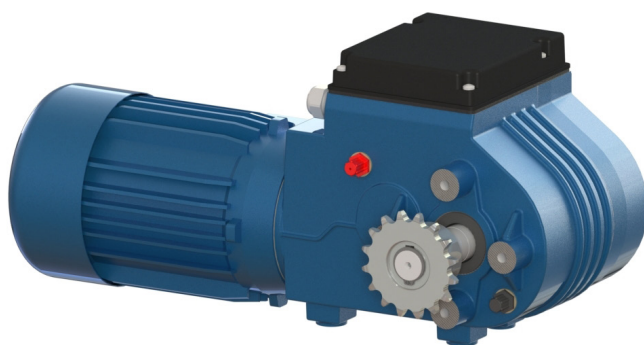


GW Installation manual

Standard	Winch	Rack drive	HB serie	HC serie
GW10	GW10L	GW10TGA	GW40HB	GW40HC
GW20	GW30L	GW20TGA	GW80HB	GW80HC
GW30			GW100HB	GW125HC
GW40				GW150HC



Declaration of incorporation

Declaration of incorporation in accordance with the European Machinery Directive 2006/42/EC, Annex II, No. 1B

DE GIER B.V.
WESTLANDSEWEG 9
NL-2291 PG WATERINGEN
THE NETHERLANDS

We hereby declare that pursuant to article 2G the following partly completed machines are exclusively intended to be integrated into or mounted in another machine or piece of equipment:

Motor: GW10 / GW20 / GW30 / GW40 / GW80 / GW100 / GW110S / GW150S / GW40HB / GW80HB /
GW100HB / GW40HC / GW80HC / GW125HC / GW150HC / GW10L / GW30L / GW40L /
GW10TGA / GW20TGA

The specific technical documents pursuant to annex VII B have been drawn up and shall be sent on request by post to the national authorities.

This partly completed machine is compliant with the provisions of the following European directives:

European Machinery Directive 2006/42/EC
European EMC Directive 2004/108/EC

The following harmonised standards (or parts of these standards) have been applied:

EN ISO 12100-1, -2: 04/2004

Safety of machinery: Basic terms, general design principles

EN ISO 14121-1:12/2007

Safety of machinery: Risk assessments

EN 60204-1:06/2007

Safety of machinery: Machinery electrical equipment

EN 60034-5:09/2007

Rotating electrical machines (only electric motors)

This partly completed machine may only be commissioned if it has been established that the machine into which this partly completed machine needs to be built satisfies the provisions of the machinery directive.

Authorised compiler of the technical documents:

Rob Sandberg
Director General of De Gier B.V.
Wateringen, 14-10-2014



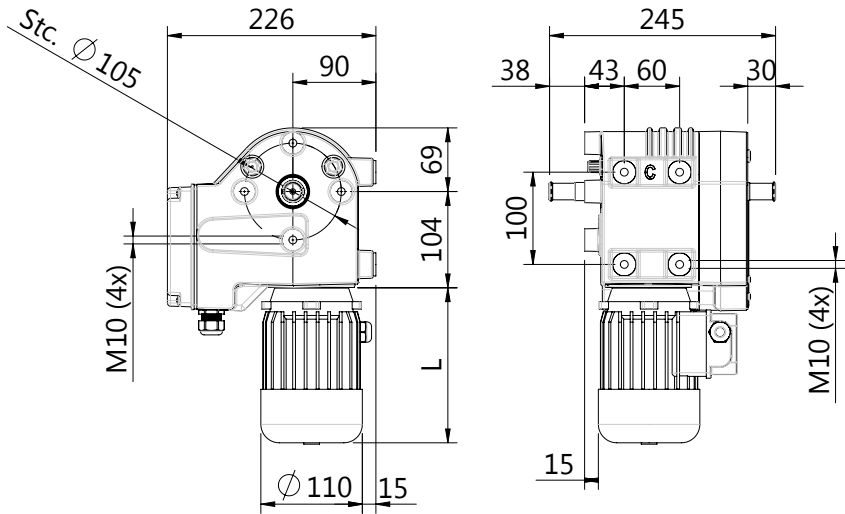
Content

Declaration of incorporation	2
Dimensions	4
Technical specifications	5
1. Explanation of symbols and safety instructions	6
2. Productname	8
3. Instructions for use	9
4. Installation	10
5. Electrical connection and commissioning	16
6. Use	18
7. Inspection and maintenance	19
8. Dismounting	19
9. Trouble shooting	20
10. Spare parts and parts replacement	19
11. Disposal	21
12. Warranty	21
Glossary	22
Appendix:	
Wiring diagram for 400 V tree-phase supply	
Wiring diagram for 400 V tree-phase supply	

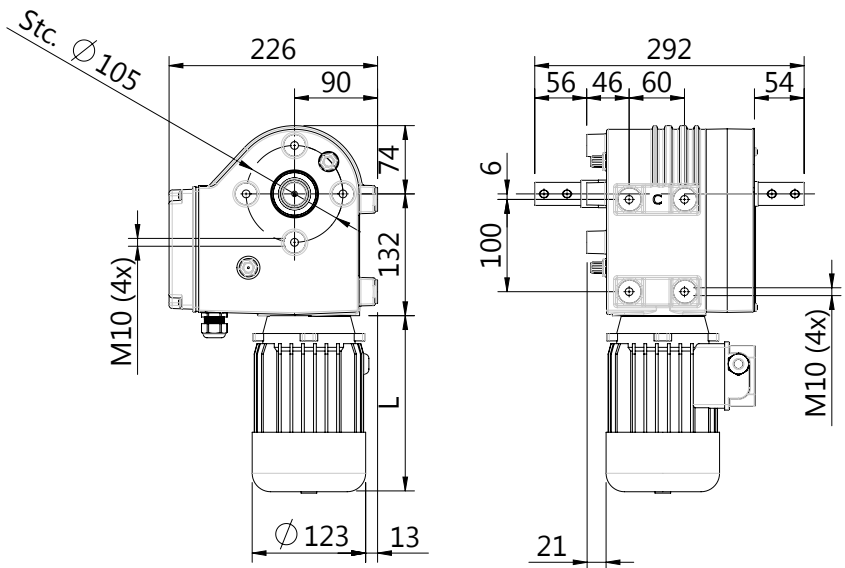


Dimensions

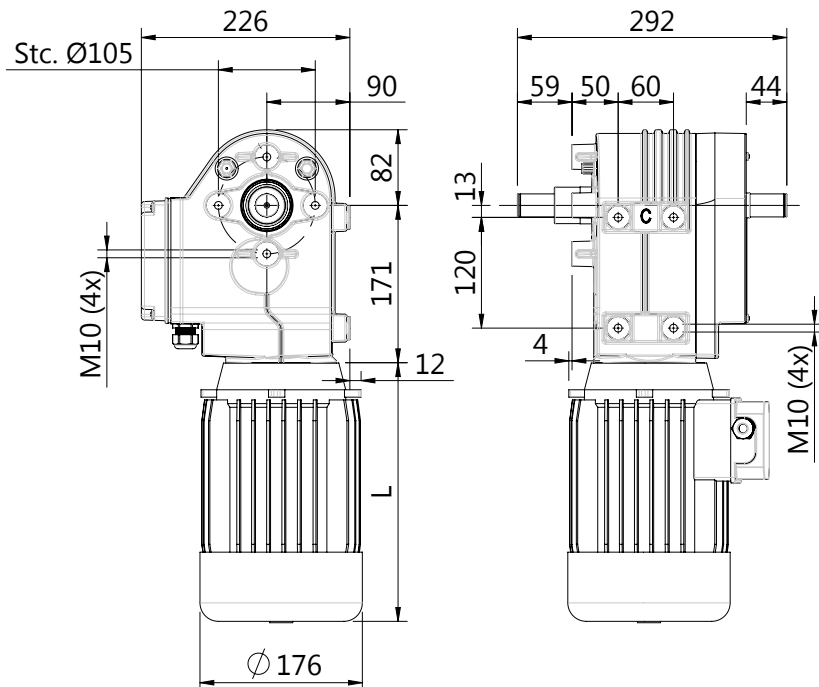
GW10



GW20 - GW30



GW40 - GW150



Technical specifications

Description	50 Hz					60 Hz					L [mm]	m [kg]
	T ₂	n [rpm]	P [kW]	U [V]	I [A]	n [rpm]	P [kW]	U [V]	I [A]			
P.GW10.230.13 *1	100	1,3	0,09	230(~1)	1,3 / -						191	20
P.GW10.230.26 *1	100	2,6	0,18	230 (~1)	1,6 / -	*2	*2	*2	*2		191	23
P.GW10.230.52 *1	100	5,2	0,18	230 (~1)	1,5 / -						191	23
P.GW10.400.13 *1	100	1,3	0,09	230/400 (~3)	0,9/0,5	1,6	0,11	277/480 (3~)	0,9/0,5		191	20
P.GW10.400.26 *1	100	2,6	0,09	230/400 (~3)	0,7/0,4	3,1	0,11	277/480 (3~)	0,7/0,4		168	20
P.GW10.400.52 *1	100	5,2	0,18	230/400 (~3)	1,0/0,6	6,3	0,22	277/480 (3~)	1,0/0,6		191	23
P.GW10.400.150 *1	100	15	0,37	230/400 (~3)	1,7/1,0	18	0,44	277/480 (3~)	1,7/1,0		220	34
P.GW10.400.300 *1	100	30	0,75	230/400 (~3)	3,5/2,0	36	0,9	277/480 (3~)	3,5/2,0		220	34
P.GW20.230.13 *1	200	1,3	0,18	230 (~1)	1,6 / -						191	23
P.GW20.230.26 *1	200	2,6	0,37	230 (~1)	3,2 / -	*2	*2	*2	*2		220	28
P.GW20.230.52 *1	200	5,2	0,37	230 (~1)	3,6 / -						220	28
P.GW20.400.13 *1	200	1,3	0,18	230/400 (~3)	1,2/0,7	1,6	0,22	277/480 (3~)	1,2/0,7		191	23
P.GW20.400.26 *1	200	2,6	0,18	230/400 (~3)	1,2/0,7	3,1	0,22	277/480 (3~)	1,2/0,7		191	23
P.GW20.400.52 *1	200	5,2	0,37	230/400 (~3)	1,7/1,0	6,3	0,44	277/480 (3~)	1,7/1,0		20	28
P.GW20.400.80 *1	200	8	0,37	230/400 (~3)	1,7/1,0	9,6	0,44	277/480 (3~)	1,7/1,0		220	34
P.GW20.400.150 *1	200	15	0,75	230/400 (~3)	3,5/2,0	18	0,9	277/480 (3~)	3,5/2,0		242	34
P.GW20.400.300 *1	200	30	1,5	230/400 (~3)	5,9/3,4	36	1,8	277/480 (3~)	5,9/3,4		242	34
P.GW30.230.13 *1	300	1,3	0,37	230 (~1)	3,2 / -						220	25
P.GW30.230.26 *1	300	2,6	0,37	230 (~1)	3,2 / -	*2	*2	*2	*2		220	28
P.GW30.230.52 *1	300	5,2	0,56	230 (~1)	4,5 / -						220	28
P.GW30.400.13 *1	300	1,3	0,18	230/400 (~3)	1,2/0,7	1,6	0,22	277/480 (3~)	1,2/0,7		191	23
P.GW30.400.26 *1	300	2,6	0,25	230/400 (~3)	1,4/0,8	3,1	0,33	277/480 (3~)	1,4/0,8		220	25
P.GW30.400.52 *1	300	5,2	0,37	230/400 (~3)	1,7/1,0	6,3	0,44	277/480 (3~)	1,7/1,0		220	28
P.GW30.400.150 *1	300	15	1,1	230/400 (~3)	5,4/3,1	18	1,3	277/480 (3~)	5,4/3,1		242	34
P.GW40.230.13 *1	400	1,3	0,37	230 (~1)	3,2 / -						220	28
P.GW40.230.26 *1	400	2,6	0,55	230 (~1)	4,8 / -	*2	*2	*2	*2		242	33
P.GW40.230.52 *1	400	5,2	0,75	230 (~1)	6,0 / -						242	34
P.GW40.400.13 *1	400	1,3	0,25	230/400 (~3)	1,4/0,8	1,6	0,33	277/480 (3~)	1,4/0,8		220	28
P.GW40.400.26 *1	400	2,6	0,37	230/400 (~3)	1,7/1,0	3,1	0,44	277/480 (3~)	1,7/1,0		220	30
P.GW40.400.52 *1	400	5,2	0,55	230/400 (~3)	2,8/1,6	6,3	0,65	277/480 (3~)	2,8/1,6		220	30
P.GW40.400.80 *1	400	8	0,75	230/400 (~3)	3,4/2,0	9,6	0,9	277/480 (3~)	3,4/2,0		242	34
P.GW60.230.52 *1	600	5,2	1,1	230 (~1)	9,5 / -	*2	*2	*2	*2		242	34
P.GW60.400.52 *1	600	5,2	0,75	230/400 (~3)	3,5/2,0	6,3	1,13	277/480 (3~)	3,5/2,0		220	30
P.GW80.400.13 *1	800	1,3	0,37	230/400 (~3)	1,7/1,0	1,6	0,44	277/480 (3~)	1,7/1,0		220	30
P.GW80.400.26 *1	800	2,6	0,55	230/400 (~3)	2,6/1,5	3,1	0,66	277/480 (3~)	2,6/1,5		220	32
P.GW80.400.40 *1	800	4	0,75	230/400 (~3)	3,5/2,0	6,3	0,9	277/480 (3~)	3,5/2,0		242	39
P.GW100.400.26 *1	1000	2,6	0,75	230/400 (~3)	3,8/2,2	3,1	0,9	277/480 (3~)	3,8/2,2		242	39
P.GW110S.400.40 *1	1100	4	1,1	230/400 (~3)	5,4/3,1	4,8	1,3	277/480 (3~)	5,4/3,1		242	38
P.GW150S.400.40 *1	1500	4	1,5	230/400 (~3)	6,4/3,7	4,8	1,8	277/480 (3~)	6,4/3,7		280	40
P.GW40HB.400.26 *1	400	2,6	0,37	230/400 (~3)	1,7/1,0	3,1	0,44	277/480 (3~)	1,7/1,0		266	32
P.GW40HC.400.26 *1	400	2,6	0,37	230/400 (~3)	1,7/1,0	3,1	0,44	277/480 (3~)	1,7/1,0		220	30
P.GW80HB.400.26 *1	800	2,6	0,55	230/400 (~3)	2,6/1,5	3,1	0,66	277/480 (3~)	2,6/1,5		266	34
P.GW80HC.400.26 *1	800	2,6	0,55	230/400 (~3)	2,6/1,5	3,1	0,66	277/480 (3~)	2,6/1,5		218	32
P.GW100HB.400.26 *1	1000	2,6	0,75	230/400 (~3)	3,8/2,2	3,1	0,9	277/480 (3~)	3,8/2,2		298	38
P.GW125HC.400.26 *1	1250	2,6	0,88	230/400 (~3)	4,5/2,6	3,1	1	277/480 (3~)	4,5/2,6		238	38
P.GW150HC.400.26 *1	1500	2,6	1,1	230/400 (~3)	5,2/3,0	3,1	1,3	277/480 (3~)	5,2/3,0		242	40

*1) Depending on version, K = chain coupling, L = Winch, T = Rack drive





*2) Ask for the possibilities of both 60 Hz electric motors and dual voltage electric motors



1 Explanation of symbols and safety instructions

This installation manual is part of the delivery of the electric motor gearbox and must be kept in the vicinity of the motor gearbox.






Important procedures are emphasised in this user manual in a separate box with the initial lines printed in bold. See below for an explanation of the various instructions you will encounter in this manual.

Symbol	Meaning	Unit	Symbol	Meaning	Unit
T	Torque	Nm	n	rotational speed	rpm
P	Power	kW	L	Length	mm
U	Voltage	V	m	Mass	kg
	Tip	-		Hazard	-
	Note	-		Electrical hazard	-

Instructie	Toelichting
Tip	Gives the user suggestions and advice for carrying out specific tasks easily or more practically.
Attention Caution!	Remarks with supplementary information for the user. These remarks draw the user's attention to potential problems.
Warning!	Material damage can occur when the procedures are not followed carefully.
Risk of injury of death!	Serious injury to the user and/or serious damage to the product can occur if the procedures are not followed carefully.
	The user's life is directly endangered.

1.1 Symboolverklaring motorreductor

De volgende symbolen staan op de motorreductor weergegeven.

Symbol	Meaning	Symbol	Meaning
	Do not Spray		Fit the red vent plug
	Electrically live parts		PE connection point (earth)
	Read the documentation		

1 Explanation of symbols and safety instructions

1.3 General safety instructions

Read the installation manual carefully and in full;

Check that the delivery is complete before starting to install the motor gearbox;

Strictly observe the step-by-step procedures set out in the installation manual;

Observe all of the information in the installation manual, in particular all information relating to safety, use, maintenance and servicing;

Keep the installation manual in a safe place throughout the entire service life of the product;

Switch off power to the motor gearbox before starting to work on the motor gearbox or in its immediate vicinity;

Clean up the hazard area and leave it before switching the power back on;

Improper installation, commissioning, maintenance etc. of the motor gearbox can lead to personal injury and/or material damage due to the high torque of the motor gearbox;

Operate the motor within its electrical ratings to avoid damage to the motor, drive train or other parts of the system;

Do not allow people to stand under or close to suspended loads;

Never loosen screws, couplings or other parts while the drive train is under load;

Also observe national legislation and guidelines regarding working conditions and safety.

1.4 General safety instructions

Switch the power off before starting to work on the motor gearbox or the system and lock it out (for example, with a padlock) to prevent it from being switched back on. This also applies to auxiliary circuits, such as limit switches or standby heating. It is not sufficient to switch off the controller by selecting 'stop' or '0'. The motor gearbox may also continue to operate in the «Stop» or «0» position in response to higher-level functions, such as signals from wind or rain sensors;

Attached or driven parts may have a shorter service life than the motor gearbox itself;

With a three-phase supply, swapping two of the phases reverses the direction of rotation of the motor gearbox, which can affect the operation of the limit switch mechanism;

The GW motor gearboxes are self-braking, but this function may not be effective under certain conditions. We strongly recommend that for hoisting applications you use a motor gearbox equipped with a mechanical brake and mount a fall-arrest brake on the driven shaft;

With attached or driven components there is a risk of becoming trapped or injured. Amongst other things, the safety distances set out in EN 349 and EN 13857 must be observed and suitable precautions must be taken, such as safety devices or a dead-man vigilance system;

The housing of the motor gearbox can reach temperatures above 60°C / 140°F. Fit a protective cover if necessary, depending on the location of the motor gearbox;

Despite careful planning and compliance with all regulations, some risks cannot be prevented.

1.5 Qualified staff

All activities described below must be performed by qualified staff. Qualified staff means persons who, based upon their training, experience and/or education, have obtained sufficient knowledge of the applicable standards, provisions, accident prevention regulations and operating conditions and are thus able to identify and avoid potential hazards during relevant activities (for instance, installers recommended by your supplier). Approval by the safety officer for the overall plant or system is always required before work may be carried out.



2 Productname

2 Product name

2.1 Supplier

The address details of the supplier is set out below;

Name supplier	I : Internet address
Street	E : E-mail address
Postal code, place	T : Telephone number
Country	

2.2 Rating plate

Example of an identification sticker

1	Articlenr. : P.GW80.400.26.K
2	Potmeter : 500 Ohm
3	Motornr. : 1433593 / 012279
4	Date : 04/11/2014

Street
Postal code, place
Telephone number
internet address

1	Item number
2	Potentiometer resistance (optional)
3	Motor identification number
4	Production date
5	Serial number
6	De Gier barcode
7	De Gier address details

2.3 Description

The structure of the item number on the above rating plate is set out below with an explanation of the possible versions.

CODE	SERIES	TORQUE [x 10 Nm]	VOLTAGE [V]	RPM [x 10 ⁻¹ rpm]	VERSION
P	GW	10	400	26	K

Possible versions		Possible versions	
K	Chain coupling	L1	Single cable drum
K100	1" Drive tube	L2	Dual cable drum
K125	1,25" Drive tube	LB	Belt winch drum
K200	2" Drive tube	T	Toothed rack
L	Winch drum	Txxx	Stroke length xxx mm

3. Instructions for Use

3.1 Intended use

GW motor gearboxes are intended for ventilation, screening and hoisting applications, such as:

Ridge ventilation: linear-drive roof ventilation systems, for example in greenhouses, garden centres, office buildings, halls, stables or polytunnels;

Side ventilation: linear-drive side ventilation systems, for instance in greenhouses, facades, halls, or roll-up curtains or plastic tarps for stables or greenhouses;

Screening: for example, screens driven by cables or toothed racks in greenhouses or strip curtain systems;

Hoisting applications: for example, growing tube or chrysanthemum (hoisting) heating. **Only permitted with fall-arrest brake protection.**



3 Instructions for use

3.2 Special versions

The following special versions (amongst others) can be supplied in consultation with the manufacturer (not for every type):

24 VDC;

Version for non-standard mains voltage and/or frequency;

Versions for use with high relative air humidity (RH > 60%);

Non-standard approvals.

3.2 Conditions of use

The following conditions of use are applicable when using the motor gearbox:

Operating ambient temperature range:

Above 0.6 kW: -15°C to 60°C [5°F to 140°F];

Below 0.6 kW: +5°C to 60°C [32°F to 140°F];

Max. force on output shaft:

GW10: radial 1,000 N, axial 400 N

All other types with the exception of GW10: radial 4,000 N, axial 400 N;

Hoisting of freely suspended loads (not persons), such as a growth tube or chrysanthemum (hoistable) heating frame or assimilation lighting, is only permitted with a fall-arrest brake protection system;

The motor gearboxes are suitable for S3-30% operation;

The maximum continuous on time is 25 minutes;

The motor gearbox may be cycled a maximum of 3 times per minute;

The service life of the motor gearbox increases significantly with low loads and switching cycles which allow intermediate cooling of the motor gearbox.

3.3 Restrictions on use

Structural modifications to the motor gearbox are not permitted. Any such modifications render the manufacturer's warranty null and void and relieve the manufacturer of liability for any consequences. In addition, the following restrictions are applicable with regard to the use of the motor gearbox:

Do not load the motor gearbox or drive train with a torque greater than the maximum specified torque;

Do not use the motor gearbox to operate parts located in the immediate vicinity (within easy reach) of people. Maintain safe distances in accordance with EN ISO 13857;

Do not expose the motor gearbox to direct water spray, rain or snow;

Do not use the motor gearbox to operate smoke and heat exhaust ventilation systems compliant with NEN 6093 or DIN 18232;

Do not use the motor gearbox to operate automatic doors or gates used by people;

Do not use the motor gearbox in explosion hazard areas if express permission has not been granted to do so.

3.4 Unintended use (misuse)

We expressly warn against the following types of unintended use:

Do not use the motor gearbox for lifting suspended loads in areas in which people are present;

Do not use the motor gearbox for transporting people (for example, for passenger lifts, etc.).

3.5 Storage

To safeguard the service life and correct functioning of the motor gearboxes, the following rules must be followed:

Ensure that the motor gearboxes are stored in a dust-free and moisture-free environment;

The relative air humidity of the storage location must be less than 50%;

Store the motor gearboxes at temperatures between -15 and +60°C [5°F to 140°F];

Avoid sudden changes in temperature to prevent the formation of condensation.

If you wish to store the motor gearboxes for a lengthy period of time, you can use preservatives to protect the unpainted surfaces, such as threaded holes and mounting surfaces for chain couplings, against corrosion.



4 Installation

4 Installation

Installation of the motor gearbox and adjustment of the limit switches may only be carried out by qualified staff (see Section 1.5).

4.1 Installation positions and vent plug

Consider the following points when determining the installation position:

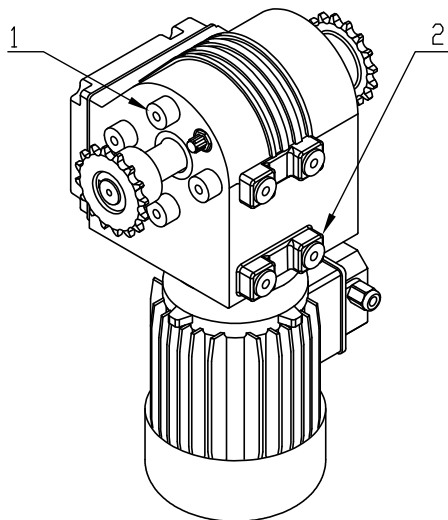
For both side mount and foot mount configurations, use M10 bolts with a strength class of at least 8.8 threaded into the motor gearbox by 10 to 15 mm;

Maintain a clearance of approximately 500 mm above the black cover for adjusting the limit switches;

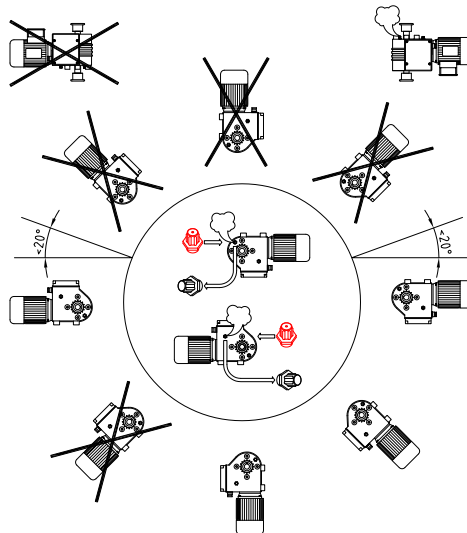
When mounted in a dusty or humid space, the motor gearbox must be fitted in a suitable enclosure;

Keep approximately 300 mm of space free behind the motor so that in the event of power failure the motor gearbox can be operated manually or with a drill (maximum speed 250 rpm) using the hex socket in the end of the motor shaft.

Every gear unit is pre-filled during manufacture with the correct type and quantity of oil. Every gear unit is also fitted with two plastic screw plugs. The higher of the two plugs in the selected installation position must be replaced by the supplied red vent plug, with the supplied gasket fitted behind the vent plug.



Mount configurations, 1; side mount, 2; foot mount



Installation positions and vent plug

4.2 Mounting the motor gearbox

The motor gearbox is normally coupled to the load bGy a chain coupling to the drive shaft. See the details below for maximum torques and maximum alignment error.

Warning!



- Do not exceed the maximum rated torque of chain couplings and accessories.
- The load must be distributed evenly over both ends of the shaft. Preferably fit the drive unit in the middle of the drive train.
- The maximum angle a chain coupling is allowed to make must remain below the specified value.

Type of chain coupling	Max. torque [Nm]	Max. angle
08B Z12 (1/2" x 5/16")	120	1°
08B Z16 (1/2" x 5/16")	240	4°
10B Z16 (5/8" x 3/8")	420	4°
12B Z16 (3/4" x 7/16")	675	3°
12B Z18 (3/4" x 7/16")	760	3°

4 Installation

4.2.1 Transport

Risk of injury or death! Falling objects can present a danger to people!



- Transport the motor gearbox carefully and avoid shocks.
- Force causes damage to the motor gearbox.
- Use a work platform, or lift the motor gearbox using hoisting equipment and appropriate slings fitted around the output shaft.

4.2.2 Foot mounting and side mounting

- With foot mounting, align the output shaft with the drive tube using shim washers under the feet of the motor gearbox;
- Secure the motor gearbox with four bolts for foot mounting or three bolts for side mounting. Tighten the bolts to 50 Nm.

Attention! The output shaft and the drive train must be in a single line.



- If alignment errors cannot be avoided, use a flexible coupling.
- Chain couplings can accommodate an alignment error of 1 to 4 degrees maximum, depending on the coupling type.
- For larger angles a universal joint can be used.

If you use wood screws or wall anchors for mounting, you must determine the right screws and tightening torques yourself, provided they have the same strength as M10 8.8 bolts.

4.3 Mounting the welding socket

- Weld the welding socket to the tube to be driven.
- Then fit the welding socket onto the output shaft of the motor gearbox using the pre-fitted bolt (tightening torque 8 Nm) so the coupling cannot move axially and slip off the shaft.

Attention! The output shaft and the drive train must be in a single line.



- If alignment errors cannot be avoided, use a flexible coupling.
- Chain couplings can accommodate an alignment error of 1 to 4 degrees maximum, depending on the coupling type.
- For larger angles a universal joint can be used.

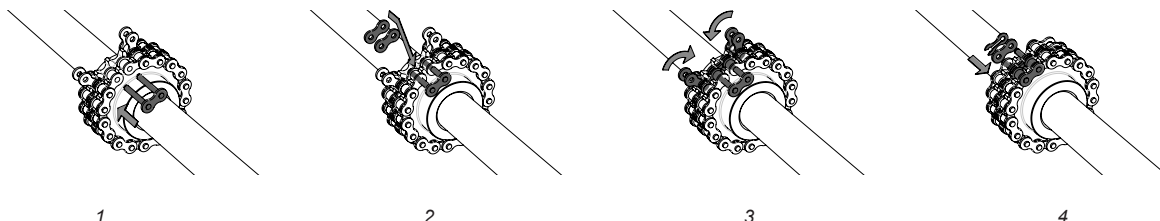
4.4 Mounting the chain coupling

- Fit the two halves of the coupling on the output shaft and the drive tube;
- Turn the coupling halves until the teeth are aligned;
- Wrap the dual chain around the teeth of the coupling sections so the ends of the chain are on top;
- Fit the chain as shown in the diagrams below.

Tip



Chain couplings can be supplied to compensate (limited) alignment errors. Different types can be com-



4 Installation

4.5 Adjusting the limit switches

Use the following procedure and the figures on page 13 to adjust the built-in limit switches.

Operation

- The switch shaft (A) of the limit switch mechanism is driven by a toothed belt from the output shaft of the motor gearbox.
- On the switch shaft (A) there are two switch nuts (E) consisting of a knurled nut (D) and an adjustment ring (C). The adjustment ring can be secured to the knurled nut (D) by a short set screw (G) and a long set screw (H).
- The switch nuts (E) move along the switch shaft (A) in direction I or II, depending on the direction of rotation of the motor gearbox. When the switch nut reaches the stop nut (B) at the end of the switch shaft and is not able to travel any further, the switch nut (E) will start to turn with the switch shaft (A).
- The limit switch has two spring arms (F), each of which actuates a working switch and an emergency switch: either working switch S11 and emergency switch S21 for rotation direction I, or working switch S12 and emergency switch S22 for rotation direction II.
- The emergency switch (S21 or S22) is a safety device and is only actuated if the working switch (S11 or S12) does not stop the motor gearbox on time.
- The long set screw (H) of each switch nut (E) is located between the spring arms. If one of the switch nuts reaches its stop nut, the switch nut rotates with the shaft and the long set screw actuates the working and emergency limit switches corresponding to direction of travel via the spring arm (F).

Mounting the limit switch (standard factory-fitted)

1. Remove the black plastic protective cover from the motor gearbox;
2. Fit the complete limit switch in its intended position;
3. Ensure that both long set screws (H) are located between the spring arms (F) so the spring arms release their limit and emergency switches when the switch nut starts to turn with the shaft;
4. Secure the limit switch above the switch shaft (A) by screwing the two Phillips screws hand-tight.

Adjustment procedure

1. Remove the black plastic protective cover to reveal the limit switch mechanism and the toothed belt;
2. Check whether the adjustment rings (C) are free to move on the knurled nuts (D) by manually moving the knurled nuts along the switch shaft (A). If they do not move freely, loosen the set screws by one turn (do not remove);
3. Use a hex key to rotate the motor gearbox from the rear of the motor and determine which working switch (S11 or S12) marks the start and end points in your application;
4. Using a hex bit, move the motor gearbox to the start point (see the diagram below);

Caution!



When driving the electric motor with a hex bit, keep the speed below 250 rpm to avoid damage to the hex socket at the rear of the motor shaft.

5. Hand-tighten the associated knurled nut (D) against its stop nut (B);
6. Fit the included hex key (X) in the long set screw (H) and turn the adjusting ring (C) over the knurled nut (D) until the spring arm moves away from the plastic case and you hear a soft click. Then tighten the long set screw on the knurled nut to 2 Nm;
7. Tighten the short set screw (G) of the switch nut (E) that has just been adjusted to 2 Nm;
8. Using a hex bit, move the motor gearbox to the other end point;
9. Repeat steps 5 through 7 to adjust the other working switch;
10. Replace the black plastic protective cover on the motor gearbox and tighten the four screws again;
11. Keep this manual with adjustment instructions in a suitable place.

Tip



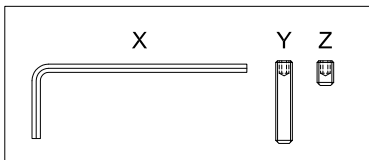
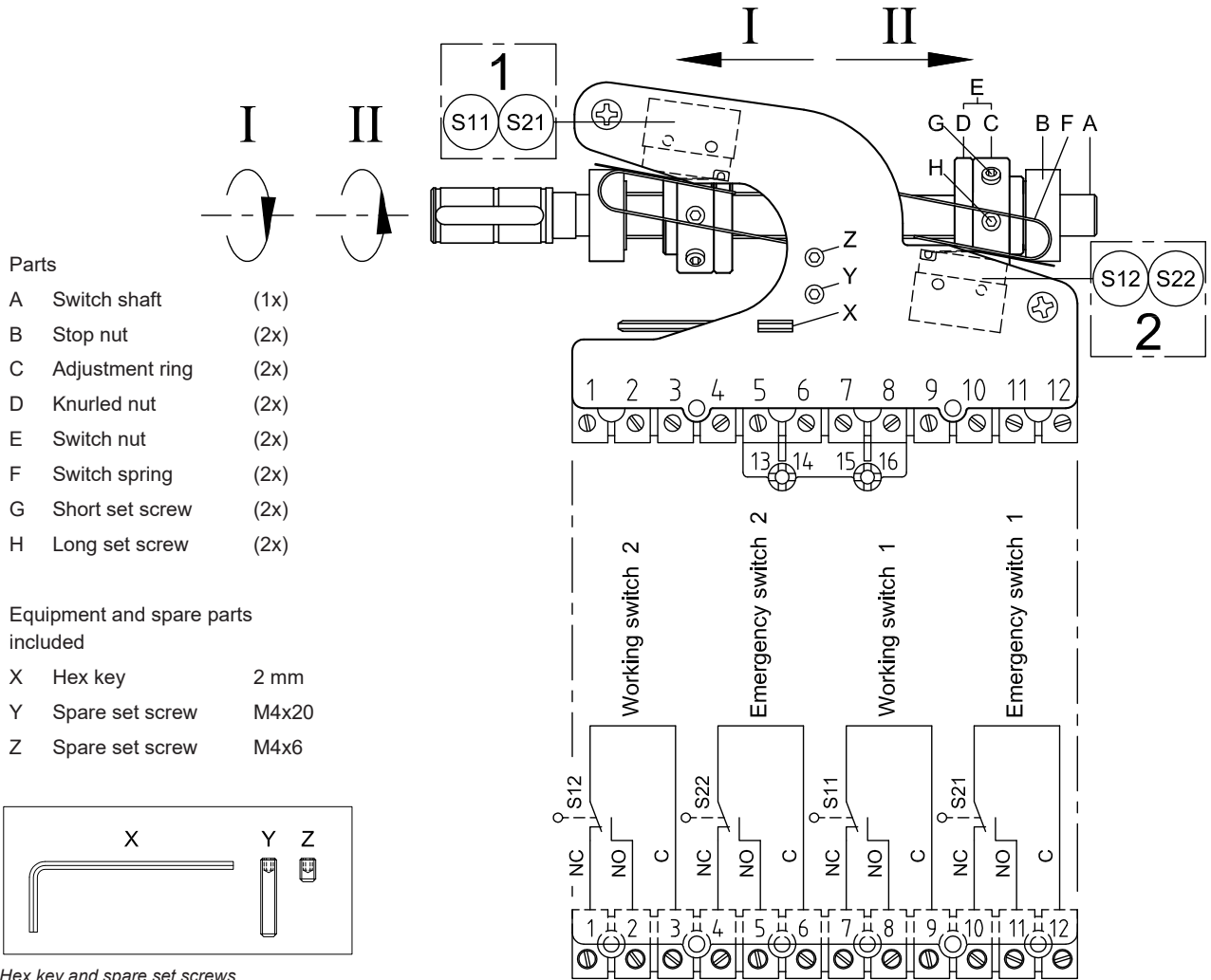
To avoid mistakes in the future, mark the switches to indicate which one limits the start position and which one limits the end position.

4 Installation

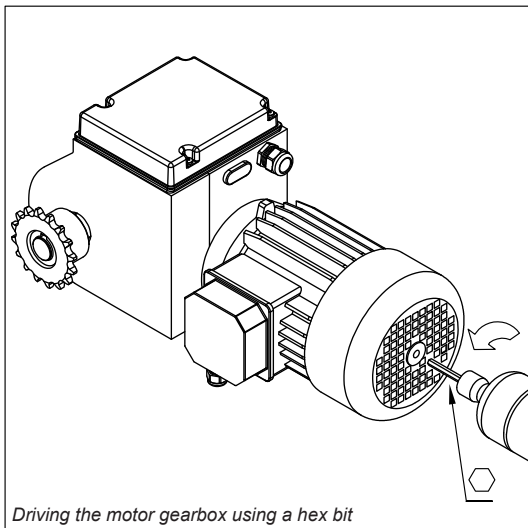
Attention!



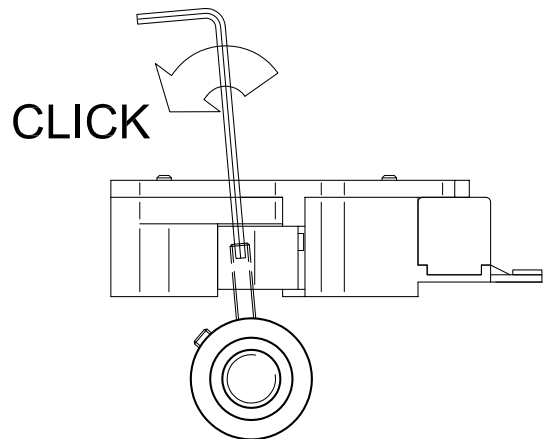
Do not keep any loose parts or documents under the black plastic protective cover, since they may impair the operation of the limit switch mechanism.



Hex key and spare set screws



Driving the motor gearbox using a hex bit



Adjusting the limit switch



4 Installation

4.6 Potentiometer (optional)

Application

The potentiometer kit is only intended to be used with GW motor gearboxes

The potentiometer has a maximum range of 10 turns and is available with the following resistance values: 0.5 k Ω , 1.0 k Ω , 2.0 k Ω , 5.0 k Ω and 10 k Ω ;

Operating temperature range: +1°C to +60°C.

Operation

The switch shaft (A) of the limit switch mechanism is driven by a toothed belt from the output shaft of the motor gearbox. A gear set reduces the number of turns of the switch shaft to a maximum of nine turns of the potentiometer shaft. Depending on the gear ratio, this gear set consists of two or three gears (if there are only two gears, the bracket (G) and gear TW5 are not included).

Mounting

Use the following procedure to retrofit the potentiometer kit:

Remove the black plastic protective cover and the side plate of the motor gearbox to reveal the limit switch mechanism and toothed belt;

Slide the toothed belt (B) off the plastic gear wheel (TW2);

Remove the retaining rings and the gear wheel (TW2) from the switch shaft (A);

Fit the gear wheel (TW3) on the switch shaft (A);

Loosen the two screws on the limit switch (C) and remove the limit switch;

Slide the terminal block (E) over the plastic bracket (F) and click them together under the limit switch (C);

Fit the potentiometer (D) and refit the limit switch (C), taking care to ensure it is fitted correctly;

Slide the gear wheel (TW4) onto the potentiometer shaft (D). Do not tighten this gear wheel yet.

Fit the gear wheel (TW5), if included, on the bracket (G); otherwise continue with step 12;

Fit the bracket (G) in place with the bolt (H) and lock washer (I), but do not tighten the bolt;

Fit the gear wheel (TW5) on the bracket (G) between the gear wheels (TW3 and TW4) and tighten the bracket. The gear wheel (TW5) should be pressed very lightly against the other gear wheels. The gears should turn smoothly and easily;

Refit the retaining rings and the gear wheel (TW2) on the switch shaft (A);

Slide the toothed belt (B) over the gear wheel (TW2);

Adjust the limit switch mechanism (see adjustment instructions in Section 4.5);

Adjust the potentiometer and secure the gear wheel (TW4) on the potentiometer shaft;

Fit the side plate and the black plastic protective cover.

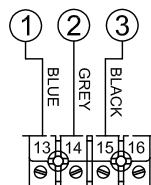
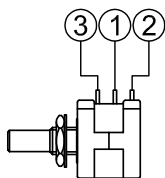
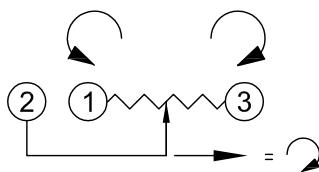
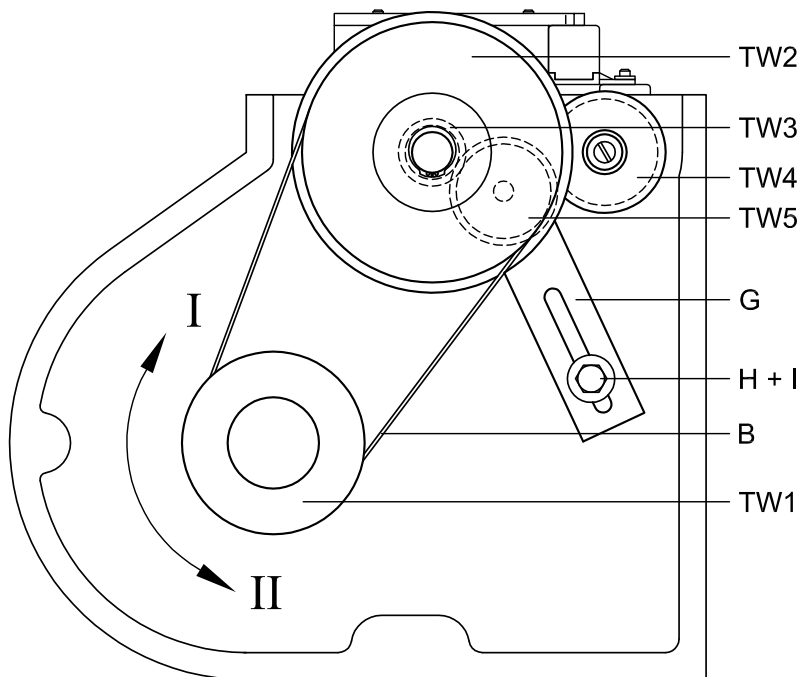
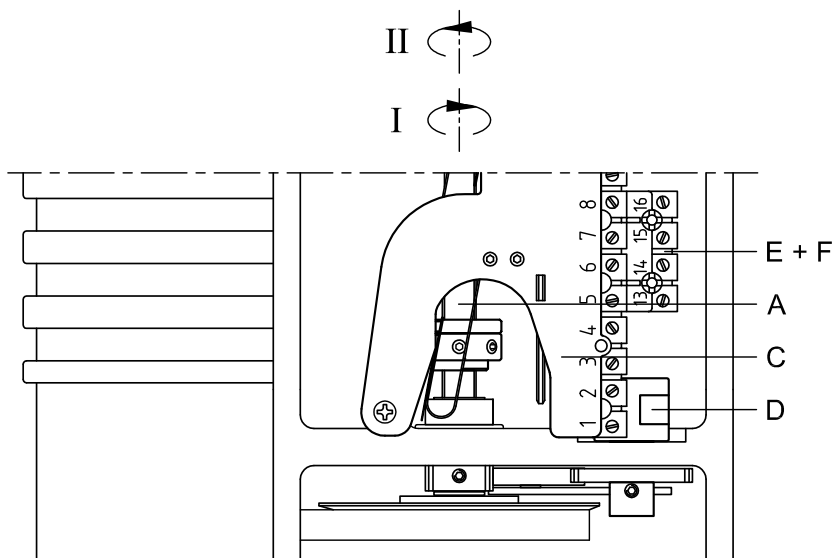
4.7 I-DE Intelligent digital encoder (optional)

Application

The intelligent digital encoder (I-DE) is a multifunction position encoder which provides extremely accurate information about the position of the GW motor gearbox. It has digital and analogue outputs. This position encoder can easily be fitted in place of a conventional potentiometer.

More information about fitting, connecting and adjusting the I-DE can be found in the specific manual for the I-DE.

4 Installation



Parts	
A	Switch shaft
B	Toothed belt
C	Limit switch
D	Potentiometer
E	Terminal block
F	Plastic bracket
G	Bracket for intermediate gear wheel (optional)
H	Bolt M5 x 8
I	Washer M5



5 Electrical connection and commissioning

5. Electrical connection and commissioning

Connecting and commissioning may only be carried out by qualified staff.

Risk of injury or death! Risk of injury or death due to electrical or mechanical forces!



Before starting to work on the motor gearbox or related parts, always switch the power off at the master switch or operating switch and lock it out with a padlock to prevent switching on again.

5.1 Mains connection for single-phase AC motors

Caution



The maximum permissible deviation of the mains voltage from the voltage stated on the rating plate of the motor is 5%.

The wiring diagram can be found in the appendix on page 24.

1. Remove the cover from the terminal block of the electric motor;
2. Insert the cable through the cable gland and rubber gasket;
3. Connect the green/yellow lead to the PE terminal (earth);
4. Connect the neutral lead (N) to terminal U1 and the live lead (L) to terminal V1 or W1 as shown on the wiring diagram, depending on the desired direction of rotation;
5. Using a hex bit, move the motor gearbox to a position between the two limit switches;
6. Check the direction of rotation of the output shaft in relation to the limit switch and the control cabinet. If necessary, switch the wiring between V1 and W1 (see diagram);
7. Fit the terminal block cover and gasket back on the motor and tighten the cable gland;
8. Make sure that the cables are clear of any moving parts.

5.2 Mains connection for three-phase AC motors

Caution



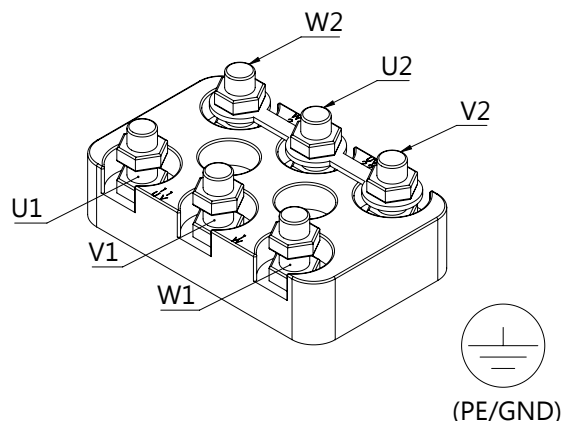
The maximum permissible deviation of the mains voltage from the voltage stated on the rating plate of the motor is 10%.

Attention!



Swapping the supply voltage phase connections changes the direction of rotation of the drive. A switch in phase will affect the operation of the limit switch mechanism.

1. Remove the cover from the terminal block of the electric motor;
2. Insert the cable through the cable gland and rubber gasket;
3. Connect the green/yellow lead to the PE terminal (earth);
4. Connect phase L1 to terminal U1, phase L2 to terminal V1 and phase L3 to terminal W1 (see diagram)
5. Using a hex bit, move the motor gearbox to a position between the two limit switches;
6. Check the direction of rotation of the output shaft in relation to the limit switch and the control cabinet, and swap two phases if necessary;
7. Fit the terminal block cover and gasket back on the motor and tighten the cable gland;
8. Make sure that the cables are clear of any moving parts.



5 Electrical connection and commissioning

5.3 Mains connection for DC motors

Caution



The maximum permissible deviation of the mains voltage from the voltage stated on the rating plate of

1. The wiring diagram is supplied upon request.
2. Remove the cover from the terminal block of the electric motor;
3. Insert the cable through the cable gland;
4. Connect the green/yellow lead to the PE terminal (earth);
5. Connect the 24 VDC lead to terminal A1 and neutral lead to terminal A2;
6. Using a hex bit, move the motor gearbox to a position between the two limit switches;
7. Check the direction of rotation of the output shaft in relation to the limit switch and the control cabinet; if necessary swap the leads on A1 and A2;
8. Fit the terminal block cover and gasket back on the motor and tighten the cable gland;
9. Make sure that the cables are clear of any moving parts.

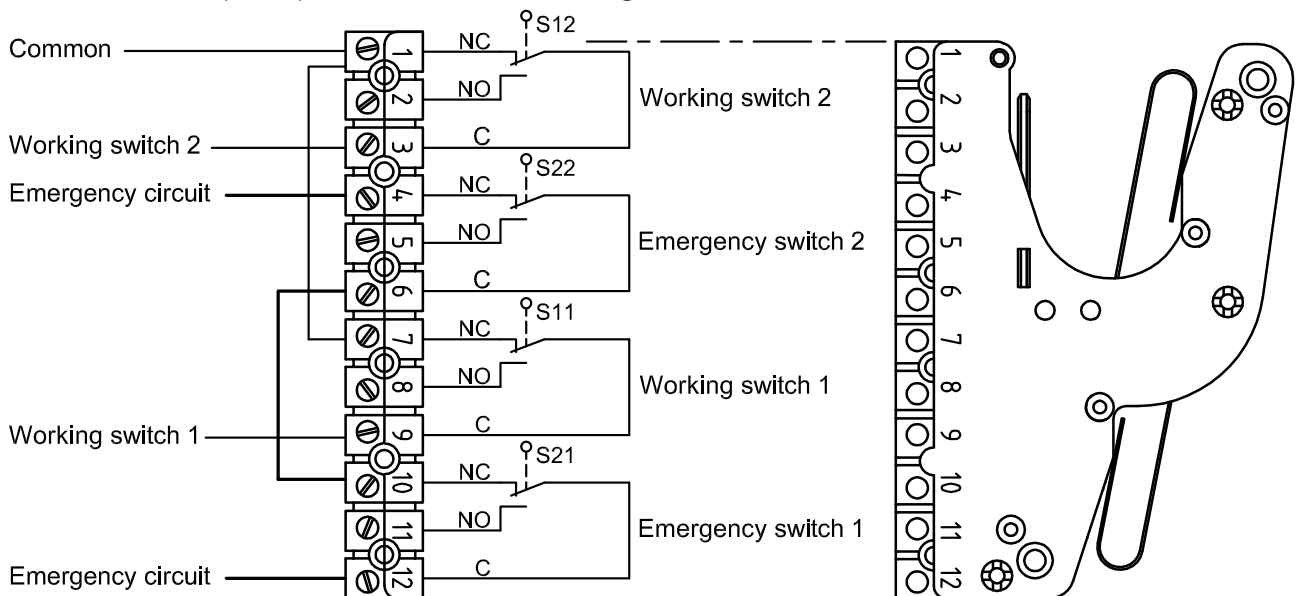
5.4 Connecting the limit switch

Attention! Observe the maximum (peak) switching current rating of 6 A at 250 VAC.



The optional Goldline limit switches, which have gold-plated contacts, must be used if the control voltage is less than 30 V or the control current is less than 400 mA.

1. Remove the black plastic protective cover from the motor gearbox;
2. Insert the cable through the cable gland;
3. Connect the working and emergency switches as indicated in the diagram below;
4. Fit a jumper between contacts 1 and 7;
5. Fit a jumper between contacts 6 and 10;
6. Make sure that the cables are free and tighten the cable gland;
7. Re-fit the black plastic protective cover on the motor gearbox.



Wiring diagram for working and emergency switches



5 Electrical connection and commissio-

5.5 Commissioning

Caution!



Operate the drive in manual mode at first; not in automatic mode.

After the motor gearbox has been installed, connected and adjusted, a test run in the system is necessary. Pay attention to the following points during the test run:

1. Ensure that no people or objects are within the working area of the motor gearbox and connected parts;
2. Check whether the vent plug is fitted in the correct position (see Section 4.1);
3. Check the operation of the system in manual mode. The direction of movement must match the indication on the control panel;
4. Check that the limit switches and stop positions are properly adjusted, and re-adjust them if necessary (see Section 4.5).

Tip



Install an operating hours counter.

6. Use

The noise level (sound pressure level) at a distance of one metre is below 60 dB(A).

6.2 Heating

- The motor gearbox is not suitable for continuous operation.
- The motor gearboxes are suitable for S3-30% operation;
- The maximum continuous on time is 25 minutes;
- The motor gearbox may be cycled at most three times per minute.

Warning! Risk of burns!

The outside of the drive unit can reach temperatures in excess of 60°C.



We recommend fitting a protective cover if the unit is within easy reach.

7. Inspection and maintenance

Inspection and maintenance tasks may only be carried out by qualified staff (see Section 1.3).

7.1 Maintenance intervals

Risk of injury or death! Risk of injury or death due to electrical or mechanical forces!



Before starting to work on the motor gearbox or related parts, always switch the power off at the master switch or operating switch and lock it out with a padlock to prevent switching on again.



Every 6 months

- Check for increased noise level
- Lubricate chain couplings (oil viscosity 80 cST to 120 cST at 20°C)

Every year

- Check and re-tighten mounting bolts
- Check couplings for wear and corrosion
- Check the limit and emergency switch mechanism for corrosion
- Re-tighten set screws in switch mechanism
- Check the wiring of the motor and the limit and emergency switch mechanism
- Check the play of the output shaft



7 Inspection and maintenance

7.2 Maintenance tasks

The motor gearbox has lifetime lubrication. Changing the gear oil is usually unnecessary.

Caution!



For the following tasks it must be ensured that the load cannot start moving by itself after it is disconnected.

7.2.1 Checking worm gear wear and shaft play

1. Put the motor gearbox in an unloaded position, for example with the vent closed;
2. Switch off the power;
3. Disconnect the motor gearbox from the drive train, so the output shaft should be able to turn freely;
4. Check the play in the gear unit by turning the output shaft of the drive.
5. If there is clearly noticeable play, the drive should be dismantled and returned to the manufacturer for inspection.

8 Dismounting

Dismounting may only be carried out by qualified staff (see Section 1.3).

Risk of injury or death! Risk of injury or death due to electrical or mechanical forces!



Before starting to work on the motor gearbox or related parts, always switch the power off at the master switch or operating switch and lock it out with a padlock to prevent switching on again.

Risk of injury or death! Risk of injury or death due to falling objects!



Cordon off the hazard area with barrier tape.
Use a work platform, or lift the motor gearbox using hoisting equipment and appropriate slings fitted around the output shaft.

Attention!



Motor gearbox components may only be replaced or repaired by an authorised service representative of the

8.1 Dismounting the motor gearbox from the drive train

1. Put the drive unit of the motor gearbox in an unloaded position, for example with the vent closed;
2. Disconnect all wiring;
3. Disconnect the output shaft from the driven system;
4. Replace the vent plug with an M12 sealing plug;
5. Dismount the motor gearbox unit from the system.

9 Troubleshooting

9 Troubleshooting

Troubleshooting may only be performed by qualified staff (see Section 1.3).

Risk of injury or death! Risk of injury or death due to electrical or mechanical forces!



Before starting to work on the motor gearbox or related parts, always switch the power off at the master switch or operating switch and lock it out with a padlock to prevent switching on again.

9.1 Fault: power outage

- Disconnect power to prevent unintentional operation of the motor gearbox during work activities;
- In emergency situations the motor gearbox can be turned to the desired position using an electric drill and a hex bit inserted in the hex socket on the motor shaft.

Caution!



When driving the motor with a hex bit, keep the speed under 250 rpm to protect the socket in the motor

9.2 Fault: drive does not run

- Check the motor protection switch and its setting. If the fault occurs again, there may be an overload;
- Check whether the emergency switch of the motor gearbox is actuated;
- Check the wiring, including the limit switch wiring;
- For motor gearboxes with 3-phase mains supply, check whether rotation directions I and II correspond to limit switches S11 and S12;
- If the thermal protection (bimetallic switch) of the motor gearbox has tripped, the motor gearbox must cool down for approximately 20 minutes. After this it can be used again. If this protection trips repeatedly, contact your installer to resolve this problem.

9.3 Fault: travel past end position

- Check whether the set screws in the limit switch mechanism are tight, and check the adjustment of the limit switches;
- Re-adjust the limit switches if necessary (see Section 4.5);
- Check the operation of limit switches S11 and S12 and emergency switches S21 and S22. The switches must be wired and monitored as normally closed (NC) contacts;
- Check the operation of the relay and replace it if necessary.

9.4 Fault: oil leak

- Check whether the vent plug is fitted and installed in the right place (see Section 4.1);
- Contact the installer if oil leaks occur.

9.5 Fault: humming noise from motor

- Check the voltages on all three phases, which should all be the same and correspond to the value on the motor rating plate;
- Check that all nuts on the terminal block are properly tightened;
- Contact the installer if the fault persists.

10 Spare parts, disposal and warranty

10 Spare parts and parts replacement

Parts may only be replaced by qualified staff. Always use original spare parts and original lubricants. For product safety reasons, the manufacturer only supplies complete motor gearboxes, limit switches and potentiometers as replacement parts. Gear unit parts may only be replaced or repaired by an authorised service representative of the manufacturer.

11 Disposal

Caution!



Improper disposal of waste oil is hazardous to the environment and to health. Used oil must be taken to a collection point for waste oil. Avoid prolonged skin contact.

Drain used oil from the motor gearbox. Used oil must be collected, temporarily stored, transported and replaced properly. Observe national legislation.

Collect waste oil and dispose of it in accordance with regulations. Clean up any spilled oil immediately using a suitable emulsifier or absorbent material.

Dispose of housing parts, gear wheels, shafts and roller bearings of the transmission as scrap metal. This also applies to parts made of grey cast iron if there is no provision for separate collection. The worm gears may contain black non-ferrous metal alloys and must be disposed of accordingly. Dispose of the packaging materials in accordance with regulations or bring them to a recycling station.

Motor gearbox parts	Material
Gear wheels, shafts, bearings, retaining rings, ...	Steel
Gear unit housing, housing parts	Cast iron
Worm gears	Bronze
Shaft seals, sealing caps	Elastomer (with steel)
Flat gaskets	Asbestos-free gasket material
Gear oil	Enriched mineral oil

12 Warranty

We only accept liability for original spare parts supplied by us. The warranty terms and conditions are the same as the standard "Metaalunie" conditions. These conditions are listed on the back of the quotation and invoice forms. An additional copy of terms and conditions can be sent to you free of charge on request. For products from the Blue-line range a 3 year warranty period is applicable.

We reserve the right to make modifications.

Glossary

Name	explanation
S3-30%	Duty cycle as defined in IEC 60034-1: intermittent periodic operation with the motor active at most 30% of the time.
AC	Alternating Current.
Protective cover	Cover to prevent direct contact between people, rain, dust and the motor gearbox.
Axial	In the length direction of the shaft.
Tightening torque [Nm]	Torque to which a bolted joint has to be tightened in units of in Newton-metre.
dB(A)	Intensity of sound, expressed in decibels.
Operating hours counter	A counter used to register the number of actual operating hours of the drive unit.
Bi-metal	Temperature-sensitive protective switch.
Flexible coupling	A coupling which is able to compensate for alignment errors, for instance a chain coupling, universal joint or cardan shaft.
DC	Direct Current.
Dead-man vigilance system	Emergency switch actuated by a pull cord spanned along the entire length of the system.
Electrical ratings	The voltage, current and power values for which an electric motor is designed and which are shown on rating plate of the motor.
Hazard area	The area below or directly around the driven or moving parts.
Suspended loads	Machinery or machine parts which are suspended on steel cables or hoisting slings and not otherwise supported.
Higher-level function	An overriding or governing switch condition, depending on the structure of the system, such as a rain signal that causes automatic operation of the motor gearbox.
Torque [Nm]	A measure of the rotational effect of a force. The magnitude of the torque is equal to the force times the radius (arm) and is expressed in Newton-metres.
Linear	Straight line.
Mechanical brake	Electromagnetically actuated brake at the rear of the electric motor. Loss of power causes the brake to be applied; restoring power releases the brake.
Motor gearbox	An (electric) motor with a gear unit to reduce its shaft speed.
Radial	A force perpendicular to the shaft.

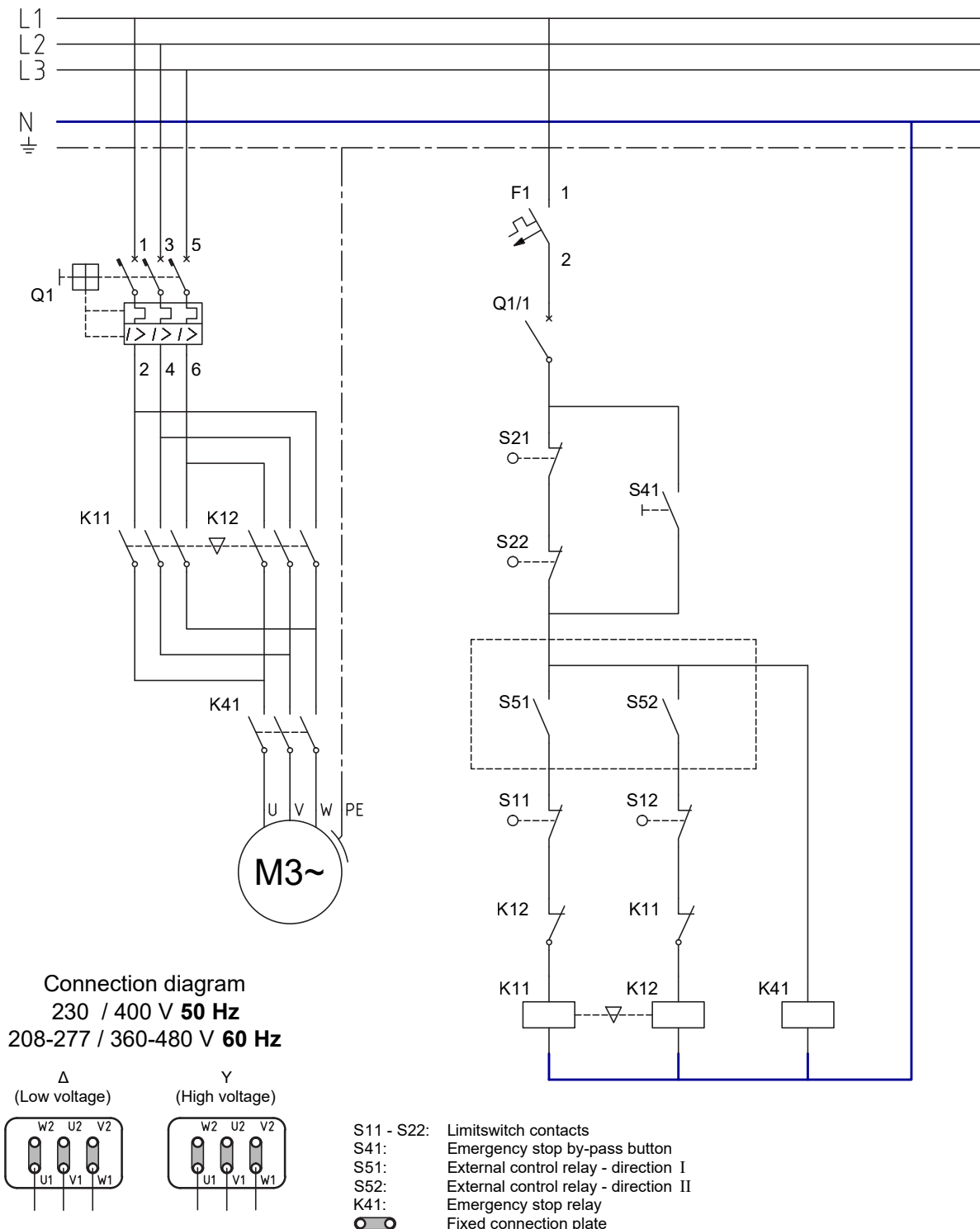
Glossary

Name	explanation
Relay	A switch operated by an electromagnet.
Residual risks	Risks which cannot reasonably be avoided (inherent in the product).
Strap	Hoisting equipment.
rpm	Revolutions per minute.
VAC	AC voltage.
VDC	DC voltage.
Fall-arrest protection brake	A protective device which stops descending loads if they are moving too fast.
Normally closed (NC) contact	An electrical contact that opens when the switch is actuated.
Viscosity	Fluidity or thickness of a liquid.
Self-braking	The gear unit can only be driven by the motor; the output shaft cannot be moved by the load.



15 Wiring diagram 400V 1~

THREE PHASE MOTOR 400 V 50 Hz / 360-480 V 60 Hz



Voltage on limitswitch [V]	Minimum current [mA]	Maximum current [A]
230	50	1.5
24	200	0.5



