

LAARMANN[®]

Innovators in Solids



LMFC250 FINE CRUSHER USER MANUAL

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1.1 Test Sheets, Declarations of Conformity and specification

Please see the Declaration of Conformity located as last page in this manual.

Use these documents for information on testing and conformance when installing, commissioning and maintaining this equipment.

LAARMANN Equipment Manual

Equipment Type: Jaw Crusher

Model: LMFC 250

Model	Item Code	Voltage	Item Code	Voltage
LMFC 250	105200	380-415 V 50 Hz	105203	380 V 60 Hz
	105201	440 V 60 Hz	105204	600 V 60 Hz
	105202	220 V 60 Hz		

Other configurations available on request

The LMFC 250 model depicted in this manual is: Item Code 105200

Revision History

Revision	Date	Page/s	Description of Revision	Approved
A	October 2012	All	All Issued of New Format	GVL
B	June 2013	All	Issued of New Format	GVL

1.2 Commercial Summary

1.2.1 Warranty - Machines

LAARMANN GROUP B.V. (LAARMANN) warrants that upon payment in full for the manufactured goods it shall give good title of the goods to the Customer and that the goods shall be free from defects of material and workmanship, except such defects as are normally regarded as being commercially acceptable.

Any warranty claim must be made within the earlier of 12 months from the date of initial operation, or 12 months from the date of dispatch from LAARMANN.

1.2.2 Warranty - Wear Parts

Each wear part returned to LAARMANN is thoroughly inspected and evaluated by our workshop staff. If it is determined beyond reasonable doubt that a wear part failure has been exacerbated by careless work practices or incorrect installation, the warranty claim will be invalid.

Any warranty claim on wear parts is dependent on the cause of the premature failure being faulty workmanship and/or materials by LAARMANN and providing the parts have been installed and operated in accordance with LAARMANN's guidelines stated within this manual.

1.2.3 Limitation of Liability

LAARMANN does not give any other warranty. Any warranty that is implied by law that can be excluded is excluded. If it cannot be excluded, any liability that LAARMANN might incur from such warranty, in the case of the goods, is limited to any one or more of the following:

- The replacement of the goods or the supply of equivalent goods.
- The repair of the goods.
- The payment of the costs of replacing the goods or acquiring equivalent goods.
- The payment of the costs of having the goods repaired.

LAARMANN shall not be liable for the cost of removal or reinstallation of materials or any unauthorized warranty work, nor shall LAARMANN be responsible for any transportation cost, unless expressly authorized in writing by LAARMANN.

Except where required by mandatory operation of law, LAARMANN will not be liable for any personal injury, indirect, special or consequential loss or damage (including loss of profits, loss of opportunity or business interruption), suffered by the Customer or any other person arising directly or indirectly out of the goods supplied by LAARMANN.

1.2.4 Warranty – Spare Parts

LAARMANN warrants that upon payment in full for any spare parts, it shall give good title of the goods to the Customer and that the goods shall be free from defects of material and workmanship.

1.2.5 Manufacturing Data Records

LAARMANN warrants that upon payment in full for any spare parts, it shall give good title of the goods to the Customer and that the goods shall be free from defects of material and workmanship.

1.2.3 Contact Information

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1.3 About this Manual

1.3.1 Duty of Care

Duty of care is incumbent upon all employees and supersedes all regulations, OEM and company/site specific requirements.

The client/end user is responsible to ensure that:

- Operators and maintainers are provided with, and use all relevant and appropriate safety equipment and PPE (Personal Protective Equipment).
- Operators are trained and competent.
- Maintenance personnel are trained and competent.
- The equipment is maintained to a high standard.

1.3.2 Safety Information

MSDS Warning

Ensure that, prior to operation of this equipment, all operators and maintainers read the Material Safety Data Sheets in Section 10 of this Manual for any Lubricants used in this machine

The following two (2) tables (**Warning** and **Note**) will generally only be used in the Installation, Lubrication, Maintenance and Workshop parts of the manual. They will always appear as shown with the word **Warning** or **Note** followed by the nature of the **Warning** or **Note**.



Warning: Personnel Danger/Hazard – or unspecified cautionary note



Note: Machinery Damage/Hazard – unspecified hazard or cautionary note

1.3.3 Personal Protective Equipment (PPE)

The following table contains all the necessary Personal Protective Equipment (PPE) which may be required to be used. Each section - Installation, Lubrication, Maintenance and Workshop - will have an individual table showing what minimum PPE is required for that step or section.

Minimum Personal Protective Equipment (PPE) required while working on the LMFC 250 Crusher



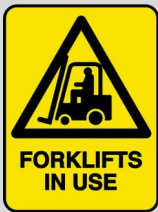
A	Eye protection must be worn	F	Lock the cover
B	Foot protection must be worn	G	Aisle must be kept clear i.e. work area
C	Head protection must be worn	H	Hearing protection must be worn
D	Hand protection must be worn	I	No Smoking
E	Dust mask must be worn		



Beware of moving machinery



Pinch point



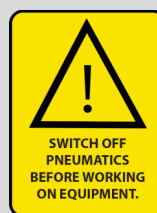
Fork lift hazard



Switch off power before working on equipment. As per Client/Owner isolation procedures















Sharp edges, watch your fingers



Switch off pneumatics before working on equipment. As per Client/Owner isolation procedures

1.3.4 Definition of Symbols Used

The following table shows other symbols that may be used throughout this manual. They will always appear under the first heading, General Safety Rules.

Symbol	Definition	Action Required
	Assistance is required	The required task should be undertaken by two (2) or more people
	Look	Check for abnormalities, leaks, color deterioration caused by heat or other conditions
	Listen	Check for air leaks, abnormal or unusual noise, vibration
	Touch (Limited)	Keep away from any moving parts, vibration, hot surfaces, etc.
	Smell	Check for leaks, burning
	Measure Temperature	Using hand held Infrared or Laser equipment, or permanently installed gauges
	Measure Pressure	Using permanently installed gauges
	Measure in mm	Using appropriate measuring tool
	Record	Take notes or complete a form for addition to the MMS
	Adjust	Check adjustments and/or torque settings
	Special Tools	Special tools are required, (i.e. torque wrench)
S	Specialist Contractor	Specialist Contractor required
	Permits are required	For hot work, confined space, working at height, etc.

1.3.5 Definitions and Abbreviations

Shall / Must	the words “shall” or “must” is to be understood as mandatory
Should	The word “should” as recommended but non-mandatory
JSA	Job Safety Analysis
MMS	Maintenance Management System (paper or computer based).
kg	Kilograms
kW	KiloWatts
Nm	Newton metres
lb	Pound
kPa	KiloPascals
P.S.I	Pounds per Square Inch
CFM	Cubic Feet per Minute
mm	Millimetres
m	Metres
XX”	Inch symbol
V	Volts
Hz	Hertz
A	Amps
dBA	Decibel (usually measured at 1 metre from the source)
OEM	Original Equipment Manufacturer
Fig	Figure
I/O	Input/output, refers to the communication between information processing systems
AWST	Australian Western Standard Time
AWDT	Australian Western Daylight Time
PLC	Programmable Logic Controller
ISPM 15	The 'International Standards for Phytosanitary Measures Publication No.15: Guidelines for Regulating Wood Packaging Material in International Trade'

1.3.6 Special Characters

Brackets: All sizes and pressures are metric units, i.e. mm or kPa. Where imperial units have been included they are shown in normal brackets, i.e. 15.8 mm (5/8”). It may also be a clarification of a number, i.e. two (2).

Square Brackets: [] Indicate an Item number. These are generally associated with an exploded drawing in the parts section of this manual. The Square Brackets [] will always be preceded by a Figure (Fig) number associated with that part.

1.3.7 Outline of Manual

The content of this manual contains important information for the installation, commissioning, operation and maintenance of the LMFC 250 Jaw Crusher. Included are Spare Parts Lists and procedures to enable the user to purchase and fit items which may be required to routinely maintain and keep the machine in working order.

2.1 General Identifications

The following section contains general information, drawings and lists for use with the LMFC 250 Jaw Crusher.

Views shown in this document are indicative only; always refer to the relevant General Arrangement Drawing of the appropriate machine in Section 2.4 for specific details.

Name of Machine	LMFC250 Fine Crusher
Machine Item Numbers	See Preliminary Information Panel on Page 1-2
Manufacturer	LAARMANN Group B.V.
Ordering Description	Machine: Jaw Crusher Model No: LMFC 250 Item No: 105200, or as above on Page 1-2
Electrical Requirements	Three Phase supply to suit most voltage & frequency ratings
Decibel Rating	~<70 dBA (No material throughput)
Dimensions	640 mm x 990 mm x 1150 mm
Working Mass	900 kg
Shipping Mass	960 kg
Overall Shipping Dimensions	840 mm x 1190 mm x 1350 mm

2.1.1 Name Plate Location

LAARMANN warrants that upon payment in full for any spare parts, it shall give good title of the goods to the Customer and that the goods shall be free from defects of material and workmanship.

2.2 Characteristics of the Machine

LAARMANN manufactures a range of Crushers to suit most applications.

The basic concept of the LMFC 250 Jaw Crusher comprises a fixed jaw plate adjacent to a moving jaw plate, in a V configuration, narrowing to an adjustable gap between the bottom edges of the two plates. The moving plate oscillates back and forth, driven by an eccentric pitman shaft, powered by V belts from a standard electric motor.

The sample material is fed into the large top opening of the jaw plates via a vibratory feeder and is crushed by the oscillating jaw plate as it passes through the narrow gap at the bottom, into a rotary sample divider. For an overview of the key component parts, please refer to Section 5.3 Machine Data, of this manual. For hold down bolt locations, please refer to the General Arrangement Drawing in Section 2.4 and for required site services please refer to Section 4.2, in the Installation Section of this manual.

2.3 Characteristics of the Component Parts

The following details outline general information relating to parts used on the LMFC 250 Crusher.

2.3.1 Electric Motor

7.5 kW, 4 pole, 380-415 V 50 Hz three phase AC, or other power configurations as required.

2.3.2 Gearbox

Not applicable to this equipment.

2.3.3 Pneumatic Equipment

Not applicable to this equipment.

2.3.4 Extraction System

Not applicable to this equipment. Done by customer

2.3.4 Hydrostatic

Not applicable to this equipment.

2.3.5 Safety Devices

For safety purposes, the Crusher cannot operate without the central control box of the complete installation. The crusher will start via the central control box after the dust extractor and sampler have started.

2.3.6 Control Devices

The Crusher cannot be controlled manually.

2.4 Spare Parts Schedules

The sections that follow contain lists of parts recommended to, Commission, Operate and Maintain the LMFC 250 Crusher.

2.4.1 Recommended Commissioning Spares

Not applicable, no commissioning spares are recommended for this machine.

2.4.2 Recommended Operating/Maintenance Spares

The following Spare Parts List shows the parts recommended to be held in stock for 12 months operation and general maintenance of the LMFC 250 Crusher. It does not include parts that may be required during a major overhaul. Refer to the comprehensive Parts List in Section 9 of this manual.

Item	Item No. / Type	Supplier	Quantity	Lead time
Drive Motor	7.5kW-4P-132M-IP55-400/690V-50Hz-B3R	WEG	1	1 Week
V belts	SPB 1615 Id/17x1575 Li B62, antistatic ISO1813	Optibelt	2	1 Week
Jaw plates (Serrated)		LAARMANN	2	1 Week
Liner, side plate LH		LAARMANN	1	1 Week
Liner, side plate RH		LAARMANN	1	1 Week

2.4.3 Recommended Critical Insurance Spares

Not applicable. No critical insurance spares are recommended for this machine.

3 Transportation & Handling

The following section outlines all the relevant storage, transport and handling requirements for the LMFC 250 Crusher.

Minimum PPE used in this section



3.1 General safety rules

Only trained operators of forklifts or cranes are to lift or move the crated or un-crated LMFC 250 Crusher.

3.2 Storage, Transportation and Handling

The sections below outline steps and procedures for the transportation, handling and unpacking of the LMFC 250 Crusher and storage of the machine if required.

3.2.1 Storage

If the machine needs to be stored for any reason, it should be indoors or undercover away from the effects of the weather.

3.2.2 Transportation

The packing crate has a pallet base for ease of access and movement with a forklift. The forklift must have a rated capacity to lift the crated machine.

Please note, under no circumstances are slings or chains to be used to lift the crated machine. Always lift the machine utilizing the recesses in the pallet base with a forklift.

3.2.3 Handling

Always use the forklift to lift and move the Crusher. Placing the Crusher close to the installation point, prior to unpacking, will prevent unnecessary moving and therefore reduce the risk of injury.

3.3 Unpacking

Following is the procedure for unpacking the LMFC 250 Fine Crusher. Please follow these instructions to carefully remove the machine from the transportation packaging.

3.3.1 Packing details

The LMFC 250 Crusher packing crate is manufactured to ISPM15 International Standard. Depending on the destination, the crate may be an open slat type or solid sided. For dispatch from the factory the machine is strapped and bolted to the base of the crate, black poly wrapping is used to protect the machine and the body of the crate is then screwed into position.

Note: The crate must be dismantled, a panel at a time, from the crate pallet base to unpack the machine. Do not lift the upper crate from the machine as this may cause damage to the machine. The Figure below illustrates a typical open slat type of crate.

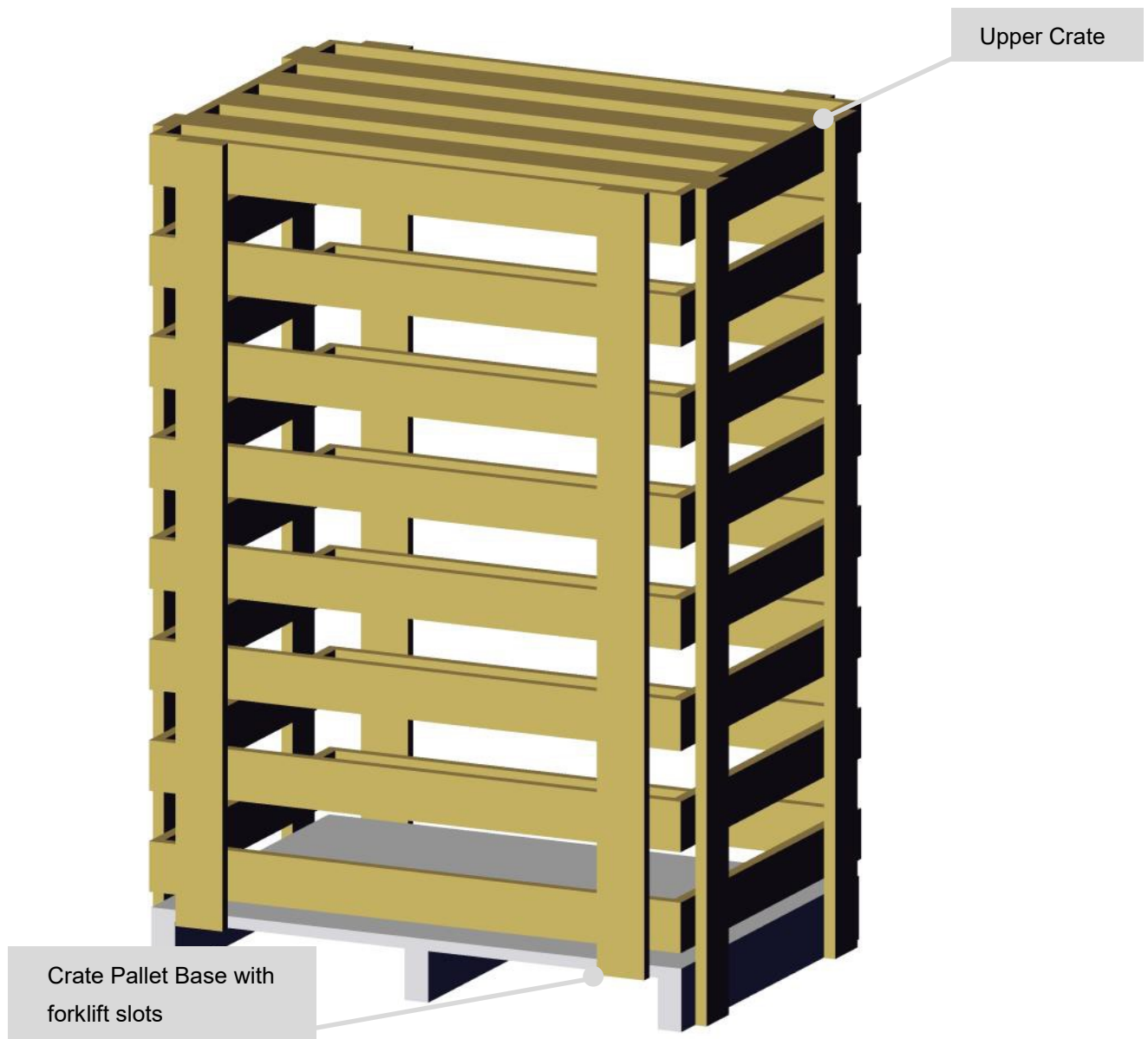


Fig 1. Typical open slat type packing crate.

3.3.2 Special Devices for Transportation

Not applicable, no special fixtures, devices or connections are required. General equipment used must be capable of lifting the weight of this machine.

3.3.3 Upon Delivery

Prior to unpacking, make a visual inspection of the packaging for transit damage.

If any damage is evident, advise the transport company at the time of delivery or take photos and notes to forward to your supplier or LAARMANN in case more serious damage is detected once the machine is unpacked.

3.3.4 Unpacking the machine

Follow the procedure below to unpack the LMFC 250 Crusher. Care should be taken not to break the crate in case it may be required for re-use.

- Ensure a visual inspection upon delivery and take note of any damage that may have taken place.
- Remove the screws that hold the front of the packing crate in place, release the front of the crate and set aside out of the way.
- Remove the top, sides and rear panels of the packing crate.
- Carefully remove the plastic protective wrapping and discard.
- Carefully cut the strapping used to secure the Crusher to the crate base and discard.
- Using a forklift and the lifting eyes provided, carefully lift the Crusher off the crate base.

3.3.5 Movement after Unpacking

Move the machine to the area of installation with suitable lifting equipment with a rated capacity to lift the machine.

3.2.6 Checklist of Supplied Parts

The following list describes the separate items and quantities that are/may be supplied with the LMFC 250 Crusher.

Description	Quantity
Installation, Operation, Maintenance and Spare Parts Manual	1
Gap Adjustment Spanner	1

For any parts required, that do not have an Item Number showing, please contact LAARMANN.

3.2.7 Details for Notification

If any items listed above are not included in the packaging please report the,

- Model number
- Description of equipment purchased
- Date purchased
- Where the equipment was dispatched from and
- A list of the missing items to your supplier, or LAARMANN Group B.V.

4.1 Installation

4.1 General Safety Rules

Minimum PPE



Provision of the following is the responsibility of the end user.

- Electrical supply and isolation procedures conforming to relevant company requirements.
- Control safeguards and operational procedure including start-up and shutdown protocols.
- Implementation of power loss restart.
- Setting and controlling all safety set points and limitation.
- Do not lift the machine by any point other than the lifting eyes or slots provided, unless specifically stated otherwise.
- Only lift the machine by using all of the lifting eyes or slots provided.
- Under no circumstance are the cover handles to be used for any purpose other than opening the covers.



Emergency stop

- Press the emergency stop button to stop the operation.
- Turn the button counter clockwise to reset the emergency stop function.

4.1.1 Vents and Drains

Not applicable

4.1.2 Decibel rating

~<70 dBA (with no material through put)

4.1.3 PPE Required

The correct PPE is to be worn at all times as per company requirements.

4.2 Site Services Required

The following details outline services and other items that may be required on site for the installation of the LMFC 250 Fine Crusher.

4.2.1 Power

The Crusher operates on a power supply of **380-415 V three-phase AC** connected via a three phase plug and socket. Other voltage and frequency configurations are available on request. Contact details for LAARMANN can be found in Section 1 of this document.

4.2.2 Pneumatics

Not applicable

4.2.3 Hydraulics

Not applicable

4.2.4 Water

Not applicable

4.2.5 Footings or Bench/Table/Frame/Platform detail

It is recommended the LMFC 250 Crusher be securely fastened to a concrete floor, using the high stress fasteners provided.

4.2.6 Floor Space

Refer to the General Arrangement drawing in Section 2 of this manual.

4.2.7 Drainage

Not applicable

4.2.8 Dust Extraction

It is recommended the LMFC 250 Crusher be provided with a suitable dust extraction system. There is a 100 mm dust extraction spigot provided at the rear of the machine. Dust extraction for the complete system will be covered by the customer.

4.2.9 Environmental Conditions

The LMFC 250 Crusher is designed for use indoors or under cover out of the elements.

4.2.10 Heating, Cooling or Ventilation

Not applicable.

4.3 Installation of Equipment

The machine comes as a complete unit, so no additional parts requiring installation will be included, unless specifically requested, such as optional extras. Ensure the standard issue of items indicated in Section 3 (Checklist of Supplied Parts) have been received.

4.3.1 Special Tools

No special tools are required for the installation, maintenance or repair of this machine.

4.3.2 Installation Procedure

The correct installation procedure for the LMFC 250 Crusher, being bolted to a concrete floor, is as follows:

- Ensure all site services are correctly measured and placed aside, ready for installation. (i.e. correct cable length).
- Correct measurement and placement of the mounting holes is essential. It is advisable to place the Crusher in position and use the fixing holes in the base frame as a template.
- Drill the required number of holes into the floor to secure the Crusher, suitable for appropriate size.
- Lower the Crusher into place using a forklift and the eye bolts and take care to accurately position the machine. Secure the machine to the floor/platform.

4.3.3 Assembly Instructions

The machine is supplied as a complete unit, no assembly is required.

4.4 Dry Commissioning

Following is the procedure for dry commissioning the LMFC 250 Crusher. Follow these instructions to carefully operate and to test the Crusher.

4.4.1 Pre-Operation

Prior to starting the Crusher, perform the following checks

- Perform a visual check on the machine to check for any damaged or broken parts.
- Check that all electrical connections have been made correctly.
- Ensure the dust extraction system has been installed correctly.
- Check that the hopper and jaw throat are clear of any material or objects that might damage the jaws.
- Ensure that the particle size adjustment lock bolt (46 mm) on the back of the pitman housing is secure with the lock nut.
- Remove the V belt cover and check the drive belt adjustment.
- Remove the flywheel cover and rotate the flywheel by hand to ensure the jaw plates do not touch and jam and that the flywheel freely turns whole revolutions.
- Check that the Crusher is seated correctly on its mounting.

4.4.2 Operation of the Crusher

To manually dry commission the Crusher, follow the procedure outlined below.

- Start and stop the Crusher.
- Run the Crusher without any material for approximately two (2) hours. During this test run check the temperature of the side plates of the machine.

4.4.3 Testing the Crusher

The correct installation procedure for the LMFC 250 Crusher, being bolted to a concrete floor, is as follows:

- Ensure the correct operation of all moving parts.
- Ensure the stop and start buttons operate correctly.
- Check that the Crusher is not unusually noisy during operation.

4.5 Maintenance Required during Dry Commissioning

While monitoring the machine during commissioning, place yourself at a safe operating distance from all moving parts to prevent injury. Ensure no tools or other objects are left on, or around the Crusher during commissioning.

5 Operation

5.1 General Safety Rules

Following is the procedure for dry commissioning the LMFC 250 Crusher. Follow these instructions to carefully operate and to test the Crusher.

Minimum PPE



The following safety rules should be adhered to at all times to ensure the safety of the operator and the correct operation of the machine.

- Lubrication must not be carried out when the machine is running.
- All guards must be fastened in place before the machine is started.
- Prior to starting the machine, check the electrical cables for obvious defects.
- Ensure that the work area is clear of any obstruction or material that may be detrimental to a safe working environment.
- Do not climb or sit on the machine.
- Electrical safety requirements are to be followed as per user's company requirements.
- Wear the following, appropriate personal protective equipment when using the machine:



Gloves



Safety Glasses



Ear Protection



Dust Mask

5.2 Functional Description

5.2.1 Purpose

The LMFC 250 Jaw Crusher is a crushing device for mineral sampling. Depending on the type of material being crushed, approximately 100 kg per hour can be crushed and collected in a tray beneath the jaws. Crushing size can be adjusted to client's specifications, to a minimum of 2 mm particle size.

5.2.2 Basic Construction

The machine is fabricated using standard gauge materials and is painted with a high quality, durable finish.

5.2.3 Principles of Operation

The LMFC 250 Jaw Crusher uses an electric motor to drive the Crusher pitman eccentric shaft, providing an oscillating movement to the moving jaw plate. The moving and fixed jaw plates form a V shape with an adjustable gap at the bottom, thereby crushing the material fed down between the jaw plates, to the gap size. The gap can be adjusted to the required particle size, to a minimum of 2 mm. The crushed material is collected in a tray beneath the jaw plates.

5.2.4 Principles of Operation

When it's installed in an installation, starting and stopping will be arranged by a central control box.

5.2.5 Controls

The LMFC 250 Crusher has electrical, local stop and start buttons on the control box on the right side of the machine, (only when operated as individual machine).

5.2.6 Alarms and Trip Set Points

Not applicable.

5.2.7 Operating Parameters

Parameters for operation of this machine are to be determined by the user's company requirements and are to be specified by others.

5.3 Machine Data

Massa of the machine is around 100kg.
Motor mounted is standard 7,5 kW.

5.4 Operator's Controls

The LMFC 250 Crusher's operation is controlled locally by the operator by using the central control box.

5.5 Operation and Use

The following sections contain important information on the correct procedure for day to day use of the LMFC 250 Crusher. Please be aware of all special conditions and safety messages (displayed in **Red**).

5.5.1 General

The general rules that follow for operation will ensure safe and efficient use of the Crusher.

- Do not load the machine with material of a lump size larger than 110 mm.
- Do not overload the hopper with too much material. Allow the material to feed through at a reasonable rate of about 100 kg per hour.
- Never place hands inside the hopper or near any moving parts while the machine is operating.

5.6 Wet Commissioning, Starting and Stopping

The following steps outline the procedure for correct wet commissioning of the Crusher.

- Perform a visual check on the machine to ensure there are no damaged or broken parts.
- Start the Crusher.
- Ensure the machine is running normally.
- Open the hopper lid and add a quantity of sample material.



Note: Machinery Damage/Hazard – The Crusher must be running before adding sample material. Failure to adhere to this requirement will cause damage to the machine and void the warranty.

- Add more material as required.
- When all the material has been crushed, stop the Crusher and remove the sample collection tray.
- Inspect the resultant material for the desired particle size.

Note: It is advisable to wear the appropriate PPE during the operation of the Crusher, as noted at the beginning of this Section of the manual

5.6.1 Verification

The various procedures that follow provide information on checking and starting the LMFC 250 Crusher, as well as adjusting & stopping the machine.

Prior to starting the machine, perform the following checks and verifications:

- Check the Lubrication Schedule to determine if lubrication is required. If required, perform the relevant lubrication procedure “as outlined in the Lubrication Section of this Manual.
- Carefully check for any loose, worn, missing or broken parts on the machine.
- Check the electrical cables for any damage. Do not use the machine if any electrical cable is damaged. Notify the relevant authority to have the machine tagged and the damage repaired.



SAFETY NOTE: ISOLATE THE MACHINE BEFORE MAKING ANY ADJUSTMENTS. FAILURE TO DO THIS MAY CAUSE SERIOUS INJURY TO THE OPERATOR OR DAMAGE TO THE MACHINE

5.6.2 Start Procedure

Isolation and startup of this machine are as per the user’s company procedures and control systems supplied by others.

Warning

Isolate power before accessing any electrical or mechanical components.

5.6.3 Daily Operation

Prior to operating the LMFC 250 Crusher, ensure the verification procedure above has been performed. Checklists for the operation of this machine are as per the user’s company requirements. While operating the Crusher, perform a general visual check to ensure there are no damaged or broken parts.

Check that all panels are secured and the dust extraction system is correctly attached

5.6.4 Instrumentation Checks.

Not applicable.

5.6.5 Warm Up.

Not applicable.

5.6.6 Checks During Operation

Checks for the operation of this machine are as per the user's company requirements.

5.6.7 Stop Procedure

Stop procedures for this machine are as per the user's company procedures.

5.5.8 Special Conditions of Use

The Crusher must be kept undercover, in a dry area, away from the effects of weather, particularly moisture, at all times.

5.5.9 Preservation and Storage

If the Crusher will not be used for any extended period of time, it should be kept in its original packaging where possible, or wrapped in plastic and stored undercover in a dry area

6 Maintenance

This document outlines important information on the maintenance of the LMFC 250 Crusher in a working environment. Procedures and diagrams are provided to help ensure proper maintenance of the machine.

6.1 Safety during Maintenance Operations

Minimum PPE



SAFETY NOTE WARNING: The machine can start without warning. Isolate power before accessing any electrical or moving components.

Before carrying out any other work on the machine, ensure that the power supply is disconnected and that any relevant isolator is locked out and labelled with a suitable warning notice.

Should it be necessary for maintenance purposes to put the machine into operation, it must be fitted with notices to the effect that it may start without warning; and that under no circumstances are tools, equipment or personnel to be allowed in the vicinity of the moving parts of the machine.

Should access to the moving parts be required for any reason, the motor shall be isolated as described and not reconnected to the power supply until all equipment and tools have been removed and personnel are clear of the internals of the machine.



SAFETY NOTE: Note that the mechanical advantage and efficiency of the machines mechanism is very high. Serious damage or injury will result from this being ignored.

6.2 Preventative/Corrective Maintenance Schedule

The following table indicates checks and adjustments which should be carried out to ensure trouble free use of the LMFC 250 Crusher.

Operation and Location	Every 10 Hours or every shift	Every one (1) Month	Every twelve (12) Months
Overall Machine	Visual inspection for obvious defects		
V belts		Check for correct tension & wear	
Main Shaft Bearings		Check for wear	
Main Pitman Bearing		Check for wear	
Jaw Plates	Check for wear &/or breaks		
Side Liners	Check for wear &/or breaks		
Lubrication		See Lubrication Schedule	
Jaw Plate Draw Bolts	Check that they are secure & not broken		
Floor mountings		Check that Crusher is still secure	

6.3 Wear Limit and Alignment Tolerances

The jaw plates and side liners used in the LMFC 250 Crusher are subject to very abrasive action through normal use. The materials and finishes used are selected to attain the longest possible useful life of these items consistent with efficient operation of the Crusher. However, they do wear out.

Note: The jaw plates are reversible, but the side liner plates are not.

Because different types of material result in different wear characteristics, it is not possible to state a definitive guide to replacement requirements. Visual inspection and inability to attain the minimum jaw gap will indicate the requirement to replace or rotate the jaw plates and side liner plates.

Unusually rapid wear of any crushing component should be referred to LAARMANN for advice.

6.4 Corrective Maintenance Troubleshooting Guide

The Troubleshooting Guide following outlines possible causes to any problems which may occur with the LMFC 250 Crusher. Refer to the Preventative / Corrective Maintenance Work Instructions for details.

Operation and Location	Every 10 Hours or every shift	Remedy
Excessive dust inside machine	Dust extraction hose is disconnected.	Re-connect dust extraction hose.
	Dust extraction hose split or damaged	Replace hose
Excessive dust around the sample collection tray	Dust extraction hose is disconnected.	Re-connect dust extraction hose.
	Dust extraction hose split or damaged	Replace hose
Incorrect particle size being produced	Jaw gap size incorrectly adjusted	Re-adjust jaw gap
	Jaw plates excessively worn	Replace or rotate jaw plates
Material not feeding into Crusher	Product size too large	Feed smaller material
Required jaw gap unattainable	Jaw plates worn beyond gap adjustment ability	Replace or rotate jaw plates
V belts slipping or Crusher not operating	V belts loose or broken	Replace or adjust tension of V belts
Crusher will not start	Loss of power to machine	Restore power to machine

6.5 Preventative / Corrective Maintenance Work Instructions

This section details the steps needed to be taken to rectify the problems outlined in the troubleshooting table above.

6.5.1 Excessive dust inside the machine and Excessive dust around the sample collection tray.

Follow the steps if there is excessive dust inside the machine, or around the sample collection tray.

Step 1

To re-connect the dust extraction hoses, remove the hose clamp from around the hose using a screw driver. Adjust the hose as necessary and secure the hose with the clamp.

Step 2

To replace a dust extraction hose, remove the old hose by removing the clamps using a screw driver. Adjust the new hose as necessary and secure the hose with the clamps.

6.5.2 Incorrect particle size being produced



Warning: Personnel Danger/Hazard – Isolate the machine from all power before making any adjustments or jaw plate inspections. Failure to comply may result in personal injury or damage to the machine and void the warranty.

Step 1

Isolate the machine from all power, as stated above.



Note: Machinery Damage/Hazard – The minimum jaw gap is 2 mm.

Step 2

To adjust the gap, first remove the hopper and flywheel cover and turn the flywheel until top dead centre of the eccentric shaft and jaw movement is found (i.e. jaw plates closest together).

Step 3

Mark a line on the top of the flywheel, adjacent to the grease nipple, with a permanent marker. This will make it quicker to find top dead centre for future adjustments.

Step 4

Using the supplied 46 mm spanner, undo the locknut of the clamp block bolt and then undo the bolt at least four (4) full turns, to enable

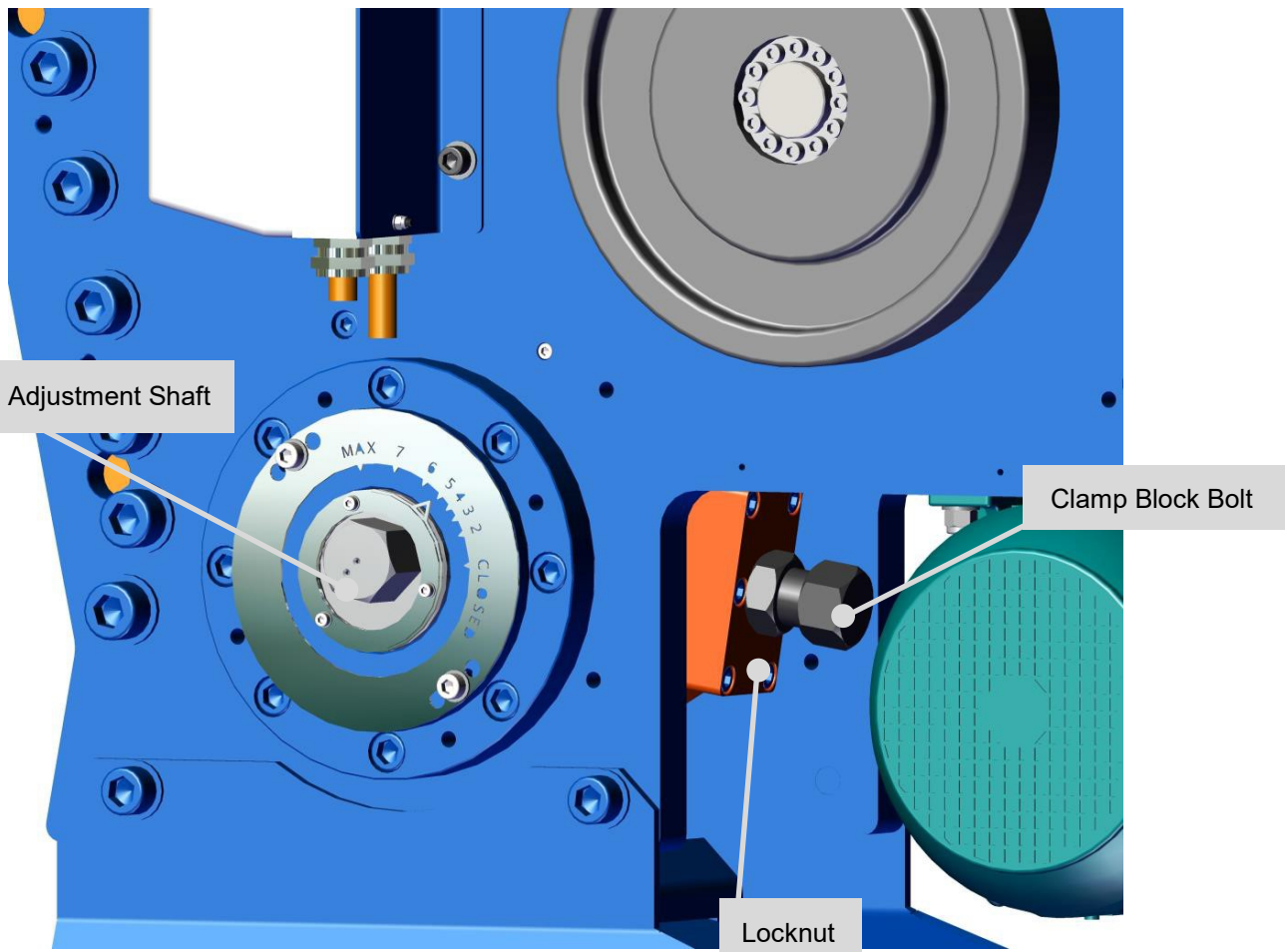


Fig 2. Releasing the bottom adjustment shaft.

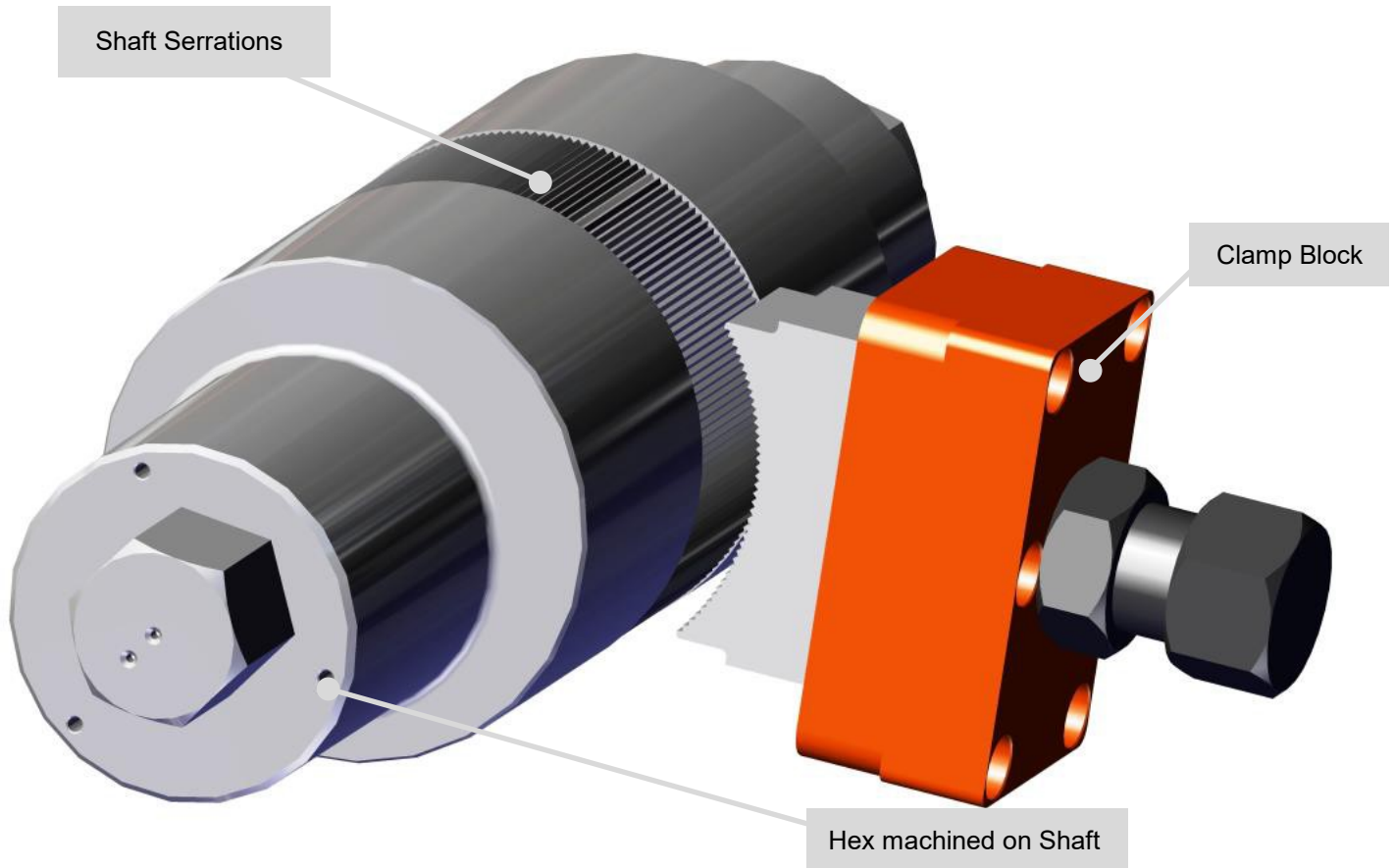


Fig 3. Serrations on the clamp block & shaft.

Step 5

Using the supplied 46 mm spanner on the hex machined on the end of the shaft, turn the shaft until the jaw gap has closed. Undo the three (3) pointer plate screws and turn the pointer to the “Closed” mark on the indicator plate. Re-tighten the three screws.

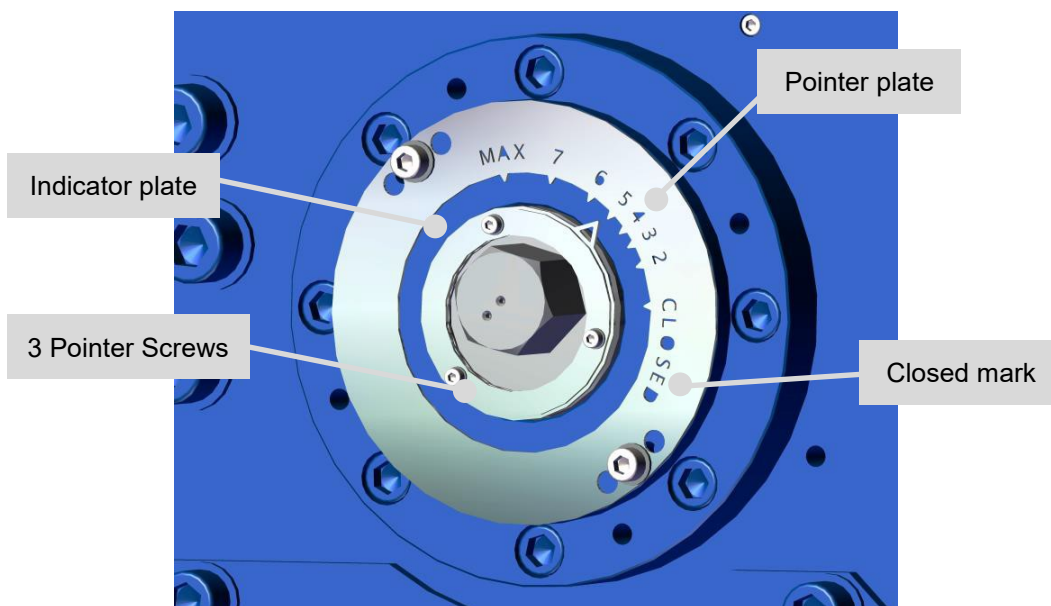


Fig 4. Jaw cap indicator plate. 1

Note: Should you experience difficulty lining up the pointer with the “Closed” mark on the indicator plate, you can remove the pointer plate, turn it over the other way and reinstall it to provide more movement in the screw slots, as shown in the Figure below.

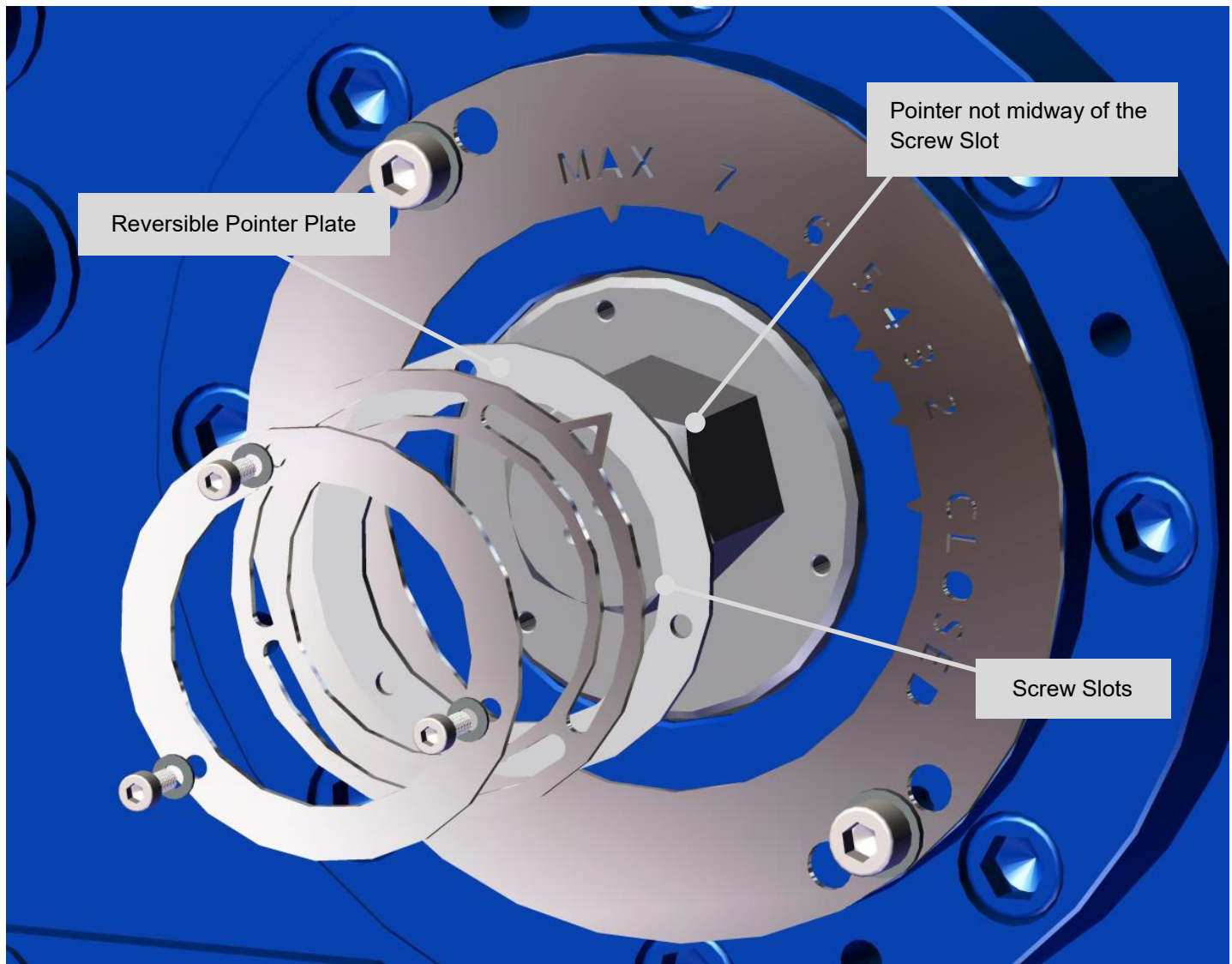


Fig 5. Reversing the pointer plate.

Step 6

Using the supplied 46 mm spanner on the hex machined on the end of the shaft, turn the shaft back until the pointer is lined up with the desired particle size, in mm, on the indicator plate. Use a portable shim (steel plate of appropriate thickness) as a feeler gauge between the bottom edges of the jaw plates to confirm the setting of the jaw plates. The minimum jaw gap for this machine is 2 mm.

Step 7

Remove the shim gauge from the Jaw Plates. With the supplied 46 mm spanner still on the hex on the shaft, turn in the clamp block bolt and feel the serrations on the shaft and the clamp block meshing together as the bolt is tightened. If necessary, rock the shaft slightly with the spanner to ensure the serrations mesh correctly. Nip the bolt up, not too tight and nip up the locknut.

Step 8

Turn the flywheel by hand to check that everything is correct and the jaw plates do not touch and that the gap has remained correct. Reinstall the covers and reconnect the power to crush a sample of material to determine the correct settings for the desired particle size.

Note: Different types of material may crush to variable particle sizes for the same setting. Therefore, fine tuning of the jaw gap may be necessary for different materials.

6.5.4 Material not feeding into Crusher

Check there is no blockage in the feed hopper. Isolate power to clear any blockage and check that the sample size is correct, no larger than 110 mm. On top of the LMFC250 there is a feeder mounted, transporting the ore towards the LMFC250.

6.5.5 Required jaw gap unattainable – Replacing Jaw Plates

Follow the steps, if the required jaw gap is unattainable and the jaw plates and/or side liners need to be replaced or rotated.

Step 1: Ensure the machine is isolated from power, remove the hopper, material deflective plate and flywheel cover and clean the jaw plate area of the machine.

Step 2: Turn the flywheel by hand to open the jaw gap to its maximum opening.

Step 3: Remove the side liner plates by simply levering them free and lifting them out from their position in the frame.

Step 4: Loosen, but do not remove the four (4) long M12 draw bolts in the fixed front jaw plate and the pitman moving jaw plate. Turn out one bolt, of the front fixed jaw plate, completely and then screw it back in three (3) full turns. Undo the other bolt, but stop when the head of the first bolt drops down to reach the top of the front body plate. The front fixed jaw plate and the T clamp supporting it have now been lowered to allow removal of the jaw plate.

Step 5: Repeat Step 4 above for the moving jaw plate to enable removal.

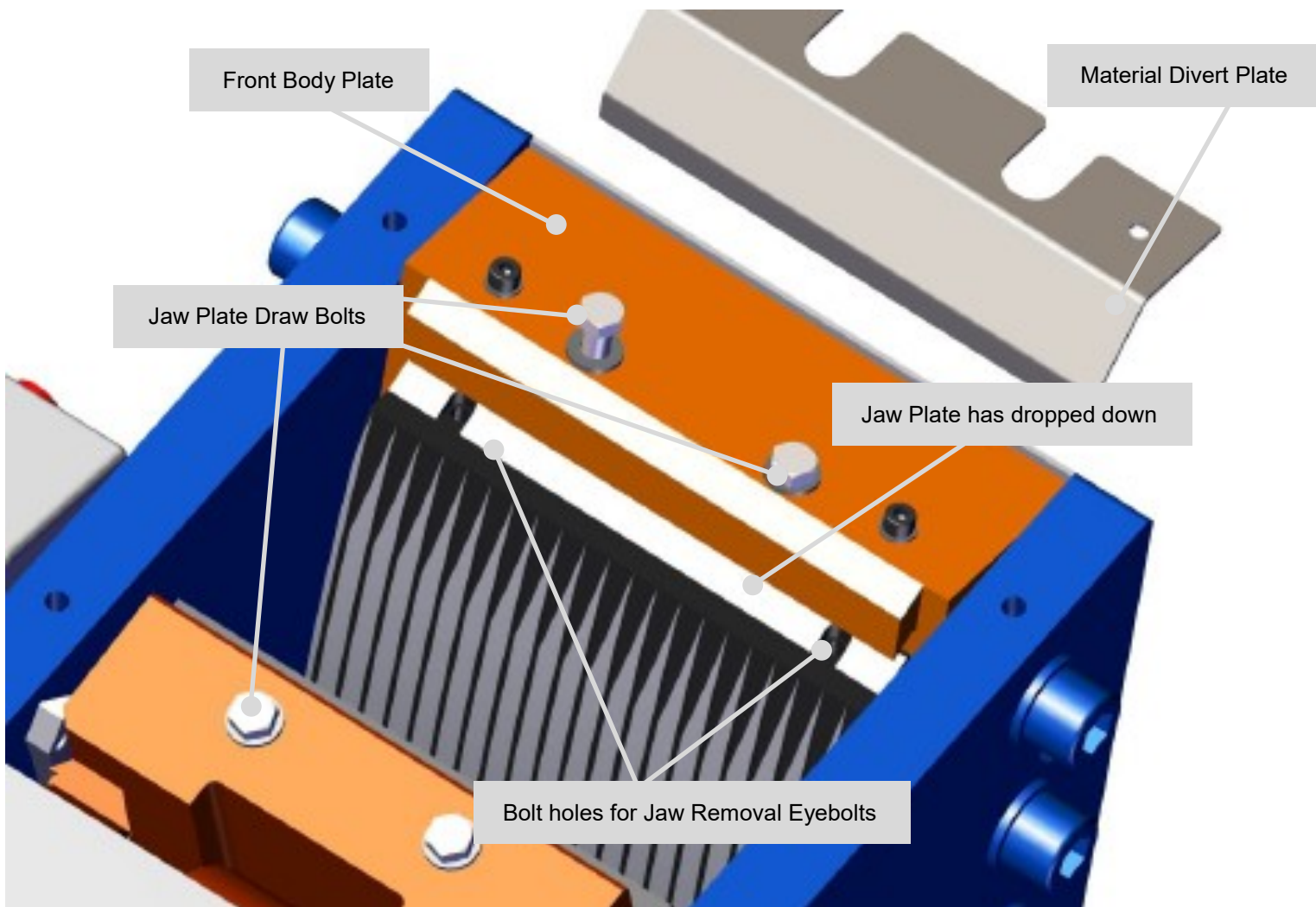


Fig 6. Loosening jaw plate draw bolts.

Step 6: Using two (2) M8 eyebolts, carefully lift the jaw plate out from the Crusher frame leaving the T clamp at the bottom of the draw bolts.

Note: The eyebolts screwed into the top end of the jaw plates make it easier to remove the plates from the machine.



Warning: Personnel Danger/Hazard – Exercise caution when removing the jaw plates to prevent injury. Each plate weighs approx. 25 kg.

Step 7: Repeat Step 6 for the other jaw plate, then thoroughly clean the whole area where the jaw plates and side liners locate, prior to installing new plates.

Step 8: The jaw plates can be rotated only once before being replaced by new ones. Relocate the rotated or new jaw plates into position on the T clamps and draw them up with the draw bolts.

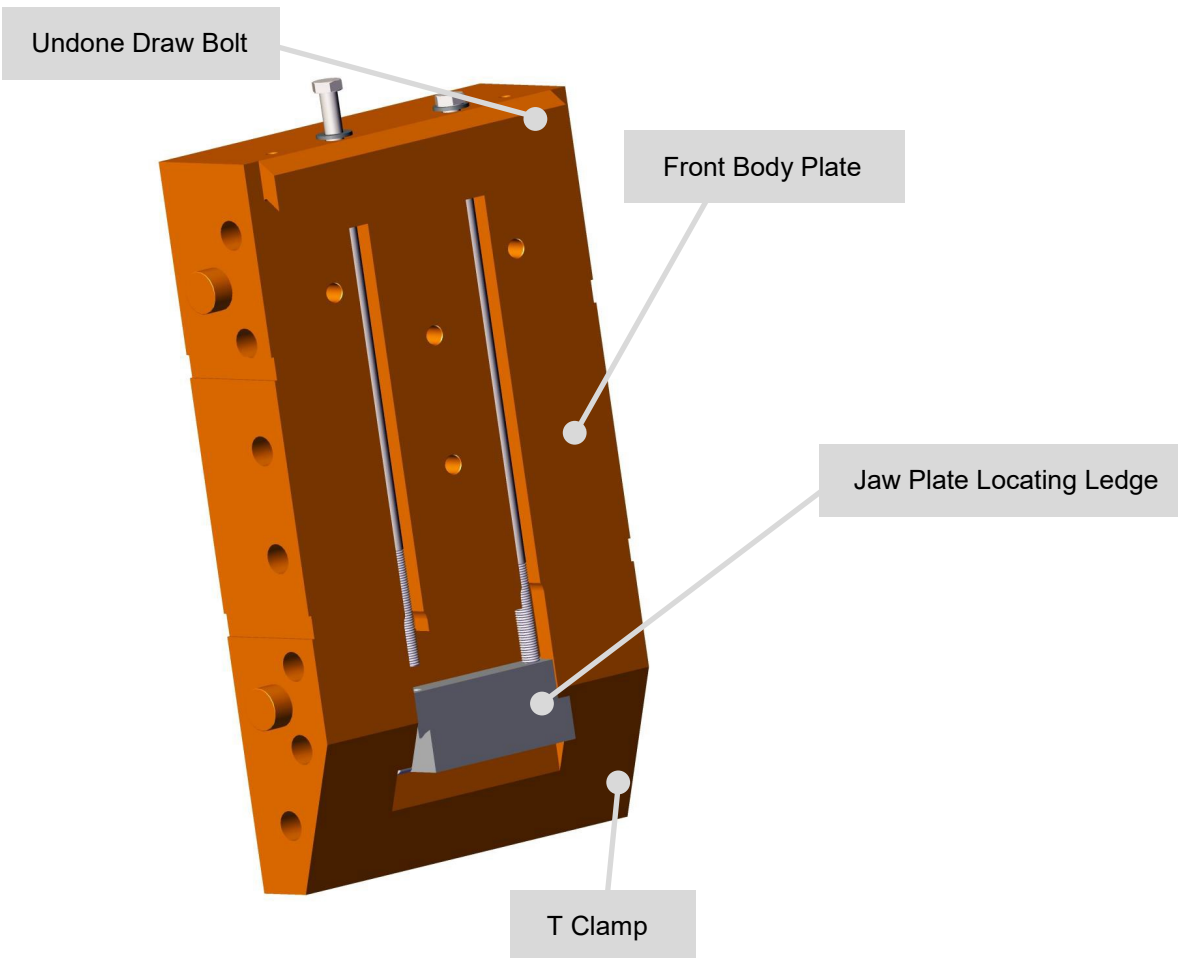


Fig 7. Jaw plate T clamp and draw bolts.

Step 9: The new side liners can only be installed in one direction, as they have a full chamfer on the rear edge towards the moving jaw plate and a half chamfer on the front edge. When located in place, give them a slight tap on top to help them seat properly.

Step 10: Re-adjust the jaw plate gap as per Section 6.5.3, Steps 4 to 8 in this section of the manual.

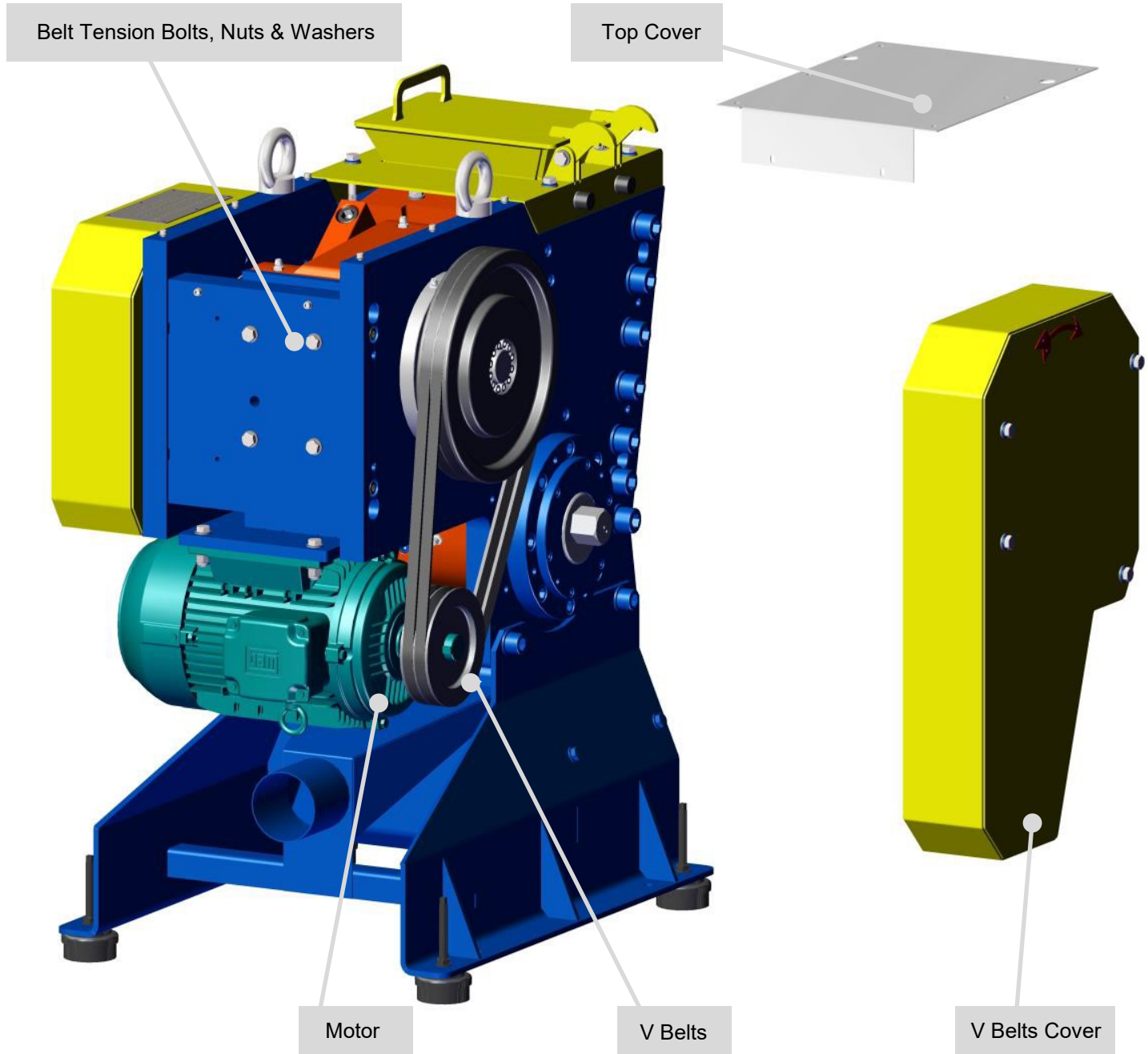
Step 11: Replace all covers and reconnect power to test run the machine.



Note: Machinery Damage/Hazard – After changing the jaw plates and/or side liners, check the jaw plates draw bolt tension at 12 hours & 120 hours of operation & every 20 hours thereafter.

6.5.6 V belts slipping or Crusher not operating

Follow the steps, if the V belts are slipping or the Crusher is not operating



Step 1: Check the power supply to the machine. If faulty, restore power to the machine by repairing the fault. This may require the services of a qualified electrician.

Step 2: To replace or re-tension the V belts, remove the belt drive cover and the stainless steel top cover over the pitman.

Step 3: To replace broken V belts, loosen the four (4) bolts, nuts and washers securing the motor mounting plate to the frame back plate and lever up the motor and motor mounting plate to enable the new belts to be fitted on the pulleys.

Step 4: To tension the new belts or existing belts, lower the motor mounting plate to tension the V belts and tighten the four motor mounting bolts.

Note: The correct belt tension is approximately 6 mm deflection, measured midway between the pulleys when approximately 5.6 kg of force is applied to each belt.

Step 5: Turn the driven pulley by hand to ensure everything is in order. Replace the covers, re-connect power and test run the machine.

6.5.7 Crusher will not start

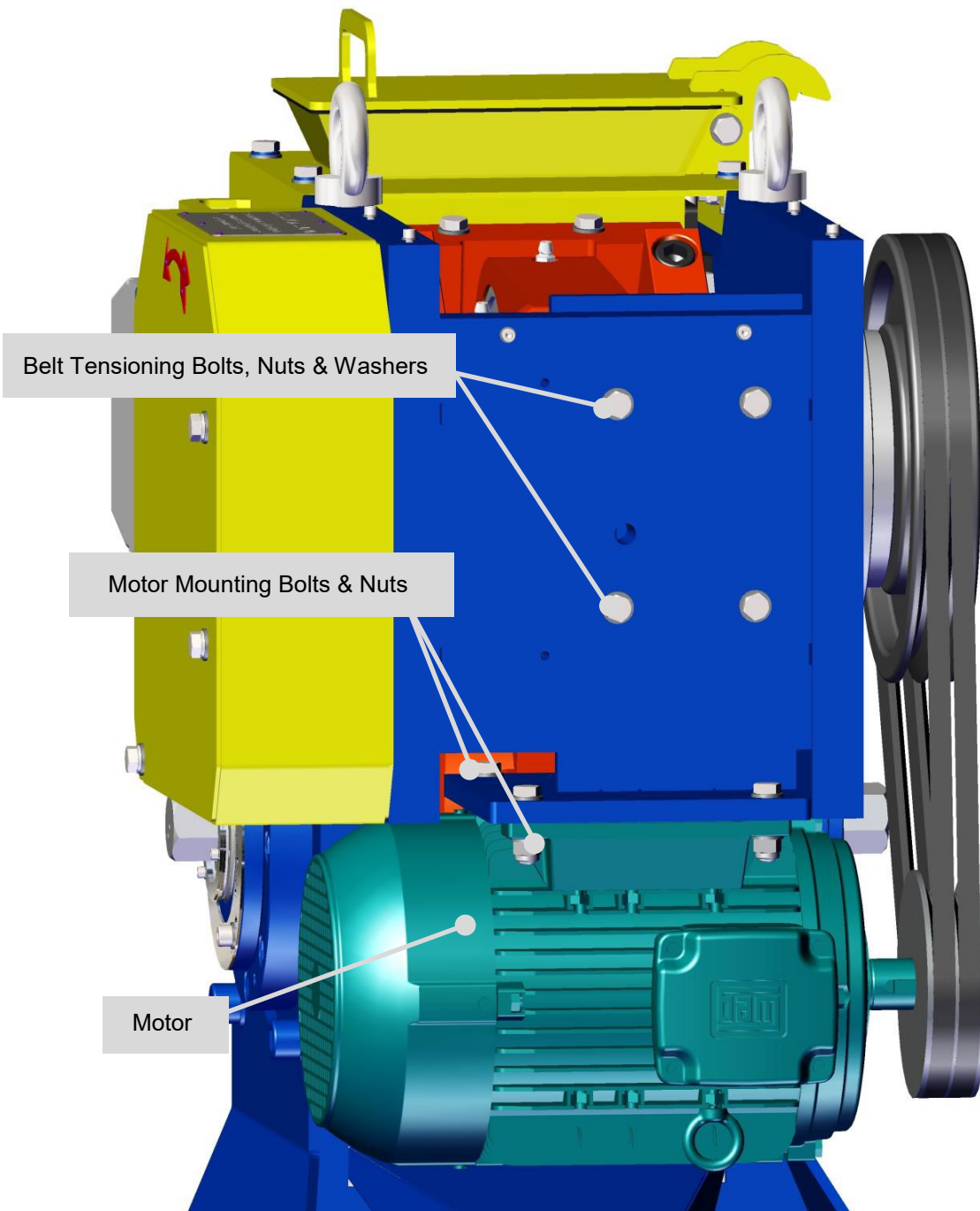
Follow the following steps, if the Crusher will not start.

Step 1: Check the electrical supply to the Crusher and have an electrician check all the electrical connections to the Crusher and control buttons and specifically the motor. Repair any electrical failure found between the supply and the machine.

Step 2: To replace a faulty motor, loosen the four (4) belt tensioning bolts, nuts and washers and lever the motor upwards to slacken the V belts, so they can be removed.

Step 3: Disconnect the cables to the motor. Undo and remove the four (4) motor mounting bolts and nuts holding the motor to the mounting plate. Replace the motor with a new one. Re-install all parts in reverse order.

Step 4: Re-tension the V belts as per Steps 4 and 5, Item 6.5.6 above.



6.6 Other Maintenance Procedures

Please contact LAARMANN for any additional technical documentation covering detailed overhaul procedures.

6.7 Operator's Tool kit

Listed below are a number of tools that are recommended for use with the LMFC 250 Crusher.

- Set of Metric Allen keys
- Socket set
- Set of open-ended spanners
- Set of screw drivers

6.8 Cleaning

Routine cleaning should be performed on the Crusher to remove excess dust. To do so, use a clean, dry rag to wipe all components down. Do not use compressed air or high pressure water hoses to clean the Crusher, as damage may result and will void the warranty.

6.9 Bolt Torque Settings

The list that follows indicates recommended torque ratings for bolts used on the LMFC 250 Crusher.

Description	Torque Setting Grade 4.6	Torque Setting Grade 8.8	Torque Setting Grade 10.9	Torque Setting Grade 12.9
M5	2 Nm	5 Nm	8 Nm	9.5 Nm
M6	3.5 Nm	9 Nm	13 Nm	16 Nm
M8	8.5 Nm	22 Nm	32 Nm	39 Nm
M10	16.7 Nm	44 Nm	63 Nm	77 Nm
M12	29 Nm	77 Nm	109 Nm	135 Nm
M14	46.4 Nm	122 Nm	174 Nm	215 Nm
M16	71.3 Nm	180 Nm	270 Nm	330 Nm
M18		269 Nm	370 Nm	
M20	139.4 Nm	372 Nm	528 Nm	650 Nm
M22		519 Nm	722 Nm	
M24	241 Nm	640 Nm	914 Nm	1100 Nm
M30	476 Nm	1314 Nm	1817 Nm	2250 Nm
M36		2297 Nm	3173 Nm	3850 Nm
M10 Shoulder Bolt	29 Nm			

7 Lubrication

7.1 Lubrication Safety and other precautions

The procedure that follows outlines the proper method for routinely and safely lubricating the Crusher.

- Lubrication must not be carried out when the Crusher is running.
- Ensure that the work area is clear of any material that may cause, or fuel, a fire.
- Follow the manufacturer's safety instructions when handling the lubricant, to prevent any injury to personnel.
- Wipe the Crusher grease points down with a clean rag prior to lubrication.
- Avoid over lubricating the Crusher. Refer to 7.4 Lubrication Schedule, below.
- Always wipe off any excess grease.

Note: Access to the grease nipples is gained by removing the stainless steel top cover. To remove the cover, remove the two (2) eye bolts and eight (8) Allen screws holding the cover to the top of the machine.

7.2 Data for Lubricants, Hydraulic Fluids, Coolants etc.

Note: Refer to Section 10 of this Manual for any Lubrication Material Safety Data Sheets.

7.3 Lubrication Points

The Crusher has seven (7) lubrication points, five (5) for the main bearings and crank and two (2) for the main pitman arm bush.

Refer to the Figures below for the location of grease points.

Five Grease points for Main Bearings & Crank

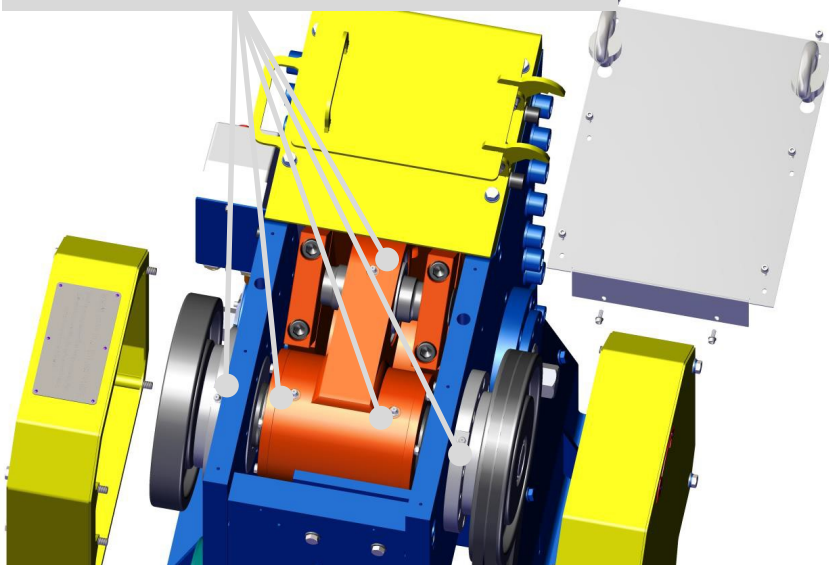


Fig 10. Grease points for the crusher main bearings & crank.

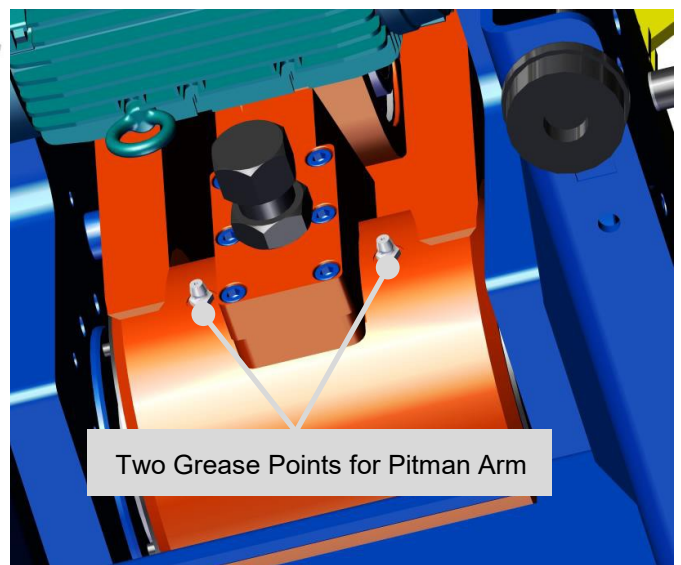


Fig 11. Grease points for crusher pitman arm bush.

7.4 Lubrication Schedules

The following Table illustrates a suggested initial lubrication schedule to be administered to the LMFC 250 Crusher. However, due to the myriad of variables with each installation (Bearing size and type, operating temperatures, load bearings, vibrations in equipment, methods of application etc.) the frequency of lubrication applied should be modified over time according to experience.

Note: Over lubricating can be equally as detrimental as under lubricating. It is therefore recommended the lubrication applied be supervised, documented and monitored as part of the overall routine maintenance schedule for this machine.

Location	Grease or Oil Type	Frequency	Note
All Grease Points	Castrol EPL 2 or equivalent	100 hours of operation	Leave a layer of grease on the nipple of protect from dirt

7.4.1 Routine Lubrication Maintenance Schedule (Example only)

Correct lubrication of equipment is very important to maximize life expectancy and performance. The following Table illustrates an example of a routine lubrication maintenance schedule that may be handy, to monitor the lubrication of your machine. Using an hour meter installed on the machine can assist with determining the correct amount of lubrication to be applied, as time of operation may be more relevant than just dates.

Name & # of Machine		Name & Number of Your Machine			
Loc & Name of Bearings		Bearing 1	Bearing 2	Bearing 3	Bearing 4
Date of Lubrication	Hours of Operation	Enter type & amount of grease administered			
01/09/19	100	9 Nm	13 Nm	16 Nm	
15/09/19	100	22 Nm	32 Nm	39 Nm	
01/10/19	100	44 Nm	63 Nm	77 Nm	
15/10/19	100	77 Nm	109 Nm	135 Nm	

Warning: Do not over-lubricate this machine. If grease is emerging from the Bearing Housings, too much is being pumped in. Grease should occupy approximately 70% of the free space in the Bearing Housings to allow the grease to circulate through the Bearings.

8.1 General Safety Rules

Minimum PPE required for jobs contained in the workshop section of this manual.



8.2 Test and Inspection Procedures

Procedures for testing and inspection of the LMFC 250 Crusher are as per the user's company requirements.

8.2.1 Special Test Equipment

Not applicable. No special test equipment is required for use on the LMFC 250 Crusher.

8.2.2 Crusher will not start

The following procedure outlines the steps for testing and inspecting the Crusher.

- Perform a visual inspection on parts that are likely to wear, such as the jaw plates and side liners, V belts and any breakdown of bearings.
- Check that there is no excessive dust build up around the Crusher.
- Check that all electrical cables, plugs and sockets are free from damage and connected correctly.
- Check the tension of the V belts.
- Ensure the hopper lid opens and closes freely and without obstruction.
- Ensure the lubrication points have been adequately lubricated.

8.2.3 Testing Standards

Not applicable

8.2.4 Adjustments for Test or Inspection

No adjustments for test or inspection are required on the LMFC 250 Crusher.

8.3 Troubleshooting Procedures

Refer to the Maintenance Section of this Manual for a detailed Troubleshooting Guide and procedures.

8.4 Bolt Torque Settings

The list that follows indicates recommended torque ratings for bolts used on the LMFC 250 Crusher.

Description	Torque Setting Grade 4.6	Torque Setting Grade 8.8	Torque Setting Grade 10.9	Torque Setting Grade 12.9
M5	2 Nm	5 Nm	8 Nm	9.5 Nm
M6	3.5 Nm	9 Nm	13 Nm	16 Nm
M8	8.5 Nm	22 Nm	32 Nm	39 Nm
M10	16.7 Nm	44 Nm	63 Nm	77 Nm
M12	29 Nm	77 Nm	109 Nm	135 Nm
M14	46.4 Nm	122 Nm	174 Nm	215 Nm
M16	71.3 Nm	180 Nm	270 Nm	330 Nm
M18		269 Nm	370 Nm	
M20	139.4 Nm	372 Nm	528 Nm	650 Nm
M22		519 Nm	722 Nm	
M24	241 Nm	640 Nm	914 Nm	1100 Nm
M30	476 Nm	1314 Nm	1817 Nm	2250 Nm
M36		2297 Nm	3173 Nm	3850 Nm
M10 Shoulder Bolt	29 Nm			

9.1 General content

The following sections outline details of the Sub-Assemblies and Parts of the LMFC 250 Jaw Crusher.

9.2 Major Assemblies

9.2.1 List of Major Assemblies

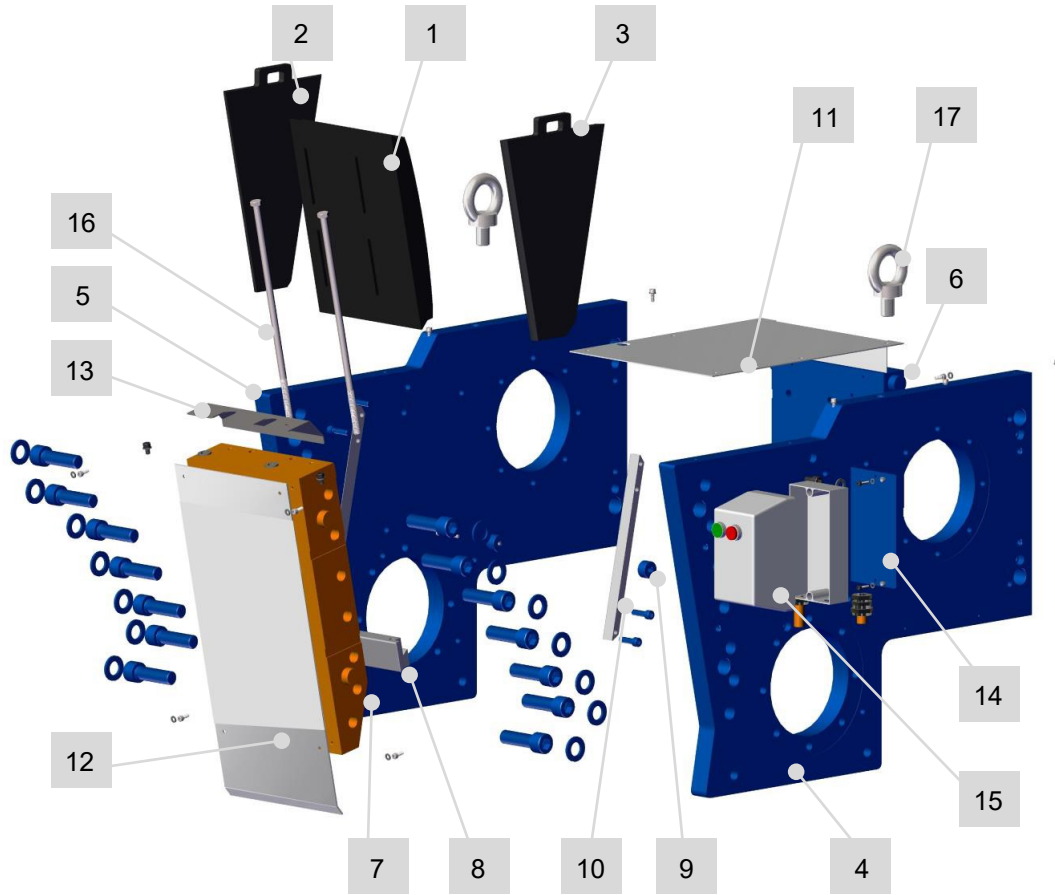
The following list and Figure below detail the Major Assemblies of the LMFC 250 Jaw Crusher.

- LMFC 250 Jaw Crusher
- Hopper (not supplied)
- Motor
- Jaw Gap Adjustment
- Base Frame (Not supplied)
- Main Frame (not supplied)
- Control Box (In central control box)

9.3 Parts Lists

9.3.1 Parts of the Main Body Assembly

The Parts List quantities and location of parts which may be required for use on the LMFC 250 Main Body Assembly.



Item	Description	Item No. / Type	Supplier	Quantity
1	LMFC250 serrated jaw plate	012-002-904	LAARMANN	1
2	Left hand side plate	012-002-142-01	LAARMANN	1
3	Right hand side plate	012-002-142-02	LAARMANN	1
4	Non drive side plate	012-002-180-01	LAARMANN	1
5	Drive side plate	012-002-180-02	LAARMANN	1
6	Rear plate	012-002-182	LAARMANN	1
7	Front plate	012-002-181	LAARMANN	1
8	T-Clamp for jaw plate	012-002-140	LAARMANN	1
9	Spacer button	012-002-188	LAARMANN	2
10	Wedge block for side liner plate	012-002-144	LAARMANN	1
11	Top cover plate	012-002-174	LAARMANN	1
12	LAARMANN label plate	012-002-175	LAARMANN	1
13	Deflective plate	012-002-143	LAARMANN	1
14	Mounting plate for motor starter assembly	012-002-123	LAARMANN	1
15	Motor On/Off starter		LAARMANN	1
16	LMFC250 draw bolt	012-002-901	LAARMANN	2
17	Eye bolt M24			2

9.3.2 Parts of the Drive Side & Flywheel Covers

The Parts List, quantities and location of parts which may be required for use on the LMFC 250 Drive Side and Flywheel Covers.

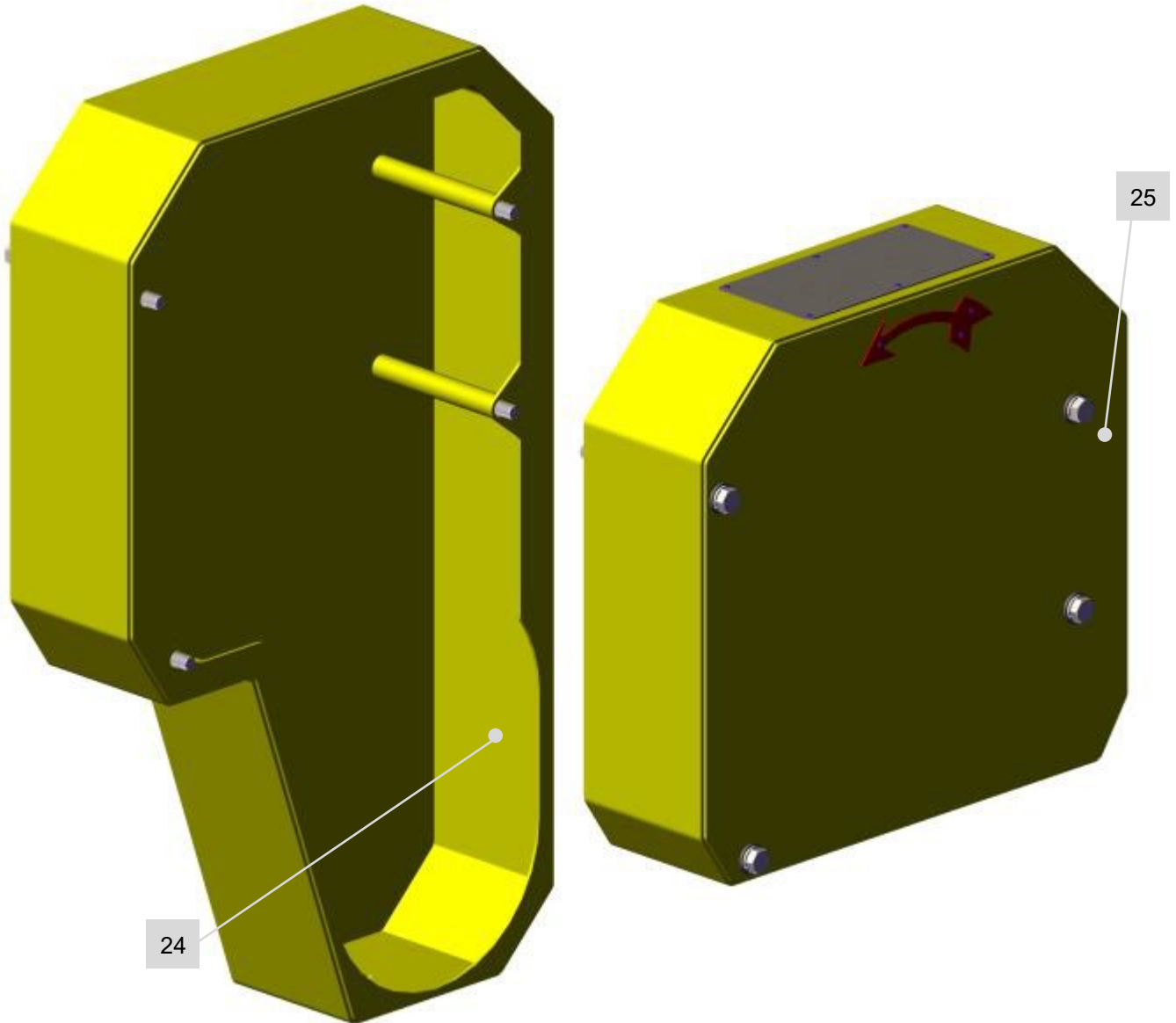


Fig 13. Drive side & flywheel covers.

Item	Description	Item No. / Type	Supplier	Quantity
24	Drive side cover	012-002-061	LAARMANN	1
25	Fly wheel cover	012-002-060	LAARMANN	1

9.3.3 Parts of the Pitman Arm Assembly

The Parts List and Figure below, illustrate the details, quantities and location of parts which may be required for use on the LMFC 250 Pitman Arm Assembly.

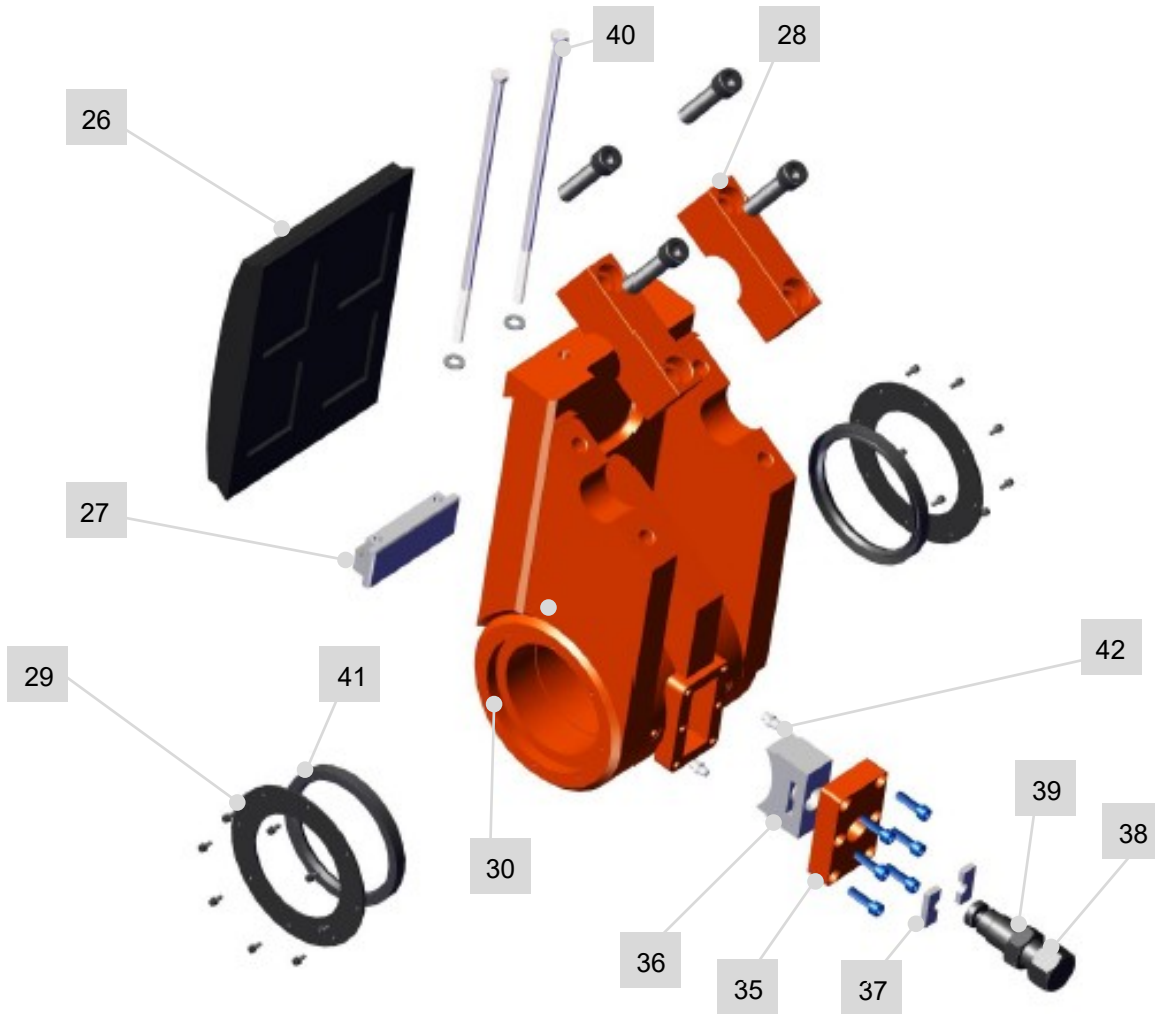


Fig. 14. Parts of the LMFC 250 pitman arm assembly.

Item	Description	Item No. / Type	Supplier	Quantity
26	LMFC250 serrated jaw plate	012-002-904	LAARMANN	1
27	T-Clamp for jaw plate	012-002-140	LAARMANN	1
28	Pitman shaft cap final machining	012-002-209	LAARMANN	2
29	Cover plate for pitman arm seal	012-002-135	LAARMANN	2
30	Pitman arm	012-002-212-01	LAARMANN	1
35	Fixing plate of clamp block	012-002-201	LAARMANN	1
36	Clamp block	012-002-202	LAARMANN	1
37	Retaining pins of clamp block			2
38	Clamping bolt			1
39	Lock nut			1
40	LMFC250 draw bolt			2
41	Oil Seal			2
42	Grease nipple			2

9.3.4 Parts of the Crank Arm Shaft Assembly

The Parts List, quantities and location of parts which may be required for use on the LMFC 250 Crank Arm Shaft Assembly.

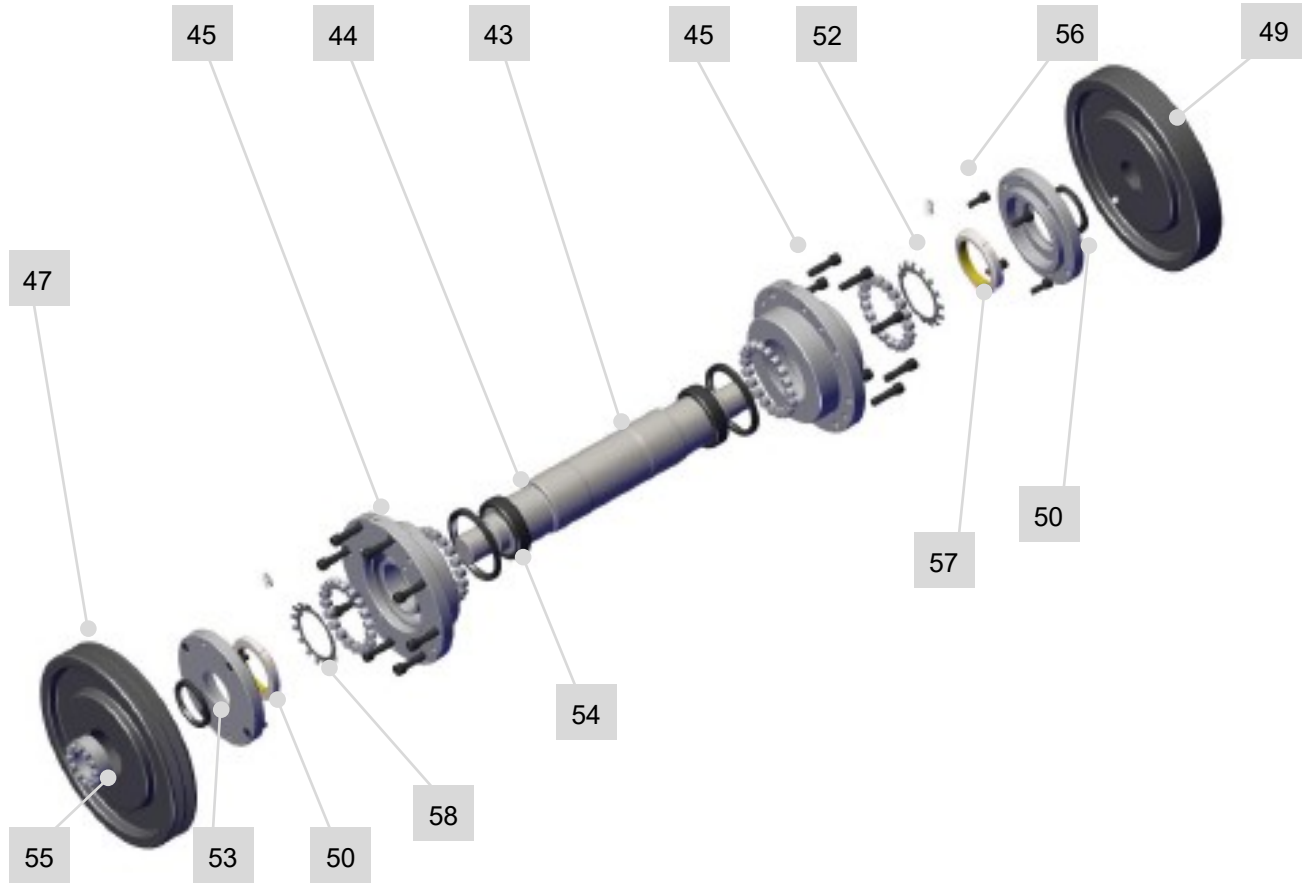


Fig 15. Parts of the LMFC 250 crank arm shaft assembly.

Item	Description	Item No. / Type	Supplier	Quantity
43	Main shaft	012-002-154	LAARMANN	1
44	Concentric shaft sleeve	012-002-155	LAARMANN	2
45	Main shaft outer fixed bearing housing	012-002-153	LAARMANN	2
47	Drive pulley	012-002-151	LAARMANN	1
49	Fly wheel	012-002-152	LAARMANN	1
50	Main shaft fixed bearing cap	012-002-150	LAARMANN	2
52	Bearing			2
53	Seal			2
54	Seal			2
55	Ringfeder			2
56	Grease nipple			2
57	Tab washer			2
58	Lock nut			2

9.3.5 Parts of the Crank Arm Shaft Assembly

The Parts List and Figure below, illustrate the details, quantities and location of parts which may be required for use on the LMFC 250 Pitman Shaft Assembly.

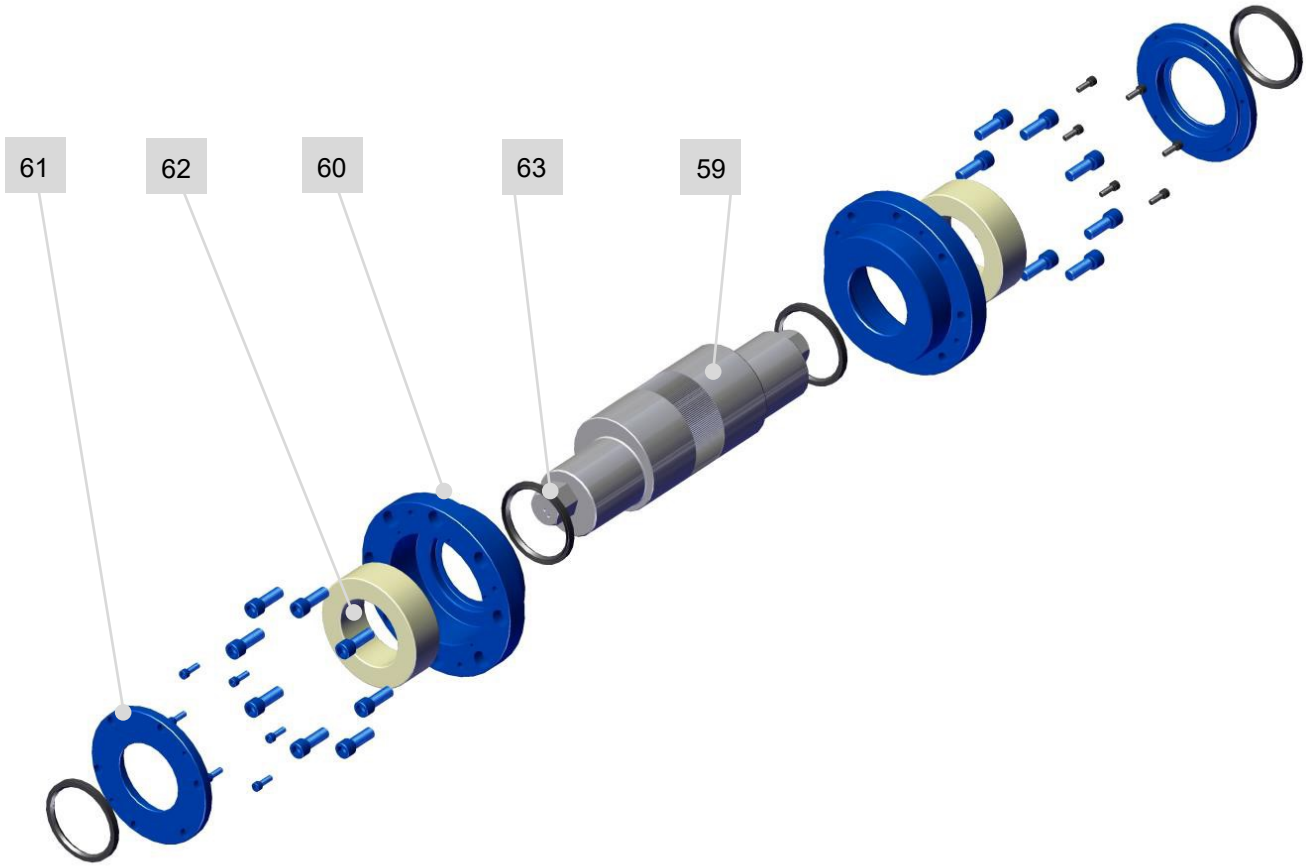


Fig 15. Parts of the LMFC 250 crank arm shaft assembly.

Item	Description	Item No. / Type	Supplier	Quantity
59	Bottom shaft	012-002-200	LAARMANN	1
60	Bearing housing for pitman shaft	012-002-134	LAARMANN	2
61	LMFC250 pitman shaft bearing housing cap	012-002-132	LAARMANN	2
62	Bearing			2
63	Seal			4

9.3.6 Parts of the Indicator Assembly

The Parts List and Figure below, illustrate the details, quantities and location of parts which may be required for use on the LMFC 250 Pitman Shaft Assembly.

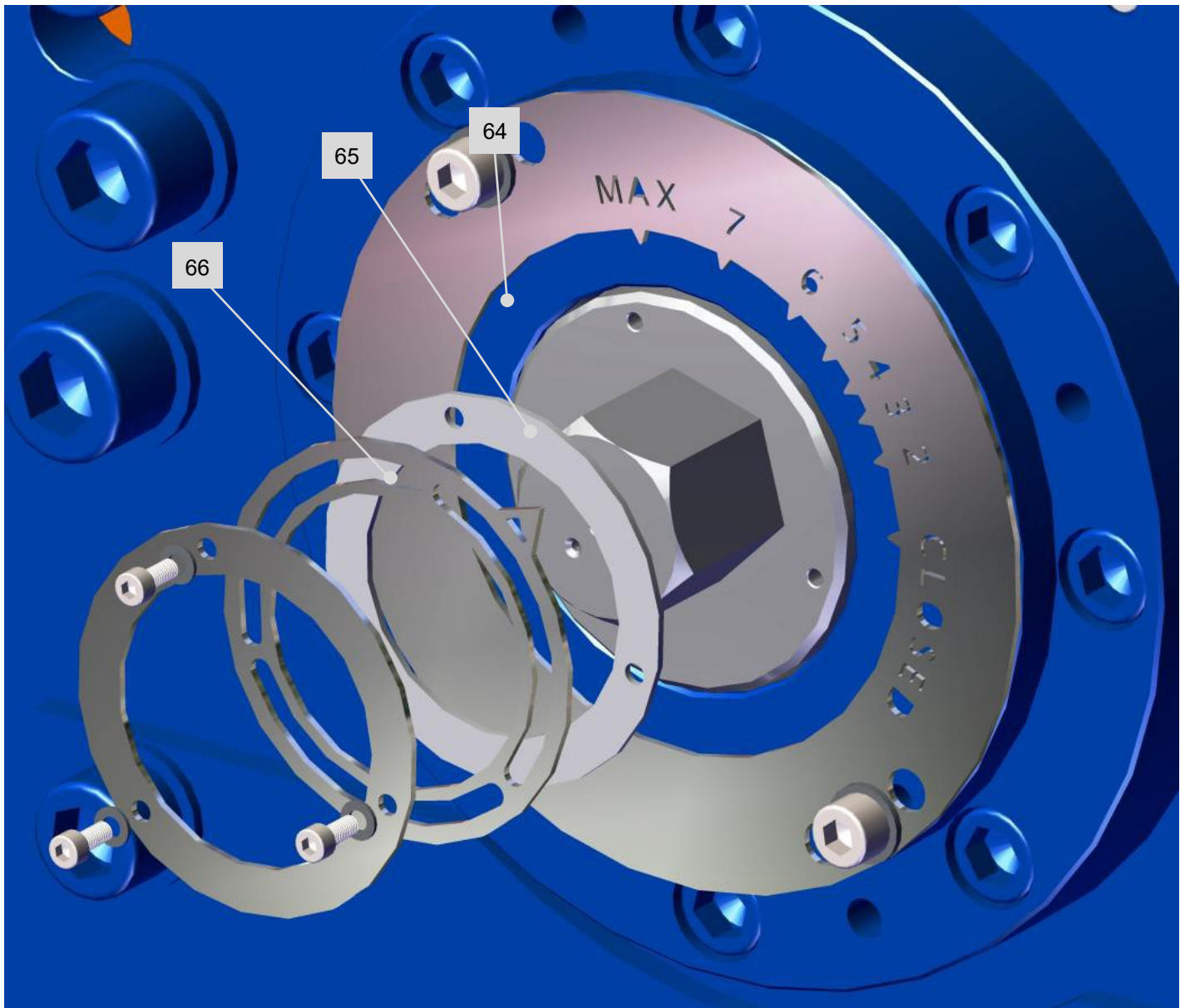


Fig 17. Parts of the LMFC 250 indicator assembly.

Item	Description	Item No. / Type	Supplier	Quantity
64	Indicator plate	012-002-133	LAARMANN	1
65	Spacer plate	012-002-130	LAARMANN	2
66	Pointer plate	012-002-131	LAARMANN	1

9.3.7 Parts of the Crank Arm Assembly

The Parts List and Figure below, illustrate the details, quantities and location of parts which may be required for use on the LMFC 250 Crank Arm Assembly.

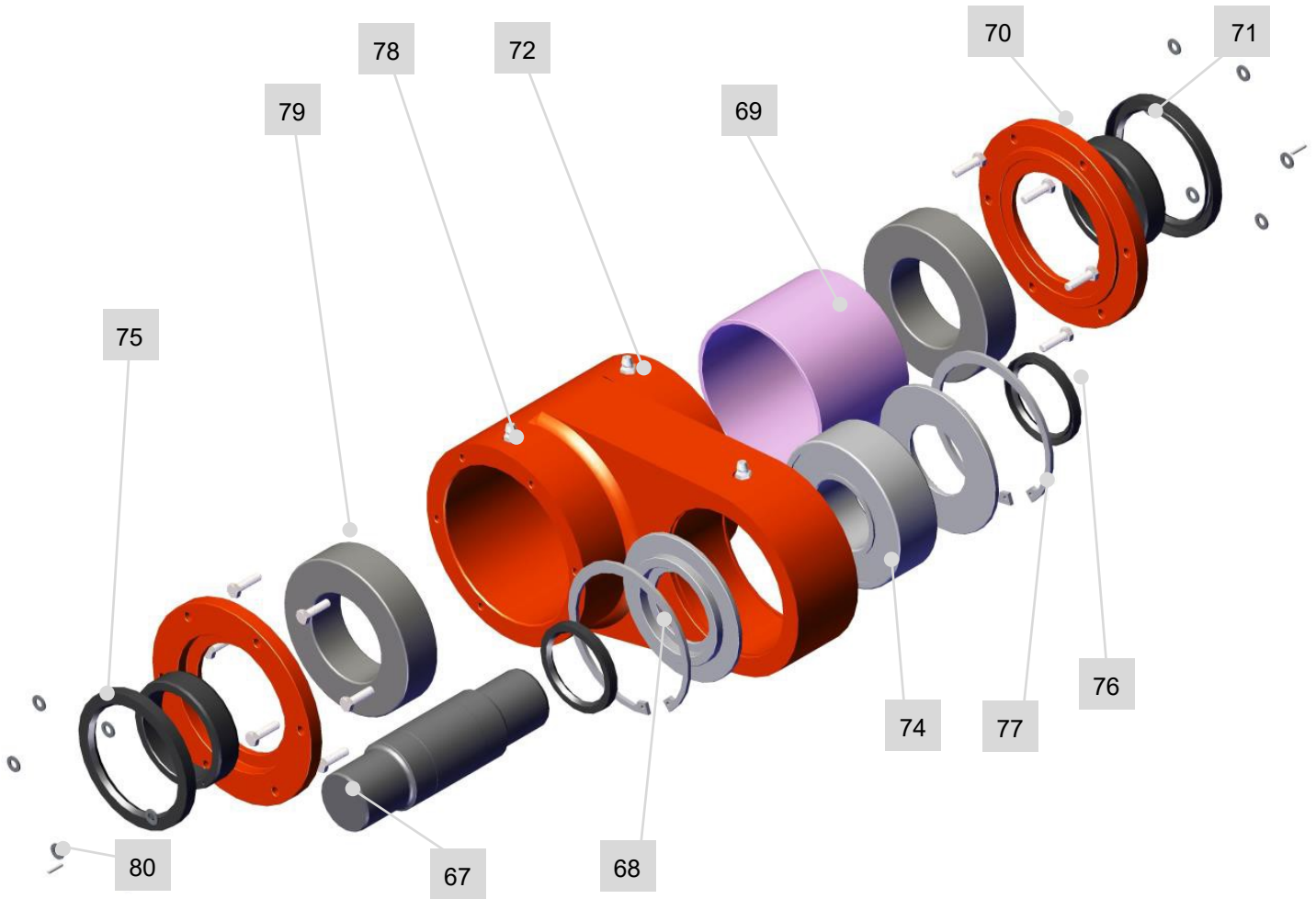


Fig 18. Parts of the LMFC 250 crank arm assembly.

Item	Description	Item No. / Type	Supplier	Quantity
67	Crank arm shaft	012-002-158	LAARMANN	1
68	Bearing cover for crank arm assembly	012-002-160	LAARMANN	2
69	Center spacer for crank arm	012-002-157	LAARMANN	1
70	Bearing cap for crank arm	012-002-159	LAARMANN	2
71	Spacer for crank arm	012-002-156	LAARMANN	2
72	Crank arm	012-002-161	LAARMANN	1
74	Bearing			1
75	Seal			2
76	Oil seal			2
77	Circlip			2
78	Grease nipple			3
79	Bearing			2
80	Spring pin			2

9.3.8 Parts of the Motor Assembly

For any parts required, that do not have an Item Number showing in this Manual Parts List, please contact LAARMANN. Contact details for LAARMANN can be found in Section 1 of this document.

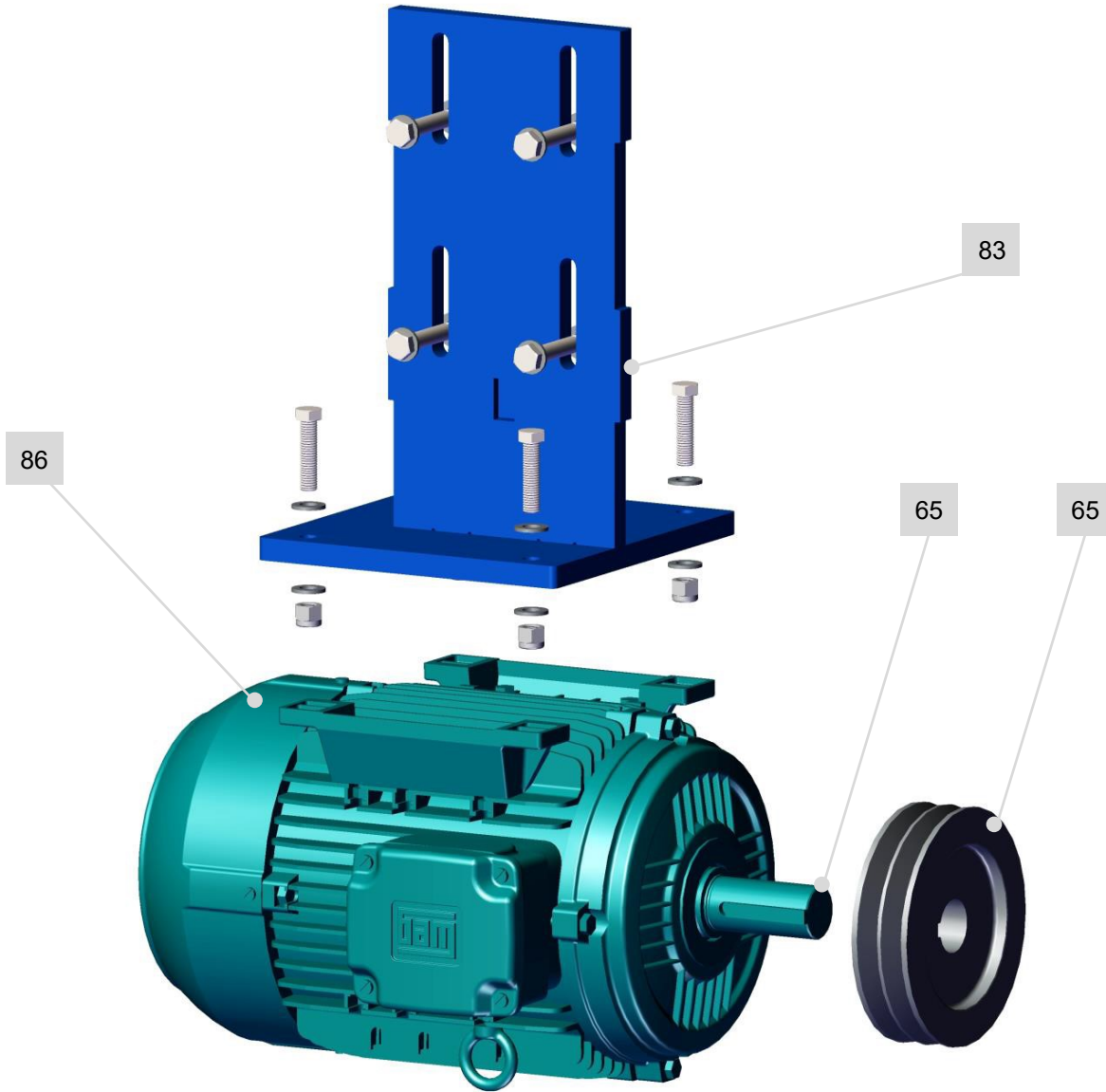


fig 19. Parts of the LMFC 250 motor assembly.

Item	Description	Item No. / Type	Supplier	Quantity
83	Motor mounting bracket	012-002-007	LAARMANN	1
84	Taperlock (not depicted)	Taperlock	LAARMANN	1
85	V-belt pulley	V-belt pulley	LAARMANN	1
86	Electric motor	7.5 kW		1

9.3.9 Parts Illustrated without an Item Number

For any parts required, that do not have an Item Number showing in this Manual Parts List, please contact LAARMANN. Contact details for LAARMANN can be found in Section 1 of this document.



LAARMANN
Jaw Crusher
Type LMFC 250

Product	Jaw Crusher
Model	LMFC 250
Power supply	200V/50/60Hz

This declaration of conformity confirms compliance of the above mentioned equipment to the relevant sections of the following European Directives:

91/368EWG	European machine guideline
73/23/EWG	EC Low Voltage Guidelines
EN 292, 294, 418	Safety guidelines
VBG 1,4,5 en 22	General electrical facilities
89/336/EEC	Electromagnetic Compatibility Directive (EMC)
EN 5008-1-1992	Emissions
EN 50082-1-1992	Immunity
EN 60204-1 Part 1	Safety of Machinery – Electrical Equipment of Machines

WARNING:

This equipment is required to be operated strictly in accordance with the instructions given in the operating manual supplied with the product. All supply voltages and frequencies as stated on the rating plate must be used. External power cables and connectors must be supplied by LAARMANN. Any additional equipment used must be of a type approved by LAARMANN.

This conformity certificate will lose its validity in case of:

- Usage of unlicensed spares
- Usage of unlicensed accessories
- Any self made modifications of the machine