

General note**WARNING**

The data and recommendations specified in all the instructions supplied, and in all other related instructions,

must always be observed in order to avoid **hazardous situations** and the **risk** of possible injury or damage.

These instructions are augmented by supplementary instructions (yellow), which contain additional information on the safety measures for electrical machines and devices. The latter instructions thus augment all submitted instructions and all other related instructions.

Furthermore, the **pertinent national, local and plant-specific regulations** and **requirements** should be kept in mind!

Special designs and **other versions** may vary in technical details! If in doubt, be sure to contact the manufacturer, quoting the **type designation** and **serial number**, or have maintenance work done by one of SIEMENS Service Centres.

NOTE: Fig. 2 ... (Spare Parts) see Annex page 29

1 Description

1.1 Application

The motors are suitable for operation in dusty and damp environments. The insulation is tropicalized. If they are properly stored or installed outdoors, special weatherproofing measures are not usually required.

Measuring-surface sound-pressure level at 50 Hz

(DIN EN 21 680 Part 1)

1LG4, 1LG6 approx. 51 to 76 dB(A)

1.2 Construction and mode of operation

The 1LG4 and 1LG6 motors are standardly self-ventilated with own fans. In addition to that the 1LG motors are optionally either without an own fan (such as fan motors with cooling by means of a separate fan arranged on the shaft end) or with external cooling (option G17). The 1PP4 and 1PP6 motors are equipped with own cooling without any fan.

The feet on foot-mounted motors are cast integrally with the motor casing or they can be optionally bolted onto the casing (option K11 / see fig. 2).

Rearranging the feet (e.g. for changing the position of the terminal box) is possible for options K09, K10 and K11. The bores and surfaces, necessary for this purpose, are already machined in a corresponding way.

Where motors with brake are concerned (e.g. option G26), take into consideration also the brake operating instructions!

These instructions are valid in addition to the operating instructions of the given motor type. They are not valid for motors of EEx e series.

2 Operation

**WARNING**

Before starting any work on the machine, be sure to isolate it from the power supply.

2.1 Transport, storage

The motors should always be lifted at both **lifting eyes** during transport.

**WARNING**

For lifting machine sets (such as built-on gearboxes, fan units), always use the lifting eyes or lifting pegs provided! Machine sets may not be lifted by

suspending the individual machines! Check the lifting capacity of the hoist!

If, after delivery, the motors are stored for more than 3 years under favourable conditions (kept in a dry place free from dust and vibration) prior to commissioning, the bearings should be regreased.

Under unfavourable conditions, this period is considerably shorter.

If necessary, the insulation resistance of the winding should be checked, see Section 2.5.

2.2 Installation

After installation, **screwed-in lifting eyes** should either be removed or tightened down.

In the **case of motors with shaft end facing upwards or downwards**, measures must be taken to ensure that no water can penetrate into the upper bearing.

In the case of **terminal boards** with 6 terminals, the top part of the terminal box can be turned through 4 x 90 degrees. For terminal boards with 9 terminals, it can be turned through 180 degrees.

Quiet running

Stable foundations or mounting conditions, exact alignment of the motors and a well-balanced transmission element are essential for quiet vibration-free running. If necessary, shims should be inserted under the motor feet to prevent strain, or the whole rotor and transmission element should be balanced.

2.3 Balancing, transmission elements

A suitable device should always be used for fitting and removing the transmission elements (coupling halves, pulleys, pinions) (Fig. 7).

As standard, the rotors are dynamically balanced with the half featherkey inserted.

The type of balance is marked on the drive end of the shaft (shaft end face):

(H = balanced with **half** featherkey)

(F = balanced with **whole** featherkey)

When fitting the transmission element, keep the type of balance in mind!

Balance with half featherkey

Poor running characteristics can arise in the case of transmission elements having a length ratio of hub length l to length of shaft end $l_M < 0.8$ and running at speeds of > 1500 rev/min (see Fig. 8). If necessary, re-balancing should be carried out, e.g. the part of the featherkey T_p that protrudes from the transmission element and above the shaft surface should be cut back.

**WARNING**

The usual measures should be taken to guard transmission elements from touch. If a motor is started up without transmission element attached, the

featherkey should be secured to prevent it being thrown out.

2.4 Electrical connection

Check to see that system voltage and frequency agree with the data given on the rating plate. Voltage or frequency deviations of $\pm 5\%$ (for 1ME6, frequency deviations of $\pm 3\%$) from the rated values are permitted without the necessity of derating the output. Connection and arrangement of the terminal links must agree with the diagram provided in the terminal box. Connect the earthing conductor to the terminal with the marking

Wherever terminal clips are used (for example, to DIN 46282), arrange the conductors so the clips are virtually level, i.e. not tilted when tightened. This method of connection means that the ends of single conductors must be bent in the shape of a U or be fitted with a cable lug (see Fig. 3.1). This also applies to the green-yellow protective earthing conductor and the outer earthing conductor (see Fig. 3.2).

Please refer to Fig. 4 for tightening torques for terminal bolts and nuts (except for terminal strips).

2.5 Checking the insulation resistance

The insulation resistance of the windings must be measured prior to initial startup of the machine, after long periods of storage or standstill (approx. 6 months).



WARNING

While the measurement is being taken and immediately afterwards, some of the terminals carry dangerous voltages and must not be touched.

Insulation resistance

- The **minimum insulation resistance** of new, cleaned or repaired windings with respect to ground is 10 MOhm.
- The critical **insulation resistance** R_{crit} is calculated first by multiplying the rated voltage U_N , e.g. 0.69 kV AC, with the constant factor (0.5 MOhm/kV):

$$R_{crit} = 0.69 \text{ kV} * 0.5 \text{ MOhm/kV} = 0.345 \text{ MOhm.}$$

Measurement

The **minimum insulation resistance** of the windings to ground is measured with 500 V DC. The winding temperature should then be $25^\circ\text{C} \pm 15^\circ\text{C}$.

The **critical insulation resistance** should be measured with 500 V DC with the winding at operating temperature.

Checking

If the **minimum insulation resistance** of a new, cleaned or repaired machine, which has been stored or at standstill for a prolonged period of time, is less than 10 MOhm, this may be due to humidity. The windings must then be dried.

After long periods of operation, the **minimum insulation resistance** may drop to the **critical insulation resistance**. As long as the measured value does not fall below the calculated value of the **critical insulation resistance**, the machine may continue in operation. If it does, the machine must be stopped immediately.

The cause must be determined, and the windings or winding sections repaired, cleaned or dried as necessary.

2.6 Commissioning

NOTE: Where the torque is very uneven (the drive of a piston-type compressor, for example), the inevitable result is a non-sinusoidal motor current, whose harmonics can lead to excessive system perturbation or excessive electromagnetic interference.

In the case of converter-fed motors, high-frequency current or voltage harmonics in the motor cables can give rise to electromagnetic interference. That is why the use of shielded cables is recommended.

Before commissioning, check that:

- The minimum insulation resistances are adhered to
- The rotor turns freely without rubbing
- The motor is properly assembled and aligned
- The transmission elements are correctly adjusted (e.g. belt tension) and the transmission element is suitable for the given operating conditions
- All electrical connections, mounting screws and connecting elements are properly tightened and fitted
- All protective conductors are properly installed
- Any auxiliaries that may be fitted (brakes, speedometer, separate fan) are in working order
- Touch protection guards are installed around moving and live parts
- The maximum speed n_{max} (see rating plate) is not exceeded.

NOTE: The maximum speed n_{max} is the highest operating speed permitted for short periods. It should be kept in mind that motor noise and vibration are worse at this speed, and bearing life is reduced.



CAUTION

After motor installation, the brake, if fitted, should be checked for proper functioning.

It is not possible to formulate a complete check list. Other checks may also be necessary!

3 Maintenance

Safety precautions



WARNING

Before starting any work on the motor or other equipment, particularly before opening covers over live or moving parts, the motor must be properly isolated from the power supply. Besides the main circuits, any additional or auxiliary circuits that may be present must also be isolated.

The usual "5 safety rules" (as set forth in DIN VDE 0105) are:

- Isolate the equipment
- Take effective measures to prevent reconnection
- Verify equipment is dead
- Earth and short-circuit
- Cover or fence off adjacent live parts

The precautions listed above should remain in force until all maintenance work is finished and the motor has been fully assembled.

NOTE: Where motors are fitted with closed condense water openings, these should be opened from time to time to allow any accumulated condense water to be drained away.

Condense water openings should always be at the lowest point of the motor!

Fitting new bearings, grease lifetime, type of grease

Under normal operating conditions, with horizontally mounted motors and coolant temperatures up to 40°C , the grease lifetime should be:

- approx. 40,000 operating hours for speeds of 1500 rpm
- approx. 20,000 operating hours for speeds of 3000 rpm

Irrespective of the number of operating hours, the grease should be renewed every 3 years because of ageing. In this case the bearings should be dismantled, washed and newly greased. The modifications with additional greasing are to be maintained according to instructions on the lubricating data plate.

In the case of motors operating under special conditions, such as vertical motor position, frequent operation at maximum speed n_{max} , heavy vibration, sudden load changes and frequent reversing operation, the bearing should be changed at considerably more frequent intervals than at the operating hours stated above.

The motors are standardly equipped with radial ball bearings of 62 ... series or with option K36 - radial ball bearings of 63 ... series which are provided with a cover plate (ZC3 version).

The cover plate is arranged on that side of the bearing facing the frame (stator).

NOTE: Notice the cover plate arrangement and the bearing clearance when changing the bearings because standard modifications can differ from special motors!

The cover plate material should withstand temperatures from -20°C to $+150^\circ\text{C}$, e.g. polyacryl-rubber (ACM).

Type of grease for standard machines: (Fa. ESSO / UNIREX N3); grease lifetime and lubrication intervals are valid for this type of grease only.

Compensatory greases must conform to DIN 51825-KL3N at least. In this case the lubrication intervals at $KT > 25^\circ\text{C}$ are to be reduced.

Special greases are introduced on the lubricating data plate.

Avoid mixing different types of grease!

Dismantle the motor to the extent necessary. Pull off the bearing with a suitable device (see Fig. 6). Clean the journal! Clean the bearing, or obtain a new one, and pack it with fresh grease.

Pack the bearing cavities flush with grease! The cover plate or endshield is kept free of grease to prevent overgreasing.

Heat bearings evenly to about 80-100 °C and press on. Heavy blows (such as with a hammer, ...) should be avoided.

Any worn sealing elements (such as shaft sealing ring, etc.) should also be renewed.

If springless radial shaft sealing rings are used, the replacement sealing rings must also be of the springless type.

Regreasing device

In the case of motors with regreasing device, take note of the information given on the lubricating data plate!

Joint sealing

When reassembling machines with degree of protection IP55 or higher (see rating plate), the bright surfaces of the joint between the motor frame and the endshields should be coated with a suitable non-hardening sealing compound (such as Hylomar, Curil).

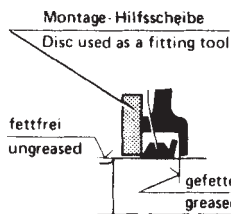
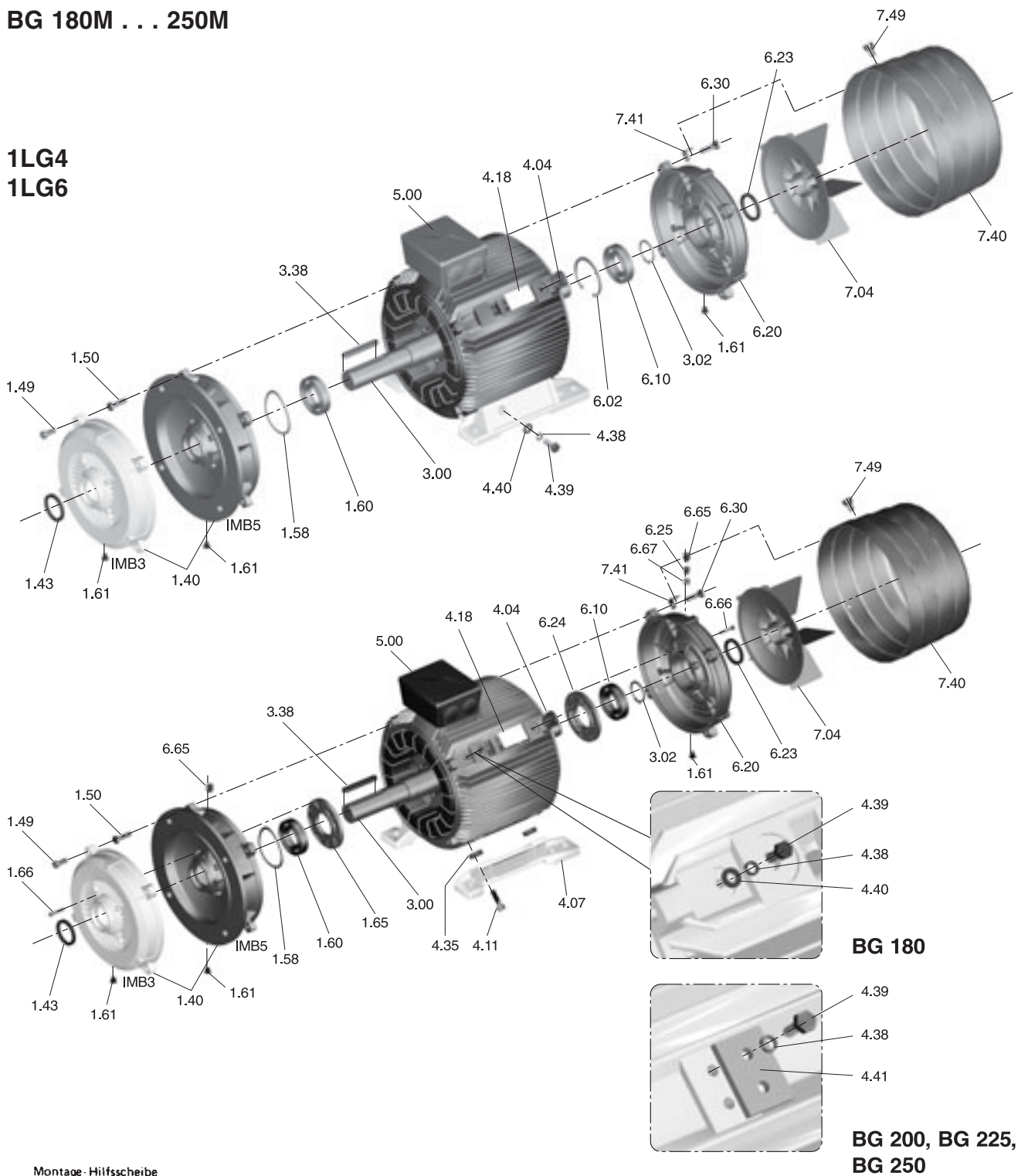
Plastic fan (frame sizes 180M ... 315L)

Plastic fans have two cast-on tabs that snap into the ring groove on the shaft to prevent axial movement. Before the fan is pulled off the shaft, these two tabs must be disengaged (screwdriver) and held temporarily in that position, e.g. by inserting packing. In the disc at the root of the blades, there are two openings for the claws of an extractor whose central screw should press against the hub. On delivery, these openings may be covered by a film of plastic and later on they should be punched.

A suitable device should be used for pulling the fan off and pressing it back on. Hammer blows must be avoided to protect the bearings.

BG 180M . . . 250M

1LG4
1LG6



Montagehinweise
Fitting instructions

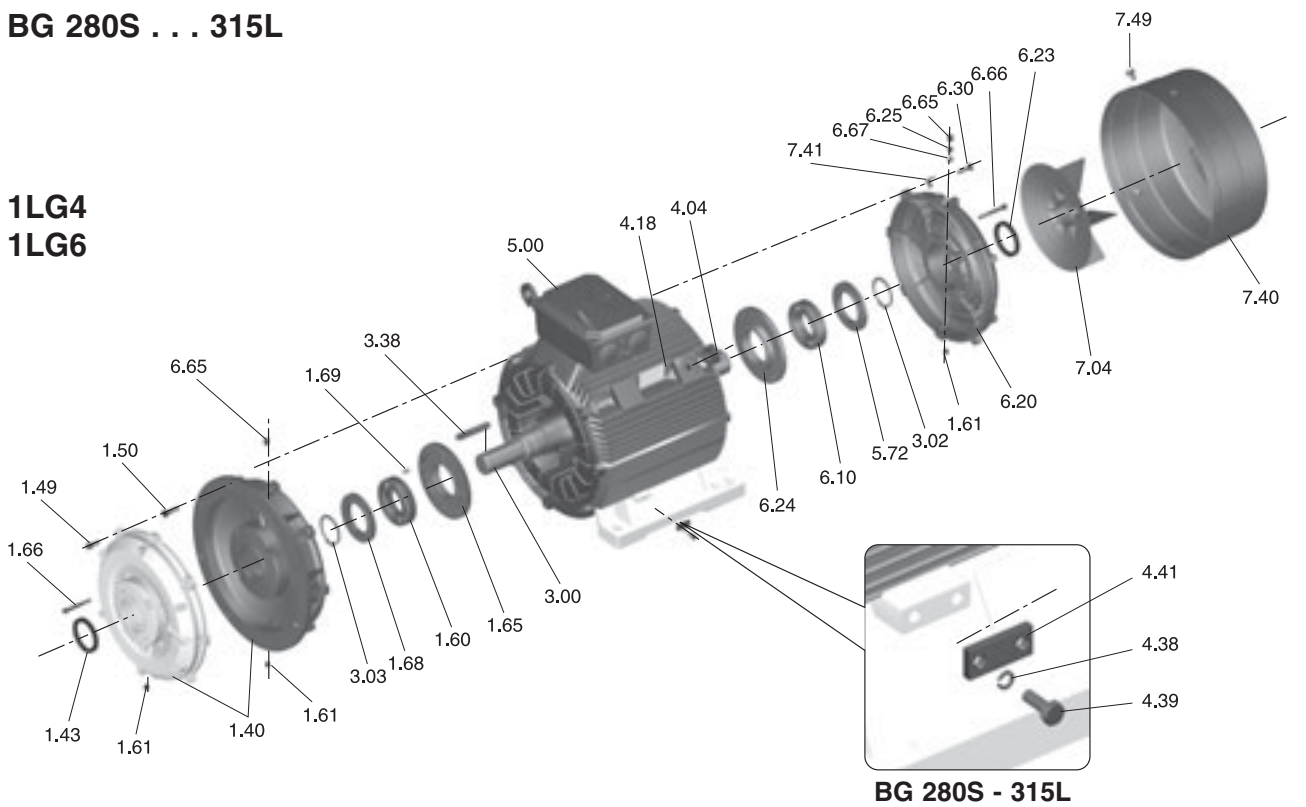


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for special operating conditions

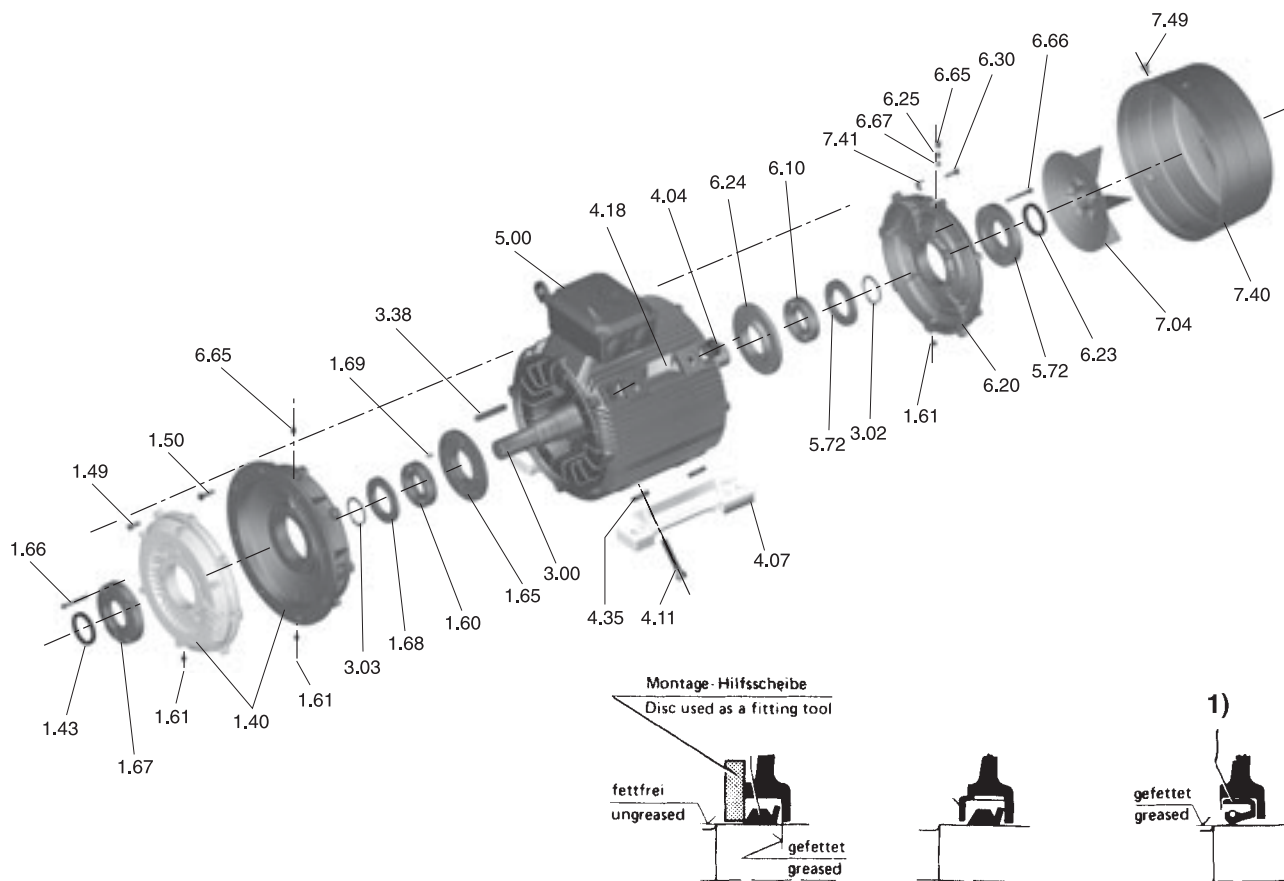
Fig. 2 +

BG 280S . . . 315L

1LG4
1LG6



BG 280S - 315L



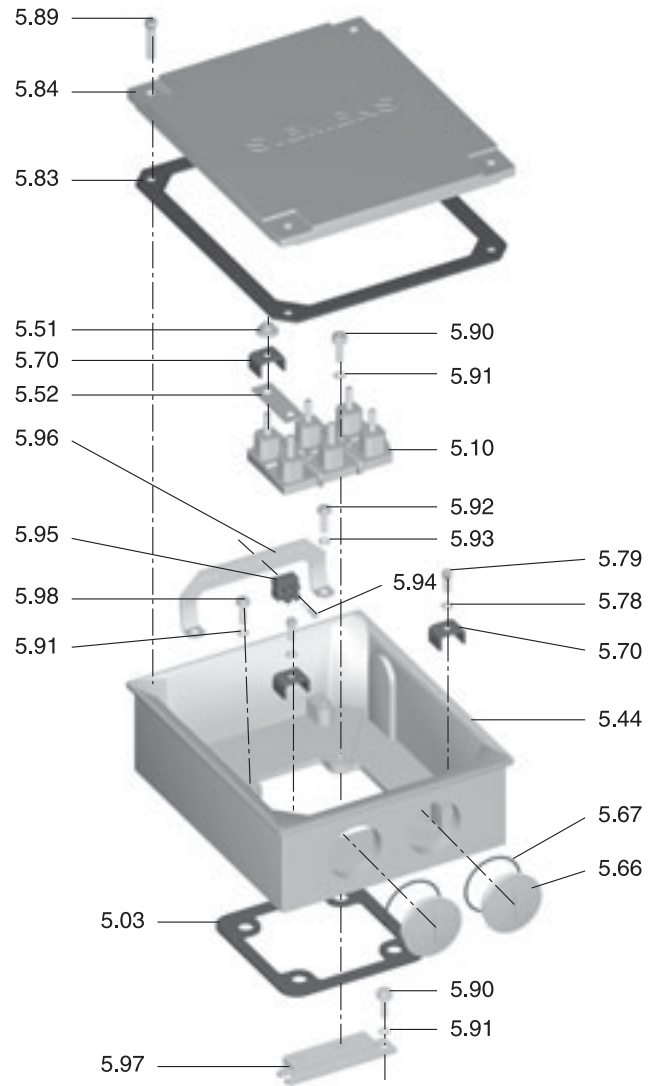
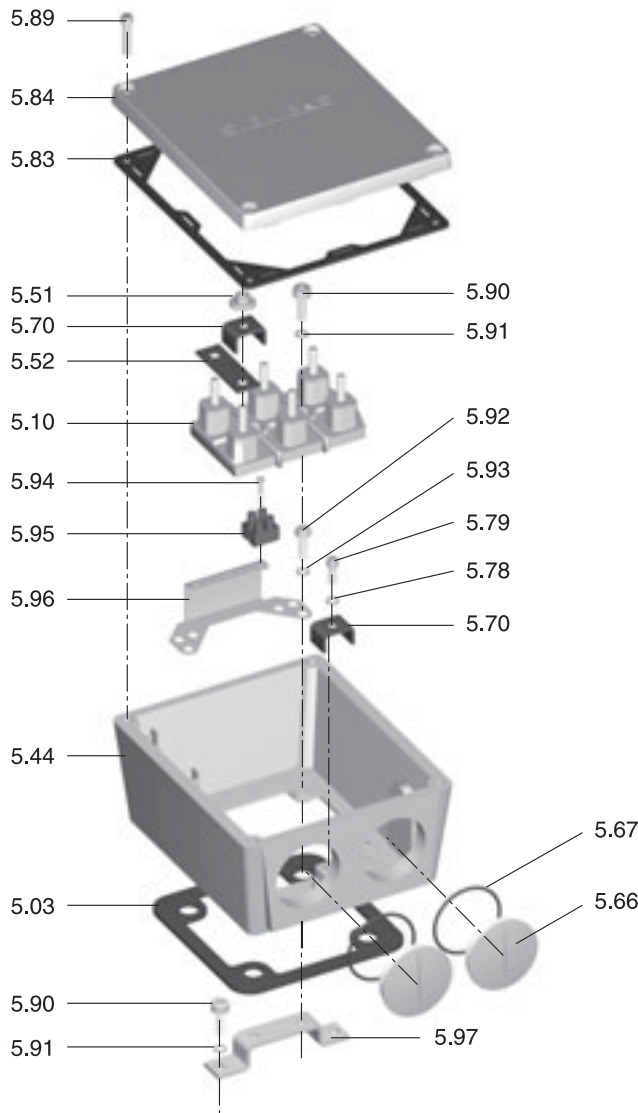
Montagehinweise
Fitting instructions

1) nur für besondere Betriebsverhältnisse
for special operating conditions

Fig. 3 +

gk 330

gt 320



Normteile sind nach Abmessung, Werkstoff und Oberfläche im freien Handel zu beziehen.

Standard commercially available parts are to be purchased in accordance with the specified dimensions, material and surface finish.

Les pièces normalisées peuvent être obtenues dans le

commerce d'après leurs dimensions, le matériau et l'état de surface.

Las piezas estándar se comprarán en comercios del ramo según las dimensiones, material y superficie especificados.

Le parti standard sono reperibili sul mercato secondo le dimensioni, il materiale e la finitura della superficie.

Normeradedetaljer kan erhållas i öppna handeln, och skall specificeras beträffande storlek, material och ytbehandling.

Normované díly lze podle rozměrů, materiálu a povrchu zakoupit volně v obchodech.

Стандартные детали можно купить в магазинах согласно размерам, материалу и поверхности.

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|------|------|---------|--|
| 4.38 | 5.78 | | |
| 5.91 | 5.93 | DIN 128 | |
| 5.21 | 5.32 | | |
| | | | |
| 3.02 | | DIN 471 | |
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| 6.02 | | DIN 472 | |
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| 4.04 | | DIN 580 | |

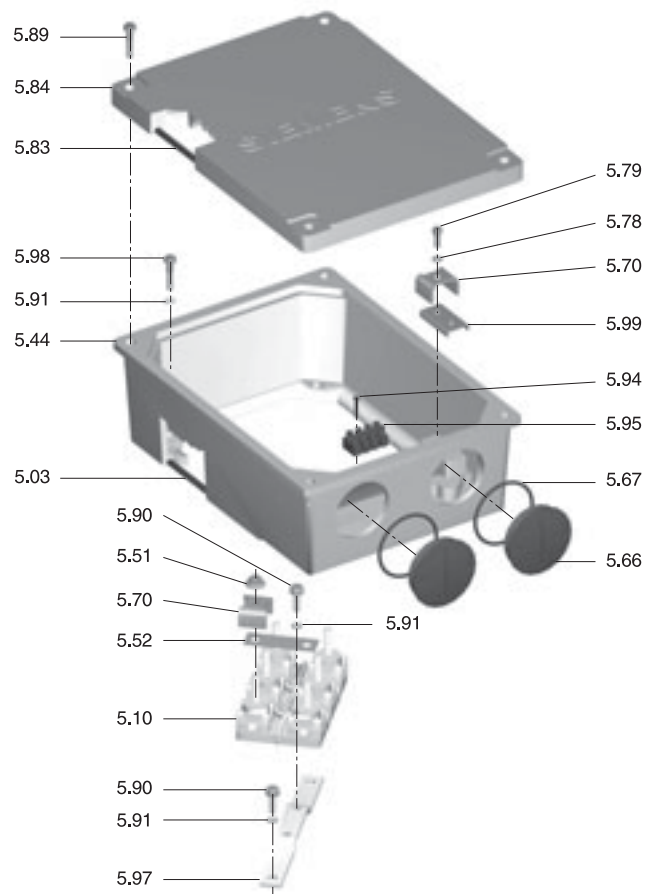
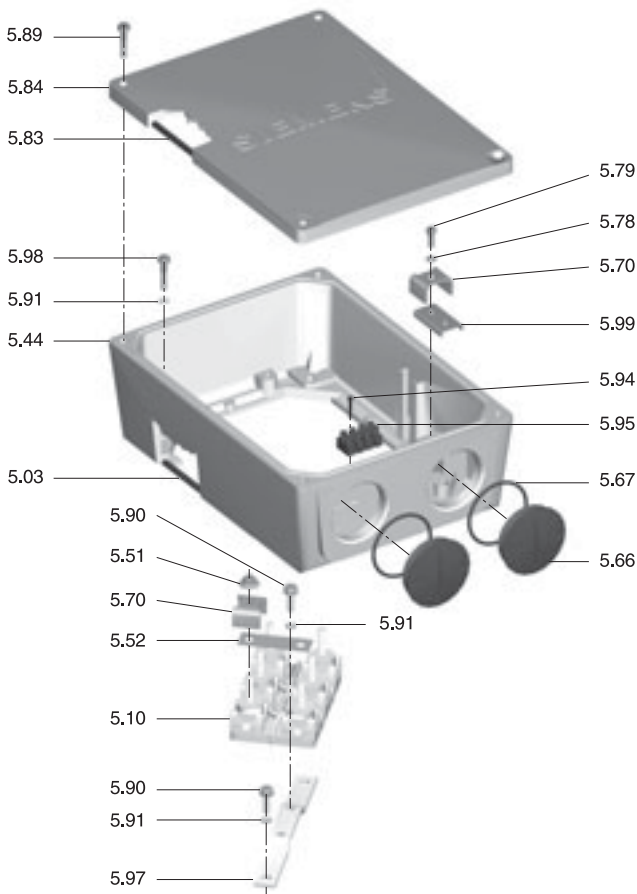
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| 1.50 | DIN 931 | |
| 4.39 | ISO 4014 | |
| 5.79 | DIN 933 | |
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| 4.40 | DIN 125 | |
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| 3.38 | DIN 6885 | |
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| 5.53 | DIN 936 | |
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| 5.66 | EN 50262 | |
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| 1.60 | DIN 625 | |
| 6.10 | Lagertyp: | |
| | Type of bearing: | |
| | Type de roulement: | |
| | Tipo de cojinete: | |
| | Tipo di cuscinetto: | |
| | Lagertyp: | |
| | Typ ložiska: | |
| | Тип подшипника: | |

Fig. 2a

gk 430

gt 420



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| 4.04 | | DIN 580 | |

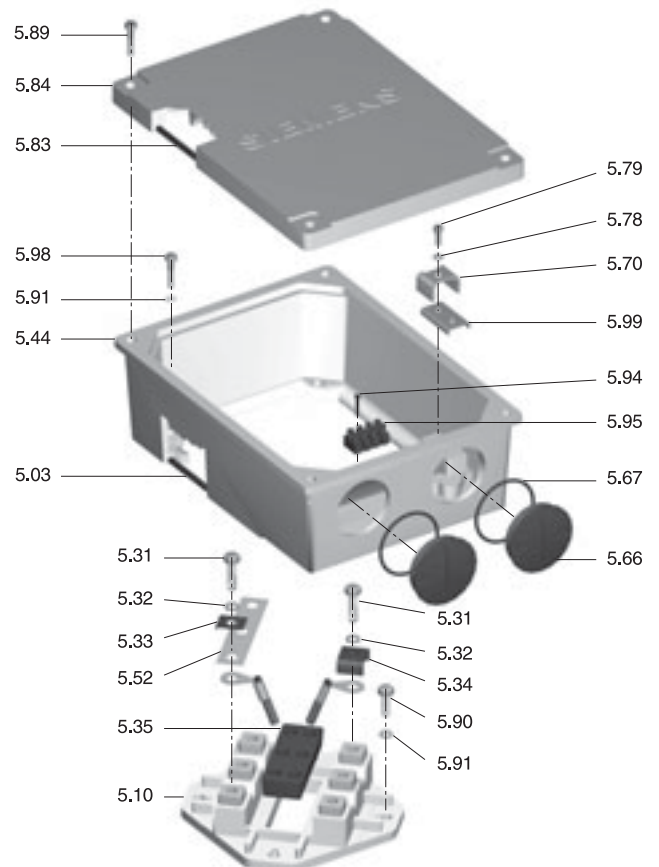
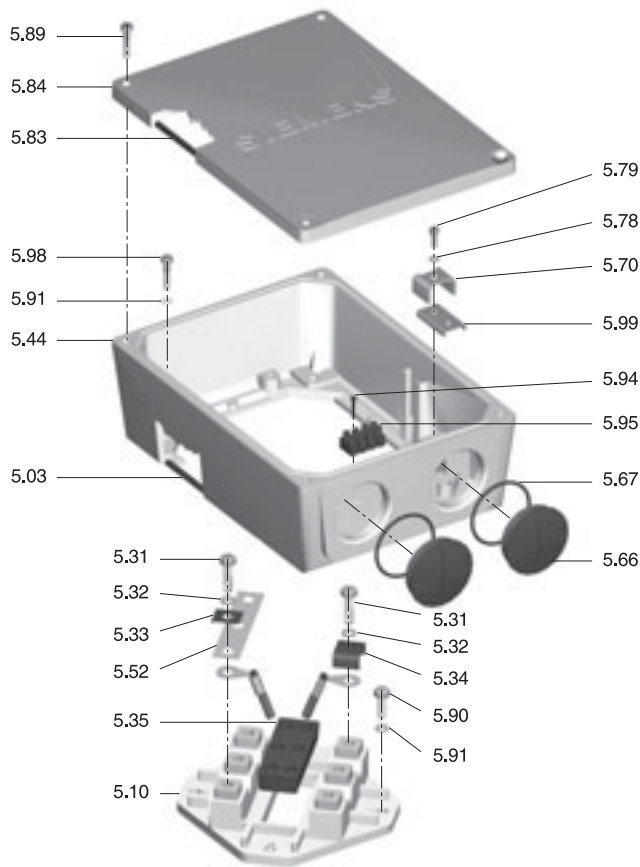
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| 3.38 | | DIN 6885 | |
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| 1.60 | | DIN 625 | |
| Lagertyp: | | | |
| Type of bearing: | | | |
| Type de roulement: | | | |
| Tipo de cojinete: | | | |
| Tipo di cuscinetto: | | | |
| Lagertyp: | | | |
| Typ ložiska: | | | |
| Тип подшипника: | | | |

Fig. 2b

gk 431

gt 421



Normteile sind nach Abmessung, Werkstoff und Oberfläche im freien Handel zu beziehen.

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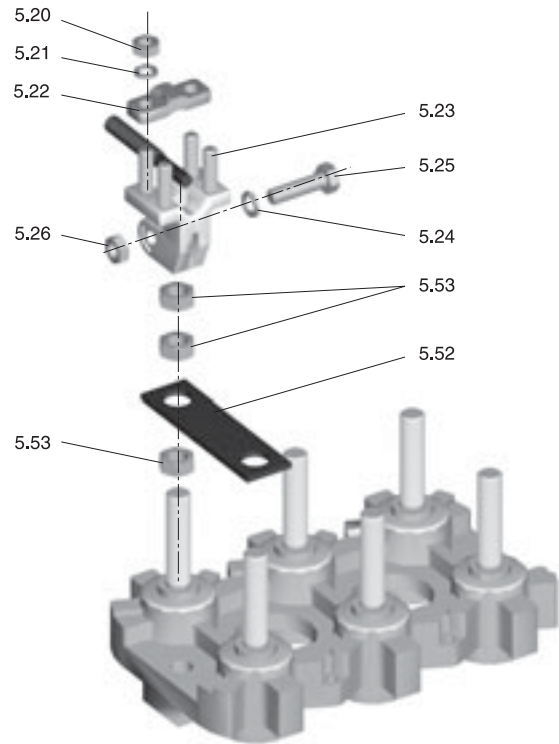
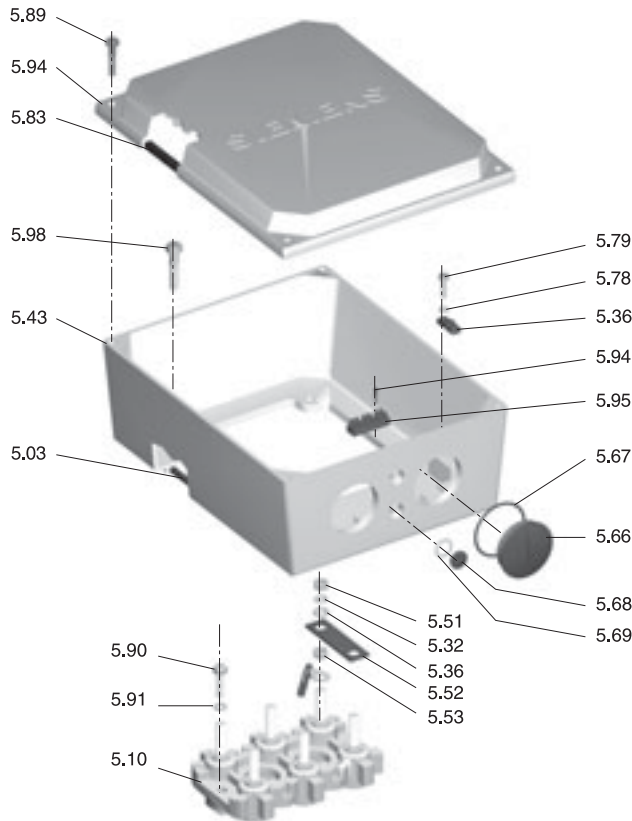
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| 1.60 | DIN 625 | |
| 6.10 | Lagertyp: | |
| | Type of bearing: | |
| | Type de roulement: | |
| | Tipo de cojinete: | |
| | Tipo di cuscinetto: | |
| | Lagertyp: | |
| | Typ ložiska: | |
| | Тип подшипника: | |

Fig. 2c

gt 620

gt 640



- for cable arrangements without lugs only terminal board (5.10) from gt 640 possible
- für Kabelschuhlosen Anschluß! nur Klemmenbrett (5.10) aus gt 640 zulässig

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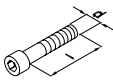
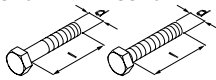
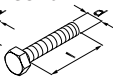
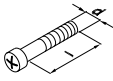

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| | | Lagertyp: | |
| | | Typ ložiska: | |
| | | Тип подшипника: | |

Fig. 2c

Anschließbare Querschnitt je nach Klemmengröße (ggf. reduziert durch Größe der Leitungseinführungen)
Conductor cross-sections connectable to the various terminals (may be reduced by size of cable entries)
Sections raccordables suivant la taille de la borne (réduction éventuelle par la taille des entrées de câbles)
Sección conectable según tamaño del borne (en caso dado, más pequeña debido al tamaño de las entradas de línea)
Diamentri dei collegamenti a sec. delle misure dei morsetti (eventualmente sono ridotte le dimensioni delle aperture per i conduttori)
Anslutningsbara ledarearor för olika klämstorlekar (ev. reducerat med hänsyn till genomföringens storlek)
Пřipojovací průřez podle velikosti svorek (v daném případě omezený velikostí průchodek vedení).
Соединительное сечение согласно размеру зажимов (в данном случае ограниченное размеров проходных изоляторов линии).

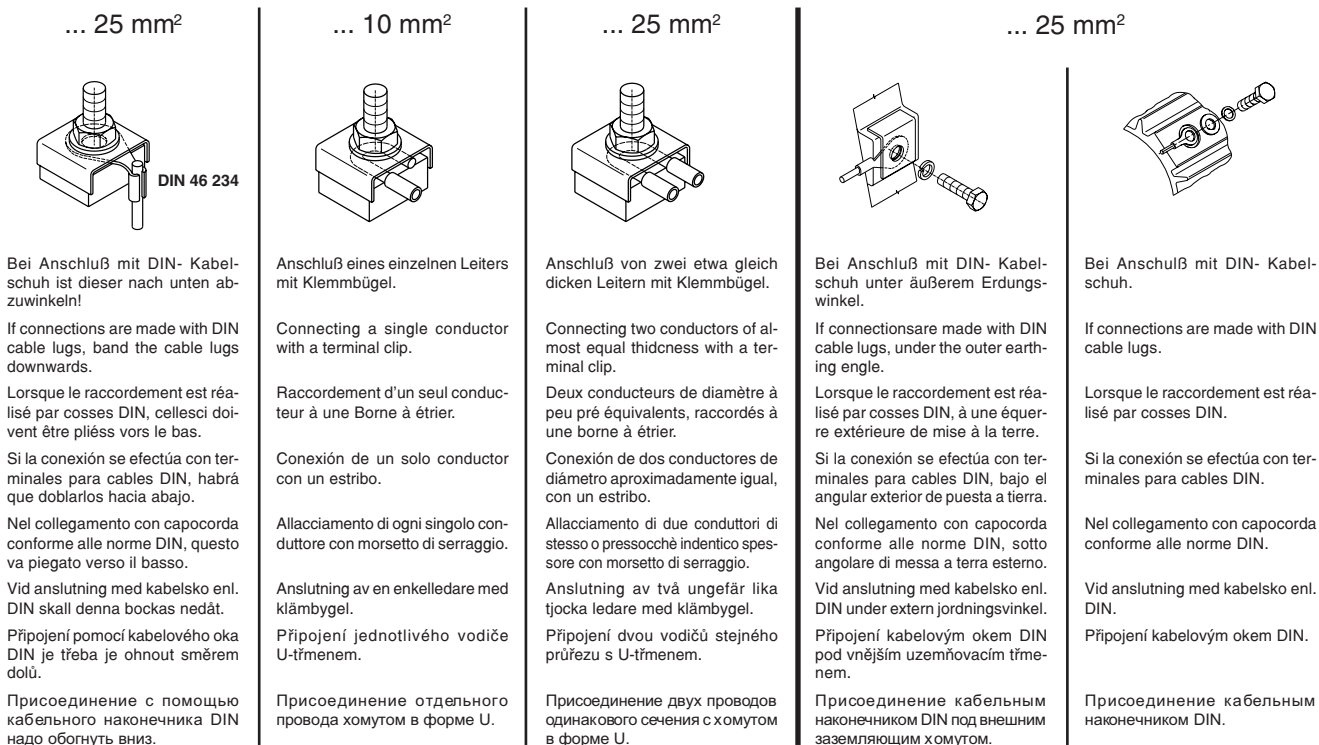


Fig. 3.1

Fig. 3.2

Anziehdrehmomente für Schraubenverbindungen der elektrischen Anschlüsse - Klemmenbrettanschlüsse (außer Klemmenleisten)
Tightening torques for screwed electrical connections - terminal board connections (except for terminal strips)
Couples de serrages des bornes de la plaque à bornes (ne concerne pas les borniers)
Pares de apriete para uniones atornilladas de las conexiones eléctricas en la placa de bornes (exceptuando las regletas de bornes).
Coppie di serraggio per le viti di attacco di collegamenti elettrici / dei portamorsetti (escluse morsettiere)
Åtdragningsmoment för de elektriska anslutningarnas skruvförband (utom på kontaktplintar)
Utahovací momenty pro šroubové spoje elektrických připojení - připojení na svorkových deskách (mimo svorkovnicové lišty).
Затяжные моменты для винтовых соединений электрических присоединений – присоединение на зажимных платах (кроме зажимной планки).

| | | | | | | | | |
|--|---|-------------------|-----|-----|-----|-----|-----|-----|
| | Gewinde- σ / Thread- σ / σ du filetage σ de la rosca / Diametro del filetto Gängdimeter / Závit σ / Диаметр резьбы | M4 | M5 | M6 | M8 | M10 | M12 | M16 |
| | Anziehdrehmoment Tightening torque Couple de serrage Par de apriete Coppia di serraggio Åtdragningsmoment Utahovací moment Затяжной момент | min мин N m | 0,8 | 1,8 | 2,7 | 5,5 | 9 | 14 |
| | max макс | 1,2 | 2,5 | 4 | 8 | 13 | 20 | 40 |

Die obigen Anziehdrehmomente gelten soweit keine anderen Werte angegeben sind!
 The above values of tightening torque are applicable unless alternative values are given elsewhere.
 Les couples de serrage indiqués ci-dessus sont valables pour autant qu'aucune valeur spécifique ne soit donnée.
 Estos pares de apriete rigen mientras no se indiquen otros.
 Le coppie di serraggio indicate qui di sopra sono valide se non sono indicati altri valori.
 Ovanstående åtdragningsmoment gäller om ej andra värden angivits!
 Výše uvedené utahovací momenty platí, pokud nejsou uvedeny jiné hodnoty.
 Вышеприведенные моменты действуют в случае, что не приведены другие значения.

Fig. 4

Lagerwechsel / Changing bearings / Remplacement des roulements / Cambio de cojinetes
Sostituzione del cuscinetto / Lagerbyte / Výměna ložiska / Замена подшипника

Zwischenscheibe (Schutz der Zentrierung im Wellenende)
Spacer washer (to protect centring bore in shaft end)
Rondelle (protection du centrage en bout d'arbre)
Disco intermedio (protege el centrado en el extremo del eje)
Spessore (protezione delle centratura null'estremità d'albero)
Distansbricka (skydd av centrerings i axeltappen)
Vložená podložka (ochrana středícího důlku na konci hřídele)
Промежуточная подкладная шайба (защита центрального отверстия в конце вала)

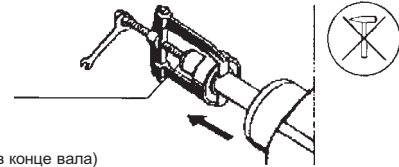
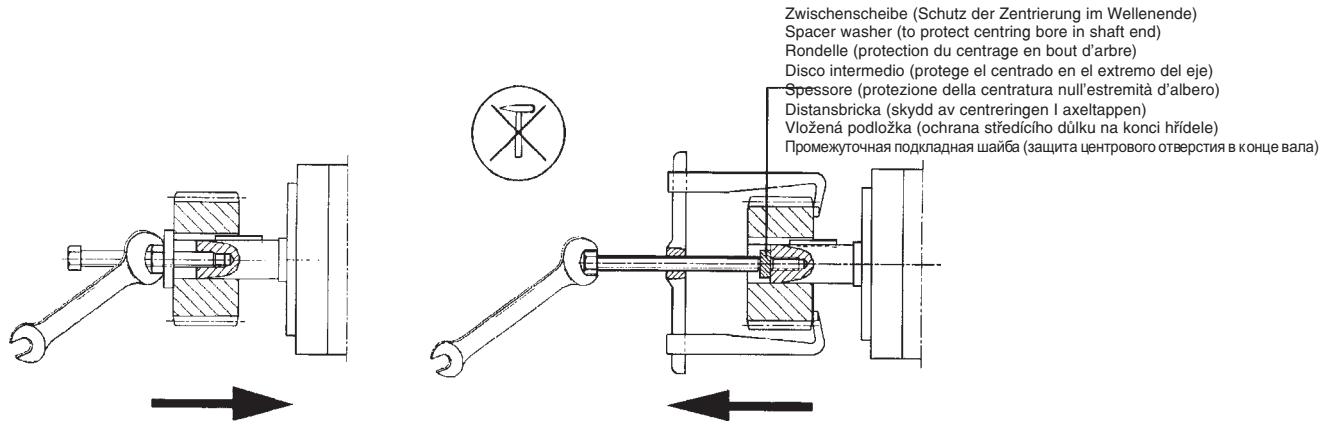


Fig. 6

Auf- und Abziehen von Abtriebs-elementen / Pressing on and pulling off drive elements / Emmanchement et extraction d'organes de transmission / Calado y extracción de elementos de accionamiento / Calettamento ed estrazione degli elementi di azionamento / På- och avdragning av drivdon / Nasazování a stahování přenosových členů / Установка и стягивание элементов передачи



Zwischenscheibe (Schutz der Zentrierung im Wellenende)
Spacer washer (to protect centring bore in shaft end)
Rondelle (protection du centrage en bout d'arbre)
Disco intermedio (protege el centrado en el extremo del eje)
Spessore (protezione della centratura null'estremità d'albero)
Distansbricka (skydd av centrerings i axeltappen)
Vložená podložka (ochrana středícího důlku na konci hřídele)
Промежуточная подкладная шайба (защита центрального отверстия в конце вала)

Zum Aufziehen von Abtriebs-elementen (Kupplung, Zahnrad, Riemenscheibe usw.), Gewinde im Wellenende benutzen und - sofern möglich - Abtriebs-elemente nach Bedarf erwärmen. Zum Abziehen geeignete Vorrichtung verwenden. Es dürfen beim Auf- und Abziehen keine Schläge (z.B. mit Hammer oder ähnlichem) oder größere als die laut Katalog zulässigen radialen oder axialen Kräfte über das Wellenende auf die Motorlager übertragen werden.

Use the tapered hole provided in the end of the shaft for fitting drive components such as couplings, gearwheels, belt pulleys, etc. and, if possible, heat the components as necessary. Use a suitable puller tool for removing the components. Do not strike the components, e.g. with a hammer or similar tool, when fitting or removing them and do not exert more than the maximum value of radial or axial force - according to the catalog - transmitted to the motor bearings through the shaft extension.

Pour monter les organes de transmission (accouplements, roues dentées, poulies à courroie, etc.), utiliser le taraudage du bout d'arbre. Au besoin et lorsque cela est possible, chauffer les organes de transmission. Pour le démontage, utiliser un dispositif approprié. Aucun coup (par ex. marteau) supérieur aux efforts axiaux et radiaux admissibles mentionnés au catalogue ne doit être transmis par l'arbre aux roulements en cours de montage ou de démontage.

Para calar los elementos de accionamiento (acoplamientos, rueda dentada, polea, etc.) utilizar la rosca en el extremo del eje y - siempre que sea posible - calentar convenientemente dichos elementos. Utilizar el dispositivo adecuado para la extracción. Durante las operaciones de calado o extracción no golpear (p. ej. con martillo o similar) ni ejercer sobre los cojinetes del motor a través del extremo del eje fuerzas axiales o radiales superiores a las admisibles según catálogo.

Per calettare gli elementi di azionamento (giunti, ruote dentate, pulegge, ecc.), utilizzare il foro filettato nell'estremità d'albero e, se possibile, riscaldare gli elementi di azionamento. Per l'estrazione vanno adoperati attrezzi adatti. Sono da evitare colpi o martellate, e forze radiali o assiali trasmesse dall'estremità d'albero ai cuscinetti che siano maggiori di quelle consentite sec. il catalogo.

Använd axeltappens gänga vid pådragning av drivdon (koppling, kuggjul, remskiva etc) och värma om möjligt upp drivdonen om så behövs. Använd lämpliga verktyg för avdragningen. Några slag (t.ex. med hammare e.dyl.) får aldrig förekomma vid på- och avdragning, och radiella och axiella krafter som är större än de som anges i katalogen får inte överföras till motorlagren via axeltappen.

Pro nasazování přenosových členů (spojka, ozubené kolo, řemenice atd.) používat závit na konci hřídele a - pokud je to možné - přenosové členy podle potřeby nahřát. Pro stahování používat vhodný přípravek. Při nasazování a stahování se nesmí používat žádné údery (např. kladivem apod.) nebo větší radiální nebo axiální síly, než jsou přípustné podle katalogu, které se přenášejí přes konec hřídele na ložiska motoru.

Для установки элементов передачи (муфта, шестерня, ременный шкив итд.) применять резьбу в носке вала и - если возможно - подогреть элементы передачи по потребности. Для стягивания применять удобное приспособление. При установке и стягивании запрещается применять удары (например молотом итп.) или радиальные или осевые усилия превышающие значения допускаемые согласно каталогу, которые передаются через носок вала в подшипники двигателя.

Fig. 7

Auswuchtung mit halber Paßfeder / Balancing with half featherkey
Equilibrage avec demi-clavette / Equilibrado con media chaveta
Equilibratura con mezza chiavetta / Balansering med halv kil
Vyvázení s polovinou pera / Балансировка с половиной шпонки

Nabenlänge l / Hub length l / Longueur du moyeu l / Longitud del cubo l
Lunghezza mozzo l / Navlängd l / Délka náboje l / Длина ступицы l

Herausragender Teil der Paßfeder T_p
Protruding section of featherkey T_p
Partie saillante T_p de la clavette
Parte saliente de la chaveta T_p
Parte sporgente della chiavetta T_p
Nedslipning av den del av kilen T_p
Přechýlující část zalicovaného pera T_p
Выступающая часть пригнанной шпонки T_p

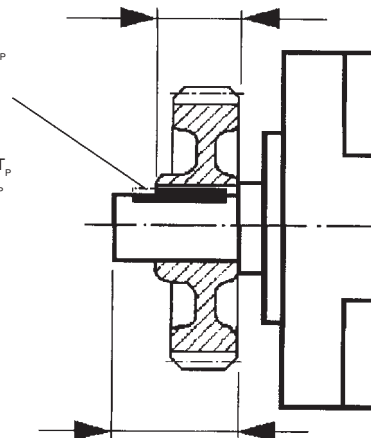


Fig. 8

Länge des Wellenendes l_M / Length of shaft l_M / Longueur du bout d'arbre l_M / Longitud del extremo del eje l_M
Lunghezza l_M dell'estremità d'albero / Axeltappens längd l_M / Délka konce hřídele l_M / Длина носка вала l_M

DEUTSCH

Ersatzteile, vom Werk lieferbar (s. Bestellbeispiel)

- 1.00 Lagerung AS**
- .40 Lagerschild
- .43 Wellendichtring
- .58 Federscheibe
- .60 Wälzlager
- .61 Verschlussstopfen
- .65 Lagerdeckel
- .67 Ausserer Lagerdeckel
- .68 Schleuderscheibe
- .69 Druckfeder
- 3.00 Läufer, komplett**
- 4.00 Ständer, komplett**
- .07 Gehäusefuß (BG180 - rechts, links)
- .18 Leistungsschild
- .35 Scheibe
- .40 Scheibe
- .41 Erdungsglasche
- 5.00 Klemmenkasten, komplett**
- .03 Dichtung (BG200 Schnurdichtung)
- .10 Klemmenbrett, komplett
- .33 Unverdrehbare Unterlage
- .34 Klemmbügel
- .35 Gummistopfen
- .44 Klemmenkasten-Oberteil
- .51 Mutter
- .52 Schaltbügel
- .70 Klemmbügel
- .71 Ausserer Lagerdeckel
- .72 Schleuderscheibe
- .83 Dichtung
- .84 Klemmenkasten-Deckel
- .89 Schraube
- .94 Schraube
- .95 Klemme
- .96 Tragschiene
- .97 Strebe komplett
- .99 Kontaktblech
- 6.00 Lagerung BS**
- .10 Wälzlager
- .20 Lagerschild
- .23 Wellendichtring
- .24 Lagerdeckel
- .65 Schmiernippel
- .66 Gummibuchse
- .67 Schmierrohr
- 7.00 Belüftung, komplett**
- .04 Lüfter
- .40 Lüfterhaube
- .41 Winkel
- .49 Schraube

Auf- und Abziehvorrichtungen für Wälzlager, Lüfter und Abtriebsselemente sind nicht lieferbar!

ENGLISH

Spare parts, available from the works (see specimen orders)

- 1.00 Bearing assembly, drive end**
- .40 Endshield
- .43 Shaft sealing ring
- .58 Resilient preloading disc
- .60 Rolling-contact bearing
- .61 Plug
- .65 Cover of bearing
- .67 Outer bearing cap
- .68 Grease slinger
- .69 Compression springs
- 3.00 Rotor, complete**
- 4.00 Stator, complete**
- .07 Body footing (BG 180 - left, right)
- .18 Rating plate
- .35 Disc
- .40 Disc
- .41 Earthing terminal
- 5.00 Terminal box, complete**
- .03 Gasket (frame sizes 200: cord-type gasket)
- .10 Terminal board, complete
- .33 Not-twist shim
- .34 Terminal clip
- .35 Rubber plug
- .44 Upper part of terminal box
- .51 Nut
- .52 Stirrup
- .70 Terminal clip
- .71 Outer bearing cap
- .72 Grease slinger
- .83 Gasket
- .84 Cover for terminal box
- .89 Screw
- .94 Screw
- .95 Clip
- .96 Supporting bar
- .97 Brace complete
- .99 Contact washer
- 6.00 Bearing assembly, non-drive end**
- .10 Rolling-contact bearing
- .20 Endshield
- .23 Shaft sealing ring
- .24 Cover of bearing
- .65 Nipple
- .66 Rubber bush
- .67 Lubrication pipe
- 7.00 Ventilation accessories, complete**
- .04 Fan
- .40 Fan cowl
- .41 Angle
- .49 Screw

Mounting and extracting devices for rolling-contact bearings, fans and out elements are not available.

FRANÇAIS

Pièces de rechange, livrables par l'usine (voir exemple de commande)

- 1.00 Palier côté entraînement**
- .40 Flasque-palier
- .43 Bague d'étanchéité
- .58 Rondelle élastique
- .60 Roulement
- .61 Bauchons
- .65 Couvercle de palier
- .67 Couvercle extérieur de palier
- .68 Disque de projection
- .69 Ressort de compression
- 3.00 Rotor, complet**
- 4.00 Stator, complet**
- .07 Pied du corps (BG 180 - gauche, droit)
- .18 Plaque signalétique
- .35 Disque
- .40 Disque
- .41 Borne de mise à la terre
- 5.00 Boîte à bornes, complète**
- .03 Joint (torique sur HA 200)
- .10 Plaque à bornes, complète
- .33 Plaque arrêtee en rotation
- .34 Etrier de serrage
- .35 Passe-câble en caoutchouc
- .44 Partie supérieure de la boîte à bornes
- .51 Ecrou
- .52 Barret droite
- .70 Etrier de serrage
- .71 Couvercle extérieur de palier
- .72 Disque de projection
- .83 Joint
- .84 Couvercle de la boîte à bornes
- .89 Vis
- .94 Vis
- .95 Bornier pour circuit auxiliaire
- .96 Lardon porteur
- .97 Étai complet
- .99 Tôle de contact
- 6.00 Palier côté opposé à l'entraînement**
- .10 Roulement
- .20 Flasque-palier
- .23 Bague d'étanchéité
- .24 Couvercle de palier
- .65 Graisseur
- .66 Douille en caoutchouc
- .67 Tube de graissage
- 7.00 Ventilation, complète**
- .04 Ventilateur
- .40 Capot du ventilateur
- .41 Equerre
- .49 Vis

Les dispositifs d'emmanchement et d'extraction pour roulements, ventilateurs et organes de transmission ne sont pas livrables.

ESPAÑOL

Piezas de recambio; suministro desde fábrica (véase ejemplo de pedido).

- 1.00 Cojinete del LA**
- .40 Escudo portacojinetes
- .43 Retén
- .58 Arandela de resorte
- .60 Rodamiento
- .61 Tapón
- .65 Cubierta del cojinete
- .67 Tapa exterior del cojinete
- .68 Anillo de engrase
- .69 Muelles de presión
- 3.00 Rotor, completo**
- 4.00 Estator, completo**
- .07 Pedestal del cuerpo (BG180 - izquierdo, derecho)
- .18 Placa de características
- .35 Arandela
- .40 Disco
- .41 Borne de puesta a tierra
- 5.00 Caja de bornes, completa**
- .03 Junta (en BG 200 obturación trenzada)
- .10 Placa de bornes, completa
- .33 Suplemento fijo
- .34 Estribo
- .35 Tapón de goma
- .44 Parte superior de la caja de bornes
- .51 Tuerca
- .52 Brida
- .70 Estribo
- .71 Tapa exterior del cojinete
- .72 Anillo de engrase
- .83 Junta
- .84 Tapa de la caja de bornes
- .89 Tornillo
- .94 Tornillo
- .95 Abrazadera
- .96 Listón de soporte
- .97 Sostén completo
- .99 Plancha de contacto
- 6.00 Cojinete del LCA**
- .10 Rodamiento
- .20 Escudo portacojinete
- .23 Retén
- .24 Cubierta del cojinete
- .65 Aceitera
- .66 Casquillo de goma
- .67 Tubo de lubricación
- 7.00 Ventilación, completa**
- .04 Ventilador
- .40 Tapa del ventilador
- .41 Angular
- .49 Tornillo

No se suministran los dispositivos para extraer y calar los rodamientos, el ventilador y los elementos de accionamiento.