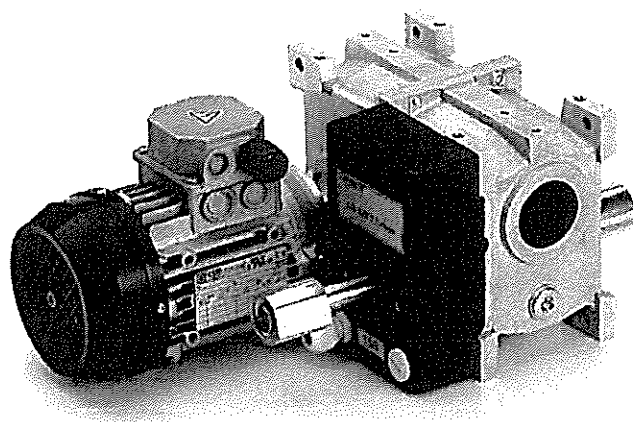




Installation Instructions/User Manual



Gear Motor LG120 og LG240

Senmatic A/S

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Contents

	Preface.....	5
	Declaration of Conformity.....	6
1.0	Safety Regulations	9
1.1	Mounting	9
1.2	Electrical connection	9
1.3	Commisioning and operation.....	9
1.4	Running-in, operation	9
2.0	Mounting	10
2.1	Mechanical mounting	10
2.1.1	Mounting methods.....	10
2.1.2	How to mount the gear motor	11
2.2	Electrical Mounting	13
2.2.1	Power voltage	13
2.2.2	Electrical mounting	13
3.0	Endstop Setting LG 120/LG 240	14
3.1	Test direction of rotation of the gear motor.....	14
3.2	Adjust limit switch system for required travel.....	14
4.0	Trouble Shooting/Rectification.....	18
4.1	General points for all LG gear motors.....	18
5.0	Technical Specifications	19
	Diagrams	21

Preface

This manual covers Senmatic A/S standard gear motor types LG 120 and LG 240.

The Senmatic A/S gear motors are quality products, developed and designed for operation of mechanical vent opening systems and screen systems in green-houses. Great emphasis has been put reliability and durability during construction and production of the products.

Prior to mounting, installation and commissioning of the product we recommend to read this manual thoroughly, as observing of our guidelines is a condition of obtaining optimum benefit from the product.

Please observe that warranty for the product will not apply if directions in this manual are disregarded.

The LG 120 and LG 240 gear motors are as standard available in many variants. Therefore, prior to mounting and installation please ensure that the delivered product type corresponds to the type required and ordered.

This manual is general, and does not include instructions by special local or national legislation. The instructions describe installation with Senmatic A/S motor relays.

In the event of problems during mounting, installation or commissioning , kindly contact your local Senmatic A/S dealer.

Senmatic A/S



Overensstemmelseserklæring.

Vi, Senmatic A/S, erklærer med henvisning til Maskin-direktivet 73/23/EØF, Art. 1, stk 5, at gearmotorer af type LG25/ LG120/ LG240/ bestemt for anvendelse med mekanisk opluk af ventilationslemme er i overensstemmelse med

- Rådets direktiv 89/392 om indbyrdes tilnærmelse af EF medlemstaternes lovgivning om maskiner.

Denne erklæring omfatter gearmotorer type LG25/LG120/LG240 fra serienummer 1 til serienummer 9999.

Disse maskiner må kun tages i brug, indbygget i anlæg der som helhed er blevet erklæret i overensstemmelse med direktivet 89/392.

Declaration of Conformity

We, Senmatic A/S, declare under our sole responsibility that gear motor type LG25/LG120/LG240 intended for mechanical opening of ventilation hatches, are in conformity with the

- Council Directive 89/392 on the approximation of the laws of the EEC Member States relating to machinery

This declaration covers gear motor type type LG25/LG120/LG240 from serial number 1 to serial number 999999.

This machine must not be put into service, until the installation, into which it is to be incorporated, has been declared in conformity with the provisions of the Directive 89/392.

Konformitätserklärung

Wir, Senmatic A/S, erklären in alleiniger Verantwortung, dass Getriebemotoren der den Typen LG25/LG120/LG240, die für mechanisches Aufschliessen der Ventilationsdeckel bestimmt sind, mit der folgenden Richtlinie übereinstimmen:

- Richtlinie des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedstaaten für Maschinen: 89/392 EWG.

Diese Erklärung umfasst Getriebemotor type LG25/LG120/LG240 von Seriennummer 1 bis Seriennummer 999999.

Die Inbetriebnahme dieser Motoren ist so lange untersagt, bis festgestellt wird, dass die Maschine, in die sie eingebaut werden sollen, den Bestimmungen der Richtlinie 89/392/EWG entspricht.

Attestation de Conformité

Nous, Senmatic, déclarons sous notre seule responsabilité que les motoréducteurs LG25/LG120/LG240, destinés à l'ouverture mécanique d'ouvrant d'aération sont conformes à la

- Directive du Conseil 89/392 concernant le rapprochement des législations des Etats membres CEE relatives aux machines

Cette déclaration comprend les motoréducteurs type LG25/LG120/ LG240 du numéro de série 1 au numéro de série 999999.

Ces moteurs ne doivent pas être mis en service avant que l'installation, dans laquelle ils seront incorporés, ait été déclarée conforme à la Directive 89/392.

Declaracion de conformidad

Nosotros, Senmatic A/S, declaramos bajo nuestra responsabilidad que los motorreductores modelos LG25/LG120/ LG240/, destinados para apertura mecánica de elementos de ventilación, son conformes con la

- Directiva del Consejo 89/392 relativo a la aproximación e las legislaciones de los Estados Miembros de la CEE sobre maquinaria.

Esta declaración cubre motorreductores modelo type LG25/LG120/ LG240, desde el número de serie 1 hasta el número de serie 999999.

Estas máquinas no deben ser puestas en funcionamiento hasta que la instalación en la que van a ser incorporados, haya sido declarada de conformidad según las normas de la Directiva 89/392.

Dichiarazione di Conformità

Noi, Senmatic A/S dichiariamo, con riferimento alla direttiva CEE 73/23 per il funzionamento delle macchine, art. 1, paragrafo 5, che i riduttori (dispositivi) del tipo LG25/LG120/LG240 destinati ad essere impiegati per l'apertura automatica dei portelli di ventilazione, sono conformi a:

- Direttiva del consiglio 89/392 concernente il ravvicinamento delle legislazioni degli Stati membri CEE relative alle macchine.

Questa dichiarazione riguarda tutti i riduttori tipo type LG25/LG120/ LG240 con numero di serie compreso tra 1 e 999999.

Questi motori possono essere utilizzati solo se incorporati in macchine che nel complesso sono state dichiarate conformi alla Direttiva 89/392.



Overeenkomstigheidsverklaring

Wij Senmatic A/S verklaren geheel onder eigen verantwoordelijkheid dat de motorreductor **LG25/LG120/LG240** bedoeld zijn voor het openen van de ramen en luiken in overeenstemming met

- de richtlijn van de raad inzake de onderlinge aanpassing van de wetgevingen van de Lid-Staten betreffende machines (89/392/EEG)

Deze verklaring betreft de Motorreductor type LG25/LG120/LG240 van serienummer 1 tot serienummer 999999.

Deze motorreductor mogen niet in bedrijf genomen worden, voordat de machine waarin de motorreductor worden ingebouwd, in overeenstemming met de bepalingen van deze richtlijn 89/392 is verklaard.

Forsakran om overensstammels

Vi, Senmatic A/S, försäkrar med hänvisning till Maskindirektivet 73/23/EÖF, Art. 1, 5 stycket, att kuggväxelmotorer typ **LG25/LG120/LG240** tillverkade för användning i samband med mekanisk öppning av ventilationsluckor överensstämmer med

- Rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning avseende maskinell utrustning.

Denna försäkran omfattar kuggväxelmotorer type LG50/LG120/LG123/LG240/243 fr.o.m. serienummer 1 t.o.m. serienummer 999999.

Dessa maskiner får endast användas/tagas i bruk under förutsättning att den utrustning i vilken de byggs in helt stämmer överens med bestämmelserna i direktivet 89/392

Declaração de Conformidade

Nós Senmatic A/S declaramos sob nossa única responsabilidade que os motores tipo **LG25/LG120/LG240** que se destinam a mecanismos para abertura de comporta de ventilação, está em conformidade com

- Directiva do Conselho das Comunidades Europeias 89/392 relativa à aproximação das legislações dos Estados Membros respeitantes às máquinas.

Esta declaração cobre motores tipo type LG25/LG120/LG240 desde o número de série 1 ao número de série 999999.

Estes motores não devem ser postos em serviço antes de a máquina onde vão ser incorporados ser declarada conforme com as disposições da Directiva 89/392.

Søndersø, 06.06.2008

Michael Winther
Sales Director

1.0 Safety regulations

1.1 Mounting

- The mounting place of the gear motor must be able to carry the weight of the gear motor itself as well as the forces created when the gear motor is in service. It is advisable to mount the gear motor on the carrying structure of the greenhouse construction i.e. at columns or spars. We advise from using vent bars or other light parts of the construction, unless the greenhouse constructor has approved such mounting places.
- When mounting the gear motor we strongly recommend to use Senmatic base plates with adjustable bolts, as this solution makes it possible to adjust the position of the gear motor accurate in relation to the torque tube. Please observe that the gear motor must be mounted by using all 4 points for mounting. (top, side or bottom of the gear motor see. Fig 2.3).
- It is important that base plates or other surfaces used for mounting of the gear motor are even and level.

1.2 Electrical connection

Connection of the high tension power to the electrical motor of the gear motor must be carried out by an authorized electrician. High tension power fuses must be removed while connection of the electrical motor is carried out.

The electrical motor connection must be protected by an overload switch. We recommend the use of Senmatic motor relays which are all supplied with built in overload switches. All Senmatic motor relays are specially designed for use with Senmatic gear motors.

The limit switch system of the gear motor must not be connected to the high tension power.

(Max. load to the limit switch system.- 24 V AC or DC).

1.3 Commissioning and operation

Before the gear motor is put into service, the limit switches must be connected and tested, and the overload switch must be set at the correct current level. Operating the gear motor without observing above points, could cause serious damage to the greenhouse structure and/or to the gear motor.

Commissioning of the gear motor must be carried out by an authorized Senmatic technician, or by a technician or dealer approved by Senmatic.

Service to the gear motor or the system connected to the gear motor must only take place if the gear motor is electrically disconnected (removal of fuses). Operating the gear motor during service may cause serious personal injury.

Local legislation must be observed when mounting, installation, connection, servicing and operating the gear motor units.

2.0 Mounting

2.1 Mechanical mounting

To obtain safe and reliable operation, the following instructions must be observed when mounting the gear motor.

2.1.1. Mounting methods

The mounting methods A (Fig. A) and B (Fig. B) are then recommended standard mounting methods. The mounting method A offers the possibility to use the Senmatic base plate and adjustment bolts, for accurate and easy mounting in relation to the torque tube.

Mounting methods C and D is not to be used.

Fig. A

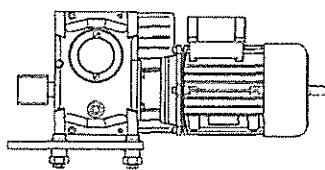


Fig. B

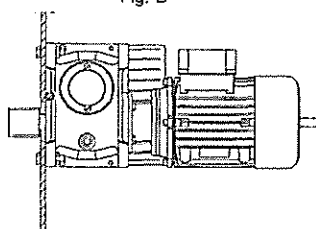


Fig. C

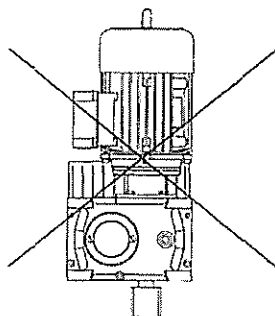


Fig. D

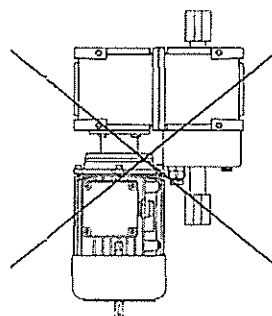


Fig. 2.1 Different mounting methods. The gear is illustrated from the side.

2.1.2. How to mount the gear motor

The gear motor must be mounted with the output shaft in alignment with the torque tube, and centre of the gear motor output shaft must equal centre of the torque tube (fig. 2.2).

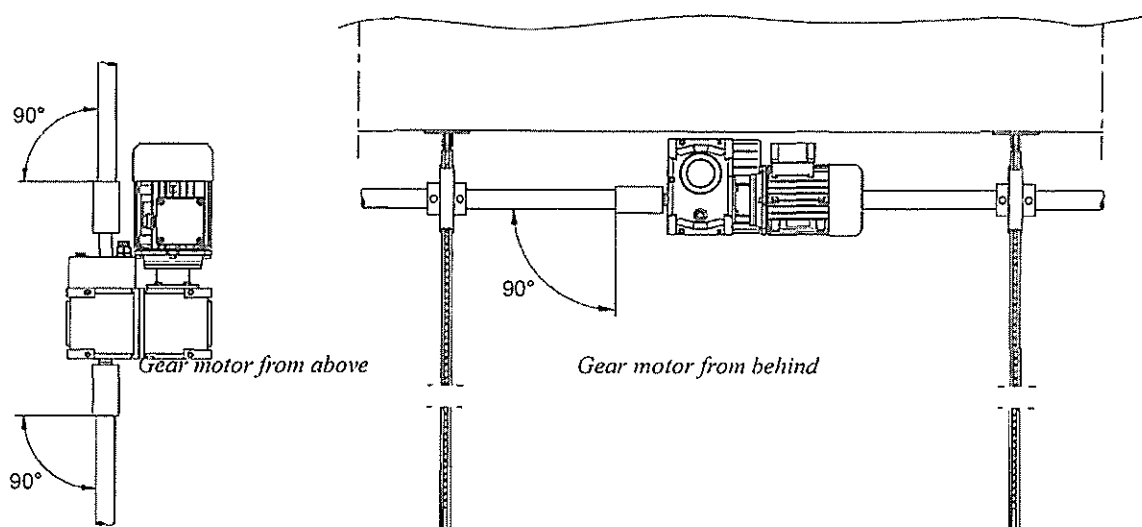


Fig. 2.2 Assembling of the Gear

For easy and accurate alignment we recommend the use of Senmatic base plate and adjustment bolts (fig.2.3).

NB! All four bolts must be used mounting the gear motor.

NB! Mounting the gear motor, it is important to observe that the unit rests on the 4 points of the mounting bolts, and that the 4 points of the bolts are in level.

When the gear motor has been mounted in accordance with above instructions the torque tube(s) has to be connected to the output shaft of the gear.

To connect the torque tube to the gear motor, the provided couplings are used (chain coupling fig. 2.4 or profile coupling fig. 2.5). If profile couplings are used, the torque tube should be secured against axial travelling using Senmatic A/S (fig. 2.6).

When mounted the, the coupling should be lubricated with temperature resistant grease.

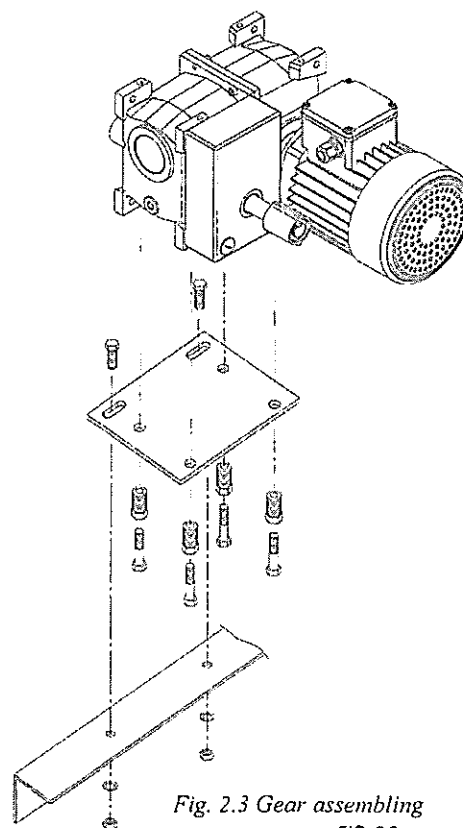


Fig. 2.3 Gear assembling
FIG. 2.3

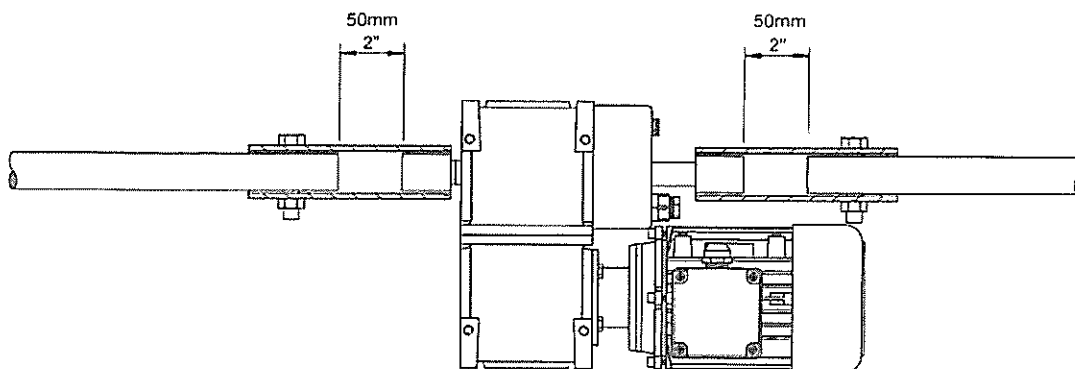


Fig. 2.4 Gear motor mounted with profile pipe couplings

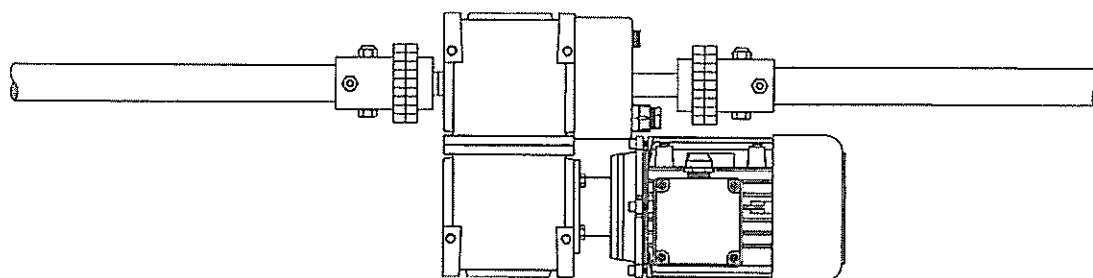


Fig. 2.5 Gear motor mounted with chain couplings

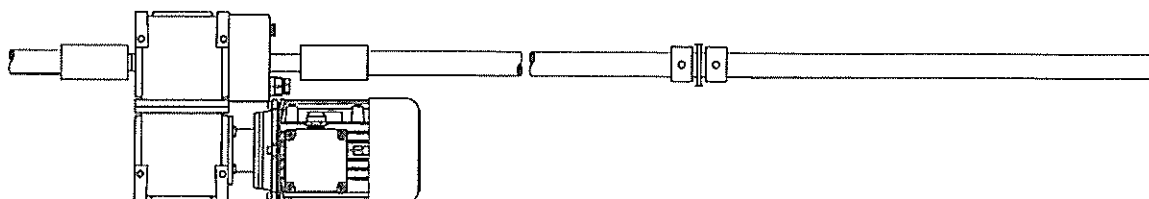


Fig 2.6: Stop rings at bearing to prevent axial travelling.

2.2 Electrical Mounting

2.2.1 Power voltage

Senmatic gear motors are available in a number of variants for different power supply (different voltages, 1 or 3 phase, 50 Hz – 60 Hz.). Check the electrical data stamped on the electrical motor, to insure that the motor supplied is rated for the local power, before connecting the motor.

All 3 phase motors supplied have the possibility of being star Y or Δ connected. Check that the terminals are supplied with the connection required for the local power. To change Y / Δ connection see diagram page 24.

NB! The motor specifications must correspond to the mains tension and frequency. Please note that the majority of gear motors from Senmatic are supplied with motors with extended voltage range, and that the mains tension must be within the extended range.

Always connect the gear motor in accordance with the diagrams supplied with the gear motor or the Senmatic relay.

NB! The electrical motor must be protected by overload switch. We recommend the use of Senmatic motor relays, which are supplied with built in overload switch.

NB! Connection of the power for the electrical motor must be carried out by a skilled electrician, or by an authorized electrician in case local legislation demands this.

When power for the electrical motor has been established it must be controlled the direction of rotation of the gear motor corresponds with the symbols or marks on the motor relay. Normal mounting is anticlockwise direction of rotation for open ($\uparrow$) and clockwise direction of rotation for closing ($\downarrow$).

NB! It is important that gear motor and torque tube is disengaged during control of direction of rotation as operation of the gear motor with wrong direction of rotation with engaged torque tube can seriously damage the greenhouse construction.

To change direction of rotation for 3 phase motors in relation to the electrical connection, change terminal connection of two of the three phases.

To change direction of rotation in relation for single phase motors, change terminals for the two phase connections.

2.2.2 Electrical mounting

Low voltage (control circuit).

The limit switch system of the gear motor must be connected to the Senmatic relay according to diagrams enclosen in this manual, or diagrams supplied with the relay.

NB! The limit switch system must be connected with low current only (max. 24V.AC or DC).

Hereafter please follow the instructions for the gear motor type in question.

3.0 LG 120 and LG 240

The gear motor types LG 120 and LG 240 are supplied with adjustable limit switches. As a standard extra safety switches are built in. To get access to the limit switch system remove the plastic covers placed next to the electrical motor.

The limit switch system is adjusted for the amount of travel required. The gear motor will be supplied with a stop system for max. 15 rev. travel or max 50 rev. travel according to order.

The safety switch system consists of two switches that will break a circuit in the case that the primary switch system fails.

Prior to the commissioning procedure, the limit switch system must be connected electrically according to chapter 2.2 and the enclosed diagrams.

3.1 Test direction of rotation of the gear motor

During control of direction of rotation of the gear motor the limit switch system must be disengaged.

To control that the limit switch system is disengaged, make sure that the contact wheel (pos. 6, page 19) turns freely.

Also make sure that torque tubes are disengaged during test of direction of rotation of the gear motor.

Set the relay control button at 'open' (↑). The output shaft of the gear motor must turn anti clockwise. If the direction of rotation is reversed, change electrical connection according to 2.2 page 13.

3.2. Adjust limit switch system for required travel

At standard mounting of LG 120/15 and LG 240/15-right model- the output shaft turns anti clock wise as opening direction and switch 1 (see page XX) is activating switch.

LG 120/15 and LG 240/15-left model- the output shaft turns clockwise as opening direction and switch 2 (see page XX) is the activating switch.

For terminal numbering in relation to function see drawing 9-SKL3596 page 17.

Please note from drawing 9-SKL-3596 that terminal and switch function is reversed for the gear motor types LG 120/50 and LG 240/50.

Adjustment of limit switch, opening direction.

Connect the gear motor output shaft to the torque tube.

Make sure that the contact wheel (6) is disengaged. If the contact wheel is engaged, disengage this by loosen the screw (11), and turn the eccentric (7) 90 degrees anti clock wise. Tighten the screw (11) lightly.

With the contact wheel disengaged, open the vents fully by operating the motor relay manually. With vents open at the desired full open position. Put motor relay on stop.

Right model: Turn contact wheel clockwise until micro switch (1) is activated. Keep the contact wheel in this position, and at the same time turn the eccentric (7) clock wise until engagement with counter wheel is obtained. Tighten the screw (11). Operate the vent row downwards, about 10 cm. by putting the motor relay on close. Put the motor on to open again , and check that the gear motor stops in the preset position.

Left model: Turn contact wheel anti clockwise until micro switch (1) is activated, and then follow same procedure as for right model.

Adjustment of limit switch, closing direction.

The 4 screws (10) are loosened.

Right model: Turn the slip ring (8) anticlockwise as far as possible.

Close vents by operating the motor relay on close. Before the vents are fully closed, the micro switch (2) is activated with a screw driver or similar. The gear motor must stop when the micro switch is activated.

NB! If the gear motor does not stop, when the switch is activated, the motor relay must be put on stop, and the connections for the limit switch system must be checked, and if necessary corrected.

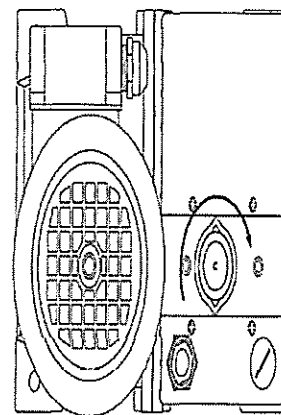
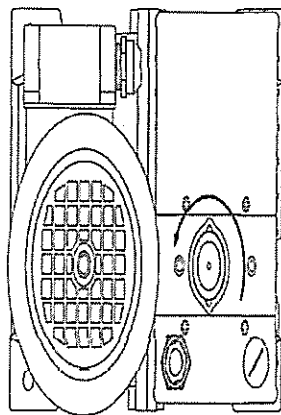
With the closing switch (2) operating according to above, close the vent row fully, and put the motor relay on stop. Turn the slip ring (8) anticlockwise until micro switch (2) is activated, and tighten the 4 screws (10).

Open the vents slightly, and close again to control that gear motor stops in the right position at fully closed.

The open and close position can be fine adjusted by means of the adjustment screws (5). If this feature is used, remember to tighten counter nut after adjustment. Tools for operating the fine adjustment feature are provided with the gear motor.

Left model: The slip ring (8) is turned clockwise. Hereafter follow same procedure as for right model.

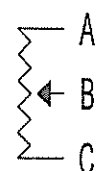

 Omdreining
 mod uret.
 Anticlockwise
 Im Gegenzeigersinn.
 Girare con movimento
 sinistrorso




 Omdreining
 med uret.
 Clockwise.
 Im uhrzeigersinn.
 Girare con movimento
 destrorso.

LG50 / LG120 / LG240			
	15 R	20 R	50 R
			
	5-6	5-6	2-3
	2-3	2-3	5-6

LG50 / LG120 / LG240						
		15 R	20 R	50 R		
						
	Højre / Right / Recht / Destra	B-C	B-A	B-C	B-A	B-A
	Venstre / Left / Links / Sinistra	B-A	B-C	B-A	B-C	B-C

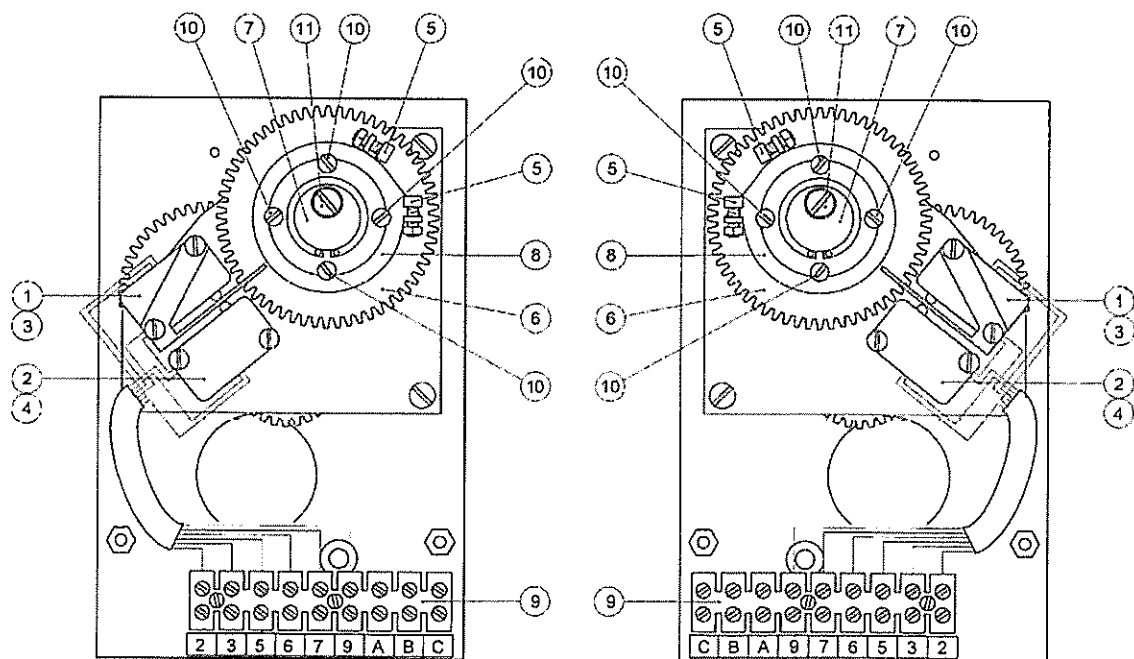


		Emne LG50 / LG120 / LG240	Tegnr. 9-SKL-3596
Anvendelse		Målede	
Mål	Rev.	Tegn. 9 1 03 HJ/g	
Industrivej 8 DK-5471 Sønderbo, Danmark			
Denne tegning er en del af den samlede dokumentation og skal altid være med i projektfilerne.			

A3

Position reference to drawing

1. Micro switch 1
2. Micro switch 2
3. Safety switch 3
4. Safety switch 4
5. Fine adjustment screws
6. Contact wheel
7. Eccentric
8. Slip ring
9. Terminal block
10. Fixing screws for slip ring. (4 pcs)
11. Fixing screw for eccentric



Right

4.0 Trouble Shooting/Rectification

4.1 General for all LG gear motors

Error	Cause	Rectification
Motor does not run, but 'hums'?	Error in the power supply, possibly lacking phase.	Check fuses, change possible defect fuses.
	Defect motor.	Check electric connections. Call an authorized electrician.
Motor does not run, and no 'humming'?	Error in the power supply.	Check fuses, change possible defect fuses.
	Declutched motor protection.	Check motor protection, if declutched this is coupled in again.
	Error in connection of end-stop	Check the end-stop connection, perhaps you should call an authorized electrician.
Motor protection declutches repeatedly?	Defect motor.	Call an authorized service technician.
	Motor protection is maladjusted.	Check the setting of the motor protection, adjust to the current indicated on the rating plate of the motor.
	Gear motor is overloaded.	Maintain the system, grease bearings and racks.
	Error in the power supply	Check fuses, change possible defect fuses. Call an authorized electrician.
	El-motor is defect.	Call an authorized service technician.
	Motor protection is defect.	Call an authorized service technician.

5.0 Technical Specifications

LG120

Electrical motor

3 phase

Power: 0,18 kW at S1 service. 4 poles (1400 r/min.)
Tension: 3x200-230/346-400 V.
Current: 1,1-1,2/0,67-0,72 A. (Current at 50 Hz service).
Frequency: 50/60 Hz.
Cos ϕ : 0,73-0,64 (Cos ϕ at 50 Hz service)

Protection rating: IP 55
Insulation class: F

Motor windings are tropicalized.

1 phase

Power: 0,18 kW at S1 service. 4 poles (1400 r/min.).
Tension: 1 x 208-230 V.
Current: 1,75-1,85 A. (Current at 50 Hz service).
Frequency: 50/60 Hz.
Cos ϕ : 0,93-0,90 (Cos ϕ at 50 Hz service).
Capacitor: 12,5 mF – 450V.

Protection rating: IP 55.
Insulation class: F.

Motor windings are tropicalized.

Gearbox

Double worm/worm wheel drive.
Gear box in light alloy casting.
Output shaft in stainless steel.
Gearbox oil lubricated.
Maximum allowed torque on output shaft: 160 Nm.

Built in limit switch

LG120

Adjustable for travel 0-15 revolutions or 0-50 revolutions.
2 extra safety switches.

LG 240

Electrical motor

3 phase

Power: 0,37 kW at S1 service. 2 poles (2800 r/min.).
Tension: 3x230/400 V.
Current: 1,75/1,01 A. (Current at 50 Hz service).
Frequency: 50/60 Hz.
Cos ϕ : 0,85 (Cos ϕ at 50 Hz service).

Protection rating: IP 55
Insulation class: F

Motor windings are tropicalized.

LG240 are not available with 1 phase motor.

Gearbox

Double worm/worm wheel drive.
Gear box in light alloy casting.
Output shaft in stainless steel.
Gearbox oil lubricated.
Maximum allowed torque on output shaft 240 Nm.

Built in limit switch

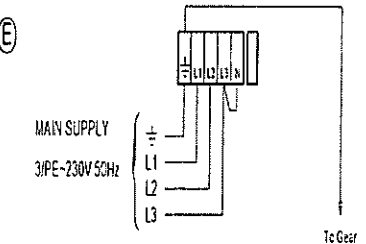
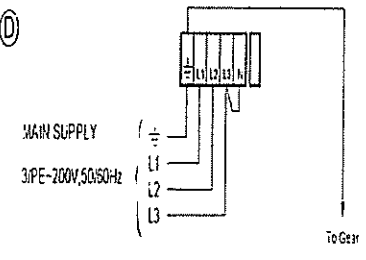
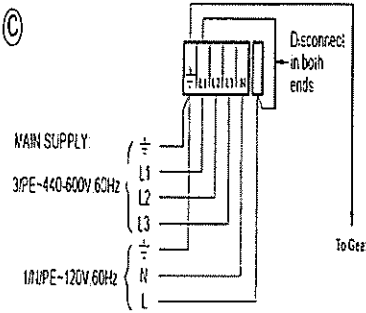
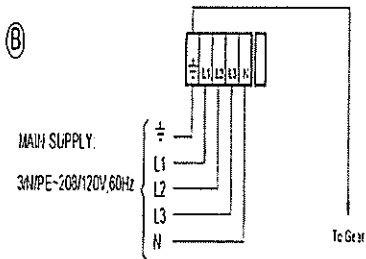
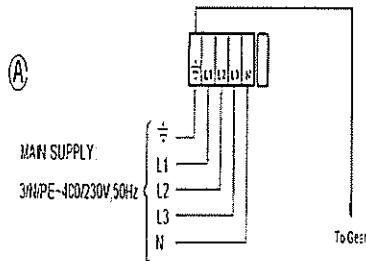
LG240

Adjustable for travel 0-15 revolutions or 0-50 revolutions.
2 extra safety switches.

DOTTED LINES INDICATE RO902

WARNING !
NEUTRAL & HOTLINE MUST BE
INSTALLED CORRECT. OTHERWISE
FAILURE OF THE UNIT WILL RESOLVE

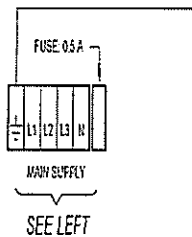
CIRCLE THE RIGHT CONNECTION BELOW
BEFORE INSTALLATION



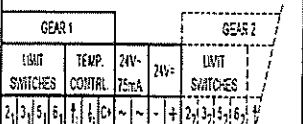
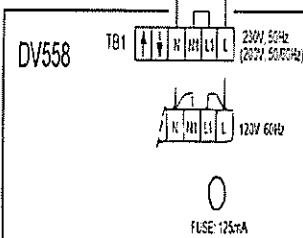
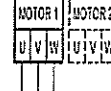
RO901 (RO902)

MOTOR SUPPLIES

Phase	Voltage	Frequency	Max current
3	400V	50Hz	10Amp
3	208V	50Hz	10Amp
3	208V	50/60Hz	10Amp
3	230V	50Hz	10Amp
3	440-600V	60Hz	10Amp

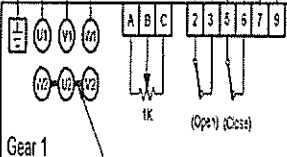


MOTOR SUPPLIES

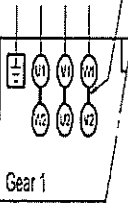


FOR CONNECTING THE LIMIT SWIT
SEE DRAWING WIRING DIAGRAM
GEAR MOTOR LGxxx + RO901 (RO9

HIGH VOLTAGE, V



LOW VOLTAGE Δ



JUMPERS MUST BE INSTALLED!

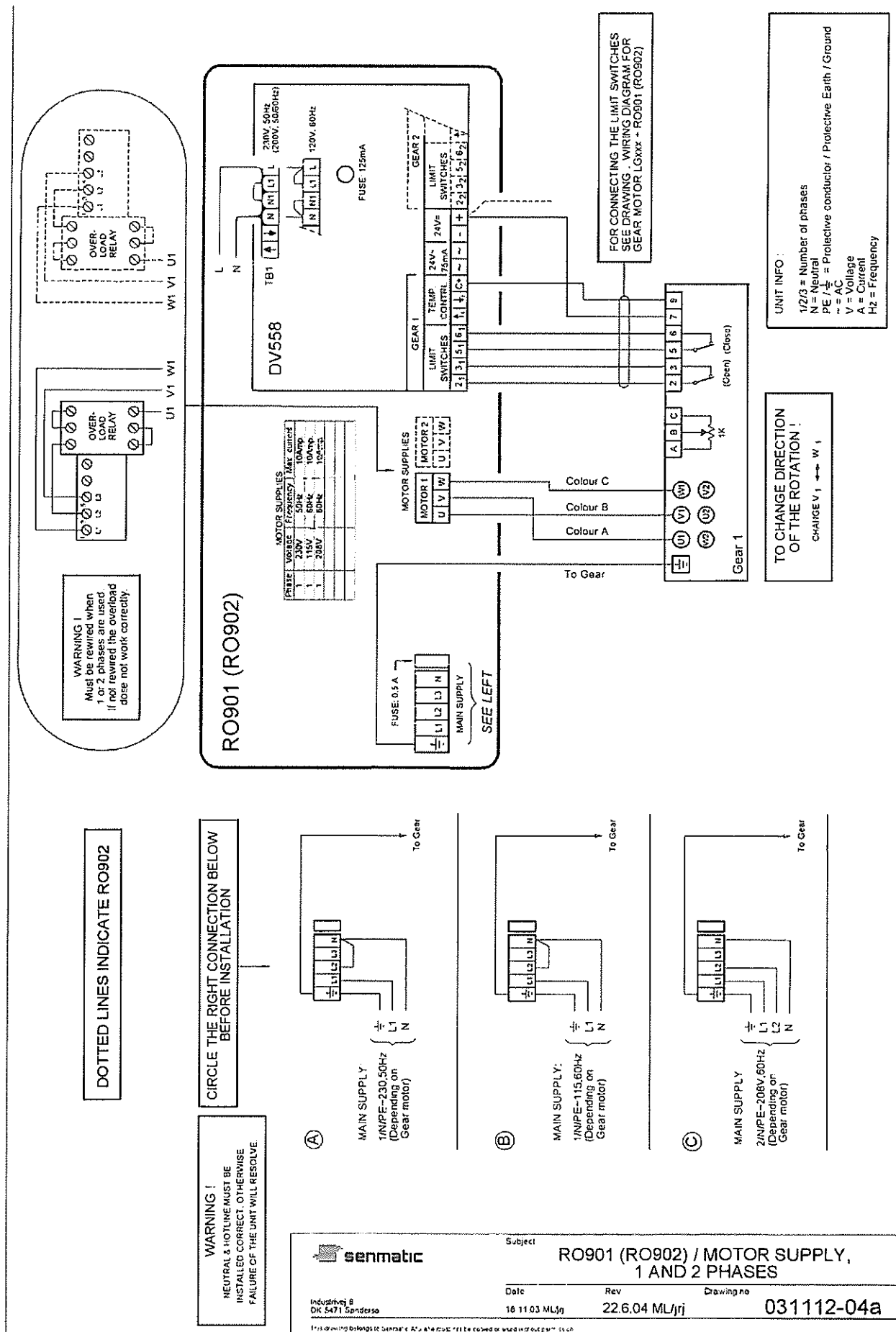
TO CHANGE DIRECTION
OF THE ROTATION !

CHANGE V1 ↔ W1

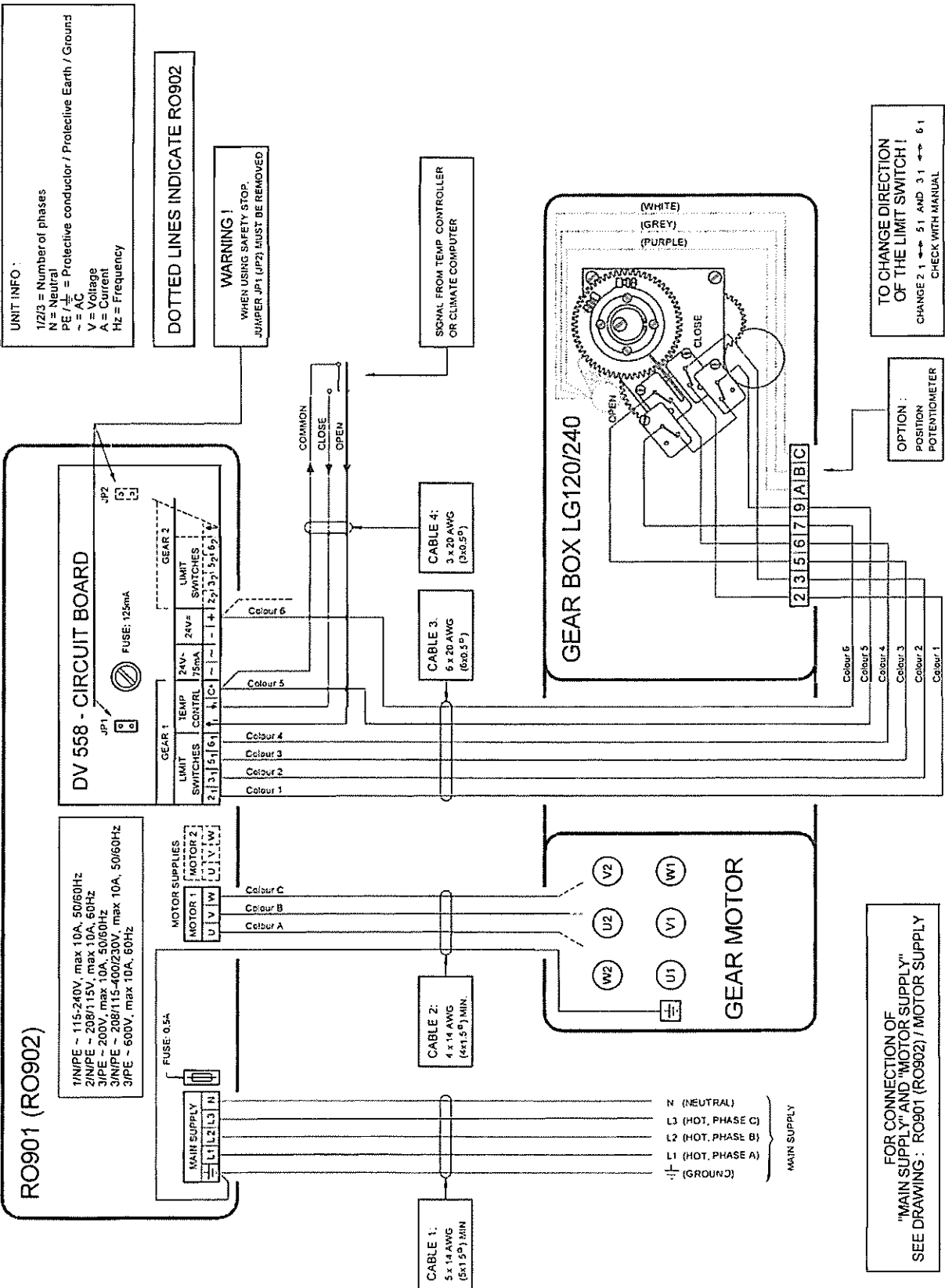
UNIT INFO

1/2/3 = Number of phases
N = Neutral
PE / ⚡ = Protective conductor / Protective Earth /
~ = AC
V = Voltage
A = Current
Hz = Frequency

sematic
RO901 (RO902) / MOTOR SUPPLY, 3 PHASES
13.11.03 M/M/H
22.6.04 M/M/H
031112-03a



WIRING DIAGRAM FOR GEAR MOTOR LG120/240 + RO901 (RO902)



Subject

WIRING DIAGRAM FOR GEAR MOTOR
LG120/240 + RO901 (RO902)

Date

Rev

Drawing no

18.11.03 MU/jrj

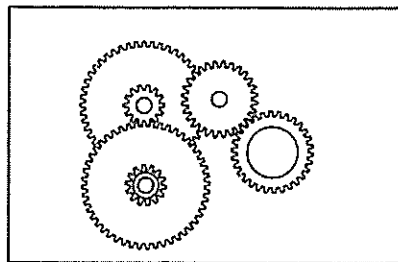
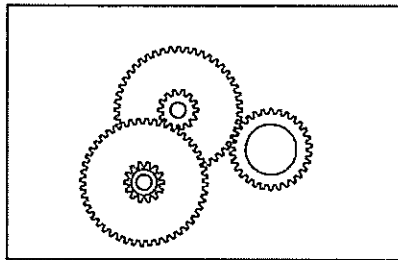
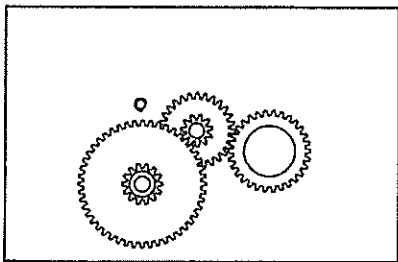
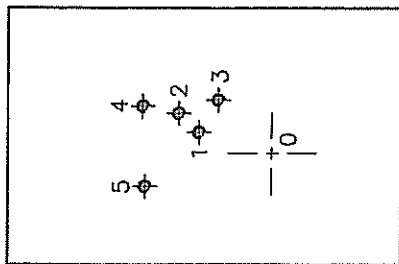
23.6.04 ML/jrj

031112-02

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dgtsales@senmatic.com
www.senmatic.com



POS	CENTERAFST. α	POS	CENTERAFST. α
0-1	29 (29.3)	4-5	31 (31.3)
0-3	29 (29.3)	2-5	31 (31.3)
0-2	39 (39.3)		
1-5	29.5 (29.8)		
3-4	29.5 (29.8)		

nom.mål (korrigeret mål)

BETEGNELSE	MONT. POS	TEGN.NR.
Tanddrev 48/14	5	2-ETH-1617
Tanddrev, kort 28/11	1	3-ETH-1407
Akseldrev, m1, z30	0	3-ETH-1614

BETEGNELSE	MONT. POS	TEGN.NR.
Tanddrev 48/14	5	2-ETH-1617
Tanddrev, kort 48/14	2	2-ETH-1619
Akseldrev, m1, z30	0	3-ETH-1614

BETEGNELSE	MONT. POS	TEGN.NR.
Tanddrev 48/14	5	2-ETH-1617
Tanddrev, kort 48/14	4	2-ETH-1619
Tanddrev 28/11	3	3-ETH-1407
Akseldrev, m1, z30	0	3-ETH-1614

		Emne: UDVEKSLING, ENDESTOP 8-DIV-1620	
Tegnr.:		Tegnr.:	
Anvendelse: LG 120		Materiale:	
Mål: 1:2		Rev.: 1.10.91 HL/jrd	
Industrivej 8 DK-5471 Sønderø • Danmark Tel.: +45 63892211 • Fax: +45 63893311 dgk@senmatic.com • www.senmatic.com			
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A3			