ENGINEERING
TOMORROW

Installation Guide

# THORX Motors
## CLM C

**Revision history**

*Table of revisions*

| Date | Changed | Rev |
|---|---|---|
| July 2025 | First edition | 0101 |

**www.danfoss.com**

## Contents

## Introduction

Thank you for choosing THORX motors for your application. This manual includes information on how to install the CLM C motor. Prior to installation, ensure that you have the following documents available:

- Technical Information
- Outline drawing of the motor
- Hydraulic schematic for the application

## Safety precautions

Always consider safety precautions before beginning an installation procedure. Protect yourself and others from injury. Take the following general precautions whenever installing a hydraulic system.

**Warning**

**Functional Safety warning for mechanical brake release**

The mechanical release of brake disengages the park brake function of the motor. Ensure the vehicle is immobilized before the brake is mechanically released to prevent any unintended motion of the vehicle.

**Warning**

**Unintended vehicle or machine movement hazard**

Unintended movement of the machine or mechanism may cause injury to the technician or bystanders. To prevent unintended movement, secure the machine or disable/disconnect the mechanism while working on it.

**Warning**

**Flammable cleaning solvents**

Some cleaning solvents are flammable. To eliminate the risk of fire, do not use cleaning solvents in an area where a source of ignition may be present.

**Warning**

**Personal safety**

Protect yourself from injury. Use proper safety equipment, including safety glasses at all times.

**Warning**

**Hazardous material**

Hydraulic fluid contains hazardous material. Avoid prolonged contact with hydraulic fluid. Always dispose of used hydraulic fluid according to environmental regulations.

## Initial start-up procedure

Follow this procedure when starting up a THORX motor installation or when restarting an installation in which the motor has been removed and re-installed on a machine. Ensure the motor has been thoroughly tested on a test stand before installing on a machine.

**Warning**

Unintended movement of the machine or mechanism may cause injury to the technician or bystanders. To protect against unintended movement, secure the machine or disable/disconnect the mechanism while servicing.

Prior to installing the motor, inspect for damage that may have occurred during shipping.

## CLM C start-up procedure

Follow this procedure when starting up a new motor installation or when restarting an installation in which the motor has been removed and re-installed on a machine.

Prior to installing the motor, inspect for damage that may have occurred during shipping. Ensure the motor has been thoroughly tested on a test stand before installing on a machine.

1. Ensure that the machine hydraulic oil and system components (reservoir, hoses, valves, fittings, and heat exchanger) are clean and free of any foreign material, and in compliance with the Hydraulic fluid specifications, see *CLM C Technical Information*.
2. Install new system filter element(s) if necessary.
3. Install the motor.
4. Fill motor case with hydraulic fluid.
5. Check that inlet line fittings are properly tightened and there are no leaks.

**Attention**

The motor should not be run unloaded at above 100 rpm during the running in period.

## Parking brake

If braked motor, check brake functionality.

1. Connect hydraulic line to the brake release port (Z port) and make sure fittings are properly tightened and there are no leaks.
2. Increase pressure to Z port until you are just able to rotate the motor's output shaft by hand. This brake release pressure should not exceed 17 bar [247 psi].
3. With zero brake release pressure, and 250 bar [3,625 psi] differential pressure applied to the motor, the brake should hold the motor torque.

**Warning**

Never apply more than max. 40 bar pressure to the Z-port.

**Warning**

While the parking brake is designed for 100 emergency dynamic stops during its lifetime, it is intended solely for static use and should not be applied while the motor is in use. Applying the brake while driving can damage the brake.

## Initial start-up procedure

**Warning**

**Functional Safety warning for mechanical brake release**

The mechanical release of brake disengages the park brake function of the motor. Ensure the vehicle is immobilized before the brake is mechanically released to prevent any unintended motion of the vehicle.

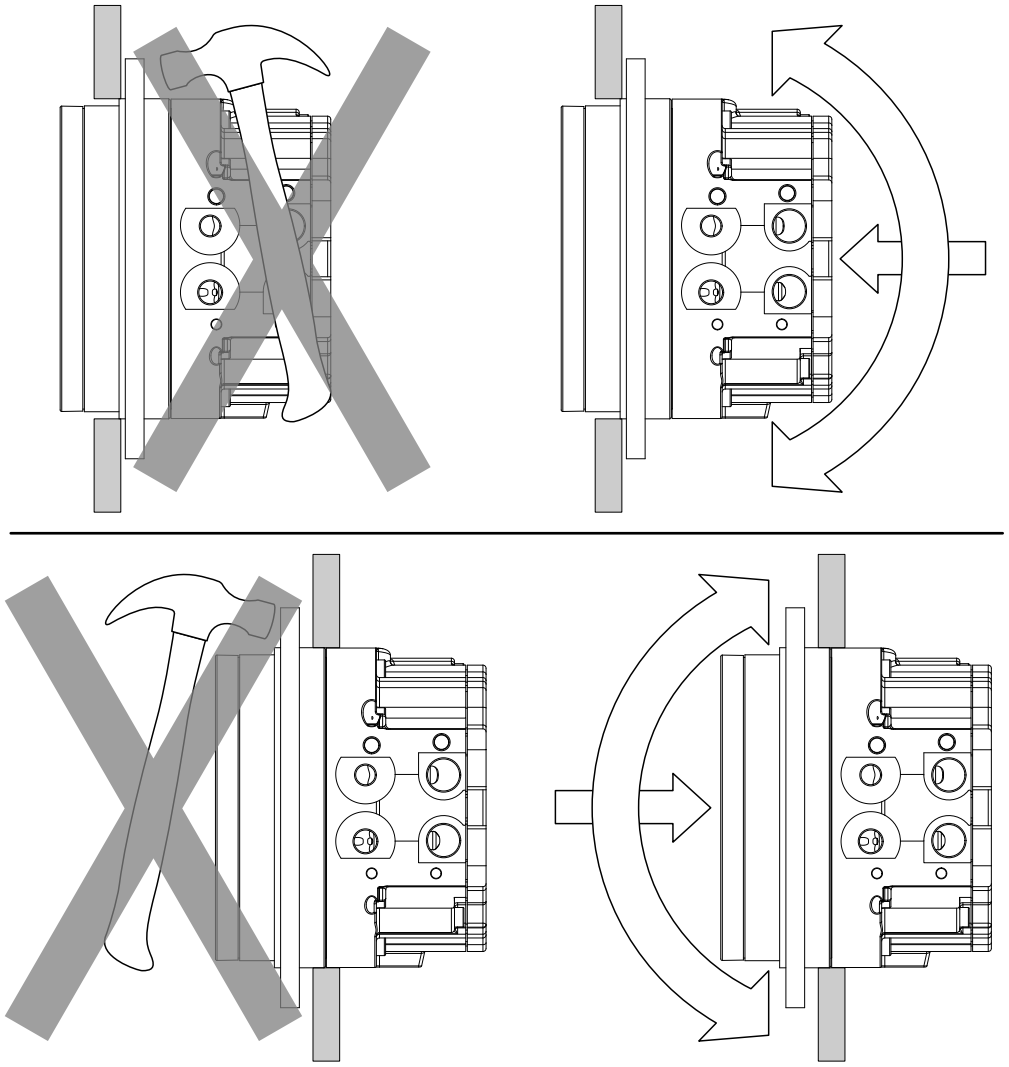
Ensure the mechanical releases is disengaged via removal of the special screws from the end cover prior to returned to vehicle operation. The vehicle immobilization should only be removed when park brake function has been fully re-engaged and its function confirmed.

## CLM 5 C installation guide

On the following pages you will find a guide for how to install the CLM 5 C.

## CLM 5 C installation guide

### Mounting procedure



**1. Prepare the Mounting Surface**

Before installing the motor, ensure that the mounting surface on the vehicle is properly prepared. The surface must be **clean and free of any contaminants**, including paint, grease, oxidation, or debris. This is critical to ensure a secure and stable connection between the motor and the vehicle chassis.

**Warning**

*Improper surface preparation may result in misalignment, reduced performance, or mechanical failure.*

**2. Align the Motor**

Position the motor so that the mounting holes align precisely with the corresponding holes on the vehicle frame.

**3. Secure the Motor**

Use the specified fasteners and torque values to secure the motor in place.

*Tightening torque specification*

| Motor | Bolt size | Class | Torque |
|---|---|---|---|
| CLM 5 C | 7 x M12x1.75 | 12.9 | 145 Nm |

## CLM 5 C installation guide

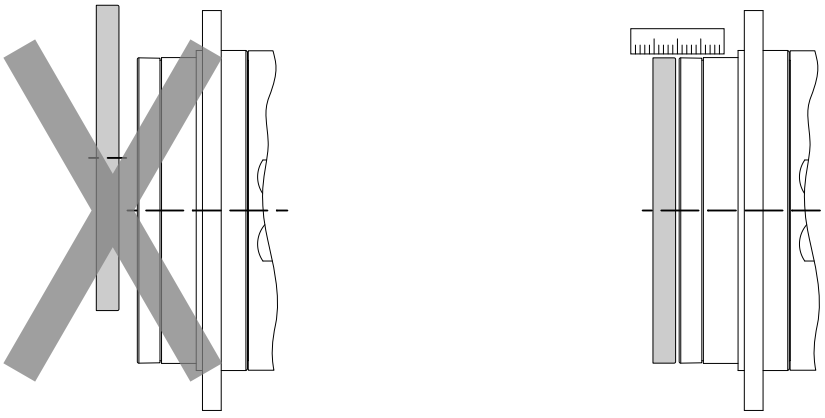
**Warning**

**Bolts – Installation requirements**

Only new bolts must be used during the mounting process to ensure compliance with specified tightening torque values. Bolts must be installed in a dry condition—**do not apply grease or degreasing agents**, as this can affect the friction characteristics and compromise the integrity of the bolted joint.

## CLM 5 C installation guide

### Wheel-to-Shaft coupling



*Tightening torque specification*

| Motor | Bolt size | Class | Torque |
|---|---|---|---|
| CLM 5 C | 5 x M16x2 | 12.9 | 355 Nm |

**Warning**

**Wheel rim clearance**

Ensure that the wheel rim does not come into contact with the mounting bolts during installation. Any rubbing or interference may damage the bolt threads and alter the intended tightening conditions, potentially compromising the integrity of the assembly.

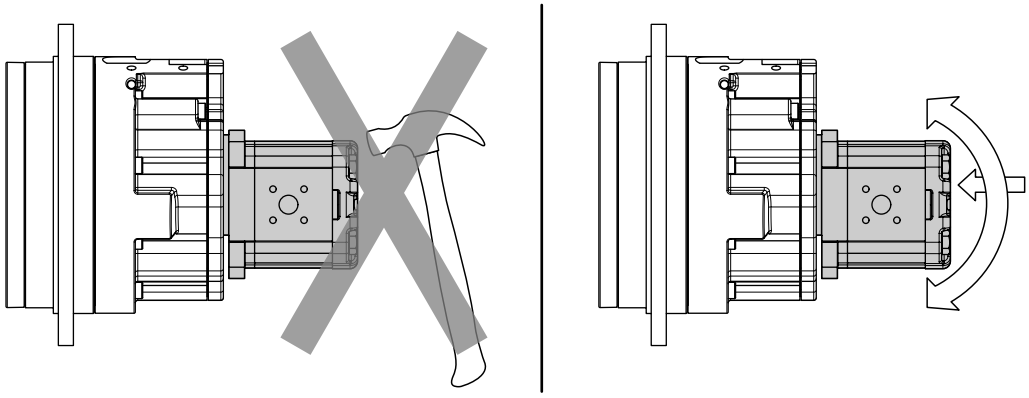
**Warning**

**Bolts – Installation requirements**

Only new bolts must be used during the mounting process to ensure compliance with specified tightening torque values. Bolts must be installed in a dry condition—**do not apply grease or degreasing agents**, as this can affect the friction characteristics and compromise the integrity of the bolted joint.

## CLM 5 C installation guide

### High Speed motor mounting



*Tightening torque specification*

| Motor | Bolt size | Class | Torque |
|---|---|---|---|
| CLM 5 C | 4 x M8x1.25 | 10.9 | 295 Nm |

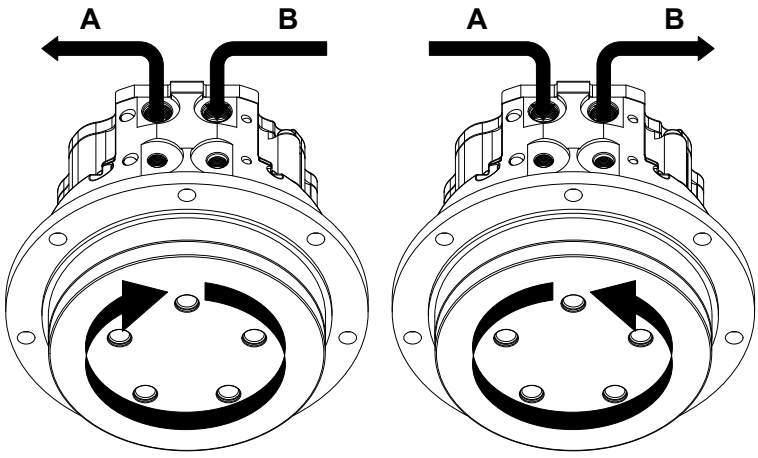
**Warning**

**Bolts – Installation requirements**

Only new bolts must be used during the mounting process to ensure compliance with specified tightening torque values. Bolts must be installed in a dry condition—**do not apply grease or degreasing agents**, as this can affect the friction characteristics and compromise the integrity of the bolted joint.

## CLM 5 C installation guide

### Flow direction

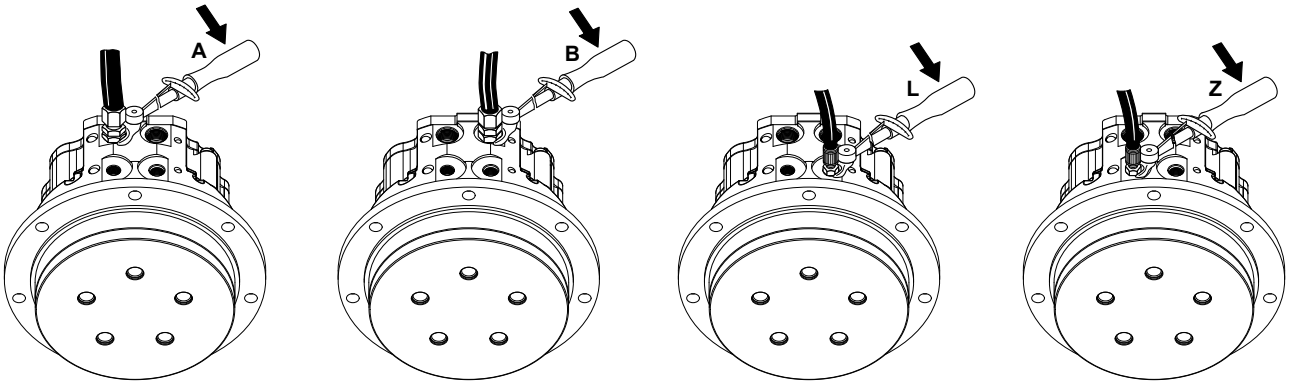



The THORX motors are based on a bidirectional design which provides the same performance in clockwise rotation as counterclockwise rotation. This provides a clear benefit in drivetrain solutions where the motor needs to reverse and don't go down in performance.

| Rotation direction | Inlet port |
|---|---|
| Clockwise | B port |
| Counter-clockwise | A port |

## CLM 5 C installation guide

### Port connection




| Max. tightening torque (ISO Metric 9974-1) | | | |
|---|---|---|---|
| | **A + B ports** | **L ports** | **Z port** |
| Screwed connection | M22 x 1.5 | M16 x 1.5 | M14 x 1.5 |
| Minimum thread engagement | 14.0 mm | 12.0 mm | 12.0 mm |
| Maximum permissible tightening torque of the thread holes | 135 Nm | 70 Nm | 55 Nm |

| Max. tightening torque (UNF - ISO 11926-1) | | | |
|---|---|---|---|
| | **A + B ports** | **L ports** | **Z port** |
| Screwed connection | 3/4 " – 16 UNF | 9/16 " – 18 UNF | 1/2 " – 20 UNF |
| Minimum thread engagement | 11.0 mm | 10.0 mm | 9.0 mm |
| Maximum permissible tightening torque of the thread holes | 160 Nm | 80 Nm | 60 Nm |

**Attention**

To ensure proper lubrication and prevent internal damage, the motor case drain port (L) **must be positioned at the highest point of the motor housing** during installation. If this is not possible due to mounting constraints, the return hose must be routed in a manner that maintains the motor case fully filled with hydraulic fluid under all operating conditions.

Additionally, the hose layout must be designed to **eliminate the risk of siphoning**, particularly in scenarios where the motor may remain inactive for longer periods of time. Failure to comply with these guidelines may result in inadequate lubrication and potential motor failure.

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