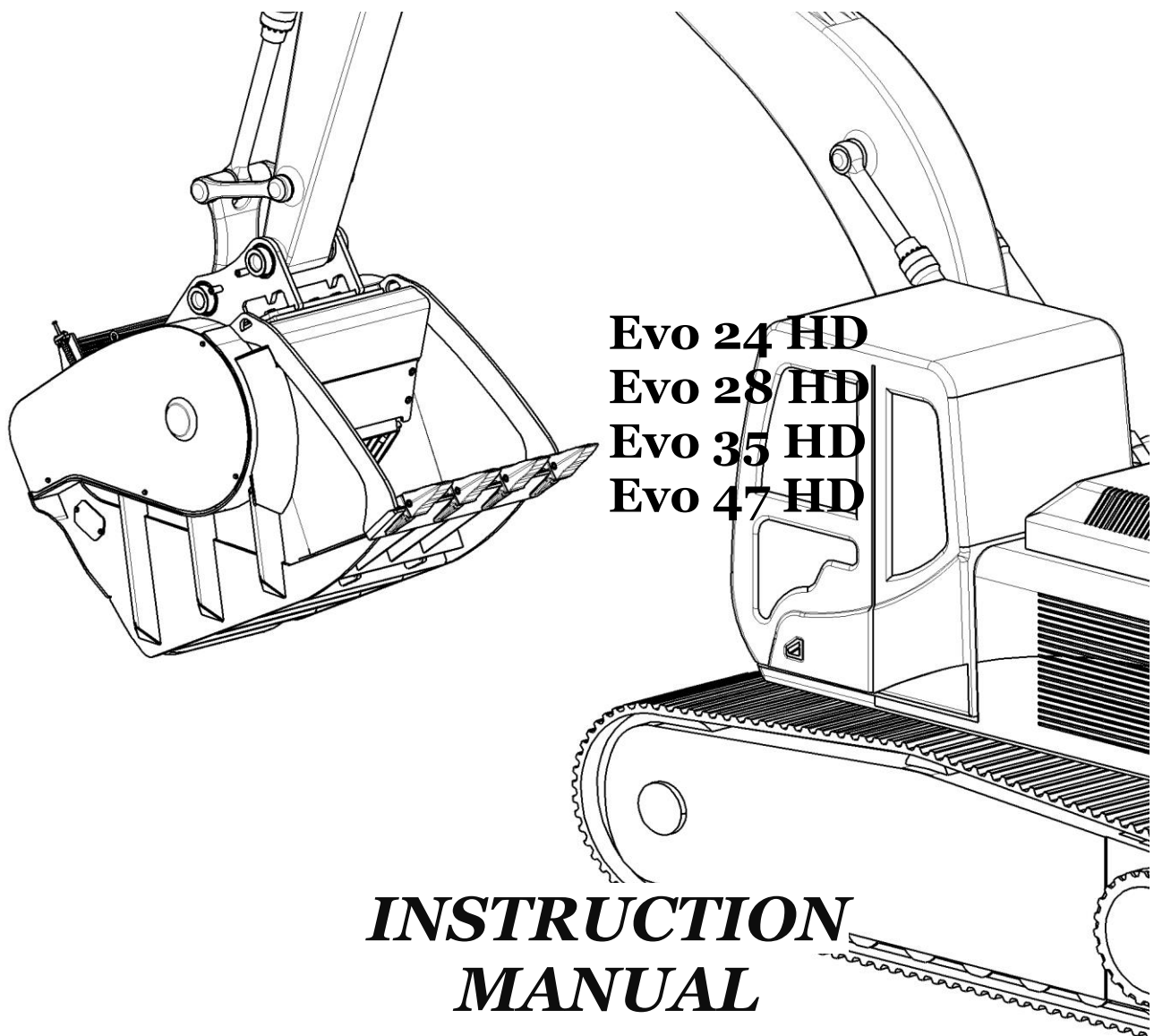


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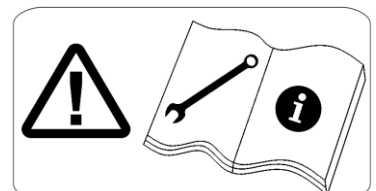
VOLUMETRIC REDUCTION BUCKET FOR INERT MATERIAL



Evo 24 HD
Evo 28 HD
Evo 35 HD
Evo 47 HD

INSTRUCTION MANUAL

COMPANY WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =



VER. 9V/07.01

Evo - Crusher

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INTRODUCTION

- This manual serves to provide the client with all the information he needs regarding the machine and the safety regulations associated with it, as well as instructions for use and maintenance.
- The manual allows the owner to make best use of the machine, and to maintain its efficiency over time.
- The user manual, together with the spare parts catalogue, makes up an integral part of the machine and should always be passed on to any new owner, up to the time that the machine is finally dismantled.
- This manual should be provided for anyone who has to use the machine, or who needs to perform maintenance operations.



ATTENTION

- Incorrect use of the machine and improper maintenance operations carry risks which can cause serious injury to people, even leading to death.
- Operators and persons qualified for maintenance should study all the contents of this manual carefully before using the machine or carrying out any maintenance operations.
- The procedures and precautions outlined in this manual are applicable only when the machine is used for the purposes permitted.

KEY



ATTENTION

This word is used in safety messages in the manual and helps to avoid situations which can cause injuries. The message may also be used to warn of dangers that could cause damage to the machine.

IMPORTANT

This word is used in relation to precautions which need to be taken to avoid any operations which might shorten the life of the machine.

Evo-Crusher cannot foresee every circumstance that could cause potential danger during the use and maintenance of the machine. For this reason, the safety messages contained in the manual might not include every possible safety precaution.

DESCRIPTION OF THE ATTACHMENT

This is a piece of equipment to be fitted on earthmoving machinery. It is made up of a metal case containing two jaws, one fixed and the other moving. The moving jaw is hinged at the base, while at the head it is connected to a shaft and a large flywheel. The off-center position of the shaft on the flywheel causes the movement at the head of the moving jaw, so that it closes against the fixed jaw and at the same time generates a vertical oscillation, assisting the uniform crushing of the material

WARNING: Before carrying out any operations on the above product, read this instruction manual carefully.

INFORMATION ON AIR NOISE OF THE ATTACHMENT

The equivalent continuous sound pressure level weighted in the workplaces is less than 70 dB (A).

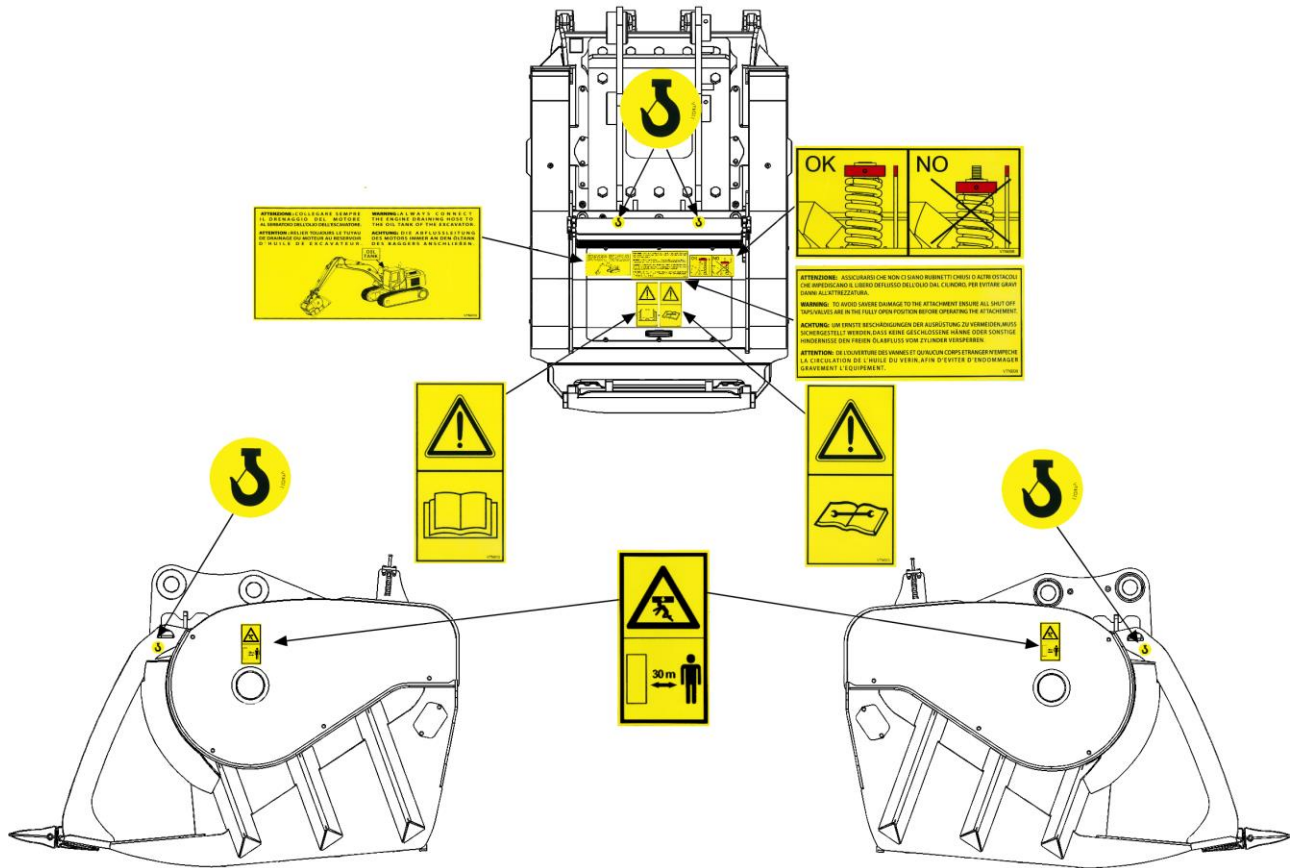
TERMS USED:

Attachment: Evo-Crusher attachment to which this manual refers.

Excavator: excavator on which the attachment is mounted

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POSITION OF STICKERS



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PURPOSE OF THE ATTACHMENT

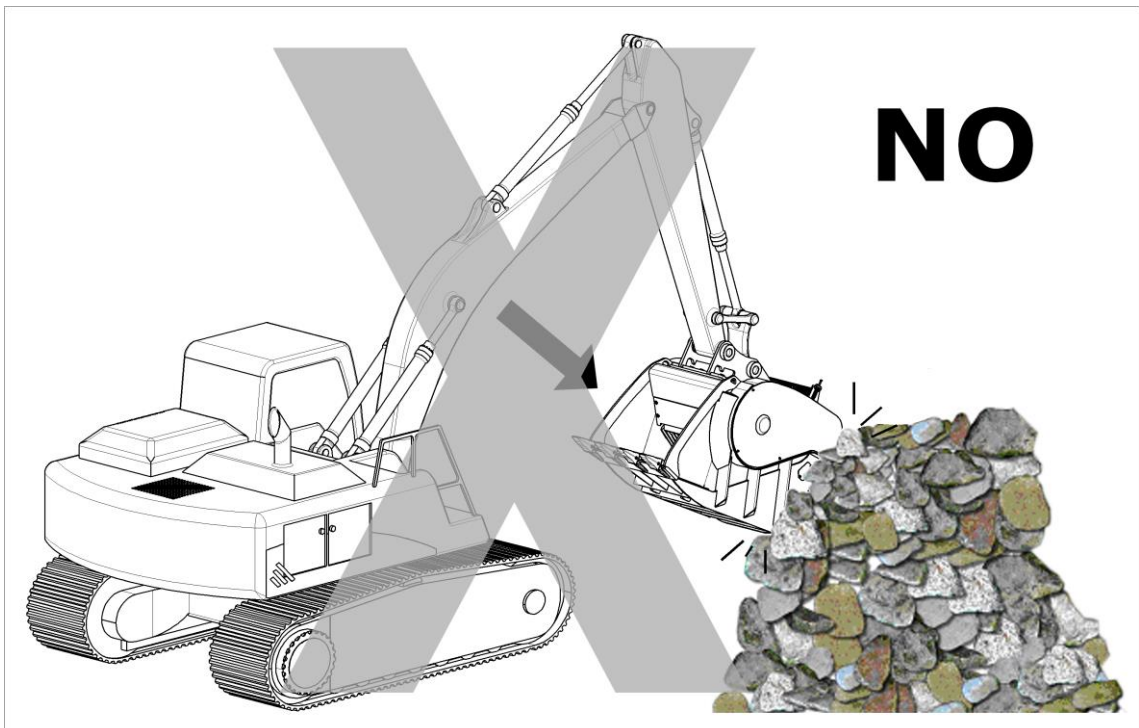
The attachment is made to crush various materials.

UNAUTHORIZED USES:

DO NOT USE THE ATTACHMENT to compress the material.

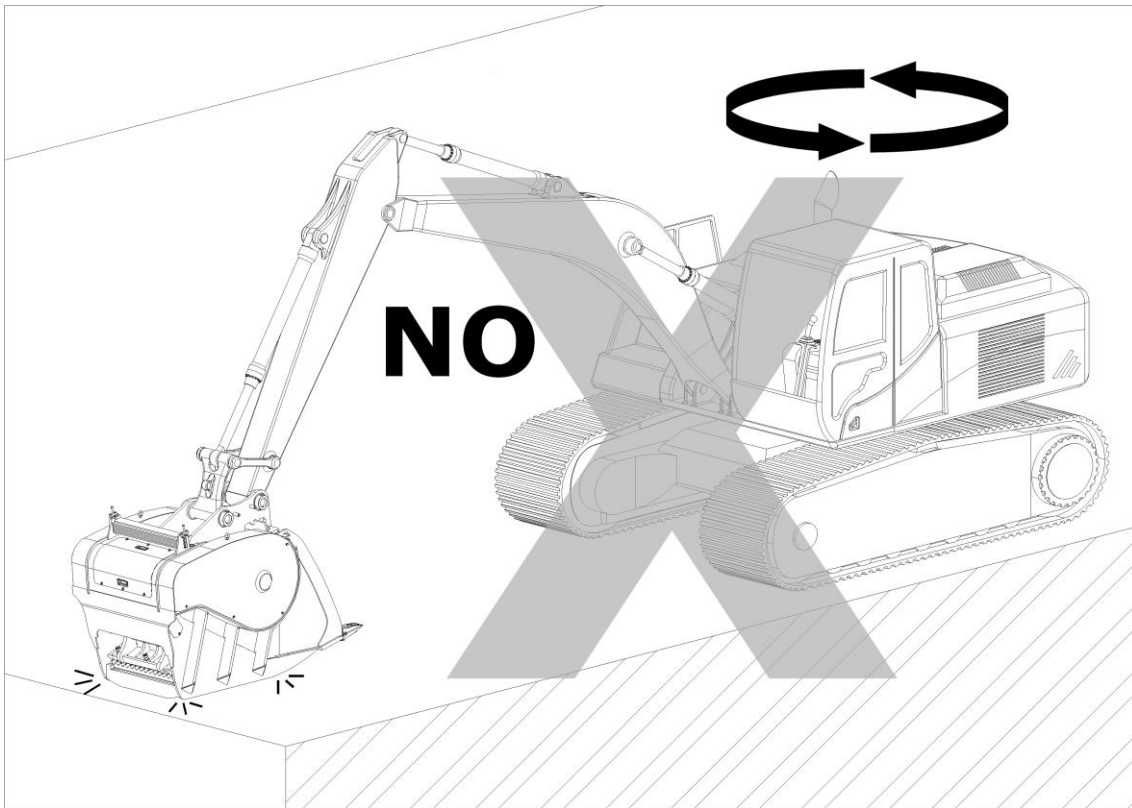


DO NOT HIT OR PUSH the unfiltered material with the equipment.



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Do not lean the machine on the ground and use it as a support-prop for turning the operating machine
Risk of damage to the equipment.



IMPORTANT

Pay attention to the not full of rocks material with advanced dimensions at the opening minimal of the jaw in job, this could be cause of the block of the equipment.



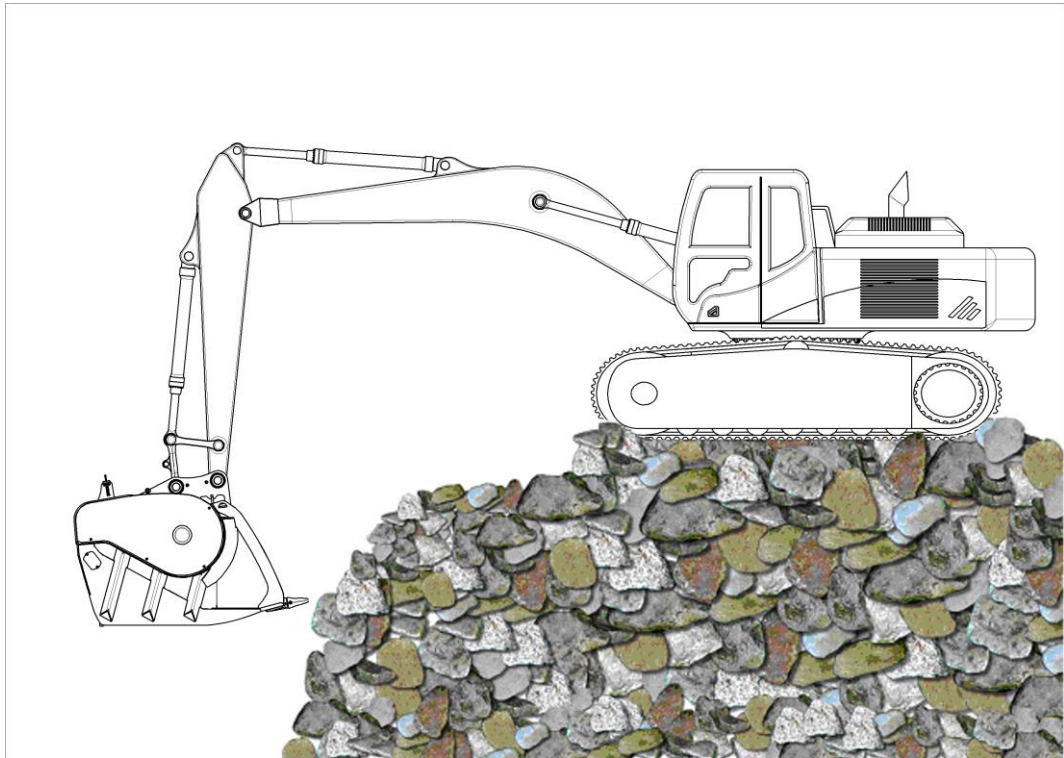
IMPORTANT

THE work space must be properly enclosed to prevent the access to peoples or animals.

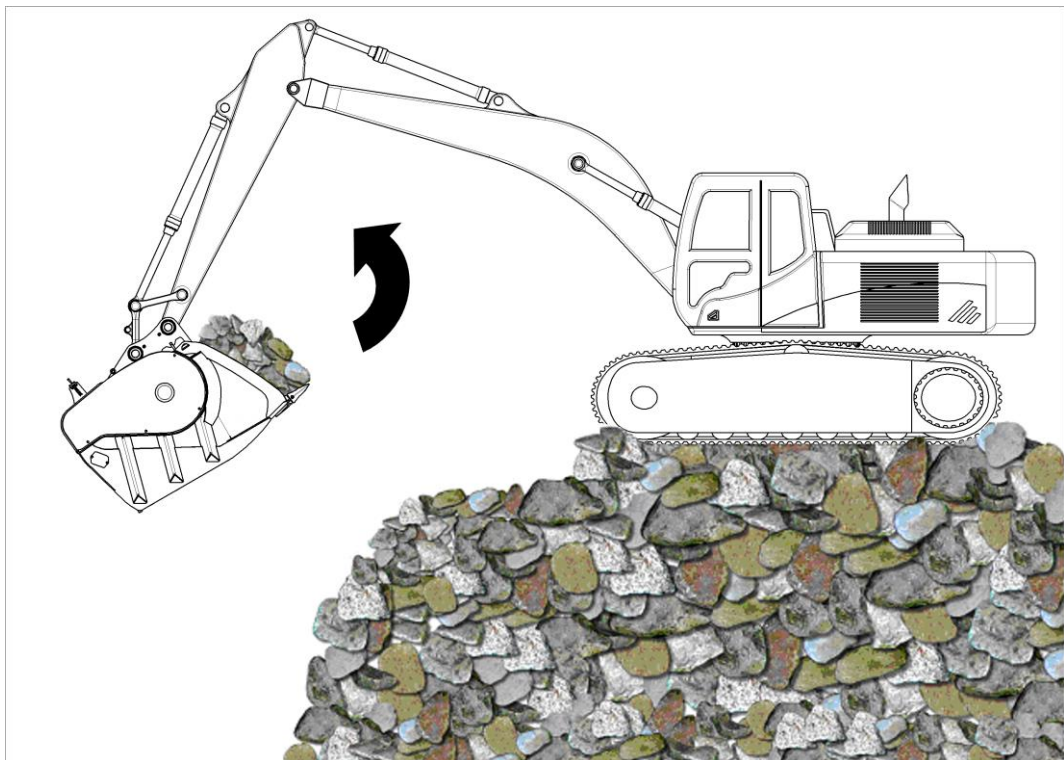
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HOW TO PROCEED WITH THE CRUSHING

Load the bucket with the material to be crushed.



Work the crusher bucket as shown in the figure. Keep it in operation in order to draw it back to a vertical position.



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Correct position of the crusher bucket for best performance.



ATTENTION

Never stop the crusher bucket in a vertical position while crushing the material.

ATTACHMENT INSTALLATION



Before proceeding to install the attachment you need to be sure that the attachment is intact as it might have been damaged during transportation.

It is especially important to check that the pipes are intact and the hydraulic connections are firmly attached.



The attachment must be installed in a space large enough to allow the necessary operations to be carried out in complete safety.



The attachment is not allowed to be used at temperatures below -16 °C or above 45 °C.



If the air temperature is below -10°C, increase the temperature of the equipment in the following way:

- Carry out working cycles with the machine empty for 20 minutes
- Begin with a job that is not too onerous for 10 minutes

ASSEMBLY AND DISASSEMBLY OF THE ATTACHMENT



While being assembled, the attachment should be laid firmly on the ground with the excavator's engine at a standstill and parking brakes pulled on.



If our attachment is supplied without couplings, it is up to the client to fit it with suitable couplings according to current safety standards.

The installer, operator and maintenance personnel must wear the suitable protection devices specified by Italian decree 81/2008, or the relevant safety legislation in force in the country where the equipment is used.



Evo-Crusher declines all liability in the event of accidents if the installer, operator or maintenance personnel fail to use the suitable safety devices.

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Assembly

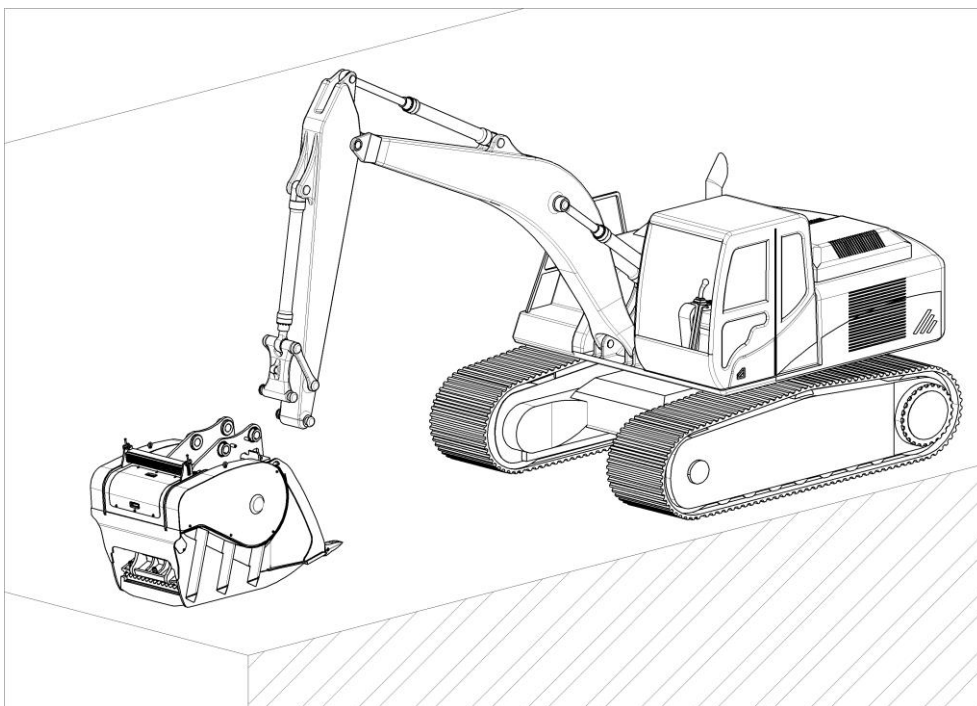
The couplings provided in our attachment are equivalent to those supplied for the standard buckets of the vehicle on which this attachment is mounted. For a detailed explanation on mechanical connection please refer to the instruction handbook of the vehicle in question.

ATTENTION

- While the coupling pins are being mounted or dismounted, there is a risk of loosening splinters. Always wear gloves, protective goggles and a helmet.
- If the equipment is being substituted, and there is no rapid attachment system, the help of another person will be required. It is important to agree upon the words and gestures to use.
- Do not use your fingers to find the center of the holes. If sudden, uncontrolled movements occur. This can cause serious bodily injury.

ATTENTION

The figure only shows the initial position required for mounting the machine. For the other operations involved, please consult the use and maintenance manual for the operating machine.



Disassembly:

When disassembling, the attachment must be laid firmly on the ground.

- a) Turn off the excavator engine and pull the parking brakes
- b) Ensure that the hydraulic system connected to the machine is not under pressure. For this operation, please refer to the use and maintenance manual for the operating machine.
- c) Wait for the oil temperature to cool down.
- d) Remove hydraulic connections between the excavator and attachment.
- e) Uncouple the coupling pins of the fitting as described in the excavator instruction handbook.

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Routine of hose

ATTENTION

For the operations to be followed for connecting the hydraulic tubes to the machine, please refer to the instructions given in the user's manual for the operating machine. The figure indicates the way in which the connecting tubes should be arranged.

IMPORTANT

The use of rapid couplings for connecting the equipment is not advised. These cause severe overheating of the hydraulic oil and therefore shorten the life of the components.

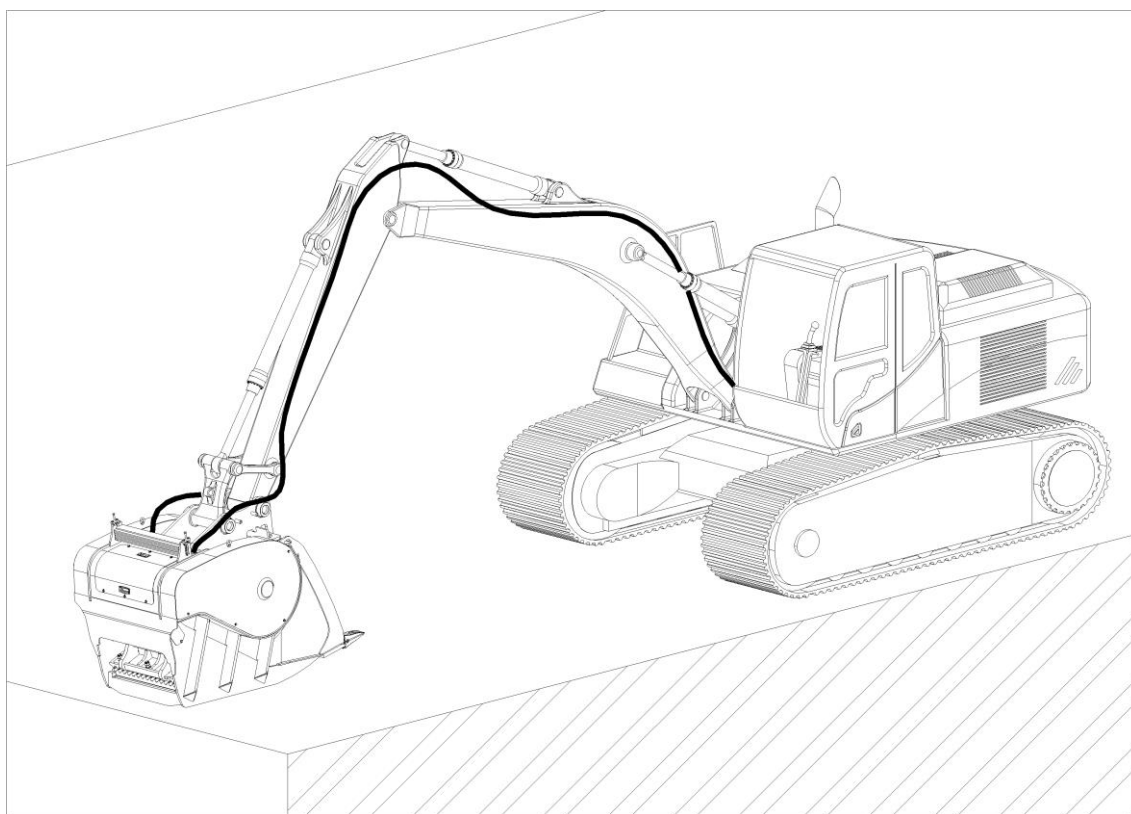
A possible malfunctioning of the rapid couplings can cause serious damage to the machine.

ATTENTION

The outlet pressure of the excavator must always be as required for the attachment in use. See section DIMENSION AND CONNECTIONS SPECIFICATIONS.

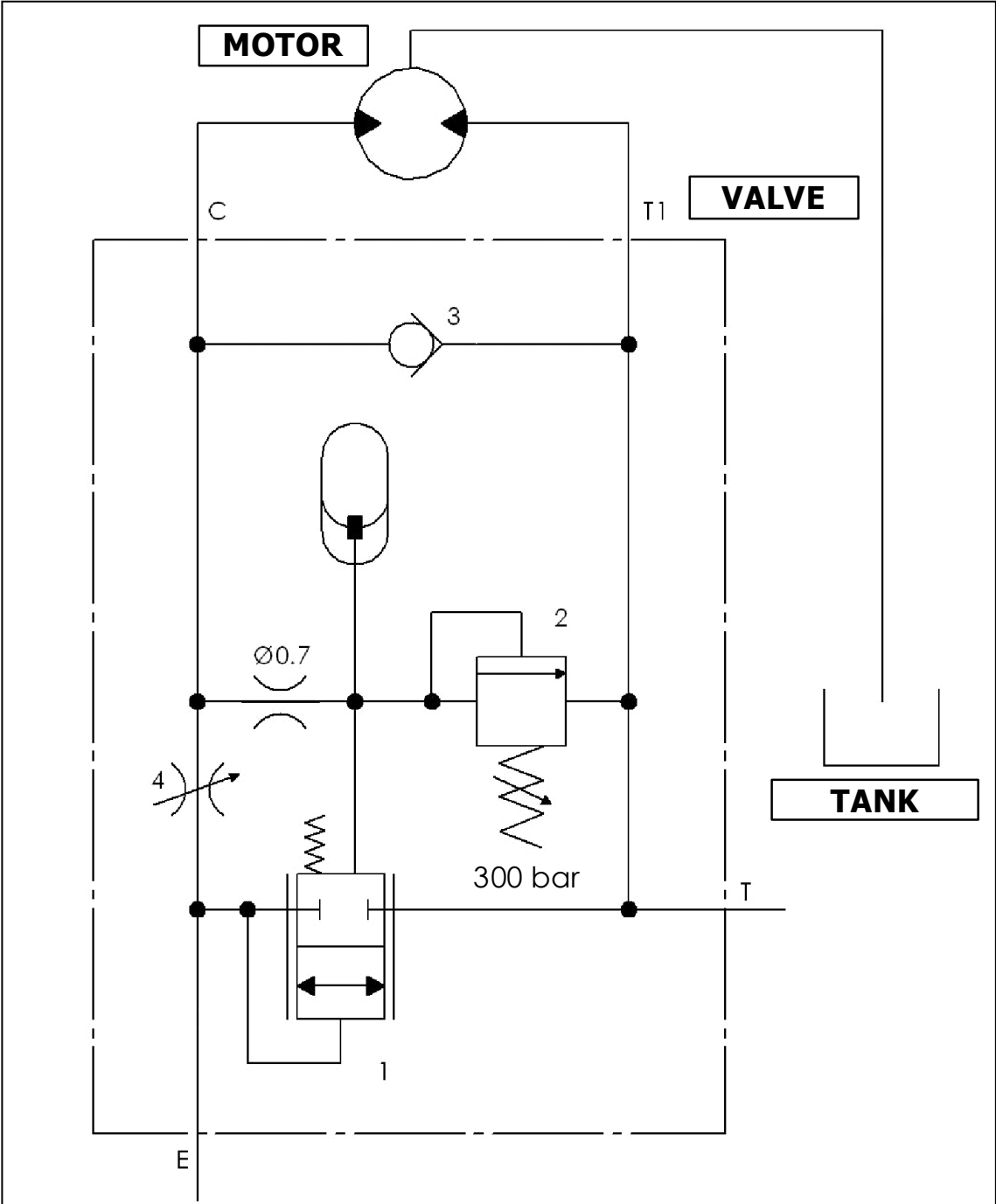
ATTENTION

Do not use the attachment without first checking that the delivery pressure of the attachment is as required.



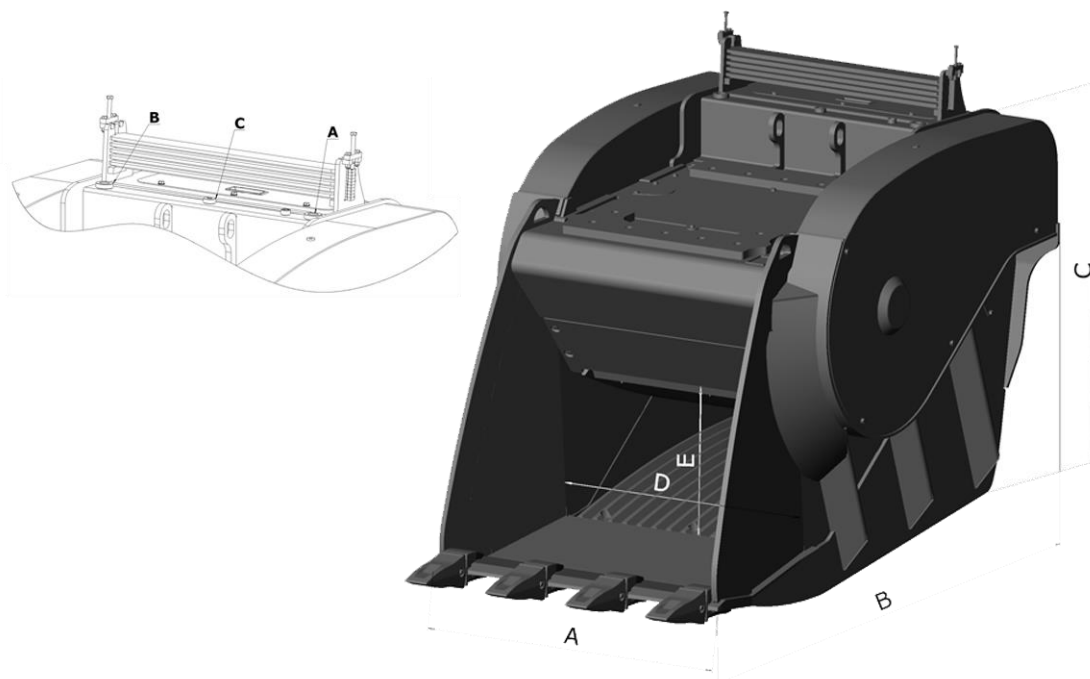
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HYDRAULIC SCHEMATIC



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DIMENSION AND CONNECTIONS SPECIFICATIONS



A-RETURN LINE

B-PRESSURE LINE

C-CASE DRAIN LINE

Model	Dimension					Weight Machine	Excavator weight	Dimension of crush material	
	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	Kg.	ton	Min (mm)	Max (mm)
Evo 24 HD	740	1800	1100	600	450	1800	12/18	18	130
Evo 28 HD	900	2050	1330	700	500	2500	16/25	18	130
Evo 35 HD	1100	2150	1400	900	500	4000	24/40	18	130
Evo 47 HD	1390	2250	1450	1200	550	5450	35/55	18	130



ATTENTION

The crushing bucket works both with dual flow circuit and single flow one.

Model	Hydraulics Connections BSPP	Hydraulics Connections BSPP	Pressure max (BAR)	Oil flow (l/min)	Hydraulics Connections BSPP
	A	B	B	B	C
Evo 24 HD	3/4"	3/4"	270	90/100	3/8"
Evo 28 HD	3/4"	3/4"	300	130/140	3/8"
Evo 35 HD	1"	1"	300	170/180	3/8"
Evo 47 HD	1"	1"	300	230/260	3/8"

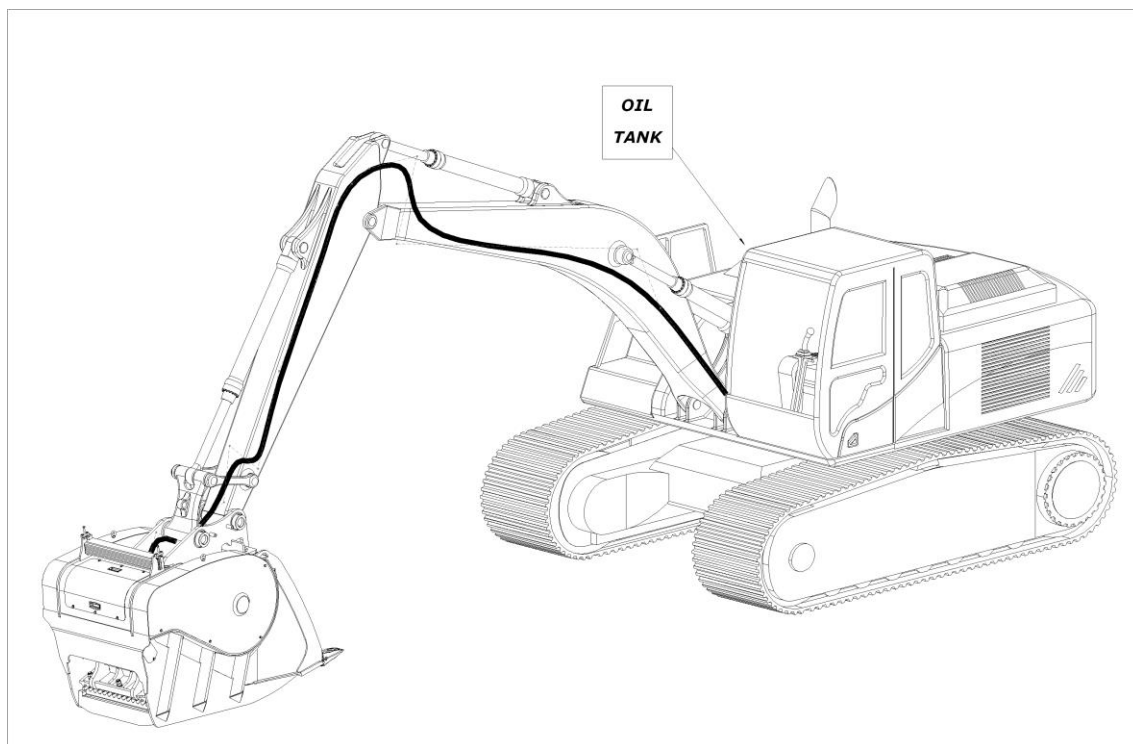


IMPORTANT

Comply strictly with the operating pressure and output valves!

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CASE DRAIN LINE



ATTENTION

Hydraulic motor drain line installation:

In order to eliminate any back pressure the hydraulic motor, case drain line must be an independant return line piped directly back to the hydraulic oil tank of the excavator.

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PERSONAL PROTECTION MEASURES



The installer, operator and maintenance personnel must wear the suitable protection devices specified by Italian decree 81/2008, or the relevant safety legislation in force in the country where the equipment is used.



Evo-Crusher declines all liability in the event of accidents if the installer, operator or maintenance personnel fail to use the suitable safety devices..

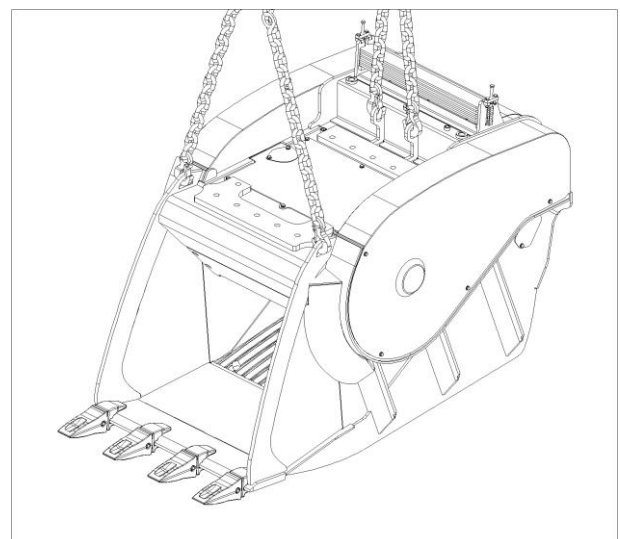
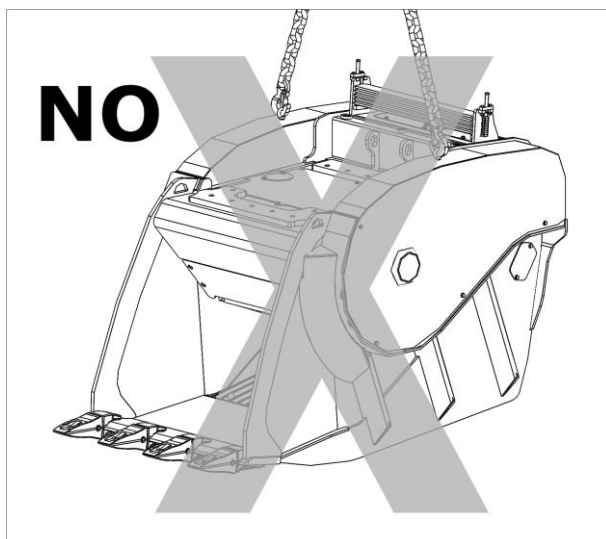
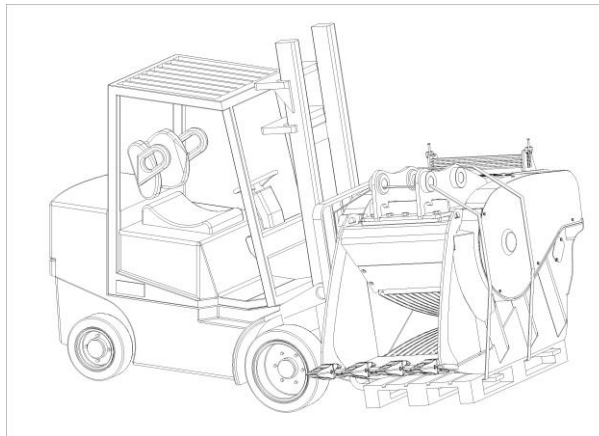
HANDLING AND TRANSPORTATION OF THE ATTACHMENT

Please see the above description of the attachment in this manual for an indication of weights and sizes.

Given the attachment's weight and size, it must be handled and transported only by specifically skilled personnel.

If the operator employed to handle the attachment does not have a complete view of the attachment to be moved, the assistance of a second operator is needed on the ground but out of the earth-moving vehicle's range of action.

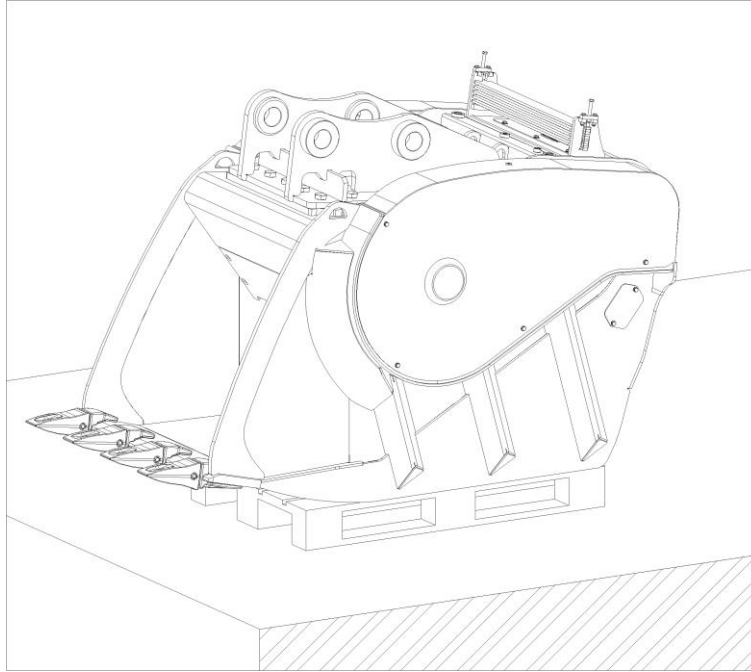
In the attachment there are holes for the insertion of lifting hooks. Make sure that these hooks are secured firmly to allow you to proceed to move the attachment.



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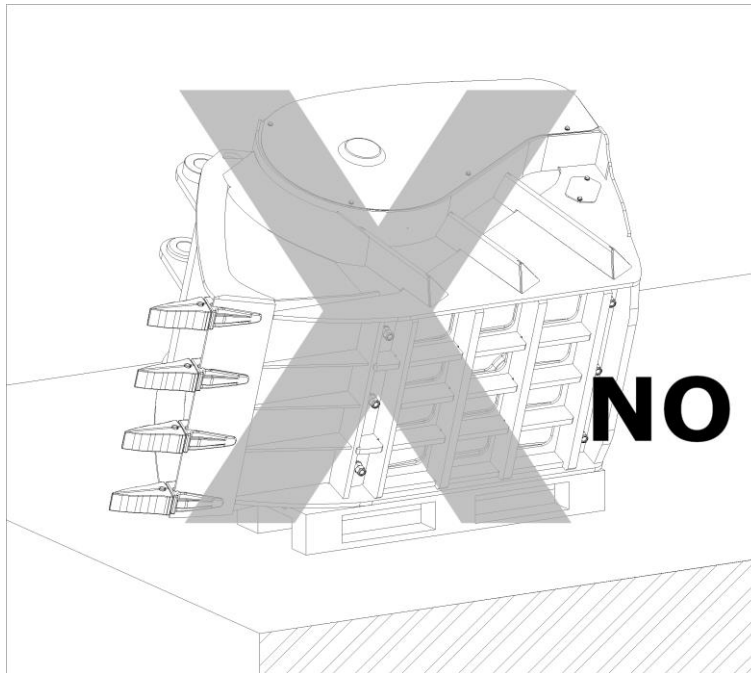
STORAGE OF THE EQUIPMENT

- Keep the equipment away from areas of transit.
- Position the equipment on a wooden bed to give it greater stability (see figure).



ATTENTION

- Do not position the machine as shown in this figure. It could tip over, causing the risk of serious cuts or crushing



If the equipment needs to be stored for more than 2 months, please follow these instructions:

- Grease the various rotation points to protect them from damp.
- Store the equipment in a dry place, at a temperature of between -5°C and $+30^{\circ}\text{C}$.
- Protect the equipment from dirt, dust and humidity..

Evo - Crusher

MAINTENANCE

ATTENTION

Maintenance and inspection of the attachment should be performed only by skilled personnel.

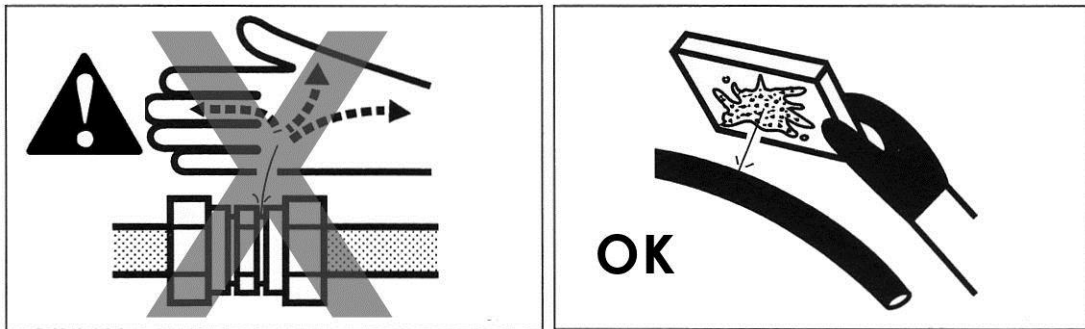
ATTENTION

Any operation requiring direct handling by the operator (inspection, maintenance) must be performed with the excavator off, with its parking brakes pulled on with our fitting laid firmly on the ground.

Wait for the machine oil to cool (approx. 2 hours).

ATTENTION

Thin sprays of high pressure hydraulic liquid can penetrate skin. DO NOT use your finger to search for any leaks. DO NOT place your face close to suspected leaks. To highlight signs of hydraulic leaks, place a piece of cardboard close to the suspected leaks and then inspect the cardboard itself. Should the hydraulic fluid penetrate your skin, immediately call for medical help.



It is extremely important for operational safety to inspect and maintain the following thoroughly, keeping to their timing:

IMPORTANT

EVERY TIME THE FITTING IS USED:

Make sure the pipes are in perfect condition and check the hydraulic attachments.

As to take place itself also of single of the following conditions tube will have to be immediately taken apart and replaced:

- displacement of the connection on the flexible pipe
- in case of damages, cut or abrasions on the superficial layer
- hardening or rigidity of the flexible pipe, presence of burns or leaks due to heat
- in case of crack, rust on the connection
- in case of points of loss on the flexible pipe or the connection
- in case of permanent folds, crushings, flattening or torsions on the flexible pipe
- in case of bubbles, softening, usury or detachment of the external layer

IMPORTANT

EVERY 40 HOURS OF USE OF THE ATTACHMENT:

- Check that there are no cracks in the welding;
- Check that the screws are undamaged and securely tightened according to the enclosed table, see section TIGHTENING TORQUE OF SCREWS AND NUTS
- Check the screws, elastics pegs, seeger and split pins conditions;

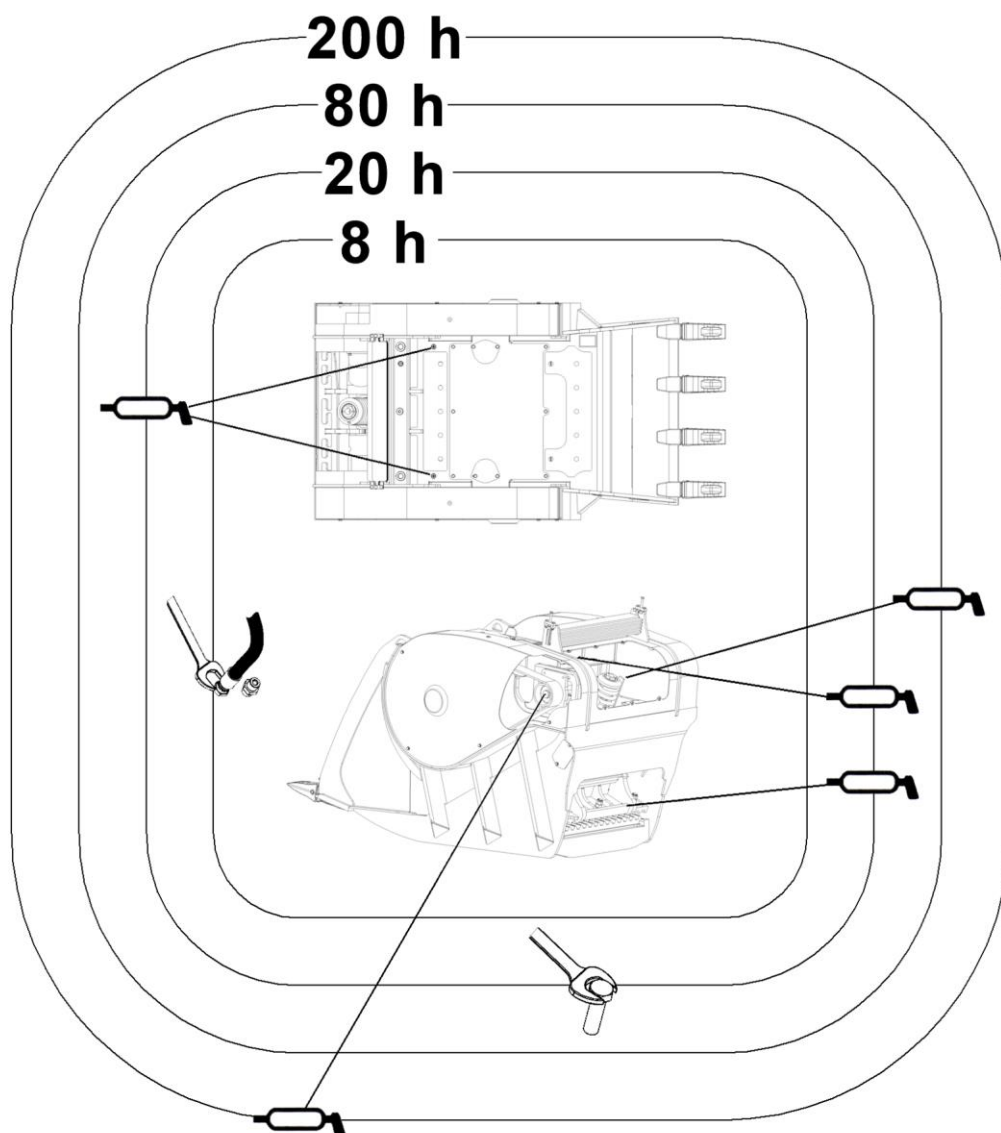
IMPORTANT

- The level of fluid contamination must be in class 19/15 or better ;
- The temperature of the oil in use SHALL NEVER EXCEED 70 °C.

ATTENTION

If the attachment breaks down, contact the authorised dealer or, in any case a skilled personnel. Neither the attachment itself nor its functionality may be modified in any way.

Evo - Crusher



 **Grease**



**Tightness
of screws**



**Tightness
of tubes
and joints**



ATTENTION

After the first 40 hours of use of the equipment, check the tightness of the tubes and joints inside the equipment. Loosening can be caused during the initial phase of adjustment after the fastening of the hydraulic parts.



IMPORTANT

It is recommended that more frequent lubrications should be carried out in tropical, very damp, dusty environments, as well as in environments full of impurities and subject to sudden changes in temperature.

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JAWS WEAR

JAWS:

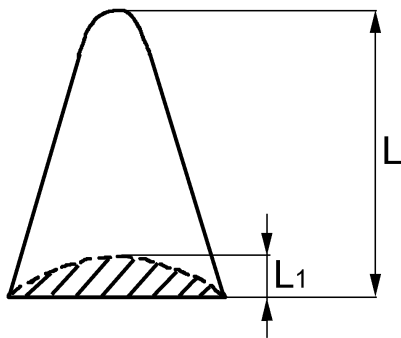
- They should be rotated by 180°. However, this operation should be done on both of the jaw grips so that a collision does not occur between the two of them leading to a sudden blockage of the machine.
- Their position can be reversed, in order to ensure uniform wear.



Unscrew the screws very carefully when removing the top jaw, since it may fall down and cause damage to property or injure people or animals.

It is advised to rotate or to invert the position of jaws in an equipped workshop

JAWS WEAR



L = NEW WAVE

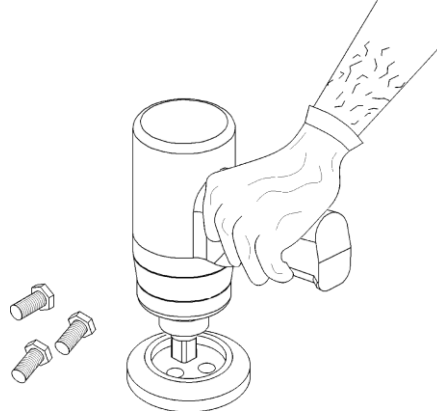
L1 = 5mm WORN WAVE

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TIGHTENING TORQUE OF SCREWS AND NUTS

The tightening torque in the table is valid approximately for the following conditions:

- Hexagonal- head screws (UNI 5737 type), cylindrical-head screws (UNI 5931 and UNI 6107 type).
- The tightening torque must be applied slowly with dynamometric wrenches.



★ 1 Nm = 0,102 kgm

NORM				8.8		10.9		12.9	
Ø bolt	hexagon	Metric Thread		Metric Thread		Metric Thread		Metric Thread	
↓	mm	coarse mm	fine mm	coarse Nm	fine Nm	coarse Nm	fine Nm	coarse Nm	fine Nm
M8	13	1,25	1,0	25	27	35	38	42	46
M10	17	1,5	1,25	50	53	70	74	84	89
M12	19	1,75	1,5	85	89	119	125	143	150
M14	22	2,0	1,5	135	148	190	208	228	250
M16	24	2	1,5	212	226	298	318	357	382
M18	27	2,5	2,0	290	310	402	436	490	523
M20	30	2,5	2,0	413	436	580	614	697	736
M22	34	2,5	2,0	568	597	798	840	958	1.008
M24	36	3,0	2,0	714	781	1.004	1.098	1.204	1.317
M27	41	3,0	2,0	1.050	1.139	1.477	1.602	1.772	1.923
M30	46	3,5	2,0	1.429	1.590	2.009	2.236	2.411	2.648
M33	50	3,5	2,0	1.941	2.136	2.729	3.004	3.275	3.605
M36	55	4,0	3,0	2.497	2.652	3.511	3.730	4.213	4.476

The data in the table refer to Regulation DIN 267

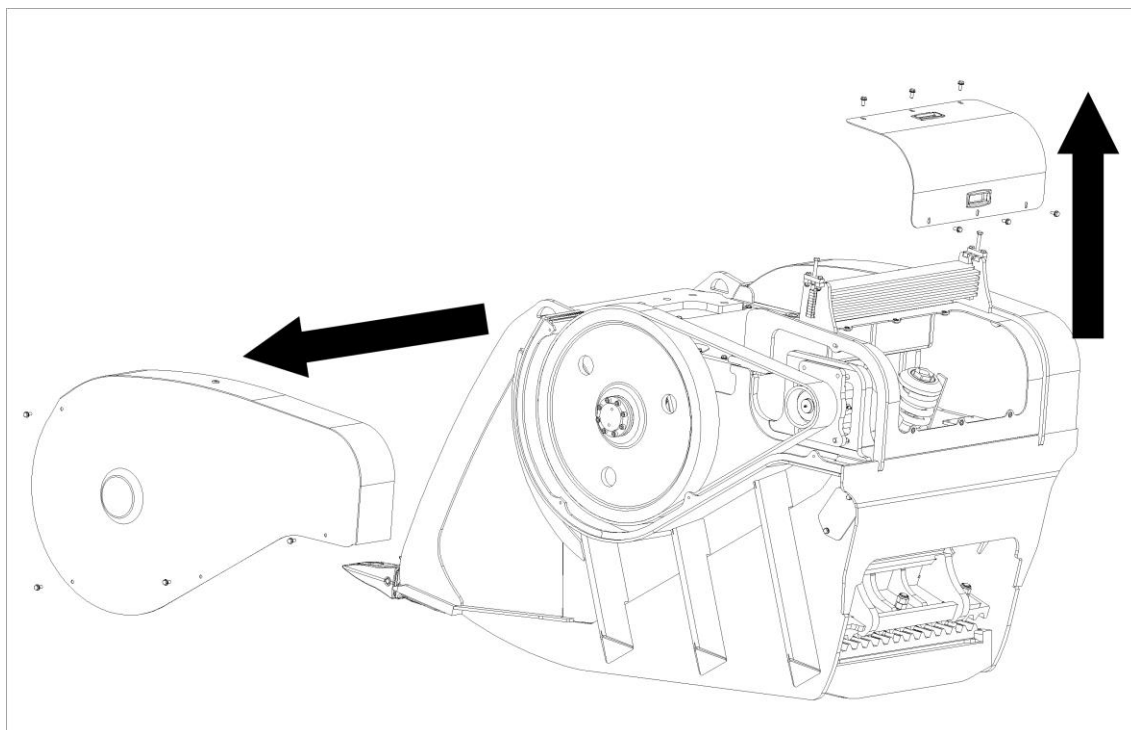
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ADJUSTING THE BELT TENSION

Remove the hoods and the cover using suitable tools and wearing safety clothing.



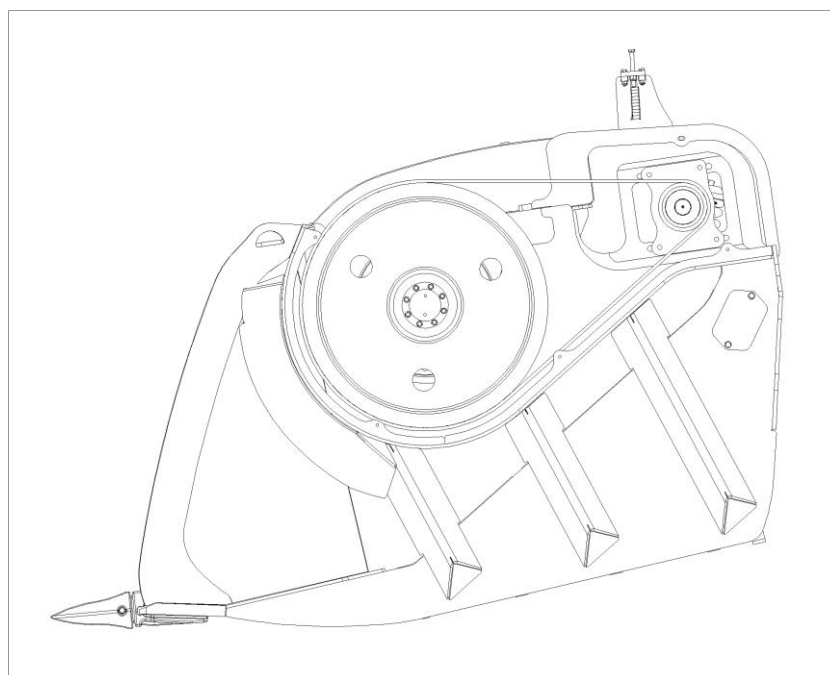
The operation must be performed with the machine off, the parking brakes engaged and the crushing bucket resting on the ground.



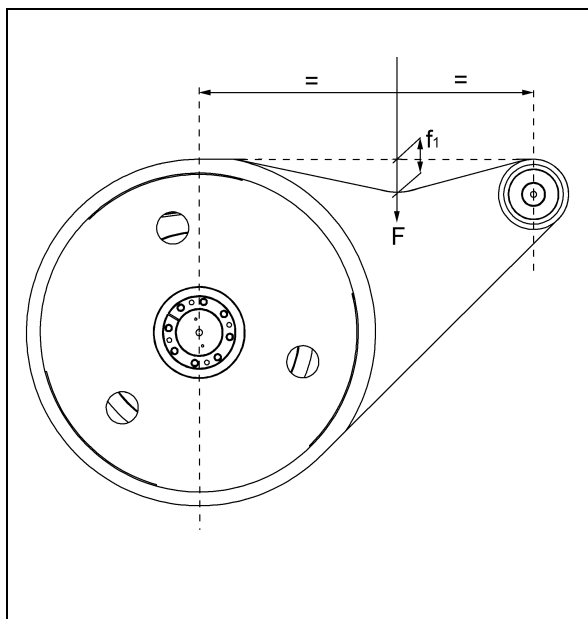
Dispose the crushing bucket so that the top of the belt is in horizontal position.



After positioning the crushing bucket, switch the machine off and engage the parking brakes before proceeding with the next steps.



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CHECKING THE BELT TENSION

Evo 24 HD – Evo 28 HD – Evo 35 HD

Use a dynamometer to apply a perpendicular force $F=25\text{kg}$ to the belt halfway between the axes of the two pulleys.

This should cause the belt to flex down by $f_1=10\text{mm}$.

If:

$f_1 < 10\text{ mm}$ loosen the belt

$f_1 = 10\text{ mm}$ ok

$f_1 > 10\text{ mm}$ tighten the belt.

Evo 47 HD

Use a dynamometer to apply a perpendicular force $F=48\text{kg}$ to the belt halfway between the axes of the two pulleys.

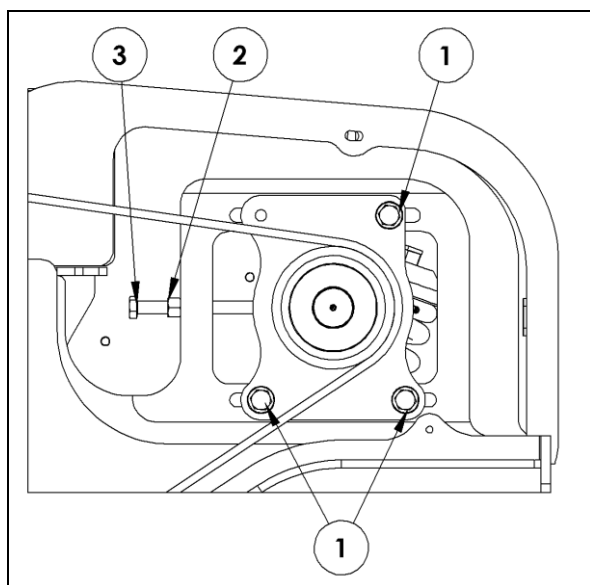
This should cause the belt to flex down by $f_1=11\text{mm}$.

If:

$f_1 < 11\text{ mm}$ loosen the belt

$f_1 = 11\text{ mm}$ ok

$f_1 > 11\text{ mm}$ tighten the belt.



ADJUSTING THE BELT TENSION

Loosen the nuts 1 that secure the engine support.

Unscrew the lock nut 2 on the belt tensioner screw 3.

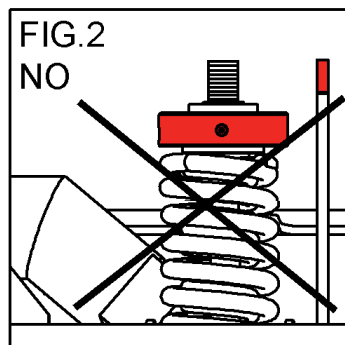
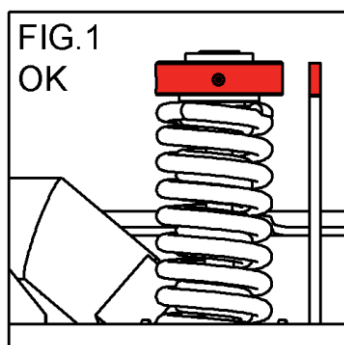
Tighten or loosen the belt tensioner screw 3 until achieving the result shown in the previous figure.

After completing the operation, secure the belt tensioner screw with the lock nut 2.

Tighten the nuts 1 that secure the engine support.

Once all the operations have been completed, put back the hoods and the cover.

ADJUSTING SPRING TENSION

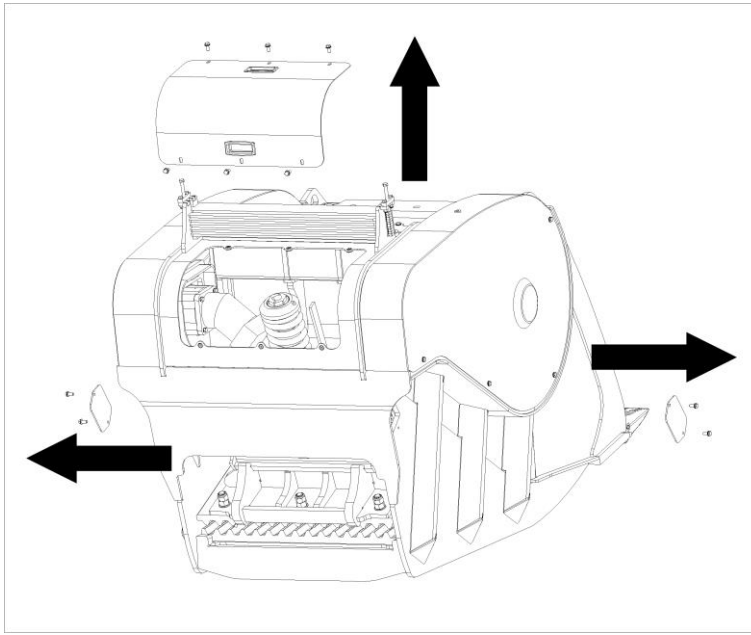


To adjust the tension of the spring, align the red part of the spring stop with the red part of the indicator located to the side. The adjustment must be performed with the spring fully extended.

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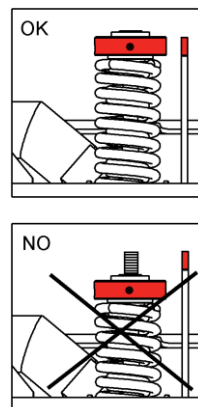
JAW OPENING SETTINGS

FIG.1



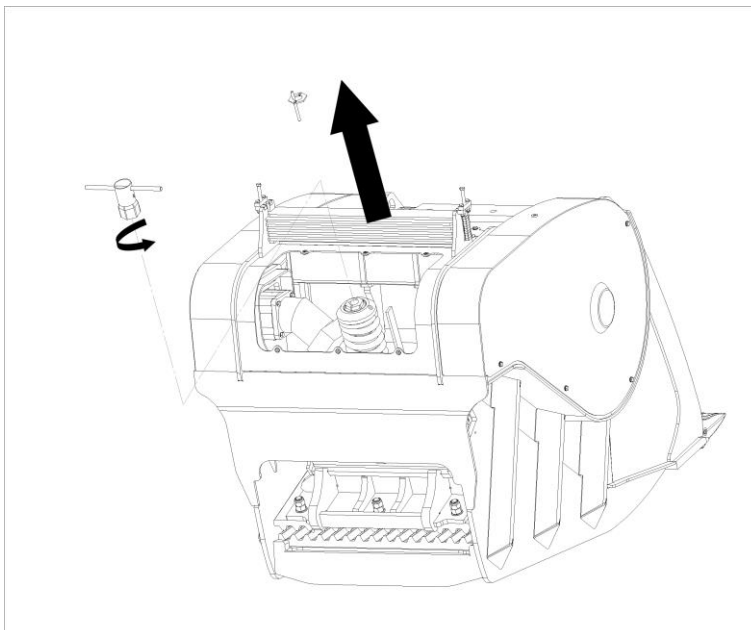
UNSCREW THE FASTENING SCREWS ON THE GUARDS INDICATED AND REMOVE THE GUARDS.

FIG.2



CHECK THAT THE RED PART OF THE SPRING STOP AND THE RED PART OF THE INDICATOR LOCATED TO THE SIDE ARE ALIGNED.

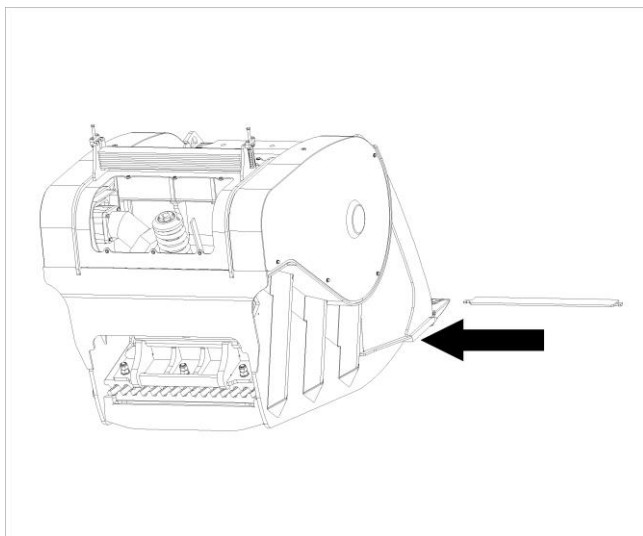
FIG.3



UNSCREW THE SCREW ON THE SAFETY STOP AND REMOVE IT. UNSCREW THE NUT THAT ADJUSTS THE TENSION OF THE SPRING UNTIL CREATING SUFFICIENT SPACE TO ADD OR REMOVE SPACERS. BEFORE UNSCREWING THE NUT THAT ADJUSTS THE TENSION OF THE SPRING, ALWAYS CHECK THAT THE SPRING IS FULLY EXTENDED (FIG.2).

Evo - Crusher

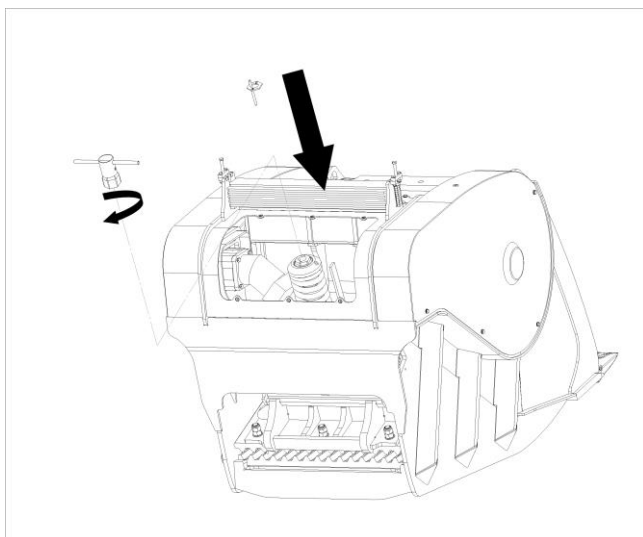
FIG.4



ADD SPACERS TO CREATE A SCREEN SIZE FOR SMALLER MATERIAL.

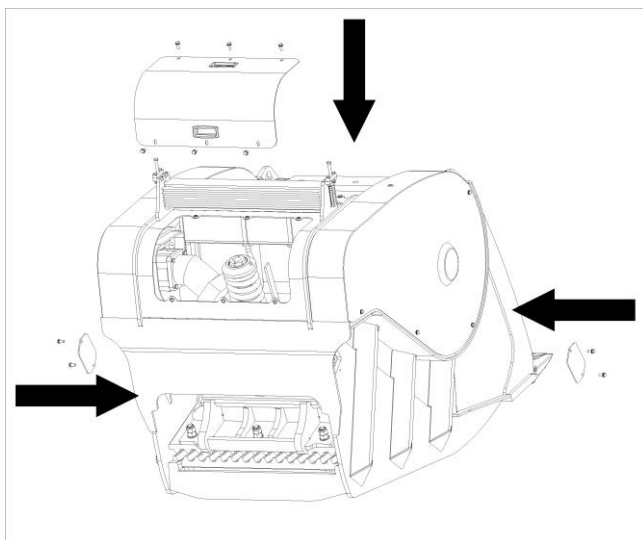
REMOVE SPACERS TO CREATE A SCREEN SIZE FOR LARGER MATERIAL.

FIG.5



TIGHTEN THE NUT THAT ADJUSTS THE TENSION OF THE SPRING UNTIL REACHING THE SITUATION SHOWN IN FIG.2 AND REPOSITION THE SAFETY STOP, FASTENING IT WITH THE SCREW.

FIG.6



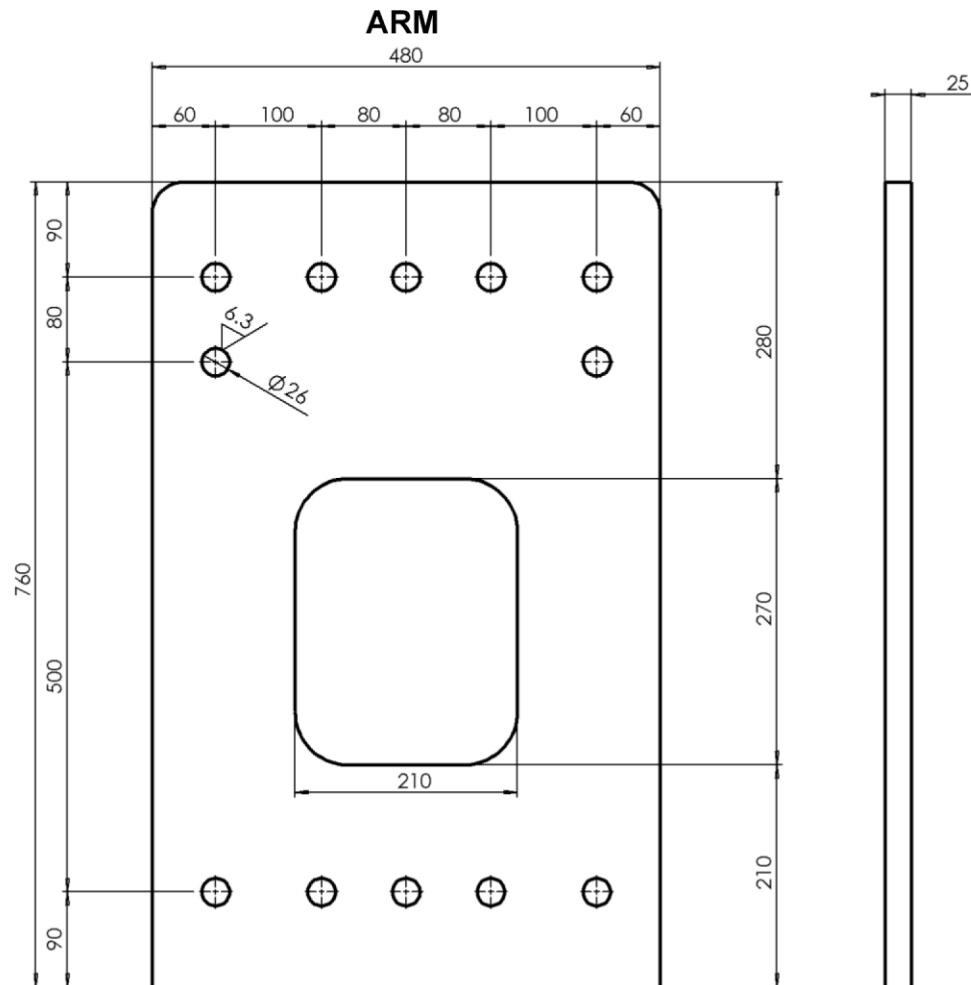
REPOSITION THE GUARDS, FASTENING THEM WITH THE SCREWS.

Evo - Crusher

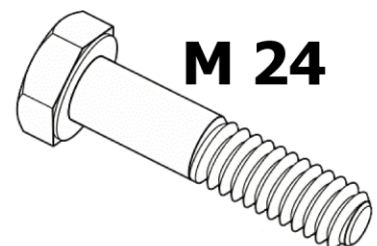
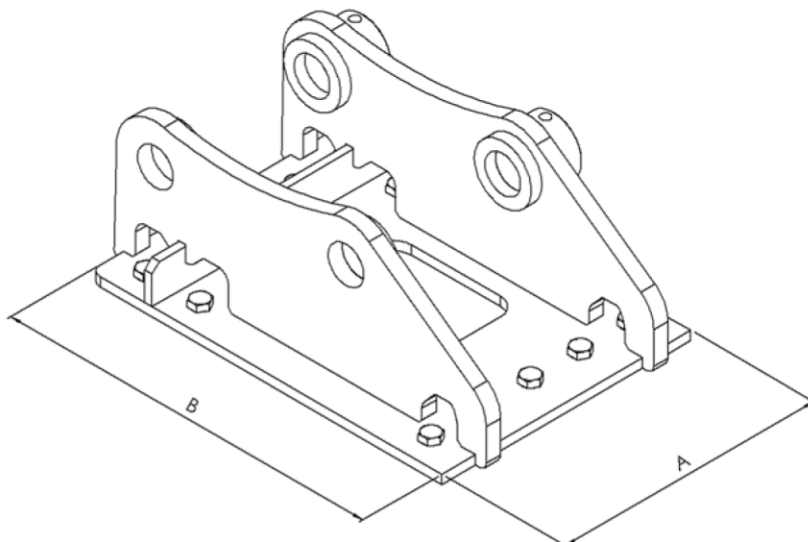
TOP PLATE Evo 24 HD

ATTENTION

To protect the safety of the machine and its operators, we advise the purchase of the saddle attachment either directly from our company or from your distributor. If the saddle attachment is constructed by unauthorized users, Evo-Crusher will not hold itself responsible for any damage that might ensue.



LEVER

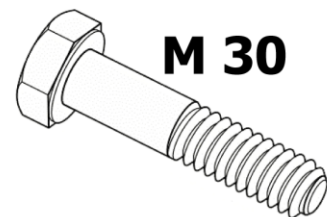
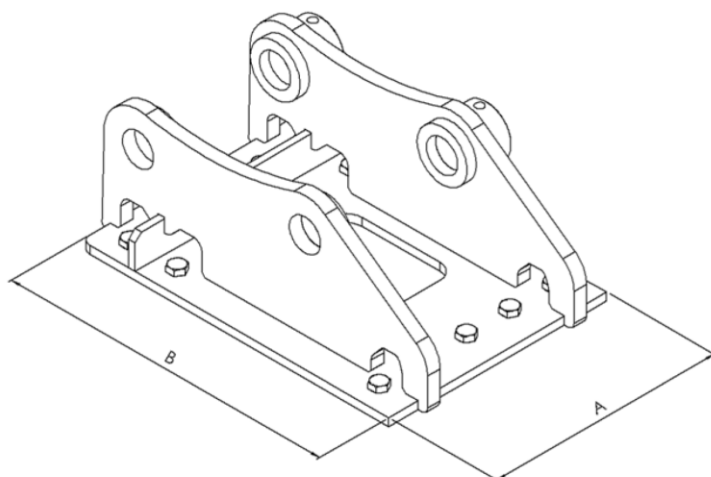
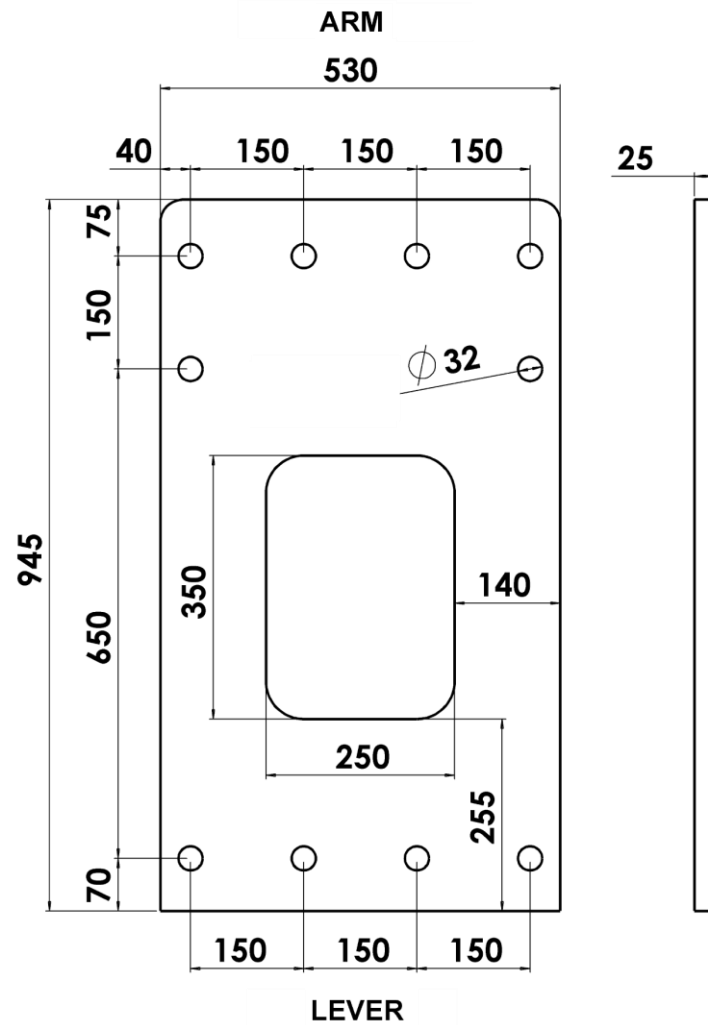


Evo - Crusher

TOP PLATE Evo 28 HD

ATTENTION

To protect the safety of the machine and its operators, we advise the purchase of the saddle attachment either directly from our company or from your distributor. If the saddle attachment is constructed by unauthorized users, Evo-Crusher will not hold itself responsible for any damage that might ensue.

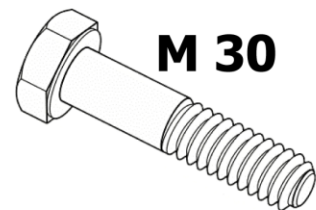
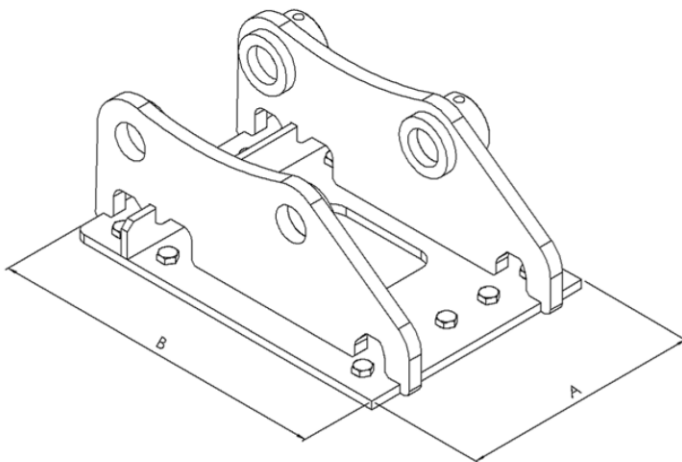
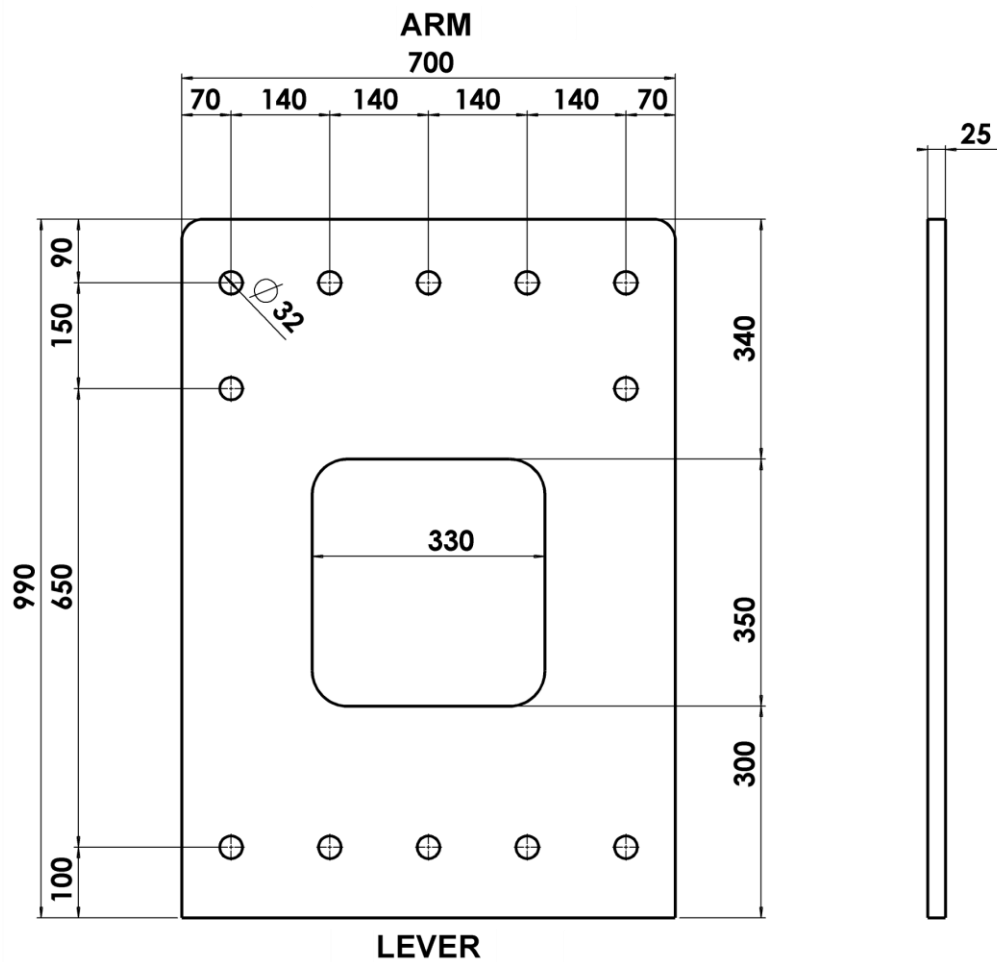


Evo - Crusher

TOP PLATE Evo 35 HD



To protect the safety of the machine and its operators, we advise the purchase of the saddle attachment either directly from our company or from your distributor. If the saddle attachment is constructed by unauthorized users, Evo-Crusher will not hold itself responsible for any damage that might ensue.



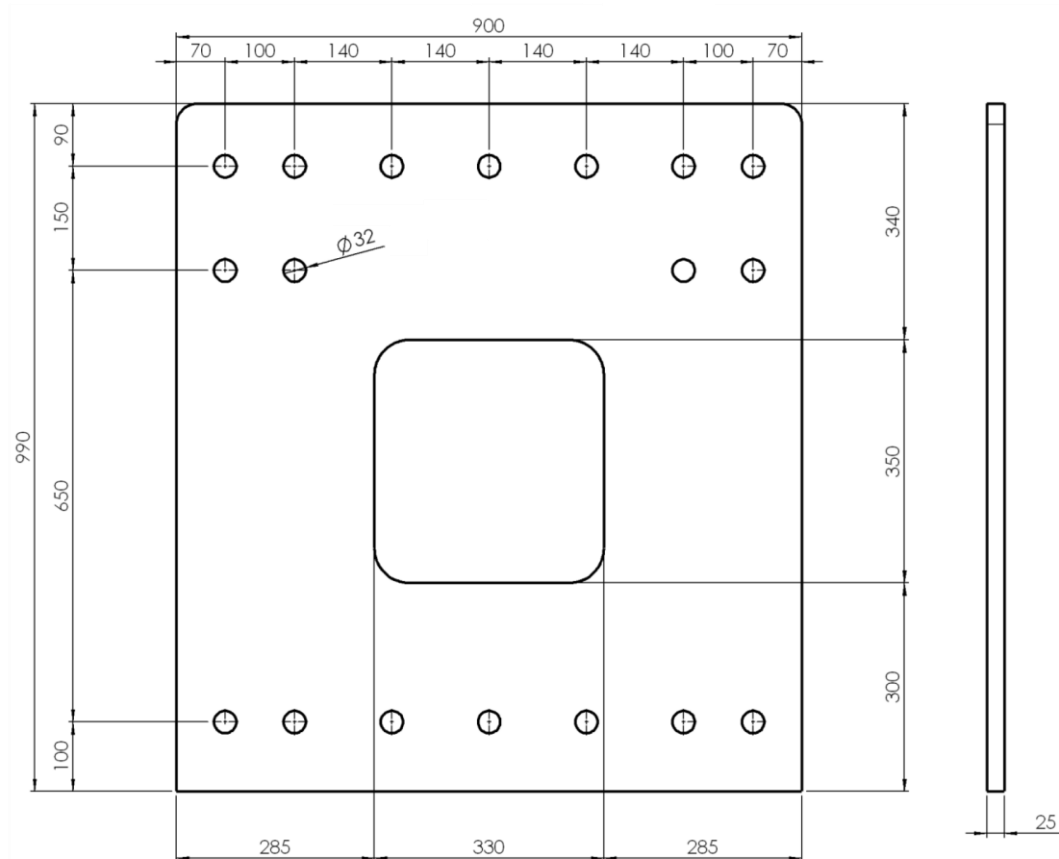
Evo - Crusher

TOP PLATE Evo 47 HD

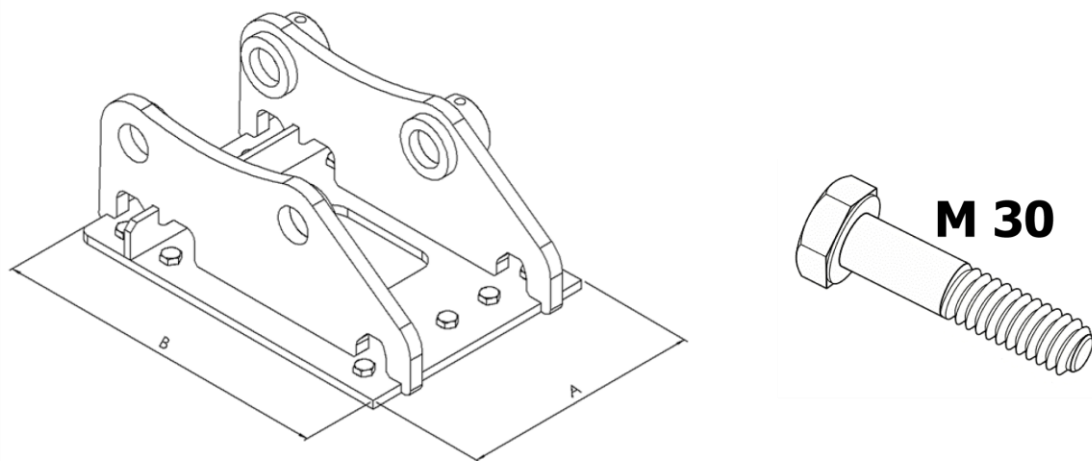


To protect the safety of the machine and its operators, we advise the purchase of the saddle attachment either directly from our company or from your distributor. If the saddle attachment is constructed by unauthorized users, Evo-Crusher will not hold itself responsible for any damage that might ensue.

ARM

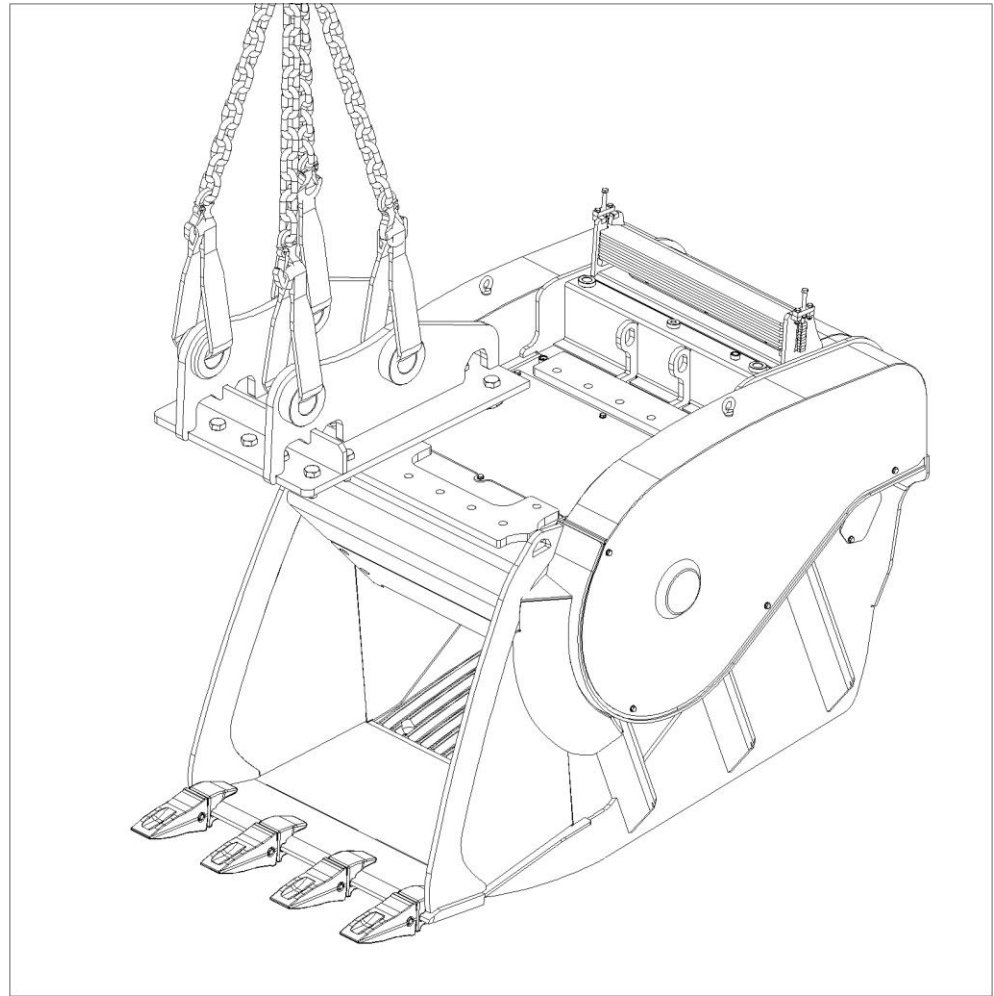


LEVER

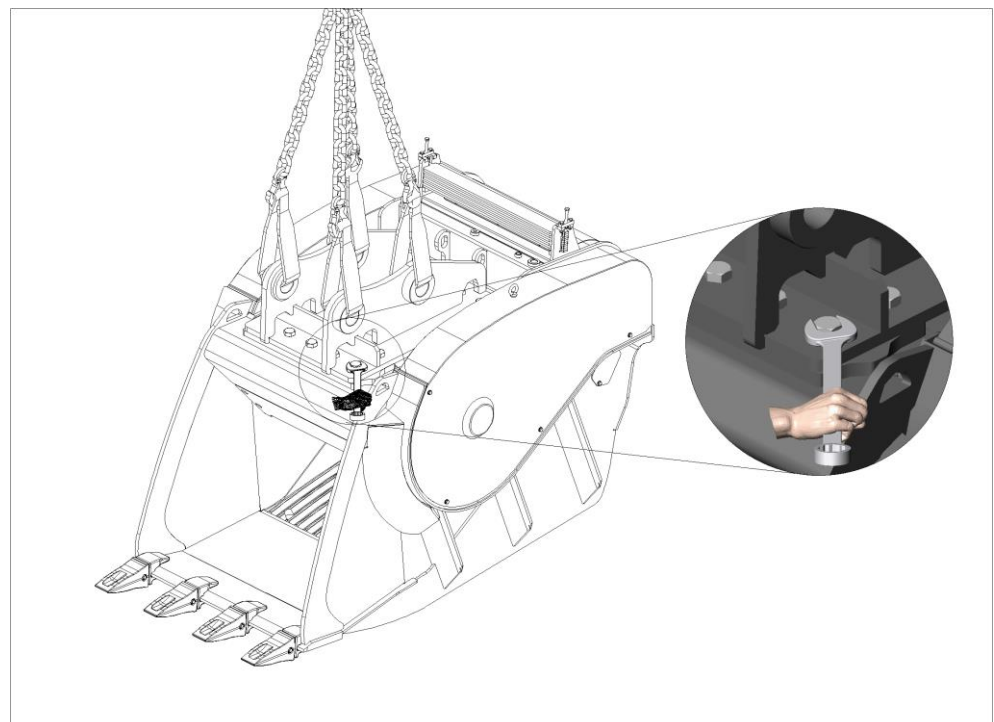


HITCH ASSEMBLY

Position the equipment as shown in the figure and, using suitable lifting gear, approach the holed adapter plate to the machine



After positioning the holed adapter plate on the attachment plate of the machine, insert the bolts and tighten them with a spanner. Repeat the operation 2/3 times to ensure they are properly tightened.



Evo - Crusher

INFORMATION REGARDING DISMANTLEMENT

DEMOLITION OF THE MACHINE



If you ever decide to scrap the machine, you are advised to render it inoperable by dismantling the various components. All the dismantling process must be carried out by specialized personnel. Every time the machine is moved around on the demolition site, a suitable means of transport must be used, with a carrying capacity greater than the weight of the machine.



Empty the machine completely of all its oil content.

INFORMATION OF ENVIRONMENTAL CONCERN



Disposal of the packaging materials associated with the machine, as well as substitute parts and lubricants, must be carried out with respect for the environment, avoiding pollution of soil, air and water. It is the responsibility of the consignee to ensure that the operation is executed in full conformity with the current regulations of the country where the machine is put to use.

ADVICE REGARDING THE PROPER TREATMENT OF WASTE MATERIAL

- Ferrous material, such as aluminium and copper: to be treated as recyclable material and taken to an official collection center.
- Plastic and rubber materials: these materials should be taken to the scrap-yard or official recycling center.
- Oil waste: to be taken to an official center for the collection of oil waste, to be properly destroyed.
- Never tip oil waste into drains, rivers etc.
- Never discharge oil waste straight onto the ground.
- Comply fully with the laws and regulations regarding the treatment of dangerous substances such as oil, fuel, solvents used filters and batteries.



