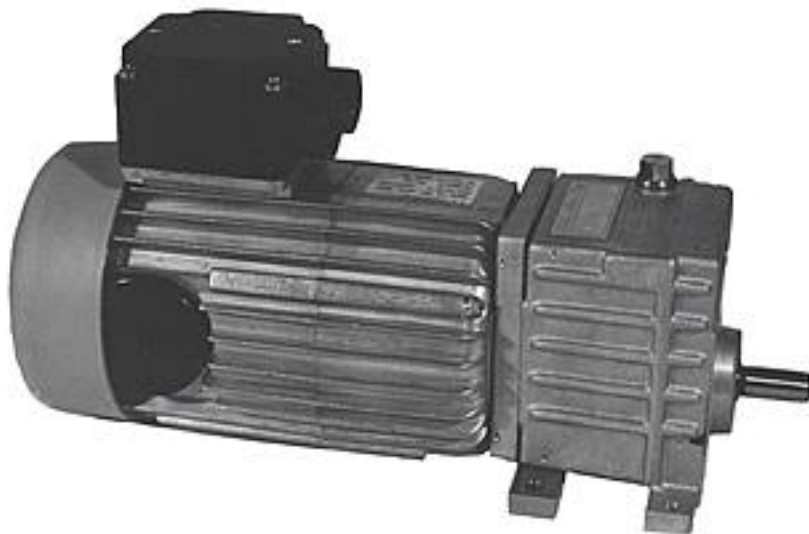


DC shunt
geared motors

Series GN



Heytraction Antriebstechnik GmbH
Heidemannstraße 3 80939 München

Phone: +49 89 312135-0 Fax: +49 89 312135-12
Email: info@heytraction.de Internet: www.heytraction.de

Table of contents

⇒ Technical Overview

Drive motors	3
AC tachogenerators	3
Gears	3

⇒ Selection tables

GN with spur gear	4
GN with spur and bevel gear	5
GN with worm gear	6

⇒ Dimensional drawings

Motor and tacho	6
GN with worm gear	6
GN with spur gear	7

⇒ Speed control

Thyristor control	10
-------------------------	----

⇒ Delivery program

Overview	11
----------------	----

Distinctive features

- 150 Watt power
- Output torques up to 30 Nm
- Transmission between $i = 3.33$ and $i = 5,611.30$
- Highly compact design
- Combination with spur, bevel, and worm gears
- Lifetime lubrication means maintenance-freedom
- All gears can be operated irrespective of their position, see dimension sheets for available designs

This catalogue contains product specifications, but no assurance of properties.
We reserve the right for technical changes and changes of availability.

Drive Motors

Our DC-shunt gear motors are internally-cooled and fitted with ball-bearing-mounted anchors. These motors are ideally suited for control via the **SGP160 2.5** thyristor.

Technical data

Nominal speed	4000 1/min
Nominal torque	0.35 Nm
Nominal capacity	150 W at F=1.0
Form factor F	1.0
Armature/field current	1.4A / 0.1 A
Armature/field voltage	180 V / 200 V
Armature inductance	160 mH
Protection class	IP44
Insulation Class	B
Weight (mass)	2.7 kg
Moment of inertia	0.00035 kgm ²

AC Tachogenerator

The motors can be equipped with a **WTA36/30** AC tacho.

When using a bridge rectifier, this transducer can be applied for analogue as well as digital rotation speed display instruments. As a transducer for the thyristor controller SGP160-2.5, it has a control range up to R= 50.

Attaching the tacho extends the length of the motor by 33 mm. (see dimensional drawing on page 6)

Technical data

Terminal voltage U_K (Load resistance $R_b = 10\text{ k}\Omega$)	\square 30V/1000 1/min
Internal resistance stat. R_i	60 \square
Minimum speed n_{min}	40 1/min
Maximum speed n_{max}	5000 1/min
Frequency f	0.3 x n Hz; (n in 1/min)
Protection class	IP21
Weight with armature	0.4 kg
Polarity of the DC voltage is	independent of direction of rotation

Gears

The 4000 1/min nominal speed of the motor can be adapted to individual applications by attaching **spur or worm gears** with finely graded transmissions.

The gears are hermetically sealed, lifetime lubricated, and can be installed in any position.

Spur gear units with 2 to 7 steps are available with transmission ratios between $i = 3.33 =$ and $i = 1,832.73$.

Spur gears can be combined with additional **bevel gears**, thus allowing transmission ratios up to $i = 3,665.43$.

The location of the output shaft can optionally be arranged at a 90° angle.

Worm gears, which are flanged directly to the motor, are available with transmissions between $i = 7$ and $i = 75$.

High quality gearing, maintenance-free friction bearings and a special lifetime grease lubrication result in quiet and trouble-free drives with good efficiency.



Gear motor with spur gear

Motor power

0.15 (0.10) KW

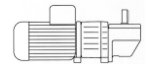
DC shunt

Output speed n ²	Output torque M ₂	Output torque M ₂		Gear ratio	approx. weight w motor	Dimensions
at n ¹ = 4000 1/min	Form factor F = 1.0	Form factor F = 1.3				
1/min	Nm	Nm	Typ	i =	kg	Bild-Nr.
1202	0.9	0.6	GN23-150	3.33	3.6	57.1
954	1.1	0.8	GN23-150	4.19	3.6	57.1
786	1.4	0.9	GN23-150	5.09	3.6	57.1
623	1.7	1.1	GN23-150	6.42	3.6	57.1
591	1.8	1.2	GN23-150	6.77	3.6	57.1
495	2.1	1.4	GN22-150	8.08	4.3	56.1
385	2.8	1.9	GN23-150	10.37	3.6	57.1
292	3.7	2.5	GN22-150	13.71	4.3	56.1
257	4.2	2.8	GN23-150	15.56	3.6	57.1
224	4.8	3.2	GN22-150	17.81	4.3	56.1
185	5.8	3.9	GN239-150	21.65	4.8	58.1
179	6.0	4.0	GN24-150	22.31	3.7	57.1
142	7.6	5.0	GN24-150	28.14	3.7	57.1
117	9.2	6.1	GN24-150	34.15	3.7	57.1
108	9.9	6.6	GN239-150	37.10	4.8	58.1
93	*10	7.7	GN24-150	43.07	3.7	57.1
83	12.9	8.6	GN239-150	48.20	4.8	58.1
78	*10	9.2	GN24-150	51.27	3.7	57.1
68	15.8	10.5	GN249-150	58.57	4.8	58.1
54	*10	9.8	GN25-150	73.49	3.7	57.1
51	*10	*10	GN24-150	78.49	3.7	57.1
43	*10	*10	GN25-150	92.68	3.7	57.1
40	26.9	17.9	GN249-150	100.38	4.8	58.1
35	*10	*10	GN25-150	112.50	3.7	57.1
31	*30	23.1	GN249-150	130.43	4.8	58.1
28	*10	*10	GN25-150	141.89	3.7	57.1
25	*30	28.7	GN259-150	158.50	4.9	58.1
24	*10	*10	GN25-150	168.89	3.7	57.1
16.5	*10	*10	GN26-150	242.08	3.8	57.1
14.7	*30	*30	GN259-150	271.62	4.9	58.1
13.1	*10	*10	GN26-150	305.31	3.8	57.1
11.3	*30	*30	GN259-150	352.93	4.9	58.1
10.8	*10	*10	GN26-150	370.60	3.8	57.1
9.3	*30	*30	GN269-150	428.87	4.9	58.1
8.6	*10	*10	GN26-150	467.39	3.8	57.1
7.2	*10	*10	GN26-150	556.36	3.8	57.1
5.4	*30	*30	GN269-150	734.96	4.9	58.1
5.0	*10	*10	GN27-150	797.45	3.8	57.1
4.2	*30	*30	GN269-150	954.97	4.9	58.1
4.0	*10	*10	GN27-150	1005.73	3.8	57.1
3.3	*10	*10	GN27-150	1220.79	3.8	57.1
2.6	*10	*10	GN27-150	1539.64	3.8	57.1
2.1	*10	*10	GN27-150	1832.73	3.8	57.1
1.4	*10	*10	GN27-150	2805.65	3.8	57.1

* Design-related permissible torque of transmission gear

Form factor F = 1.0: Operation at ideal DC power without speed adjustment (e.g. by battery or three-phase bridge)

Form factor F = 1.3: Operation with speed control SGP160-2.5



Gear motor with spur and bevel gear

Motor power

0.15 (0.10) KW

DC shunt

Output speed n ² at n ¹ = 4000 1/min 1/min	Output torque M ₂ Form factor F = 1.0 Nm	Output torque M ₂ Form factor F = 1.3 Nm	Typ	Gear ratio i =	approx. weight w motor kg	Dimensions Bild-Nr.
601	1.8	1.2	GN23W2-150	6.66	4.4	57.2
477	2.3	1.5	GN23W2-150	8.38	4.4	57.2
393	2.7	1.8	GN23W2-150	10.18	4.4	57.2
311	3.5	2.3	GN23W2-150	12.84	4.4	57.2
295	3.6	2.4	GN23W2-150	13.54	4.4	57.2
247	4.3	2.9	GN22W2-150	16.16	5.1	56.2
193	5.6	3.7	GN23W2-150	20.74	4.4	57.2
145	7.4	4.9	GN22W2-150	27.42	5.1	56.2
128	8.4	5.6	GN23W2-150	31.12	4.4	57.2
123	8.7	5.8	GN239W3-150	32.47	5.6	58.2
112	9.6	6.4	GN22W2-150	35.62	5.1	56.2
90	11.9	8.0	GN24W2-150	44.62	4.5	57.2
72	14.9	9.9	GN239W3-150	55.65	5.6	58.2
71	15.1	10.1	GN24W2-150	56.28	4.5	57.2
58	18.5	12.3	GN24W2-150	68.30	4.5	57.2
55	19.5	13.0	GN239W3-150	72.30	5.6	58.2
46	*20	15.6	GN24W2-150	86.14	4.5	57.2
46	22.4	15.6	GN249W3-150	87.85	5.6	58.2
39	*20	18.4	GN24W2-150	102.54	4.5	57.2
27	*20	*20	GN25W2-150	146.98	4.5	57.2
27	*30	26.5	GN249W3-150	150.57	5.6	58.2
25	*20	*20	GN24W2-150	156.98	4.5	57.2
22	*20	*20	GN25W2-150	185.36	4.5	57.2
20	*30	*30	GN249W3-150	195.65	5.6	58.2
17.8	*20	*20	GN25W2-150	225.00	4.5	57.2
16.8	*30	*30	GN259W3-150	237.75	5.7	58.2
14.1	*20	*20	GN25W2-150	283.78	4.6	57.2
11.8	*20	*20	GN25W2-150	337.78	4.5	57.2
9.8	*30	*30	GN259W3-150	407.43	5.7	58.2
8.3	*20	*20	GN26W2-150	484.16	4.6	57.2
7.6	*30	*30	GN259W3-150	529.39	5.7	58.2
6.6	*20	*20	GN26W2-150	610.62	4.6	57.2
6.2	*30	*30	GN269W3-150	643.30	5.7	58.2
5.4	*20	*20	GN26W2-150	741.20	4.6	57.2
4.3	*20	*20	GN26W2-150	934.78	4.6	57.2
3.6	*30	*30	GN269W3-150	1102.44	5.7	58.2
3.5	*20	*20	GN26W2-150	1112.72	4.6	57.2
2.8	*30	*30	GN269W3-150	1432.45	5.7	58.2
2.5	*20	*20	GN27W2-150	1594.90	4.6	57.2
2.0	*20	*20	GN27W2-150	2011.46	4.6	57.2
1.6	*20	*20	GN27W2-150	2441.58	4.6	57.2
1.3	*20	*20	GN27W2-150	3079.28	4.6	57.2
1.1	*20	*20	GN27W2-150	3665.43	4.6	57.2
0.7	*20	*20	GN27W2-150	5611.30	4.6	57.2

* Design-related permissible torque of transmission gear

Form factor F = 1.0: Operation at ideal DC power without speed adjustment (e.g. by battery or three-phase bridge)

Form factor F = 1.3: Operation with speed control SGP160-2.5

Gear motor with worm gear

Motor power

0.15 (0.10) KW

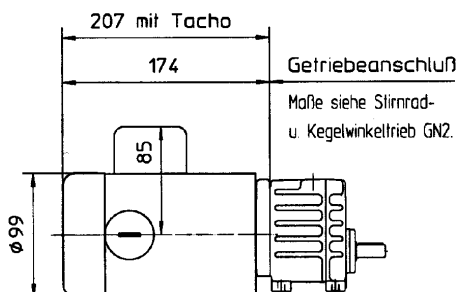
DC shunt

Output speed n^2	Output torque M_2	Output torque M_2		Gear ratio	approx. weight w motor	Dimensions
at $n^1 = 4000$ 1/min	Form factor $F = 1.0$	Form factor $F = 1.3$	Typ	$i =$	kg	Bild-Nr.
571	1.7	1.1	GNS151-150	7	3.8	32
400	2.2	1.5	GNS151-150	10	3.8	32
267	2.9	1.9	GNS151-150	15	3.8	32
167	4.2	2.7	GNS151-150	24	3.8	32
133	4.2	2.7	GNS151-150	30	3.8	32
105	4.6	3.0	GNS151-150	38	3.8	32
53	6.6	4.3	GNS151-150	75	3.8	32

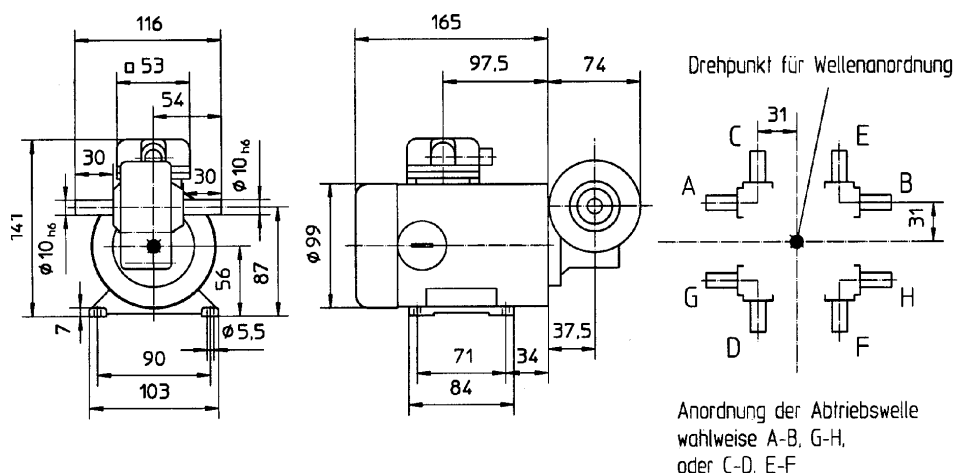
Form factor $F = 1.0$: Operation at ideal DC power without speed adjustment (e.g. by battery or three-phase bridge)
 Form factor $F = 1.3$: Operation with speed control SGP160-2.5

Gleichstrom- Nebenschluß- Minigetriebemotor

GN2.



GNS151 - 150

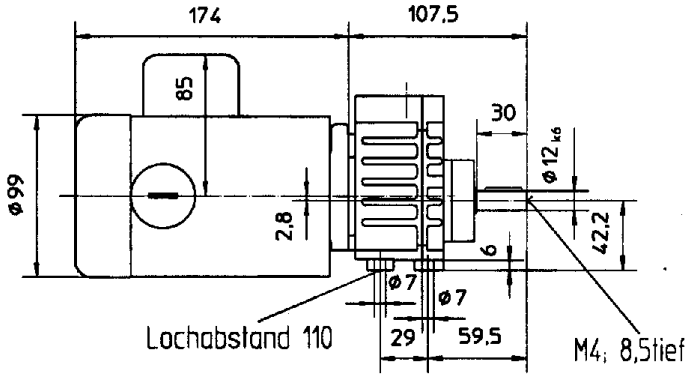
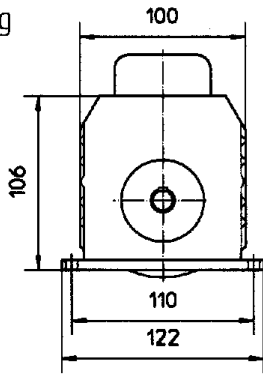


- Gleichstrom- Nebenschluß- Minigetriebemotor

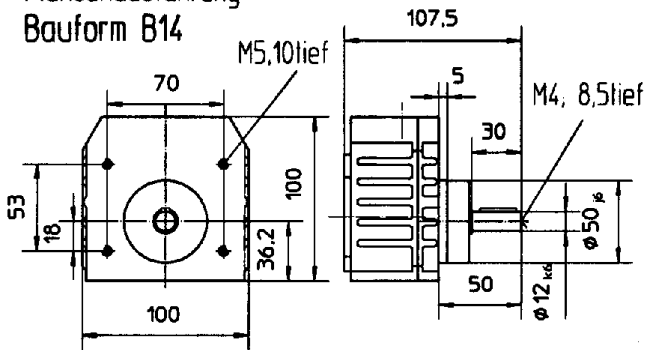
Typ GN22

Bild 56.1

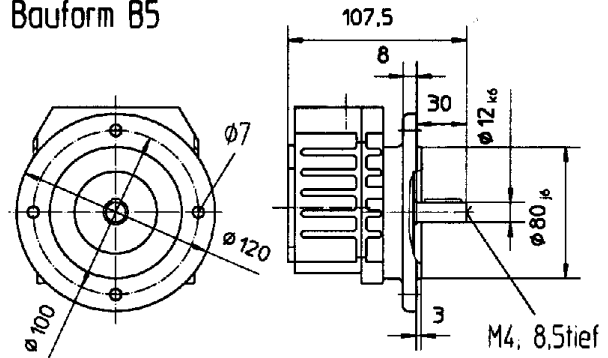
Fußausführung
 Bauform B3



Flanschausführung
 Bauform B14



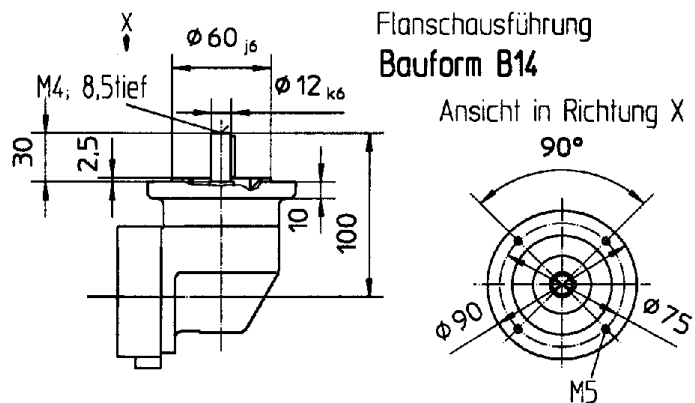
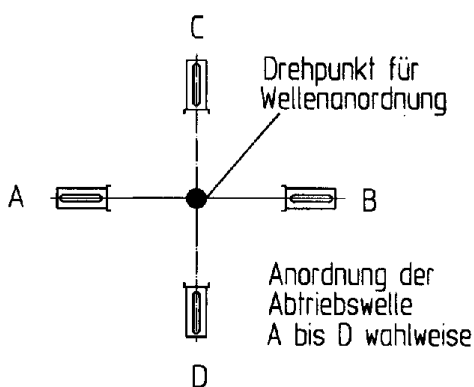
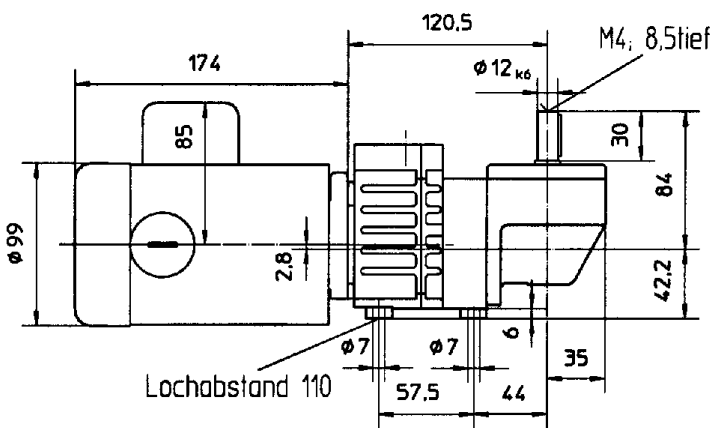
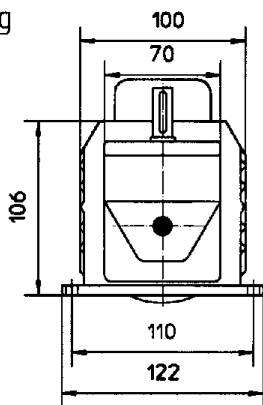
Flanschausführung
 Bauform B5



Typ GN22 W2

Bild 56.2

Fußausführung
 Bauform B3

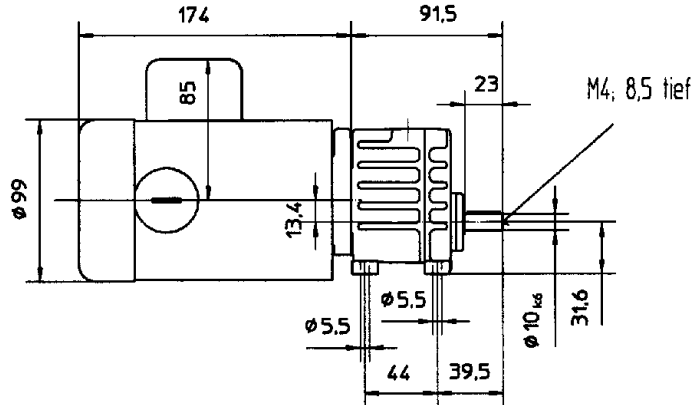
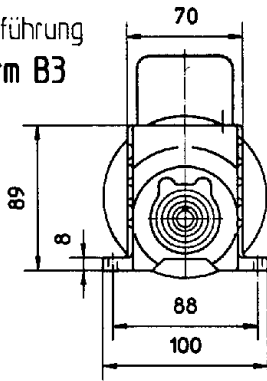


Gleichstrom- Nebenschluß- Minigetriebemotor

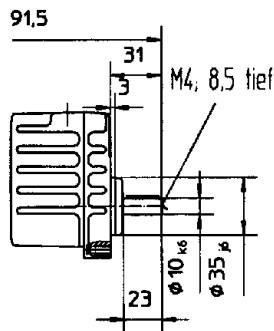
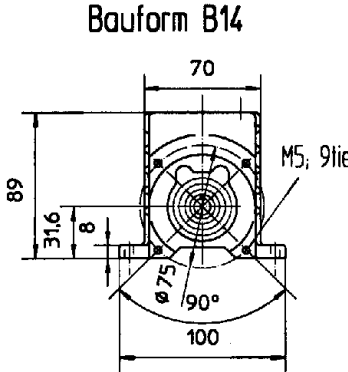
Typ GN23 - GN27

Bild 57.1

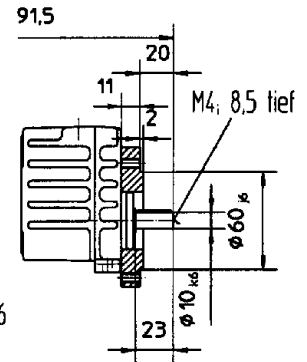
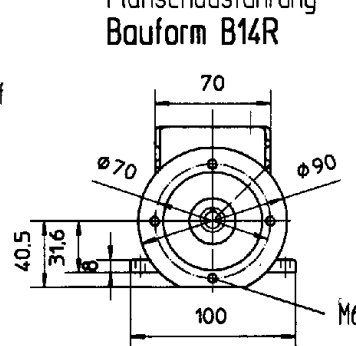
Fußausführung
 Bauform B3



Flanschausführung
 Bauform B14



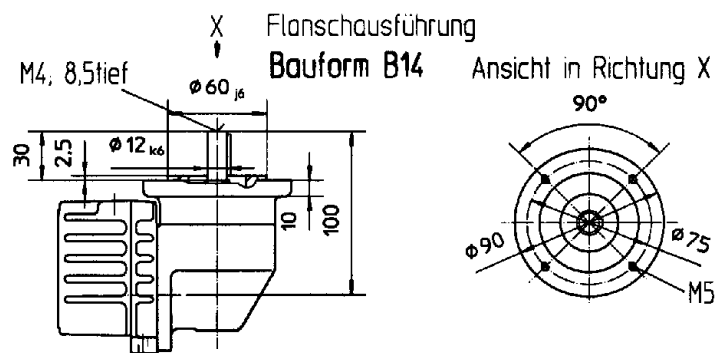
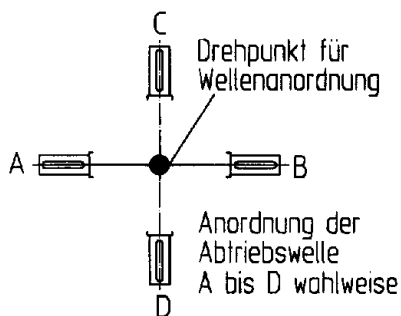
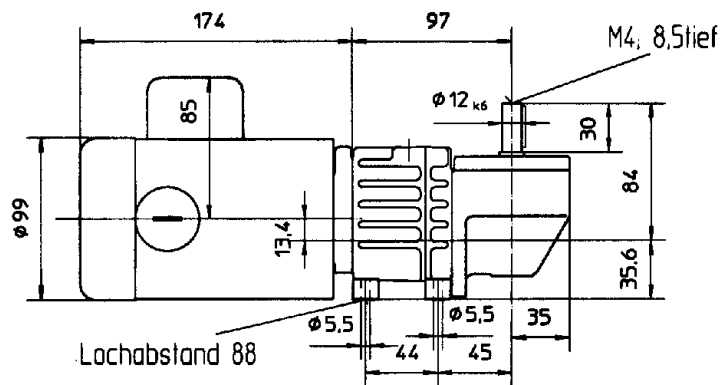
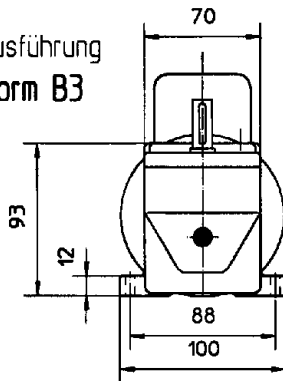
Flanschausführung
 Bauform B14R



Typ GN23W2 - GN27W2

Bild 57.2

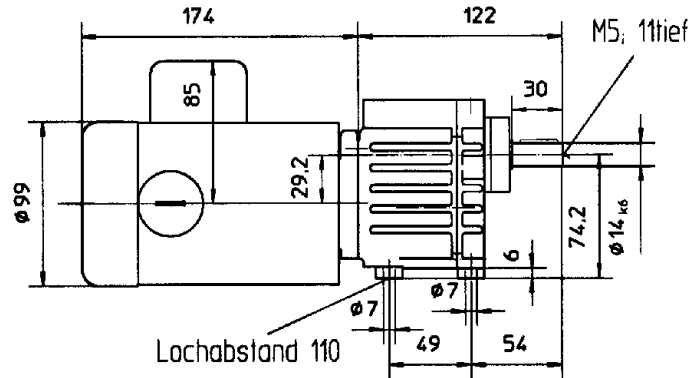
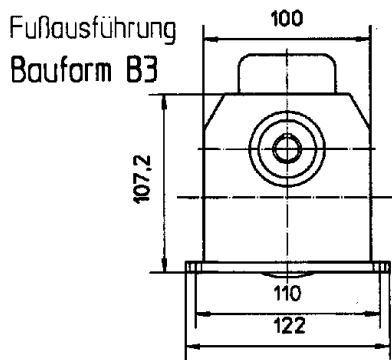
Fußausführung
 Bauform B3



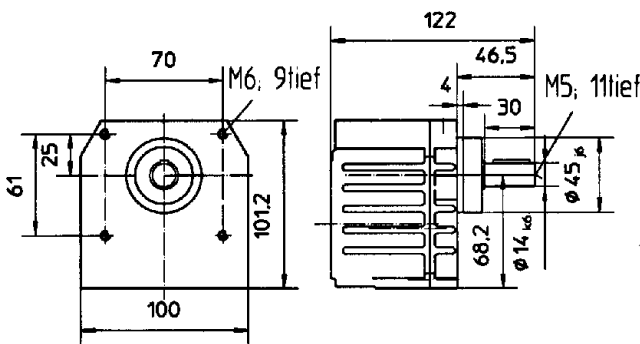
Gleichstrom- Nebenschluß- Minigetriebemotor

Typ GN239 - GN269

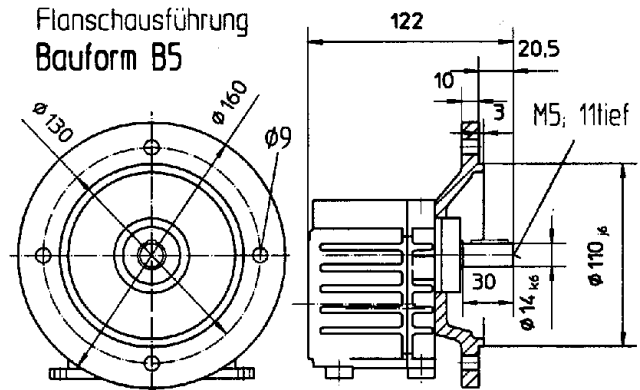
Bild 58.1



Flanschausführung
Bauform B14

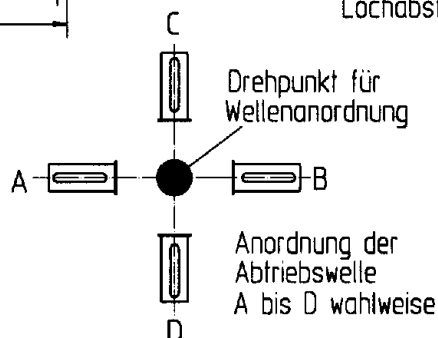
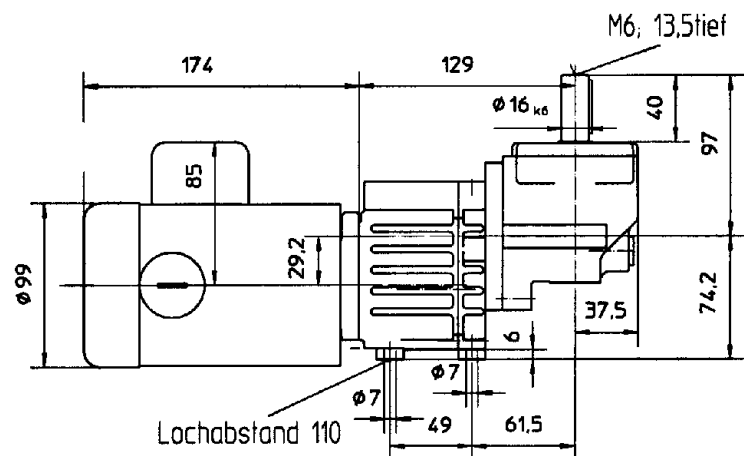
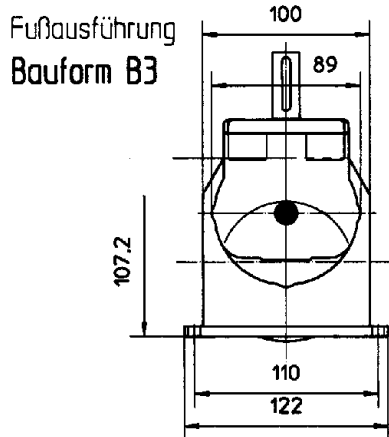


Flanschausführung
Bauform B5



Typ GN239W3 - GN269W3

Bild 58.2



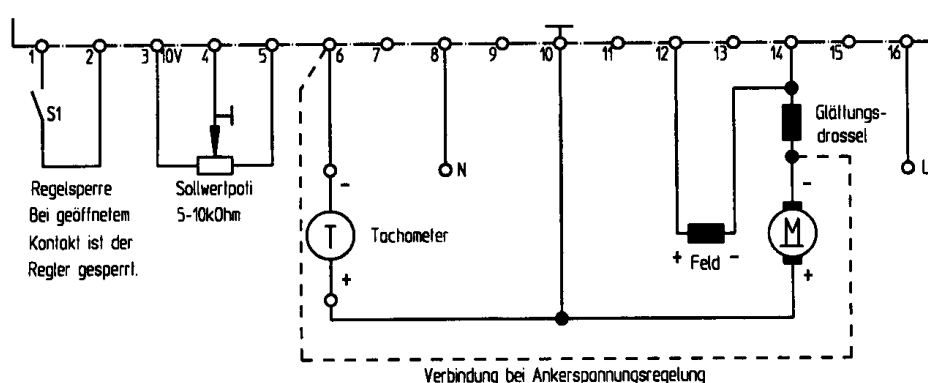
SGP 160-2.5 speed control

The rugged, low-cost **SGP160-2.5** type thyristor controller allows variable speed adjustments in DC shunt motors. Designed as a printed circuit board with a terminal strip, the device offers exceptional reliability due to its sophisticated technology.

Technical data

Recommended motor power	up to 0.25 kW
Armature voltage	0 to 180 V
Armature current	2.5 A
Excitation voltage	200 V DC
Set value	Potential 10 K Ω
Connection voltage	230 V \pm 15%
Connection	via terminal strip
Dimensions [mm]	160 x 100 x 33
Control accuracy	Tachometer control: \pm 1% IxR compensation: \pm 3%
Control range	Tachometer control: R=100 IxR compensation: R= 30
Protection class	IP00
Operating temperature	-15°C to +50°C

Wiring diagram



Dimensional drawing

