

Operating instructions



Subject to technical changes

Framo Morat GmbH & Co. KG
Höchst 7 • D-79871 Eisenbach

Tel.: +49 (0) 7657 / 88-0
Fax: +49 (0) 7657 / 88-333

www.framo-morat.com
info@framo-morat.com

Installation- and operating instructions

1.0 Safety information



- Before installation and operation please read all documents carefully and follow all instructions.
- The mechanical and electrical installation as well as the adjustment and setup has to be done by certified electricians.
- Doublecheck the technical data on the name plate and follow the instructions on the labels of the drive .
- Moving parts have to be secured against unintentional contact to avoid injuries. The manufacturer points out that this is the responsibility of the user.
- Don't modify the drive. Modifying the drive is dangerous and voids the warranty.
- Don't block the drive while operating. This may damage the drive seriously.
- Don't overload the drive. The values for torque and duty cycle declared on the name plate can't be exceeded. Otherwise the drive may be damaged seriously.



- Make sure that power is disconnected before working on the open terminal box or limit switches. Secure the power source against unintentional switch on.
- Connect the drive only to a power source with ground terminal .
- Pay attention to the appropriate circuit diagram (schematic).



- Don't touch the drive during operation. The housing temperature can rise up to 90°C (close to 200°F).

1.1 Conditions of use

Framo gear motors and actuators shall not be used for the movement of loads whereby persons can be directly or indirectly endangered.

The use of Framo gear motors and actuators for machines which are intended for the transport of passengers is only permissible after prior written consultation and the agreement of the manufacturer Framo or their representatives.


Avoid environmental temperatures below 0°C and above 60°C.

We refer users of gear motors to safety rules, regulations and laws governing the protection of staff working in the area of moving equipment. Protective guards or barriers shall be used.

Similarly-protective measures are required where suspended loads are involved.

Don't overload or modify the drive.

Do not use the drive in dangerously explosive areas. Our drives are certified according to directive 94 / 9 / EG (ATEX 95) and have the following symbols (optional):

EEEx II 3D,  bck II T5

2.0 Documentation

Every drive is shipped with operating instructions and circuit diagram. These are taped to the drive in an envelope. The technical documentation is available in German and English.

3.0 Setup, mounting and electrical connection

3.1 Setup and mounting

Wear safety-shoes while carrying and working on/with the drive. A falling drive may cause injuries. Mount the drive with four screws, making sure that the case is not distorted. Other parts (e.g. couplings, chain sprockets) must not be mounted by hammering (bearings and retaining rings may be damaged). Parts to be mounted on the stub shaft (if supplied) should be heated to about 200C to ease assembly. To simplify the adjustment of the limit switches make sure that the middle position of the internal limit switches meet the middle position of the application.

Fastening torque for mounting screws

The property class for the mounting screws has to be 8.8 or better. Use the correct screw length to avoid damage of the housing. Use the following table for correct fastening torques.

	Torque
MR6	14 Nm
MS12	14 Nm
MR30	25 Nm
AG60	25 Nm
AG60Plus	120 Nm

Capacity of the output shaft

	Radial load	Axial load
MR 6	1500 N	750 N
MS 12	1500 N	750 N
MR30	2000 N	1000 N
AG 20/60	2000 N	1000 N
AG plus	5000N	1000 N

Pressure compensation for drives with high duty cycle

Replace the upper screw plug with vent on high duty cycle applications. Drives for applications with less than 60% duty cycle are not delivered with vent.

Attention!

Vents may affect the standard protection class rating (IP54).

3.2 Electrical Installation



- Make sure to interrupt the current supply before working on the terminal box or limit switches and secure it against unintentional switch on.
- Connect the drive only to a power source with ground terminal.
- Read the circuit diagram carefully and pay attention to use the right voltage (see name plate on the drive)
- Connect all external control- and power conduction to the corresponding internal contacts (according to circuit diagram). If limit switches and/or thermal protection are not connected the drive can be destroyed. The thermal sensor is a NC contact (normally closed) and shall interrupt the motor power if activated.

Attention!

Protect the motor against unintentional start, because the thermal switch automatically closes the contact after cooling down (bi-metal contact).

- On the 3-phase motors the motor may turn CW or CCW. Test the direction by jogging the motor and doublecheck the correct limit switch wiring. The motor direction may be changed by changing 2 phases.
- The standard protection rating is IP54. The IP rating can only be assured if the appropriate cable connectors are used.

3.3 Note

Don't decelerate the motor by reversing the motor power. The life of the gear motor will be dramatically reduced.

4.0 Important informations

4.1 Duty cycle

COMPACTA gear motors are typically used for intermittent forward / reverse applications (max. duty rating 60 %) using the internal limit switches and a standard non-ventilated motor. For higher duty cycles there is an optional cooling fan or forced ventilation fan (duty rating 100 %). The duty cycle reference time is 10 minutes in a max. ambient temperature 40°C at an altitude of 1000 meters.

4.2 Ambient temperature, water condensation

Consult the manufacturer for operation under 0°C (to select a suitable gear oil). Permanently changing temperatures or high humidity can lead to water condensation. The provision of condensed water drain holes (ø 2mm) in the motor casing and in the terminal box (in conjunction with a moisture protection varnish coat on the rotor/stator) produces a significant improvement (not possible with MR6 - 24V DC motor).

Attention!

The drain holes will effect the standard protection class (IP54).

The provision of stand-by heating of the gear unit serves the same purpose. This is simply arranged by providing a low current through one phase connection whilst the gear unit is at a standstill, the gear unit will remain warm to the touch. Each motor type has a different tension, we therefore recommend to contact the manufacturer's work or foreign agent in any case.

4.3 Hand crank

In case of operation with hand crank an overtravel of the limit switches must be avoided. It is possible to incorporate a sight glass to the switch box cover as an optional if preferred.

4.4 Operating temperature

If the temperature of the drive, in spite of approved usage, exceeds 90°C, refer to the manufacturer. Perhaps there's a defect.

4.5 Safety coupling between limit switches and main gearing (MS and AG)

In-appropriate installation (no or false wiring of the switches) can cause the shift nut to overtravel and run against the limit switches. A coupling between the limit switch box and the main gearbox protects the limit switch assembly by breaking in case of overloading (white plastic coupling with 12mm diameter).

Compacta MS12 and AG60 gear motors are equipped with a spare coupling. Please contact the manufacturer if you need instructions to replace the coupling.

4.6 Oil leaks:



Use extra caution if the gear motor is leaking oil. The surface might be slippery.

4.7 Self-locking

Self-locking is affected by lead angle, face surface roughness, running speed, lubricant and temperature rise. A distinction must be made between dynamic (from motion) and static (standstill) self-locking.

Shaking or vibration can cancel out self-locking.

Similarly a number of factors associated with lubrication, running speed and load can favour slip characteristics to such an extent that self-locking is counteracted.

This means that gearing which is self-locking in theory is no substitute for a brake or reverse lock. Therefore it is impossible for us to accept warranty obligations in respect of self-locking.



Important: Self-locking can NOT be responsible for safety characteristics!

Consider the usual precautions in connection with technical products to minimize further dangers.

5.0 Warranty, maintenance, approved usage

The drive is maintenance free due to lifetime-lubrication.

The lifetime of the drive depends on the application (eg. ambient temperature, torque, speed, cycles, environmental influences).

5.1 Warranty and repair

All drives are tested before delivery. During warranty-time the drive shall not be opened except for the cover of the terminal box or the limit switch box. Further dismantling leads to expiration of any warranty by the manufacturer.

If a drive has to be repaired send it back to the customer or a suitable agency. A service technician can be ordered for on-site service on short notice.

6.0 End of product life-time:

6.1 When the indicated lifetime is reached you can send the drive back for an overhaul.

6.2 If you want to dispose the drive please pay attention to ecological and legal regulations.

7.0 Service

To offer fast and competent help to our customers - e.g. while installation - we provide a service-number.

Under +49 (0)160 / 941 84 444 you can reach the 24 hour hotline. Please note that the usual fee will arise.



Subject to technical changes