INSTRUCTION MANUAL
DAAB DRIVE UNIT MT/MK2/MA2/M10

Issue 1

Revision: 5

DAAB
WE OPEN DOORS FOR YOU

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Innehåll

EC Declaration of Conformity (original version)

Manufacturer

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Person authorised to compile the technical documentation

Ulf Ivarsson, FAAC Nordic AB, Box 125, 284 22 Perstorp, Sweden

General description and type designation

Drive unit for industrial doors and gates MT, MK2, MA2, M10

We hereby declare that the MT, MK2, MA2, M10 drive unit meets the relevant requirements of Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU, RoHS Directive 2011/65/EU incl. (EU) 2015/863, REACH 1907/2006/EC and Construction Products Regulation 305/2011.

The drive units MT, MK2, MA2, M10, where applicable, compliant with the following standardised norms:

- SS-EN 13241+A2:2016 Industrial, commercial and garage doors and barriers – Product standard, performance characteristics.
- SS-EN 13849-1:2016 Safety-related parts of control systems – Part 1: General principles for design.
- SS-EN 60204-1 Safety of machinery - Electrical equipment of machines – Part 1: General requirements.
- SS-EN 60335-1 Household and similar electrical appliances - Safety - Part 1: General requirements
- SS-EN 60335-2-103 Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for barriers, doors and windows.
- SS-EN 61000-6-2 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments.
- SS-EN 61000-6-3 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environment.

This EC declaration of conformity relates to drive units MT, MK2, MA2, M10 in the condition in which it is released to the market, and does not cover components added and/or modifications made thereafter. Nor does it relate to third-party equipment or to interfaces between third-party equipment and said equipment supplied by FAAC Nordic AB. The instruction/installation manual for drive units MT, MK2, MA2, M10 must be followed and attention must be paid to risks in the installation of the industrial door or gate.

Declaration of performance

Intended use of the construction product

Drive unit intended for installation on industrial doors or gates for use in industry, commercial areas and residential areas that are open to the public, and intended to provide secure access for people, goods and vehicles.

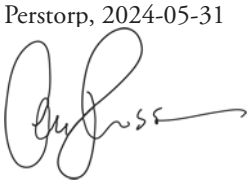
System for the assessment and continuous verification of the performance of the construction product

System 3

Performance

Property	Performance	Harmonised standard
Force exerted		**SS-EN13241 + A2:2016**
• Safety edges	Performance level c	SS-EN 13849-1
• Load guard	Performance level c	SS-EN 13849-1

Perstorp, 2024-05-31



Ola Hansson, MD

Safety

- General

Read through the entire instruction manual carefully before unpacking, installing and using the equipment. Pay particular attention to the safety paragraphs in the text.
There is a risk of serious injury or material damage if the prescribed precautionary measures are not taken.

Sections of text warning of hazards are sorted by severity and have the headings DANGER, WARNING and NOTE! which have the following significance:

DANGER
This means that there is a danger to the life or health of the user if the relevant precaution is not taken.

WARNING
This means that there is a risk of bodily injury or damage to the machine if the relevant precaution is not taken.

- NOTE!

This means that important information requires the full attention of the reader.

Packing, transport and unpacking

- General

NOTE!
It is important to secure the drive unit properly in its packaging and to ensure that moving parts are not under tension during transport.

Immediately on arrival check that the consignment is as agreed.

WARNING
Treat the drive unit carefully during handling and transport.

Lifting the drive unit

WARNING
Do not lift the drive unit by its moving parts or protective cover.

Table of weights excluding the drive arm and link arm:

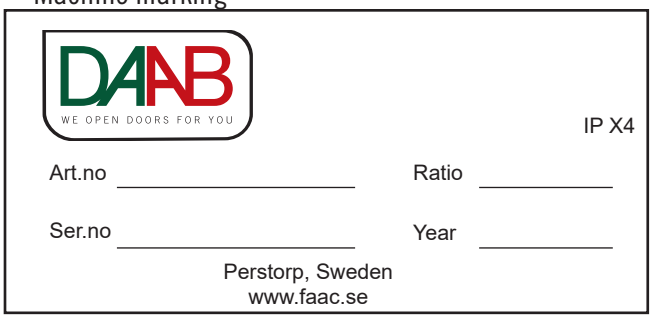
Drive unit	MT	MA2	MK2	M10
Weight, kg	16	23	25	60

Introduction

• Intended use

To open and close swing gates, leaf doors and folding doors.
Drive units are intended for use in normal indoor and outdoor environments.
All other use is prohibited.

• Machine marking



The plate must not be removed or made illegible!

The identification plate contains the following information:

- Art.no: Part number
- Ser. no: The serial number of the drive unit (used in all communication with FAAC Nordic AB regarding spare parts).
- Ratio: The gear ratio of the gearbox in the drive unit
- Year: The year in which the drive unit was manufactured.
- IP: The IP rating of the drive unit.

• Manufacturer

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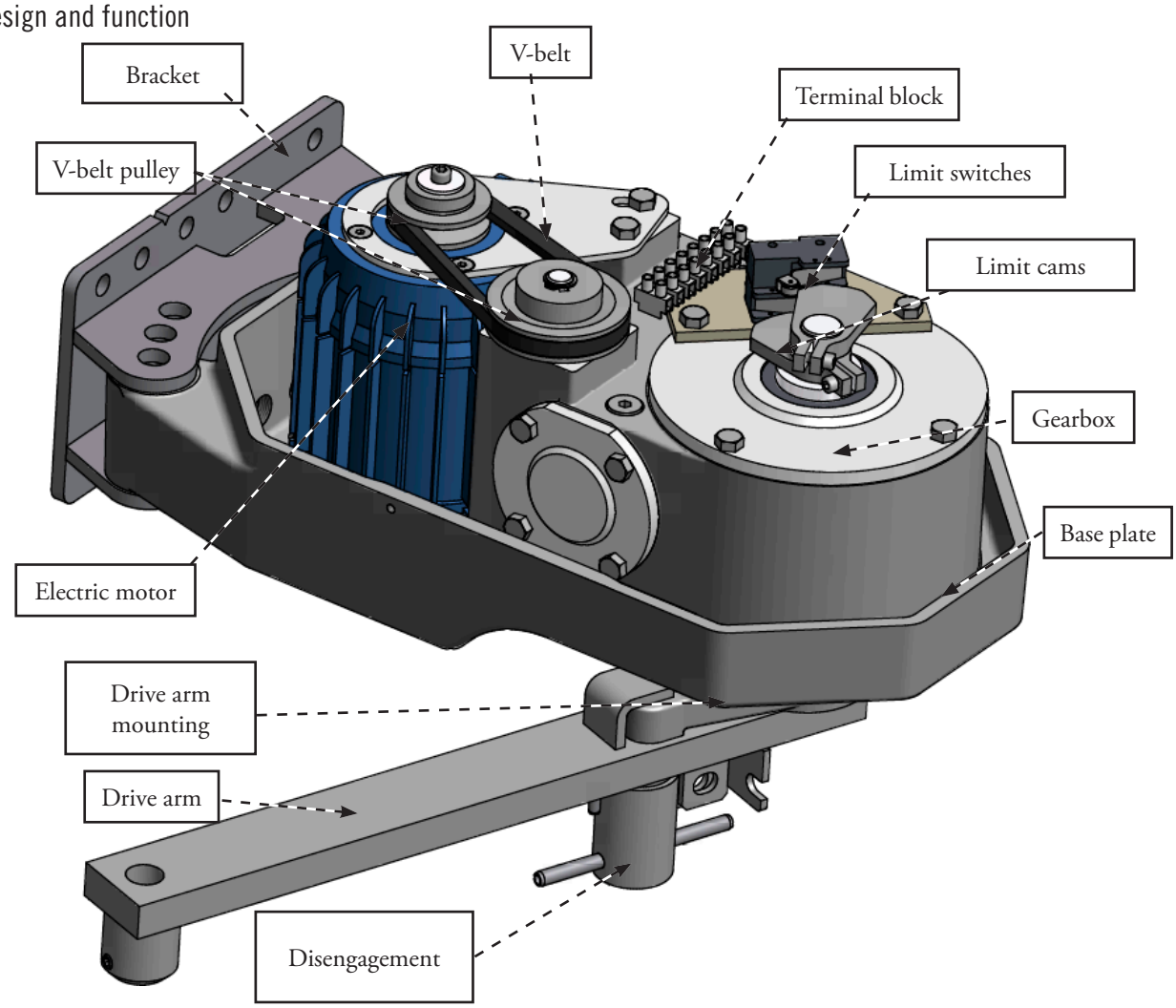
Box 125
SE-284 22 Perstorp, Sweden
Telephone: +46 435 77 95 00
Fax: +46 435 77 95 29
E-mail: info@faac.se
Website: www.faac.se

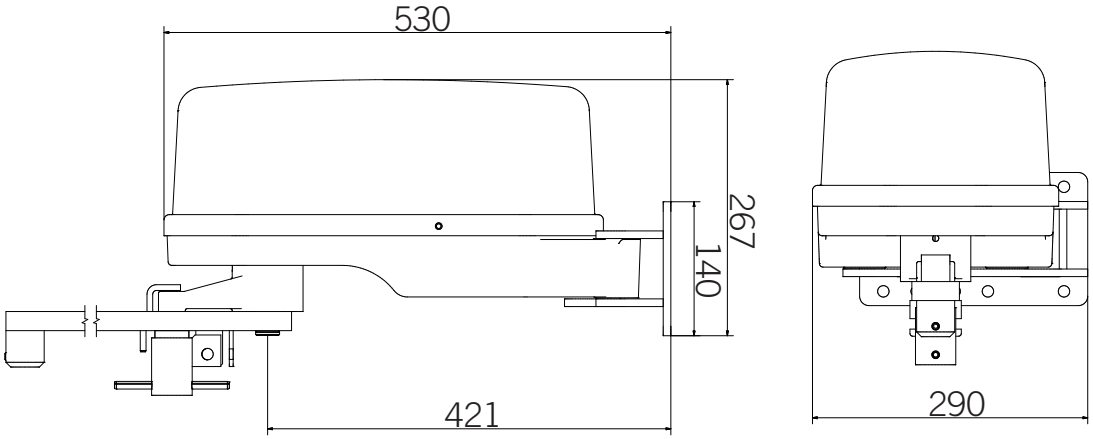
Drive unit MA2/MK2

- Function description

Design and function



Dimensions



- Technical specification

Electric motors

The design, rated output and connection dimensions of the motors meet the requirements contained in Swedish and European Standards according to IEC 31-1 and 72 together with SS4260101 and SS4360102.

Ratings for motor types used in the MK2, MA2 and M10

Motor type ~	Hz	Output kW	Voltage V	Current A	Motor speed rpm	Type of operation*	Ingress protection rating	Thermal switch
SKh 714B2 3-phase	50	0.37	220-240 D 380-440 Y	2.2-2.4 1.25-1.4	1370 1370	S3 25%	IP54	With or without a thermal switch**
SKh 714B2 3-phase	50	0.37	525	0.8	1360	S1	IP55	No thermal switch
SEMKh 714B2 1-phase 10uF/450V	50	0.25	240	2.6	1350	S1	IP54	With or without a thermal switch**

*S1 = Continuous operation. The motor can be subject to full load in continuous operation.
*S3 = Intermittent operation. The motor must not be subject to full load for more than 25% of the 10 minute duty cycle. In practice the motor is not subject to full load for more than one second just as it starts.

**The motor is available both with and without an integrated thermal switch. If the motor has a thermal switch there is a red label on the motor indicating this.

Gears

Select the opening speed taking account of the size and weight of the gate. The basic rule is to select a lower speed for large gates.

WARNING
Too high an opening speed can result in trapping forces being too large despite the use of a sensing strip.

MK2/MA2

Electric motor pulley mm	GEARING i	MOTOR SHAFT SPEED rpm	TORQUE Nm	OPENING TIME seconds
40	1400	1,00	1600	30
50	1150	1,25	1275	24
71	800	1,77	900	17
100	570	2,49	650	12
125	450	3,12	510	9
140	400	3,49	450	8

- Installation and commissioning

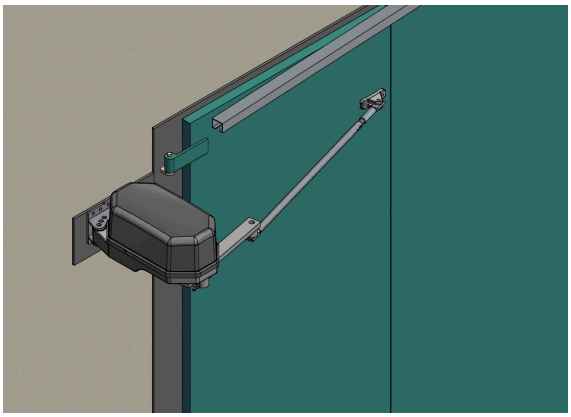
General installation

WARNING
Always start installation with a run through of the points in the: "Pre-installation checklist".

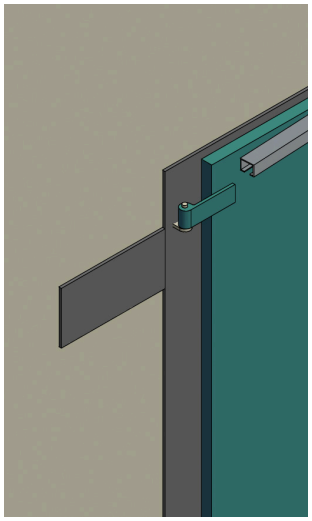
WARNING
The drive unit must be installed so that no unprotected moving parts are lower than 2,500 mm.

WARNING
Always use the fasteners prescribed in the assembly drawing with regard to: property class, dimensions, length and quantity.

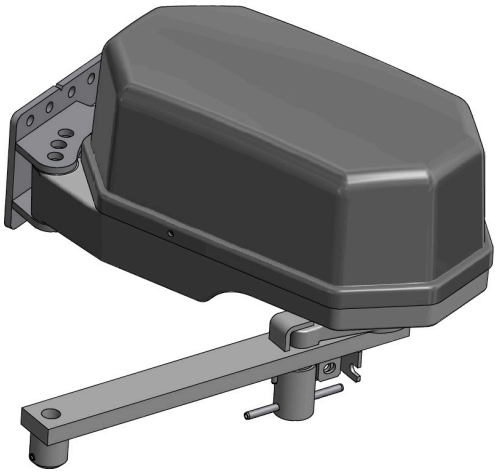
- Side installation



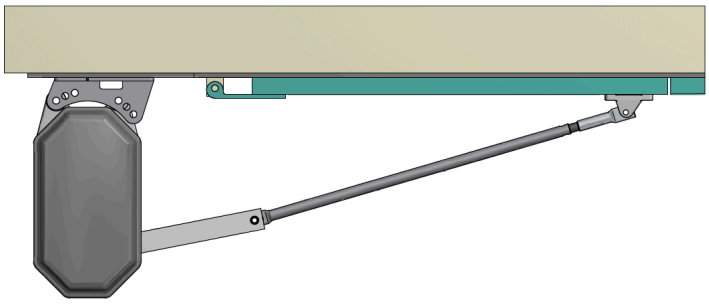
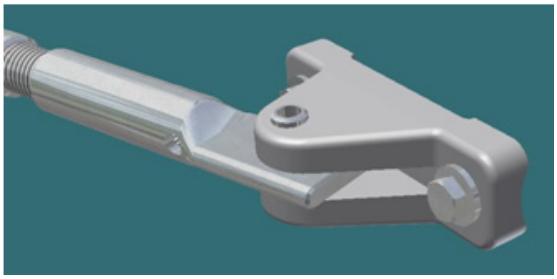
Mounting plate

1		The mounting plate is not manufactured by FAAC. The measurement from the floor or other permanent entry level to the lower edge of the mounting plate should be at least 2,550 mm. The dimensions of the mounting plate should be 200 mm x 400 mm and it should be at least 8 mm thick. It must be positioned according to the enclosed assembly drawing. The mounting plate is to be anchored so that it can withstand a torque of 2,000 Nm. Lightweight concrete wall for example – through-going M10 bolts are used. Concrete – 10 mm resin anchor. Steel building – square tube onto a fixed building structure. The mounting plate is also welded onto the gate surround.

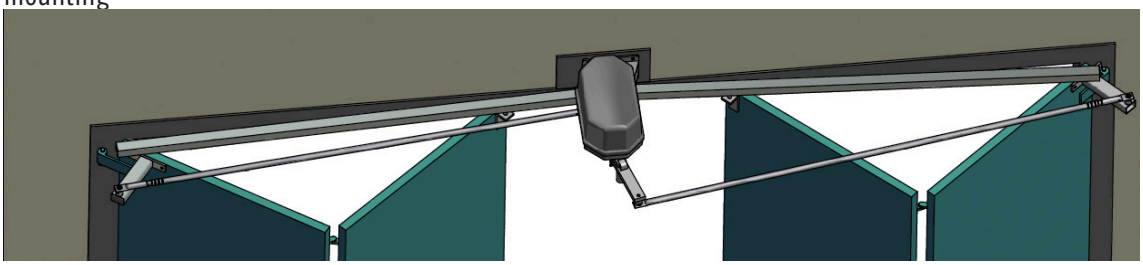
Drive arm

2		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer.

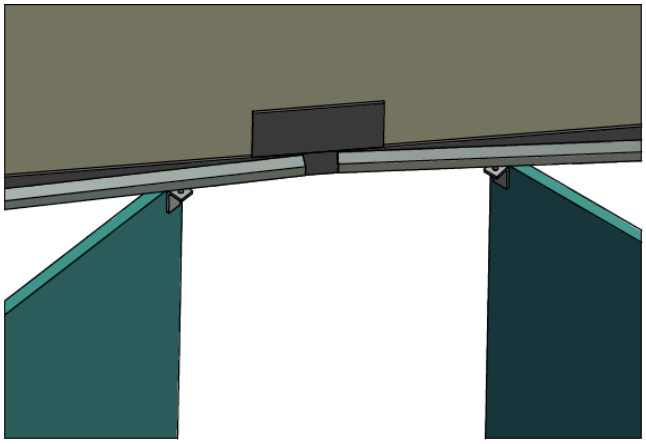
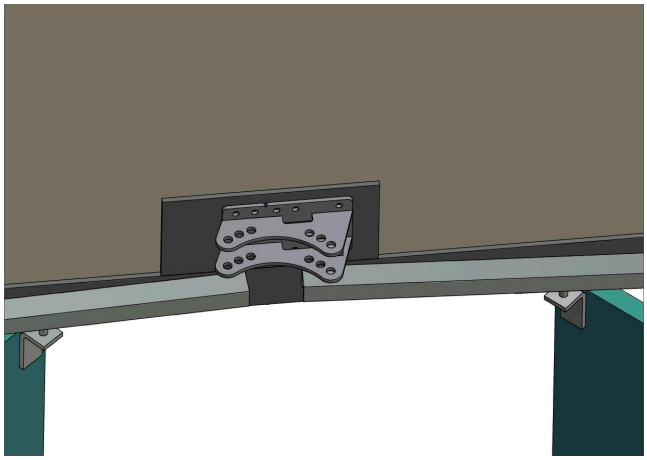
Gate mounting and link arm

3	 	Screw together the link arm with the gate mounting and drive arm. The lateral position of the gate mounting can be determined when the gate is fully closed and the drive arm and link arm are in line. The gate mounting should be as close to the pivot point as possible as this provides the best geometry. Screw the gate mounting into place using two M8 bolts and washers.

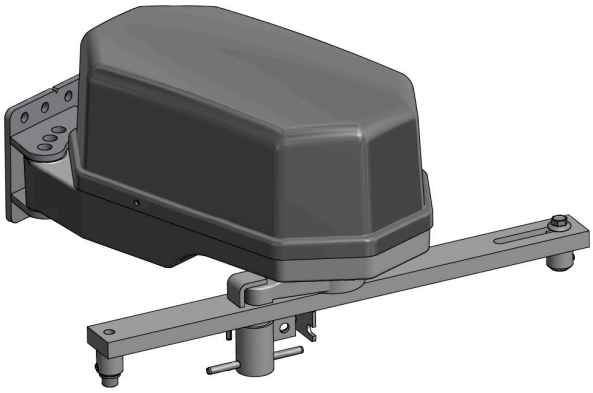
- Top mounting



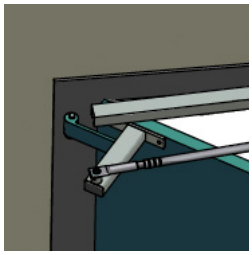
Bracket & mounting plate

1		Positioned centrally above the gate opening. Dimensions and mounting according to the point entitled "Mounting plate" in the chapter "Installation and commissioning; General installation"
2		Centre the plate horizontally above the gate opening. Height dimensions in accordance with a separate assembly drawing. Then weld the motor plate onto the mounting plate.

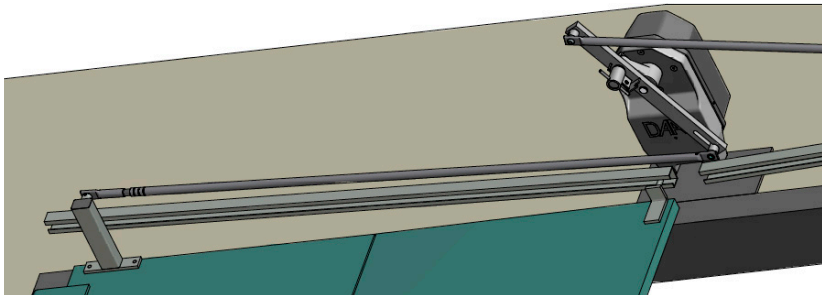
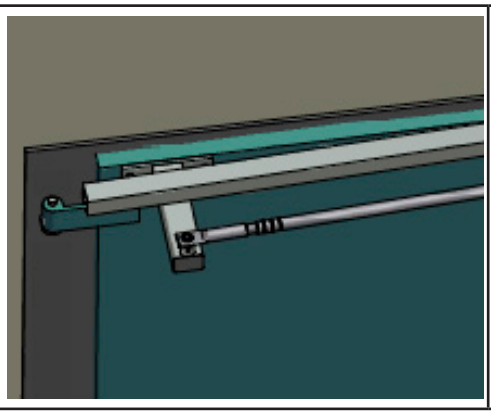
Drive arm

3		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer / retaining ring.

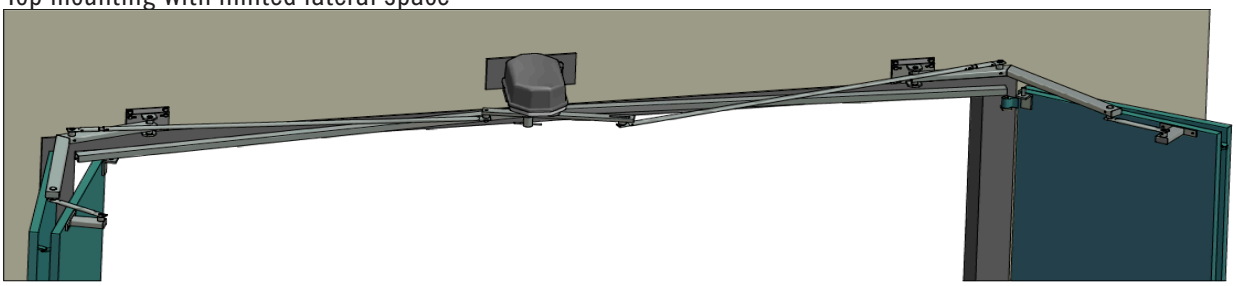
Gate mounting

4		Screw the gate mounting into place using two M8 bolts according to the assembly drawing.

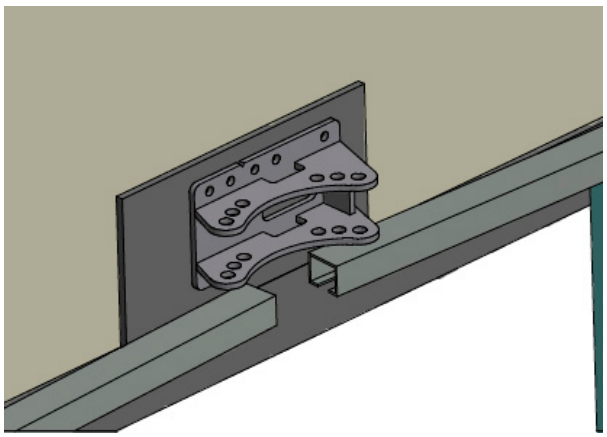
Link arm

5		Position the link arm between the drive arm and gate mounting. Screw it into place using M12 bolts and washers.
6		Adjust it by undoing one bolt and then screwing the arm out or in at the gate mounting.

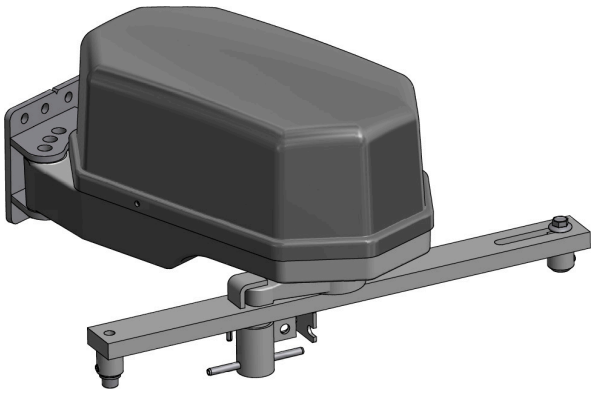
- Top mounting with limited lateral space



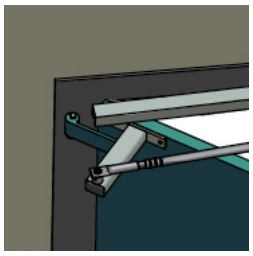
Bracket & mounting plate

1		Centre the plate horizontally above the gate opening. Height dimensions in accordance with a separate assembly drawing. Then weld the motor plate onto the mounting plate.

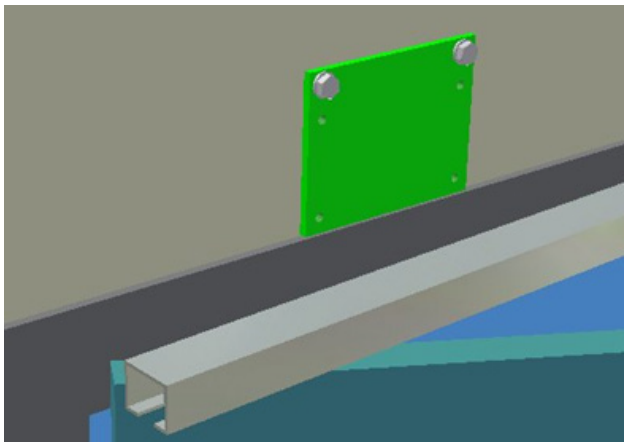
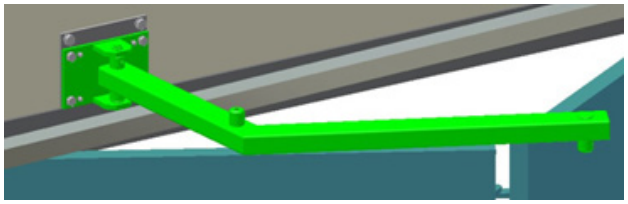
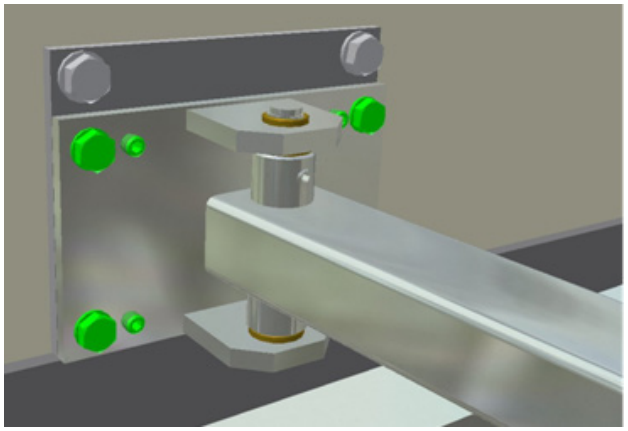
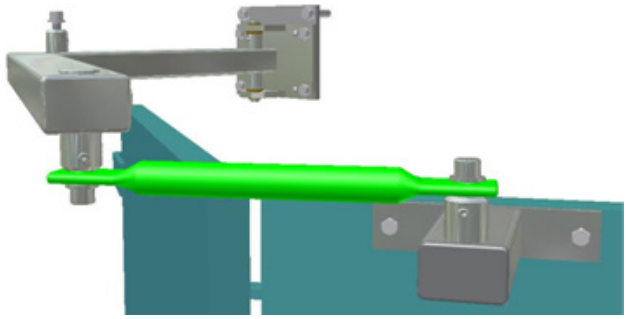
Drive arm

2		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer / retaining ring.

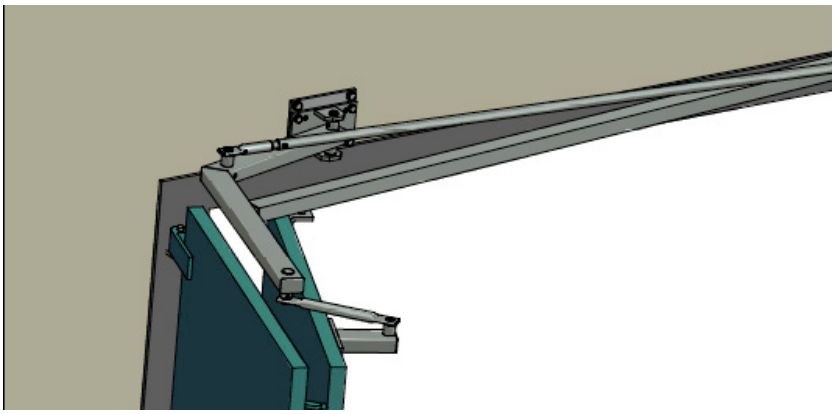
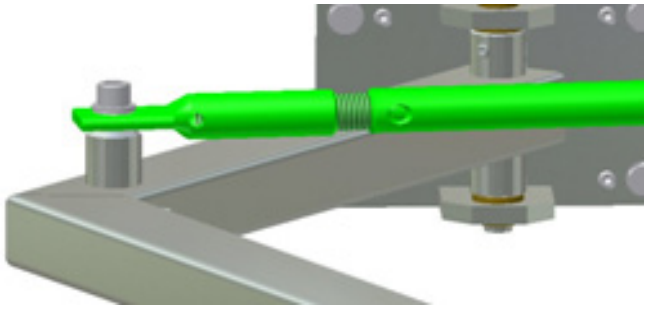
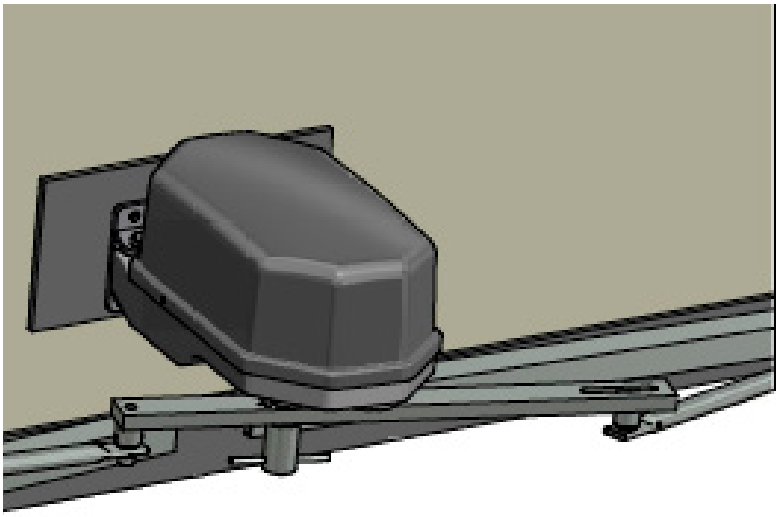
Gate mounting

3		Screw the gate mounting into place using two M8 bolts according to the assembly drawing.

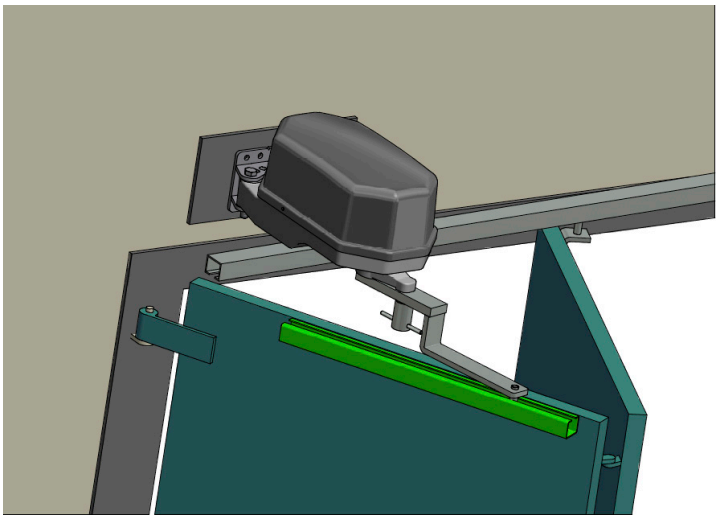
Mounting plate for the swing arm bracket

4		Position the mounting plate for the swing arm bracket according to the point entitled "Mounting plate" in the chapter "Installation and commissioning; Side installation".
5		Screw the bracket into place on the mounting plate using four M10 bolts. Adjust the swing arm so that it is always horizontal.
6		Adjust the mounting using the four set screws.
7		Screw in the short link arm between the outer swing arm mounting and the gate mounting using M12 bolts and washers.

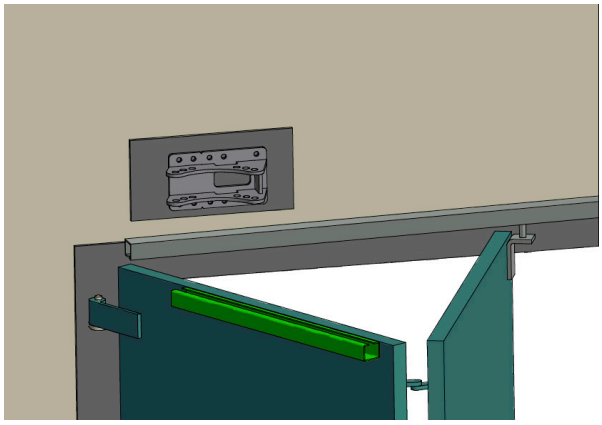
Link arm

8		Screw in the link arm between the drive arm and swing arm using M12 bolts and washers.
9		Adjust it by undoing one bolt and then screwing the arm out or in at the swing arm mounting.
10		Adjust the outer link arm by unscrewing the bolt on the mounting and then inserting it into the oblong groove in the drive arm.

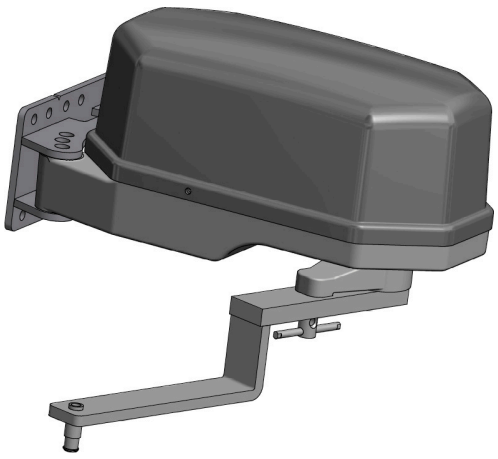
- Wing mounting



Bracket & mounting plate

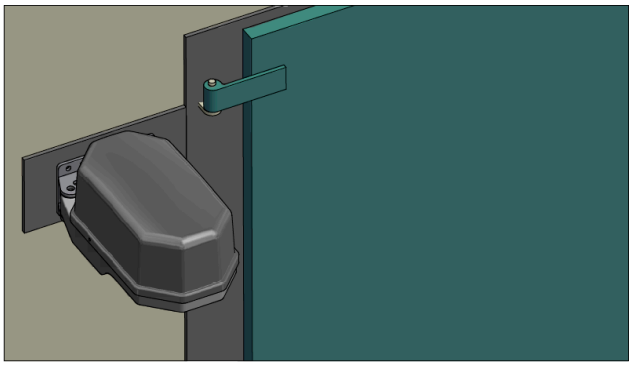
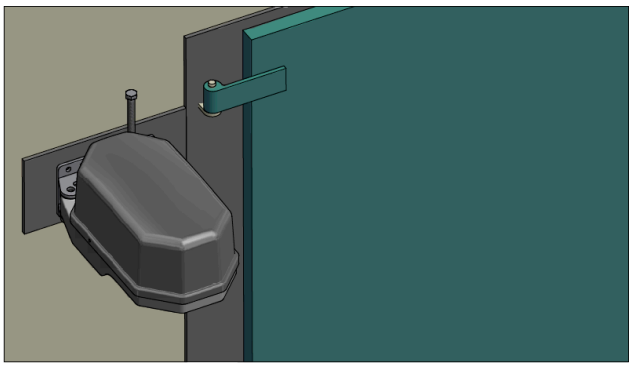
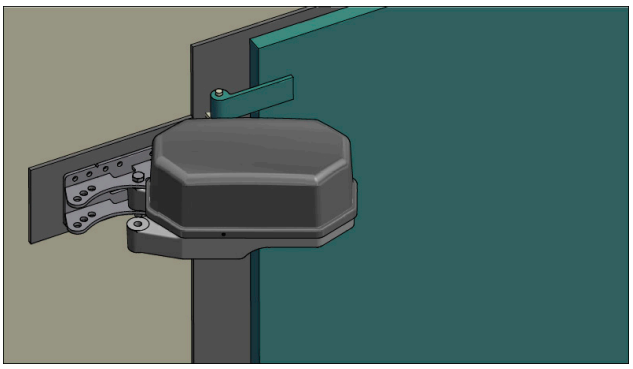
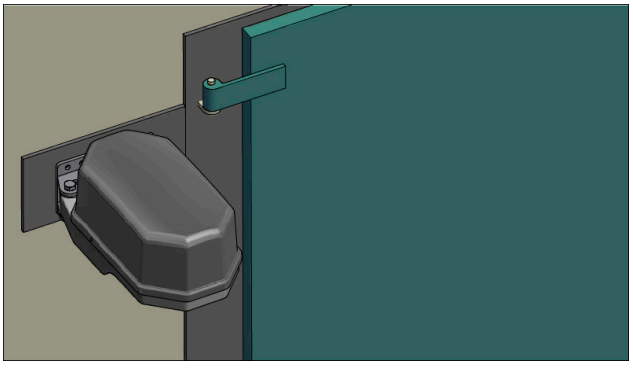
1		Position the motor plate horizontally according to the assembly drawing. Then weld the motor plate onto the mounting plate.

Drive arm

2		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer / retaining ring.

- Installing the drive unit

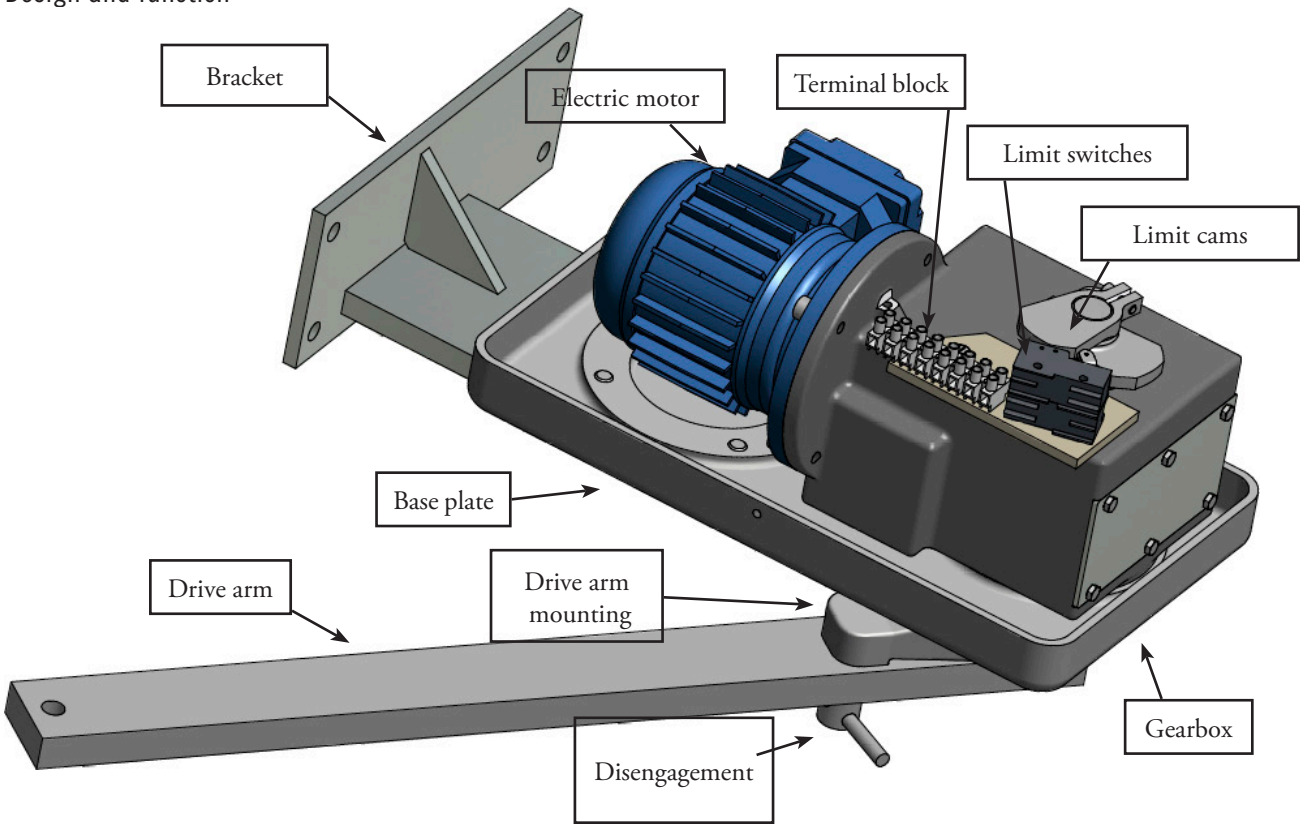
Installation of the drive unit is common to all types of mounting.
The motor is located in different holes depending on the angle at which it is positioned. Viewed from the left this is 90, 100 and 110 degrees. The angle to be used is indicated in the assembly drawing supplied with the unit.

1		Insert the drive unit in the bracket.
2		Tighten one bolt.
3		Turn the drive unit to make the installation of power and limit position cables easier.
4		Turn back the drive unit and tighten the other bolt.

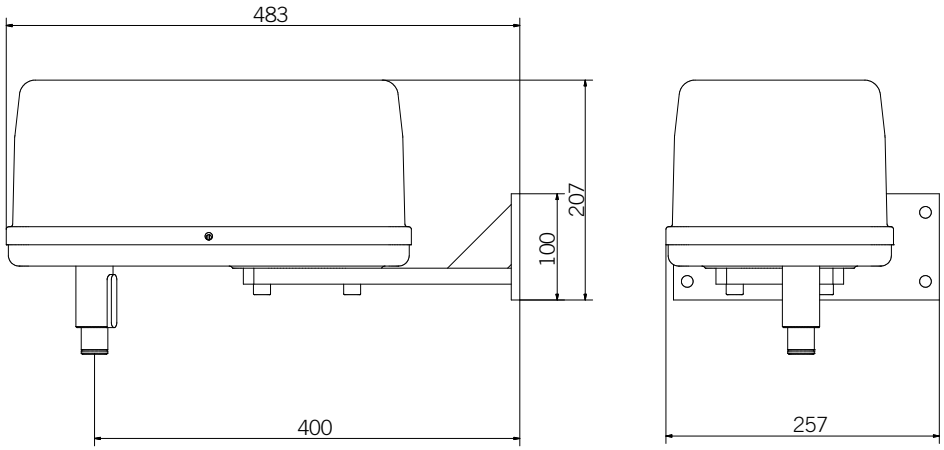
Drive unit MT

- Function description

Design and function



Dimensions



- Technical specification

Electric motors

The design, rated output and connection dimensions of the motors meet the requirements contained in Swedish and European Standards according to IEC 31-1 and 72 together with SS4260101 and SS4360102.

Ratings for motor types used in the MT:

Motor type ~	Hz	Output kW	Voltage V	Current A	Motor speed rpm	Type of opera-tion*	Ingress protection rating	Thermal switch
SKg 63-2B 3-phase	50	0.25	220-240 D 380-420 Y	1.1-1.2 0.65-0.72	2760	S1	IP55	With or without a thermal switch**
	60		440-480 Y	0.65-0.72	3310			
STKg 63X-4C 3-phase	50	0.25	220-240 D 380-420 Y	1.65-1.8 0.95-1.0	1400	S1	IP55	With or without a thermal switch**
	60	0.30	440-480 Y	0.95-1.0	1680			
SEMKg 63-2B 1-phase 8uF/450V	50	0.18	240	1.45	1360	S1	IP55	With or without a thermal switch**
SEMKg 63-4C 1-phase 8uF/450V	50	0.18	240	1.70	2760	S1	IP55	With or without a thermal switch**

*S1 = Continuous operation. The motor can be subject to full load in continuous operation.
*S3 = Intermittent operation. The motor must not be subject to full load for more than 25% of the 10 minute duty cycle. In practice the motor is not subject to full load for more than one second just as it starts.

**The motor is available both with and without an integrated thermal switch. If the motor has a thermal switch there is a red label on the motor indicating this.

Gears

Select the opening speed taking account of the size and weight of the gate. The basic rule is to select a lower speed for large gates.

WARNING
Too high an opening speed can result in trapping forces being too large despite the use of a sensing strip.

ELECTRIC MOTOR OUTPUT SPEED rpm	GEARING i	MOTOR SHAFT SPEED rpm	TORQUE Nm	OPENING TIME seconds
1400	750	1,90	550	16
2800	750	3,80	275	8

- Installation and commissioning

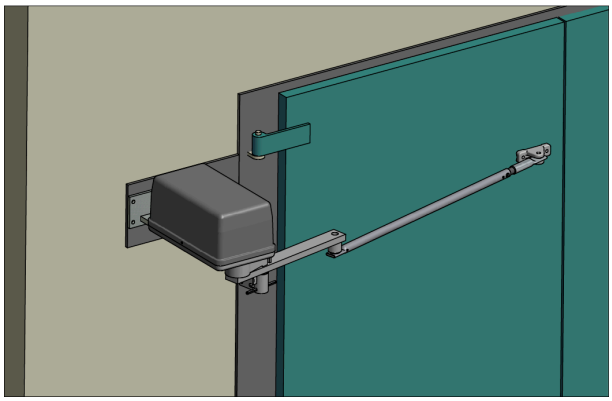
General installation

WARNING
Always start installation with a run through of the points in the: "Pre-installation checklist".

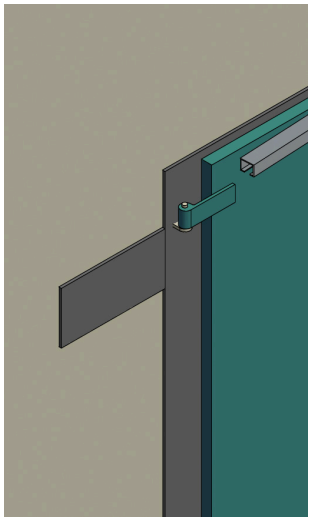
WARNING
The drive unit must be installed so that no unprotected moving parts are lower than 2,500 mm.

WARNING
Always use the fasteners prescribed in the assembly drawing with regard to: property class, dimensions, length and quantity.

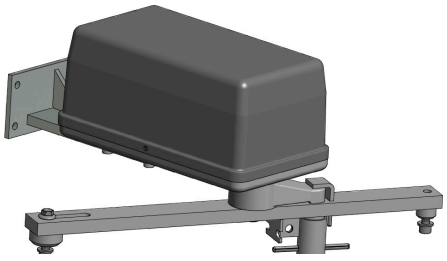
- Side installation



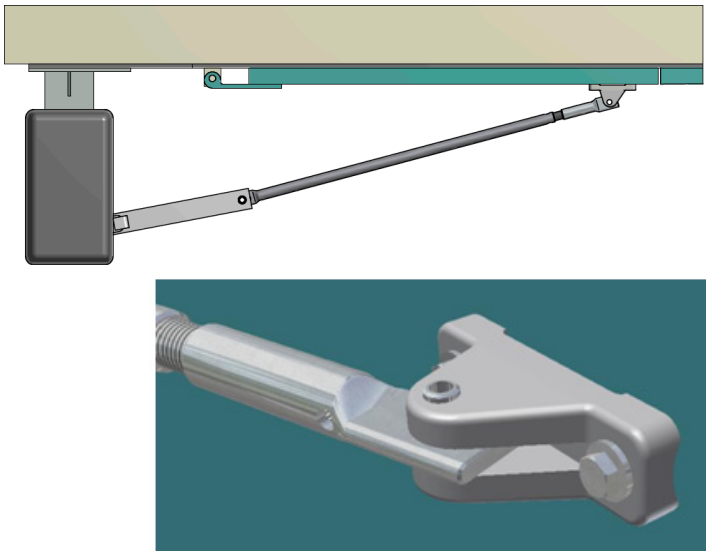
Mounting plate

1		The mounting plate is not manufactured by FAAC. The measurement from the floor or other permanent entry level to the lower edge of the mounting plate should be at least 2,550 mm. The dimensions of the mounting plate should be 200 mm x 400 mm and it should be at least 8 mm thick. It must be positioned according to the enclosed assembly drawing. The mounting plate is to be anchored so that it can withstand a torque of 2,000 Nm. Example: Siporex wall - through-going M10 bolts are used. Concrete – 10 mm resin anchor. Steel building – square tube onto a fixed building structure. The mounting plate is also welded onto the gate surround.

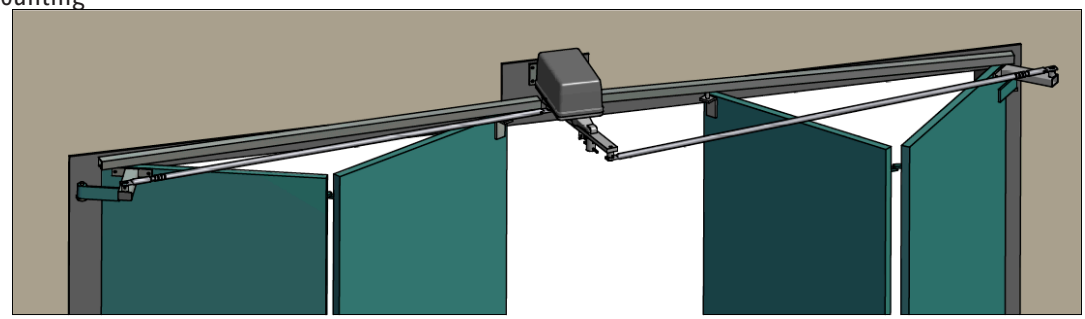
Drive arm

2		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer.

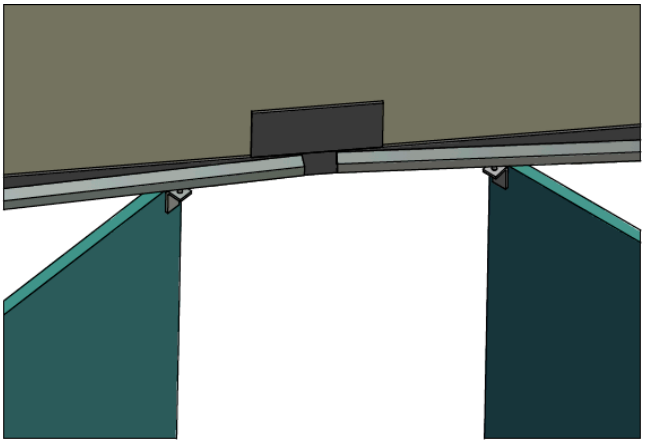
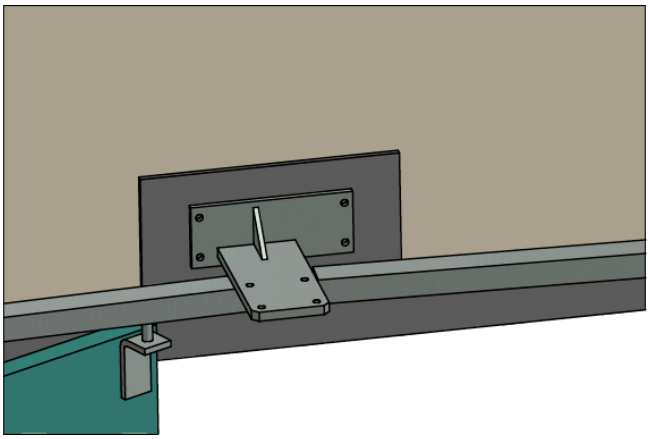
Gate mounting and link arm

3		Screw together the link arm with the gate mounting and drive arm. The lateral position of the gate mounting can be determined when the gate is fully closed and the drive arm and link arm are in line. The gate mounting should be as close to the pivot point as possible as this provides the best geometry. Screw the gate mounting into place using two M8 bolts and washers.

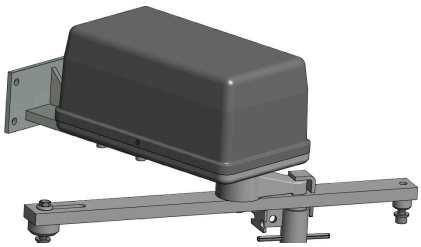
- Top mounting



Bracket & mounting plate

1		Positioned centrally above the gate opening. Dimensions and mounting according to the point entitled "Mounting plate" in the chapter "Installation and commissioning; General installation"
2		Centre the plate horizontally above the gate opening. Height dimensions in accordance with a separate assembly drawing. Then weld the motor plate onto the mounting plate.

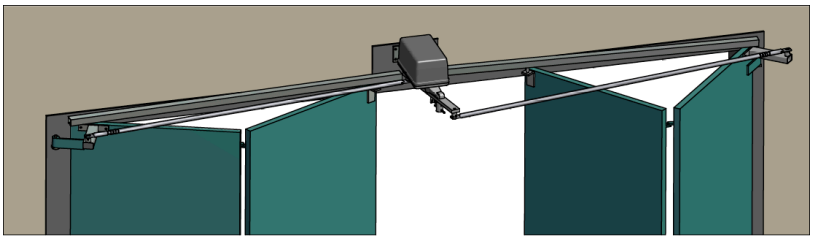
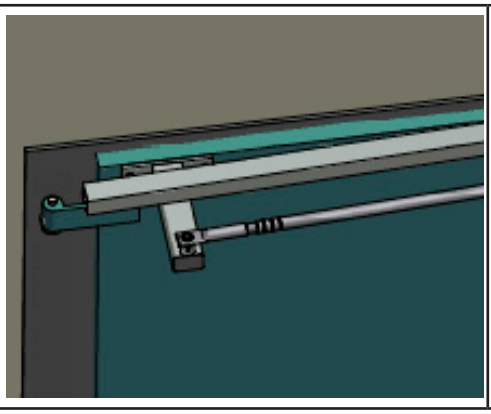
Drive arm

3		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer / retaining ring.

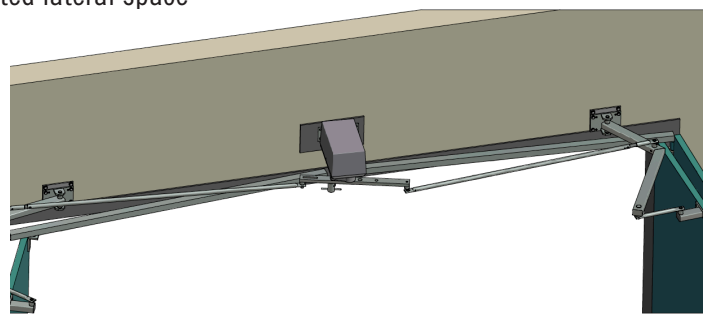
Gate mounting

4		Screw the gate mounting into place using two M8 bolts according to the assembly drawing.

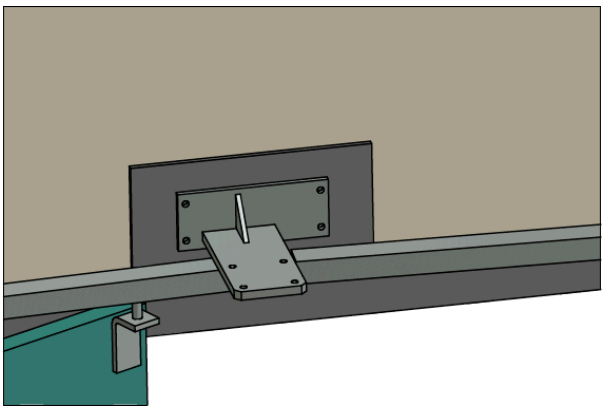
Link arm

5		Position the link arm between the drive arm and gate mounting. Screw it into place using M12 bolts and washers.
6		Adjust it by undoing one bolt and then screwing the arm out or in at the gate mounting.

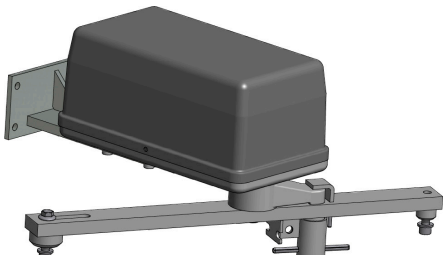
- Top mounting with limited lateral space



Bracket & mounting plate

1		Centre the plate horizontally above the gate opening. Height dimensions in accordance with a separate assembly drawing. Then weld the motor plate onto the mounting plate.

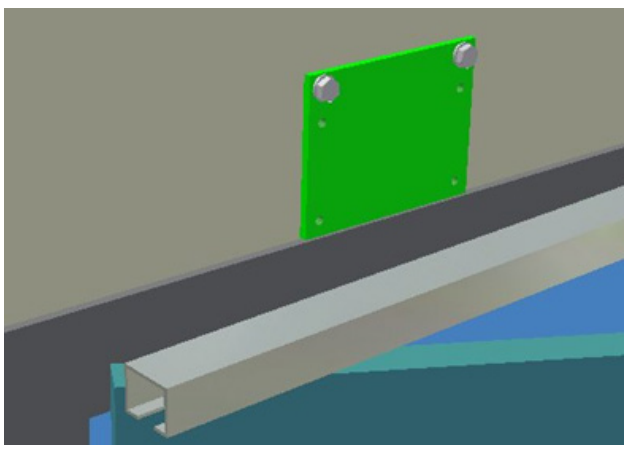
Drive arm

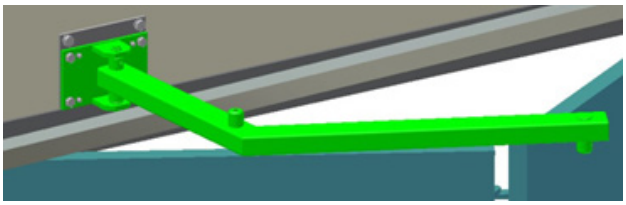
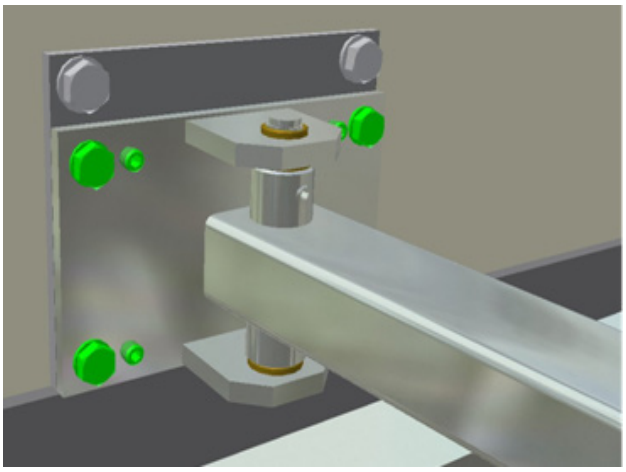
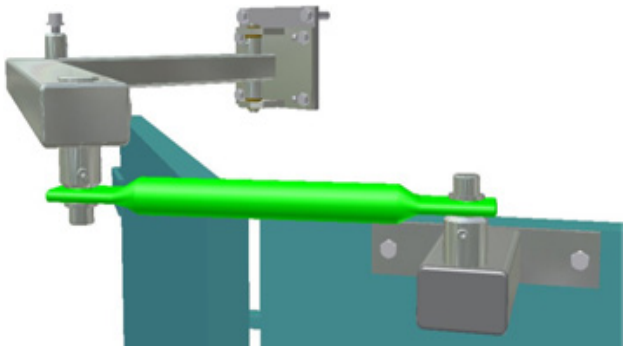
2		Install the drive arm by removing the bolt and washer / retaining ring on the output shaft from the drive unit and pressing the arm into place. Then reinstall the bolt and washer / retaining ring.

Gate mounting

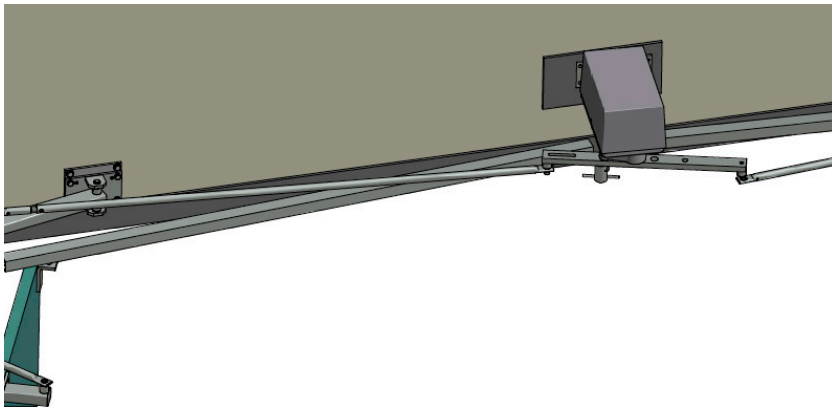
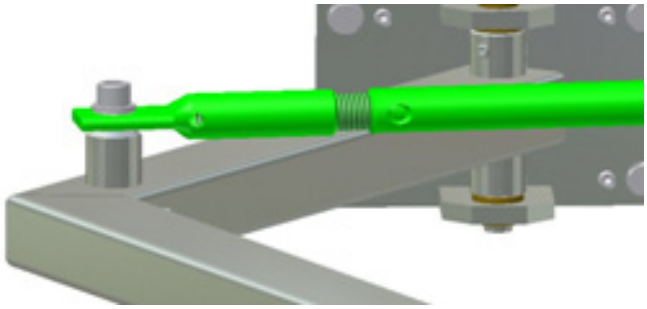
3		Screw the gate mounting into place using two M8 bolts according to the assembly drawing.

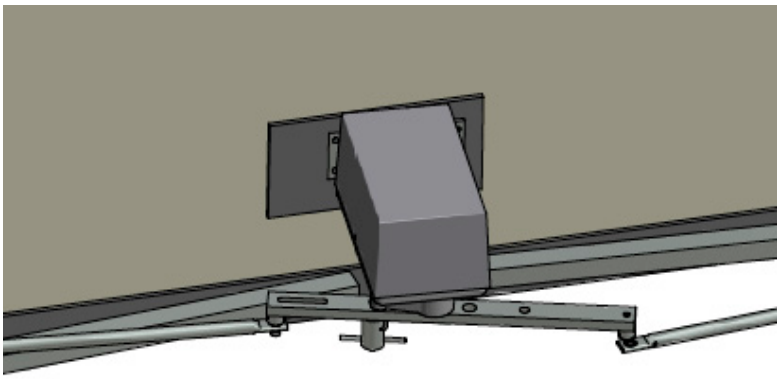
Mounting plate for the swing arm bracket

4		Position the mounting plate for the swing arm bracket according to the point entitled "Mounting plate" in the chapter "Installation and commissioning; Side installation".

5		Screw the bracket into place on the mounting plate using four M10 bolts. Adjust the swing arm so that it is always horizontal.
6		Adjust the mounting using the four set screws.
7		Screw in the short link arm between the outer swing arm mounting and the gate mounting using M12 bolts and washers.

Link arm

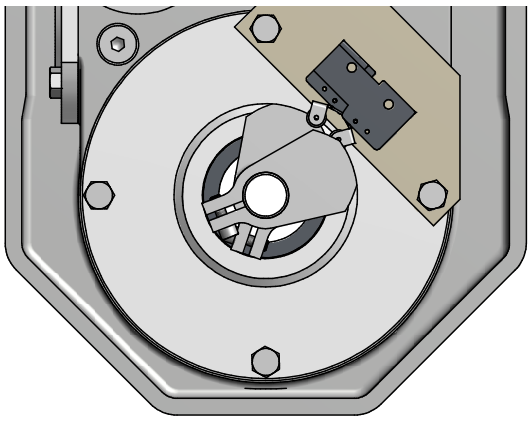
8		Screw in the link arm between the drive arm and swing arm using M12 bolts and washers.
9		Adjust it by undoing one bolt and then screwing the arm out or in at the swing arm mounting.

10		Adjust the outer link arm by unscrewing the bolt on the mounting and then inserting it into the oblong groove in the drive arm.

- Adjusting the drive unit

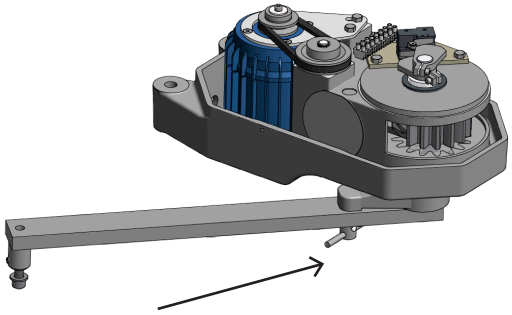
⚠	WARNING Disengage the door/gate at the drive arm and ensure that it can be easily operated manually.

⚠	DANGER Before all safety devices are in operation and are correctly calibrated only hold to run operation is permitted.

	Ensure that the door/gate opens and closes to the correct position, i.e. that it does not press too hard on the surround or does not open completely. The leaves of the gate must line up with each other in the closed position which is important if there is a solenoid lock or striker. Adjust the limit positions by turning the limit cams on top of the drive unit output shaft. The upper cam is for adjusting the closed position and the lower for the open position.

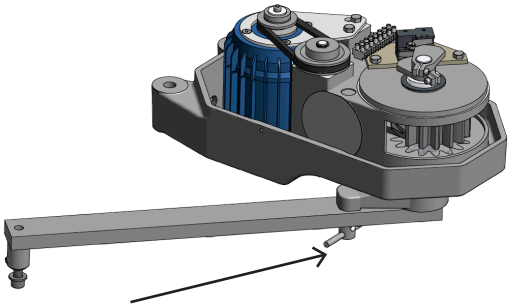
- Disengagement

  Quick release



Turn the release handle a half turn to disengage the door.

Release handle



Unscrew the release handle from the drive arm mounting to disengage the door.

Electrical connection

- General

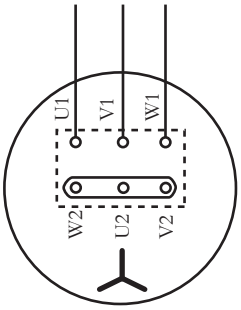
	WARNING Turn off the main circuit breaker before carrying out electrical work.

	WARNING All electrical work must be carried out by a qualified electrician.

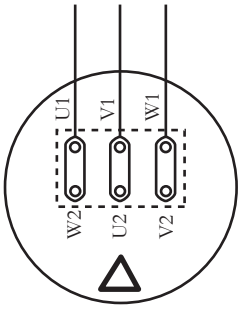
NOTE!
Check that the supply voltage and motor voltage are the same.

- Engaging the electric motor

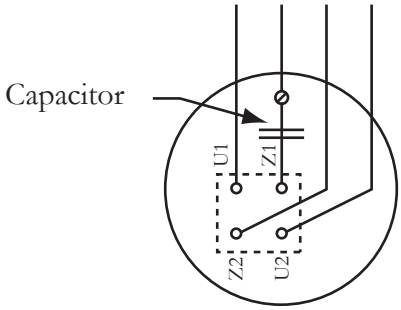
Connection of electrical motor



3-phase motor
Star-coupled



3-phase motor
Delta-coupled



1-phase motor
Assymetrical

- Limit positions

	Terminal block on the limit position plate
No. 1	Limit position Open (lower cam) C
No. 2	Limit position Open (lower cam) NC
No. 3	Limit position Close (upper cam) C
No. 4	Limit position Close (upper cam) NC
No. 5	Thermal switch (if used)
No. 6	Thermal switch (if used)
No. 7	Connection block for the anti-trap guard or solenoid etc.
No. 8	Connection block for the anti-trap guard or solenoid etc.

Maintenance and service

- General

WARNING
Turn off the main circuit breaker before carrying out service and maintenance.

NOTE!
Check of safety circuits according to the Industrial Door Standard and national regulations
Since FAAC Nordic don't supply the complete machine, we refer to the instructions made by the supplier of the industrial door or gate. According to the Swedish authority "Boverket", the function of the safety arrangements shall be checked according to the instructions of the industrial door or gate supplier. If instructions are missing, a check of the safety functions shall be performed twice a year.
This must be documented in a log book.

Preventive maintenance must be performed depending of usage frequency and application; i.e. a big and heavy door or gate in a high frequency usage environment must be maintained more often than a small and light door/gate with low usage.
The table below describes a medium size door/gate with medium frequency usage.

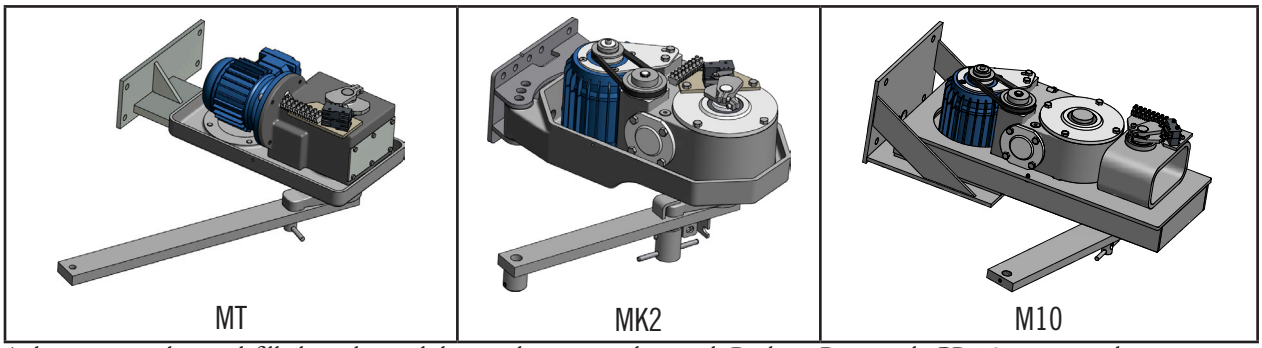
Openings/day	**Maintenance interval** *
< 100	24 months
100 – 200	12 months
200 – 500	6 months
> 500	3 months

*) To ensure that the correct maintenance interval is chosen, the drive unit shall be checked 2 – 3 months after commissioning to decide which interval is required in the current installation.

Preventive maintenance includes the following points:
- Check that all bolts are tightened.
- Check the tension and condition of the V-belt (where applicable), adjust ocr change if necessary.
- Check that the release mechanism can be easily disengaged, lubricate if necessary.
- Lubricate the spherical link arm bearings with grease.
- Check the lubrication of the gearbox, see instructions pn the following page.

- Lubrication

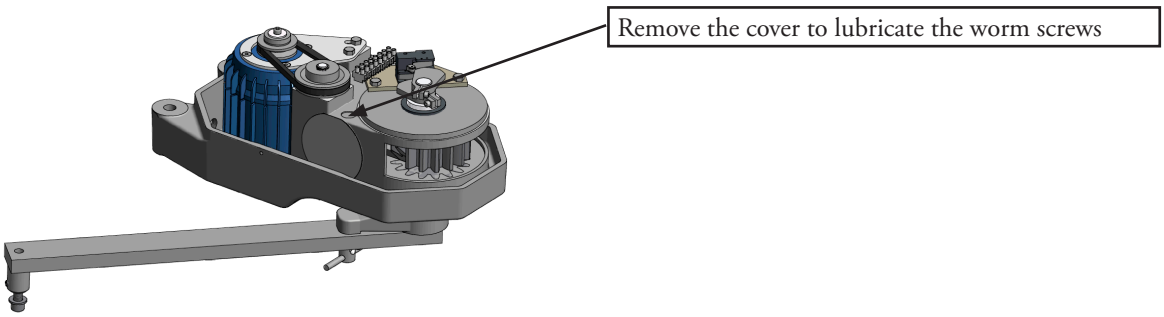
Oil filled gearbox



A drive unit with an oil-filled gearbox is lubricated using synthetic oil: Bechem Berusynth GP 150 or equivalent.
Oil change is normally not necessary.

The M10 drive unit has two gear wheels under the gearbox. These must be lubricated using Molykote 165 LT at the intervals chosen according to previous page.

Open gearbox



MA2

A drive unit with an open gearbox must be lubricated at the intervals chosen according to previous page.
Apply Molykote 165 LT onto the worm gears and worm screws.

Spare parts

Contact FAAC Nordic AB with any queries or to order spare parts and accessories.
Always give the serial number which is located on the inside of the control cabinet.

Fault search

- In the event of a blockage

If the door/gate cannot be operated manually using one of the normal control devices, use the manual release (see the chapter on disengagement). Disengagement means that the door/gate can be opened and closed manually without damaging the drive mechanism.

- In the event of a collision

A collision can seriously damage the installation, always check the anti-trap function, load guard and that parts are intact before continuing to use the system. If spare parts are needed see the chapter on spare parts.

- The motor is running but the gate is not moving

Check that the door/gate is not disengaged. If the installation is disengaged, try to contact the person who disengaged it to find out the reason for this. If the installation is not disengaged, check that the drive arm mounting and other mechanical components are intact.

FAAC