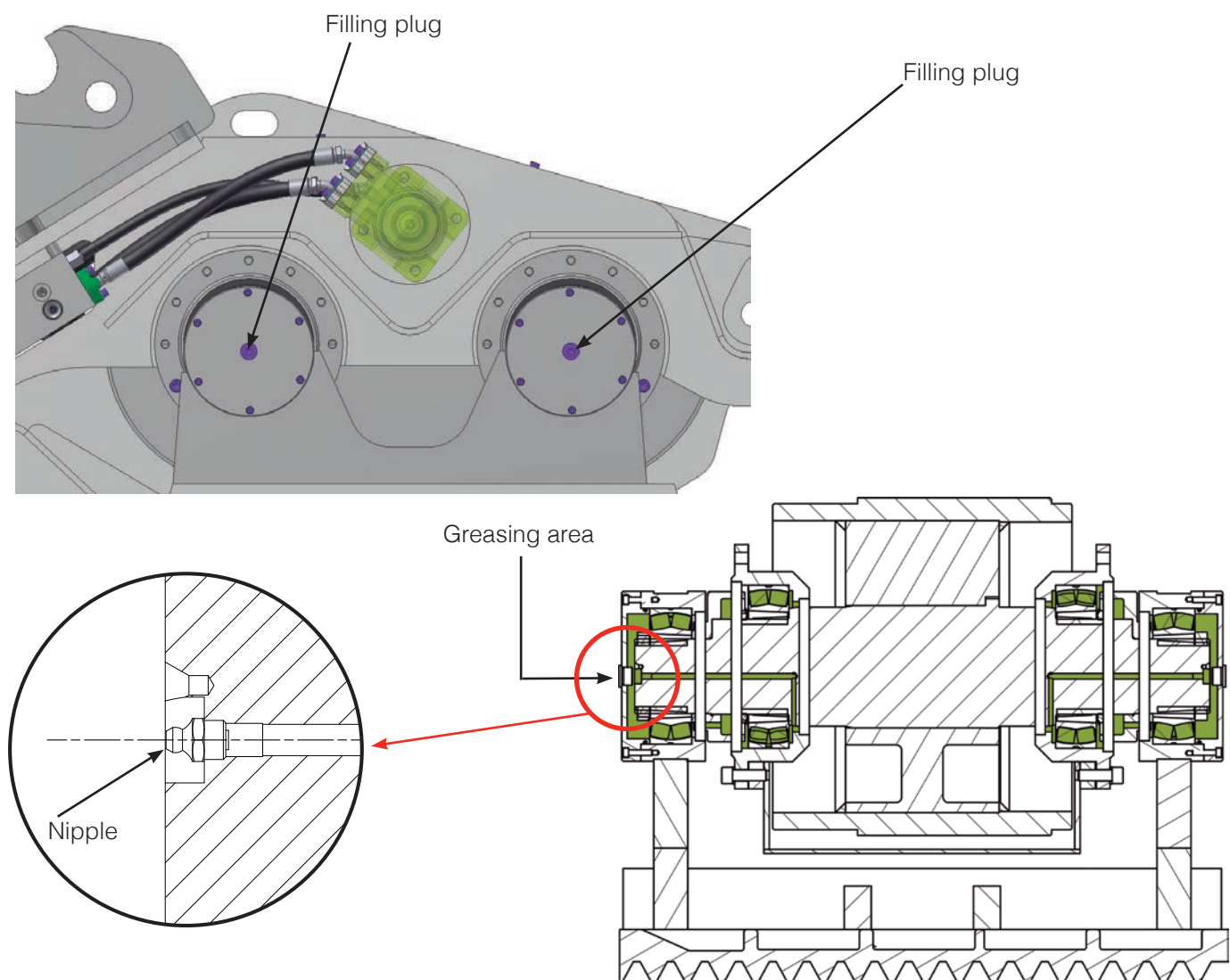
	UNIT	TEST METHOD	VALUE
Colour		Visual	Light Brown
NLGI Consistency			0
Soap type			Lithium
Base oil (type)			Mineral
Base oil viscosity @ 40°C cSt		IP 71/ASTM-D445	160
Worked Penetration, 60 strokes @ 25°C	0,1 mm	IP 50/ASTM-D217	370
Dropping Point	°C	IP 322/ASTM-D566	180
DIN Classification	DIN 51825	KP0K-20	

: Available mineral greases

MANUFACTURER	NAME OF GREASE	MANUFACTURER	NAME OF GREASE
Agip	Agip Grease MU EP 0	Repsol	Grasa Litica EP 0
BP	Energrease LS-EP 0	Shell	Alvania EP 0
Cepsa	Arga EP Especial 0	Total/Fina	Marson EPL Grease 0
Chevron Texaco	Delo Heavy Duty EP 0		

: Available biodegradable greases

MANUFACTURER	NAME OF GREASE
Cargo Oil	Bio Natur 0
Cogelsa	Gelsa Bio 0
Envirosys	Bio-W
Neste	Multigrade BIO EPG



FILLING ECCENTRIC MECHANISM

Make sure the filling area is clean and connect the grease gun in the nipple inside the hole. Being closed chambers, once the shaft and bearings are lubricated, the grease will begin to come out from the lower part of the filling hole.

Repeat the same procedure for filling the 4 filling points.

ATTENTION!

Grease leaking from bearings chambers are normal during the operation.

DANGER!

Grease spills to the ground:

Pouring grease down on the ground, can turn it into a slippery surface, causing falls.

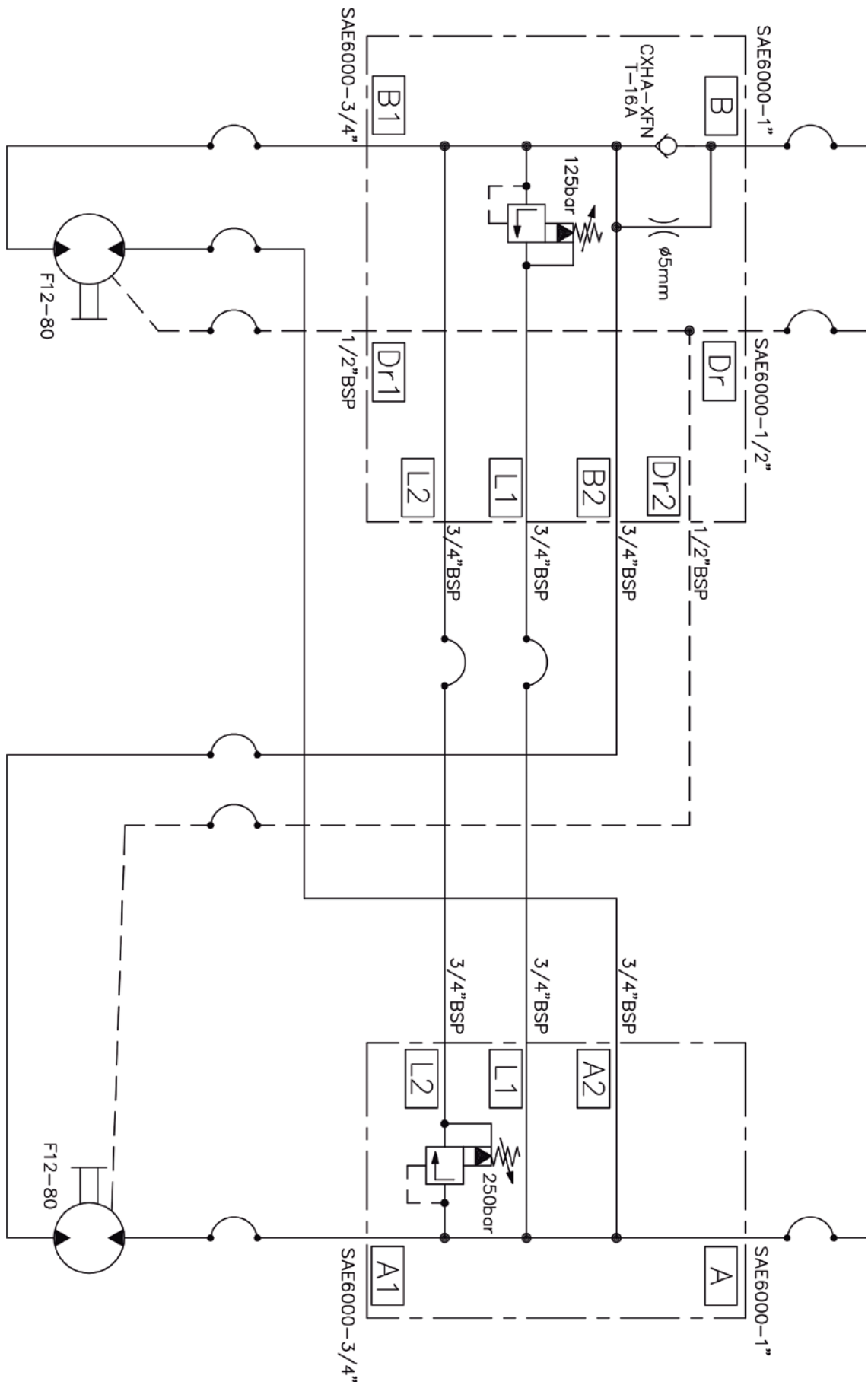
- Ensure that no grease has fallen down to the floor in the filling operation.
- If grease has been spilled on the floor, clean it immediately.

Skin diseases due to the use of grease and oil.

- Avoid any direct skin contact with the grease.
- Use a suitable product for skin protection.
- Always use protective gloves when working with hydraulic oil or grease.
- Clean immediately with soap and water the skin area exposed to contact with the grease.

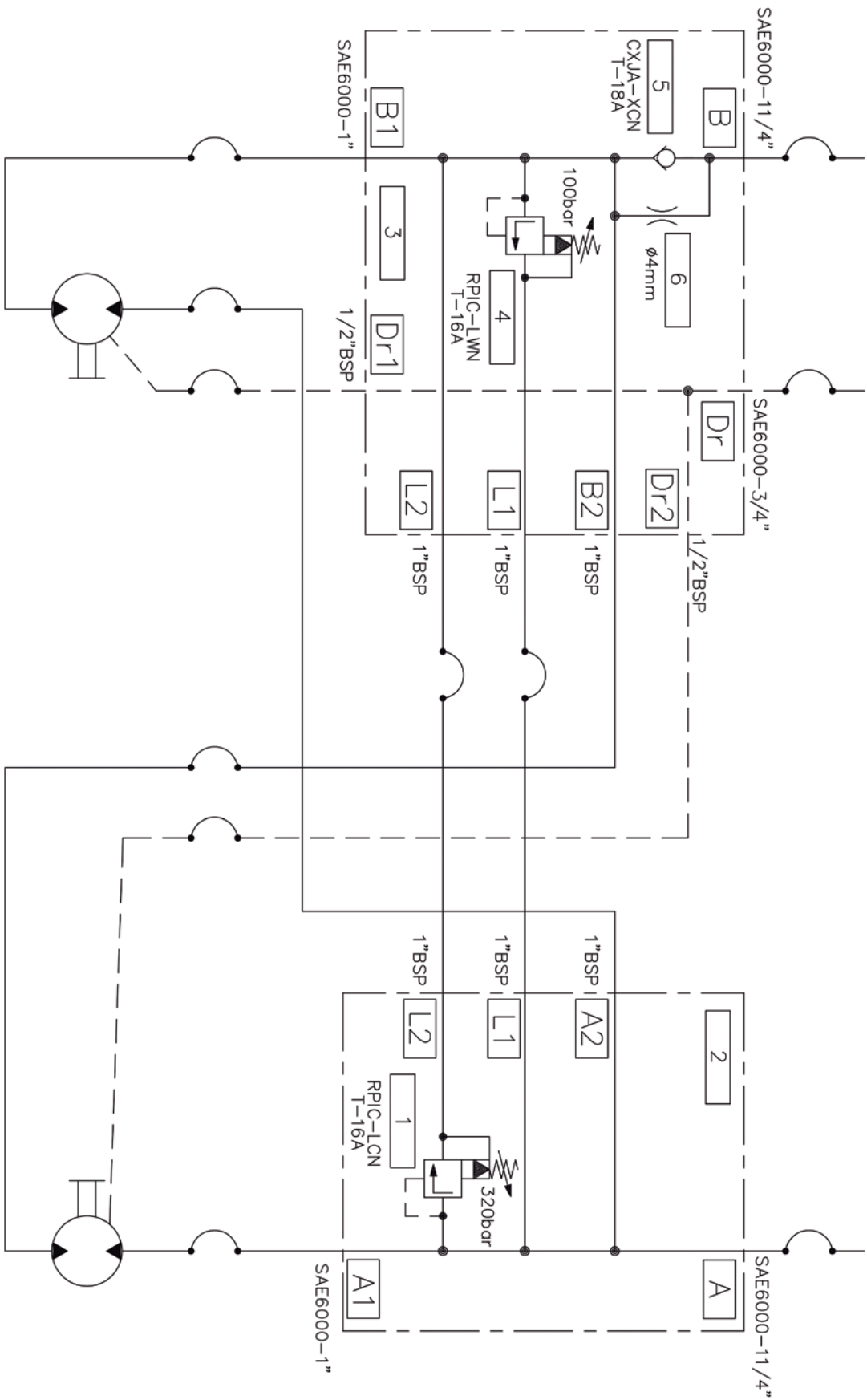
VALVE BLOCK SCHEMATIC DRAWINGS

: Schematic plan control valve block XC15 - XC17 - XC20 - XC30



VALVE BLOCK SCHEMATIC DRAWINGS

: Schematic plan control valve block XC40 - XC50 - XC60



BOLT TIGHTENING TORQUES

MAX. TIGHTENING TORQUE FOR BOLTS STEEL QUALITY 8.8

Bolt diameter x Thread pitch mm	Torque	
	Nm	Lbs. Ft.
M8 x 1.25	26	16.3
M10 x 1.5	53	39
M12 x 1.75	120	89
M14 x 2	140	103
M16 x 2	210	154
M18 x 2.5	295	217
M20 x 2.5	415	306
M22 x 2.5	580	428
M24 x 3	710	524
M27 x 3	1050	774
M30 x 3.5	1420	1047
M36 x 4	2400	1770

The above bolt torques are for dry bolts. If the threads are lubricated before assembly reduce the torque setting by 10%.

- MANUAL REVISION INDEX -

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