



**Instruction Manual
PL 50/100
Fa. Berger**

**according to Atex guidelines
94/9/EG**

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1. Important notes

This instruction manual is needed for the fault-free use of our gearboxes and is pre-requisite for fulfilling any liability claims. Read this instruction manual therefore before using the gears.

2. General safety instructions

There is danger for hands and feet of being trapped and crushed by the weight of the gearbox. During operation there are parts moving in the gearbox – there is a danger of being pulled in and danger from foreign objects hurled about. In addition there are hot surfaces, which occur during and after operation.

All work on the gearbox may only be performed by qualified technicians under consideration of the current safety norms. Incorrect usage, faulty installation and operation, as well as insufficient maintenance can cause heavy damage or serious injury. The operating instructions need to be observed in any case.

The gearbox is designed for industrial applications. The valid operating data that is specified in the dimensional drawings may never be exceeded. When there are changes compared to normal operation the gearbox has to be switched off in case of doubt. Please contact our customer service department if you have any technical questions or problems.

Operation is forbidden for improper use.

3. Additional safety instructions for use in areas with explosion hazards

Explosive gas mixtures or dust concentrations in connection with potential ignition sources such as hot surfaces or sparks at the gearbox during operation can cause serious or fatal injuries. That is why this operating manual must be observed. The gearbox meets the requirements of the guidelines 94/9/EG and may be used only in the areas for which it is approved.

4. Liability and guarantee

NEUGART does not accept liability for damage or injury ensuing from improper usage or handling.

The warranty claim is nullified when the gearbox is opened not by NEUGART in service cases and/or it is not NEUGART who replaces gearbox components.

5. EC machinery directive

The CE marking as well as the EC Declaration of Conformity are not required, because the gearbox is not a machine in the sense of the EC machinery directive 98/37, but rather a component. Operation is prohibited within the area of validity of the EC directive until it has been determined that the machine in which this gearbox is installed as a component corresponds to the regulations within this directive.

6. Delivery status

The gearbox can be put into operation immediately after the motor mounting. In- and output have been treated with an anti-corrosion agent for protection against corrosion. Remove all traces of the anti-corrosion agent before mounting the gearbox.

The following documentation should be part of the delivery:

- Instruction Manual
- Assembly Instructions
- Dimensional Drawing

7. Storage

The gearbox can be stored dryly and in the original packing for a maximum of 2 years at a temperature between -30°C and +60°C. Higher storage temperatures of up to +85°C are permissible. However this can lead to an ageing of the seals. Direct sunlight, UV light, and ozone also cause the seals to age and must therefore be strictly avoided!

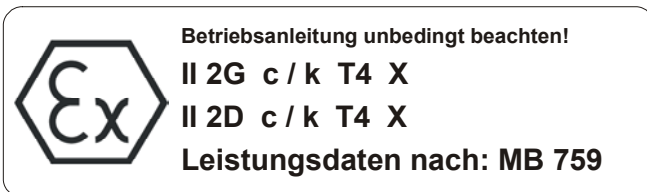
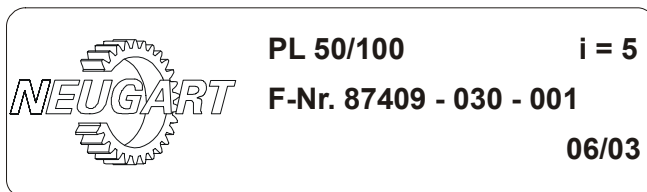
Please note that we provide a 24-month warranty after delivery. We recommend therefore to keep storage time as short as possible.

8. Identification plate, Type designation

The identification plate identifies the gearbox. The respective fabrication number (F.Nr.) of the gearbox is of special importance. It is unique for every gearbox and is therefore definitely necessary for tracing it back to our factory. Therefore you should never remove the identification plate from the gearbox. The identification plate should be legible at all times. All warranty claims are nullified if the identification plate is removed or made illegible.

The identification plate also specifies the type, the model size, the year of manufacture, the valid use in areas with explosion hazards, and the respective dimensional drawing with the performance data.

Example of an identification plate:



9. Assembly

The drive can only be mounted when the specifications of the identification plate on the valid use in areas with explosion hazards meets the local valid use conditions. Furthermore it needs to be ensured that there is no explosive atmosphere at the time of mounting.

The motors have to be mounted according to the assembly instructions that are included as documentation with the shipping unit.

In order to ensure the protection class in dusty environments the covering screw in the drive flange needs to be screwed back in and sealed.

10. Gearbox installation

The gearboxes can be installed in any position. The mounting seats and contact surfaces have to be undamaged and clean and in precise position to the connecting shafts in order to prevent damaging strain in the total system to bearings, shafts, and casing due to misalignments. Be sure to follow the instructions in the assembly instructions on applying the torques.

Clutches, wheels, toothed and gear wheels, etc. have to be mounted onto the gear drive shaft using suitable clamping sets. Hammering or applying pressure can damage bearings, refrain from doing this.

11. Sealing and protection class

Only high-quality shaft seals are used for sealing the PL 50/100 gearbox. Please be sure that the seals are not damaged in any way, for example by sharp or pointed objects. The protection class of the gearbox is IP 65.

12. Lubrication

The lubrication used is a permanent lubrication under normal operation conditions. (see also "Inspection" chapter)

13. Gears in group II, category 2G/3G and 2D/3D

The explosion protected gearboxes of the PL 50/100 series meet the regulations for device group II, category 2G and 3G (explosion-hazard gas) and device group III, category 2D and 3D (explosion-hazard dust).

The approved temperature class refers to the casing surfaces and can be found on the identification plate. Make sure that the dissipation loss of the gearbox does not create heat in the gears that exceeds the permitted operating temperature of the gearbox.

The maximum permissible operating temperatures are defined independently of the temperature class as follows:

PL 50/100: +80°C

The gearboxes may be operated at all ambient temperatures with the limitation that the maximum permissible operating temperatures of the gearboxes may not be exceeded at peak performance in the given application. This maximum gearbox temperature is to be measured and to be documented (see "Start-up" chapter).

Please be sure that a sufficient convection of the gearbox is not hindered and that the gearbox can dissipate enough heat by its flange.

Note that the motor and external heat sources can heat up the gearbox. Consult the motor manufacturer therefore concerning the motor temperatures that occur.

Check with the operator of the line that in case there is a lot of dust at the site, the dust that may be deposited on the gearbox does not exceed 2 mm.

A continuous temperature monitoring of the surface temperature is advisable.

In any case it needs to be ensured that the technical specifications (torques, speeds, forces) of the gearbox are not exceeded.

Please make sure that the motor/gearbox combination is grounded in order to discharge any potentials.

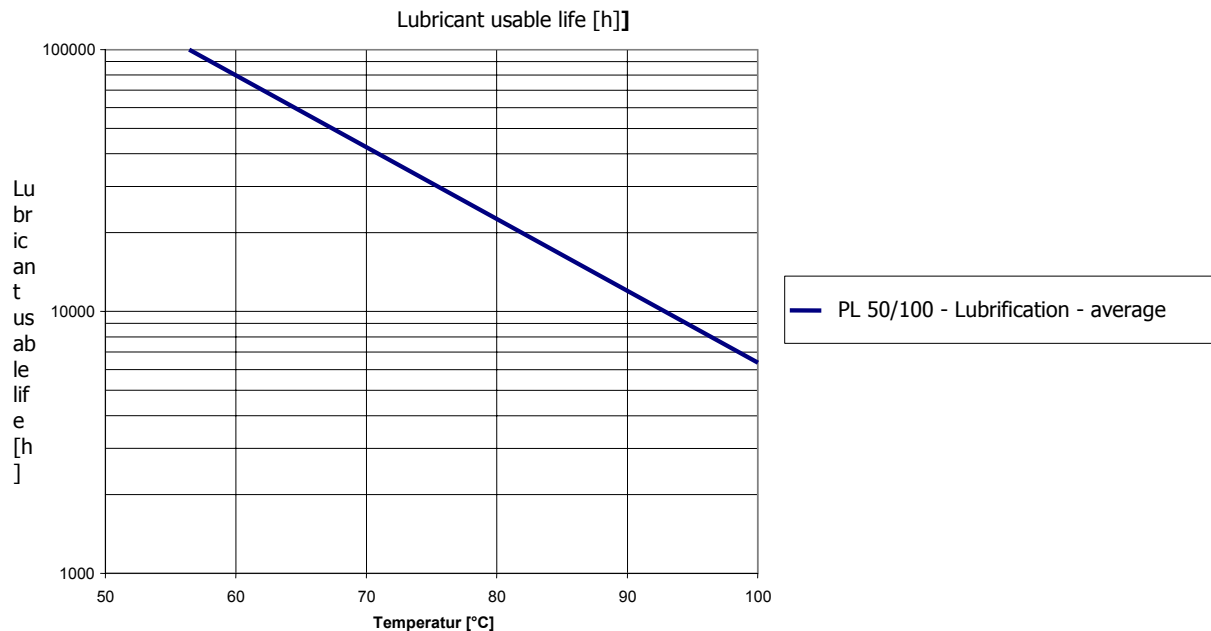
14. Start-up

During start-up an explosion-hazardous atmosphere may not yet occur.

The specifications of the maximum surface temperatures are based on normal ambient, fastening, and application conditions. Even minor deviations can significantly influence the temperature development. That is why it is imperative to measure the surface temperature at maximum load. The surface temperature of the gearbox should be measured on the center of the casing. A thermally stable condition has been reached when the temperature increase does not exceed 2°C/h. The permissible operating temperatures of the gearboxes may not be exceeded then. In case the temperatures are higher, switch off the system immediately and call NEUGART. Document the measured temperatures. In order to determine the lubrication's usable life 10°C has to be added to this value. Using this temperature value the lubrication's usable life can be determined in the "Inspection" chapter.

15. Inspection

Every 2500 hours, at least semi-annually: visual check of the seals for leaks
Depending on operating conditions: lubricant renewal by NEUGART (see chart)



Lubricant renewal depending on the temperature at S1 operation and rating

16. Maintenance

Lubricant renewal has to be done by NEUGART.

Seals should preferably be replaced by NEUGART. They may however be replaced by the customer upon consultation with NEUGART. The original part has to be ordered from NEUGART. When replacing the rotary shaft seal (not possible with gearboxes of the PLE/WPLE series) switch off the machine and secure it. Wait for the gearbox to cool, because otherwise there is a risk of burns. When installing the new rotary shaft seal make sure the material is correct and that the grease deposit is sufficient.

17. Malfunctions

If malfunctions occur such as unusual running noises, temperature developments, or leaks, then please take up contact with NEUGART. Have the following information ready at hand:

- Identification plate data (complete)
- Type and extent of malfunction
- Attendant circumstances of the malfunction
- Application data (cycle of the torque, speed, forces over time / surrounding conditions)

18. Contact

For any further questions:

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
Konformitätserklärung im Sinne der EG-Richtlinie 94/9/EG

Hiermit erklären wir, daß die Bauart unserer Getriebe

PL 50/100

in der gelieferten Ausführung den Bestimmungen der EG-Richtlinie 94/9/EG vom 23.März 1994 entspricht.

Die Getriebe dürfen nach folgender Kennzeichnung verwendet werden:

 II 2G c / k T4 X
 II 2D c / k T4 X

Die Betriebsanleitung ist sorgsam zu lesen und einzuhalten.

Angewandte Normen:

DIN EN 13463 Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen
DIN EN 13463 – 1 Grundlagen
DIN EN 13463 – 5 Konstruktive Sicherheit
DIN EN 13463 – 8 Flüssigkeitskapselung

NEUGART hinterlegt die gemäß 94/9/EG geforderten Unterlagen bei der benannten Stelle PTB (EU Kennnummer 0102).

NEUGART GmbH

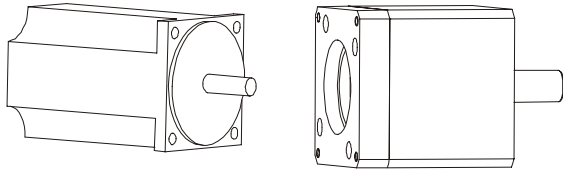


Thomas Herr
(Geschäftsführender Gesellschafter)

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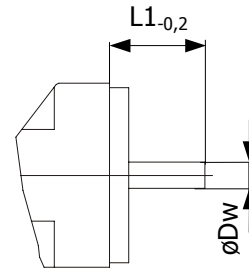


1.



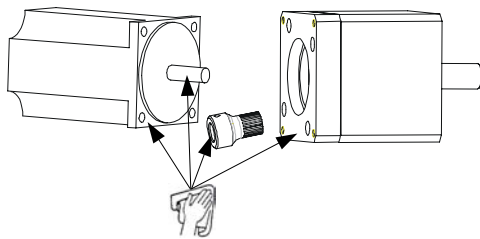
Check whether the tolerances for the motor flange and motor shaft are conform with DIN 42955-R.

2.



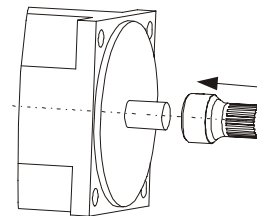
Check whether the length of the motor shaft matches the value in "Table 1", if necessary shorten it to the correct dimension.

3.



- a. Repair any damages (indentations, flash).
- b. Remove all grease from the motor and gear flange, motor shaft and pinion.

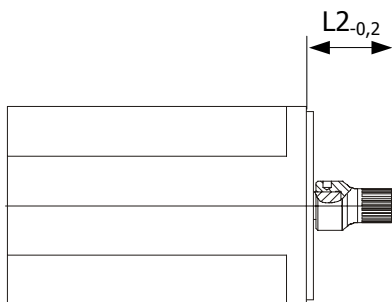
4.



- a. Wind the motor pinion until it stops, make sure to keep the applied pressure constant.

CAUTION: Do not use a hammer, as it could damage the motor shaft bearing.

5.

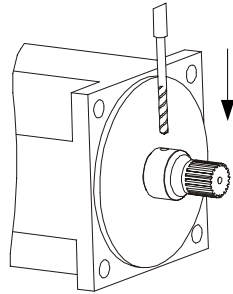


Check whether length L2 matches the value in "Table 1".

Table 1 :

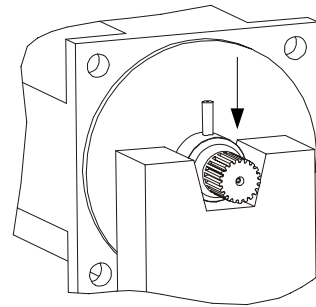
I=	Dw=9,5/12		Dw=14	
	L1	L2	L1	L2
3	17,5...40	41	15,5...40	41
4	17,5...40	41	15,5...40	41
5	17,5	41	15,5	41
8	17,5	41	15,5	41
10	17,5	41	15,5	41
12	17,5...40	41	15,5	41
15	17,5...40	41	15,5...40	41
16	17,5...40	41	15,5...40	41
20	17,5	41	15,5...40	41
24	17,5...40	41	15,5	41
25	17,5	41	15,5...40	41
32	17,5	41	15,5	41
40	17,5	41	15,5	41
64	17,5	41	15,5	41
100	17,5	41	15,5	41

6.



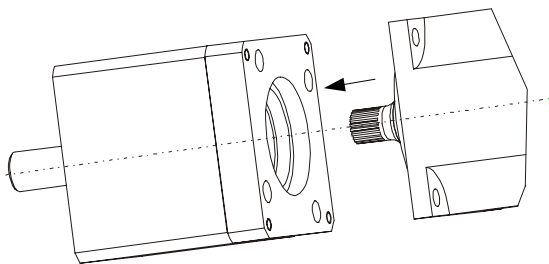
Use a suitable drill to make the cross hole for the supplied pin in the pinion and the motor shaft.

7.



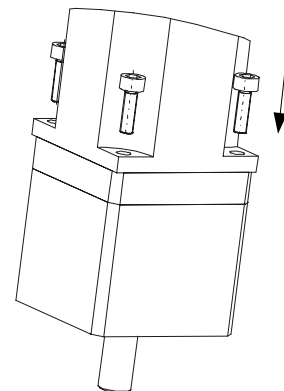
Put the motor pinion in a prism and press in the pin by applying slight pressure.

8.



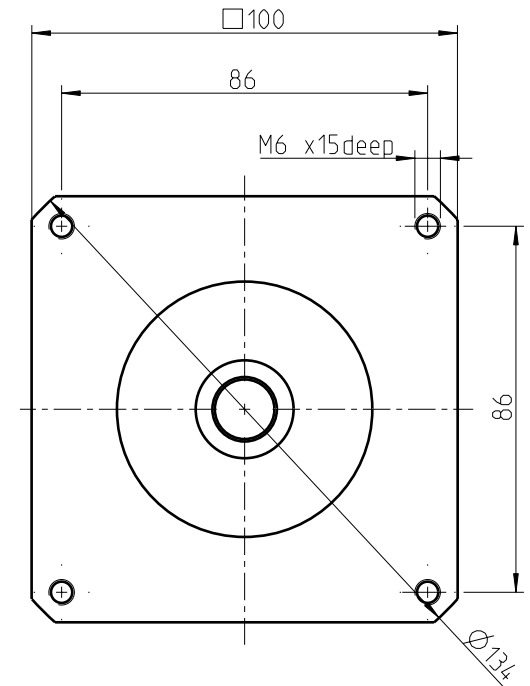
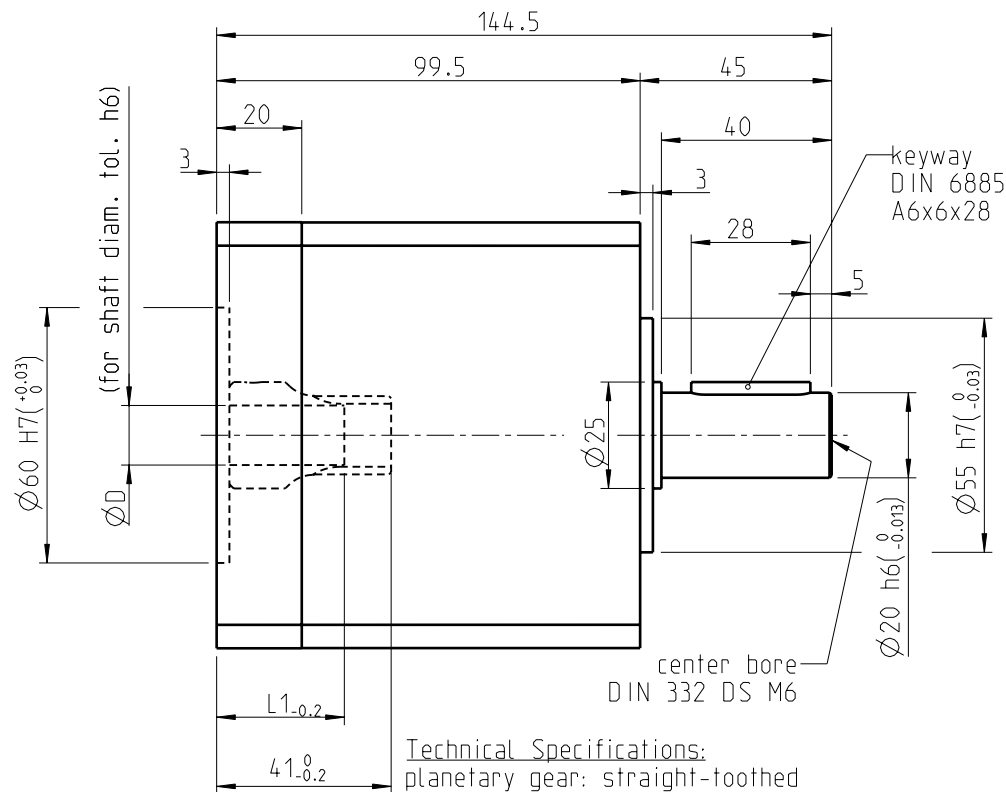
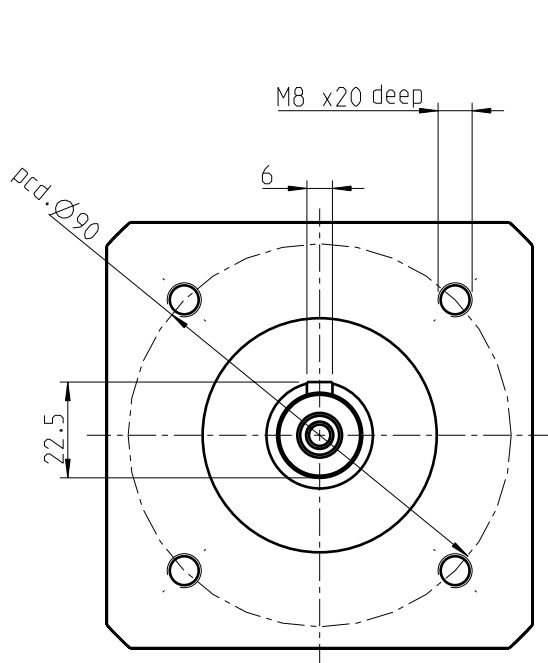
- a. Carefully join the motor unit and the gearbox by applying slight pressure and turning the gearbox housing, until the teeth of the motor pinion and planetary gear engage.
- b. If the gearbox has a shaft seal, it must not be damaged!

9.



Crosswise tighten the connecting bolts between the motor and the gearbox.

The mounting steps have to be performed in accordance with point 1-9, to maintain the warranty.
If you have any questions, we will be glad to be of assistance.

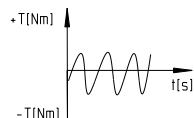
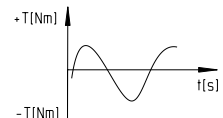
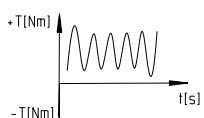


Mn = nominal output torque
at output shaft [Nm]

i=	D	L1	Neugart-Nr.:	Berger-Nr.:
3	14	30	085N003-EX000	02992050031
5	14	15.5	085N005-EX000	02992050051
5	12	17.5	085N005-EXD12	02992050052
10	14	15.5	085N010-EX000	02992050101

qualified according ATEX 94/9/EG for group II, category 2D/2G/3D/3G
class of temperature: T4 X

only tumscent load		shift in directions of torque with slow rise		shift in directions of torque with fast rise	
i	Mn	i	Mn	i	Mn
3	30	3	30	3	28
5	35	5	35	5	28
10	24	10	24	10	24



Technical Specifications:

planetary gear: straight-toothed
output shaft bearing: grooved ballbearing
- max. axial load: 700N by n2=200 1/min /Fr=0
- max. radial load: 700N by n2=200 1/min /Fa=0
- ref. on shaft center/Lh=10.000h/T=30°C
max. allowed pressing force: 1000N
backlash: <=12 arcmin ref. on output shaft.
recommended input speed: n1<=4500 1/min⁽¹⁾
lubrication: life time lubrication
operating temperature: -20°C...+80°C
efficiency: by rated load (ratio dependently)
- ca. 90%

nominal output torque: by n2=100 1/min
sealing:
- input: radial shaft seal ring
- output: radial shaft seal ring
motor mounting: M4 (pinned)
- pinion will be shipped loosely
method of working: S1
operation ratio: cB=1
protective system: IP 65

Material:

output shaft: steel - untreated
housing: Aluminium - black anodized
input flange: Aluminium - black anodized

⁽¹⁾ Operating temperature may not be exceeded!

NEUGART				date	name	Massstab: 4:5	DIN A3	ISO
h				Auth.	29.07.04	Ilte	ATEX-data sheet PL 50/100 1-stage for Ex RDM 3913	
g			Aud.	29.07.04	Cihlar			
f			Rel.	13.09.04	Cihlar			
e								
d								
c				Neugart GmbH Keltenstrasse 16 D - 77971 Kippenheim			Draw. -No.:MB - 759	Blatt
b							Part. - No.:	
a								BL.
stat.	change	date	nam.(Urspr.)	(Ers.f.)		(Ers.d.)		

Modification reserve!
Consider motor fitting
instructions!