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INS.3.1.1

# PROMET III-Locking for Cast Lip Shrouds

Installation procedure

## DISCLAIMER



**Liability:** To ensure the correct use and handling of the MTG products without risk, please carefully read the corresponding service instructions set out on the MTG website. MTG will not be held liable for damages, loss, injury, or death arising from incorrect use or failure to heed the provisions of this guide. Similarly, MTG will not be held liable for damages caused due to the faulty installation or handling of its products. MTG likewise declines all liability for recommendations related to the use or handling of MTG products set out in documents not expressly authorized by MTG.

## 1. SAFETY

The practices described in this manual can be taken as guidelines for operating safely in many conditions and in addition to the safety standards that are current and enforceable in your area or region.

Your safety and the safety of third parties is the result of putting into practice your knowledge of the correct operational procedures.

Attention, when performing the work described in these instructions, always work safely and use the personal protection elements required to minimize or avoid injury. Always wear:

HARD HAT | SAFETY GLASSES | EAR PROTECTION | STEEL TOED BOOTS | PROTECTION GLOVES

To avoid eye injury, always wear safety goggles or a protective mask when using any equipment, hammer or similar tool. When equipment is under pressure or when objects are struck, chips or other debris can be thrown out. Make sure no one gets hurt by the debris that is fired before applying pressure or hitting an object. Wear eye protection that complies with ANSI Z87.1 and OSHA standards. Also wear hearing protection and gloves.

Lifting a heavy object can cause serious or fatal injury. DO NOT exceed the maximum rated capacity of lifting and positioning devices: Stay away from the area under a suspended load.

Make sure that the chain is not damaged and that the load is always balanced.

LIFTING LUG

## 1.1 APPLICATIONS WITH GET DETECTION INSTALLED

**Be aware:** The MFS unit contains an internal Lithium battery. When performing hot works near the sensor, the temperature at the sensor location must never exceed 130ºC (266 °F).

**Hazard Details:**

• Maximum Temperature Limit: The internal lithium battery is strictly rated for a maximum operating temperature of 130ºC (266°F).

• Safety Risk: Hot works (including welding, cutting, gouging, or grinding) applied near the equipment can cause localized temperatures to rapidly spike. Exposing the sensor to temperatures above 130ºC (266°F) may compromise the housing and damage the battery, creating a safety hazard.

**Required Preventive Actions:**

To ensure safe operation during hot works in the vicinity of the sensor, you must adhere to one of the following protocols:

• Monitor Temperature: Continuously verify that the temperature at the exact location of the sensor remains below 130ºC (266°F) throughout the duration of the work.

• Remove the Sensor: If the temperature at the sensor location cannot be actively monitored or guaranteed to stay below the limit, the MFS unit must be removed from the area before work begins.

**Overheating Protocol:**

If a sensor is inadvertently exposed to excessive heat or direct hot works:

1. Immediately cease the hot works.

2. Do not touch the unit. Allow the sensor to cool down naturally to ambient temperature.

3. Only manipulate or remove the sensor after it has fully cooled.

4. Do not reuse the unit. Any sensor that has been exposed to temperatures exceeding 130ºC (266°F) must be disposed of and replaced.

**Disclaimer:**

Failure to adhere to these temperature limits or removal procedures violate safe operating guidelines. The manufacturer assumes no liability for injury, equipment damage, or system downtime resulting from a failure to follow this safety directive

## 2. WELDING

Following is a quick reference on consumables that can be used to weld MTG products. For a complete reference on welding procedures, refer to the document entitled "General welding recommendations".

**WELDING UNALLOYED FILLER CONSUMABLES**

| PROCESS | EN CLASS | AWS CLASS |
|---|---|---|
| **SMAW** | EN ISO 2560-S E42X | E70X ACCORDING TO A5.1 OR EQUIVALENT UNDER A5.5 |
| **GMAW** | EN ISO 14341-A G42X | E70C-X ACCORDING TO A5.18 OR EQUIVALENT UNDER A5.28 |
| | EN ISO 14341-A G46X | E70S-X ACCORDING TO A5.18 OR EQUIVALENT UNDER A5.28 |
| **FCAW** | EN ISO 16834-A T42X | E7XT-X ACCORDING TO A5.20 OR EQUIVALENT UNDER A5.29 |

**WELDING AUSTENITIC STAINLESS FILLER CONSUMABLES**

| PROCESS | AWS CLASS |
|---|---|
| **SMAW** | E307-X ACCORDING TO A5.4 |
| **GMAW** | ER307T-X ACCORDING TO A5.22 |
| | ER307 ACCORDING TO A5.9 |
| **FCAW** | 307-X ACCORDING TO A5.22 |

**NOTE: "X" MAY STAND FOR ONE OR SEVERAL CHARACTERS**

## 3. IMPORTANT

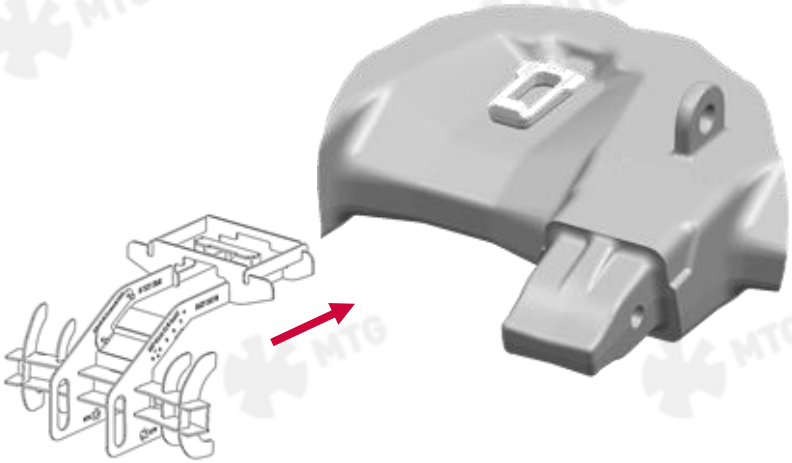
Read the full document prior to start any operation since there may be some steps which may require previous verifications/operations.

These instructions are a generic procedure for all lip shrouds installed on MTG TWINMET cast lip, regardless of lip size and shroud width.

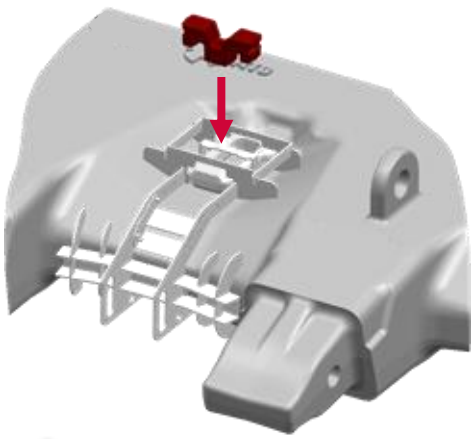
This procedure is only valid for the positioning of the weld-on base on TWINMET style lips, not HD style.

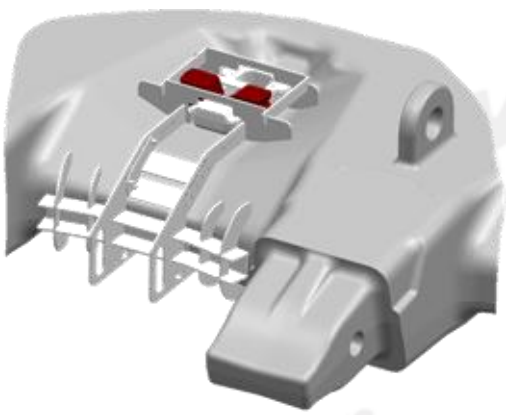
## 4. WELD-ON BASE POSITIONING WITH THE CAGE GAGE

**4.1** Place the weld-on base laying on the lip shroud station as the picture shows and insert the cage gage completely through the weld-on base.

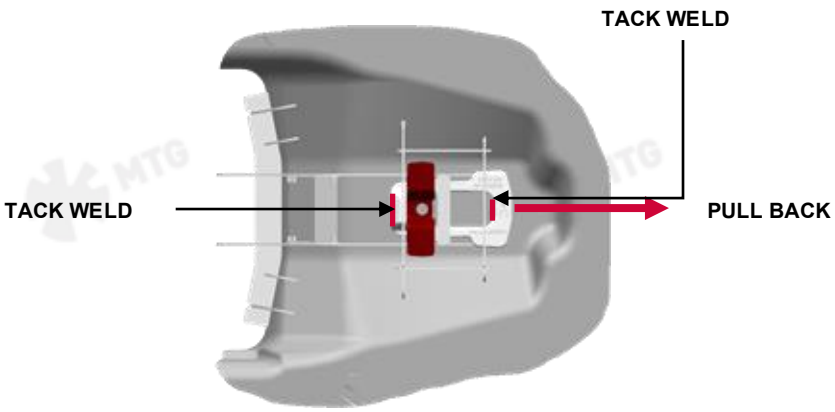


**4.2** Insert the mechanical block between the weld-on base and gauge making sure the “FRONT” text on the block is facing away from the bucket.





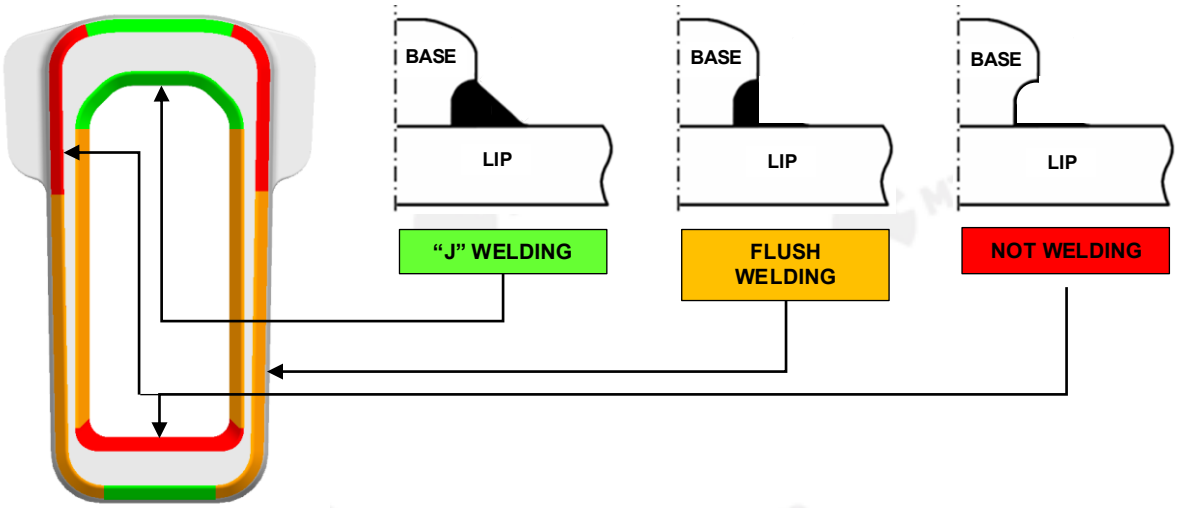
**4.3** Pull the weld-on base firmly back. In this position and without stop pulling the base backwards, apply tack welds in the indicated areas, always making sure, that the base makes perfect contact with its lip support surface. Prior to tack welding, both the base and the lip should have been preheated to a temperature between 175ºC and 200ºC (347ºF and 392ºF) in an area of 100mm (4”) around the area to be welded.



**4.4** Remove the mechanical block and the gauge, in order to start with the welding of the base.

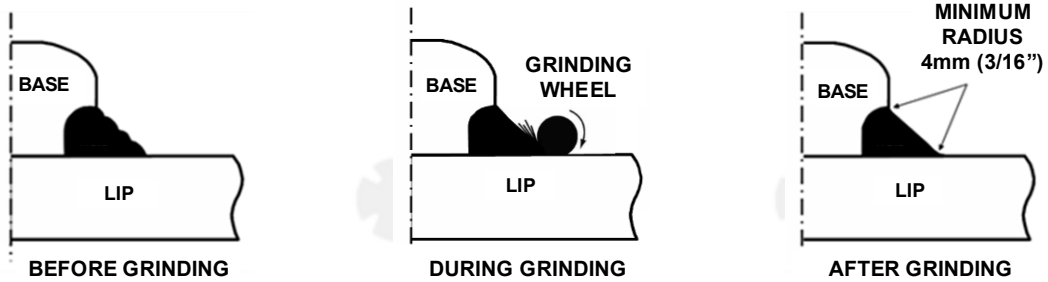
**4.5** Before proceeding with the welding, verify that both the base and the lip are still at a temperature between 175ºC and 200ºC (347ºF and 392ºF) in an area of 100 mm (4”) around the area to be welded.

Proceed with the welding of the base by filling the welding grooves according to the color code indicated in the following figure. Do not weld outside the marked areas or exceed 250ºC (482ºF) during the welding process.




BASE BOTTOM VIEW

**4.6** Once the welding is finished, it must be ground. Grinding shall produce a smooth surface free of roughness and unevenness associated with the weld beads. The toes of the welds shall merge smoothly with the lip and the base with a minimum radius of 4mm - 5/32 in.




BEFORE GRINDING DURING GRINDING AFTER GRINDING

Grinding shall be done using high speed electric or pneumatic grinders with grinding wheels no larger than 50mm - 2 in. in diameter. ANGLE HEAD OR DISK GRINDERS ARE NOT ALLOWED FOR THIS WORK.

Grinding must be carried out with the outer part of the disc and not with the central part of it. The grinding direction must be perpendicular to the ends of the weld beads as shown in the figure.

Grinding the radio at the toes of the welds is facilitated using cone-shaped grinding wheels. For final grinding, the abrasive may be no coarser than 24 Grit.

4.7 After grinding the welds, it is also recommended to carry out a peening of the weld toes or a high-frequency mechanical impact treatment as described in the document entitled "General recommendations"

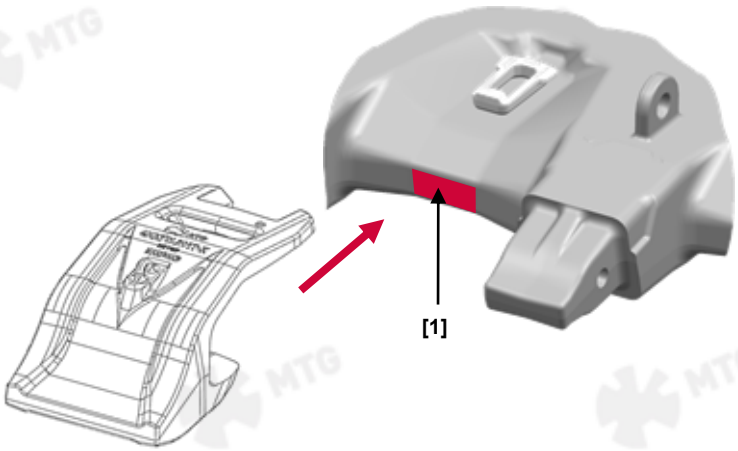
4.8 Finally, all welds should be subjected to a visual inspection and die penetrants, magnetic particles or similar, as described in the document entitled "General welding recommendations". Any weld cracks detected must be cleaned and repaired.

## 5. WELD-ON BASE POSITIONING WITH A SHROUD

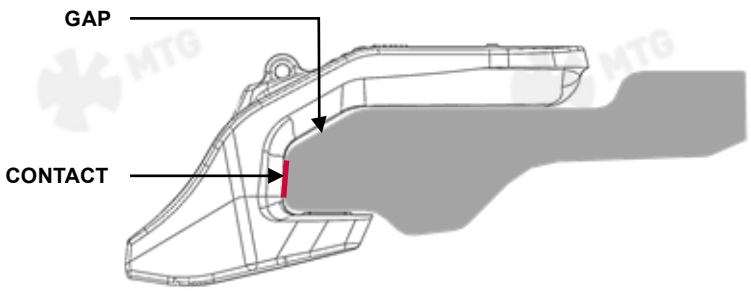
The positioning of the weld-on bases with a shroud is indicated when the gauge to carry out the operation is not available. However, if an appreciable level of plastic deformation is observed on the front of the shroud station, the best option to place the base is with the gauge, in order to rebuild that area prior to the installation of the base.

**5.1** Place the weld-on base on the top surface of the shroud station. Check the correct orientation of the weld-on base.

**5.2** Place the weld-on base resting on the lip shroud station top surface being sure that it is correctly oriented. Then insert the shroud into the lip shroud station being sure that the weld-on base pass through the guides in the shroud. The shroud must be in frontal contact with the blunt of the lip [1].

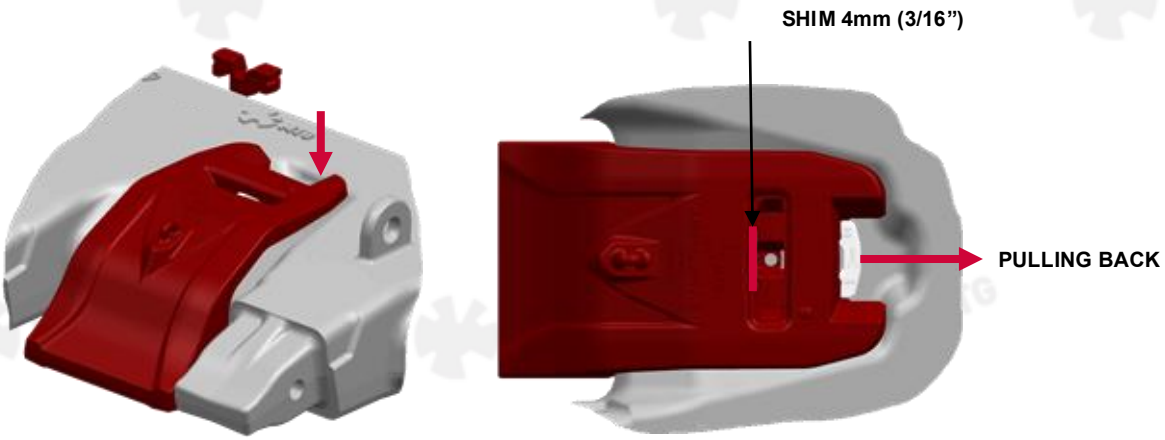



The shroud should make contact where indicated and there should be some space between the shroud and the lip bevel. If the shroud contacts the bevel, it will be necessary to rebuild the lip using a MTG gauge. To perform the reconstruction/recalibration of lips, it is mandatory to follow the MTG reparation instructions which describe the proper procedures for recovering the lip geometry by using MTG gauges. Please contact technical.services@mtgcorp.com for further information.

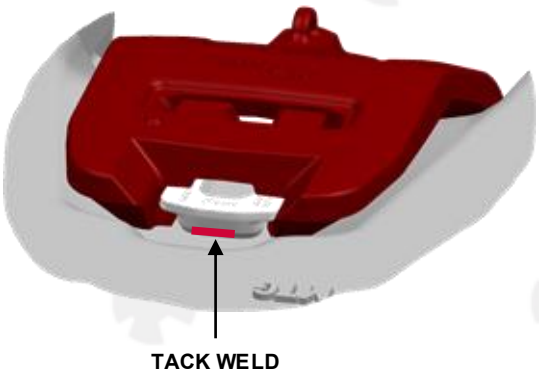


5.3 Insert the mechanical block into its housing between the shroud and the weld-on base, making sure that the “FRONT” text on the block faces away from the bucket.

5.4 Place a 4 mm (3/16”) shim in the front part, between the weld-on base and the mechanical block as shown in the image. Finally, pull the weld-on base backwards using a pry bar or similar.



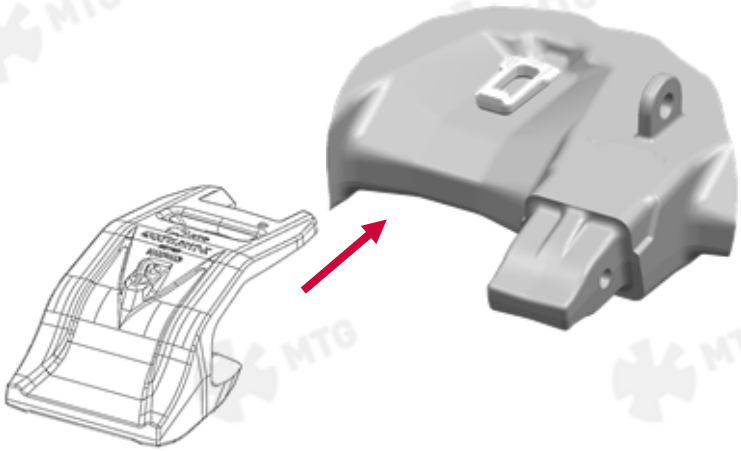

5.5 Tack weld the weld-on base to the lip to keep it in its correct position. Before doing so, it is necessary to preheat the weld-on base and lip to a temperature between 175ºC and 200ºC (347ºF and 392ºF) in an area of 100 mm (4”) around the area to be welded. Once the correct temperature has been reached, pull the base back using a pry bar or similar as described in the previous step and tack weld in the area shown in the following image.




5.6 Remove the mechanical block and the shroud. Verify that both the base and the lip are still at a temperature between 175ºC and 200ºC (347ºF and 392ºF) in an area of 100 mm (4”) around the area to be welded and proceed with the welding of the base as described in steps 4.5 to 4.8 of the previous section.

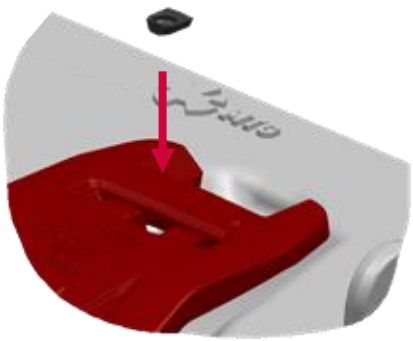
## 6. INSTALLATION PROCEDURE

**6.1** Insert the lip shroud into its station through the weld-on base with the help of a crane and the lifting lug.

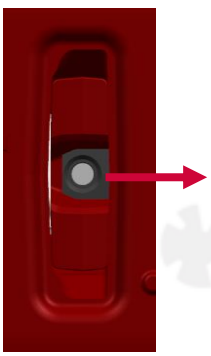


**6.2** Insert the mechanical block into its housing between the shroud and the weld-on base, making sure that the “FRONT” text on the block faces away from the bucket. At this time, the shroud can no longer move.

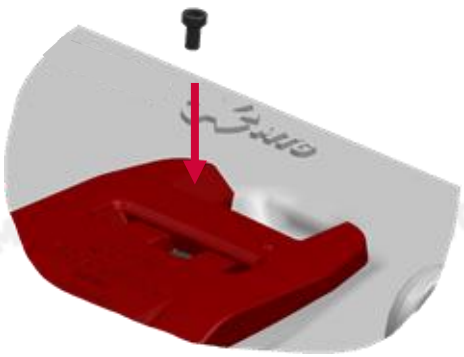
**6.3** Insert the locking plate on its housing into the mechanical block and slide it towards the inside of the bucket until its hole and the one on the mechanical block are concentric. Then insert the bolt and screw it until a torque of $\mathbf{300}^{\pm 50}$ **Nm** ($221{,}3^{\pm 37}$ lbft). Finally, insert the plug into the bolt´s head to prevent it from dirt.



**INSERT LOCKING PLATE**



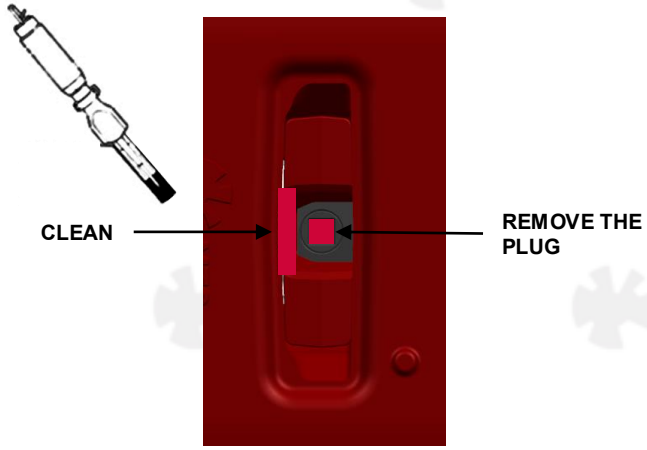
**SLICE THE PLATE**



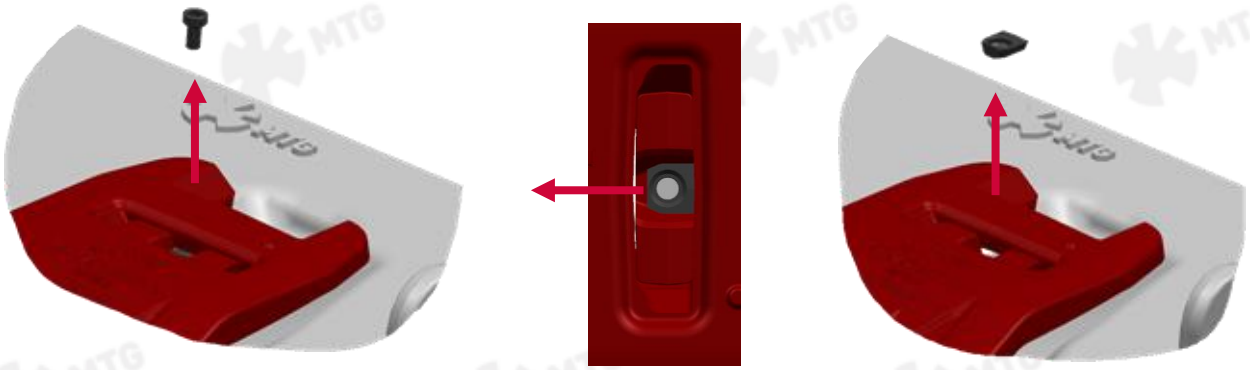
**INSERT THE BOLT AND SCREW IT**

## 7. REMOVAL PROCEDURE

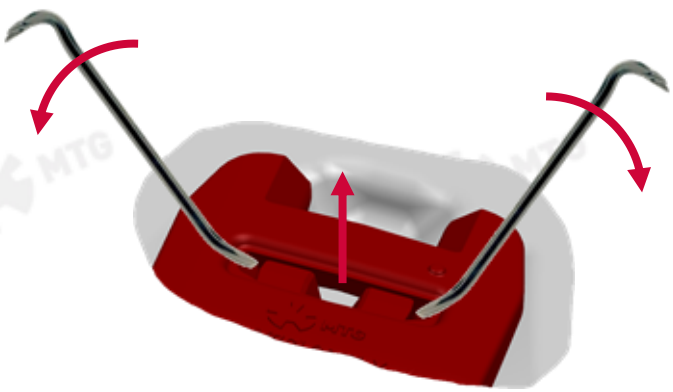
**7.1** Clean the fines stuck behind the locking plate by means of a needle gun. Then, remove the plug from the bolt´s head and unscrew the bolt until release it. An electric or pneumatic rattle gun can ease the operation.



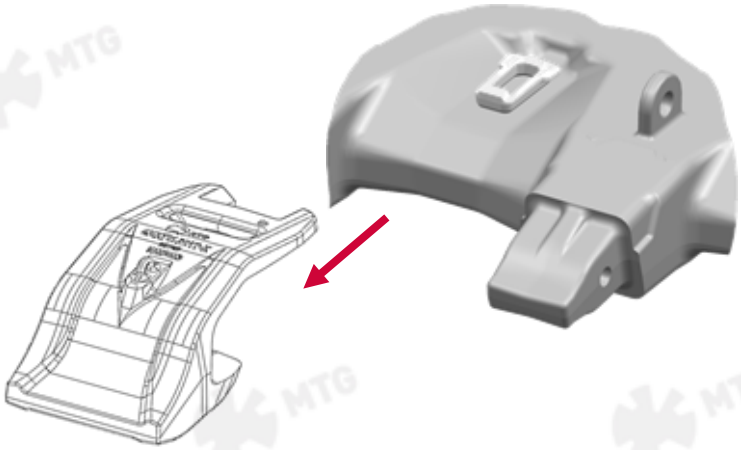

**7.2** Remove the bolt, slide the lock plate back and remove it. Additional cleaning may be required to ease the operation.




**7.3** Extract the mechanical block with the help of a pry bar or similar. Alternating levering movement from both sides will make the operation easier.



7.4 Weld a lifting eye to the shroud and pull it out by means of a crane.



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## Service Instructions

The latest welding recommendations and assembly / disassembly instructions can be found online:
www.mtgcorp.com/manuals

Please contact Technical Services in case of questions:
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