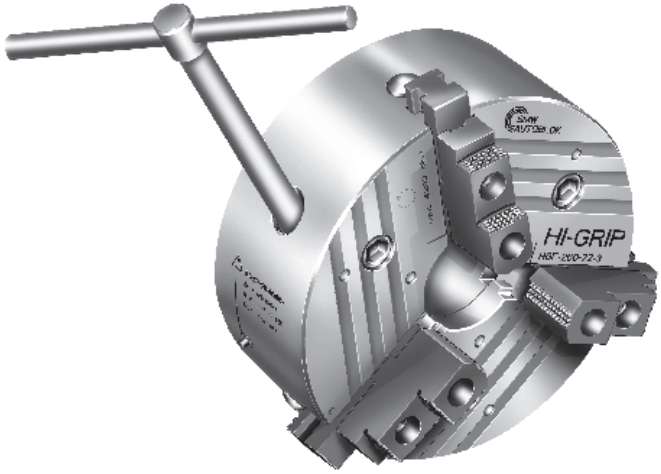
COPY OF THE ORIGINAL

INSTRUCTION MANUAL

# MANUAL CHUCK

## Type HG-N
## Type HG-F

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SMW® AUTOBLOK

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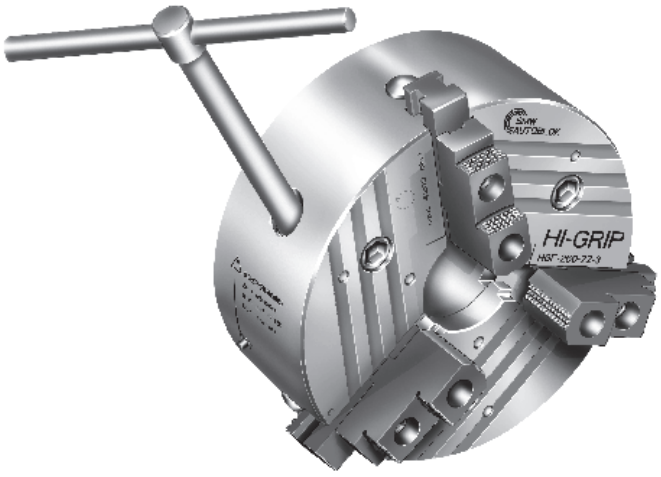



# INSTRUCTION MANUAL
## Manual Chuck
## Type HG-N
## Type HG-F

**Thank you for purchasing an Original-SMW-AUTOBLOK chuck type HG-N / HG-F.**

This **instruction manual** contains the installation, the use and the maintenance instructions of the work holding **„HG-N / HG-F"**.

**SMW-AUTOBLOK** reserves the right to make **changes without notice**.

This **instruction manual is a part of the work holding** and must be passed to the new owner in case of sale.

This **instruction manual may not be** -in whole or in part- **copied** without our written agreement.

**Please read the instruction manual carefully before installation and use and always follow the regulations.**

**Please note especially the sections which are marked with the following signs:**

- **Danger of injury or danger to life if instructions are not followed.**
- **Danger of damage to the work holding, the machine or the components.**

# Declaration of incorporation

## for an incomplete machine
## Machinery Directive 2006/42/EC, Annex II, B

| | |
|---|---|
| The manufacturer: | SMW-AUTOBLOK Spannsysteme GmbH<br>Wiesentalstrasse 28<br>88074 Meckenbeuren<br>Deutschland / Germany |

herby declares, that the following product:

| | |
|---|---|
| Product description: | Manual chuck |
| Application range: | Installation in machine tool |
| Type: | HG-N / HG-F |

is intended to be installed into a completed machine. It must not be put into service until the final machine into which the partly completed machinery it is to be incorporated has been declared in conformity with the provisions of the EU machine directive (2006/42/EC) Annex II, B.

Applied harmonized norms:

- DIN EN 1550 (2008)
- DIN ISO 13857 (2008)

The following basic requirements of Annex I, 2006/42/EC are complied with:

- No. 1, 1.1, 1.1.1, 1.1.2, 1.1.3
- No. 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.3.8
- No. 1.5, 1.6.1
- No. 1.7.1, 1.7.3, 1.7.4

The special technical documents have been created in accordance with Annex VII, Part B. These documents will be made available electronically on a reasoned request by the national authorities.

| | |
|---|---|
| Responsible for documentation: | Schilling Rainer<br>Chief designer |
| Place: | Meckenbeuren (Germany) |
| Date: | 29.12.2009 |

Eckhard Maurer
President

# General safety instructions

**1. Correct use**

SMW-AUTOBLOK chucks work safely and troublefree if they are used according to their specification i.e. to clamp components on turning machines.

Any other use can cause hazards.

**2. Demands on operators**

SMW-AUTOBLOK chucks must be installed, operated and maintained only by qualified and regularly trained personnel.

**3. Visual inspection**

Please check the product for visible damage prior to use!

**4. Transport**

Please use suitable lifting gear for product heavier than 16 kg!

**5. Safety precautions to the machine**

- During machining the power chuck and the clamped component must be protected by safety guards.
- Open machine door only when machine spindle is completely stopped.
- Maintenance and actuation of the power chuck must only be carried out when machine spindle is stopped.

**6. Maximum speed**

The max. spindle speed is only valid at max. actuating force using the standard hard stepped top jaws type GST, which are not exceeding the outer diameter of the chuck. If, for special applications, special top jaws are used clamping force and the max. speed must be calculated according to VDI 3106 but not exceeding the max. permitted speed.

Heavy special top jaws have an especially big influence on the max. speed. During the machining operation the centrifugal force increases or decreases the gripping force.

**OD clamping = decreasing**

**ID clamping = increasing**

All theoretically calculated values must be double checked with a suitable dynamic gripmeter. We recommend to use a calibrated dynamic grip force tester.

**7. Jaws**

Always use original SMW-AUTOBLOK base jaws and monoblock jaws. Jaws of other manufacturers can cause damage to the chuck or accidents.

Top jaws must be mounted with head socket screws of the class 12.9 only. Tighten with the specified torque.

Always ensure sufficient length of thread engagement (min. 1.25 x thread dia.)!

If the jaw height of special jaws exceeds the height of the standard jaws, the max. actuating force of the chuck must be reduced in order to avoid an excessive lever action and thus damage to the manual chuck.

At reduced actuating force, the max. speed must also be reduced accordingly!

**8. Jaw change**

The jaw is positioned min. as far to the marking on the chuck body that the serration of the wedge bar is fully engaged with the serration of the jaws.

By turning the wrench the complete serration of the wedge bar is engaged into the serration of the jaws. The clamping can start if 60 % of the serration is engaged. This is indicated by the indicator pin on O.D. of the chuck. Never clamp or rotate the chuck with the indicator pin protruding!

**9. Clamping**

Actuate the chuck with the original wrench. Do not exceed max. torque! Always remove wrench immediately after clamping! Do not leave wrench in the chuck! According DIN/EN 1550 the machine must be electrically locked against spindle start if the wrench is still in the chuck.

**10. Remaining risks**

The type of components (shape, weight, unbalance, material etc.) has a big influence on the system "machine tool - manual chuck - component".

For that reason there is always a residual risk.

These residual risks must be calculated by the user and have to be eliminated by suitable actions.

**11. Maintenance**

The manual chuck must be maintained in regular intervals. Check the conditions by measuring the gripping force with static gripmeter.

Replace damaged parts with original SMW-AUTOBLOK spare parts only.

Maintenance must be carried out at safe spindle stop of the machine only.

**12. Environment protection**

Danger for environment when handling incorrect!

Incorrect handling of environment hazardous materials, especially the disposal, may result in environmental damage.

- Always follow below instructions.
- In case environmentally hazardous material polluted the environment always take suitable actions immediately. If in doubt, inform the local authority about the pollution.

The following hazardous materials are used: Lubricants such as oil and grease can contain poisonous agents. They must not pollute the environment. The disposal must be carried out by a suitable waste management company.

For a proper function of the work holding, use original SMW-AUTOBLOK lubricant only.

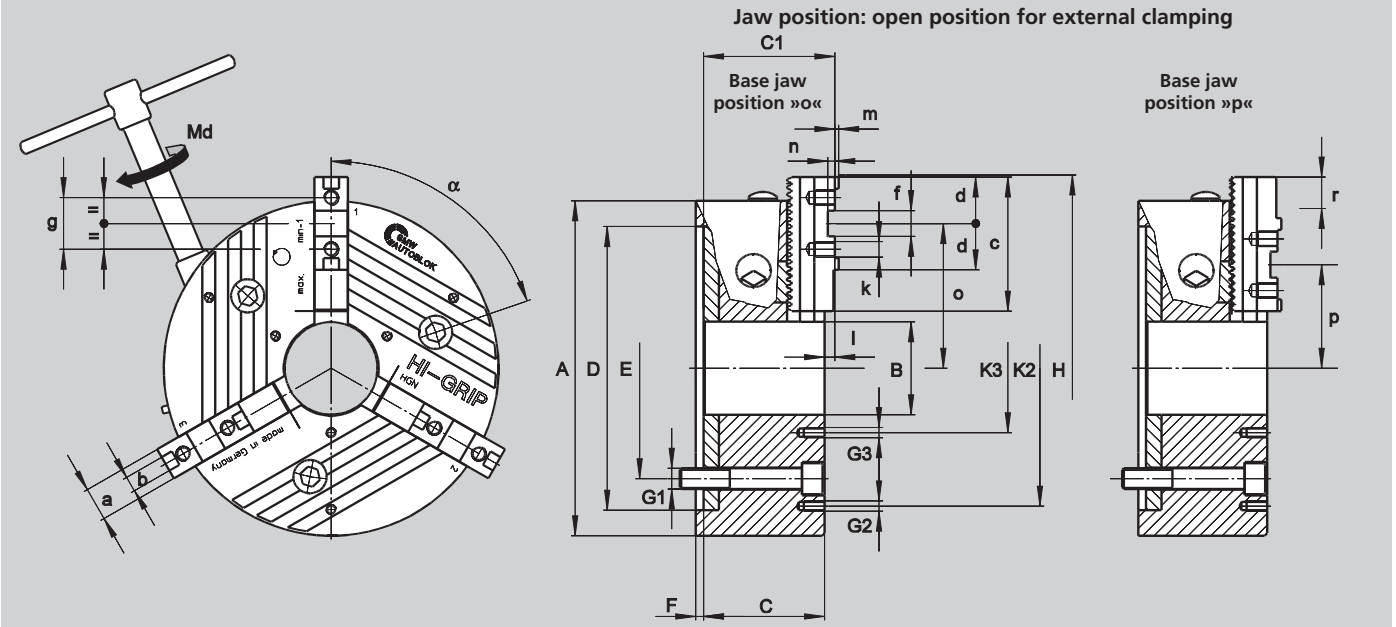
**For any problems or questions please contact SMW-AUTOBLOK directly or one of our authorized offices.**

# HG-N

**QUICK JAW CHANGE**
**Jaw system original SMW**

# Manual chucks Ø 160 - 630 mm

## Main dimensions and technical data

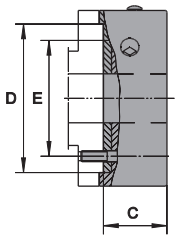



Subject to technical changes.
For more detailed information please ask for customer drawing.

| SMW-AUTOBLOK Type HG-N | | 160-46 | 210-60 | 260-81 | 315-102 | 400-128 | 500-165 | 630-254 |
|---|---|---|---|---|---|---|---|---|
| **Mounting** | **Size** | **Z140** | **Z170** | **Z220** | **Z300** | **Z380** | **Z380** | **Z380** |
| | **A** | 165 | 210 | 260 | 315 | 400 | 500 | 630 |
| | **B** | 46 | 60 | 81 | 102 | 128 | 165 | 254 |
| | **C** | 64 | 85.5 | 93.7 | 110.8 | 125 | 136 | 143 |
| | **C1** | 71 | 90.4 | 102 | 120.1 | 134.3 | 146 | 153 |
| H6 | **D** | 140 | 170 | 220 | 300 | 380 | 380 | 380 |
| | **E** | 104.8 | 133.4 | 171.4 | 235 | 330.2 | 330.2 | 330.2 |
| | **F** | 5 | 6 | 6 | 6 | 6 | 8 | 8 |
| | **G1** | M10 | M12 | M16 | M20 | M24 | M24 | M24 |
| | **G2** | - | M10/3 x 120° | M10/3 x 120° | M10/3 x 120° | M12/3 x 120° | M16/9 x 40° | M16/6 x 60° |
| | **G3** | M5/3 x 120° | M6/3 x 120° | M8/3 x 120° | M10/3 x 120° | M12/3 x 120° | M12/3 x 120° | M12/3 x 120° |
| Swing dia. | **H** | 194 | 244 | 300 | 358 | 426 | 530 | 685 |
| | **K2** | - | 168 | 210 | 268 | 330 | 420 | 550 |
| | **K3** | 75 | 75 | 95 | 120 | 152 | 195 | 290 |
| | **α°** | 76 | 74 | 71 | 71 | 71 | 71 | 74 |
| | **β°** | - | 60 | 60 | 60 | 60 | 20 | 30 |
| Master jaw | | GBK 160 | GBK 200 | GBK 250 | GBK 315 | GBK 400 | GBK 500 | GBK 630 |
| | **a** | 20 | 22 | 26 | 32 | 32 | 45 | 45 |
| f7 | **b** | 8 | 10 | 12 | 12 | 12 | 18 | 18 |
| | **c** | 65 | 85 | 104 | 115 | 125 | 160 | 200 |
| | **d** | 28 | 33 | 36 | 36 | 43 | 50 | 50 |
| H7 | **f** | 18 | 20 | 20 | 20 (26) | 26 | 30 | 30 |
| | **g** | 32 | 40 | 40 | 40 (54) | 54 | 60 | 60 |
| Thread/thread depth | **k** | M8/12 | M8/13 | M12/15 | M12/17 | M12/17 | M16/34 | M16/34 |
| | **l** | 6 | 4.9 | 8.3 | 9.3 | 9.3 | 10 | 10 |
| | **m** | 2.5 | 2.5 | 3 | 3 | 3 | 4 | 4 |
| | **n** | 5 | 4.5 | 5.5 | 6 | 7 | 9 | 9 |
| max./min. | **o** | 69/51.2 | 88/64.5 | 112.4/79.4 | 141.3/102.8 | 168.8/113.8 | 211/141 | 291.5/200.5 |
| max./min. | **p** | 59.3/40.5 | 69/45.5 | 80.6/47.6 | 97.3/58.8 | 129.8/74.8 | 150/80 | 191.5/100.5 |
| Base jaw tooth pitch | **-** | 4.7 | 4.7 | 5.5 | 5.5 | 5.5 | 7 | 7 |
| Master jaw offset | **r** | 18.8 | 23.5 | 33 | 38.5 | 55 | 70 | 91 |
| Master jaw offset | teeth | 4 | 5 | 6 | 7 | 10 | 10 | 10 |

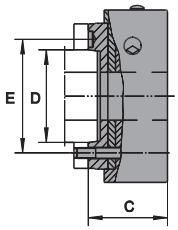
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Usable jaw stroke** | mm | 5.9 | 6.4 | 7.4 | 9.6 | 11.4 | 11.5 | 13 |
| **max. total gripping force** | kN | 60 | 75 | 130 | 180 | 220 | 250 | 250 |
| **at max. torque Md** | Nm | 80 | 120 | 160 | 200 | 250 | 260 | 260 |
| **Speed** | r.p.m. | 5500 | 4800 | 4200 | 3500 | 2700 | 1500 | 1500 |
| **Weight without jaws** | kg | 8.3 | 19 | 32 | 53 | 103 | 161 | 270 |
| **Moment of inertia** | kg·m² | 0.03 | 0.09 | 0.25 | 0.60 | 1.9 | 4.5 | 12 |

## Chuck with center mounting DIN 6350



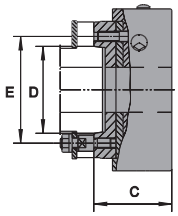

| HG-N | 160-46 | 210-60 | 260-81 | 315-102 | 400-128 | 500-165 | 630-254 |
|---|---|---|---|---|---|---|---|
| Mounting | Z140 | Z170 | Z220 | Z300 | Z380 | Z380 | Z380 |
| C | 81 | 85.5 | 94 | 111 | 125 | 136 | 136 |
| D | 140 | 170 | 220 | 300 | 380 | 380 | 380 |
| E | 104.8 | 133.4 | 171.4 | 235 | 330.2 | 330.2 | 330.2 |
| **Chuck with GBK + WAK** | | | | | | | |
| Id. No. | 089310 | 089538 | 089550 | 089562 | 089574 | 089584 | 089708 |
| **Chuck with GST** | | | | | | | |
| Id. No. | 089312 | 089313 | 089317 | 089321 | 089325 | 089328 | 089709 |
| **Chuck with GBK + GUA** | | | | | | | |
| Id. No. | 089331 | 089539 | 089551 | 089563 | 089575 | 089585 | 089710 |

## Chuck with ISO-A mounting DIN 55026



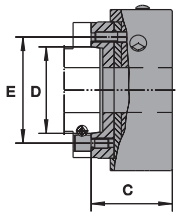

| HG-N | 160-46 | | 210-60 | | | 260-81 | | 315-102 | | 400-128 | | 500-165 | | 630-254 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mounting | A4 | A5 | A5 | A6 | A8 | A6 | A8 | A8 | A11 | A11 | A15 | A11 | A15 | A11 | A15 |
| C | 101 | 101 | 109.5 | 107.5 | 125.5 | 118 | 119 | 141 | 141 | 165 | 161 | 176 | 172 | 176 | 172 |
| D | 63.52 | 82.57 | 82.57 | 106.39 | 139.73 | 106.39 | 139.73 | 139.73 | 196.88 | 196.88 | 285.77 | 196.88 | 285.77 | 196.88 | 285.77 |
| E | 82.6 | 104.8 | 104.8 | 133.4 | 171.4 | 133.4 | 171.4 | 171.4 | 235.0 | 235.0 | 330.2 | 235.0 | 330.2 | 235.0 | 330.2 |
| **Chuck with GBK + WAK** | | | | | | | | | | | | | | | |
| Id. No. | 089332 | 089342 | 090458 | 089540 | 089542 | 089552 | 089554 | 089564 | 089566 | 089576 | 089578 | 089586 | 089588 | 089711 | 089713 |
| **Chuck with GST** | | | | | | | | | | | | | | | |
| Id. No. | 089962 | 089346 | 090459 | 089314 | 089315 | 089318 | 089319 | 089322 | 089323 | 089326 | 089327 | 089329 | 089330 | 089715 | 089732 |
| **Chuck with GBK + GUA** | | | | | | | | | | | | | | | |
| Id. No. | 089427 | 089434 | 090460 | 089541 | 089543 | 089553 | 089555 | 089565 | 089567 | 089577 | 089579 | 089587 | 089589 | 089749 | 089760 |

## Chuck with bayonet mounting DIN 55027 Type C




| HG-N | 160-46 | | 210-60 | | | 260-81 | | 315-102 | | 400-128 | | 500-165 | | 630-254 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mounting | C4 | C5 | C5 | C6 | C8 | C6 | C8 | C8 | C11 | C11 | C15 | C11 | C15 | C11 | C15 |
| C | 101 | 101 | 107.5 | 107.5 | 125.5 | 119 | 119 | 141 | 141 | 161 | 161 | 172 | 172 | 172 | 172 |
| D | 63.52 | 82.57 | 82.57 | 106.39 | 139.73 | 106.39 | 139.73 | 139.73 | 196.88 | 196.88 | 285.77 | 196.88 | 285.77 | 196.88 | 285.77 |
| E | 85 | 104.8 | 104.8 | 133.4 | 171.4 | 133.4 | 171.4 | 171.4 | 235.0 | 235.0 | 330.2 | 235.0 | 330.2 | 235.0 | 330.2 |
| **Chuck with GBK + WAK** | | | | | | | | | | | | | | | |
| Id. No. | 089464 | 089487 | 090461 | 089544 | 089546 | 089556 | 089558 | 089568 | 089570 | 089580 | 089582 | 089590 | 089592 | 089761 | 089762 |
| **Chuck with GST** | | | | | | | | | | | | | | | |
| Id. No. | 089488 | 089489 | 090462 | 089478 | 089479 | 089480 | 089476 | 089481 | 089482 | 089483 | 089484 | 089485 | 089486 | 089765 | 089766 |
| **Chuck with GBK + GUA** | | | | | | | | | | | | | | | |
| Id. No. | 089518 | 089519 | 090463 | 089545 | 089547 | 089557 | 089559 | 089569 | 089571 | 089581 | 089583 | 089591 | 089593 | 089786 | 089802 |

## Chuck with Camlock mounting DIN 55029 Type S




| HG-N | 160-46 | | 210-60 | | | 260-81 | | 315-102 | | 400-128 | | 500-165 | | 630-254 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mounting | S4 | S5 | S5 | S6 | S8 | S6 | S8 | S8 | S11 | S11 | S15 | S11 | S15 | S11 | S15 |
| C | 109 | 109 | 118.5 | 118.5 | 125.5 | 132 | 132 | 154 | 154 | 175 | 175 | 186 | 186 | 186 | 186 |
| D | 63.52 | 82.57 | 82.57 | 106.39 | 139.73 | 106.39 | 139.73 | 139.73 | 196.88 | 196.88 | 285.77 | 196.88 | 285.77 | 196.88 | 285.77 |
| E | 82.6 | 104.8 | 104.8 | 133.4 | 171.4 | 133.4 | 171.4 | 171.4 | 235.0 | 235.0 | 330.2 | 235.0 | 330.2 | 235.0 | 330.2 |
| **Chuck with GBK + WAK** | | | | | | | | | | | | | | | |
| Id. No. | 089520 | 089528 | 090464 | 089901 | 089905 | 089909 | 089913 | 089917 | 089921 | 089925 | 089929 | 089933 | 089937 | 089803 | 089832 |
| **Chuck with GST** | | | | | | | | | | | | | | | |
| Id. No. | 089602 | 089663 | 089996 | 089899 | 089903 | 089907 | 089911 | 089915 | 089919 | 089923 | 089927 | 089931 | 089935 | 089843 | 089897 |
| **Chuck with GBK + GUA** | | | | | | | | | | | | | | | |
| Id. No. | 089668 | 089674 | 090466 | 089902 | 089906 | 089910 | 089914 | 089918 | 089922 | 089926 | 089930 | 089934 | 089938 | 089942 | 089955 |

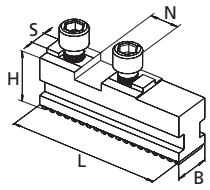
Parts included: Fixing elements (screws resp. studs resp. camlock bolts)

# HG-N

## QUICK JAW CHANGE

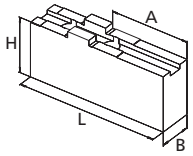
## JAWS

### GBK
**Hardened base jaws**



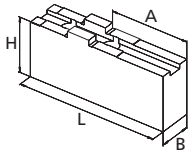

| Chuck | HG-N 160 | HG-N 210 | HG-N 260 | HG-N 315 | HG-N 400 | HG-N 500 | HG-N 630 |
|---|---|---|---|---|---|---|---|
| Jaw type | GBK 160 | GBK 200 | GBK 250 | GBK 315 | GBK 400 | GBK 500 | GBK 630 |
| Id. No. | 012439 | 012440 | 012441 | 012442 | 012443 | 012444 | 012445 |
| B | 20 | 22 | 26 | 32 | 32 | 45 | 45 |
| H | 27.5 | 29.5 | 37 | 43 | 43 | 57 | 57 |
| L | 65 | 85 | 104 | 115 | 125 | 160 | 200 |
| N | 18 | 20 | 20 | 20 | 26 | 30 | 30 |
| S | 8 | 10 | 12 | 12 | 12 | 18 | 18 |
| kg/set | 0.7 | 1.0 | 1.8 | 2.7 | 3.0 | 7.1 | 9.0 |

### WAK
**Soft top jaws**



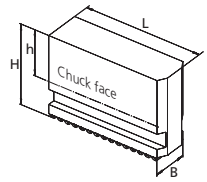

| Chuck | HG-N 160 | HG-N 210 | HG-N 260 | HG-N 315 | HG-N 400 | HG-N 500 | HG-N 630 |
|---|---|---|---|---|---|---|---|
| Jaw type | WAK 160-10 | WAK 200-10 | WAK 250-10 | WAK 250-10 | WAK 400-10 | WAK 500-10 | WAK 500-10 |
| Id. No. | 012491 | 012492 | 012493 | 012493 | 012494 | 012495 | 012495 |
| B | 20 | 22 | 30 | 30 | 35 | 50 | 50 |
| H | 35.5 | 42 | 50 | 50 | 54 | 75.5 | 75.5 |
| L | 85 | 105 | 125 | 125 | 145 | 180 | 180 |
| A | 42 | 50 | 70 | 70 | 74 | 100 | 100 |
| kg/set | 1.2 | 2.0 | 3.6 | 3.6 | 5.8 | 13.7 | 13.7 |

### WAKS
**Wide soft top jaws**



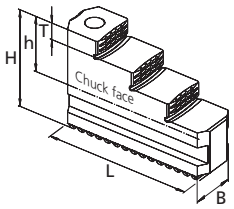

| Chuck | HG-N 160 | HG-N 210 | HG-N 260 | HG-N 315 | HG-N 400 | HG-N 500 | HG-N 630 |
|---|---|---|---|---|---|---|---|
| Jaw type | WAKS 140-10 | WAKS 200-30 | WAKS 250-20 | WAKS 250-30 | WAKS 400-30 | WAKS 500-30 | WAKS 500-30 |
| Id. No. | 012496 | 012497 | 012498 | 012499 | 012500 | 012501 | 012501 |
| B | 35 | 40 | 60 | 80 | 80 | 90 | 90 |
| H | 35.5 | 36 | 55 | 55 | 64 | 73 | 73 |
| L | 63 | 70 | 90 | 90 | 100 | 130 | 130 |
| A | 25 | 27 | 44 | 44 | 44 | 65 | 65 |
| kg/set | 1.5 | 1.9 | 6.2 | 8.5 | 11.0 | 16.4 | 16.4 |

### UVB
**Soft monoblock jaws**

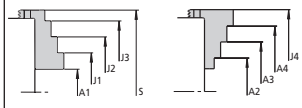



| Chuck | HG-N 160 | HG-N 210 | HG-N 260 | HG-N 315 | HG-N 400 | HG-N 500 | HG-N 630 |
|---|---|---|---|---|---|---|---|
| Jaw type | UVB 160 | UVB 200 | UVB 250 | UVB 315 | UVB 400 | UVB 500 | UVB 630 |
| Id. No. | 012447 | 012448 | 012449 | 012450 | 012451 | 012452 | 012453 |
| B | 20 | 22 | 26 | 32 | 32 | 45 | 45 |
| H | 60 | 70 | 90 | 100 | 100 | 134 | 134 |
| h | 39.4 | 45 | 61 | 66 | 66 | 87 | 87 |
| L | 69 | 83 | 108 | 119 | 146.5 | 175 | 230 |
| kg/set | 1.8 | 2.8 | 5.5 | 8.2 | 10 | 23 | 30 |

### GST
**Hardened stepped monoblock jaws**




**Clamping ranges**

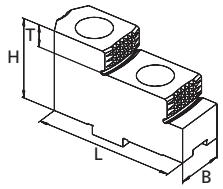



| Chuck | HG-N 160 | HG-N 210 | HG-N 260 | HG-N 315 | HG-N 400 | HG-N 500 | HG-N 630 |
|---|---|---|---|---|---|---|---|
| Jaw type | GST 170 | GST 210 | GST 260 | GST 315 | GST 400 | GST 500 | GST 500 |
| Id. No. | 035867 | 035863 | 037623 | 012457 | 012458 | 012459 | 012459 |
| B | 20 | 22 | 26 | 32 | 32 | 45 | 45 |
| H | 43.5 | 51 | 60 | 66 | 70 | 93 | 93 |
| h | 23 | 26 | 31 | 32 | 36 | 46 | 46 |
| L | 65 | 84 | 100 | 117 | 137 | 175 | 175 |
| T | 7 | 8 | 10 | 10 | 11 | 20 | 20 |
| kg/set | 0.7 | 1.3 | 1.9 | 3.4 | 4.4 | 11.7 | 11.7 |
| A1 | 6-59 | 10-96 | 10-98 | 20-115 | 53-173 | 65-195 | 153-313 |
| A2 | 42-89 | 56-130 | 62-150 | 85-180 | 116-238 | 160-285 | 241-401 |
| A3 | 73-120 | 96-170 | 111-200 | 140-235 | 184-308 | 310-435 | 391-551 |
| A4 | 104-151 | 136-210 | 161-250 | 195-290 | 252-378 | - | - |
| J1 | 44-78 | 70-147 | 63-149 | 80-170 | 118-243 | - | - |
| J2 | 74-110 | 109-187 | 112-199 | 135-225 | 186-310 | 170-295 | 254-414 |
| J3 | 105-141 | 149-228 | 161-249 | 190-282 | 253-378 | 320-445 | 404-564 |
| J4 | 135-182 | 186-260 | 212-300 | 255-350 | 328-448 | - | - |
| S | 198 | 244 | 303 | 350 | 456 | 540 | 660 |

# HG-N

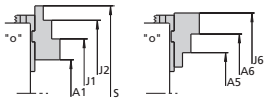
QUICK JAW CHANGE

**GUA**
**Hardened reversible stepped top jaws**

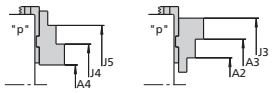



**Clamping ranges**

Base jaw position "o"




Base jaw position "p"




| Chuck | HG-N 160 | HG-N 210 | HG-N 260 | HG-N 315 | HG-N 400 | HG-N 500 | HG-N 630 |
|---|---|---|---|---|---|---|---|
| Jaw type | GUA 160 | GUA 200 | GUA 250 | GUA 250 | GUA 400 | GUA 500 | GUA 500 |
| Id. No. | 012484 | 012485 | 012486 | 012486 | 012487 | 012488 | 012488 |
| B | 20 | 22 | 30 | 30 | 36 | 45 | 45 |
| H | 36.5 | 38 | 50 | 50 | 56 | 70 | 70 |
| L | 63 | 72 | 90 | 90 | 105 | 130 | 130 |
| T | 7.5 | 10 | 14 | 14 | 15 | 20 | 20 |
| kg/set | 0.6 | 0.8 | 1.9 | 1.9 | 3.2 | 10.8 | 10.8 |
| A1 | 32-69 | 55-111 | 73-161 | 120-205 | 138-258 | 190-336 | 190-336 |
| A2 | 60-98 | 69-125 | 45-101 | 48-120 | 78-188 | 80-200 | 80-200 |
| A3 | 85-123 | 96-152 | 125-181 | 130-200 | 186-298 | 200-320 | 200-320 |
| A4 | 13-51 | 17-73 | 20-97 | 36-188 | 60-183 | 55-200 | 55-200 |
| A5 | 78-116 | 104-163 | 76-165 | 120-205 | 143-268 | 190-335 | 190-335 |
| A6 | 103-141 | 131-190 | 156-245 | 205-285 | 253-378 | 315-455 | 315-455 |
| J1 | 91-129 | 117-174 | 152-240 | 202-285 | 218-338 | 305-450 | 305-450 |
| J2 | 116-154 | 144-201 | 233-321 | 280-365 | 328-448 | 425-570 | 425-570 |
| J3 | 144-181 | 158-215 | 204-259 | 208-280 | 263-380 | 335-450 | 335-450 |
| J4 | 74-111 | 80-136 | 101-177 | 110-200 | 138-263 | 170-310 | 170-310 |
| J5 | 99-136 | 107-163 | 180-257 | 198-280 | 248-373 | 290-430 | 290-430 |
| J6 | 162-200 | 193-253 | 235-323 | 276-365 | 333-458 | 425-570 | 425-570 |
| S | 198 | 196-253/255 | 333 | 390 | - | 590 | 590 |

# Important for maintenance and safe operation, to be ordered with the chuck

## Grease K05®

**Special grease for manual and power chucks**

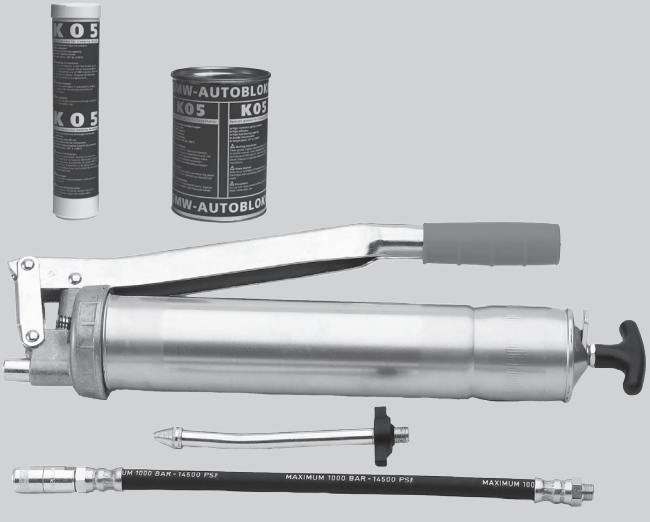
**Cartridge 14 Oz. (DIN 1284)**
**Grease content 500 g**
**Id. No. 016440**

**Can 1000 g**
**Id. No. 011881**

- High adhesion
- High resistance against coolant
- High load bearing capacity
- Low friction coefficient
- High gripping force
- Avoids tribocorrosion

## Grease gun

**Grease gun (DIN 1283) for cartridges 14 Oz. (DIN 1284).**
**■ Also refillable from grease can 1000 g.**



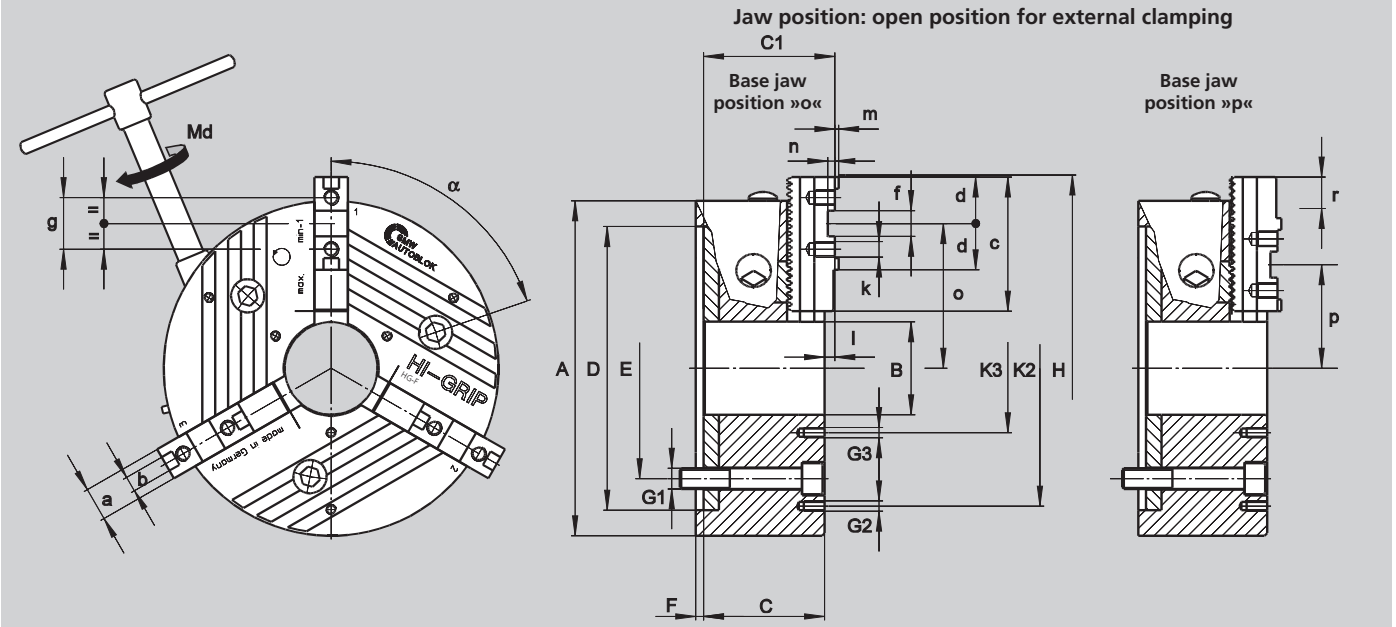

**Lubrication set Id. No. 083726**
Supply range
- Grease gun
- 1 Adapter flexible for high pressure grease nipple
- 1 Adapter for cone grease nipple

# HG-F

**QUICK JAW CHANGE**
**Jaw system Forkardt**

## Manual chucks Ø 160 - 400 mm

### Main dimensions and technical data

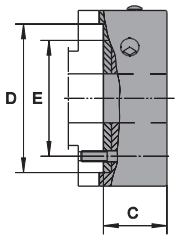



Subject to technical changes.
For more detailed information please ask for customer drawing.

| SMW-AUTOBLOK Type HG-F | | 160-46 | 210-60 | 260-81 | 315-102 | 400-128 |
|---|---|---|---|---|---|---|
| **Mounting** | **Size** | **Z140** | **Z170** | **Z220** | **Z300** | **Z380** |
| | **A** | 165 | 210 | 260 | 315 | 400 |
| | **B** | 46 | 60 | 81 | 102 | 128 |
| | **C** | 64 | 85.5 | 94 | 111 | 132 |
| | **C1** | 71 | 92.7 | 101.7 | 120.1 | 141.9 |
| H6 | **D** | 140 | 170 | 220 | 300 | 380 |
| | **E** | 104.8 | 133.4 | 171.4 | 235 | 330.2 |
| | **F** | 5 | 6 | 6 | 6 | 6 |
| | **G1** | M10 | M12 | M16 | M20 | M24 |
| | **G2** | - | M10/3 x 120° | M10/3 x 120° | M10/3 x 120° | M12/3 x 120° |
| | **G3** | M5/3 x 120° | M6/3 x 120° | M8/3 x 120° | M10/3 x 120° | M12/3 x 120° |
| Swing dia. | **H** | 195 | 250 | 300 | 372 | 492 |
| | **K2** | - | 168 | 210 | 268 | 330 |
| | **K3** | 75 | 75 | 95 | 120 | 160 |
| | **α°** | 68 | 64 | 66 | 65.5 | 64.5 |
| | **β°** | - | 60 | 60 | 55 | 45 |
| Master jaw | | MFG 160 | MFG 200 | MFG 250 | MFG 315 | MFG 400 |
| | **a** | 20 | 22 | 26 | 32 | 45 |
| f7 | **b** | 8 | 10 | 12 | 12 | 18 |
| | **c** | 74 | 90 | 110 | 125 | 160 |
| | **d** | 28 | 33 | 36 | 36 | 50 |
| H7 | **f** | 18 | 20 | 20 | 26 | 30 |
| | **g** | 32 | 40 | 40 | 54 | 60 |
| Thread/thread depth | **k** | M8x1/12 | M8x1/13 | M12x1.5/15 | M12x1.5/17 | M16/30 |
| | **l** | 6 | 7.2 | 7.7 | 9.3 | 9.9 |
| | **m** | 2.5 | 3 | 3 | 3 | 4 |
| | **n** | 5 | 6 | 6 | 8 | 9 |
| max./min. | **o** | 69.5/55.1 | 86.5/62 | 112.2/82.4 | 149/93 | 193.6/125.6 |
| max./min. | **p** | 51.5/37.1 | 67.3/42.8 | 74.3/44.3 | 103/54 | 134.3/66.3 |
| Base jaw tooth pitch | **-** | 4.8 | 4.9 | 6 | 7 | 8.5 |
| Master jaw offset | **r** | 14.4 | 24.5 | 30 | 56 | 68 |
| Master jaw offset | teeth | 3 | 5 | 5 | 8 | 8 |

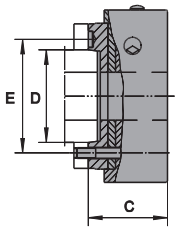
| | | | | | | |
|---|---|---|---|---|---|---|
| **Usable jaw stroke** | mm | 5.9 | 6.2 | 7.4 | 9.6 | 11.4 |
| **max. total gripping force** | kN | 60 | 75 | 130 | 180 | 220 |
| **at max. torque Md** | Nm | 80 | 120 | 160 | 200 | 250 |
| **Speed** | r.p.m. | 5500 | 4800 | 4200 | 3500 | 2700 |
| **Weight without jaws** | kg | 8.3 | 19 | 32 | 53 | 103 |
| **Moment of inertia** | kg·m² | 0.03 | 0.09 | 0.25 | 0.60 | 1.9 |

## Chuck with center mounting DIN 6350



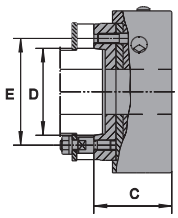

| HG-F | 160-46 | 210-60 | 260-81 | 315-102 | 400-128 |
|---|---|---|---|---|---|
| Mounting | Z140 | Z170 | Z220 | Z300 | Z380 |
| C | 64 | 85.5 | 94 | 111 | 132 |
| D | 140 | 170 | 220 | 300 | 380 |
| E | 104.8 | 133.4 | 171.4 | 235 | 330.2 |
| **Chuck with MFG + WAK** | | | | | |
| Id. No. | 090521 | 090026 | 090058 | 090090 | 090122 |
| **Chuck with FST** | | | | | |
| Id. No. | 090523 | 090028 | 090060 | 090092 | 090124 |
| **Chuck with MFG + GUA** | | | | | |
| Id. No. | 090522 | 090027 | 090059 | 090091 | 090123 |

## Chuck with ISO-A mounting DIN 55026



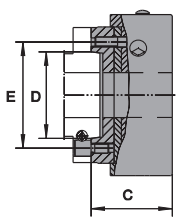

| HG-F | 160-46 | | 210-60 | | | 260-81 | | 315-102 | | 400-128 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mounting | A4 | A5 | A5 | A6 | A8 | A6 | A8 | A8 | A11 | A11 | A15 |
| C | 84 | 79 | 109.5 | 107.5 | 125.5 | 118 | 119 | 141 | 141 | 168 | 168 |
| D | 63.51 | 82.56 | 82.56 | 106.39 | 139.73 | 106.39 | 139.73 | 139.73 | 196.88 | 196.88 | 285.77 |
| E | 82.6 | 104.8 | 104.8 | 133.4 | 171.4 | 133.4 | 171.4 | 171.4 | 235.0 | 235.0 | 330.2 |
| **Chuck with MFG + WAK** | | | | | | | | | | | |
| Id. No. | 090524 | 090527 | 090543 | 090030 | 090034 | 090062 | 090066 | 090094 | 090098 | 090126 | 090130 |
| **Chuck with FST** | | | | | | | | | | | |
| Id. No. | 090526 | 090529 | 090545 | 090032 | 090036 | 090064 | 090068 | 090096 | 090100 | 090128 | 090132 |
| **Chuck with MFG + GUA** | | | | | | | | | | | |
| Id. No. | 090525 | 090528 | 090544 | 090031 | 090035 | 090063 | 090067 | 090095 | 090099 | 090127 | 090131 |

## Chuck with bayonet mounting DIN 55027 Type C




| HG-F | 160-46 | | 210-60 | | | 260-81 | | 315-102 | | 400-128 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mounting | C4 | C5 | C5 | C6 | C8 | C6 | C8 | C8 | C11 | C11 | C15 |
| C | 84 | 84 | 107.5 | 107.5 | 125.5 | 119 | 119 | 141 | 141 | 168 | 168 |
| D | 63.51 | 82.56 | 82.56 | 106.39 | 139.73 | 106.39 | 139.73 | 139.73 | 196.88 | 196.88 | 285.77 |
| E | 85 | 104.8 | 104.8 | 133.4 | 171.4 | 133.4 | 171.4 | 171.4 | 235.0 | 235.0 | 330.2 |
| **Chuck with MFG + WAK** | | | | | | | | | | | |
| Id. No. | 090530 | 090533 | 090546 | 090038 | 090042 | 090070 | 090074 | 090102 | 090106 | 090134 | 090138 |
| **Chuck with FST** | | | | | | | | | | | |
| Id. No. | 090532 | 090535 | 090548 | 090040 | 090044 | 090072 | 090076 | 090104 | 090108 | 090136 | 090140 |
| **Chuck with MFG + GUA** | | | | | | | | | | | |
| Id. No. | 090531 | 090534 | 090547 | 090039 | 090043 | 090071 | 090075 | 090103 | 090107 | 090135 | 090139 |

## Chuck with camlock mounting DIN 55029 Type S




| HG-F | 160-46 | | 210-60 | | | 260-81 | | 315-102 | | 400-128 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mounting | S4 | S5 | S5 | S6 | S8 | S6 | S8 | S8 | S11 | S11 | S15 |
| C | 92 | 92 | 118.5 | 118.5 | 125.5 | 132 | 132 | 154 | 154 | 182 | 182 |
| D | 63.51 | 82.56 | 82.56 | 106.39 | 139.73 | 106.39 | 139.73 | 139.73 | 196.88 | 196.88 | 285.77 |
| E | 82.6 | 104.8 | 104.8 | 133.4 | 171.4 | 133.4 | 171.4 | 171.4 | 235.0 | 235.0 | 330.2 |
| **Chuck with MFG + WAK** | | | | | | | | | | | |
| Id. No. | 090536 | 090539 | 090549 | 090046 | 090050 | 090078 | 090082 | 090110 | 090114 | 090142 | 090146 |
| **Chuck with FST** | | | | | | | | | | | |
| Id. No. | 090538 | 090541 | 090551 | 090048 | 090052 | 090080 | 090084 | 090112 | 090116 | 090144 | 090148 |
| **Chuck with MFG + GUA** | | | | | | | | | | | |
| Id. No. | 090537 | 090540 | 090550 | 090047 | 090051 | 090079 | 090083 | 090111 | 090115 | 090143 | 090147 |

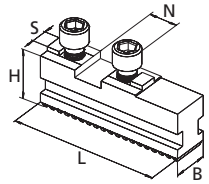
Parts included: Fixing elements (screws resp. studs resp. camlock bolts)

# HG-F

**QUICK JAW CHANGE**
**Jaw system Forkardt**

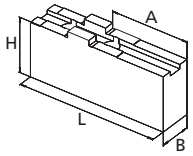
## JAWS

### MFG
**Hardened base jaws**



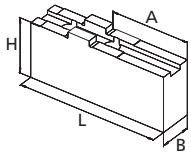

| Chuck | HG-F 160 | HG-F 210 | HG-F 260 | HG-F 315 | HG-F 400 |
|---|---|---|---|---|---|
| Jaw type | MFG 160 | MFG 200 | MFG 250 | MFG 315 | MFG 400 |
| Id. No. | 081303 | 081304 | 081305 | 081306 | 081307 |
| B | 20 | 22 | 26 | 32 | 45 |
| H | 29.5 | 35 | 40 | 46 | 55 |
| L | 74 | 90 | 110 | 125 | 160 |
| N | 18 | 20 | 20 | 26 | 30 |
| S | 8 | 10 | 12 | 12 | 18 |
| kg/set | 0.8 | 1.2 | 2.0 | 3.3 | 7.3 |

### WAK
**Soft top jaws**



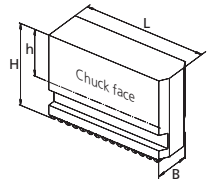

| Chuck | HG-F 160 | HG-F 210 | HG-F 260 | HG-F 315 | HG-F 400 |
|---|---|---|---|---|---|
| Jaw type | WAK 160-10 | WAK 200-10 | WAK 250-10 | WAK 400-10 | WAK 500-10 |
| Id. No. | 012491 | 012492 | 012493 | 012494 | 012495 |
| B | 20 | 22 | 30 | 35 | 50 |
| H | 35.5 | 42 | 50 | 54 | 75.5 |
| L | 85 | 105 | 125 | 145 | 180 |
| A | 42 | 50 | 70 | 74 | 100 |
| kg/set | 1.2 | 2.0 | 3.6 | 5.8 | 13.7 |

### WAKS
**Wide soft top jaws**



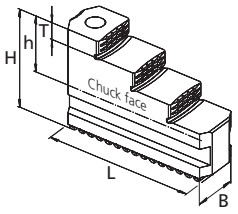

| Chuck | HG-F 160 | HG-F 210 | HG-F 260 | HG-F 315 | HG-F 400 |
|---|---|---|---|---|---|
| Jaw type | WAKS 140-10 | WAKS 200-30 | WAKS 250-20 | WAKS 400-30 | WAKS 500-30 |
| Id. No. | 012496 | 012497 | 012498 | 012500 | 012501 |
| B | 35 | 40 | 60 | 80 | 90 |
| H | 35.5 | 36 | 55 | 64 | 73 |
| L | 63 | 70 | 90 | 100 | 130 |
| A | 25 | 27 | 44 | 44 | 65 |
| kg/set | 1.5 | 1.9 | 6.2 | 11.0 | 16.4 |

### BFR
**Soft monoblock jaws**

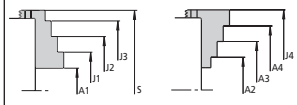



| Chuck | HG-F 160 | HG-F 210 | HG-F 260 | HG-F 315 | HG-F 400 |
|---|---|---|---|---|---|
| Jaw type | BFR 160 | BFR 200 | BFR 250 | BFR 315 | BFR 400 |
| Id. No. | 081272 | 081273 | 081274 | 081275 | 081276 |
| B | 20 | 22 | 26 | 32 | 45 |
| H | 45 | 60 | 70 | 81 | 93 |
| h | 24 | 35 | 40 | 46 | 45 |
| L | 79 | 94 | 115 | 140 | 176 |
| kg/set | 1.4 | 2.6 | 4.4 | 7.4 | 15.4 |

### FST
**Hardened stepped monoblock jaws**




**Clamping ranges**

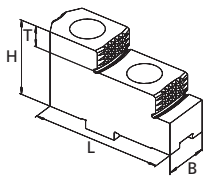



| Chuck | HG-F 160 | HG-F 210 | HG-F 260 | HG-F 315 | HG-F 400 |
|---|---|---|---|---|---|
| Jaw type | FST 170 | FST 210 | FST 250 | FST 315 | FST 400 |
| Id. No. | 081282 | 081283 | 081284 | 081285 | 081286 |
| B | 20 | 22 | 26 | 32 | 45 |
| H | 45 | 60 | 70 | 79 | 93 |
| h | 24 | 35 | 40 | 46 | 53 |
| L | 79 | 94 | 114 | 130 | 167 |
| T | 7.5 | 1.0 | 14 | 15 | 20 |
| kg/set | 1.1 | 1.9 | 3.3 | 5.2 | 10.8 |
| A1 | 6-59 | 10-96 | 19-99 | 20-115 | 48-173 |
| A2 | 42-89 | 56-130 | 76-142 | 85-180 | 116-238 |
| A3 | 73-120 | 96-170 | 120-186 | 140-235 | 184-308 |
| A4 | 104-151 | 136-210 | 164-230 | 195-290 | 252-378 |
| J1 | 44-78 | 70-147 | 81-147 | 80-170 | 118-243 |
| J2 | 74-110 | 109-187 | 125-191 | 135-225 | 186-310 |
| J3 | 105-141 | 149-228 | 169-235 | 190-282 | 253-378 |
| J4 | 135-182 | 186-260 | 211-278 | 255-350 | 328-448 |
| S | 198 | 244 | 280 | 350 | 456 |

# HG-F

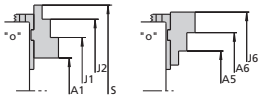
**QUICK JAW CHANGE**
**Jaw system Forkardt**

**GUA**
**Hardened reversible stepped top jaws**

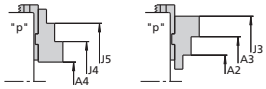



**Clamping ranges**

Base jaw position "o"




Base jaw position "p"




| Chuck | HG-F 160 | HG-F 210 | HG-F 260 | HG-F 315 | HG-F 400 |
|---|---|---|---|---|---|
| Jaw type | GUA 160 | GUA 200 | GUA 250 | GUA 400 | GUA 500 |
| Id. No. | 012484 | 012485 | 012486 | 012487 | 012488 |
| B | 20 | 22 | 30 | 36 | 45 |
| H | 36.5 | 38 | 50 | 56 | 70 |
| L | 63 | 72 | 90 | 105 | 130 |
| T | 7.5 | 10 | 14 | 15 | 20 |
| kg/set | 0.6 | 0.8 | 1.9 | 3.2 | 10.8 |
| A1 | 32-69 | 55-111 | 73-161 | 64-194 | 108-264 |
| A2 | 60-98 | 69-125 | 45-101 | 44-108 | 70-158 |
| A3 | 85-123 | 96-152 | 125-181 | 156-220 | 171-259 |
| A4 | 13-51 | 17-73 | 20-97 | 22-100 | 24-146 |
| A5 | 78-116 | 104-163 | 76-165 | 72-202 | 121-277 |
| A6 | 103-141 | 131-190 | 156-245 | 134-314 | 222-378 |
| J1 | 91-129 | 117-174 | 152-240 | 140-270 | 223-379 |
| J2 | 116-154 | 144-201 | 233-321 | 256-382 | 324-480 |
| J3 | 144-181 | 158-215 | 204-259 | 323-296 | 286-374 |
| J4 | 74-111 | 80-136 | 101-177 | 93-176 | 138-260 |
| J5 | 99-136 | 107-163 | 180-257 | 210-288 | 239-361 |
| J6 | 162-200 | 193-253 | 235-323 | 260-390 | 336-492 |
| S | 198 | 196-253/255 | 333 | 372 | 492 |

# Important for maintenance and safe operation, to be ordered with the chuck

## Grease K05®

**Special grease for manual and power chucks**

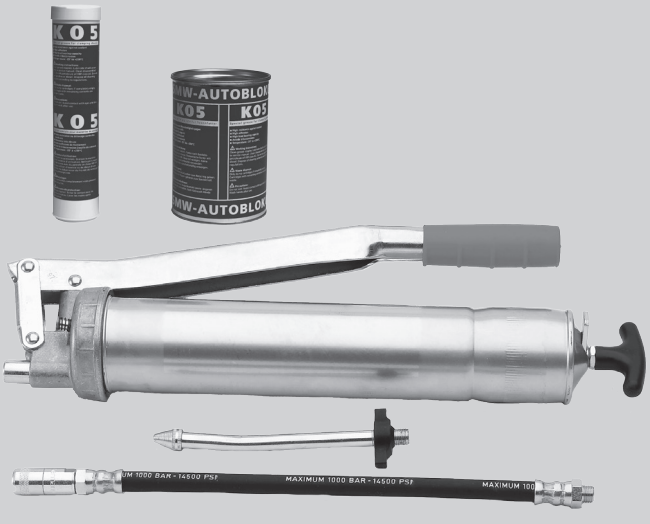
**Cartridge 14 Oz. (DIN 1284)**
**Grease content 500 g**
**Id. No. 016440**

**Can 1000 g**
**Id. No. 011881**

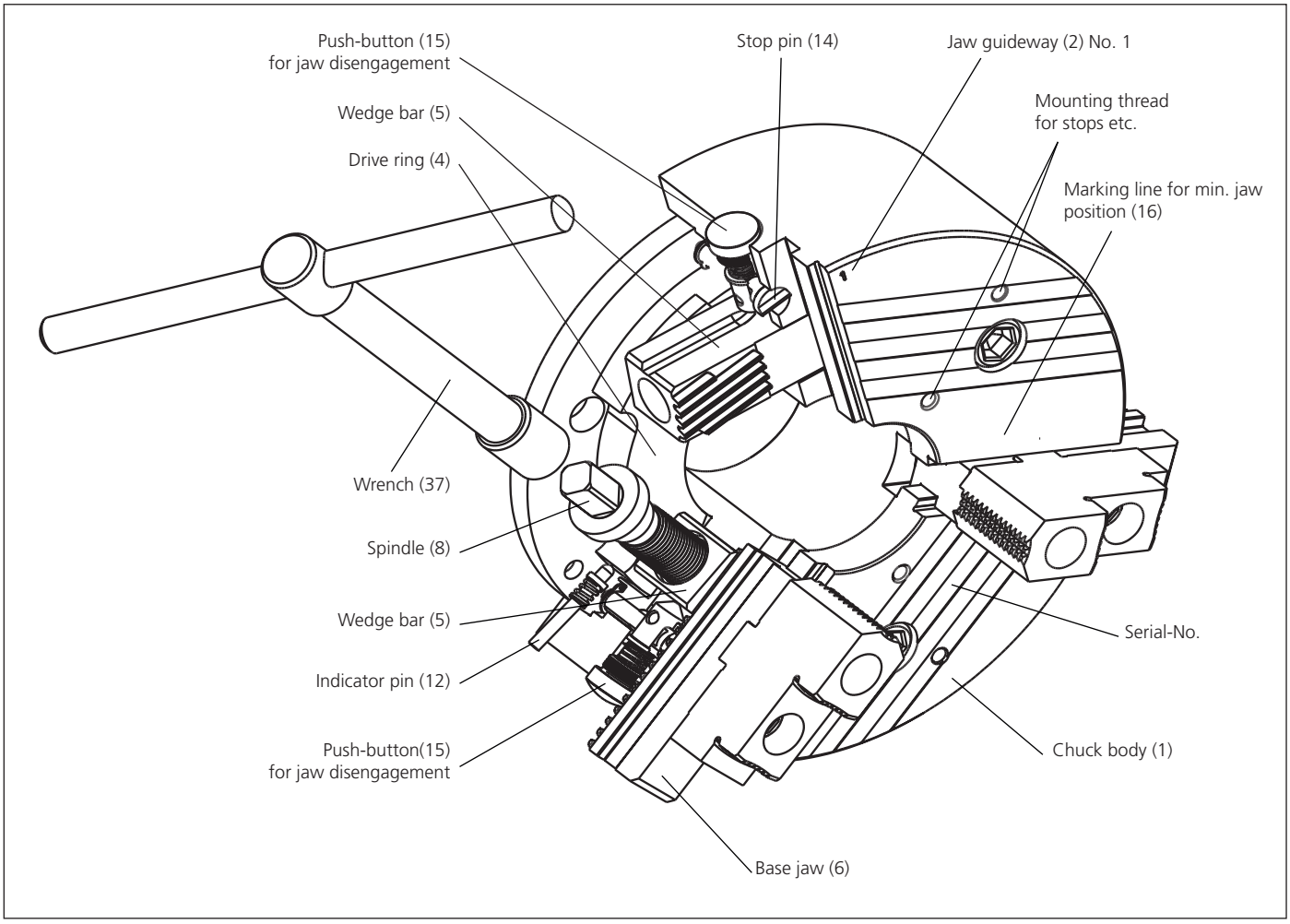
- High adhesion
- High resistance against coolant
- High load bearing capacity
- Low friction coefficient
- High gripping force
- Avoids tribocorrosion

## Grease gun

**Grease gun (DIN 1283) for cartridges 14 Oz. (DIN 1284).**
**■ Also refillable from grease can 1000 g.**




**Lubrication set Id. No. 083726**
Supply range
- Grease gun
- 1 Adapter flexible for high pressure grease nipple
- 1 Adapter for cone grease nipple

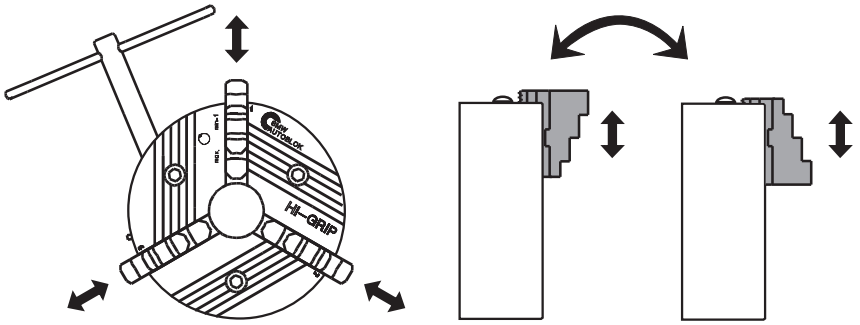

Push-button (15)
for jaw disengagement
Stop pin (14)
Jaw guideway (2) No. 1
Mounting thread
for stops etc.
Wedge bar (5)
Drive ring (4)
Marking line for min. jaw
position (16)
Wrench (37)
Spindle (8)
Wedge bar (5)
Serial-No.
Indicator pin (12)
Push-button(15)
for jaw disengagement
Chuck body (1)
Base jaw (6)

## HI-GRIP (HG-N / HG-F)

The precision manual chuck type HI-GRIP HG is designed for flexible manufacturing on NC-lathes.
The unique wedge bar design guarantees highest gripping forces, repeatability, a constant high concentricity and a quick jaw change with accurate repositioning and reversing the jaws.

**Function of the wedge bar drive**
HG chucks are equipped with a wedge bar drive.
The 3 wedge bars (5) in the chuck body are connected with the drive ring (4). The wedge bars are tangentially moved by the spindle 8) in a wedge angle to the jaw guideways (2). The serration of the wedge bars (5) is engaged into the serration of the base jaws (6) and drives the base jaws (6) in radial direction.

**Jaw change / repositioning of jaws**
By turning the wrench (37) counter-clockwise until the stop the wedge bars are tangentially shifted that the base jaw - wedge bar connection is released. The stop pin is retracted by actuating the push-button (15). The jaw (6) can be removed or re-positioned.
The position of the wedge bars (5) is controlled via the indicator pin (12). If less than 60 % of the serration is engaged the indicator pin (12) is protruding from the chuck body. Turn the wrench (37) clockwise until the indicator pin is no more protruding. The chuck is now ready for clamping and workpieces can be clamped.

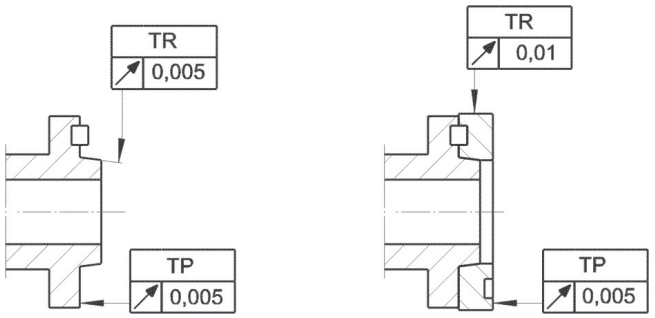



**Jaw changing / repositioning / reversing**

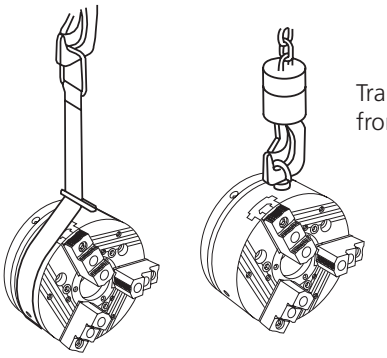
**Never clamp or rotate the chuck with the indicator pin protruding!**

**When inserting jaws please insert jaw at least to the marking (16) to ensure full engagement of the serration for a safe operation.**

## 1 Check spindle nose

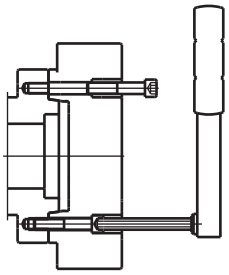



## 2 Use mounting belt for safe mounting



Transportation thread from size 260

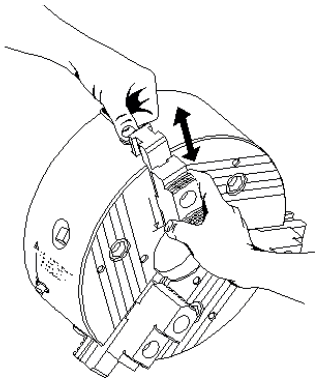
## 3 Mounting of chuck



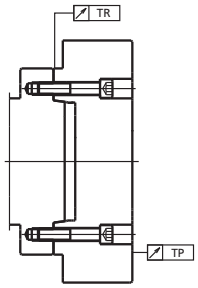
Tighten bolts one after another with torque wrench

| Bolt 10.9 ISO 4762 | M10 | M12 | M16 | M20 | M24 |
|---|---|---|---|---|---|
| Tigthening torque Md (Nm) | 48 | 70 | 170 | 300 | 500 |

## 4 Check easy movement of jaws

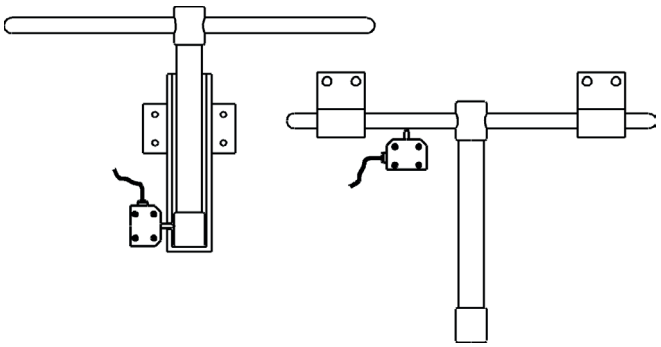


## 5 Check radial and face runout




| HG-N / HG-F | 160 - 210 | 260 - 400 | 500 - 630 |
|---|---|---|---|
| TR | 0.02 | 0.03 | 0.05 |
| TP | 0.02 | 0.03 | 0.05 |

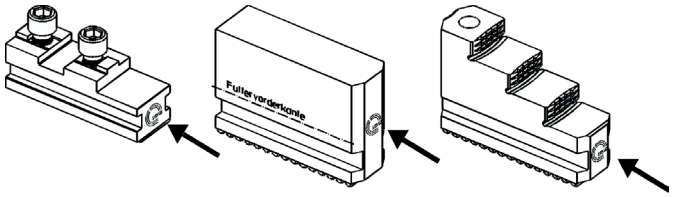
## 6 Electrically protection against spindle start. Spindle may only start when key is in the key box



**According to DIN/EN 1550 the machine must be electrically locked against spindle start while if the wrench is still in the chuck. Spindle may start after key is in the key box/key holder only.**

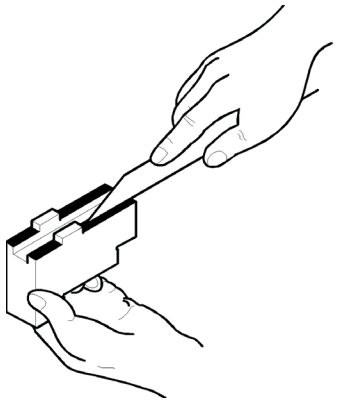
### Mounting of top jaws on master jaws GBK

**1**



**Use original SMW-Autoblok jaws only!**
They are marked on their face with the logo.

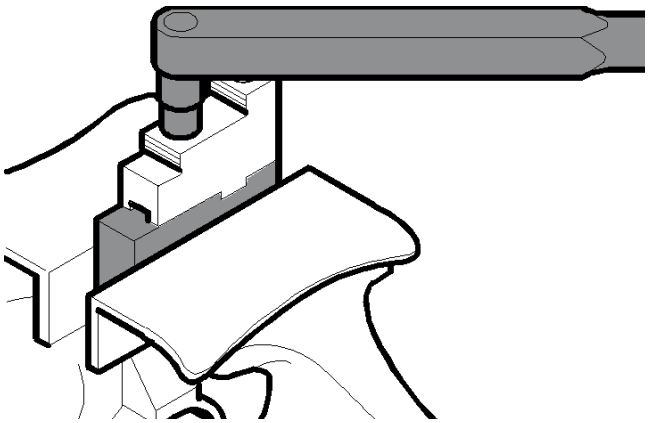
**2**



**Mounting surfaces of the top jaws must be straight and on the same level. Otherwise the master jaw gets distorted and locks in the quideway.**

**3**

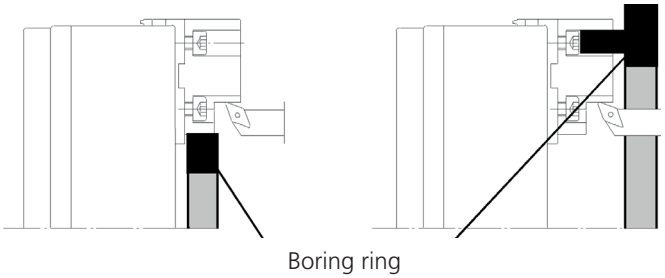
**Use mounting bolts 12.9 ISO 4762 only.**
**Always check correct length of thread engagement!**
**Use torque wrench and tighen one after another.**
**Do not exceed torque (Md) otherwise master jaw gets distortet.**



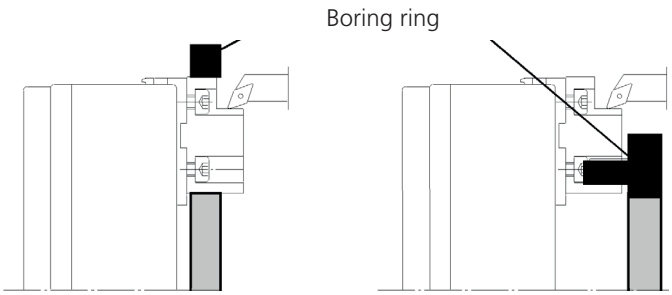
| HG-N / HG-F | 160 | 210 | 260 | 315 | 400 | 500 | 630 |
|---|---|---|---|---|---|---|---|
| Bolt | M8 | M8 | M12 | M12 | M12 | M16 | M16 |
| Md (Nm) | 35 | 35 | 65 | 65 | 65 | 200 | 200 |
| length of thread engagement | $11^{+1}$ | $11^{+1}$ | $15^{+2}$ | $15^{+2}$ | $15^{+2}$ | $20^{+2}$ | $20^{+2}$ |

**Jaws of other manufacturers:**
- **Safety risks due to wrong material or heat treatment**
- **Danger of damage of your HG-N / HG-F chuck due to wrong dimensions / tolerances**
- **No warranty from SMW-AUTOBLOK**

### Boring of soft jaws




O.D. clamping

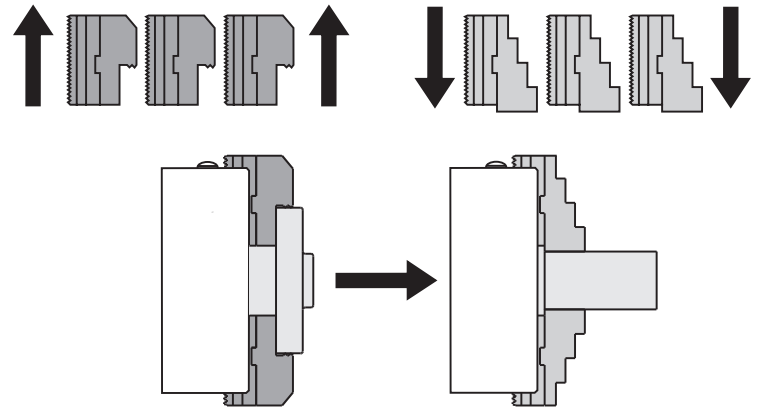



I.D. clamping

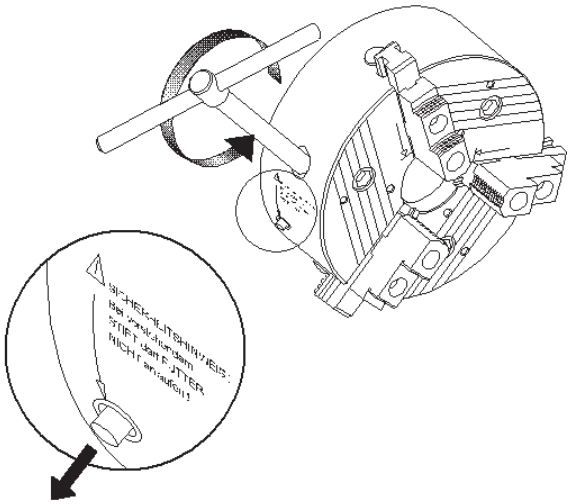
### TIP

- Always tighten bolts of top jaws with torque wrench.
- Boring ring must be gripped as close to the gripping area as possible.
- Never grip boring ring with master jaws.
- Always machine top jaws under gripping force. Use rigid boring ring.
- For repeating jobs store top jaws with master jaws as one unit.

## Changing or re-positioning of the jaws

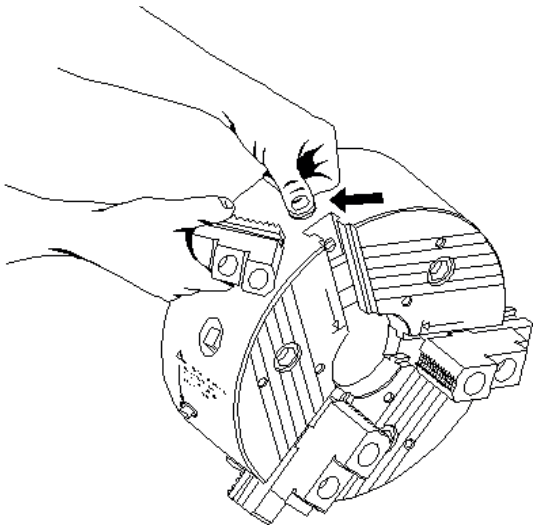


**1**



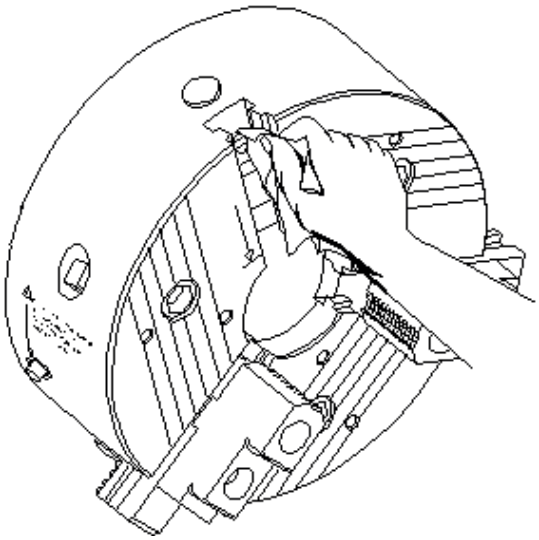
Turn key counter-clockwise until stop. Indicator pin is protruding = jaw change position is achieved.

**2**



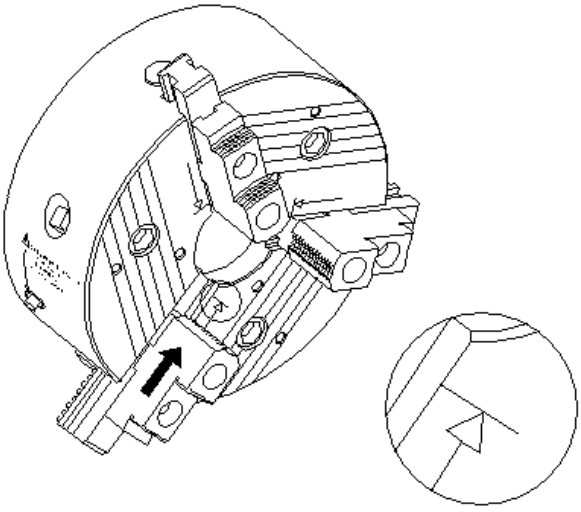
Press push-button for jaw disengaging and remove / reposition / insert new jaw.

**3**



Clean jaw guideway and lubricate. Lubricate new jaw set in the guideway and in the serration.

**4**



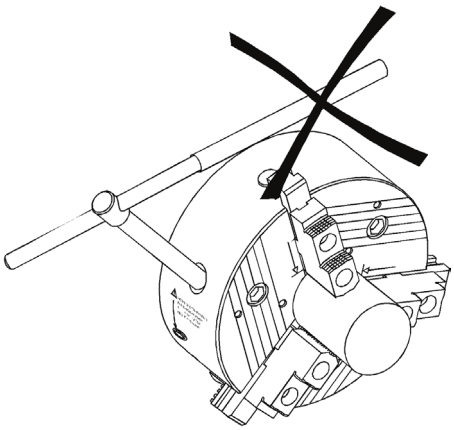
**Insert jaw min. as far to the marking line that the complete serration of the wedge bar / jaw is engaged!**

## 5

**For changing / re-positioning jaw No. 2 and jaw No. 3 repeat steps 2-4**

To ensure highest repeatability please note:
Insert jaw 1 in guideway 1, jaw 2 in guideway 2 etc.

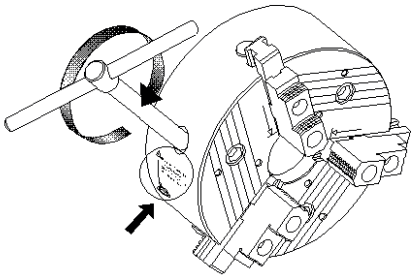
## 7

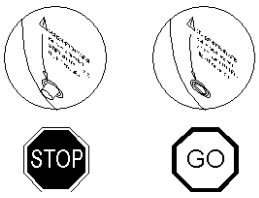


- **Never use an extension during clamping!**
- **Do not exceed max. torque!**
- **Remove wrench immediately!**

| HG-N / HG-F | 160 | 210 | 260 | 315 | 400 | 500 | 630 |
|---|---|---|---|---|---|---|---|
| Wrench Mdmax (Nm) | 80 | 120 | 160 | 200 | 250 | 260 | 260 |

## 6






**Turn wrench clockwise until indicator pin is no more protruding. Chuck is ready for clamping and workpieces can be clamped.**

## 8

**Please check before spindle start:**

**Insert jaw at least to the marking line!** ✓

**Never rotate the chuck with the indicator pin protruding!** ✓

**Always remove wrench!** ✓

**Workpiece must be clamped safely!** ✓

⚠ Regular maintenance is the basis for correct function, high service life, precision and clamping force of the clamping chuck.

⚠ Check gripping force regularly with gripmeter (GFT-X)!

⚠ Never use coolants which dissolve the grease!

| Maintenance intervals at normal conditions / using coolant | | |
|---|---|---|
| Measurement | Lubricate with K05 grease | Disassemble + clean |
| after operating hours | 20 | 1000 |

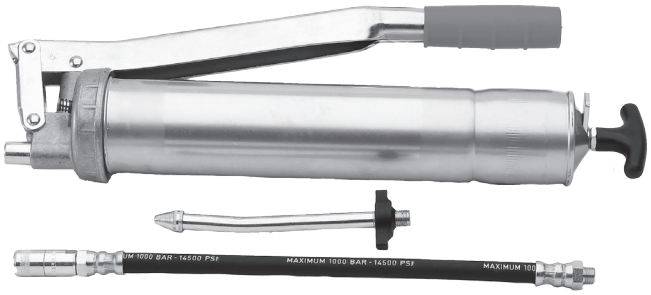
| Maintenance intervals at rough conditions / using coolant | | |
|---|---|---|
| Measurement | Lubricate with K05 grease | Disassemble + clean |
| after operating hours | 8 | 600 |

**Cartridge** 500 g
Id.No. 016440

**Can** 1000 g
Id.No. 011881

⚠ **Use original SMW-AUTOBLOK K05 grease!**
**The use of unsuitable lubricants can cause considerable losses in clamping force or damage to the clamping chuck.**

**Lubrication set**
Id.No. 083726



**Grease gun for 14 Oz. cartridges to DIN 1284.**
(also refillable from grease can 1000 g.)

⚠ **IMPORTANT:**
**Important advise for operator and service staff!**
Certain coolants (mainly synthetic coolants) can affect or destroy the grease type K05 and/or the sealings of the chuck.
This can cause damage of the chuck and loss of clamping force!
This causes danger for the operator! The operation of the chuck under these conditions is not permitted.

**It is under the responsibility of the operator and/or service staff** to check this and if necessary to use a different type of coolant or grease.

⚠ **ATTENTION:**
**Environment protection**
**Danger for environment when handling incorrect!**
Incorrect handling of environment hazardous materials, especially the disposal, may result in environmental damage.

- Always follow below instructions.
- In case environmentally hazardous material polluted the environment always take suitable actions immediately. If in doubt, inform the local authority about the pollution.

The following hazardous materials are used:
Lubricants such as oil and grease can contain poisonous agents. They must not pollute the environment. The disposal must be carried out by a suitable waste management company.
For a proper function of the work holding, use original SMW-AUTOBLOK lubricant only.

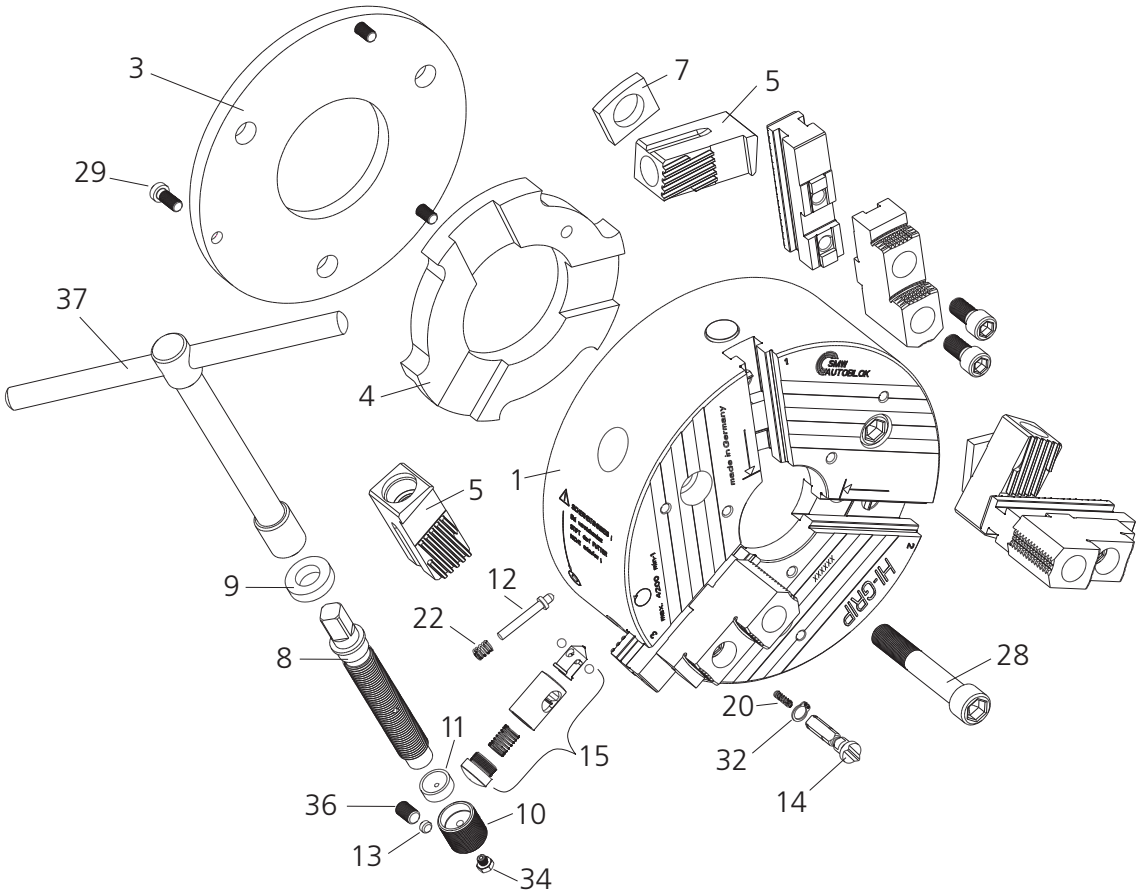
# Notes

## Disassembling

1. Remove clamping jaws from chuck.
2. Disassemble chuck from machine and put on work bench with frontside down.
3. Remove screws (29) and cover (3).
4. Remove drive ring (4), sliding pads (7), 2 wedge bars (5) (without thread) from chuck.
5. Disassemble indicator pin (12) with spring (22).
6. Remove springs (20) from stop pin bore (14).
7. Remove threaded pin (36) and copper bolt (13).
8. Remove spindle bearing (10).
9. Turn spindle (8) with wrench (37) clockwise until close to end stop.
10. Shift spindle with wedge bar to the left and disassemble pressure washer (9).
11. Shift spindle with wedge bar to the right, tilt left side upward and remove spindle with wedge bar.
12. Remove circlip (32) from stop pin (14), underlay chuck and remove stop pin.
13. Remove disengaging cartridge (15) radially.
    Do not disassemble disengaging cartridge any further.
14. Clean all parts and check for wear or damage.
15. Replace damaged or worn out parts by original SMW-AUTOBLOK spare parts only.

## Assembling

1. Assembling in reverse sequence as disassembling.
2. Clean parts and lubricate with SMW-AUTOBLOK K05 grease.
3. Tighten spindle bearing (10) firm and loosen so that spindle can be moved easily but without clearance.
4. Secure spindle bearing (10) with threaded pin (36) and copper bolt (13).
5. Check chuck to function and lubricate with SMW-AUTOBLOK K05 grease.




**Important!**
For spare parts order please advise chuck type and serial number!
Ordering example: For HG-N 210-60 serial number 100912 / For HG-F 210-60 serial number 100913
Pos. 5: 1 set wedge bars / Pos. 5: 1 set wedge bars

| Pos. | Qty. | Description | Note |
|---|---|---|---|
| 1 | 1 | Chuck body | |
| 3 | 1 | Cover | |
| 4 | 1 | Drive ring | |
| 5 | 1 | Wedge bar | 1 set = 3 pcs. |
| 7 | 3 | Sliding block | |
| 8 | 1 | Spindle | |
| 9 | 1 | Pressure washer | |
| 10 | 1 | Spindle bearing | |
| 11 | 1 | Pressure piece | |
| 12 | 1 | Indicator pin | |
| 13 | 1 | Copper bolt | |
| 14 | 3 | Stop pin | |
| 15 | 3 | Disengaging cartridge compl. | |
| 20 | 3 | Compression spring | |
| 22 | 1 | Compression spring | |
| 28 | 3 | Cylindrical bolt | |
| 29 | 3 | Cylindrical bolt | |
| 32 | 3 | Retaining ring | |
| 34 | 1 | Grease nipple | |
| 36 | 1 | Threaded pin | |
| 37 | 1 | Wrench | |

# Calculation formulas for practical use

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $F_{sp}$ | = | req. static chuck grip force | N | $F_s$ | = | main cutting force | N |
| $F_{spd}$ | = | dyn. chuck grip force | N | $F_c$ | = | centrifugal force of jaws | N |
| $M_{dz}$ | = | machining torque | Nm | $M_{dsp}$ | = | chuck clamping torque | Nm |
| a | = | depth of cut | mm | $d_{sp}$ | = | clamping diameter | m |
| $d_z$ | = | machining diameter | m | f | = | feed | mm/rev. |
| $k_s$ | = | specific cutting force (see diagram) | N/mm² | $m_B$ | = | mass jaws per set | kg |
| n | = | speed | $min^{-1}$ | $r_S$ | = | cent. of gravity radius jaw | m |
| $\mu_{sp}$ | = | coefficient of friction (see diagram) | | S | = | safety factor (1.5 - 2) | |

req. static chuck grip force:

$$F_{sp} = \frac{F_s \bullet S}{\mu_{sp}} \bullet \frac{d_z}{d_{sp}} \text{ [N]}$$

centrifugal force of jaws:

$$F_c = \Sigma(m_B \bullet r_S) \bullet \left(\frac{\pi \bullet n}{30}\right)^2 \text{ [N]}$$

machining torque:

$$M_{dz} = \frac{F_s \bullet d_z}{2} \text{ [Nm]}$$

main cutting force:

$$F_s = f \bullet a \bullet k_s \text{ [N]}$$

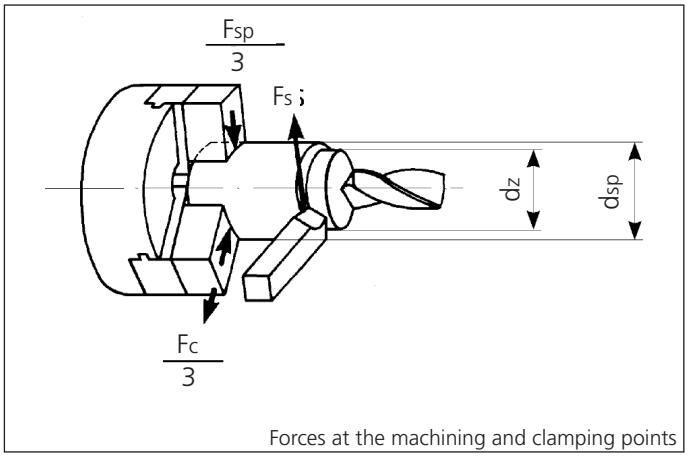
dyn. chuck grip force:

$$F_{spd} = F_{sp} - F_c \text{ [N]}$$

chuck clamping torque:

$$M_{dsp} = \frac{F_{sp} \bullet \mu_{sp} \bullet d_{sp}}{2} \text{ [Nm]}$$

The dynamic grip force **$F_{spd}$** is calculated from the static grip force **$F_{sp}$** less total centrifugal force of jaws **$F_c$**.



Forces at the machining and clamping points

### Tolerance classes

The axial and radial runout tolerances are according to the Technical Terms of Delivery for power operated lathe chucks **DIN 6386** of tolerance class 1.

### Permissible unbalance

The max. permissible unbalance for lathe chucks is according the Technical Terms of Delivery for power operated lathe chucks **DIN 6386** of tolerance class 1.

**Determination of the permissible speed of lathe chucks (jaw chucks) has to be carried out according to VDI 3106!**

**Specific cutting forces $k_s$ N/mm²**

Specific cutting force $k_s$ at feed s and setting angle of 45°

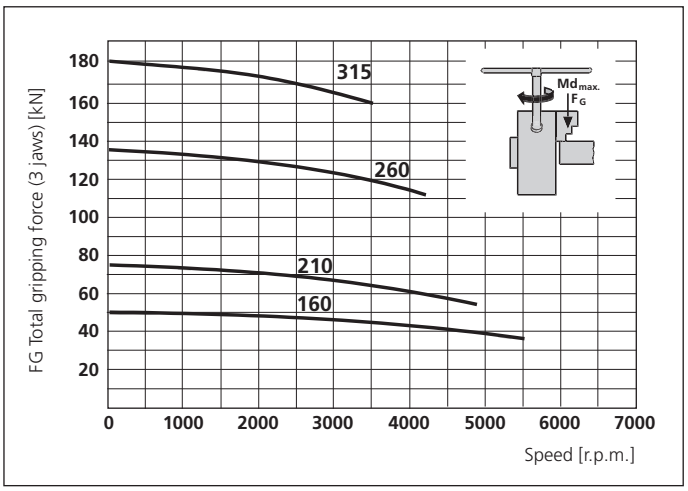
| Material | | Strength | Feed s (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | N/mm² | 0.16 | 0.25 | 0.40 | 0.63 | 1.00 | 1.60 |
| Steels | St42 | ... - 500 | 2600 | 2400 | 2200 | 2050 | 1900 | 1800 |
| | St50 | 520 | 3500 | 3100 | 2750 | 2450 | 2150 | 1950 |
| | St60 | 620 | 3050 | 2800 | 2600 | 2400 | 2200 | 2050 |
| | C45 | 670 | 3050 | 2800 | 2600 | 2400 | 2200 | 2050 |
| | C60 | 770 | 3050 | 2800 | 2600 | 2400 | 2200 | 2050 |
| | St70 | 720 | 4350 | 3800 | 3300 | 2900 | 2500 | 2200 |
| | 18CrNi6 | 630 | 4350 | 3800 | 3300 | 2900 | 2500 | 2200 |
| | 42CrMo4 | 730 | 4350 | 3900 | 3450 | 3100 | 2750 | 2450 |
| | 16MnCr5 | 770 | 3750 | 3300 | 2950 | 2600 | 2300 | 2050 |
| | Mn, CrNi | 850 - 1000 | 3700 | 3400 | 3100 | 2800 | 2550 | 2350 |
| | Mn-harded | | 5400 | 4900 | 4400 | 4000 | 3600 | 3300 |
| Cast iron materials | GS45 | 300 - 500 | 2300 | 2100 | 1950 | 1800 | 1700 | 1600 |
| | GS52 | 500 - 700 | 2550 | 2350 | 2200 | 2050 | 1900 | 1800 |
| | GG16 | HB 2000 | 1500 | 1350 | 1200 | 1100 | 1000 | 900 |
| | GG25 | HB 2000 - 2500 | 2050 | 1800 | 1600 | 1450 | 1300 | 1150 |
| Non ferrous metals | Cast bronze | | 2550 | 2350 | 2200 | 2050 | 1900 | 1800 |
| | Gunmetal | | 1100 | 1000 | 900 | 800 | 700 | 650 |
| | Brass | HB 800 - 1200 | 1200 | 1100 | 1000 | 900 | 800 | 750 |
| | Cast alu. | 300 - 420 | 1100 | 1000 | 900 | 800 | 700 | 650 |

**Coefficient of friction $\mu_{sp}$ for steel parts**

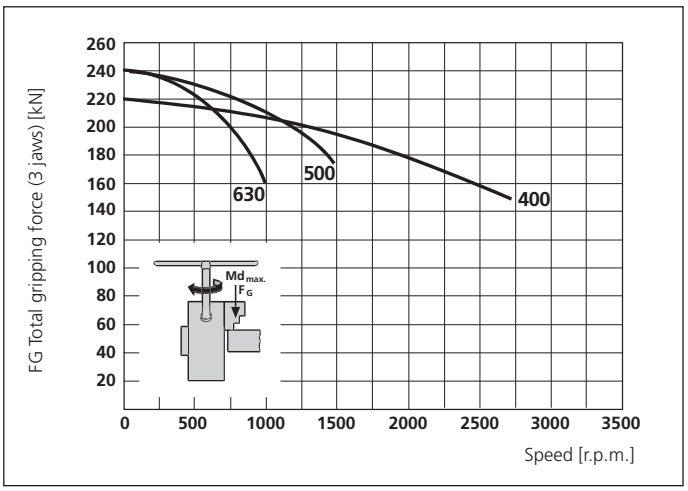
| Surface of workpiece | Gripping surface of jaws | | |
|---|---|---|---|
| | smooth | diamond style | serrated |
| smooth mach. finish ground | 0.07 | 0.12 | 0.20 |
| rough to med. machined | 0.10 | 0.20 | 0.35 |
| unmachined | 0.15 | 0.30 | 0.45 |
| Correction factors | Aluminium alloy = 0.95<br>Brass = 0.90<br>Grey cast iron = 0.80 | | |

# Gripping force - speed diagram

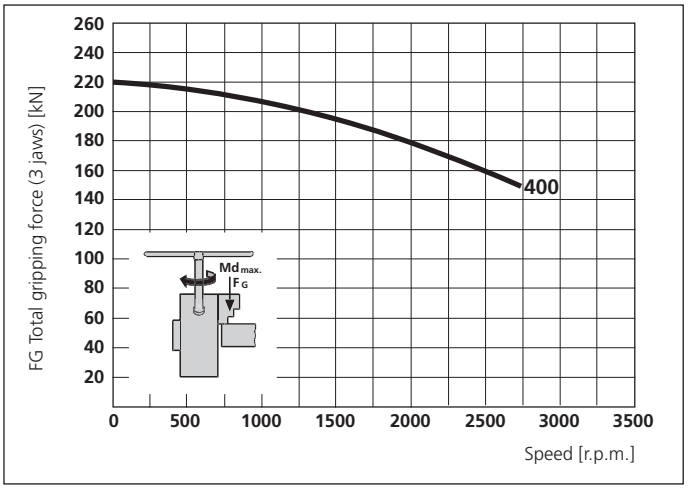
## HG-N / HG-F 160 - 315




## HG-N 400 - 630




## HG-F 400




- The max. gripping force is the total, acting on the 3 jaws, obtained by applying to the chuck the max. allowed torque for actuation. The data refers to a chuck in good conditions, using SMW-AUTOBLOK K05 grease.

- The dynamic gripping forces have been measured using hardened standard stepped monoblock jaws type GST, which are not exceeding the outer diameter of the chuck. In case of heavier clamping jaws it is necessary to reduce the rotating speed.

# Trouble shooting

| Problem | Caused by | | Action |
|---|---|---|---|
| Heavy vibrations on the machine spindle | **A** | Unbalance due to component or top jaws. | Change shape of top jaws or balance with counterweights on the chuck body. |
| | **B** | Unbalance on the parts:<br>• machine spindle<br>• drive<br>• chuck adapter | Check runout on all components one after another. Center, balance or replace the parts. |
| | **C** | Unbalance due to collision. | Send manual chuck back to **SMW-AUTOBLOK** for inspection. |
| Gripping force is too low | **A** | Short jaw movement at large quantity of same workpieces times at full jaw stroke.<br>Insufficient film of lubricant. | Actuate chuck without workpiece several times at full jaw stroke.<br>Insufficient film of lubricant Film of lubricant is rebuild and chuck achieves full gripping force again. |
| | **B** | Lubrication is not sufficient. | Lubricate or clean the chuck with **SMW-AUTOBLOK K05** grease. Check type of grease. |
| | **C** | Chuck is contaminated by dirt. | Disassemble, clean and lubricate chuck. |
| | **D** | Malfunction of the chuck. | Check all chuck parts.<br>Replace damaged parts by **original SMW-AUTOBLOK** spare parts. |
| Radial runout or insufficient repeatability | **A** | Top jaws are not bored or ground properly. | Rebore or regrind top jaws, see page 17. |
| | **B** | Jaws are inserted into wrong guideway. | Insert jaw 1 in guideway 1, jaw 2 in guideway 2 etc. |
| | **C** | Master jaw contaminated with dirt.<br>Master jaw damaged. | Clean serration of the master jaws.<br>Replace master jaws. |
| | **D** | Mounting bolts for the top jaws too short or too long, overloaded. | Check length of thread engagement.<br>Replace master jaws, check correct torque (see page 17). |
| | **E** | Jaws are too high. | Change top jaws, method of gripping. |
| | **F** | Chuck is damaged or worn out. | Send manual chuck back to **SMW-AUTOBLOK** for inspection. |
| Jaw is locked in the guideway | **A** | Jaw of other manufacturers which do not correspond with **SMW-AUTOBLOK** specification. | Use original **SMW-AUTOBLOK** jaws only, see page 17. |
| | **B** | Master jaw is deflected.<br>Mounting surface of top jaws not on same level, contaminated or damaged. | Check top jaws and replace if necessary, see page 17. |
| | **C** | Master jaw is deflected.<br>Torque of the mounting bolts too high. | Check correct torque, see page 17. |

# 12 months warranty

**Product: Manual chuck**

SMW-AUTOBLOK provides a warranty on the purchased product for 12 months from the date of purchase as stipulated in our General Terms of Sale in the following cases:

- The defect was not known to the customer at the time of purchase.
- The defect is not due to wear as a result of use.
- The customer has not been negligent by improperly operating or incorrectly maintaining of our product. Refer to the enclosed instruction manual for operation and maintenance information.
- It is not a wear part such as seals, rollers or valves.
- Especially work piece touching parts such as jaws, locators, inserts, rollers and face drivers are excluded from warranty.
- Only original SMW-Autoblok parts have been used such as spare parts, seals, rollers, valves, jaws, locators, inserts and face drivers.
- There is evidence that the maintenance intervals in the operating instructions have been followed. The customer must provide maintenance documentation for this purpose. The maintenance performed must be documented in the maintenance section of the operating instructions and signed by a properly authorized person.

Please note that, if the above requirements are not met, the warranty is only invalid if the defect already existed at the time of transfer of risk, which is usually upon delivery of the product, unless the customer was aware of the defect at the time of transfer of risk.

# 24-months warranty
## -optional-

**Product: Manual chuck**

**Against additional fee,** SMW-AUTOBLOK offers a warranty on the purchased product for 24 months from date of purchase as a modification to the 12-month limitation period stipulated in our General Terms of Sale if the following conditions are met:

- An extension of the warranty from 12 to 24 months has been agreed upon in writing with SMW-AUTOBLOK.
- There is no defect due to wear as a result of use.
- The defect was not known to the customer at the time of purchase.
- The customer has not been negligent by improperly operating or incorrectly maintaining of our product. Refer to the enclosed instruction manual for operation and maintenance information.
- It is not a wear part such as seals, rollers or valves.
- Especially work piece touching parts such as jaws, locators, inserts, rollers and face drivers are excluded from warranty.
- Only original SMW-Autoblok parts have been used such as spare parts, seals, rollers, valves, jaws, locators, inserts and face drivers.
- There is evidence that the maintenance intervals in the operating instructions have been followed. The customer must provide maintenance documentation for this purpose. The maintenance performed must be documented in the maintenance section of the operating instructions and signed by a properly authorized person.
- Paid inspection by or at SMW-AUTOBLOK is mandatory.
  Minimum interval with maintenance documentation by SMW-AUTOBLOK.

  | | |
  |---|---|
  | Single shift operation | once in 24 months |
  | 2- and 3-shift operation | once in 12 months |

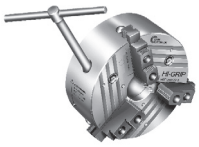
  The customer is responsible for having inspections performed on time.
- The delivery location and machine location are within Germany.

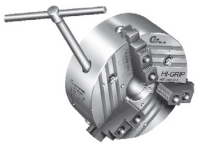
# Documentation of maintenance

**Product:** _____

**Serialno.:** _____

**Regular and documented maintenance conserves the value of your work holding, and ensures warranty!**

| | |
|---|---|
| **Maintained according to instruction manual** | **YES** ☐  |
| **Operating hours** | |
| **Name** | |
| **Date** | |
| **Signature** | |
| **Remarks** | |

| | |
|---|---|
| **Maintained according to instruction manual** | **YES** ☐  |
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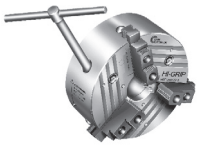
| **Name** | |
| **Date** | |
| **Signature** | |
| **Remarks** | |

| | |
|---|---|
| **Maintained according to instruction manual** | **YES** ☐  |
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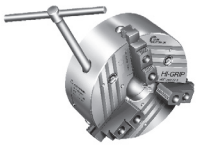
| **Signature** | |
| **Remarks** | |

| | |
|---|---|
| **Maintained according to instruction manual** | **YES** ☐  |
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| **Signature** | |
| **Remarks** | |

# Documentation of maintenance

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**Serialno.:** _____

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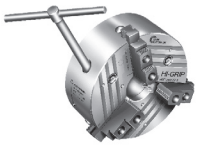
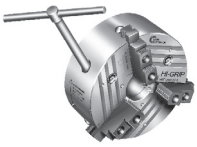
| Maintained according to instruction manual | YES ☐  |
|---|---|
| Operating hours | |
| Name | |
| Date | |
| Signature | |
| Remarks | |

| Maintained according to instruction manual | YES ☐  |
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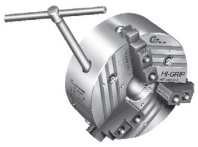
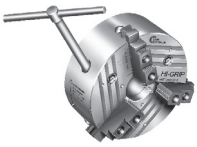
| Operating hours | |
| Name | |
| Date | |
| Signature | |
| Remarks | |

| Maintained according to instruction manual | YES ☐  |
|---|---|
| Operating hours | |
| Name | |
| Date | |
| Signature | |
| Remarks | |

| Maintained according to instruction manual | YES ☐  |
|---|---|
| Operating hours | |
| Name | |
| Date | |
| Signature | |
| Remarks | |

# Empfangsbestätigung für die Betriebsanleitung
# Confirmation of receipt of the instruction manual

Hiermit bestätigt die vom Betreiber/ Anwender beauftragte Person

This certifies the operator assigned by the operating company

Herr / Frau

Mr. / Mrs.

den Erhalt der Betriebsanleitung sowie deren Inhalte, insbesondere das Kapitel Sicherheit gelesen und verstanden zu haben.

hereby confirms to have received the instruction manual and to have read and understood the content, especially the chapters concerning safety.

| Bediener | Datum | Operator | Date |
|---|---|---|---|
| Betreiber / Sachbeauftragter | Datum | Operating Company / Authorised person | Date |

Id.Nr. / Id. No. :

Artikelbez. / Item :

Gewicht / Weight :

Seriennr. / Serialno. :

Bitte ausgefüllt zurückschicken an:

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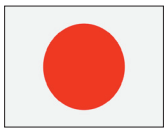

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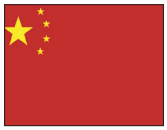

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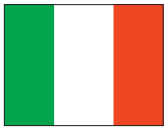

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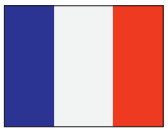

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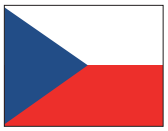

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