COMPACT AERIAL CAM UNIT
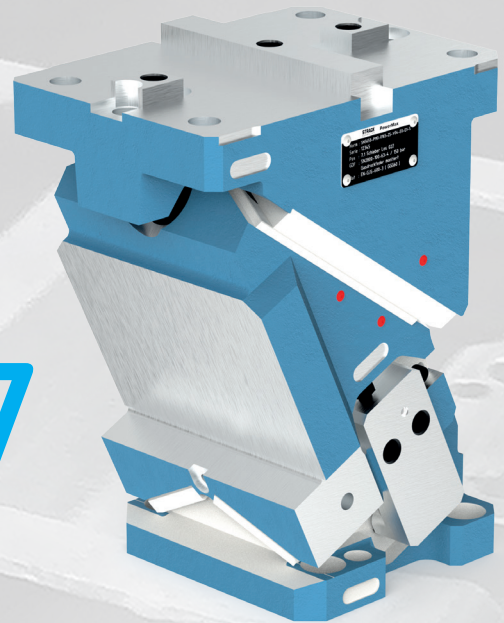## SN5650-PMOK-0065 - SN5650-PMOK-0460-V04
OPERATING INSTRUCTIONS
STAND 09.2022

PowerMax® 2.0
the next generation

STRACK®
NORMALIEN

Contents: Page:

Contents: Page:

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

Preamble

Thank you for your confidence in the product of STRACK NORMA GmbH & Co. KG.

We are pleased that you have chosen a product of STRACK. To facilitate your handling of the product, we prepared these operating instructions.

This operating manual is an important document for the side cam unit SN5650-PMO and serves for the safe and efficient operation. It is intended for all persons handling this cam-unit or for persons being responsible for its safe operation

For reasons of operational safety, a copy of these operating instructions must be left at the machine with the side cam unit to ensure direct access for the operating staff.

The safety instructions in this operating instruction have to be particularly observed to recognize and to avoid possible dangers. Read the operating instruction carefully and completely before mounting and starting-up the cam unit SN5650.

A regular maintenance is necessary to ensure a safe and economic use.

If the regulations and notes of these operating instructions are not considered, any liability on our part for resulting damages and loss of performance is excluded.

09.2022

STRACK NORMA GmbH & Co. KG · Königsberger Str. 11 · D-58511 Lüdenscheid · Tel +49 2351 8701-0 · www.strack.de

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

1. Safety instructions. Please absolutely observe!

Please absolutely read and observe the following safety instructions before mounting and starting-up and all further works at the STRACK PowerMax cam.

The cam must be used according to this operating instruction. When a new operating instruction is published, this version loses its validity.

Service and maintenance work at mounted STRACK nitrogen gas springs may only be effected by persons trained and instructed by STRACK NORMA with good technical knowledge.

If the mounted STRACK nitrogen gas spring is used improperly or for purposes other than those for which it is intended there is a risk of:
Dangers to health,
Danger to the STRACK nitrogen gas springs and other assets of the user,
Danger to the efficiency of the STRACK nitrogen gas springs.

For all work at the STRACK side cam the valid industrial safety ordinance, section 3, must be observed.

Press, tool, and peripheral devices must be suitable, prepared and coordinated for the use of STRACK side cams.

Attention:
There is the risk of accident before and during the service- and maintenance works at the tool or the STRACK cam. For this reason, these works may exclusively be carried out at retracted side cam units.
Jammed cam unit can lead to abrupt relaxation with intact gas springs and can thus be a risk of injury.

Damaged gas springs must not be reused. The exchange of individual components has to be discussed with STRACK NORMA.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

2. After receipt of delivery

Examine the delivery for external damage before opening. Immediately report any damage to the transport company, that delivered the consignment.

Compare the content of your consignment with the delivery bill or the enclosed parts list (see appendix). Ensure that all parts are present and unpacked.

Only then dispose of the transport- and packaging material.

If the contents are damaged without external damage of the packaging do not return it for repair or exchange.
Please contact STRACK NORMA GmbH & Co. KG in Lüdenscheid for further information.

<u>**CONTACT:**</u>

Team PowerMax, Automotive

Phone: 02351 / 8701 - 7300
E-Mail: team3@strack.de

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

3. Features

The design of this STRACK cam unit is a „side cam unit type SN5650". This PowerMax cam unit consists of:

-          Cam retainer
-          Cam body
-          Driver

with the corresponding attachments.

All PowerMax cam units are equipped with gas springs.

As pressure medium for the gas springs in this system nitrogen with a purity level ≥99,8 Vol.-% is used.

Cylinder size, -number and filling pressure (different for the different cam types) determine the available restoring force.

Please consider that all PowerMax cam units are the successful result of a long development effort. The resulting technical advantages unfold optimally when the respective cam stroke is completely used during the working process, i.e., the punching-/bending operation of the cam unit should take place in the front-end position.
The complete utilization of the cam stroke allows the maximum intervention of the active return and thus the highest possible provision of retraction- or stripping forces (about 10% of the press force).
At the front-end point of the cam stroke the maximum return force of the gas spring is applied. In general, the following applies: The design and the resulting values such as installation height and return forces require that the cam unit is installed in the specified front-end position.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

3.1 Description of the designs

The cam is equipped with slide elements out of sintered material. The work surface is made of cast-iron.

Attention:
The installed gas springs serve to additionally retract the cam slide.
The working forces required for this operation are absorbed by the active return.

4. Scope of delivery

The PowerMax cam units are delivered preassembled and adjusted with precise guide play.
The installed gas springs are delivered with the maximum filling pressure unless otherwise requested.

The working surface can already contain customer-specific machining.

All cams can also be manufactured for the processing of high-strength sheet metal, contrary to the angles shown in the catalogue in steps of 5, in all intermediate angles according to customer requirements.

Please contact us.

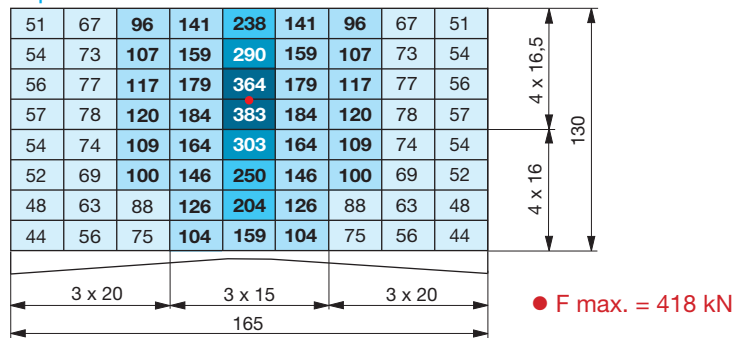## PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

5. Design of the PowerMax side cams

STRACK NORMA PowerMax cams are manufactured with high precision.

The guides, which are ground to a tight guide play, allow highest loads. The side cam units can be loaded with the tool on the work surface. It is important to ensure that the force is applied in the centre of the work surface.

If the load is off-centre, uneven forces are exerted on the guides and cause increased wear.

Bsp.: SN5650-PMO-0230-20-E0-G0-S0

51	67	**96**	**141**	**238**	**141**	**96**	67	51
54	73	**107**	**159**	**290**	**159**	**107**	73	54
56	77	**117**	**179**	**364**	**179**	**117**	77	56
57	78	**120**	**184**	**383**	**184**	**120**	78	57
54	74	**109**	**164**	**303**	**164**	**109**	74	54
52	69	**100**	**146**	**250**	**146**	**100**	69	52
48	63	88	**126**	**204**	**126**	88	63	48
44	56	75	**104**	**159**	**104**	75	56	44

3 x 20   3 x 15   3 x 20

165

4 x 16,5   130   4 x 16

● F max. = 418 kN

This clearly shows the maximum power outside the centre of action for the X or Y axis. Possible future changes in position should be considered in advance to select a cam size that corresponds to the force.

In order to be able to guarantee the same service life, the load forces are reduced depending on the position on the working surface.
For exact details, please refer to the catalogue information for your cam on the internet at www.strack.de

⚠️ **Attention:**
If the cam is to be built over with attachments, a new calculation is necessary.
Please contact us.

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

6. Preparation of tool and press

Tool, press and peripheral devices must be suitable, prepared and coordinated for the use of STRACK PowerMax cam units according to the specifications of STRACK.

Drain off liquid (e.g., water or drawing oil) in a targeted manner using a drainage system.
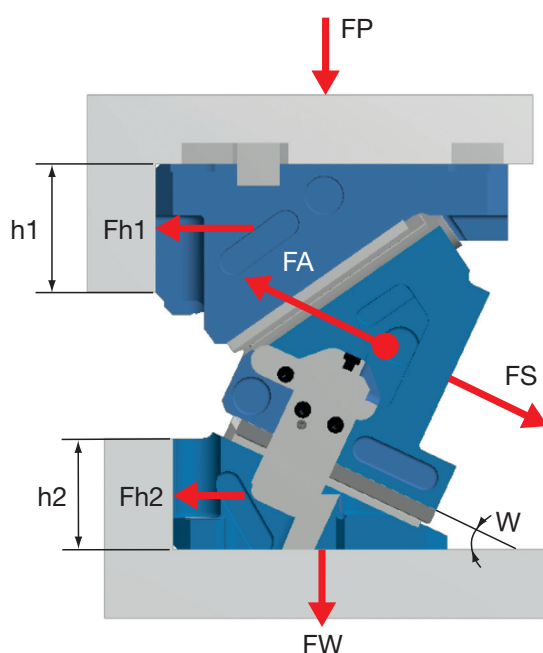Ensure that the punching waste does not fall into or onto the cam guide.

Cam slide and guide can jam. Parts falling down can damage the guides, which may reduce the ser-vice life of the cam. In case of failure the cam slide cannot be returned to its original position.

7. Shouldering

The force distribution of the individual forces in the cam depends on the right shouldering in the tool and the cam angle.
If the heights h1 and h2 (see figure below) in the tool are reduced, the forces of the shouldering cannot be fully born.
For exact details, please refer to the catalogue information for your cam on the
internet at www.strack.de

09.2022

10   **STRACK NORMA GmbH & Co. KG · Königsberger Str. 11 · D-58511 Lüdenscheid · Tel +49 2351 8701-0 · www.strack.de**

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

7.1. Centring in the tool by means of dowel pin and/or slot nuts

In version V04 STRACK Norma has combined the „Z" dowel pin and „N" slot nut from the familiar centrings in a new version. This offers the user new flexible possibilities as described under
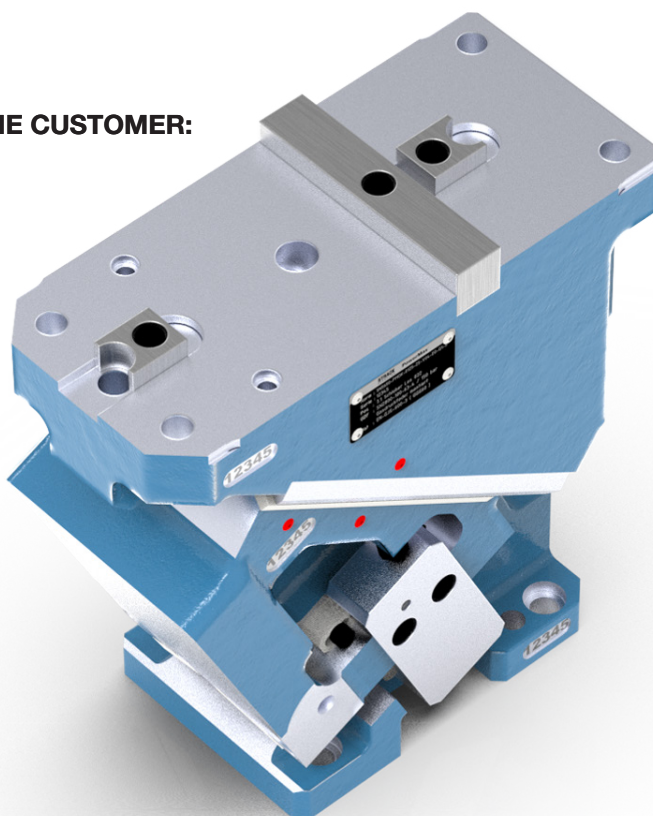7.1.1 up to 7.1.4.

COMBINATIONS ARE FREELY SELECTABLE BY THE CUSTOMER:

7.1.1 Dowel pin (old „Z")

7.1.2 Slot nuts LONG + CROSS (old "N")

7.1.3 Slot nut CROSS + dowel pin

7.1.4 Slot nut LONG + dowel pin

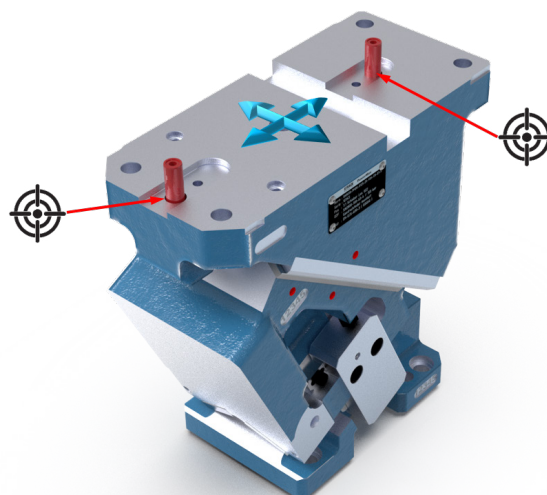### 7.1.1 Dowel pin (old „Z")

- Position cam retainer in the tool
- Set dowel pin

Direction of fine adjustment possible before pinning in both positions

End position fixed by dowel pin

09.2022

STRACK NORMA GmbH & Co. KG · Königsberger Str. 11 · D-58511 Lüdenscheid · Tel +49 2351 8701-0 · www.strack.de   **11**

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460
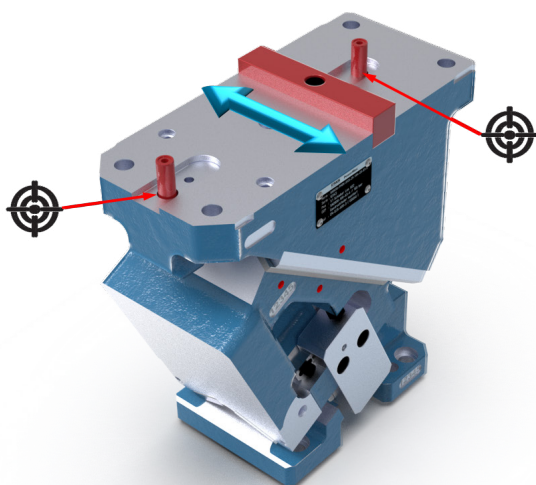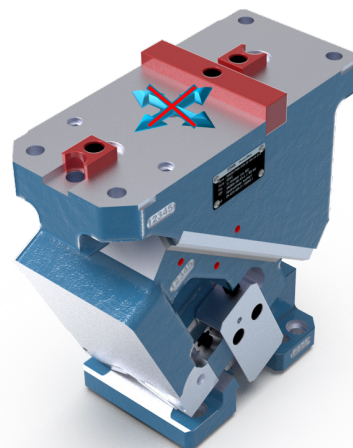
7.1.2 SLOT NUTS LONG + CROSS (OLD "N")

- Slot nuts in longitudinal- and transverse direction determine position

Fine adjustment not possible

End position determined by slot nuts

7.1.3 Slot nut CROSS + dowel pin

- Slide retainer fixed in the upper part of the tool in longitudinal axis by feather key.
- Can be moved transversely for fine positioning
- Dowel pin sets final position

Direction of fine adjustment

End position is determined by dowel pin
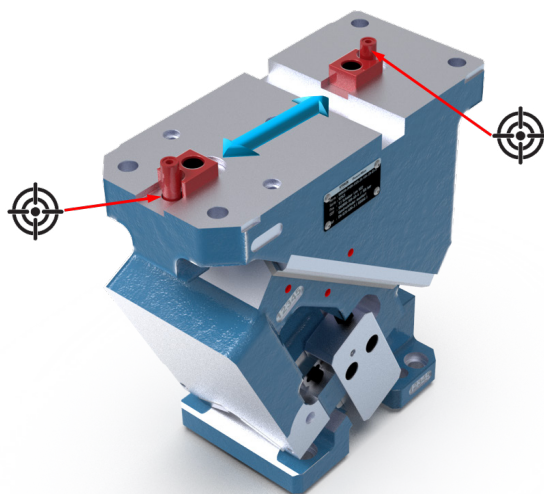
7.1.4 Slot nut LONG + dowel pin

- Cam retainer is fixed in the upper part of the tool in transverse axis by feather key.
- Can be moved longitudinally for fine positioning
- Dowel pin sets final position

Direction of fine adjustment

End position is determined by dowel   pin

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

8. Production

During production no special precautions have to be taken that go beyond the valid Industrial Safe Ordinance paragraph 3.

Alle Angaben ohne Gewähr.

Attention:
If attachments are dismounted in the assembly process, these must be then secured again with Loctite 242.
Notes on tightening torques:

Schrauben DIN EN ISO 4762-10.9	M6	M8	M10	M12	M16	M20
Anzugsdrehmoment [Nm]	14	33	65	121	302	590

Note:
Make sure that the STRACK PowerMax cams, especially the gas springs are not immersed in liquid.
If, for example, aggressive drawing oils are used during the production, create a controlled drain (drainage holes, cut-outs etc.) for this so that the liquids are led away from the gas springs.
This prevents damage to the seals.

Tip:
Check the nitrogen pressure of the gas springs at regular intervals to detect changes in the pressure level in time. When carrying out maintenance work make sure that the cam slide is properly returned.

Note:
The PowerMax cam units are equipped with low-maintenance slide elements out of SNS-sintered metal. Normally a lubrication is not necessary.
If necessary, a lubrication can only be carried out according to chapter 14 Maintenance.

09.2022
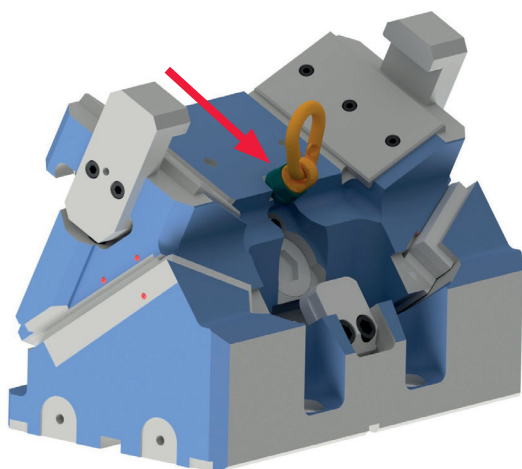
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

8.1 Handling with safety ring bolt (SN1594)

8.1.1 Mounting of the cam slide in the cam retainer

From cam widths 125 onwards, the cam retainer and slide can be mounted together in a simplified manner by means of the safety ring bolt SN1594 as the different positions of the threads of the supporting screws facilitate the threading of the cam slide in the cam retainer.
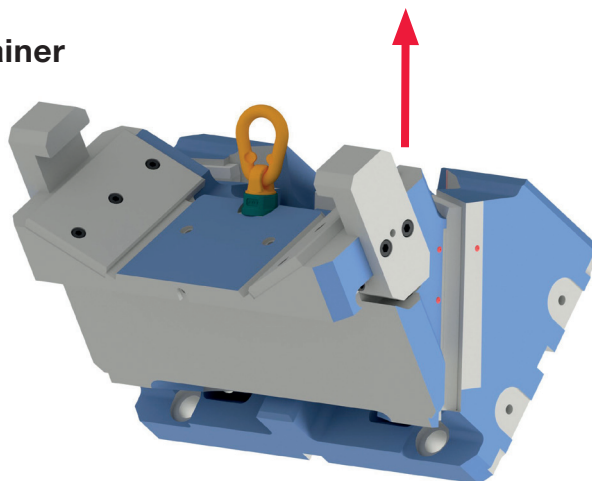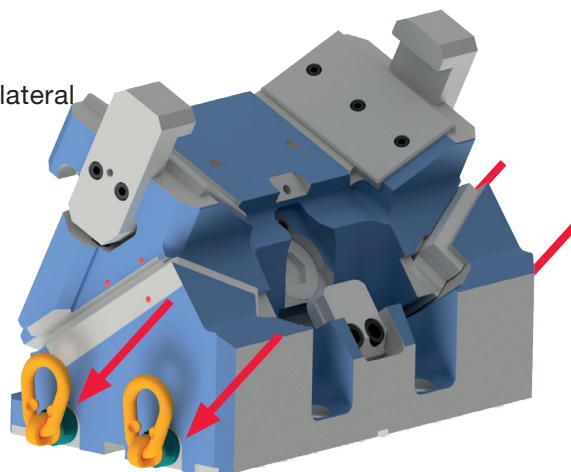
8.1.2 8.1.2 Mounting of the cam slide with cam retainer in the upper part of the tool with central transport thread

By changing of the position of the safety ring bolt, the cam retainer and cam slide can be mounted more easily together in the tool.

8.1.3 Mounting of the cam slide with cam retainer in the upper part of the tool with lateral transport thread

Installation of cam retainer with cam slide in the tool with lateral thread for flexible installation and turning of the cam.
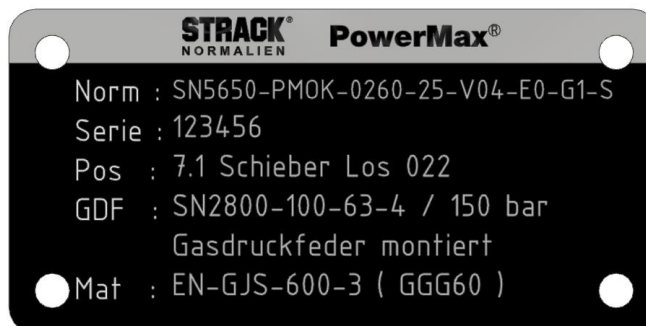
STRACK NORMA GmbH & Co. KG · Königsberger Str. 11 · D-58511 Lüdenscheid · Tel +49 2351 8701-0 · www.strack.de

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

8.2 Marking of the cams

All PowerMax cams are equipped with a type plate.
The name and the serial number are lasered onto this type plate.

Cam designation
6-digit serial number for
additional information of
the customer

The serial number refers to all cams of an order and is different from order to order. The PowerMax-cams were adjusted at STRACK. For this purpose, the hardened steel slide bars were ground to the appropriate size. The corresponding screws were additionally secured with Z9093 screw locking adhesive.

ATTENTION: Do not remove these bars. If this should become necessary in the event of a crash, the replacement bars must be adjusted accordingly.

To avoid confusion within a series, the assemblies of the individual sliders within a series are marked with serial numbers (see picture below). During the mounting make absolutely sure that the components are correctly assigned in order to avoid problems.
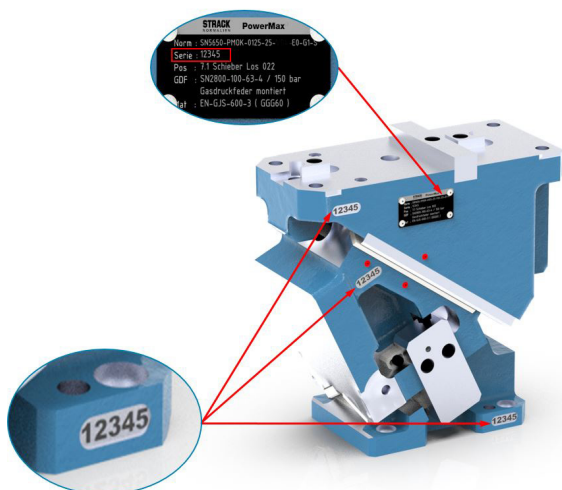
Additional markings on the cam retainer and cam body make it possible to control the position of the cam in the tool.

When the cam is retracted the upper markings are standing together, at extended cams the lower markings are standing together.

If the marking on the cam body is between those of the retainer, the whole cam is not returned to the correct starting position.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

Additional markings on the slide holder and slide body make it possible to check the position of the slide in the tool.

When the slide is retracted, the upper marks are together, when the slide is extended, the lower marks are together. When the slide is extended, the lower markings are together.
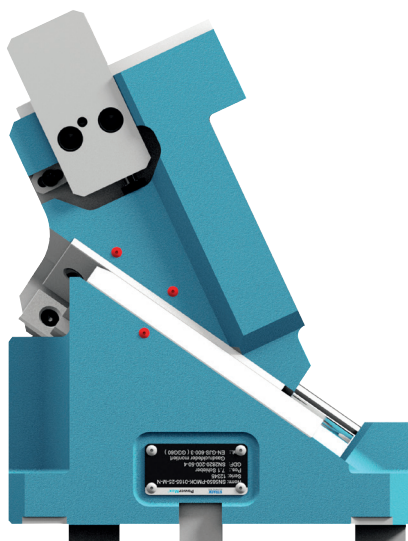
Slider in TDC position
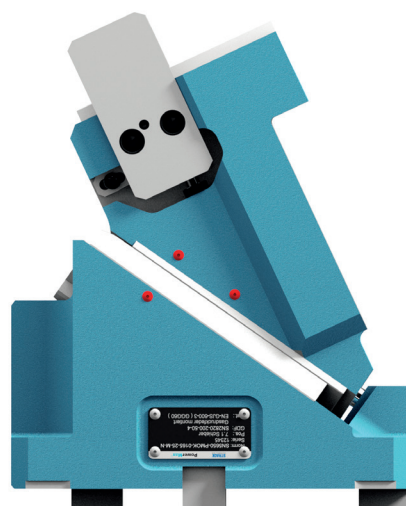
Slider in BDC position

ATTENTION: If the mark on the slider body is between those on the seat, the entire slider has not returned to the correct starting position. This can happen in case of a crash or a defective gas spring.
In this case, the gas pressure spring must be checked.
If it is defective, it must be replaced.

09.2022

16   **STRACK NORMA GmbH & Co. KG · Königsberger Str. 11 · D-58511 Lüdenscheid · Tel +49 2351 8701-0 · www.strack.de**
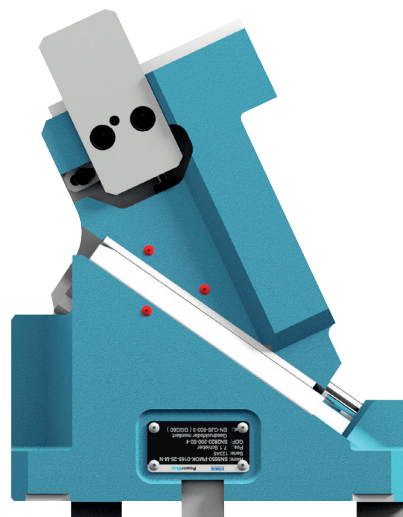
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

8.3 Optional sensor for position monitoring

Optionally the PowerMax cams can be ordered with a sensor for position monitoring. The sensor plate contacts the inductive limit switch Z7685 during the upward movement and signals to the machine that the cam slide is in the rearmost position.
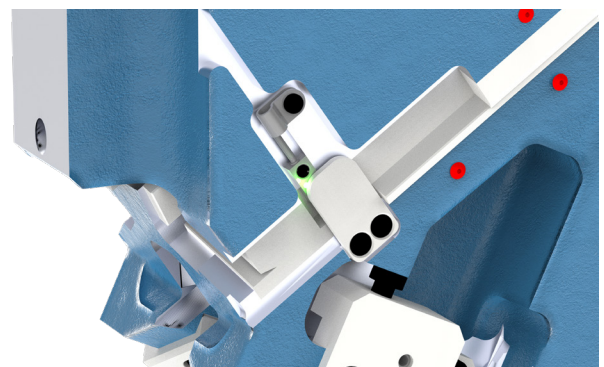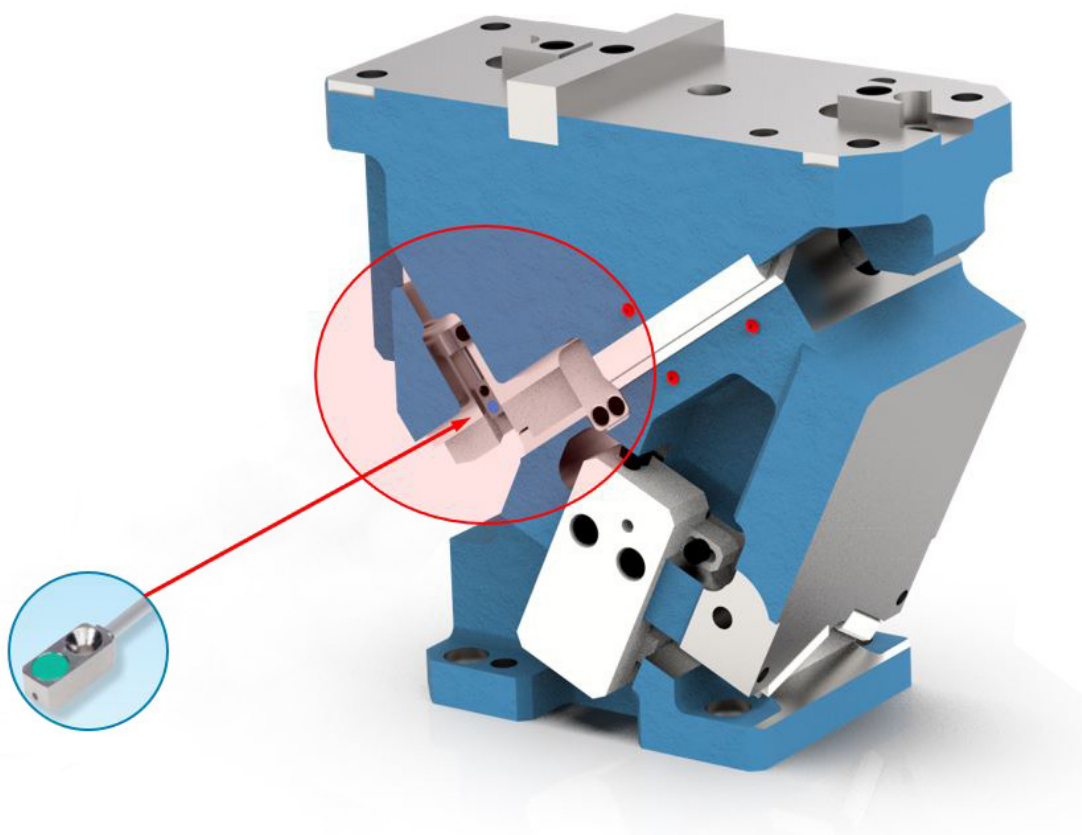
For more information on the Z7685 limit switch see the appendix.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

9.19.1 Information concerning Lock-Out-System SN5654-LOS

Force distribution:
With the newly developed Lock-Out-System it is possible to fix the corresponding cam without play in its front-end position.
For this purpose, the cam body is screwed with the cam retainer. The special feature of this system is, that the clamping screws act at an angle to the corresponding bearing surface.
That means that the cam body is pulled by the divided (resulting) forces once against the prismatically arranged sliding strips and simultaneously at the pressure piece. Now, the cam body is exactly positioned without play in its front-end position and is now prepared for additional machining.

Please consider that the Lock-Out-System can only be used with dismounted cams.

With most of the PowerMax-cams, the fixing holes are partially covered if the cam body is in the front-end position.
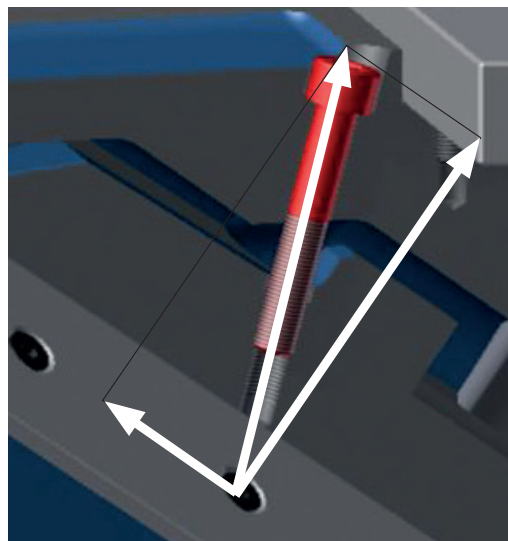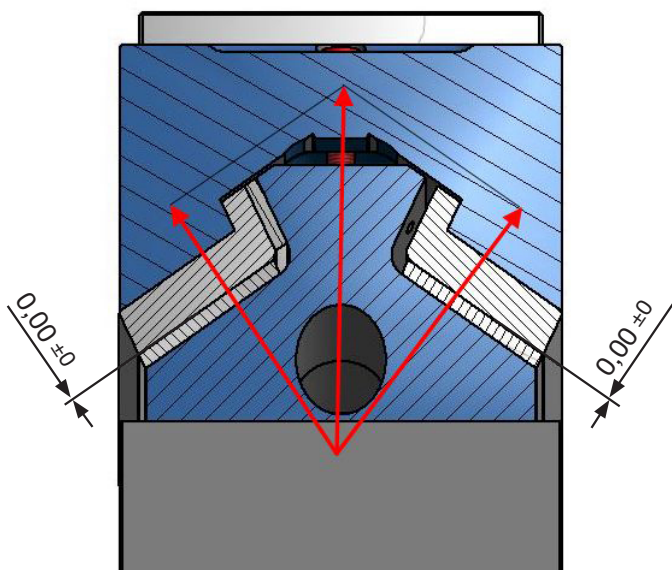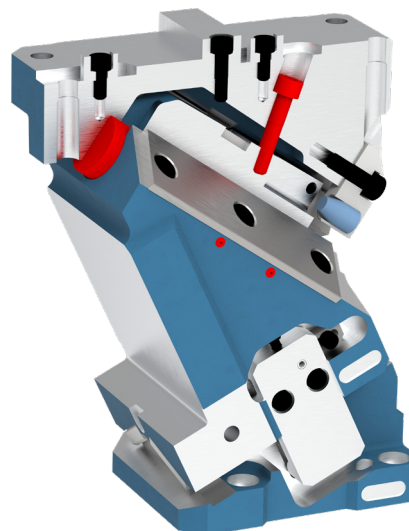
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

11. Disassembly/ Assembly of the gas springs

To remove the gas spring from the cam, at first the locking screw and the bayonet lock have to be demounted.

ATTENTION: the slide carriage falls into its lower end position after removing the bayonet catch (2). From a slide width of 230, the slide carriage must be secured in the rear position by the additional component SN5650PM-FPS (4) in the slide stop (5). The installation is done in reverse order. To do this, the slide carriage must be pulled back in order to be able to turn the bayonet catch (2). The bayonet catch (2) must then be secured with the locking screw (1).
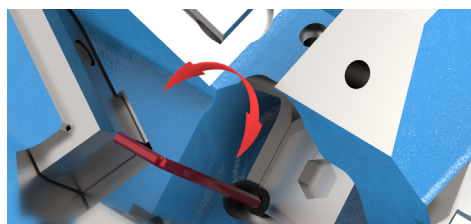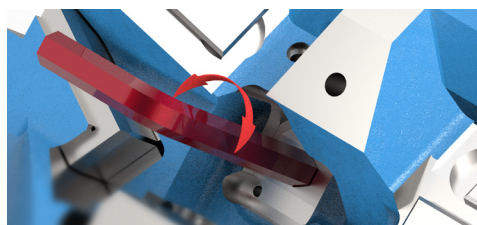
1. Disassembly of the gas spring
Loosen the locking screw (picture 1). Then dismantle the bayonet lock by turning the plug 90° (picture 2). Remove the gas spring (picture 3).

Fig. 1

Fig. 2

4
Locking screw for cam slide

Fig. 3

5

Risk of injury-
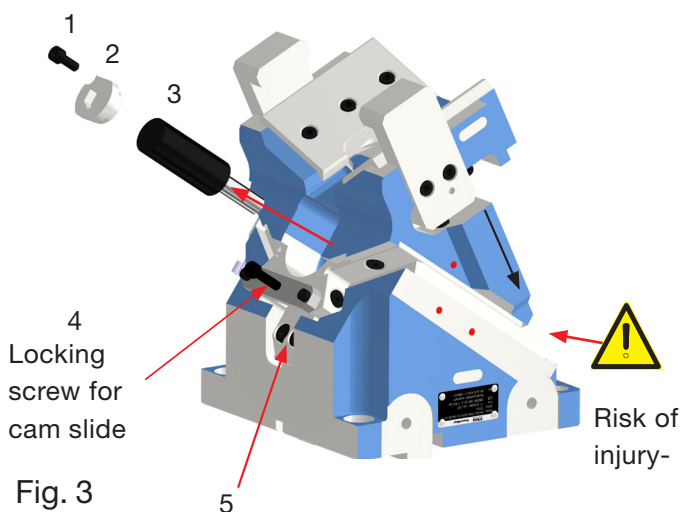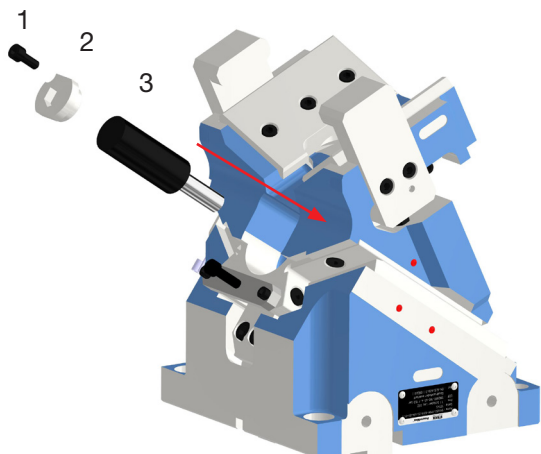
2. Assembly of the gas spring
Insert the gas spring (3) into the hole provided. Insert the bayonet catch (2) into the opening provided and turn it 90°.
Then screw in the locking screw (1) and tighten it to 33 Nm.

ATTENTION!
Use Loctite 243 medium strength to secure the screws.

Fig. 4

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

11.1 Cam lock

To ensure that the slide carriage does not slip into the lowest position when removing the gas pressure spring (see point 11) or during maintenance, the additional component SN5650-FPS (5) must be secured against the slide stop. To do this, pull the slide into the rearmost position and screw it against the stop with the locking screw. The screw prevents the slide body from sliding down.

5
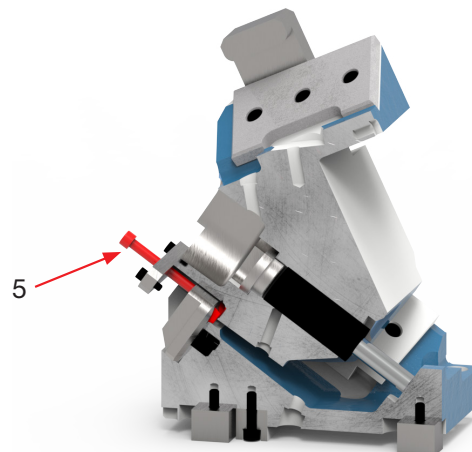
To avoid damage or a crash, the locking screw must be removed again before production begins after mainte-nance work has been completed or after the gas strut has been replaced (see point 11).

12. Modification of the system pressure of the gas springs

12.1 Releasing of the pressure of a gas spring
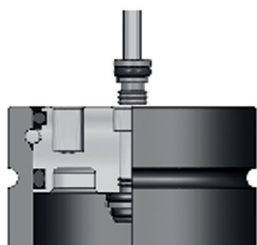
1. If necessary, remove the closing plug.
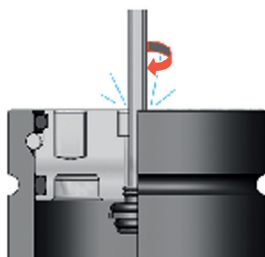
2. To loosen the valve, use a 3 mm Allen key.
   Turn it to the right till the gas escapes (1- 2 turns).

3. As soon as the gas spring is unloaded, turn the valve to the left until the initial position is reached. The gas spring is ready for filling.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

12.2 Increasing of the pressure / filling of a gas spring

Release valve   manometer

adapter M6-A

adapter M6-C

adapter M8

Spindle screw

quick coupling nipple for charging hose

needle   connection G 1/8"
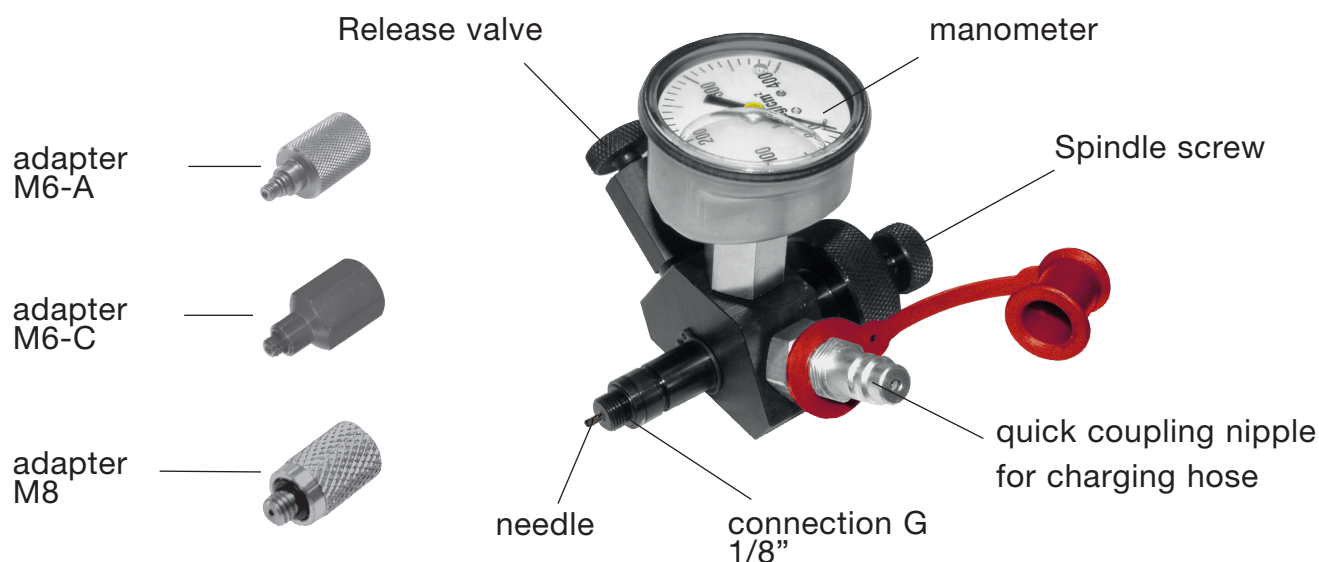
| **Attention!** | Minimum pressure | 25 bar |
| Please consider! | Minimum pressure | 175 bar |

Filling of gas springs

For gas springs with G1/8' connection thread:

1. Turn back the spindle screw until the needle is flush in the middle of the G1/8" connection.
2. Turn the loading equipment with the connection G1/8" in the gas spring. Continue with step 3.

For gas springs with connection thread M6-A/M8:

2a Turn the M6-A/M8 adapter on the connection thread G1/8".
2b Turn the loading equipment with the connection M6 into the gas spring. Continue with step 3.

3. Put the coupling of the charging hose onto the quick-coupling nipple.

4. Open slowly the valve on the charging hose until the desired pressure is indicated on the manometer (close the valve).

5. The valve in the gas spring closes automatically.
    To release the pressure which still is in the charging equipment slowly turn in the screw of the release valve until the residual pressure is released. Then immediately turn back the adjusting screw of the release valve back to its initial position.

6. Turn the loading equipment out of the gas spring.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

Pressure monitoring of gas springs with connection thread G1/8"

1. Turn back the spindle screw until the needle is flush in the middle of the G1/8" connection (fig.1).
2. Turn the loading equipment with the connection G1/8" into the gas spring.
3. By turning the spindle screw the needle opens the valve in the gas spring and the pressure is displayed on the manometer.

Pressure monitoring of gas springs with connection thread M6: is not possible!

Releasing or reducing of pressure at gas springs with connection thread G1/8"

1. Proceed as in streps 1–3 at pressure monitoring of gas springs with connection thread G1/8".
2. To release the pressure in the gas spring, slowly turn in the screw of the release valve until the pressure escapes or until the desired pressure is displayed on the manometer. Then immediately turn the adjusting screw back to its initial position. To ensure that the gas spring is depressurized, the piston rod must be able to be pressed down by hand!
The gas spring may only be dismounted in depressurized condition!

Needle

Fig. **1**

Release pressure at gas springs connection thread M6

1. Gas springs with connection thread M6 cannot be released with the charging equipment SN2967! The needle of the charging equipment cannot be turned through the screwed-on M6-A adapter.
2. Gas springs of the series SN2900 and SN2910-M16 and SN2910-M24 have a poppet valve SN2992. Continue with step 5.
3. To release the pressure of a gas spring with thread M6 use the discharging nozzle SN2955-M6 (fig.2).
4. Use side B to screw the valve out of the gas spring.
5. Proceed as described in fig. 3. To release pressure, turn the poppet valve SN2992 clockwise, one or two turns, until the gas starts to escape.
Stop and wait until the gas has escaped. Then turn the poppet valve anticlockwise to close it again (fig. 4).

SN2955-M6 Discharging nozzle

B

AA

09.2022

Fig. 2

Fig. 3

SN2992
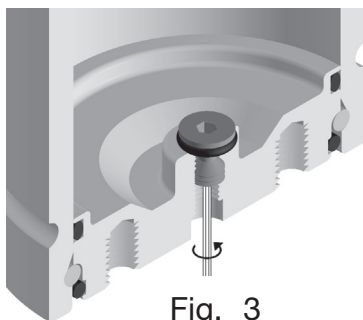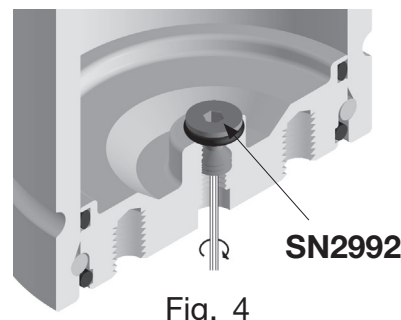
Fig. 4

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

13. Stillstand and storage

Stillstand

During the standstill of the press no special precautions have to be taken that go beyond the usual applicable regulations for pressurised gas-controlled applications.

Storage

For transport or storage of the tool with installed STRACK nitrogen spring system it is advisable to release the system pressure.

> ⚠ Please consider that due to the design, components of the tool may move together in an uncontrolled manner due to the lowering of the system pressure in the gas springs of the cam units (UVV).

Before putting the tool back into operation, check the system pressure of the gas springs. If you have to increase the system pressure again, proceed as described in chapter 12.2.

14. Maintenance

Sliding strips out of steel are hardened and are normally not subject to wear.
If necessary, these strips are adjusted at STRACK during the assembly to guarantee a low guide play.
The fixing screws of these strips are secured with the screw lock Z9093.
The sliding strips out of SNS sintered are subject to higher wear than the steel strips. The strips are manufactured in a narrow tolerance range. This means that these elements can be exchanged without having to be readjusted. If both slide partners are replace, the guide play must be controlled and be readjusted, if necessary.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

14.1 Pre-adjustment of active return
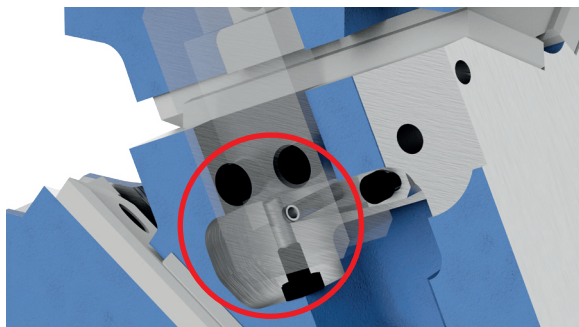
The active returns are set and pinned at factory. Check the play between insert and active return regularly. In case of increased play due to wear, this can be readjusted. To do this, remove the dowel pin which can then no longer be used. Continue as described.

The preadjusted active return has been pinned with the adjustment wedge in the casting.
This has the advantage that the active return is in the same position after disassembly and the guide play corresponds exactly to the pre-adjustment.

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

14.2 Adjustment of the forced return
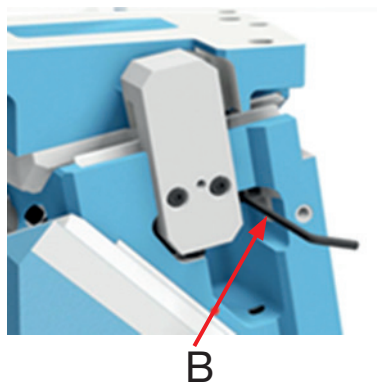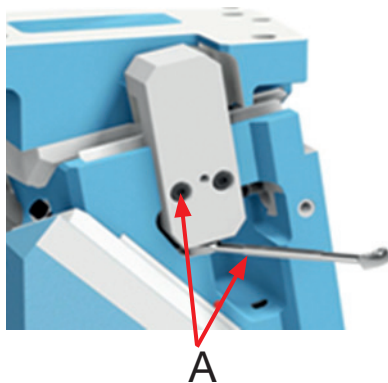
Place the cam retainer with the cam slide on the head side of the cam retainer to guarantee a firm stand.

Loosen the pin and the fixing screws of the active returns (A) and the adjustment wedge (B).
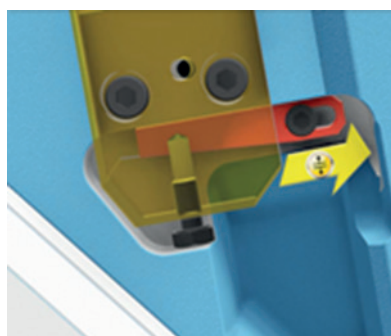
Pull back the adjustment wedge and place the driver on the prism of the cam slide.
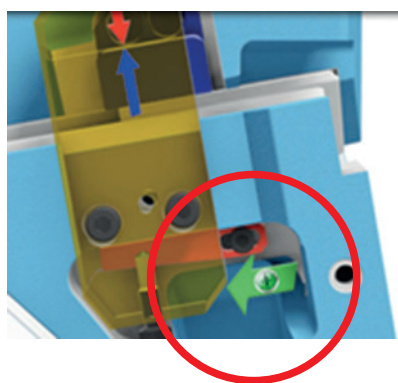
After placing the driver on the cam slide press the active returns onto the inserts of the driver and fix them by moving the adjustment wedge in direction of the arrow.

Then fasten the screws in reverse order.
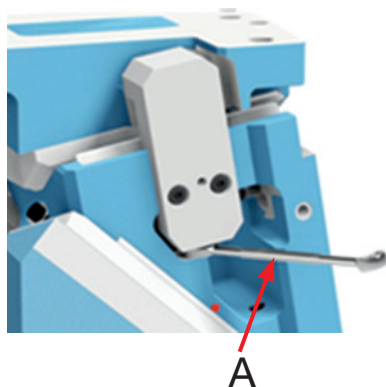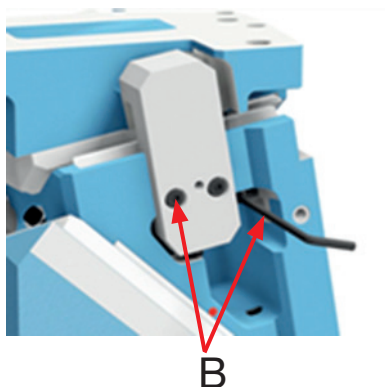
Fix the fastening screws of the adjustment wedges and the active returns (B), then lock the active return (A) and check the guide play with 0,01 mm gauge tape. To prevent the driver from tilting both sides should be tightened equally.

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

14.3 Lubrication

Guiding elements out of SNS-sintered metal characterize by the follow features:

- Significant increase in service life minimizes your maintenance costs
- High durability increases your productivity
- High temperature resistance until 250 ° ensures y our flexibility
- Favourable and constant purchase prices save your money

The requirements of modern toolmaking have changed.
To meet these requirements, a new sintered metal has been developed as slide bearing material. This SNS sintered metal absorbs the stresses caused by the machining of high-strength sheet metal. At the same time, maintenance friendliness and service life are increased.

The new generation of bearing elements is an iron-based porous sintered metal. This characterizes by a long bearing mileage at medium to high speeds. The sintered metal is applied to a steel base body which gives the guide element a higher strength.

SNS sintered metal layer

Schichtdicke 1,5 bis 2 mm

Grundträgermaterial Stahl

Vergrößerung 100:1
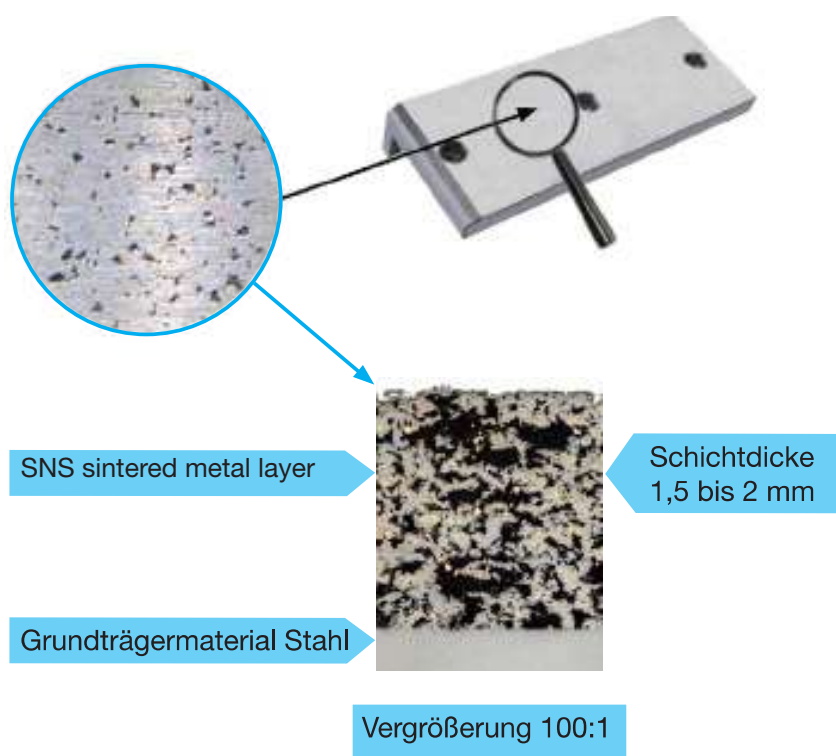
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

	SNS Sintermetall **SNS sintered metal** **Métal fritté SNS**
Maximale Gleitgeschwindigkeit / Maximal sliding speed / Vitesse de glissement maximale	40 m/min trocken / dry / sec 80 m/min geschmiert / lubricated / lubrifié
Reibungskoeffizent / Frictional coefficient / Coefficient de frottement	0,05 - 0,15
PV Wert / PV-value / Valeur PV	2950 daN/cm² x m/min
Flächenpressung max. / Surface pressure max. / Pression superficielle maximale	76 N/mm²
Arbeitstemperatur / Operating temperature / Température de travail	< 250 °C trocken / dry / sec < 150 °C geschmiert / lubricated / lubrifié (in Abhängigkeit vom verwendeten Schmierstoff / dependent from the used lubrication / dépendant de la lubrification utilisée)
Porösität der Sintergleitfläche / Porosity of the sinter sliding surface / Porosité de la surface de glissement frittée	15 - 25 %
Integrierter Schmierstoff / Integrated lubricant / Lubrifiant intégré	Fe+Cu+Graphit+MoS2
Schmierstoffanteil / Portion of lubricant / Part du lubrifiant	15 - 20 %
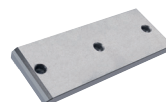
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

SNS-sintered metal slide elements are maintenance friendly. During normal operation no additional maintenance measures are necessary. However, influences as cleaning of the tools or sealings, which are carried out for transport can change the properties. In this case, additional lubrication of SNS sintered sliding elements increases the service life significantly.

An additional lubrication with an oil Z9084 reduces the friction heat and the wear significantly. The service life is also increased by reducing the number of abrasion particles and avoidance due to foreign particle influence (sealing effect). The lubrication reduces the noise generation and increases the corrosion protection effect.

In delivered condition all SNS-guiding elements are impregnated with oil Z9084. This, additionally, reduces drastic wear occurring during the initial operation.

According to the following operating instructions an additional lubrication is recommended.

For optimal running performance we recommend the following oil:

Lubricant	max.°C
STRACK Z9084	130

Further information in Annex 15.2

The relubrication intervals must be adapted to the operating conditions. All SNS-bearings should always be relubricated as part of normal tool maintenance.

Alternative recommendations optimal (if STRACK lubricants are not available):

Company	oils	max. °C	greases	max.°C
AGIP	Rotra ATF	100	Agip GR MU 2	120
BP	Autran DX III	100	Energrease	140
ESSO / Mobil	ATF 320	100	Nebula EP2	120
ESSO / Mobil	ATF 220	100	Beacon EP2	130
Castrol	ATF DEX II	100	Tribol GR 4020 PD	150
SHELL	Spirax S1 ATF TASA	80	Retinax LX	140

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15. Appendix

15.1 Internet and CAD

The company STRACK NORMA has created an online presence for the PowerMax cam elements which is tailored to the requirements of the constructing engineers.

By using the link www.strack.de you can reach the corresponding homepage.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.2 Lubricant Z9084

Synthetischer Schmierstoff für SNS-Führungselemente

Z9084	Basis: organischer Ester	l		
		0,5		
		1,0		
Z9084-l		20,0		

Synthetischer Schmierstoff für SNS-Führungselemente

Technische Daten:

Form	flüssig
Dichte (15°C) DIN 51757	0,920 kg/l
Konsistenzgeber	anorganisch
ISO Viskositätsklasse	68
SAE Viskositätsklasse	30
Viskosität bei 40°C	62,1 mm$^2 \cdot$ s^{-1}
Viskosität bei 100°C	11,4 mm$^2 \cdot$ s^{-1}
Viskositätsindex	180
Optimaler Einsatztemperaturbereich	-35 °C – +130 °C
Stockpunkt	-54 °C
Flammpunkt COC	246 °C
Verdampfungsverlust 22h, 99°C	0,8 %

Einsatzbereiche:

- Tränkung von Sinterlagern
- Reibungsarme Lager
- Manuelle oder automatische Schmierstoffzufuhr
- Umlaufschmierung
- Druckschmierung

Das Produkt hat keine negativen Auswirkungen auf Dichtungen, Kunststoffe und Anstriche aus Viton, Teflon, Perbunan mit einem Acrylnitrilgehalt >30 %, Epoxidharzlacke, ölbeständige Alkydharze, Polyamide, PET, PBT.

Nicht empfehlenswert sind Neopren, SBR, Perbunan mit einem Acrylnitrilgehalt <30 %, Acryllacke, PVC, ABS.

⚠️
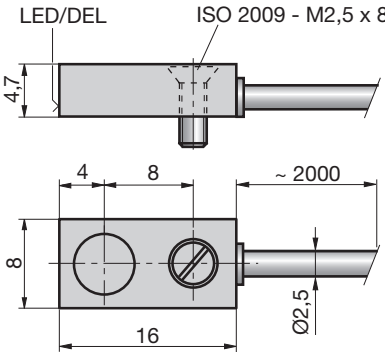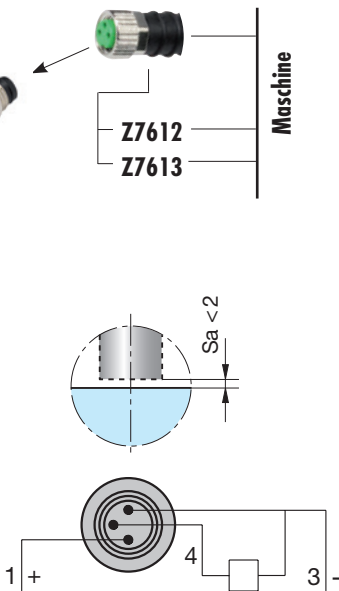
Nicht mit anderen Schmierstoffen mischen!

Eigenschaften:

- Hoher Viskositätsindex
- ISO VG 5 bis 100
- Breites Betriebstemperaturspektrum
- Hohe thermische, oxidative und chemische Stabilität
- Ausgezeichnete Kondensatabscheidung
- Gutes Detergier- und Dispergierverhalten
- Keine Neigung zu Bildung von ölbedingten Rückständen oder Ablagerungen
- Gute Produktverträglichkeit mit den Werkstoffen im modernen Maschinenbau
- Keine Schaumbildung
- Höhere kritische Temperaturen (ca. 40 - 60 °C)
- Höhere Flammpunkte und Selbstentzündungs-temperturen als Mineralöle
- Hohe Polarität
- Hohe Scherstabilität
- Ausgezeichneter Verschleißschutz
- Hoher Korrosionsschutz

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.3 Limit switch Z7685

Endschalter	Limit switch	Contacteur de fin de course

Z7621 **Z7614** **Z7612** **Z7613** **Maschine**

Sa = Arbeitsschaltabstand.
Sa = Work-switching gap.
Sa = L'intervalle de communication de travail.

1 = bn = braun/brown/brun
3 = bl = blau/blue/bleu
4 = sw = schwarz/black/noir

LED/DEL   ISO 2009 - M2,5 x 8   Sa <2

Z7685

Z7685

- Temperaturbeständigkeit bis 75°C.
- Spritzwassergeschützt nach IP 67.
- Arbeitsschaltabstand 2 mm.

- Berührungslos durch Präzisionssensorik.
- Endlose Wiederholgenauigkeit.
- Kein Verschleiß.
- Feinsteinstellung durch optische Anzeige (LED) und Z7608.
- Betriebsspannung 10 - 30 V DC.
- Strombelastbarkeit 100 mA.
- PNP-Schließer.
- Anschluss über Z7621 an die Maschinensteuerung.
- Beim Einsatz mehrerer Endschalter, die gleichzeitig geschaltet werden müssen, ist das Anschlussgehäuse Z7614 erforderlich.

- Thermal endurance up to 75 °C.
- Splash-proof to IP 67.
- Work-switching gap 2 mm.

- Contactless through precisions sensor technology.
- Infinite repeat accuracy.
- No wear.
- Fine adjustment via optical display (LED) and Z7608.
- Operating voltage 10 - 30 V DC.
- Current-carrying capacity 100 mA.
- PNP make contact.
- Connection to the machine control system via Z7621.
- Connection housing Z7614 must be used if several limit switches have to be switched simultaneously.

- Tenue en température constante jusqu'à 75 °C.
- Protection contre les projections d'eau selon le type de protection IP 67.
- L'intervalle de communication du travail 2 mm.

- Sans contact grâce à la technique sensorielle.
- Reproduction exacte en fonctionnement continu.
- Pas de verrouillage.
- Réglage de la position du capteur par vis.
- Réglage fin grâce à l'indicateur optique (DEL) et Z7608.
- Tension de fonctionnement 10 - 30 V DC.
- Charge de courant maximale: 100 mA
- PNP contact à fermeture.
- Raccordement par la prise du Z7621 à la commande de la machine.
- Lorsque plusieurs contacteurs de fin de course doivent être commutés en même temps, utiliser impérativement le boîtier de raccordement Z7614.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.4 General description of gas springs

GAS SPRINGS

The gas springs are developed and produced based on the long experience in the nitrogen gas spring research and development.

We understand that the final quality of our product is the individual quality of all

its parts, and we therefore painstakingly check each and every one of them.

All the components are subjected to visual and dimensional inspection prior to assembly.

100 % of the gas springs are subjected to dynamic and static gas-proof testing.

All STRACK gas springs, thanks to their design, admit maintenance in a quick and simple manner.

Most STRACK gas springs have a one-piece construction in all their components, thus eliminating risks of breakage due to material fatigue and therefore also

eliminating possible leakage points.

All STRACK gas springs are supplied with a quality certificate.
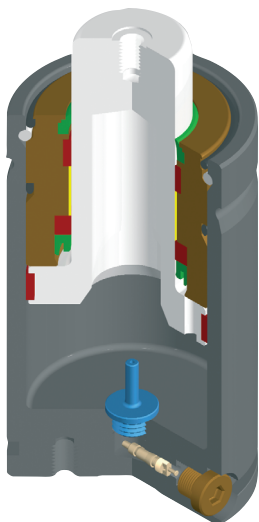
COMPONENT CHARACTERISTICS

Body

Developed in one piece up to strokes of 125 mm. In higher strokes they have a tubular construction with a welded lid. As a difference with other brands, STRACK incorporates a threaded joint between the two elements that eliminates the

possible fatigue factor in the weld bead.

Stem

Fatigue-resistant steels are employed, which have specific treatments that ensure

a long useful life. STRACK offers the maximum quality MICROFINISH on the surface of all its stems, thus ensuring a longer service life by reducing friction and wear

and tear in the seals..

Bushing

It incorporates a scraper, an element that avoids the entrance of filth. All bushings are designeavoiding a metal-to-metal contact, recurring to self-lubricating guiding elements. Reference to gastightness, specific seals are used, which have been

painstakingly tested and which offer a high working yield even near their maximum limits of use.

09.2022
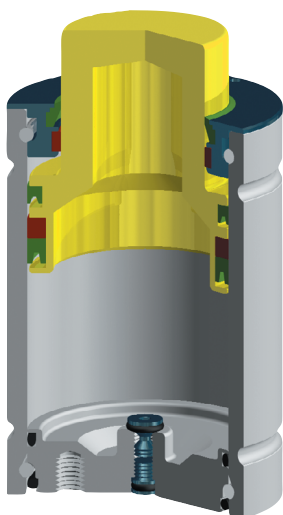
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.5 Maximal operating conditions for gas springs
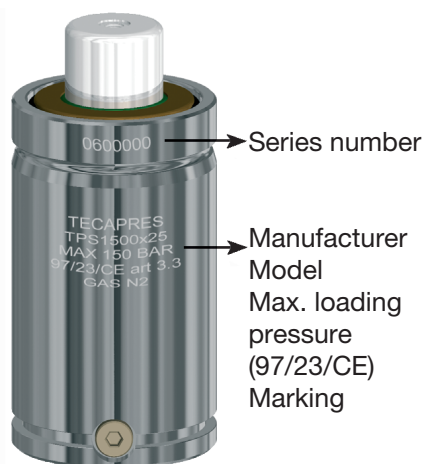
Identification

All STRACK gas springs are clearly identified by means of a consistent engraving on the body in accordance with the specification of the European norm (97/23/CE).

Working stroke

The working stroke is maintained invariable during use thanks to a mechanical stop. All STRACK gas springs can work using the whole

of their nominal stroke (S) as all models have a stroke reserve. How-ever, in order to reach an optimal service life, it is convenient to design with an optimal safety level. It is therefore recommended to

foresee a 10 % stroke reserve. (picture 1)
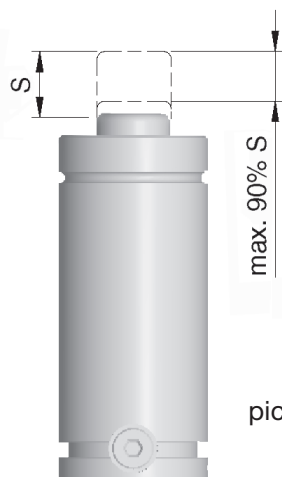
Working temperature

Maximum working temperature is 80°C. Higher temperatures can damage the gastightness elements, and seriously affect the length of the gas spring service life. (picture 2)
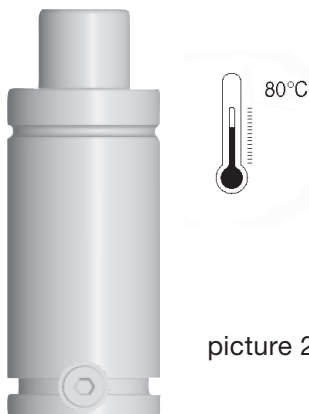
Maximum filling pressure

You should never go over the maximum loading pressure for each gas spring, which is between 150 and 175 bar (at 20°C) depending on each model. Maximum loading pressure is detailed in each model's technical specifications.

Maximum working speed

Maximum lineal working stem speed is variable depending on the type

of gas spring. Maximum working speeds are detailed in each model's technical specifications.

Maximum rate

The calculation of maximum rate per minute (N) is calculated following this formula:

$$N = \frac{K}{(2 \times S) + 50}$$

K = Calculation coefficient
(values detailed in the technical specifications for each model)
S = Working stroke

picture 1

picture 2

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.6 Calculations gas springs

Inital force

Gas spring initial force is calculated in relation with the working surface and loading force in accordance with the following formula:

$$Fi = A \times P$$

Fi = Initial nominal force in daN
A = Working area in cm^2 (as detailed in the spefications of each model)
P = Loading pressure in Bar

Variation of the initial force

Loading pressure may be modified to vary the initial force of a gas spring.
If we know the initial force, we can use the following formula:

$$P = Pi \times \frac{F}{Fi}$$

P = Pressure wanted (Bar), Pi = Gas spring nominal loading pressure (Bar)
F = Required initial force (daN), Fi = Gas spring nomilal initial force (daN)

Variation of forces depending on the temperature

Gas temperature affects the pressure of gas springs and therefore also their force. The forces specified in the catalogue correspond to loading pressures at a temperature of 20°C. In the temperature/pressure graph it is possible to see how nitrogen pressure varies according to the temperature.
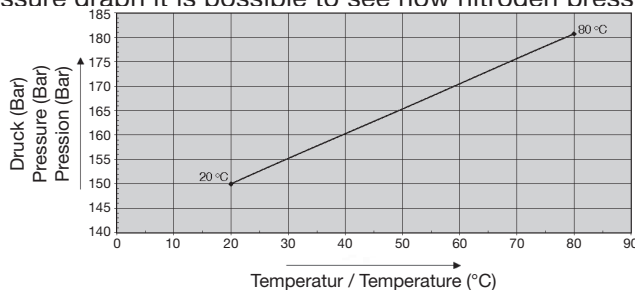
Technical advice

With the purpose of helping our customers we have a technical advice service. By means of this service, you will receive advice from specialised technicians, and all your queries will be answered. We will help you chose the most adequate product depending on the type of work you wish to carry out.

Garantee and duration

The guarantee that STRACK offers in gas springs is for one year as from the date of acquisition, or the equivalente to a stem lineal displacement of 100,000 metres in gas springs with strokes equal to or over 25 mm. whereas in gas springs with shorter strokes the guarantee is of 2,000,000 cycles.

The guarantee (which covers parts and labour costs) is applicable if and when the following conditions are fulfilled:

1. The gas springs does not present defects due to dents (blows, scratches, welding detatchments, rust and so on..).

2. Their application and use has been strictly within the limits of the technical conditions specified, and of the various applocable recommendations.

3. The gas spring has not been manipulated (opening the gas spring cancels the guarantee).

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.7 Mounting instructions gas springs

A 10 % nominal stroke reserve should be foreseen to prevent irrepearable damage in the gas springs and serious safety hazards.
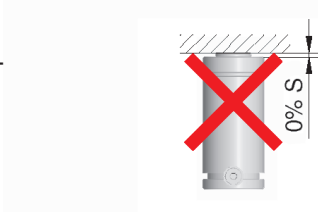
If possible fix the gas spring on the tool using the attachment holes at the bottom of the body or assembly accesories.
Do not use threaded hole on the stem to fix the gas spring onto the tool.
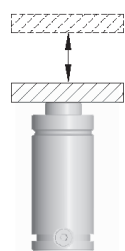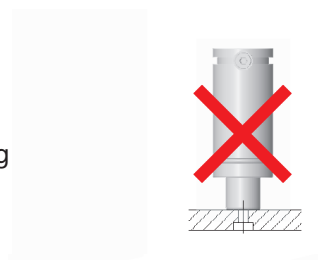
Do not install the gas spring onto the tool in such a way it makes

a free stem ejection possible. The installation of a compressed gas spring is dangerous due to serious safety risks.
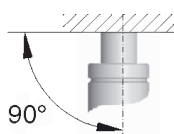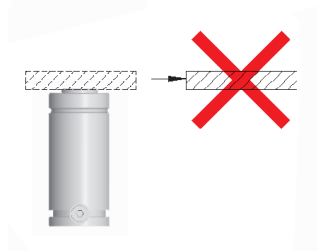
The gas spring is to work completely perpendicularly to the contact surface. Lateral forces reduce the gas spring's service life.
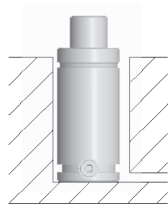
Protect the gas spring from direct contact with liquid pollution: lubricants, cleaners and so on..

Protect the gas spring against mechanical damage or blows, especially the stem. Any imperfection may bring about a loss of pressure.
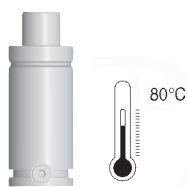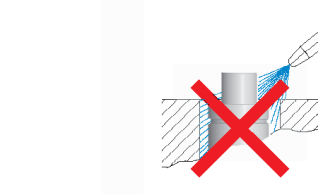
Service temperature should not exceed 80°C.
Higher temperatures will affect the seals, reducing the gas spring's service life.

Do not excede maximum filling pressures established for each Gas spring.

Higher pressures will reduce both the gas spring service life and endanger its use.

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.8 Filling pressure table gas springs

Gas springs	Nominal pressure P [bar]	Nominal force F [daN]	A	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	F max. [daN]	P max. [bar]
			Cylinder force in daN at filling pressure in bar																	
SN2800-100	175	90	0,50	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	88	175
SN2800-200	175	200	1,13	34	45	57	68	79	90	102	113	124	136	147	158	170	181	192	198	175
SN2820-200	175	200	1,13	34	45	57	68	79	90	102	113	124	136	147	158	170	181	192	198	175

Approximate values, deviations possible

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.9 Effect of changing the driver position

Case 1: Displacement of the driver in ± X-direction

W = Angle of the slider
Vw = Displacement punch / tool
X = Displacement of the driver on the sole in ± X-direction

Vw - Werkzeug (Stempel)

-Vw
+Vw

W

AS - Normalabstand

AS-X - Verschiebung nach HINTEN

H = konstant

X

-X   +X

Driver displacement in ± X-direction results in a deviation in ± Vw (tool displacement) according to the following table:

±Vw
±X
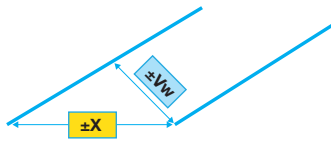
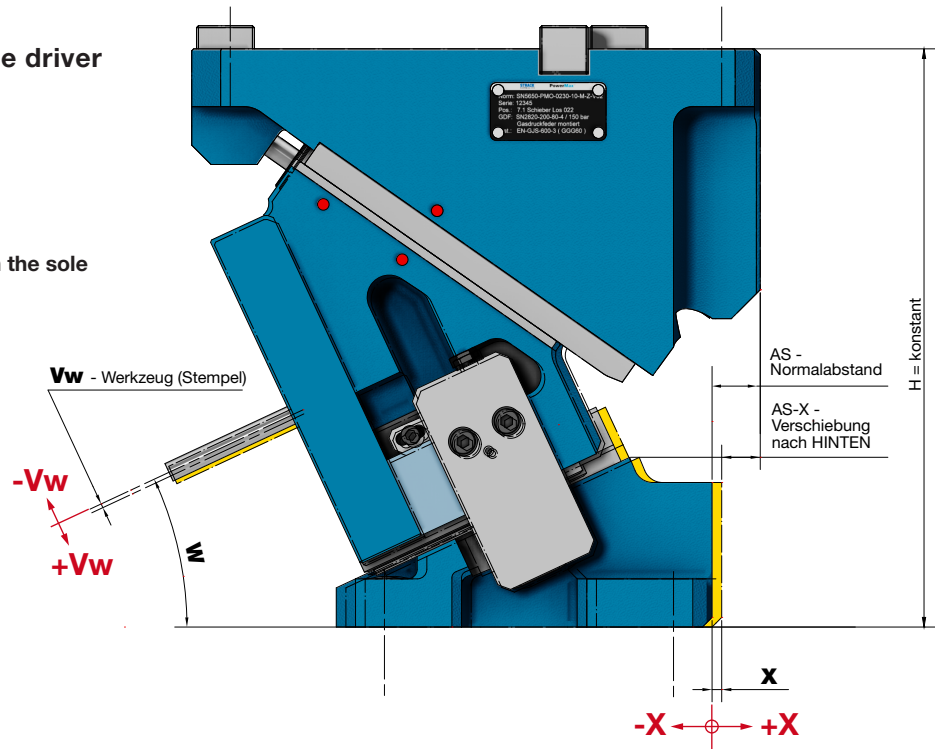| ± X [mm]	Vw [mm] at slide angle - working direction to invert [W in °]															
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
0,01	0,000	0,001	0,002	0,003	0,003	0,004	0,005	0,006	0,006	0,007	0,008	0,008	0,009	0,009	0,009	0,010
0,02	0,000	0,002	0,003	0,005	0,007	0,008	0,010	0,011	0,013	0,014	0,015	0,016	0,017	0,018	0,019	0,019
0,03	0,000	0,003	0,005	0,008	0,010	0,013	0,015	0,017	0,019	0,021	0,023	0,025	0,026	0,027	0,028	0,029
0,04	0,000	0,003	0,007	0,010	0,014	0,017	0,020	0,023	0,026	0,028	0,031	0,033	0,035	0,036	0,038	0,039
0,05	0,000	0,004	0,009	0,013	0,017	0,021	0,025	0,029	0,032	0,035	0,038	0,041	0,043	0,045	0,047	0,048
0,06	0,000	0,005	0,010	0,016	0,021	0,025	0,030	0,034	0,039	0,042	0,046	0,049	0,052	0,054	0,056	0,058
0,07	0,000	0,006	0,012	0,018	0,024	0,030	0,035	0,040	0,045	0,049	0,054	0,057	0,061	0,063	0,066	0,068
0,08	0,000	0,007	0,014	0,021	0,027	0,034	0,040	0,046	0,051	0,057	0,061	0,066	0,069	0,073	0,075	0,077
0,09	0,000	0,008	0,016	0,023	0,031	0,038	0,045	0,052	0,058	0,064	0,069	0,074	0,078	0,082	0,085	0,087
0,1	0,000	0,009	0,017	0,026	0,034	0,042	0,050	0,057	0,064	0,071	0,077	0,082	0,087	0,091	0,094	0,097
0,2	0,000	0,017	0,035	0,052	0,068	0,085	0,100	0,115	0,129	0,141	0,153	0,164	0,173	0,181	0,188	0,193
0,3	0,000	0,026	0,052	0,078	0,103	0,127	0,150	0,172	0,193	0,212	0,230	0,246	0,260	0,272	0,282	0,290
0,4	0,000	0,035	0,069	0,104	0,137	0,169	0,200	0,229	0,257	0,283	0,306	0,328	0,346	0,363	0,376	0,386
0,5	0,000	0,044	0,087	0,129	0,171	0,211	0,250	0,287	0,321	0,354	0,383	0,410	0,433	0,453	0,470	0,483
0,6	0,000	0,052	0,104	0,155	0,205	0,254	0,300	0,344	0,386	0,424	0,460	0,491	0,520	0,544	0,564	0,580
0,7	0,000	0,061	0,122	0,181	0,239	0,296	0,350	0,402	0,450	0,495	0,536	0,573	0,606	0,634	0,658	0,676
0,8	0,000	0,070	0,139	0,207	0,274	0,338	0,400	0,459	0,514	0,566	0,613	0,655	0,693	0,725	0,752	0,773
0,9	0,000	0,078	0,156	0,233	0,308	0,380	0,450	0,516	0,579	0,636	0,689	0,737	0,779	0,816	0,846	0,869
1	0,000	0,087	0,174	0,259	0,342	0,423	0,500	0,574	0,643	0,707	0,766	0,819	0,866	0,906	0,940	0,966
2	0,000	0,174	0,347	0,518	0,684	0,845	1,000	1,147	1,286	1,414	1,532	1,638	1,732	1,813	1,879	1,932

Example 1: **X 0,1 bei 25° ➔ Vw = 0,042 mm**
Shows the change of the tool position (Vw) with a shift of the driver position (X)

Example 2: **Vw 0,148 bei 40° ➔ X = 0,23 mm** *(0,129+0,019 = 0,148 / 0,2+0,03 = 0,23)*
Shows which displacement (X) is necessary to obtain the desired tool displacement (Vw).
to be obtained. Here values can also be added to the searched value

09.2022

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

Effect of changing the driver position

Case 2: Displacement of the driver in ± Z-direction

W = Angle of the slider
Vw = Displacement punch / tool
Z = Shift driver height position in ± Z-direction

Vw - Werkzeug (Stempel)
+Vw
-Vw
W
AS - Normalabstand
H = verändert
+Z
-Z
Z = Veränderung der Treiberhöhenposition

Driver displacement in ± Z-direction results in deviation in ± Vw (tool displacement) according to the following table
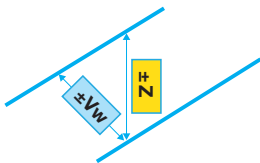
± Z [mm]	Vw [mm] bei Schieberwinkel - Arbeitsrichtung zur Sohle [W in °]															
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
0,01	0,010	0,010	0,010	0,010	0,009	0,009	0,009	0,008	0,008	0,007	0,006	0,006	0,005	0,004	0,003	0,003
0,02	0,020	0,020	0,020	0,019	0,019	0,018	0,017	0,016	0,015	0,014	0,013	0,011	0,010	0,008	0,007	0,005
0,03	0,030	0,030	0,030	0,029	0,028	0,027	0,026	0,025	0,023	0,021	0,019	0,017	0,015	0,013	0,010	0,008
0,04	0,040	0,040	0,039	0,039	0,038	0,036	0,035	0,033	0,031	0,028	0,026	0,023	0,020	0,017	0,014	0,010
0,05	0,050	0,050	0,049	0,048	0,047	0,045	0,043	0,041	0,038	0,035	0,032	0,029	0,025	0,021	0,017	0,013
0,06	0,060	0,060	0,059	0,058	0,056	0,054	0,052	0,049	0,046	0,042	0,039	0,034	0,030	0,025	0,021	0,016
0,07	0,070	0,070	0,069	0,068	0,066	0,063	0,061	0,057	0,054	0,049	0,045	0,040	0,035	0,030	0,024	0,018
0,08	0,080	0,080	0,079	0,077	0,075	0,073	0,069	0,066	0,061	0,057	0,051	0,046	0,040	0,034	0,027	0,021
0,09	0,090	0,090	0,089	0,087	0,085	0,082	0,078	0,074	0,069	0,064	0,058	0,052	0,045	0,038	0,031	0,023
0,1	0,100	0,100	0,098	0,097	0,094	0,091	0,087	0,082	0,077	0,071	0,064	0,057	0,050	0,042	0,034	0,026
0,2	0,200	0,199	0,197	0,193	0,188	0,181	0,173	0,164	0,153	0,141	0,129	0,115	0,100	0,085	0,068	0,052
0,3	0,300	0,299	0,295	0,290	0,282	0,272	0,260	0,246	0,230	0,212	0,193	0,172	0,150	0,127	0,103	0,078
0,4	0,400	0,398	0,394	0,386	0,376	0,363	0,346	0,328	0,306	0,283	0,257	0,229	0,200	0,169	0,137	0,104
0,5	0,500	0,498	0,492	0,483	0,470	0,453	0,433	0,410	0,383	0,354	0,321	0,287	0,250	0,211	0,171	0,129
0,6	0,600	0,598	0,591	0,580	0,564	0,544	0,520	0,491	0,460	0,424	0,386	0,344	0,300	0,254	0,205	0,155
0,7	0,700	0,697	0,689	0,676	0,658	0,634	0,606	0,573	0,536	0,495	0,450	0,402	0,350	0,296	0,239	0,181
0,8	0,800	0,797	0,788	0,773	0,752	0,725	0,693	0,655	0,613	0,566	0,514	0,459	0,400	0,338	0,274	0,207
0,9	0,900	0,897	0,886	0,869	0,846	0,816	0,779	0,737	0,689	0,636	0,579	0,516	0,450	0,380	0,308	0,233
1	1,000	0,996	0,985	0,966	0,940	0,906	0,866	0,819	0,766	0,707	0,643	0,574	0,500	0,423	0,342	0,259
2	2,000	1,992	1,970	1,932	1,879	1,813	1,732	1,638	1,532	1,414	1,286	1,147	1,000	0,845	0,684	0,518

Example 1: **Z 0,1 bei 25°** ➔ **Vw = 0,091 mm**
Shows the change of the tool position (Vw) with a shift of the driver position (Z)

Example 2: **Vw 0,26 bei 40°** ➔ **Z = 0,34 mm** *(0,230+0,031 = 0,261 / 0,3+0,04 = 0,34)*
Shows which displacement (Z) is necessary to obtain the desired tool displacement (Vw).
to be obtained. Here, values can also be added to the searched value
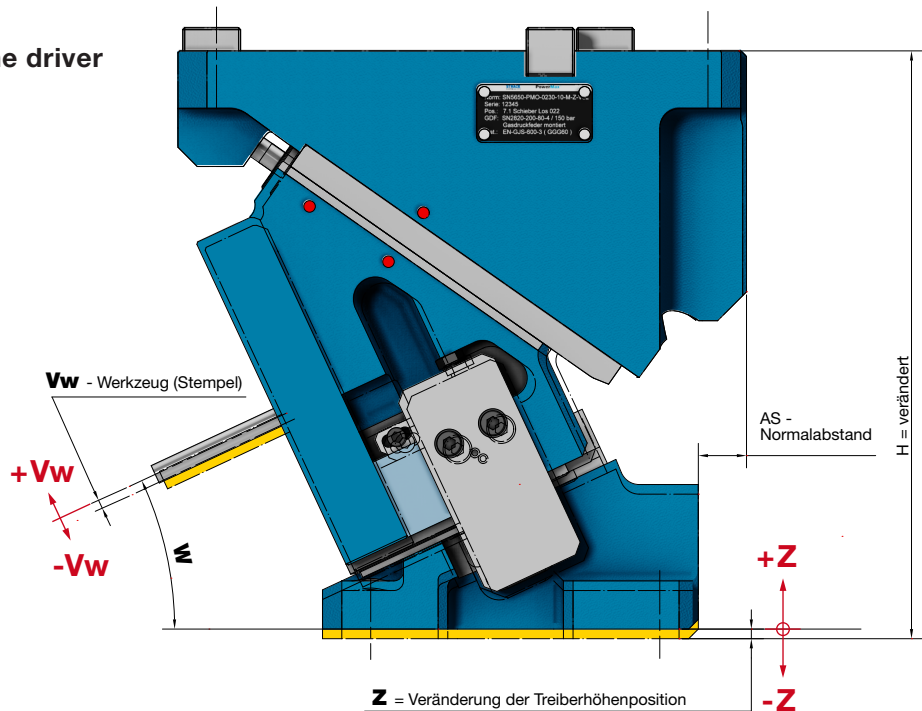
PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

15.10 Exploded view and item list

On the following pages you will find an exploded view and an item list (exemplary) like it can be downloaded on the internet side of the PowerMax cam (www.strack.de)
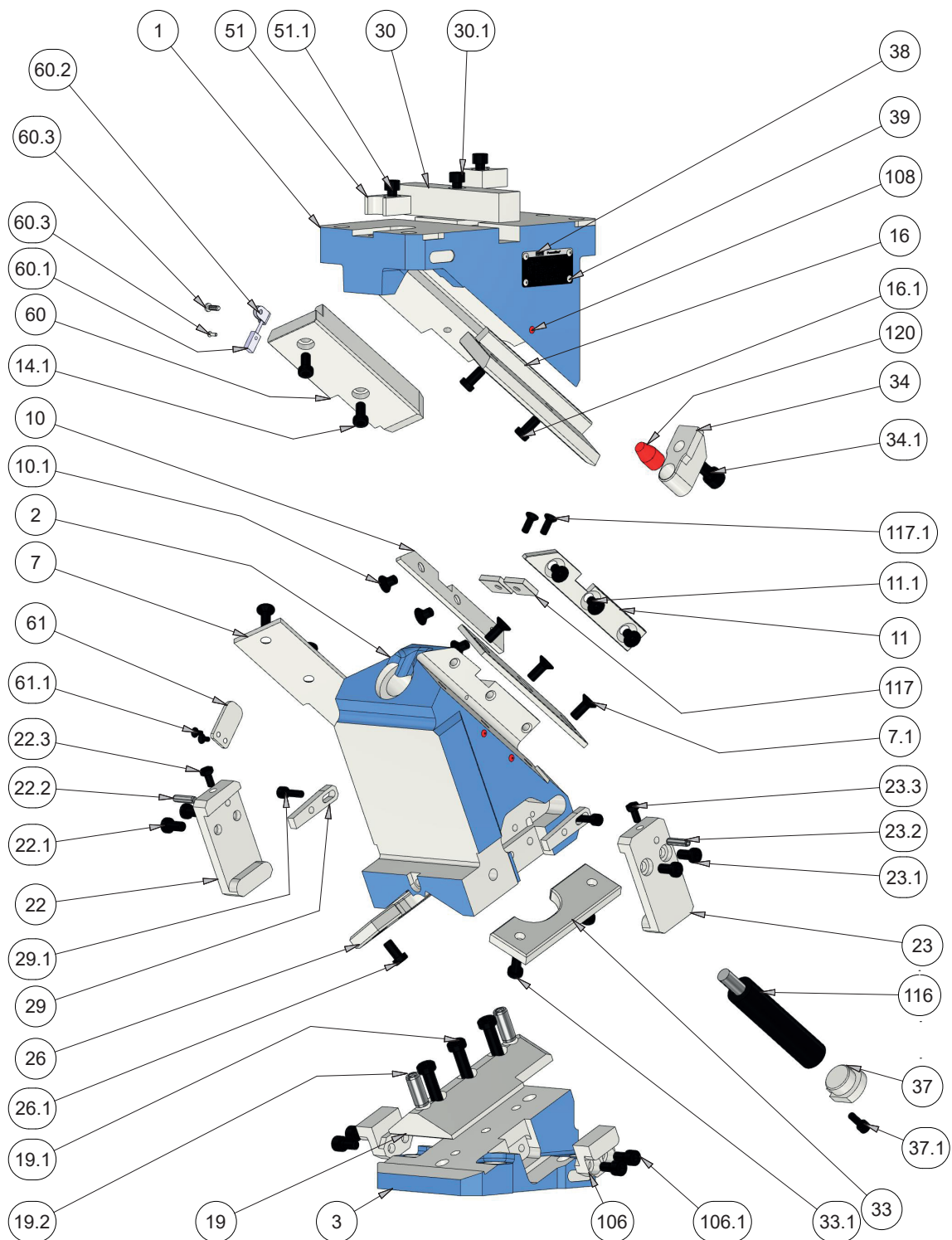
09.2022

STRACK NORMA GmbH & Co. KG · Königsberger Str. 11 · D-58511 Lüdenscheid · Tel +49 2351 8701-0 · www.strack.de   **39**

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

Teil: 520474

Bezeichnung: SN5650-PMOK-0165-25-E0-G0-S1-V04

Änderungsdatum: 01.06.2022

Seite: 2 von **3**

Pos.	Stk.	Bezeichnung		Art. Nr.
1	1	SN5650-PMOK-SAF-0165-25-V05	Schieberaufnahme Fertigteil / Slide retainer, machined part	502178
2	1	SN5650-PMOK-SKF-0165-25-V05	Schieberkörper Fertigteil / Slide retainer, machined part	502179
3	1	SN5650-PMOK-TF-0165-25-V05	Treiber Fertigteil / Driver unit, machined part	502180
7	2	SN5650-PMK-BS-T4-V02	Beplankung Schieberbett / Planking slidebed	223393
7.1	6	SN3550-M8-25	Senkkopfschraube / Countersunk head screw	62646
10	1	SN5650-PMK-BSSL-T1-V02	Bepl. Schieberbett links / Planking sliding bed left	223395
10.1	3	SN3550-M8-16	Senkkopfschraube / Countersunk head screw	62644
11	1	SN5650-PMK-BSSR-T1-V02	Bepl. Schieberbett rechts / Planking sliding bed right	223397
11.1	3	SN3550-M8-16	Senkkopfschraube / Countersunk head screw	62644
14	1	SN5650-PMK-GSA1-P-T4-V01	Gleitplatte Schieberaufnahme links / Guideplate slide retainer left	223270
14.1	2	SN3540-M8-20	Zylinderschraube / Socket head screw	62607
16	1	SN5650-PMK-GSA2-P-T4-V01	Gleitplatte Schieberaufnahme rechts / Guideplate slide retainer right	223274
16.1	2	SN3540-M8-20	Zylinderschraube / Socket head screw	62607
19	1	SN5650-PMO-GTL-T4-20-V02	Gleitstück Treiber links / Guidepiece driver left	223290
19.1	3	SN3500-M12-40	Zylinderschraube / Socket head screw	62849
19.2	2	SN1975-16-30	Zylinderstift / Dowel pin	600453
22	1	SN5650-PMO-ZWL-P-T3-V02	Zwangsrückzug links / Active return left	223431
22.1	2	SN3500-M8-20	Zylinderschraube / Socket head screw	62808
22.2	1	SN1975-6-32	Zylinderstift / Dowel pin	62513
22.3	1	SN3560-M8-16	Sechskantschraube / Hexagon head screw	624639
23	1	SN5650-PMO-ZWR-P-T3-V02	Zwangsrückzug rechts / Active return right	223425
23.1	2	SN3500-M8-20	Zylinderschraube / Socket head screw	62808
23.2	1	SN1975-6-32	Zylinderstift / Dowel pin	62513
23.3	1	SN3560-M8-16	Sechskantschraube / Hexagon head screw	624639
26	1	SN5650-PM-GST1-P-T4-20-V01	Gleitplatte Schieber-Treiber / Guideplate slider-driver	112074
26.1	2	SN3540-M8-20	Zylinderschraube / Socket head screw	62607
29	2	SN5650-PM-KEZ-T3-V02	Keil Zwangsrückzug / Key active return	10008340
29.1	2	SN3500-M6-25	Zylinderschraube / Socket head screw	62790
29.2	1	SN3500-M10-55	Zylinderschraube / Socket head screw	62832
29.3	0	SN3500-M8-80	Zylinderschraube / Socket head screw	62819
29.4	0	SN3500-M8-100	Zylinderschraube / Socket head screw	62821

09.2022

40

PowerMax®

PowerMax cam unit SN5650-PMOK-0065 — SN5650-PMOK-0460

Teil: 520474

Bezeichnung: SN5650-PMOK-0165-25-E0-G0-S1-V04

Änderungsdatum: 01.06.2022

Seite: 3 von **3**

Pos.	Stk.	Bezeichnung		Art. Nr.
30	1	SN5650-PM-PS1-T4-V02	Passfeder1 / Fitting key 1	10008573
30.1	1	SN3500-M8-30	Zylinderschraube / Socket head screw	62810
33	1	SN5650-PM-GST2-P-T4-20-V01	Gleitplatte Schieber-Treiber / Guideplate slider-driver	112078
33.1	2	SN3540-M8-20	Zylinderschraube / Socket head screw	62607
34	1	SN5650-PMK-SA-T3-V02	Schieberanschlag / Slide stop	223420
34.1	1	SN3500-M10-30	Zylinderschraube / Socket head screw	62827
35	1	SN5651-LOS-DS-32x15	Lock-Out-Distanzscheibe / Lock-Out-distance washer	227542
37	1	SN5650-PM-BV-T3-V01	Bajonettverschluss / Bayonet fitting	630766
37.1	1	SN3500-M8-20	Zylinderschraube / Socket head screw	62808
38	1	SN5650-PM-TYPS-V02	Typschild / Type plate	223226
39	4	SN5650-PM-PN-4-3	Popniete / Rivet	223192
51	2	SN5650-PM-PS4-T2-V01	Passfeder 4 / Fitting key 4	10212028
51.1	2	SN3500-M8-20	Zylinderschraube / Socket head screw	62808
60	1	Z7685	Endschalter / Limit switch	162771
60.1	1	SN3550-M2.5-8-SN1	Senkkopfschraube mit Schlitz / Countersunk head screw	10211362
60.2	1	SN2979-5-M4	Schlauchschelle einzeln / hose clamp single	600756
60.3	1	SN2980-M4-12	Schraube selbstschneidend / screw self-cutting	600757
61	1	SN5650-PM-SB-T1-V01	Sensorblech / sensor plate	10211269
61.1	2	SN3550-M4-8	Senkkopfschraube / Countersunk head screw	62638
106	2	SN5650-PMK-EZT-T3-V01	Einsatz Zwangsrückzug / Application active return driver	223284
106.1	4	SN3500-M8-20	Zylinderschraube / Socket head screw	62808
108	3	SN5650-PM-PNR-4-3	Popniete rot / Rivet red	223266
116	1	SN2820-200-50-4-PM	Gasdruckfeder für PM / Gas spring for PM	10086487
117	2	SN5650-PM-SP-BSS-V01	Sicherungsplatte BSS / Safety plate	223306
117.1	2	SN3550-M6-16	Senkkopfschraube / Countersunk head screw	62642
120	1	SN1817-16-25	Druckstück / Thrust piece	64791

09.2022

STRACK
N O R M A L I E N

TÜVRheinland®
ZERTIFIZIERT

Management System
ISO 9001:2015

www.tuv.com
ID 0910092006

09.2022