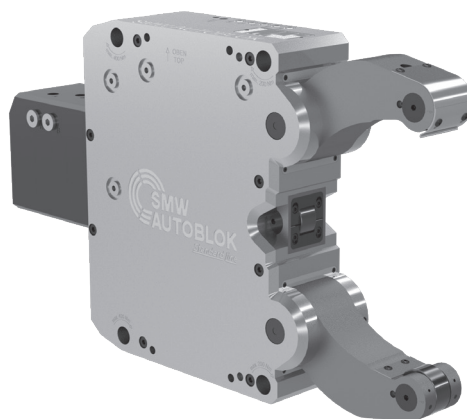


COPY OF THE
ORIGINAL

STEADY REST

Type SLU-X (Standard Line)



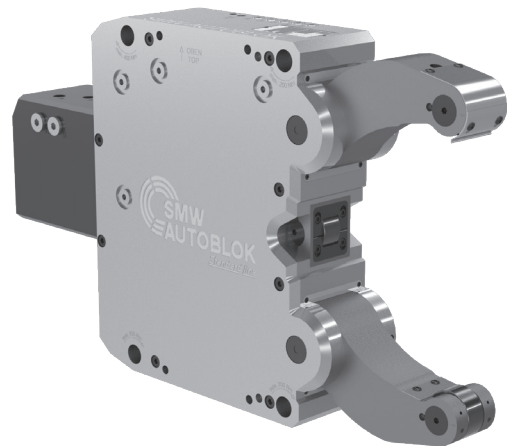
worldwide • Weltweit • worldwide

Date: 2018-05
Version: 12
Language: English



Content

Declaration of incorporation	4
General safety instructions	5
Technical data	6
Ordering review / Accessories / Wearing parts	7
Description of function	8
Installation	9
Mounting / adjustment of the steady rest bracket	9
Connection of the hydraulic	10
Stroke control	11
Connection of the compressed air	13
Connection of the central oil lubrication (Z)	14
Connection of the oil+air lubrication (OLD)	15
Connection of the central grease lubrication (F)	16
Control of the function	17
Adjustment of the steady rest	18
Fine adjustment	19
Operation	20
Adjustment of clamping pressure and speed	20
Adjusting of spring-loaded chip guard (option)	20
Exchanging of the rolles	21
Adjustment of the chip guard	21
Lubrication	22
Maintenance	23
Disassembling / Repair	24
Trouble shooting	27
Spare parts list	28
Warranty 12 and 24 months	30
Documentation of maintenance	32
Confirmation of receipt of the manual	37



INSTRUCTION MANUAL

Steady rest

Type SLU-X

(Standard Line)

Thank you for purchasing an Original-SMW-AUTOBLOK steady rest type SLU-X.

This **instruction manual** contains the installation, the use and the maintenance instructions of the work holding „SLU-X“.

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
Wiesentalstrasse 28
88074 Meckenbeuren
Deutschland / Germany

herby declares, that the following product:

Product description: Steady Rest
Application range: Installation in machine tool
Type: SLU-X

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 ISO 12100 (2011)
- 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
Chief designer

Place: Meckenbeuren (Germany)
Date: 29.12.2009


Eckhard Maurer
President



Danger!



Danger to the environment!



General precept sign!



Follow the instructions!



General warning sign!



Warning of risk of crushing!



Warning of hand injuries!



Warning of suspended load!



1. Correct use

SMW-AUTOBLOK steady rests are designed to support thin long shafts on lathes or grinding machines. Any other use is dangerous and is prohibited by the manufacturer, no other use of this product is intended nor should any other use be attempted. SMW-AUTOBLOK refuses any responsibility caused by misuse of the steady rest.



2. Demands on operators

SMW-AUTOBLOK steady rests 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 steady rest and the clamped work piece must be protected by suitable protective gear of the machine.
- A signal must stop the machine spindle in case of failure in the clamping pressure and workpiece must remain clamped safely until machine spindle stops.
- During machining the steady rest and the clamped component must be protected by safety guards.
- Maintenance and actuation of the steady rest must only be carried out when machine spindle is stopped.



6. Maximum spindle speed

Never exceed the max. RPM depending on roller and component dia.



7. Required clamping force

Always insure that sufficient clamping force is applied depending on component weight, spindle speed and cutting forces.



8. Residual risks

The type of component (shape, weight, imbalance, material etc.) has a big influence on the system "machine tool - power chuck - steady rest - 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.



9. Maintenance

Give regular maintenance to the steady rest by trained personal only and always use original SMW-AUTOBLOK spare parts and original SMW-AUTOBLOK rollers.

Improper use or maintenance of this product will make the warranty void. Neither SMW-AUTOBLOK nor its affiliates are liable for injuries or damage resulting from improper use or maintenance of this product.



10. Environment protection

Danger for environment when handling incorrect!

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

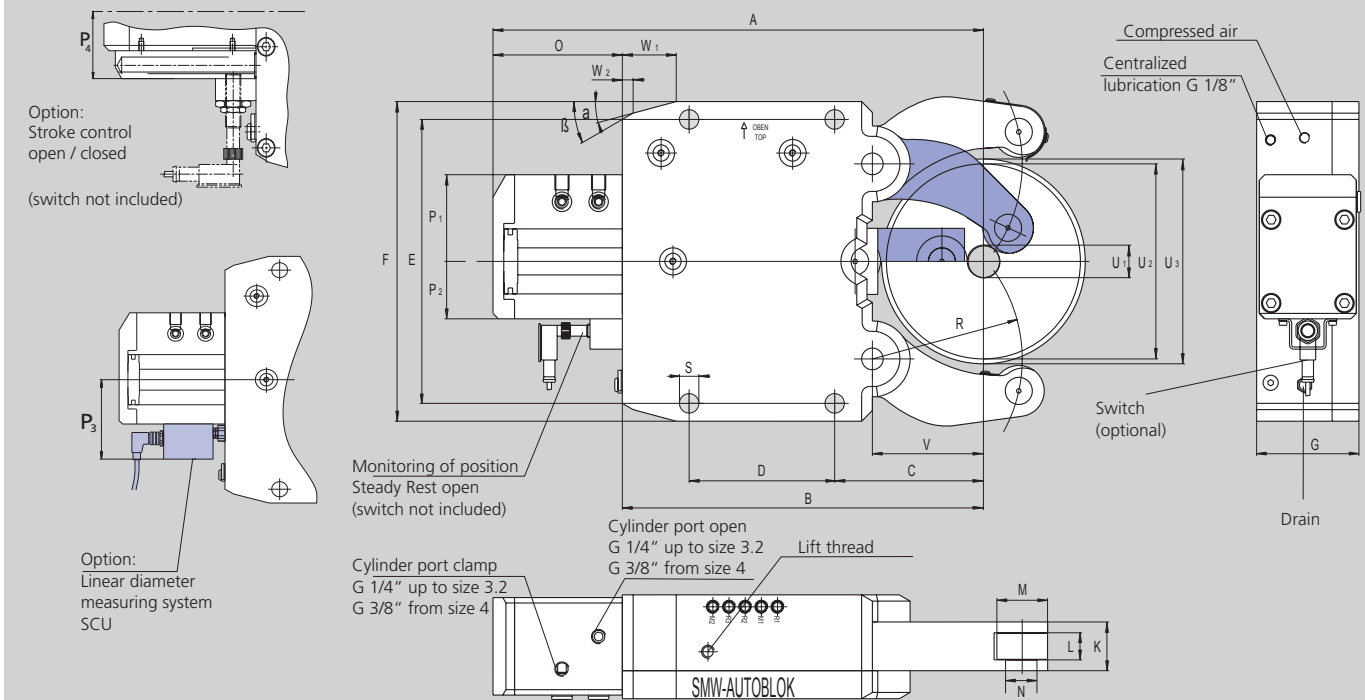
- Always follow below instructions.
- In case environmentally hazardous material polluted the environment always take suitable actions immediately. If in doubt, inform the local authority about the pollution.

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.



In case of doubts or questions please ask SMW-AUTOBLOK or one of our authorized offices.



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

Drain and compressed air
G 1/8" up to size 3.2
G 1/4" from size 4

SMW-AUTOBLOK Type Size		SLU-X 1	SLU-X 2	SLU-X 3	SLU-X 3.1	SLU-X 3.2	SLU-X 4	SLU-X 5	SLU-X 5.1
Centering range without chip guard	U1	6	8	12	20	50	30	45	85
	U2	70	101	152	165	200	245	310	350
Max. axial clearing dia.	U3	75	106	164	172	202	253	320	352
Centering range with chip guard 3-piece	U1	8	12	14	20	50	30	45	85
	U2	70	101	152	165	200	245	310	350
	A	214.5	277	428	436	455	603	697	717
	B	149	195	312	320	335	448	510	530
	C	52	70	115	123	138	146	178	198
	D	66	85	135	135	135	240	270	270
	E	140	170	262	262	262	365	400	400
	F	160	195	295	295	295	405	440	440
	G	63	75	95	95	95	110	145	145
	K	28	35	45	45	45	60	75	75
Width of rollers	L	15	19	25	25	25	25	29	29
Diameter of rollers	M	24	35	47	47	47	52	62	62
Diameter of roller pins	N	8	15	20	20	20	25	30	30
	O	65.5	82	116	116	120	155	187	187
	P1	53	63	85	85	85	91	97	97
	P2	29	40	53	53	53	61	63	63
	P3	-	82	95	95	95	103	105	105
	P4	40	61	74	74	74	82	84	84
	R	55	74	119	124	139	172	209	229
	S	11	14	18	18	18	23	23	23
	V	37	51	85	93	103	128	160	180
	W1	20	30	50	50	50	58	62	62
	W2	5	11.2	10	10	10	18.3	19.1	19.1
	α	15°	15°	15°	15°	15°	15°	18°	18°
	β	45°	30°	30°	30°	30°	40°	40°	40°
Piston area*	cm ²	7	19.6	38.5	38.5	38.5	63.6	78.5	78.5
Operation pressure min./max.	bar	6/70	8/70	8/80	8/80	8/80	8/70	8/80	8/80
Max. clamping force/roller	daN	165	450	1000	1000	1000	1500	2000	2000
Centering accuracy within the whole range	mm	0.02	0.02	0.04	0.04	0.04	0.05	0.06	0.06
Repeatability accuracy	mm	0.005	0.005	0.007	0.007	0.007	0.007	0.01	0.01
Max. roller surface speed	m/min	800	800	725	725	725	715	600	600
Weight approx.	kg	8	17	50	51	59	103	168	170

* Cylinders differing from standard available on request.
Subject to technical changes!

- Ordering review
- Accessories
- Wearing parts

SLU-X Steady Rest with stroke control Steady Rest open via proximity switch (without proximity switch)

Steady Rest size		1	2	3	3.1	3.2	4	5	5.1
SLU-X-M Manual lubrication	Id. No.	127563	129001	129018	129196	129234	129141	129278	129291
SLU-X-Z Central lubrication oil	Id. No.	127562	129000	129020	129195	129235	129140	129280	129292
SLU-X-OLD Central lubrication oil + air	Id. No.	127564	129002	129019	129197	129236	129142	129279	129293
SLU-X-F Central grease lubrication	Id. No.	129761	129762	129763	129764	129765	129766	129767	129768

SLU-X Steady Rest with stroke control Steady Rest open / closed via proximity switch (without proximity switch)

Steady Rest size		1	2	3	3.1	3.2	4	5	5.1
SLU-X-M Manual lubrication	Id. No.	126155	222390	221912	223890	222400	on request	on request	on request
SLU-X-Z Central lubrication oil	Id. No.	126154	221116	221151	221152	221153	221154	221155	221156
SLU-X-OLD Central lubrication oil + air	Id. No.	126156	on request	221913	on request	on request	on request	on request	on request
SLU-X-F Central grease lubrication	Id. No.	on request	on request	221914	225348	225349	on request	on request	on request

SLU-X Steady Rest with stroke control via linear stroke control SCU, output 4-20 mA















Steady Rest size		1	2	3	3.1	3.2	4	5	5.1
SLU-X-Z Central lubrication oil	Id. No.	-	225830	225831	225832	225833	222513	222183	225834

SLU-X Steady Rest with stroke control via linear stroke control SCU, output 0-10 V

Steady Rest size		1	2	3	3.1	3.2	4	5	5.1
SLU-X-Z Central lubrication oil	Id. No.	-	on request	on request	on request	on request	on request	on request	on request

Type SLU-X

♦ denotes wearing parts, recommended stock items

Steady Rest size		1	2	3	3.1	3.2	4	5	5.1
Compact lubrication system for oil pressure lubrication Container 2.7 l, 220 V *,**		088707	088707	088707	088707	088707	088707	088707	088707
Compact lubrication system for oil & air lubrication Container 2.7 l, 220 V *,**		088708	088708	088708	088708	088708	088708	088708	088708
Eccenter fine adjustment compl. at lever arm (2 pcs. per Steady Rest)		-	127237	127240	127240	127240	128474	128584	128584
Inductive limit switch		087926	087926	087926	087926	087926	087926	087926	087926
Swarf guard 3-pieces	 ♦	126171	026116	026117	026117	026117	026118	026119	026119
Spring loaded chip-guard***	 ♦	226668	025760	025759	025759	025759	025758	025757	025757
Roller pin with collar***	 ♦	226656	225317	221112	221112	221112	204052	125824	125824
Roller stripper (2-pieces) for middle piece	 ♦	200155	200154	198950	198950	198950	196199	196200	196200
Rollers cylindrical design	 ♦	023122	016952	016951	016951	016951	016953	018345	018345
Rollers spherical design	 ♦	028738	017658	018433	018433	018433	018443	019545	019545
Rollers synthetic material ****	 ♦	225135	029451	023443	023443	023443	023672	023650	023650
Roller stripper (2-pieces) for middle piece with roller synthetic material	 ♦	-	204211	204212	204212	204212	204213	204215	204215
Rollers carbide	 ♦	on request	129223	129225	129225	129225	220918	222038	222038
Adjustment device 1 set = 3 pieces		-	-	200178	200178	200178	200179	200179	200179

* When placing an order please advise voltage.

** On request 110 V available.

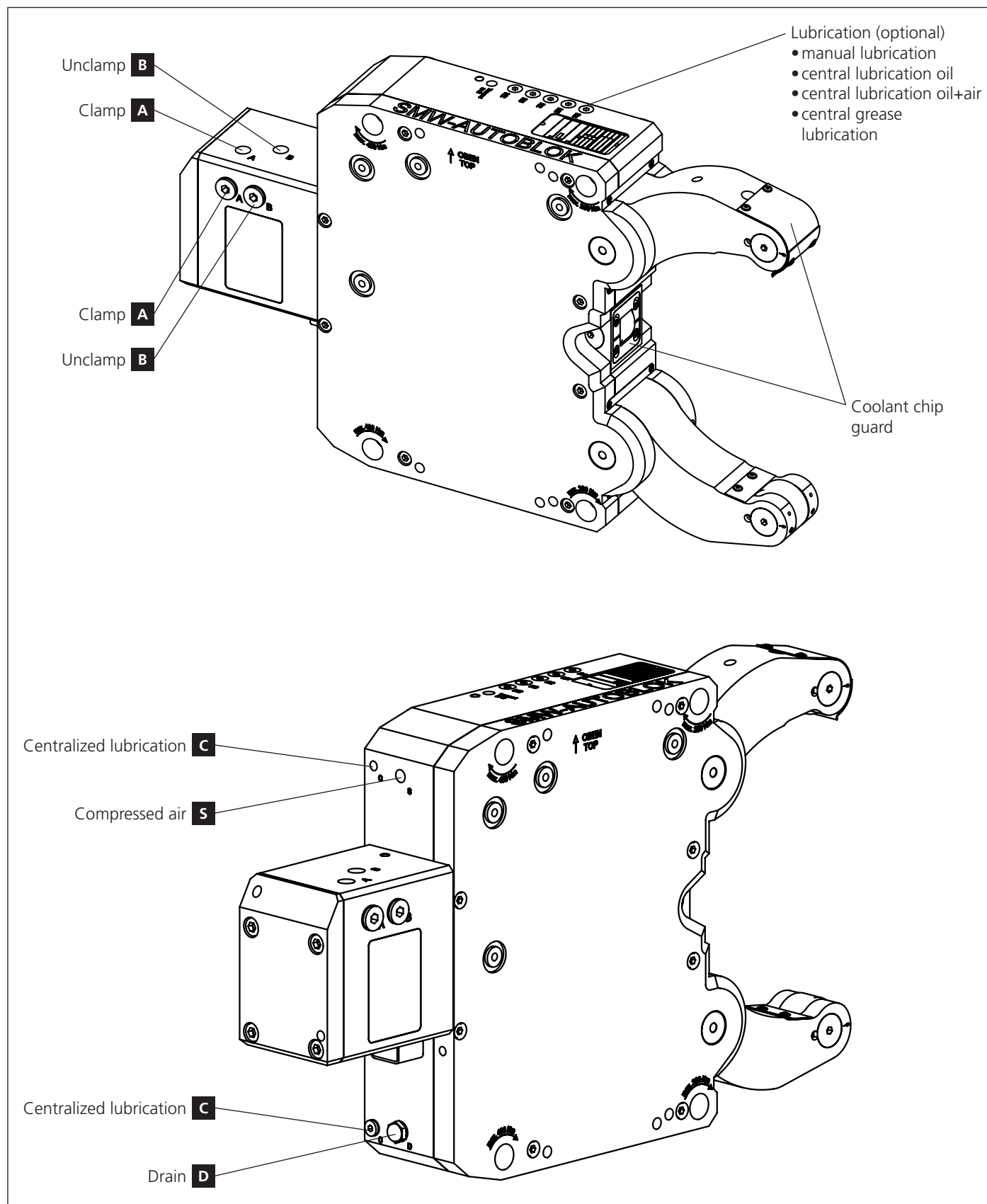
*** Use of spring located chip-guard only possible in combination with roller pin with collar.

**** Attention: Reduced clamping force! Please refer to the clamping force value marked on the roller.

SMW-AUTOBLOK steady rests are designed to be used on high performance CNC-lathes and CNC-multipurpose machines. Based on the cam lever design developed by SMW-AUTOBLOK, to open the steady rest arms without using springs. It is used for precise centering and support of shafts independent of their diameter.

The compact and rigid design with a large clamping range as well as with case hardened and ground internal parts guarantees high precision, rigidity and long service life.

The actuation is done via a built-in cylinder with stroke control and hydraulic or pneumatic non return valve.



Installation

Mounting / adjustment of the steady rest bracket



Mounting of the steady rest bracket

The precision of the steady rest is depending among other things, on a properly manufactured steady rest bracket. Sufficient rigidity, a flat exactly right-angled contact surface to the machine center line are the most important conditions.



Danger of damage:

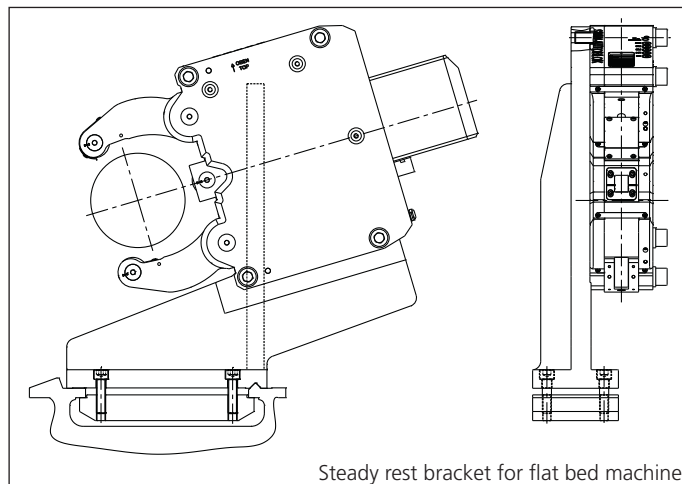
Check if the mounting face is exactly flat. The steady rest will be distorted otherwise.



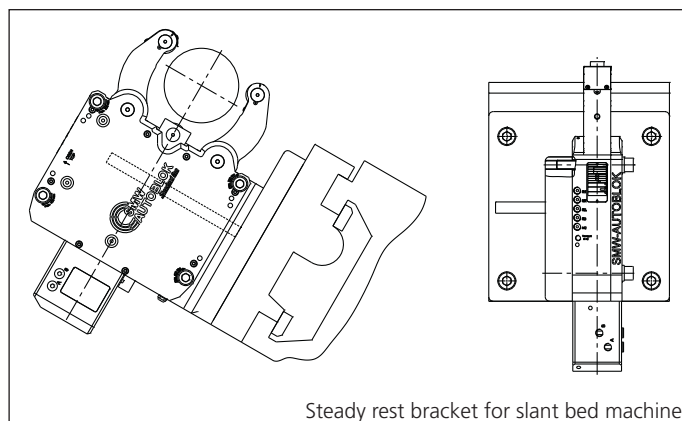
Check mounting surface in 2 directions with dial indicator if steady rest bracket is exactly in rightangled position to the center line. If necessary readjust or remachine the steady rest bracket.

SMW-AUTOBLOK supplies the correct bracket for all applications. Additionally for a fast and easy adjustment of the steady rest to the center line we propose to use the SMW-AUTOBLOK adjustment device which, on request, can be integrated in the steady rest bracket.

Channels and adjustable coolant-nozzles to flush away the chips can also be considered on request.



Steady rest bracket for flat bed machine



Steady rest bracket for slant bed machine



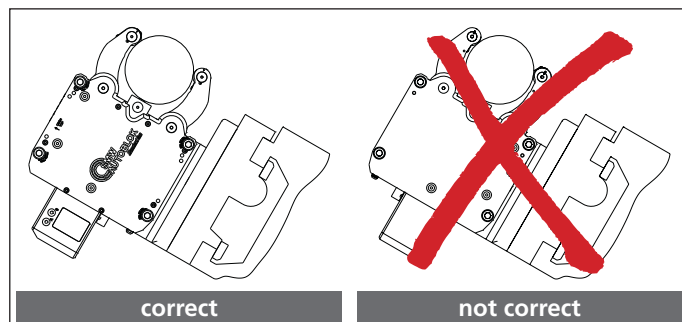
On the top of the steady rest there is a lift thread for an eye bolt.

The steady rest has to be mounted to the steady rest bracket with the arrow showing upward.



Use 4 fixing bolts (class 12.9) with attached special washers.

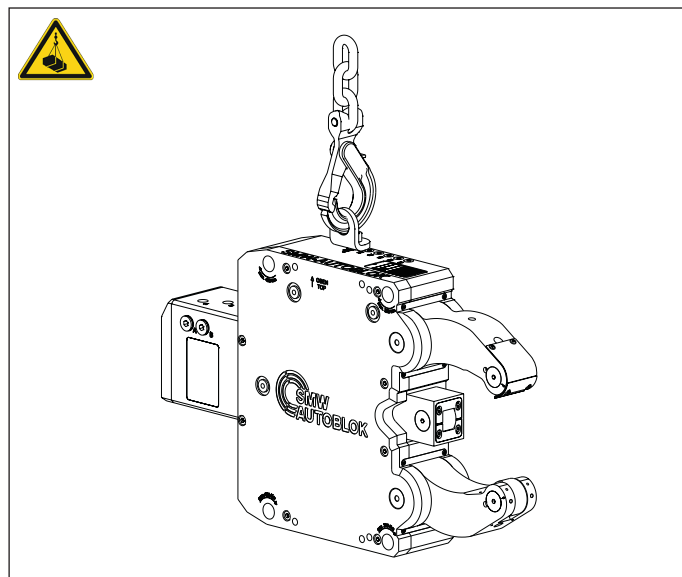
SLU-X	1	2	3/3.1/3.2	4	5/5.1
Fixing bolts	M10	M12	M16	M20	M20
Torque front (Nm) 2x	50	80	150	200	250
Torque rear (Nm) 2x	50	120	200	400	500



Recommended torque of mounting bolts is ingraved on steady rest housing and must not be exceeded!



Adjustment of steady rest on steady rest bracket refer to INSTALLATION on page 18.



Connection of hydraulic system

SMW-AUTOBLOK steady rests are actuated hydraulically (or pneumatically as a special). The connection can be done to a already existing hydraulic power unit supplied with the machine according to the hydraulic plan. If there is no hydraulic power unit on the machine we propose to use the proven SMW-AUTOBLOK hydraulic power units.

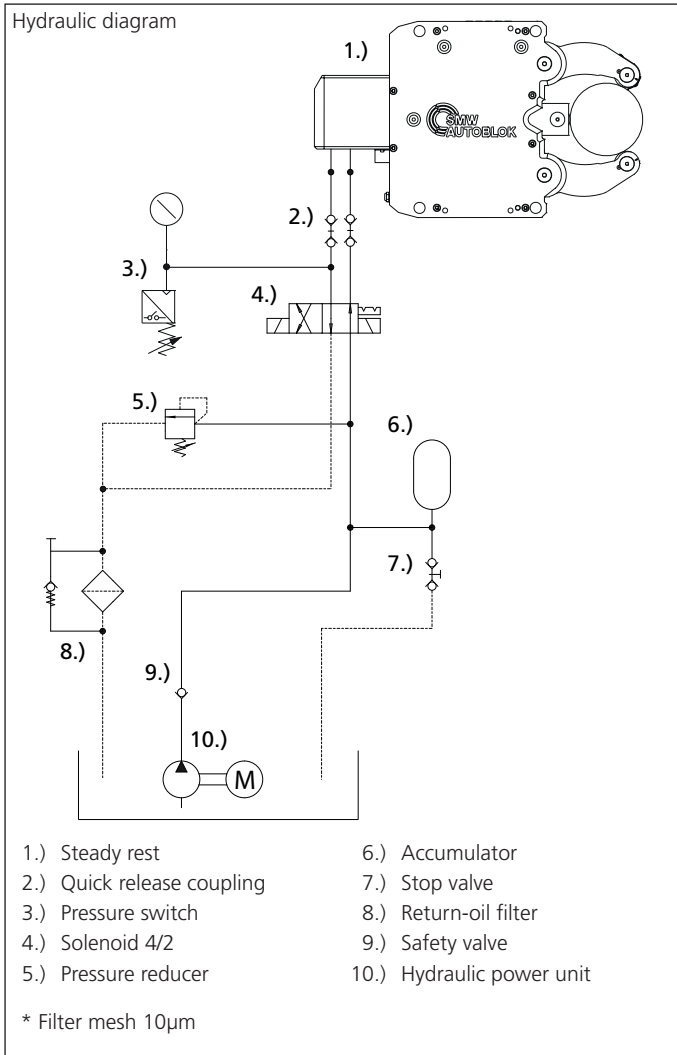
For tandem applications with alternating actuation we can supply the corresponding wiring diagram.



The actuation of the 4/2 solenoid-valve through the machine CNC must be according to all safety instructions. For the connection we recommend the use of hydraulic pipes or alternatively metal-coated high pressure hoses and, when changing the steady rest frequently, self-closing quick release couplings.

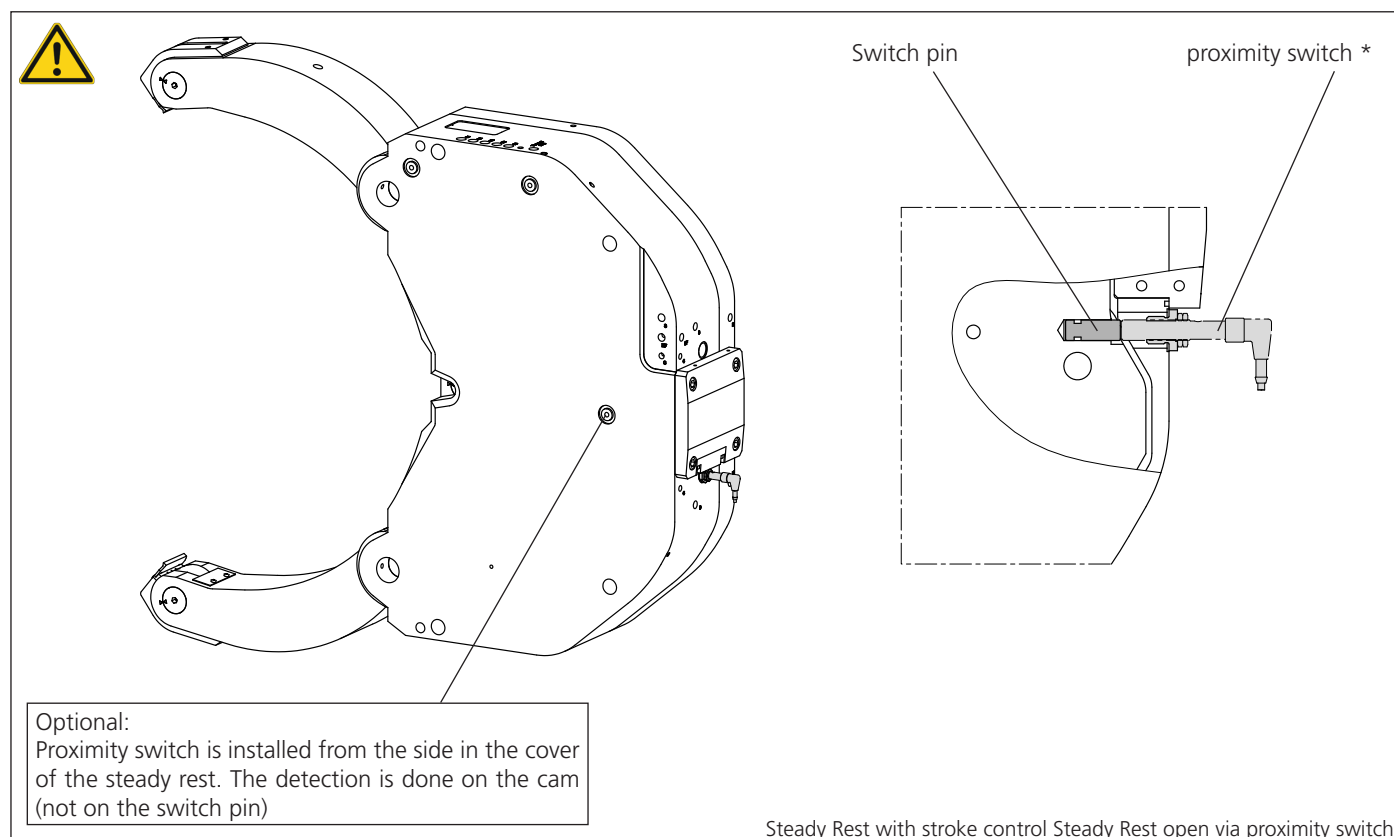


All hydraulic lines must be 8 mm I.D. and suitable for 100 bar pressure.
All connecting ports are on the rear side of the steady rest. Connect the lines according to the label on the cylinder.



Connections					
SLU-X	1	2	3/3.1/3.2	4	5/5.1
A Clamp	G1/4"	G1/4"	G1/4"	G3/8"	G3/8"
B Unclamp	G1/4"	G1/4"	G1/4"	G3/8"	G3/8"
C Central lubrication	G1/8"	G1/8"	G1/8"	G1/8"	G1/8"
D Drain	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"
S Compressed air	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"

Steady Rest with stroke control Steady Rest open via proximity switch



* When using proximity switches (not included with the steady rest) please observe instruction of the maker.



When using the original SMW-AUTOBLOK linear stroke control unit SCU (not included with the steady rest) please observe the separate instruction manual.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Connection of compressed air

SMW-AUTOBLOK steady rests are equipped with a connection for compressed air as a standard.

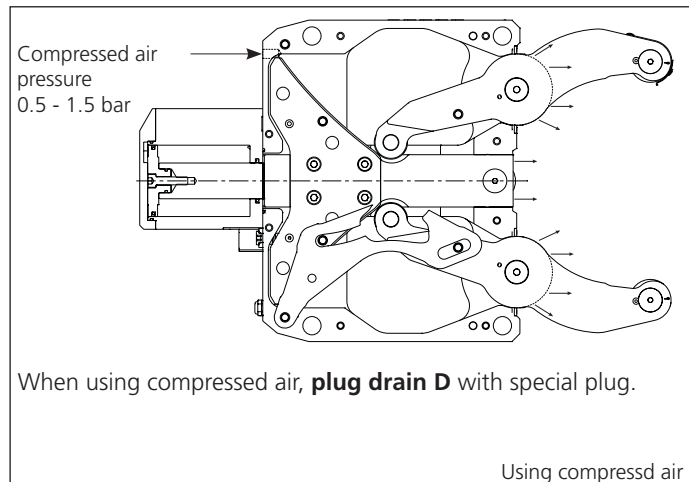
The compressed air generates an excess pressure in the steady rest body which escapes at the fine gap between arm, housing and sealing strip.

This prevents the entering of coolant and swarf.

A pneumatic solenoid and a service unit are not included in the standard supply range.

When **using compressed air, plug drain D** with special plug.

(The special plug has a 1 mm bore and a silencer in order to bleed the condensation water).



Use with compressed air



If compressed air is used, **drain D** must be **plugged** with attached special plug in order to arrive to excess pressure.

Open **drain** every 3 month and check the **special plug D** if compressed air can pass through the 1 mm bore and the silencer. Change the special plug if necessary.

Compressed air pressure 0.5 - 1.5 bar

Use without compressed air



Drain D must remain open, to allow entered coolant, to escape.



Compressed air quality class 4 to ISO 8573-1(2010):

Solid particles / dust			
Class	max. particle count per m ³ of a particle size with d in µm *		
	0.1 ≤ d ≤ 0.5	0.5 ≤ d ≤ 1.0	1.0 ≤ d ≤ 5.0
4	not defined	not defined	≤ 10.000

Water	
Class	Pressure dew point, in °C
4	≤ +3°C

Oil	
Class	Total oil concentration (fluid, aerosol + gaseous) [mg/m ³] *
4	≤ 5.0

* At reference conditions 20°C, 1 bar(a), 0% humidity

Central oil lubrication (Z)

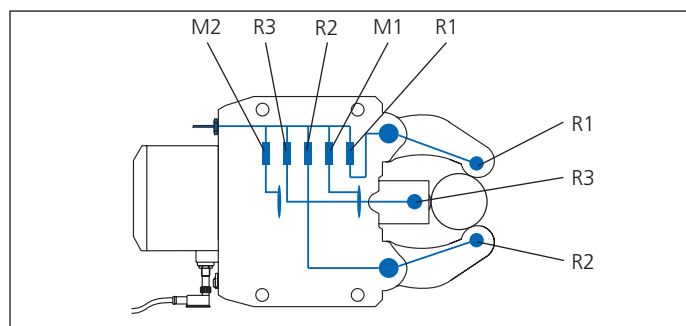
The steady rest is provided with a lubrication connection at the rear side to supply the lubrication points and rollers with lubrication oil via integral dosing elements.

Min./max. operating pressure of the lubrication pump 10 to 45 bar. If the centralized lubrication system of the machine meets this requirement the steady rest can be connected to it as well.

However, a compromise over the lubricant and lubrication intervals must be made which can affect the working life of the steady.

We therefore recommend the use of a separate compact lubrication system to enable the lubricant and the lubricating intervals to be adjusted to suit the steady rest.

Oil: viscosity of 46-68 mm²/s



Connection of the central oil lubrication

The supply of lubrication oil to the steady rest is done via the SMW-AUTOBLOK compact lubrication system with 220 V or 110 V, Id. No. 088707. The connection of the power supply is done according to the schematic that can be found underneath the cover of the built-in control unit.

The line power, shown on the label, must correspond with the line power used.

The following functions are built into the control unit:

- Monitoring of built-up pressure in the supply-line with pressure switch.
- Monitoring of oil level in the oil reservoir.
- Electronic timer to adjust the time interval between the lubrication oil shots.

The time interval is factory set to 1 min. and can be changed according to the application.

Connect the compact lubrication unit with a hose 4 mm/max. pressure 60 bar with the steady rest (port C).



The connection and installation of the oil lubrication unit is done according to the **separate instruction manual** for oil lubrication units.

Connection of the central oil lubrication

Fill the oil reservoir with clean **oil viscosity of 46-68 mm²/s**. Actuate the lubrication intervals manually until oil comes out on the rollers as well as on the center arm.



Adjusting/ correcting the intervals

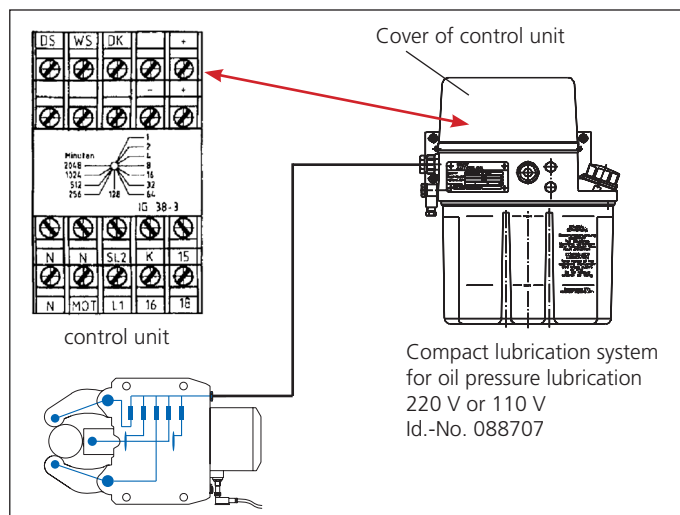
When adjusting / correcting the intervals, first switch off the power. Remove the cover and adjust the timer on the control unit. Then reinstall the cover and switch on the power again.

Select time intervals according to application

5 min. = 12 lubrication impulses/ hour

20 min. = 3 lubrication impulses/ hour.

(The time interval is factory set to 1 min.)



The steady rest can also be connected to the centralized lubrication system of the machine as long as this is according to the same specification as the SMW-AUTOBLOK lubrication unit. It must be a pressure centralized lubrication unit.

(Min. pressure 10 bar, max. 45 bar, lubrication via dosing elements).

Disadvantage:

The cycles of the oil shots must be adapted to the requirement of the steady rest rollers.

Some of the Japanese manufactured machines are equipped with a so-called throttle centralized lubrication (no pressure, no dosing elements).

They are not suitable to be used for lubricating a steady rest **therefore we recommend to use the SMW-AUTOBLOK lubrication unit.**



You can also use semi-fluid grease with a **NLGI-class 00** and a **oil viscosity of 100-150 mm²/s**.

A residual pressure of 3 bar in the lubrication line of the central lubrication unit must not be exceeded inbetween the lubrication intervals, when the pump is switched off.

Installation

Oil+air centralized lubrication (OLD)



Oil+air centralized lubrication (OLD)

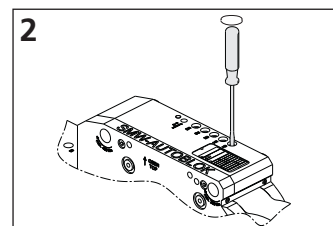
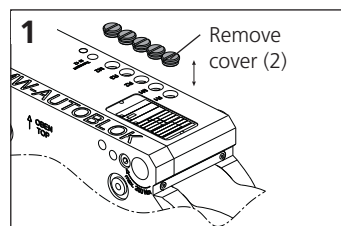
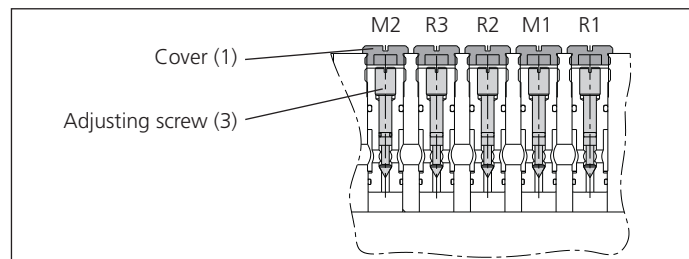
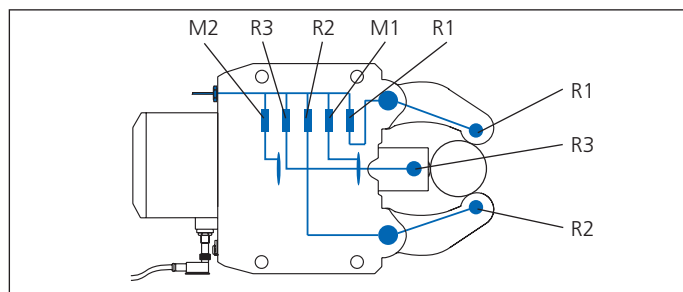
For extreme environments as high accumulation of dirt, swarf, scale or coolant.

Our oil+air lubrication unit supplies a permanent air flow to the steady rest. Oil is injected into the air flow in regular intervals and is transported via the air flow to the steady rest. The oil is distributed to the different lubrication points via built-in throttles.

The air flow causes a precharging of the rollers and thus avoids contamination.

Line air pressure: 5 - 8 bar.

Lubrication oil: viscosity of 46-68 mm²/s



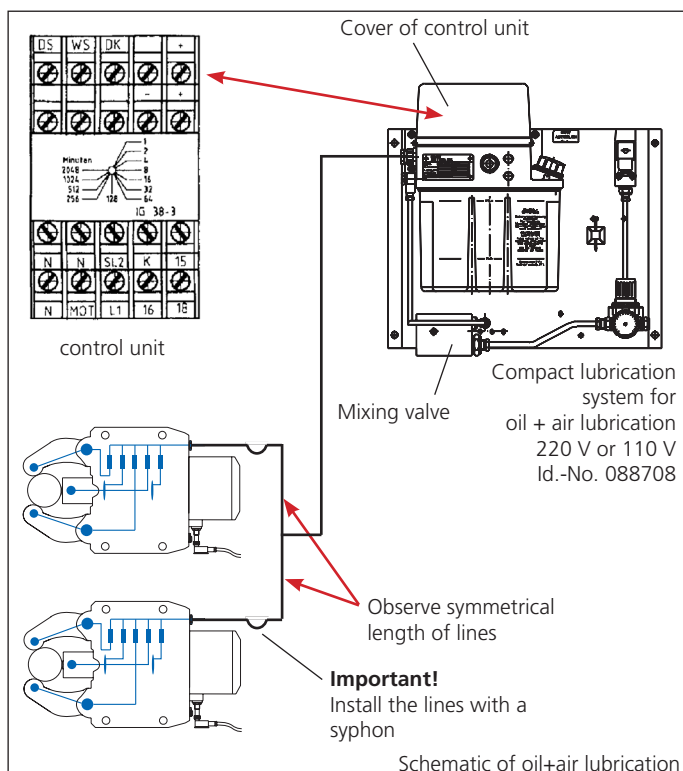
Adjustment (distribution) of the air flow to the lubrication points R1-R3 and M1-M2:

1. Remove the rollers.
2. Switch on the line pressure (line pressure 5 - 8 bar). Adjust the air pressure at the oil+air lubrication unit to 0.5 - 3 bar.
3. Remove cover (2).
4. Screw in the adjusting screws (3) to a dead stop.
5. Open the adjusting screws step by step (approx. 1- 2 revolutions so that there is the same air flow on all lubrication points.
6. Put the rollers back.

Connect and adjust oil+air lubrication unit



The connection and installation of the oil+air lubrication unit is done according to the **separate instruction manual** for oil+air lubrication units.



Fill the oil reservoir with clean **oil viscosity of 46-68 mm²/s**.

Line air pressure: 6 - 8 bar

Adjust operating air pressure to approx. 3 - 4 bar

Actuate the lubrication intervals manually until oil comes out on the rollers as on the center arm.

Tip: This process can be speeded up as follows:
Disconnect the lines to the steady rest right on the oil+air lubrication unit and fill oil into the lines directly with an oiler.



Adjusting/ correcting the intervals

When adjusting/ correcting the intervals, first switch off the power. Remove the cover and adjust the timer on the control unit. Then reinstall the cover and switch on the power again.

Select time intervals according to application:

1 min. = 60 lubrication intervals/ hour

4 min. = 15 lubrication intervals/ hour

(The time interval is factory set to 1 min.)

Oil volume per interval 0.03 cm³

Oil type:

Line air pressure:

Operating air pressure:

viscosity of 46-68 mm²/s

6 - 8 bar

3 - 4 bar

Central grease lubrication (F)

The lubrication points and rollers would be provided with grease by the mounted dosing elements. The min./max. operating pressure of the lubrication pump must be 30 / 45 bar.

We recommend using a separate lubrication unit in order to adjust the lubrication interval optimally to the operation conditions.



The connection and installation of the lubrication unit is done according to the **separate instruction manual** for lubrication units!

Otherwise the steady rest would be over-lubricated. Therefore the rollers of the steady rest could be damaged!

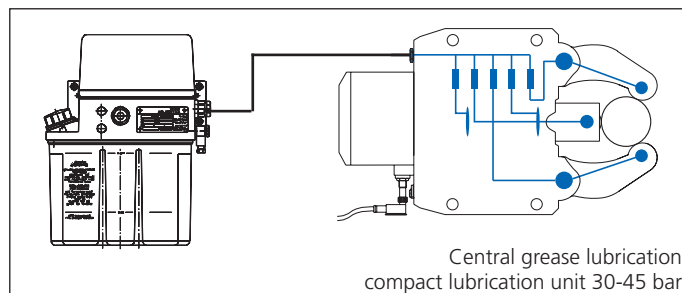


Use only lubrication grease with an **NLGI-class 0 or 1**.



Do not exceed a residual operating pressure of 8 bar in the piping wiring of the central grease lubrication connections of the steady rest when you release the steady rest (break down between lubrication cycles).

After the installation of the central grease lubrication, the lubrication intervals must be following acted, until the grease leaks at the point of the rollers and the middle piece.



Control of the function

After connecting all lines please check the function by actuating the steady rest at stopped machine spindle.



- Please insure that all air is bled from the system, that no leakage is visible and that the pressure remains constant!



- Please check all functions step by step.
- Be sure that oil escapes from the rollers when an oil shot is given at centralized lubrication and oil-mist lubrication!
- When **using compressed air, plug drain D** with special plug.
- When no compressed air is used **drain D must be open** (special plug not mounted).

General instructions



Never clamp the steady rest when the component is rotating at high speed: The sudden acceleration of the rollers can cause damage and marking of the outer surface.



Never move the clamped steady rest axially when the component is not rotating. The outer surface of the rollers can be damaged.



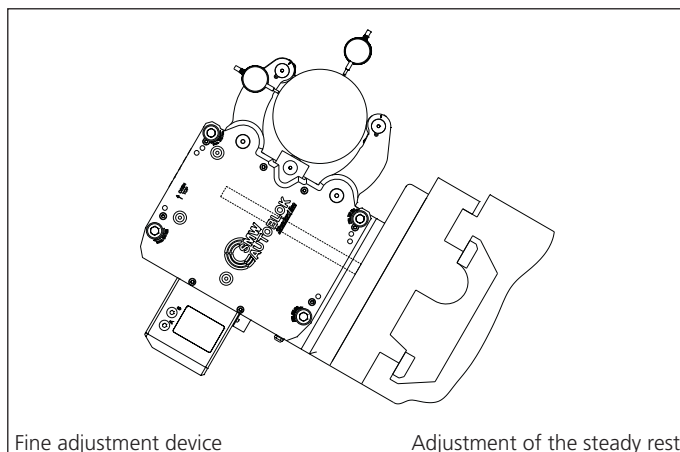
For safety reasons I.D. or end machining of components must only be carried out with steady rest including a safety valve, to keep the component clamped in case of sudden loss of pressure.

1. Step: Adjusting the steady rest/ adjusting of the center line

1. Clamp a test-bar/ master workpiece in the chuck and support with the tailstock-center.
2. Set 2 dial indicators 90° offset and check concentricity. Set the dialindicators to 0 and leave them in position.
3. Open the mounting screws of the steady rest on the steady rest bracket, so that the steady rest can slide on the bracket surface, without losing contact. Clamp the steady rest on the test-bar/ master workpiece.
Tighten the mounting bolts lightly. Retract the tailstock-center. Now correct the off set shown by the dialindicators by fine adjusting the steady rest.



4. Tighten the mounting bolts and repeat the same procedure until the requested accuracy is achieved. Please observe the max. Torque for the screws shown on page 9.



Fine adjustment device

Adjustment of the steady rest

For easy and precise fine adjustment we recommend to use brackets with our fine adjustment device.



When **changing** the clamping diameter, the position of the steady rest or the clamping pressure it can be necessary to **re-adjust the center-line of the steady rest**.

2. Step: Fine adjustment of the center line with eccentric fine adjustment of the rollers (option)

1. Clamp a test-bar/ master workpiece in the chuck and support with the tailstock-center.



2. Set 2 dial indicators 90° offset and check concentricity. Set the dial indicators to 0 and leave them in position. (see picture on page 18 - "adjusting of the steady rest")

3. Retract tailstock-center and check the offset of the workpiece indicated by the dial indicators.

4. Engage tailstock-center and open the steady rest.

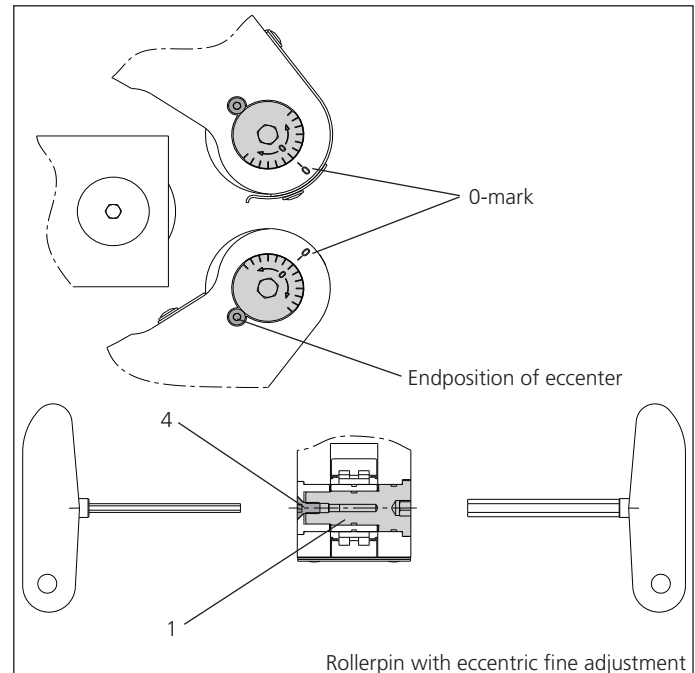
5. Open screw (4) and adjust the excenter fine adjustment pin with a wrench.

Adjusting range from 0-mark 90° left and right maximum.

Adjustment range at 90° rotation to left or right on:

SLU-X 2 - SLU-X 5.1

± 0.10 mm



6. Tighten the screw (4) and clamp the steady rest.

7. Retract the tailstock-center and check if correction was successful.

8. If necessary repeat the procedure.



In case the center line can not be reached within the range of the excenter fine adjustment, the entire steady rest has to be readjusted on the bracket.

Adjustment of clamping pressure

According to the weight of the component, spindle speed, length of component and cutting forces the clamping pressure at the pressure regulating valve of the machine must be adjusted.



Min./max. operation pressure see page 6.

Max. clamping force/roller see page 6.



Exceeding the max. surface speed can cause accidents and damage of the steady rest and the component.

Spindle speed

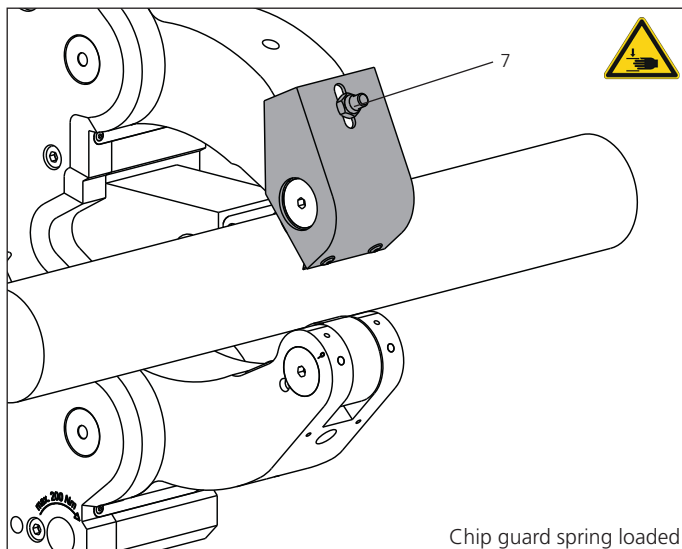
The max. speed allowed for the steady rest is a function of the surface speed of the steady rest rollers.

Surface speed at the clamping diameter = surface speed of the roller.

SLU-X	1	2	3/3.1/3.2	4	5/5.1
Roller Ø	24	35	47	52	62
Vmax m/min. (oil, oil+air)	800	800	725	715	600
Vmax m/min. (grease)	565	600	560	535	428

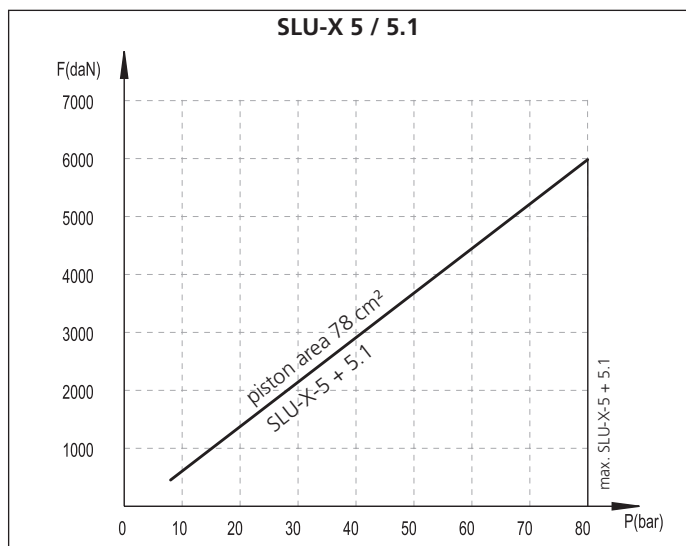
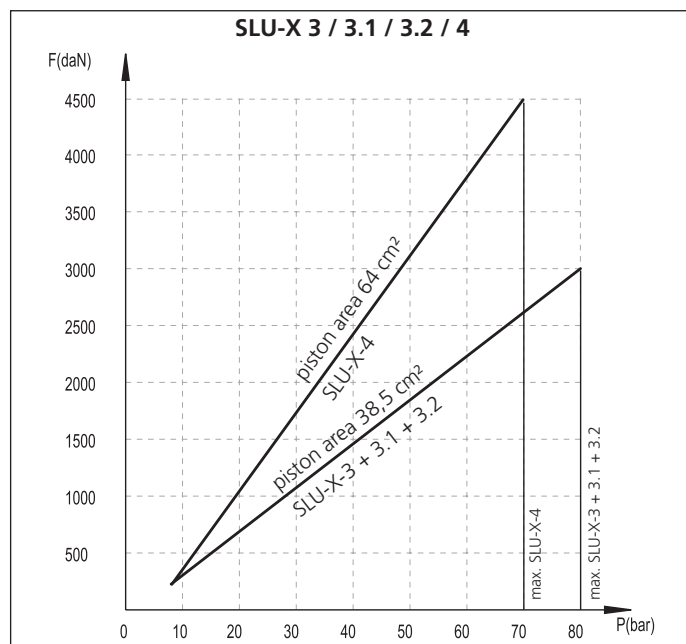
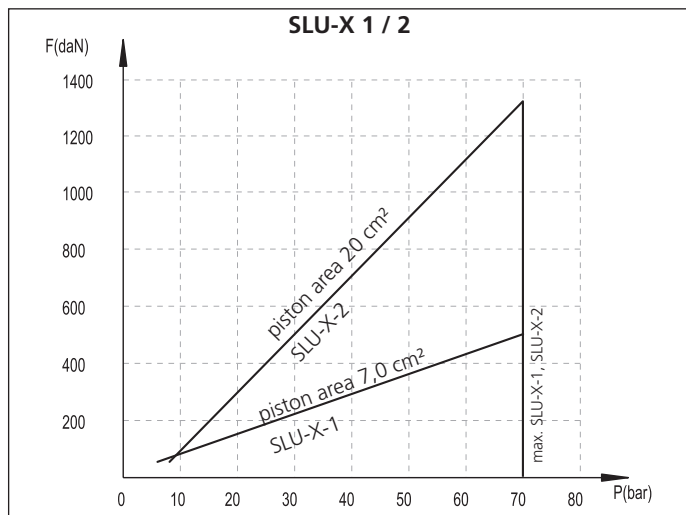
Adjusting of spring-loaded chip guard (option)

The chip guard is self-adjusting to the workpiece dia. by means of a spring.



Range of component dia. can be adjusted by means of hexagonal nut (7).

Retrofitting is possible with special roller pins because preparation on the arms is standard.

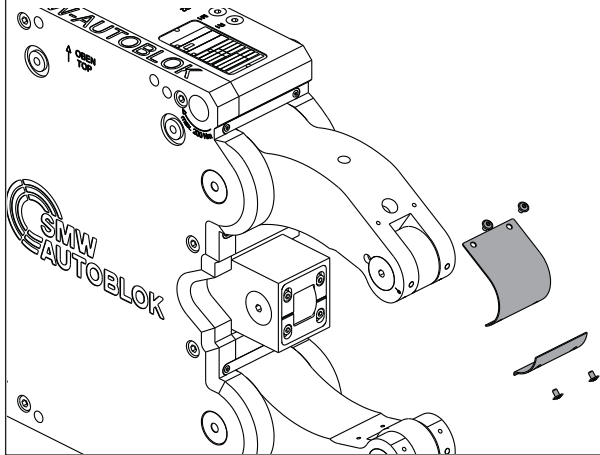


Operation

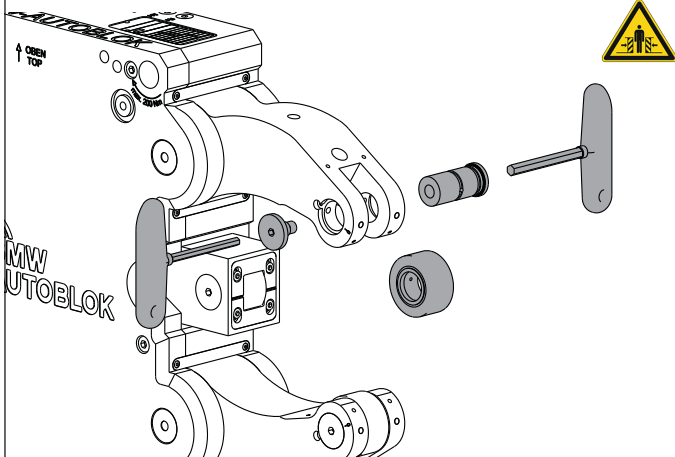
Exchanging of the rollers Adjustment of the chip guard

Change the rollers at the arms

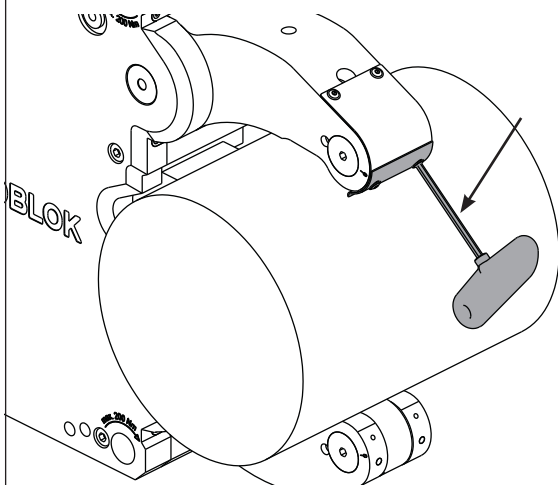
1.1 Remove/ mount chip guard



1.2 Remove/ mount roller pin Exchange roller

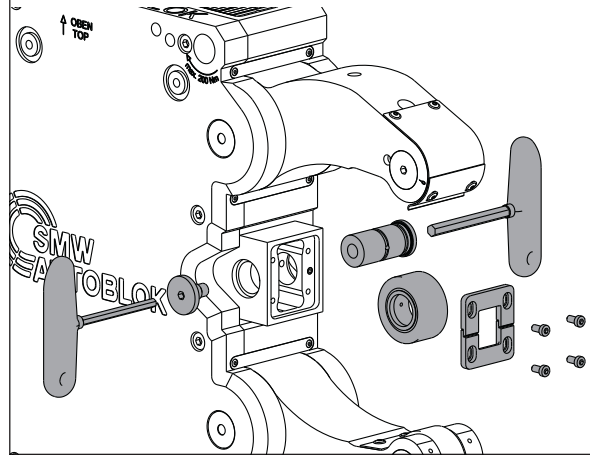


1.3 Adjust wiper without 0.1 mm clearance to the workpiece

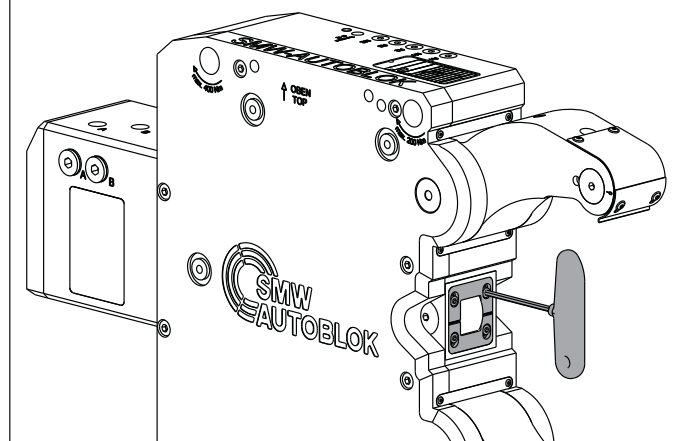


Change the roller at the center arm

2.1 Remove/ mount roller protection plate Remove/ mount roller pin Exchange roller



2.2 Adjust the roller stripper to the center roller so that the center roller still can rotate easily



Use **original SMW-AUTOBLOK** rollers accuracy class P05 only!

The warranty is void when using rollers from other manufacturers.



Danger of damage!

To remove the roller pin use the plastic pin.
Do not tilt the roller pin when reassembling.



Check daily:

Lubricant must flow out on the lubrication points i.e. at the 3 rollers and at the center arm.



Rollers and roller protection plates are wear parts. To avoid subsequent damage exchanged rollers and roller protection plates in time!

Centralized lubrication (Z)



Adjusting / correcting the intervals

When adjusting / correcting the intervals, first switch off the power. Remove the cover and adjust the timer on the control unit. Then reinstall the cover and switch on the power again.

Select time intervals according to application

5 min. = 12 lubrication impulses/ hour

20 min. = 3 lubrication impulses/ hour.

(The time interval is factory set to 1 min.)

SLU-X-Z	1	2	3/3.1/3.2	4	5/5.1
Lubricant volume per interval (cm ³)	0.4	0.4	0.5	1.0	1.5



Check daily:

Lubricant must escape lightly on the lubrication points, that means on the 3 rollers and on the center arm.

Use oil with a viscosity of 46-68 mm²/s (viscosity class ISO)!



You can also use semi-fluid grease with a **NLGI class 00** and a **oil viscosity of 100-150 mm²/s**.

Oil+air centralized lubrication (OLD)



Adjust the air pressure to 0.5 - 3 bar at the lubrication unit. Adjustment of the throttles in the steady rest body for the air flow to the lubrication points see installation page 15.



Adjusting / correcting the intervals

When adjusting / correcting the intervals, first switch off the power. Remove the cover and adjust the timer on the control unit. Then reinstall the cover and switch on the power again.

Select time intervals according to application

1 min. = 60 lubrication impulses/ hour

4 min. = 15 lubrication impulses/ hour.

(The time interval is factory set to 1 min.)



Check daily:

Lubricant must escape lightly on the lubrication points, that means on the 3 rollers and on the center arm.

Use oil with a viscosity of 46-68 mm²/s (viscosity class ISO)!

Central grease lubrication (F)



The adjustment of the lubrication intervals is to be set according to the use of the steady rest.

Note: Minimum is one lubrication point per shift!

SLU-X-F	1	2	3/3.1/3.2	4	5/5.1
Lubricant volume per interval (cm ³)	0.4	0.4	0.5	1.5	1.5



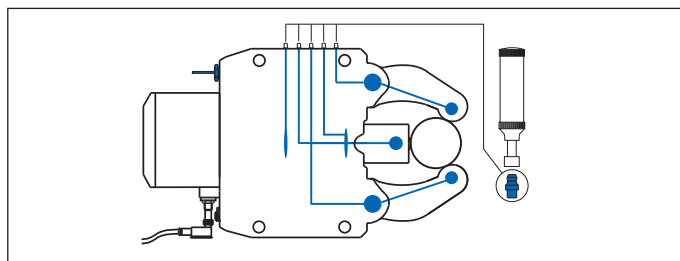
Check daily:

Lubricant must escape lightly on the lubrication points, that means on the 3 rollers and on the center arm.



Use only lubrication grease with an **NLGI-class 0 or 1**.

Manual lubrication (M)



SLU-X 1, SLU-X 2

4 high pressure grease nipples DIN 71412 can be found next to the label on the steady rest body.

SLU-X 3, SLU-X 3.1, SLU-X 3.2, SLU-X 4, SLU-X 5, SLU-X 5.1

5 high pressure grease nipples DIN 71412 can be found next to the label on the steady rest body.



Grease **daily** all lubrication-points with the grease gun (4 or 5 points) so that grease lightly escapes from the lubrication points.

Use grease KPE 2R-20 DIN 51 502 or equivalent high quality roller bearing grease.

Frequent maintenance, lubrication and cleaning of the steady rest and replacement of damaged parts guarantees long service life of your original SMW-AUTOBLOK steady rest.



Check daily:

Lubricant must escape lightly on the lubrication points, that means on the 3 rollers and on the center arm.



Monthly:

Open drain **D** (position can be found on the label on the steady rest) and check if air can pass through. (Only necessary if compressed air is used / special plug is mounted).



Annually:

According to working conditions we recommend disassembly and cleaning of the steady rest at least annually.



Disassemble and reassemble according to assembly drawing page 24-26.



Replacing all seals (seal kit as spare part kit available) after each disassembling is recommended.



Be sure to clean all lubrication and air channels and ensure they are not blocked.



Check all internal parts and replace if necessary with **original SMW-AUTOBLOK spare parts**.

Annually: Check the safety valve



The built-in safety valve must hold the workpiece clamped in case of a sudden loss of pressure due to power failure or breakage of hoses until the machine is stopped. To check the function, pressure in line **A** "clamping" must be reduced. It must not be possible to open the arms mechanically.



In case of problems replace the safety valve and repeat the test.

Exchange of safety valve

Remove plug and remove safety valve.



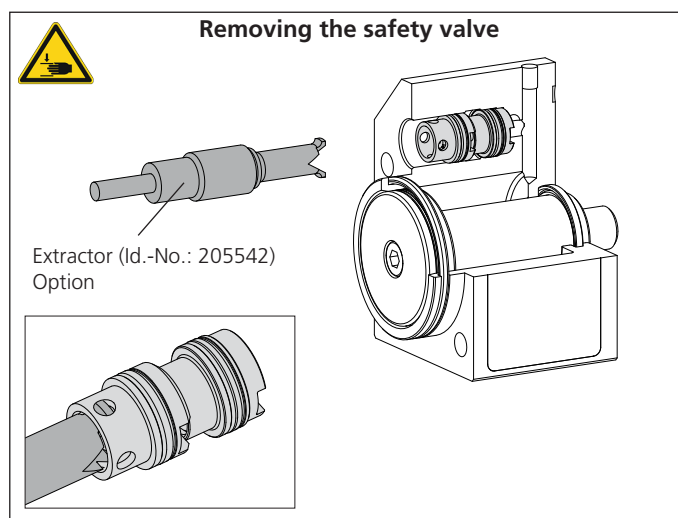
When assembling do not damage / loose components, seals, o-rings. Use ballbaring grease with assembling.

Release rotation of the valve:

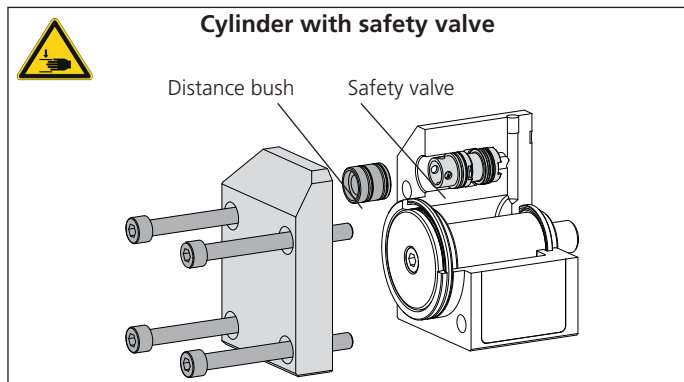
SLU-X 1	2.6 : 1
SLU-X 2	4.5 : 1
SLU-X 3 / 3.1 / 3.2	4.4 : 1
SLU-X 4	4.4 : 1
SLU-X 5 / 5.1	4.4 : 1

Assembling / disassembling:

1. Remove the cylinder cover.
2. Install the spacer sleeve including the 2 seals.
3. Remove the 3 pc. safety valve with the extractor (Id.No. 205542).
4. Clean the bore.
5. Install the safety valve and the spacer sleeve including the seals.
6. Mount the cylinder cover (torque for the mounting bolts see attached table).



Steady rest type / size	Torque Nm
SLU-X 2	50
SLU-X 3 / 3.1 / 3.2 / 4	80
SLU-X 5 / 5.1	100



Removing the actuating cylinder

1. Remove the 4 screws (1) of the cylinder housing (2).
2. Remove screw (3) of piston (4).
3. Now cylinder housing (8) can be removed together with piston (4).

Exchange of seals



When changing seals replacing of all seals and o-rings (seal kit cylinder) is recommended.

Seal kit cylinder consisting of:

Piece 5:	Piston seal (2-pcs.)
Piece 7:	O-ring
Piece 9:	O-ring
Piece 10:	O-ring
Piece 11:	Piston rod seal (2-pcs.)
Piece 13:	O-ring
Piece 14:	O-ring



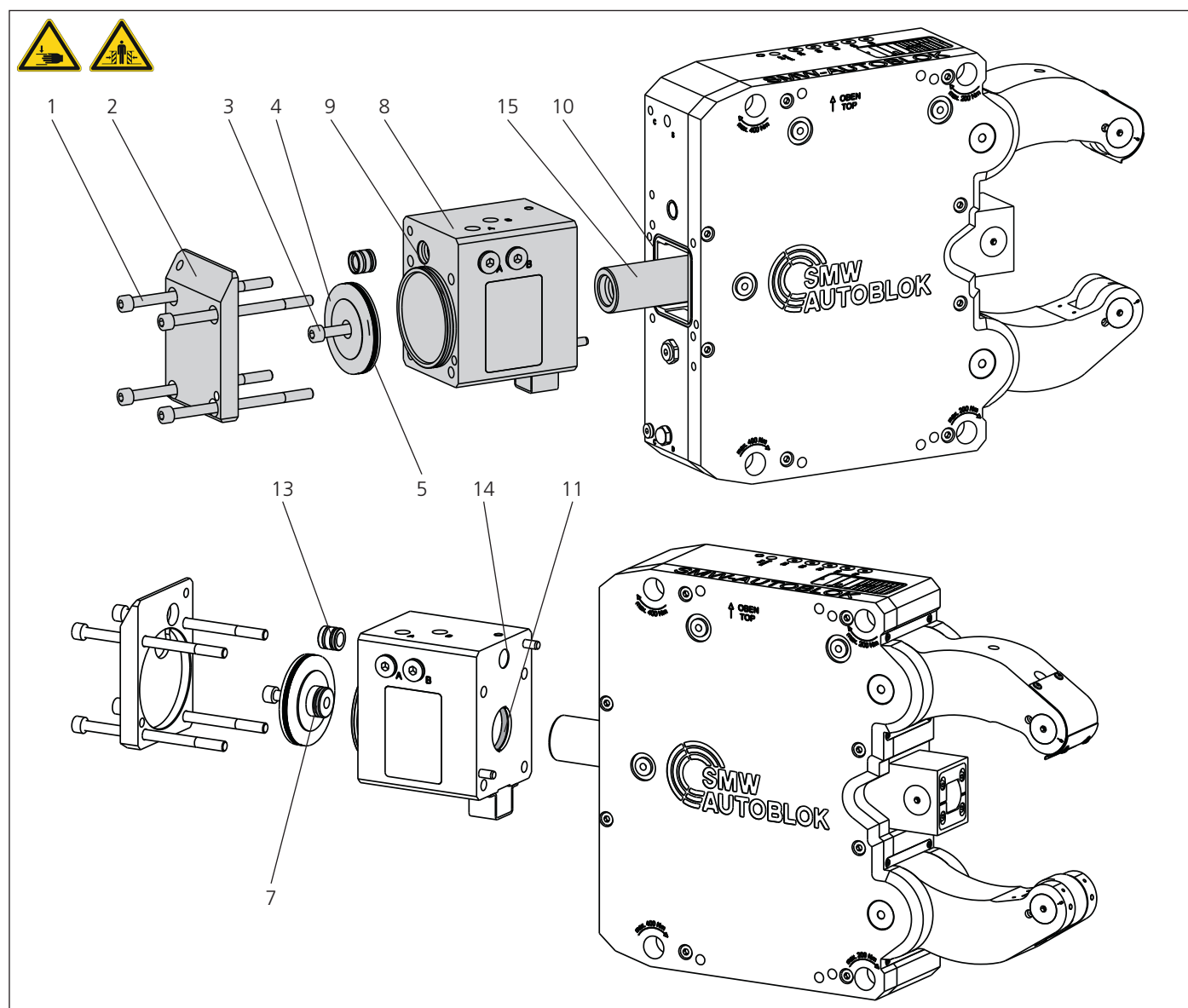
Do not damage the seal when mounting.

Mounting the actuating cylinder

1. Grease piston rod and insert cylinder housing (8) on piston rod (15) carefully.
2. Insert piston (4) in cylinder housing (8)/ piston rod (15) on tighten screw (3).
3. Mount cylinder cover (2) with 4 screws (1) on cylinder housing (8).

When assembling do not damage/ loose components, seals, o-rings.

Use ballbearing grease with assembling.

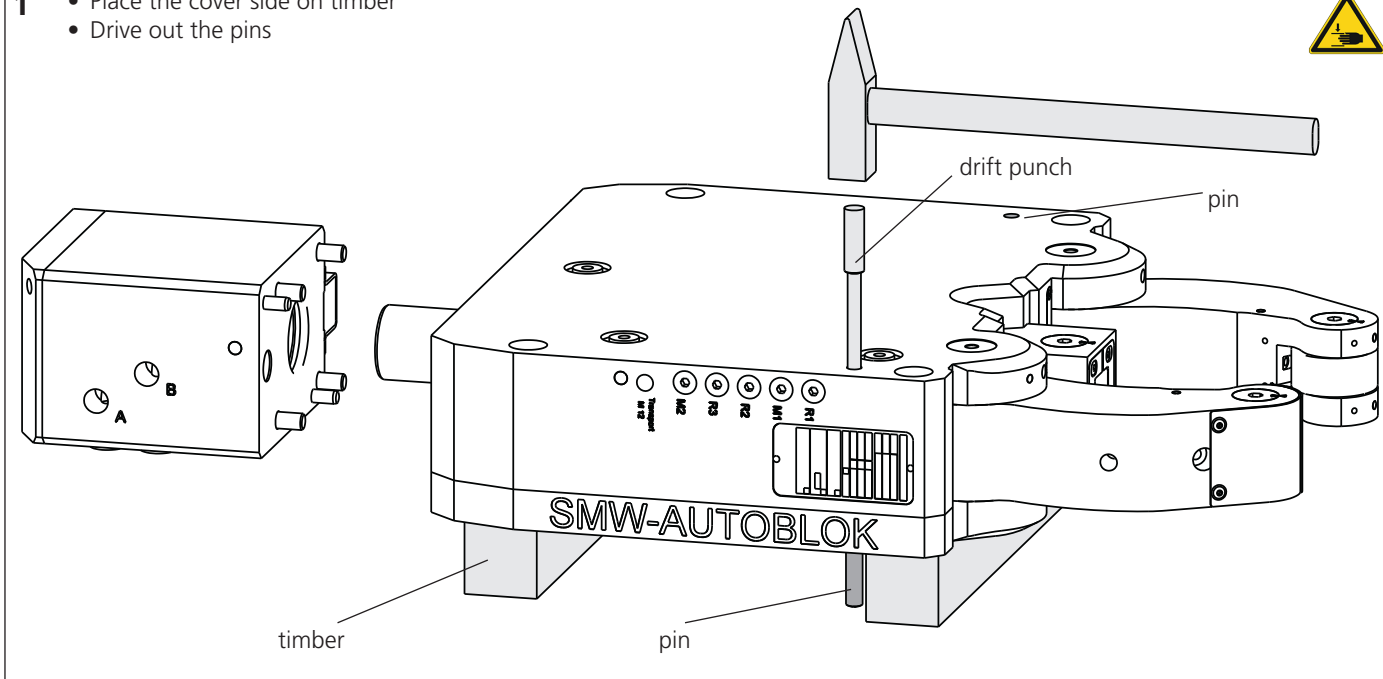


Disassembling of steady rest

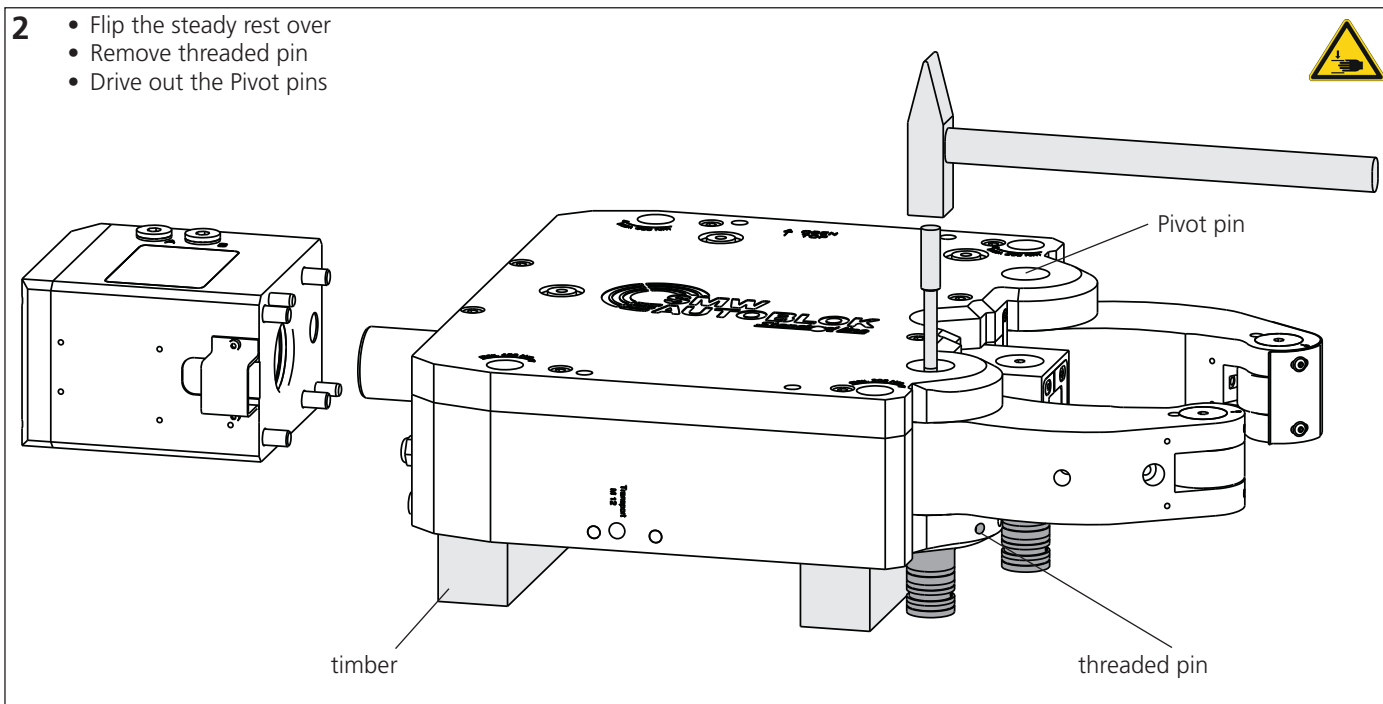


Remove actuating cylinder and seal. (see page 24)

- 1
 - Place the cover side on timber
 - Drive out the pins



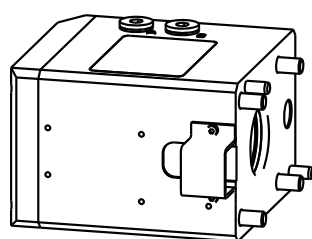
- 2
 - Flip the steady rest over
 - Remove threaded pin
 - Drive out the Pivot pins



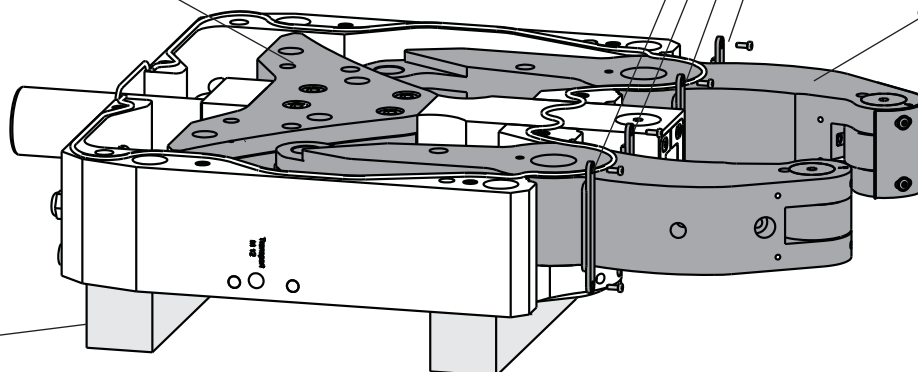
- 3**
- Remove seal strips screws (4 pieces)
 - Remove screws of cover
 - Lift cover
 - Remove pull back plate
 - Remove arm + center arm



Save flat head screws
with "Loctite light 222"



center arm



pull back plate

seal strips / screws

arm

timber



Clean all parts with approved cleaning liquid. Dispose of cleaning according to regulations.



Replace damaged parts by original SMW-AUTOBLOK spare parts.



Replacing all seals after each disassembling is recommended.



Reassembling in reversed sequence.
Slightly save pull back plate screws with Loctite light 222".



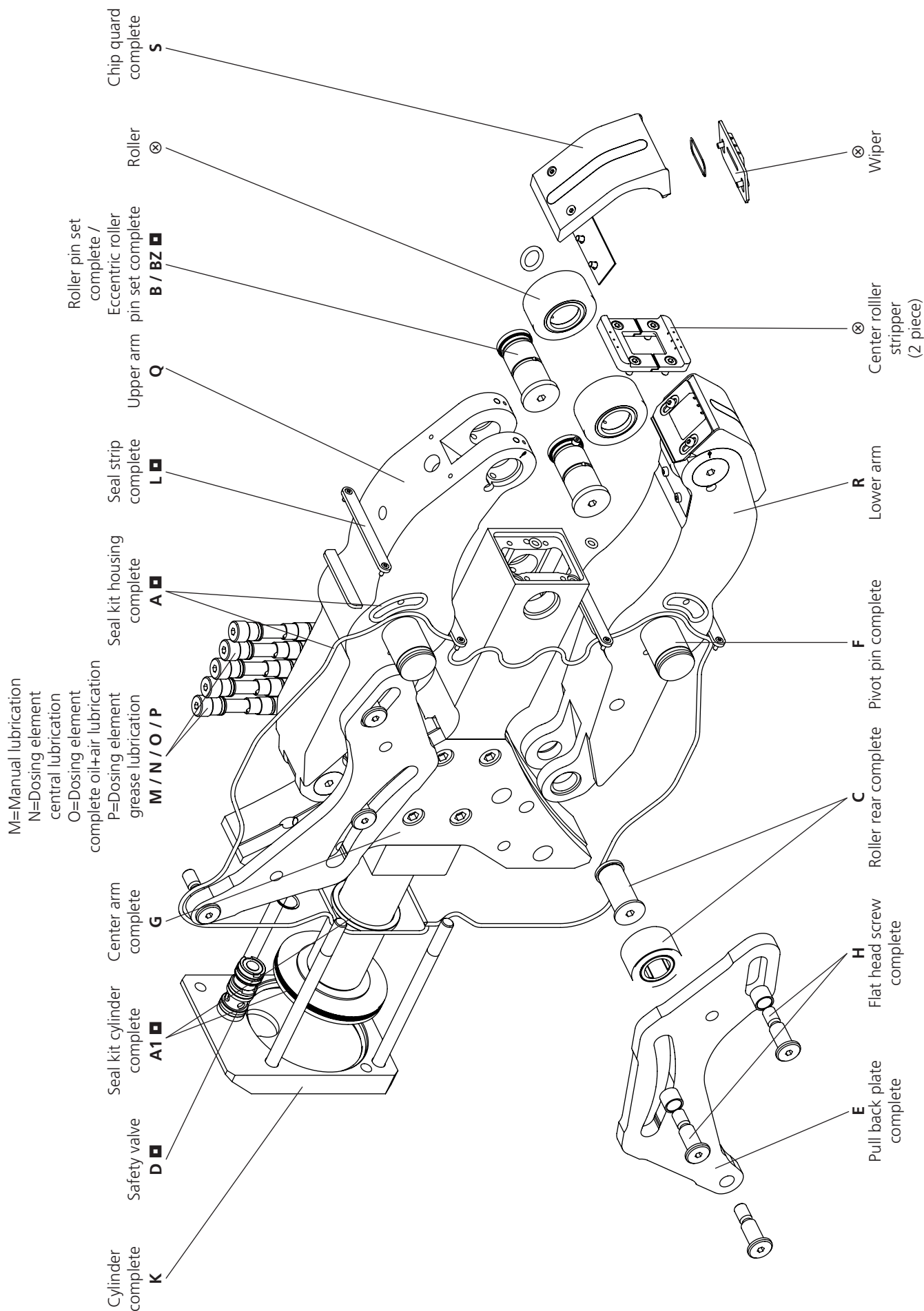
Seal kit: Spare Part Package A/A1 on page 28/29.



When assembling do not damage/ loose components, seals, o-rings.

Use ballbaring grease with assembling.

Problem	Caused by	Action
Component conical	Steady rest is not adjusted to center line	Adjust steady rest to center line
Component is pulled out of the chuck	Steady rest is not on center line or not in proper angle position to the center line	Adjust steady rest/steady rest bracket
Component is not round	Hydraulic system is not bled	Bleed hydraulic system
	Piston seal is damaged	Replace piston seal
	Clamping dia. is not round	Re-machine clamping dia.
Rollers overheat using centralized lubrication version	Centralized lubrication system is damaged	Check lubrication unit, exchange dosing elements, clean lubrication channels
	Oil+air lubrication is damaged	Check, clean and adjust throttle elements
	Lubricant is missing	Refill lubrication oil
Outer arm or center arm is damaged	Crash with turret	Send steady rest to SMW-AUTOBLOK
Roller wear at the outer dia. flat spots	Steady rest has been moved axially with no spindle rotation	Change process
	Steady reset has been damaged at high spindle speed	Reduce spindle speed until rollers are accelerated
Clamping force is not reached	Piston seal damaged	Replace piston seal
	Problems at hydraulic power unit or solenoids	Check pressure and filters at hydraulic power unit
Hydraulic oil escapes from steady rest or cylinder flange	O-Ring at cylinder housing is damaged	Replace O-ring Check if parts are damaged
	Piston rod seal is damaged	Replace piston rod seal Check if parts are damaged
Steady rest does not open	No pressure in supply line	Check hydraulic power unit
	Safety valve in the cylinder does not open	Replace safety valve



SPARE PART PACKAGE	A
Seal kit housing complete consisting of:	Qty.
O-ringstrip cover	1
O-ringstrip housing	4
O-ring cover	1
O-ring arm	2
O-ring Pivot pin	10
SPARE PART PACKAGE	A1
Seal kit cylinder complete consisting of:	Qty.
Piston rod seal (2 pieces)	1
Piston seal (2 pieces)	1
O-ring distance bush	1
O-ring cover	2
O-ring piston	1
O-ring flangeside	2
SPARE PART PACKAGE	B
Roller pin set complete consisting of:	Qty.
Roller pin	3
Roller pin cover	3
SPARE PART PACKAGE (2 pieces / steady rest)	BZ
Eccentric roller pin set complete consisting of:	Qty.
Eccentric roller pin	1
Bushing	1
Cover	1
Screw	1
SPARE PART PACKAGE	C
Roller rear complete consisting of:	Qty.
Pins	2
Roller	2
Bearing	2
Screw	2
SPARE PART PACKAGE	D
Safety valve consisting of:	Qty.
Valve	1
SPARE PART PACKAGE	E
Pull back plate complete consisting of:	Qty.
Pull back plate	2
Flat head screw	6
Bushing	4
SPARE PART PACKAGE	F
Pivot pin complete consisting of:	Qty.
Pivot pin	2
Threaded pin	2
O-ring	10
SPARE PART PACKAGE	G
Center arm complete consisting of:	Qty.
Middel piece	1
Cam	1
Screw	4
Piston rod	1
SPARE PART PACKAGE	H
Flat head screw complete consisting of:	Qty.
Flat head screw	6
Bushing	4

SPARE PART PACKAGE	K
Cylinder complete consisting of:	Qty.
Cylinder housing	1
Cylinder flange	1
Piston rod	1
Piston	1
Seal kit cylinder complete (A1)	1
Screw	5
Stroke control rod	1
Locking screw	1
Safety valve	1
SPARE PART PACKAGE	L
Seal strip complete consisting of:	Qty.
Seal strip	4
Screw	8
SPARE PART PACKAGE	M
Grease nipple / conversion kit to manual lubrication	Qty.
consisting of:	
Grease nipples	4/5
Pipe	4/5
Locking screw with O-ring	1
SPARE PART PACKAGE	N
Dosing element / conversion kit to central lubrication	Qty.
consisting of:	
Dosing element	4/5
Spacer + distance piece	4/5
SPARE PART PACKAGE	O
Throttle set / conversion kit to oil+air lubrication	Qty.
consisting of:	
Throttle	4/5
Locking screw	4/5
SPARE PART PACKAGE	P
Dosing element / conversion kit to grease lubrication	Qty.
consisting of:	
Dosing element	4/5
Spacer	4/5
SPARE PART PACKAGE	Q
Upper arm consisting of:	Qty.
Upper arm	1
SPARE PART PACKAGE	R
Lower arm consisting of:	Qty.
Lower arm	1

Spare parts are supplied in these packages only.
To order the required spare part kit please contact SMW-Autoblok.

■ denote use up items

⊗ denote wear parts

(recommended stock item)

Wear parts: rollers, chipguards, middleroller coverplate

Wear parts see ordering review on page 7.

12 months warranty

Product: Steady Rest

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: Steady Rest

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.

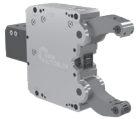
- The delivery location and machine location are within Germany.

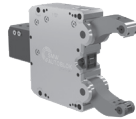
Product: _____


Serialno.: _____




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

Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

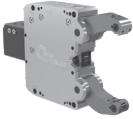
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Operating hours	
Name	
Date	
Signature	
Remarks	

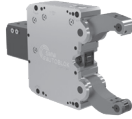
Product: _____


Serialno.: _____




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

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

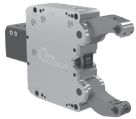
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Date		
Signature		
Remarks		

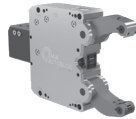
Product: _____


Serialno.: _____




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

Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

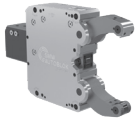
Maintained according to instruction manual	YES <input type="checkbox"/> 
Operating hours	
Name	
Date	
Signature	
Remarks	

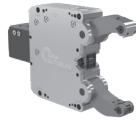
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Serialno.: _____

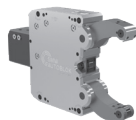


Regular and documented maintenance conserves the value of your work holding, and ensures warranty!

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
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:

Please send the filled in form back to:

SMW-AUTOBLOK
Spannsysteme GmbH
Wiesentalstraße 28
D-88074 Meckenbeuren
Fax: +49 (0) 7542 - 3886
Mail: vertrieb@smw-autoblok.de

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D-88074 Meckenbeuren
Fax: +49 (0) 7542 - 405 181
Mail: sales@smw-autoblok.de



Id. No. :

Item :

Weight :

Serialno. :

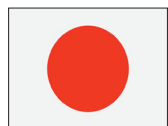
**SMW-AUTOBLOK Spannsysteme GmbH**

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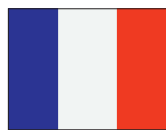
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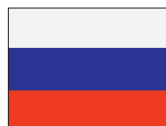
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