

SKC slideway coatings are used for the production of guideways and sliding surfaces. Originally developed to be used for machine-tools, today, they are applied for industries being most different from each other as e. g. construction of heavy machinery or of printing machines, they even found entry in optical industry.

Apart from the optimal technical properties, forming-to-size technique is offering a great variety of alternatives for a cost-saving production of surfaces in most different designs.

Slideway Coating SKC 60
standard type
application by injection

Slideway Coating SKC 62
low viscosity
application by injection

Slideway Coating SKC 63
standard type
application by spatula

Slideway Coating SKC 63 R
fast-hardening repair compound
application by spatula

Slideway Coating SKC 3
high loading capacity
application by spatula

Slideway Coating SKC 400 ELF
PTFE-slideway coating
application by spatula or injection

Slideway Coating SKC 600
PTFE-slideway coating
application by spatula or injection

Slideway coating SKC 90
standard type
pouring method

Slideway Coatings

Advantages

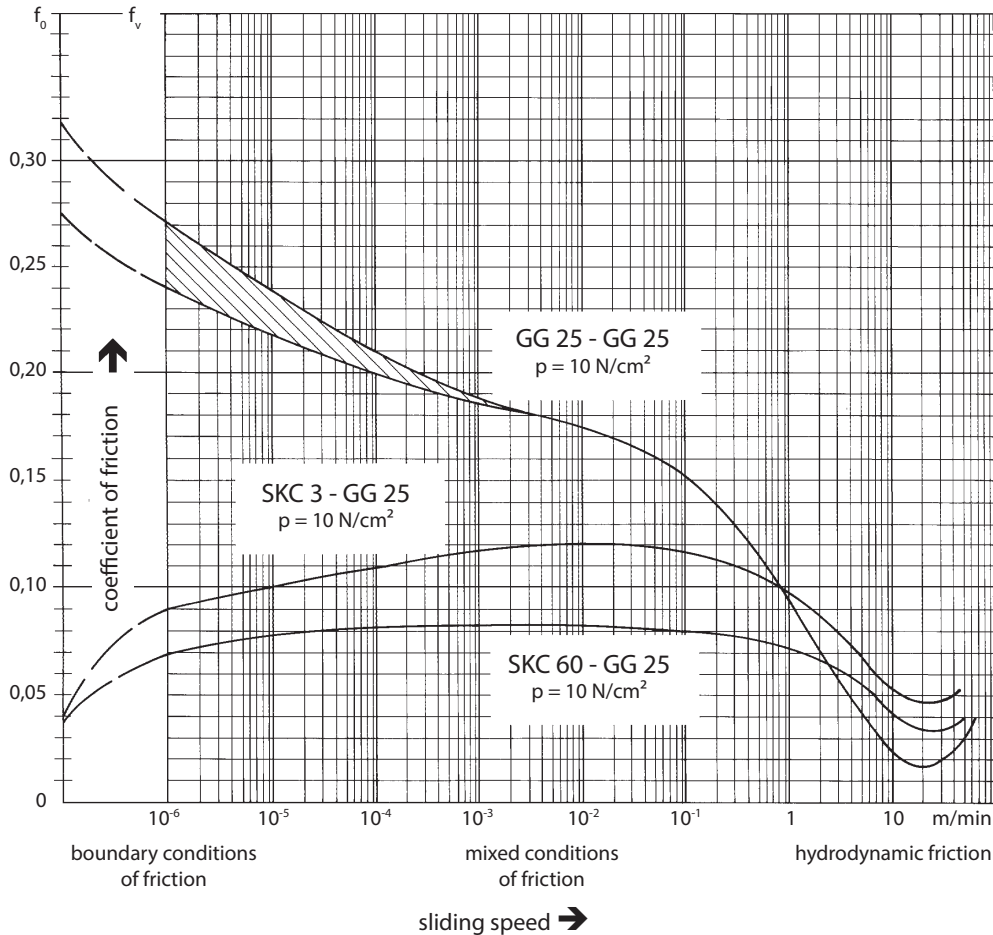
- ▶ high accuracy
- ▶ anti-stick-slip-behaviour
- ▶ very high wear resistance
- ▶ high damping
- ▶ high accuracy to size
- ▶ excellent adhesion
- ▶ properties displayed under emergency conditions
- ▶ cost-saving forming-to-size technique
- ▶ interchangeability when forming from a master

Fields of applicaton

- ▶ machine tools
- ▶ forming machines
- ▶ sheet-metal working machines
- ▶ printing machines
- ▶ paper machines
- ▶ special machinery
- ▶ measuring machines
- ▶ plastic machines
- ▶ optical appliances
- ▶ machine overhauling
- ▶ handling devices
- ▶ pumps
- ▶ hydraulic tools
- ▶ toolings
- ▶ hydrostatic guideway systems
- ▶ aerostatic guideway systems

Diagramme of Frictional Characteristics

SKC 3 / SKC 60



Lubricant:
Shell Tonna T 68

The diagramme of frictional characteristics shows a comparison of the frictional characteristics of SKC 3 - GG 25 (grey cast) and SKC 60 - GG 25 to the pairing GG 25 - GG 25. The advantages of the SKC slideway coatings are evident from the following facts, which are brought out by the graph:

1. The static friction f_0 is very low, it is about $\frac{1}{7}$ of the value of adherent friction of GG 25 - GG 25 pairings. Correspondingly, the starting forces and the amount of elastic prestressings which the drives generate until starting, are low.
2. The frictional characteristic of motion, i. e. the kinetic friction, initially rises with increasing sliding speed and will then drop again,

when the hydro-dynamic lubricating film is built up. The influence of different slide-pairings as, e. g. SKC-cast / cast hardened / steel and steel hardened on the frictional characteristics can be ignored.

When positioning components, the increase of the frictional function avoids the undesired, jerky stress-relief of the drive elements after the start, and allows exact feed in microns. On the reduction of the sliding speed to a standstill, and the end of a feed, the frictional function declines. Thus, a high stress-relief of the drive elements is achieved, and an undesired stick-slip, caused by relief of stresses under the influence of shocks and of fluctuations of the cutting force are avoided.

When machine elements are sliding at low speed - in the range of boundary conditions - the increase of the frictional function generate a damping of the sliding process, thus avoiding the undesired stick-slip effect. In contrast to this, the decreasing frictional function of other pairings of sliding materials leads to an instability of the sliding process and to stick-slip phenomena.

3. The amount of the friction coefficient is not only dependent on the pairing. Using an adequate lubricant is also of importance. Apart from their good tribological properties, modern bedway oils also offer an excellent behaviour of de-emulsification. If lubricant penetrates into the guideway gap, the media will not get mixed; therefore, in normal case, difficulties can be avoided. Impeccable lubrication is the only warranty for the total function of high-quality machines.

SKC Slideway Coatings - Characteristics

Anti-stick-slip behaviour

Even under high area loads, SKC slideway coatings offer a jerk-free starting and smooth movement. Minimum feed (in the range of microns) and a very precise positioning are achieved by SKC-coated guideways, if an adequate drive, an adequate lubricating system and lubricant are used. This behaviour is obtained by the most salient of the positive properties: the static friction f_o is smaller than the kinetic friction f_v .

Resistance to wear

The excellent properties of the SKC compounds minimize wear of the slideway coating and the opposing guide surface. The readiness with which it embeds foreign bodies offers an additional and an effective protection against scoring.

Forming exactly to size and at low cost

SKC slideway coatings harden without any technically relevant shrinkage, therefore the accuracy of the surface to be formed is truly reproduced on the SKC antifric-tion coating. So, in most cases, a subsequent and costly mechanical machining is avoided, as the lubrication grooves can be formed simultaneously.

Dimensional stability

In contrast to many other synthetics, SKC slideway coatings are scarcely effected by deformation under load, in particular, under the influence of heat (see tech. data).

Damping

The high accuracy of SKC-coated guideways and the technological properties of the slideway coating allow the minimum of guiding tolerance. The excellent damping behaviour of slideways, e. g. compared to roller-type guideways is therefore remarkably improved. By the increasing frictional function in the boundary area, and into the direction of motion, damping is given. The dynamic rigidity of the machines is improved.

Safety and reliability

The excellent properties under emergency conditions of the SKC slideway coatings avoid high wear, even under unfavourable conditions, such as inadequate lubrication. SKC-coated guideways do not "seize".

Excellent adhesion

SKC slideway coatings adhere excellently on cleaned metallic surfaces, and also on existing SKC layers. Correction of damage or of machining errors on SKC slideway coatings can be done easily. Even on components of machines made of solventless polymerisable resinous compound or cement-bound concrete, SKC slideway coatings have outstanding adhesion characteristics.

Chemical Properties

SKC compounds are resistant to water, sea water, mineral and synthetic oils, weak acids and caustics, gasoline and alcohol.

They are not resistant to acetone, benzene, methanole, phenoles and cresoles (under permanent load), and to solvents (under a longer-lasting influence).

Any particulars as far as chemical resistance is concerned have to be seen under a certain reservation, as parameters like temperature, time of action and state of hardening of the compounds are of importance. If there is any doubt, we recommend to provide specific storing tests.

In cases of long-term influence under watery solvents, as well as by depositing of oxydes, fission and metabolic products (especially from water-mixable coolants/lubricants) dimensional variations of some microns might occur.

Upon request, we are well prepared to send you detailed and relevant information.

These statements are based on practical experiences having been won over decades and on a great variety of researches carried out at technical universities and by renowned SKC users.

Technical Data

Slideway Coatings

	SKC 3	SKC 400 ELF	SKC 60	SKC 62
Specific weight [kg/dm ³]	1.8	1.4	1.6	1.5
Mixing ratio resin : hardener	100:7.3	100:10.3	100:9.5	100:9.9
Safe surface load, dynamic [N/mm ²]	15	2	5	5
Safe surface load, static [N/mm ²]	100	10	50	50
Modulus of elasticity [N/mm ²]	6190	2920	4850	4770
Hardness [Shore D]	83,5	n. b.	82	80
Coefficient of friction f_0 as per type of oil	< 0.10	< 0.06	< 0.08	< 0.08
Maximum operating temperature [°C]	80 (short-time 100)			
Heat-exchange coefficient [K ⁻¹]	$\sim 30 \times 10^{-6}$			
Heat conductance [W/mK]	0.5-0.8			
Volume resistance [Ω cm]	$\sim 1 \times 10^{17}$			
Dielectric coefficient	~ 4			
Dielectric strength [kV]	~ 10 (at 2.5-3 mm thickness of layer)			
Minimum thickness of layer, approx. [mm]	1.5	1.5	2.0	1.5
Shrinkage during hardening [%]	< 0.1			
Quantity required	volume [cm ³] $\times F_m$ equals quantity [g]			
Factor F_m * spatula method	3	3	-	-
Factor F_m * injection/pouring method	-	2	2	2
Time of application at 20 °C, approx. [min] **	45	45	30	30
Time before separation at 20 °C [h]	12-16	18-22	12-16	12-16
Hardening time at 20 °C [h]	16-22	22-30	16-22	16-22
Storing life at approx. 20 °C, dry conditions	12 month			
Available ready-to-use packings	see order details			

* The factor F_m contains the specific weight and a safety factor.

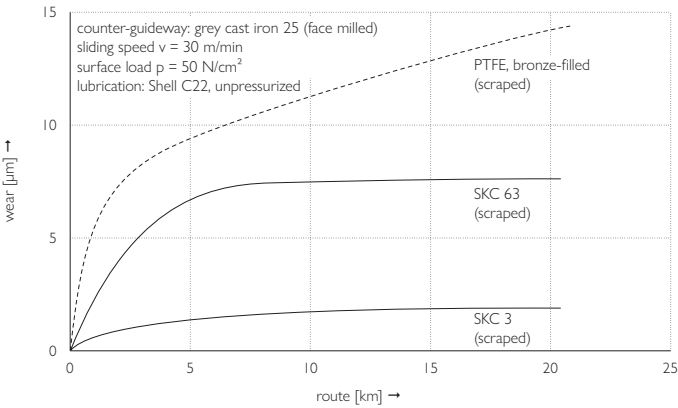
** The time of application is strongly depending on the ambient temperature and the mixing process. Even in cases of big agglomerations of the compound (e. g. in cartridge or can) the time of application can become widely shorter.

	SKC 63	SKC 63 R	SKC 90	SKC 600
Specific weight [kg/dm ³]	1.7	1.6	1.4	1.2
Mixing ratio resin : hardener	100:11.3	100:8.3	100:12.6	100:12.0
Safe surface load, dynamic [N/mm ²]	5	5	4	2
Safe surface load, static [N/mm ²]	50	50	30	10
Modulus of elasticity [N/mm ²]	5020	4850	4200	2920
Hardness [Shore D]	82	85	80	n. b.
Coefficient of friction f_0 as per type of oil	< 0.08			
Maximum operating temperature [°C]	80 (short-time 100)			
Heat-exchange coefficient [K ⁻¹]	$\sim 30 \times 10^{-6}$			
Heat conductance [W/mK]	0.5-0.8			
Volume resistance [Ω cm]	$\sim 1 \times 10^{17}$			
Dielectric constant	~ 4			
Dielectric strength [kV]	10 (at 2.5-3 mm thickness of layer)			
Minimum thickness of layer, approx. [mm]	1.5	1.0	2.0	1,5
Shrinkage during hardening [%]	< 0.1			
Quantity required	volume [cm ³] $\times F_m$ equals quantity [g]			
Factor F_m * spatula method	3	3	-	3
Factor F_m * injection/pouring method	-	-	2	2
Time of application at 20 °C, approx. [min] **	30	15	45	45
Time before separation at 20 °C [h]	12-16	1,5	18-22	18-22
Hardening time at 20 °C [h]	16-22	4	22-30	22-30
Storing life at approx. 20 °C, dry conditions	12 month	12 month	9 month	12 month
Available ready-to-use packings	see order details			

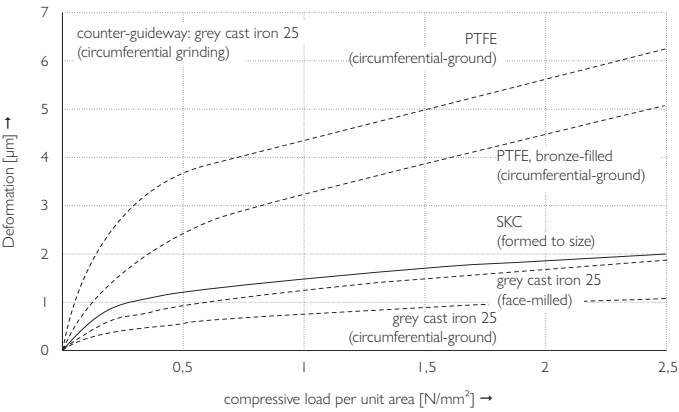
The above details are to our best knowledge. We cannot accept responsibility in individual cases as the way in which the material is prepared and handled is outside our control. Due to the manifold conditions of production, operating and application, every user has to check by himself the suitability of the product for his specific purpose of application. The specifications given in this brochure are not to be understood as an assured property.

Diagrams

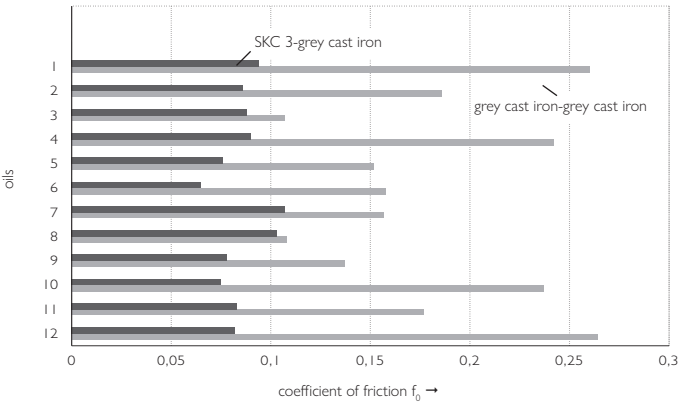
Warming-up wear of various materials
(extract from a test of a renowned German machine-tool manufacturer)



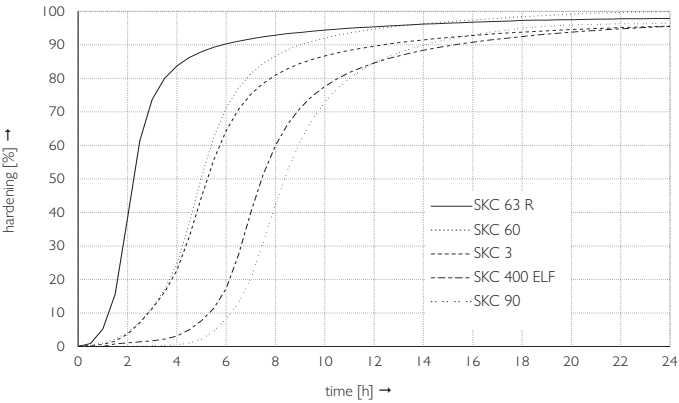
Behaviour of deformation



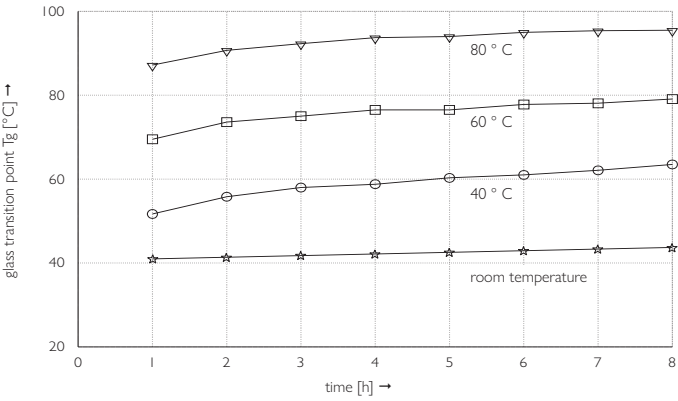
Coefficients of friction: Standard series oils VG 220



Sequence of hardening of various SKC coatings



Aging SKC 60 - Development T_g



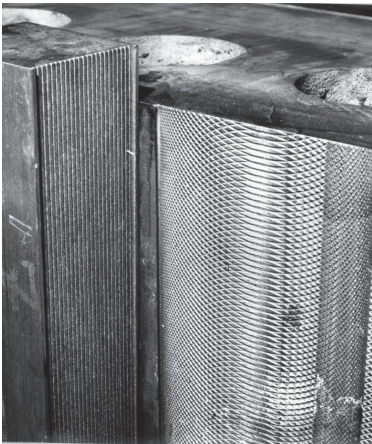
Guidelines for Application

Slideway Coatings

Preparation

Roughening of the surface to be coated

To improve adhesion, the guide surface to be coated has to be roughened. The peak-to-valley height should be about 0.5 mm ($R_t=500\text{ }\mu\text{m}$). Roughening can be provided by rough-planing, rough-milling, by cutter or by bore hole, i.e. by turning a thread. Sandblasting, using hard and sharp grains (blasting medium: a high-furnace slag G 77, grain 0.6-1.2 mm) offers an especially good adhesion surface. In case of all these processes, care has to be taken, that the surface will not be compressed, but will be cracked.



Example for roughening of the surface to be coated by planing (lh.) and milling (rh.)

Cleaning of the surface to be coated

The components to be coated have to be cleaned thoroughly. For pre-cleaning various cleansing agents can be used.

We are at your service to provide you with information on a suitable cleansing agent.

The surfaces to be coated have to be free from oil, grease, dust, rust, scale and protective paint. In case of a mineral cast, it is necessary to remove the layer of separating wax or treatments. For the final cleaning before coating, preferably acetone

should be used. Care has to be taken when compressed air is used for dry-blowing of the adhesion surfaces, because it often contains oil which might affect adhesion.

Counter guideway and forming-to-size surface

SKC coatings can be formed to size from all kinds of counter guideways, from devices (masters), from the counter surface, or - for instance - from gauge plates or templates. When forming, the roughness of the counter guideway should not exceed $R_a = 2.5\text{ }\mu\text{m}$. The counter surfaces can be ground, fine-milled, broad-smoothed planed or fine-turned.

Releasing compounds

The surfaces from which forming-to-size is provided, are to be treated with a releasing compound. Depending on the specific case, various releasing compounds are available. Each to type, they are applied with a cleaning rag or a brush or they are sprayed on. After application and for a short time, the releasing compound layer is left to dry and then carefully polished with a soft cloth. Please, see chapter 'Accessories' for a description of the various releasing compounds.

Before coating, all areas on which compound might escape during the forming process and where it has to be removed after hardening, are also to be treated with a releasing compound.

About 1 kg of releasing compound is required for the application of 10 kg of slideway coating.

Formable oil grooves

The forming-to-size technique allows a simultaneous moulding of the oil grooves. The pre-fabricated shapes of the oil grooves are sprayed with an adhesive spray and adhered on the forming surface. It

is important to spray only a thin layer of the adhesive and to let it ventilate after spraying. For precise information, please, see the instructions of use on the adhesive spray. The shapes of the oil grooves have to be pressed on tightly and then to be treated with a releasing compound.

After hardening of the compound the shapes of the oil grooves can be removed from the compound. The oil groove itself can be lifted at its end by means of a pointed tooling and be withdrawn by hand. All application techniques allow a forming-to-size of the oil grooves. For shapes and dimensions, please, see chapter 'Accessories'.

Calculation of quantity

For application by spatula, the volume of the coating groove - in cm^3 - is multiplied by factor F_m . This gives the required quantity of the compound in grammes. Factor F_m allows for the specific weight as well as a safety margin and depends on the compound to be used and the application. The applicable value can be seen from the technical data.

Example of calculation for injection method

material: SKC 60 ($F_m=2$):
guideway: length 800 mm, width 50 mm,
thickness of groove 2,5 mm

$$80\text{ cm} \times 5\text{ cm} \times 0,25\text{ cm} \times 2\text{ g/cm}^3 = 200\text{ g}$$

Removal of the coated component

After hardening, the component can be lifted off. In case of very big workpieces, additional devices should be used to relieve the crane, as e.g. pressure screws or a winch. Before lifting off, and if possible, the component should be loosened in the direction of motion of the guideway.



Time of application, time before separation and hardening time: see technical data.

Retouching work

At the front, the edges of squeezed out material have to be removed using either a portable grinding machine or a coarse linen cloth. Lateral edges of squeezed out material are to be traced and to be cut off with a flat chisel.



Flaws, pits or chipped parts of the coating can easily be repaired. In this area, the slideway coating will be roughened, decreased and the flaw to be filled in with SKC coating. For quick repairs, SKC 63 R is available. Flaws having been repaired with this compound can be treated already after 3-4 hours. If necessary, all the SKC slideway coatings can be machined mechanically (see also the table with the empirical values). For all the mechanical processes, care has to be taken that no heating of the surface of the coating will occur. Bore holes for lubricants are to be opened by boring from the coating side to prevent an escape of the coating.

Application by spatula

Positioning

The workpiece to be coated is positioned at its moulding surface on setting screws, feelers, stops, and by means of clock gauges or water levels so that is dimensionally aligned to the surfaces of reference. As the workpiece has to be removed in order to apply the SKC slideway coating, the positioning points have to be marked.

Mixing

SKC slideway coatings are available in various ready-for-use packs containing epoxy resin and hardener precisely proportioned to each other in weight. So, an additional weighing is not required and should be avoided. For mixing, the epoxy-resin compound has to be loosened with a spatula from the tin wall and the tin base, the hardener is to be poured in and to be mixed in by hand. Subsequently, at about 400 rpm, the two components are to be mixed well with the SKC

stirrer which has to be chucked in a drill- or in an upright drilling machine. A stirring time of 3 minutes has to be observed. Take care that the stirrer will not grind at the tin base, as otherwise, the compound will heat up. After mixing, the SKC compounds applicable by spatula have to be taken out of the tin immediately and to be spread out on a sheet (see ill. below). By spreading out the compound, a certain part of the reaction heat is released, thus increasing the pot life; any air bubbles stirred in are cracked. If the material remains in the tin, a heat accumulation is created, which may lead to a short-term hardening. For a quantity of 0.5 kgs of SKC compound applicable by spatula, a sheet measuring about 500 x 500 mm should be used.



Application time and temperature

The application time is depending on the material to be used. The right values are shown on the table 'Technical Data'. SKC coatings require an ambient temperature of at least 18 °C. For the coating process, the workpieces, too, must have this temperature; if necessary, they are to be heated by radiator.

Application of the coating

By means of a spatula, the material is removed from the sheet and applied in several thin layers, where the first layer has to be pressed carefully into the roughening. At the end, the material has to be applied somewhat roof-shaped, so that the compound is displaced from the in- to the outside without any air pockets when placed against the counter-surface.

Method	Data of application
Milling	cutter head with 4 cutters, PKD (poly-crystalline diamond) cutting speed vabout 130 m/min feed per tooth f_z0.08-0.1 mm/cutting tooth cutting depth a0.1-0.3 mm chip angle γaxially positive, radially negative feed speed u150-200 mm/min rpm of workpiece n.....about 500 min⁻¹ Attention: the 'u' and 'n' values only apply as informative values for a cutter diameter of 80 mm with 4 cutters! feed speed $u = f_z \times z \times n$ f_z: feed per cutter in mm/cutting tooth z: number of cutters n: rpm of workpiece in min⁻¹
Grinding	silica-carbide wheel 36-46 G 8, wet grinding 'Stellram' wheel 42 A 46 H 16 V 24 (A = 50 % natural und 50 % crystal corundum) wet grinding, $v = 25-30$ m/s 'Naxos' wheel EKD 36 / 02G / H7 KE 100, wet grinding
Honing	type of deviceportable honing device AN 815 honing oilstandard honing oil honing stone4 stones without guiding W 47 - J 63 - 772X Attention: After honing, the bore holes have to be cleaned!

Forming-to-size of the mating component

The workpiece is positioned on the moulding point and lowered to the aligning points (setting screws etc.) which had been marked before. Excess material is squeezed off. Any corrections within the range of some 1/100 mm can still be carried out into direction of the coating. In no case shall the mating component be lifted, as this would draw in air pockets. Light workpieces are in addition to be loaded with a weight or to be clamped with retainer gibs or screw clamps. When the aligning points are reached, the workpiece is unloaded or respectively unclamped.

Injection method

Preparation

For an application by injection, the layer thickness depends on the material to be used and should be about 2 mm (please see technical data for the minimum layer thicknesses). Depending on the press system which is used on workpieces having a coating length of up to about 1000 mm, the injection bore has to be provided in the centre, thus enabling a uniform distribution of the compound into both directions of the coating gap. In case of longer pieces, several injection bores are required being at a distance of about 500 mm to each other. For a vertically arranged coating gap, the injection bore has to be arranged as low down as possible.

Sealing

Depending on the possibilities of design or of the techniques of production, sealing is carried out by metallic edges or by foam-rubber strips. Metallic edges are used as a direct support, and should be pre-machined exactly, according to the dimensional requirements. Before coating, adhesive-tape strips (e.g. linen-reinforced adhesive tape 0.3 mm thick) can be adhered on those edges free. A subsequent un-

dercutting of the compound is not required.

When sealing with foam rubber, an optimal sealing effect is obtained when the profiles are compressed to about 50% of their original thickness.

Positioning

The workpiece, cleaned and prepared for coating is placed on the moulding surface, which has been treated with the releasing compound, aligned by means of setting screws or similar devices, and fixed. During injection, the aligned component has to be kept in position, by means of retainer gibs, screw-clamps, etc., so that a displacement caused by the injection pressure, is avoided. In a range of a few 1/100 mm a re-adjustment into direction of the coating can be done after injection.

Mixing

SKC slideway coatings are available in various ready-for-use packs containing epoxy resin and hardener precisely proportioned to each other in weight. Therefore these ready-for-use packs should be used completely.

For mixing, the epoxy-resin compound has to be loosened with a spatula from the tin wall and the tin base. In case of the low-viscous compounds SKC 62 and SKC 90, the fillers deposit after a certain stock time and - before adding the hardener - they have to be stirred up thoroughly. For this purpose, the residue has to be loosened from the tin base and the resin compound stirred thoroughly until the compound is clod-free. Before further use, the resin compound has to cool down to ambient temperature.

Then, the hardener is added and carefully poured in and - for 1 minute - mixed by hand intensively with the resin. Final mixing at about 400 rpm with the SKC stirrer which has to be chucked in a drill- or in an upright drilling machine. A stirring time of 3 minutes has to be observed. An insufficient mixing of

the two components might cause the risk of soft spots.

Systems of presses

(see also 'Accessories')

The coating has to be poured in a thin stream onto the wall of the cartridge which should be held in an inclined position. Press the piston into the filled cartridge and ventilate. For ventilation, the cartridge has either to be deformed slightly by depressing the piston or providing ventilation by adding a thin wire during inserting the piston. Afterwards, the wire has to be removed.

Only for cartridges SK500, KK1000:

The tip of the thread nipple is to be cut off and the nozzle to be reduced to the diameter of injection bore (see chart on right side). Then, the diaphragm inside of the cartridge is pierced from the front through the nipple. Attach nozzle as required.

Insert the cartridge into the press and close the press with the sealing cap. Hold the press vertically upwards and ventilate it until a small quantity of compound escapes. According to the press system, the cartridge nozzle is to be pressed or screwed into the the injection bore provided. Press the coating for joint faces slowly and continuously into the gap, until it escapes through the ventilation bore at the farthest points.

Injection bore
nozzle to be shortened by

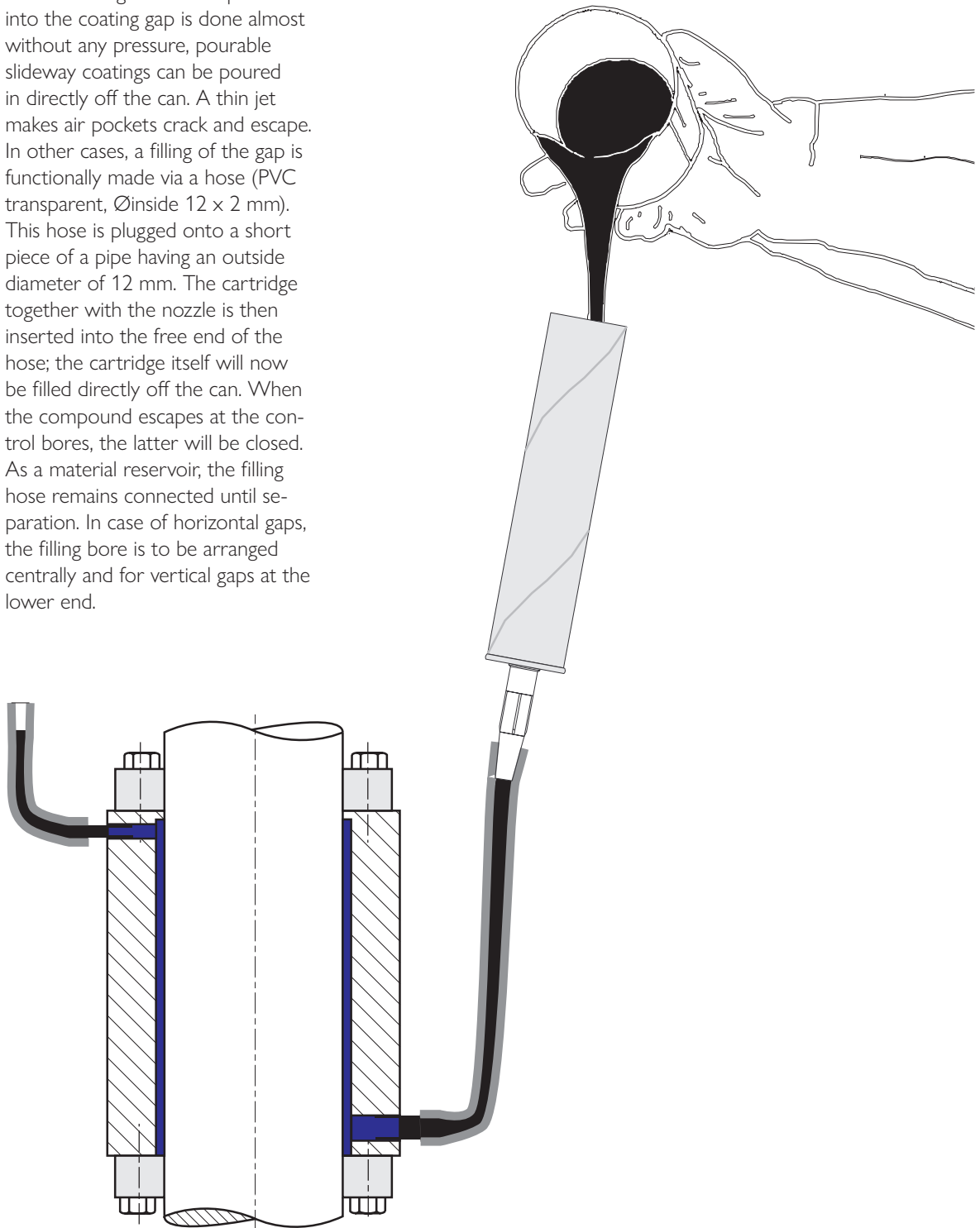
Ø 6	0 mm
Ø 8	12 mm
Ø 10	25 mm
M 8	5 mm
M 10	16 mm
R 1/4"	36 mm

Coating of long workpieces with several injection bores

The coating process is started from the central injection bore. Pressing in has to be continued until the compound escapes from the adjacent injection bores. Then, remove the press and seal the bore with a thread plug. Now, sequence of coating is continued from the bores where the compound has escaped. The process is repeated, until the complete guideway is filled. Coating of longer workpieces should be carried out simultaneously with two presses.

Pouring method

The preparations are corresponding to those of the injection method. As filling of the compound into the coating gap is done almost without any pressure, pourable slideway coatings can be poured in directly off the can. A thin jet makes air pockets crack and escape. In other cases, a filling of the gap is functionally made via a hose (PVC transparent, $\varnothing_{\text{inside}} 12 \times 2 \text{ mm}$). This hose is plugged onto a short piece of a pipe having an outside diameter of 12 mm. The cartridge together with the nozzle is then inserted into the free end of the hose; the cartridge itself will now be filled directly off the can. When the compound escapes at the control bores, the latter will be closed. As a material reservoir, the filling hose remains connected until separation. In case of horizontal gaps, the filling bore is to be arranged centrally and for vertical gaps at the lower end.



Filling of a gap via a hose (pouring method)

Repair Coatings

SKC 63 R / SKC 400 R

Coatings, applicable by spatula for the repair of blow-holes, for instance of inclusions, open spaces or scores.

The coatings SKC 63 R and SKC 400 R, applicable by spatula, have been developed for the repair of blow-holes, for instance of inclusions, open spaces or scores.

Before repairing worn-out guideways, the scores have to be milled or ground down to the exit ("zero transition") about 1 mm deep.

Using, for instance, a portable drilling machine with a grinding point, inclusions have to be ground or milled so, that the created blow-hole can be filled easily and is free from contaminations.

In order to reduce re-machining and to press the coating into the scores or into the inclusions, a guide-bar, ground and pre-treated with a releasing compound should be placed or chucked onto the coated area.

Alternatively, or on uneven surfaces, the repaired areas can be masked off with a smooth adhesive tape, after they had been filled out with the repair compound.

The repair compound combines itself homogeneously with all the SKC coatings and adheres excellently on all cleaned and roughened surfaces (e. g. metal, mineral casting etc.).

The hardening time does strongly depend on the temperature conditions. At room temperatures of 20 °C, the repaired surfaces can be re-scraped 2 hours after the compound has been applied.

After hardening, the repaired areas

can be treated mechanically (turning, milling, drilling, grinding). In order to equalize small repaired blow-holes, in cases where the surface is exposed to high demands after hardening, a fine abrasive cloth (grain size 220) used with machine oil has proven success.

If the blow-holes repaired by that method have to be absolutely free from inclusions (bearing surface of

sealing rings, general sealing function), then, after 8 hours, the surfaces are to be scanned under appropriate pressure with a pointed but not sharp object, as e. g. a rounded scribe. This method discovers the blow-holes sitting under the surface which then can be repaired as described above.

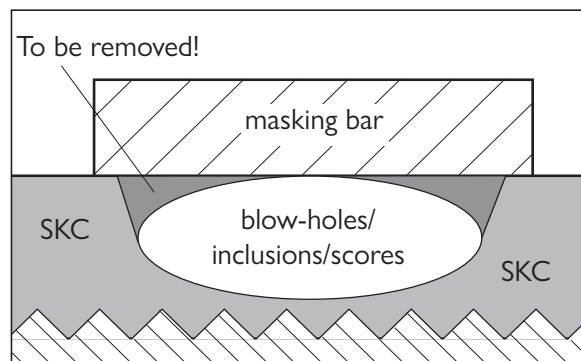


Diagram for the application of SKC repair compounds.

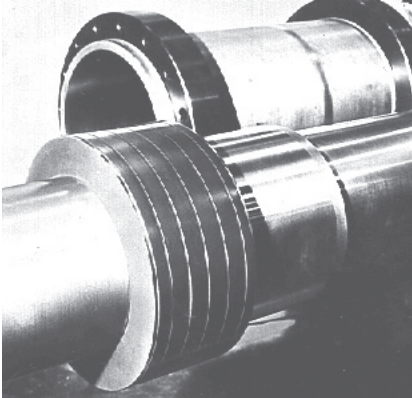
The repairing compound SKC 400 R is used on the same way as SKC 63 R. The technical data are similar to those of SKC 400 ELF. Even with the blue compound SKC 400 ELF, the repairing compound SKC 400 R allows a repair inconspicuous in colour.

Parts by weight for the consumption of smaller quantities of the compounds

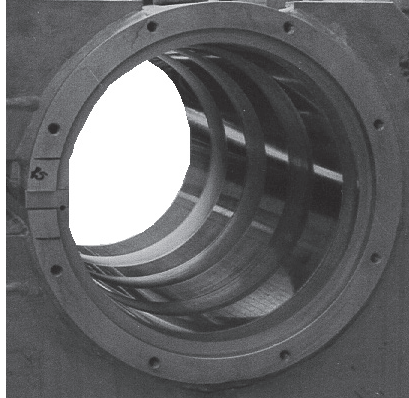
resin [g]	hardener [g]	
	SKC 63 R	SKC 400 R
20	1.7	1.8
30	2.5	2.6
40	3.3	3.5
50	4.2	4.4

Splitting of resin and hardener should be done only by means of a balance having an accuracy of reading of 0.1 g!

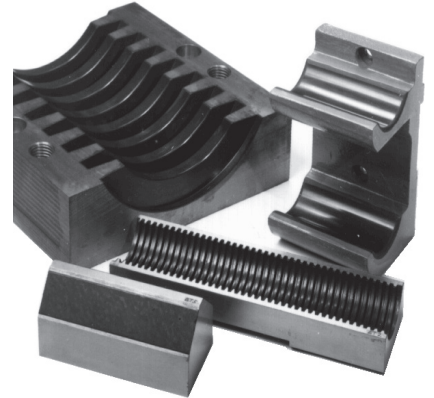
Examples of Application



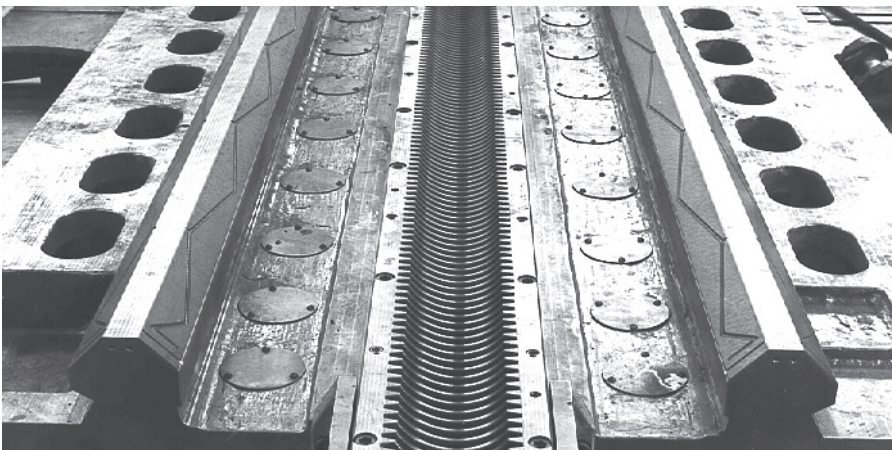
ill. 1:
Coated hydraulic piston for the table drive of a
guideway grinding machine (diameter of piston 230
mm)



ill. 2:
Sleeve guiding



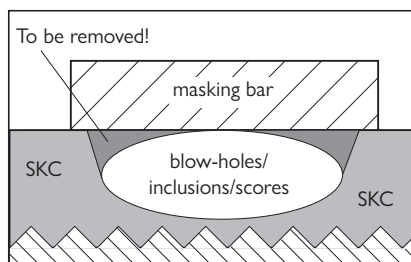
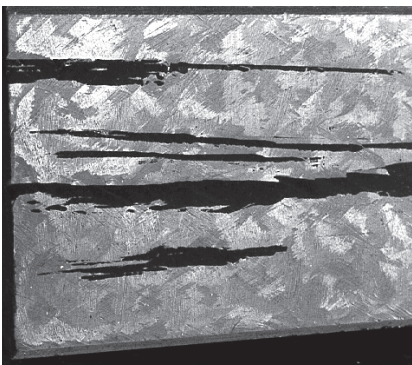
ill. 3:
Worm rack, single-thrust bearing



ill. 4:
Coated slideways and worm rack. Table of a gantry milling machine.



ill. 5:
compressor screw

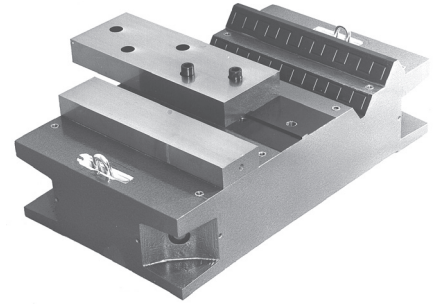


ill. 6 and 7:
Repair of scores in a metallic guideway - applying repair coating SKC 63 R

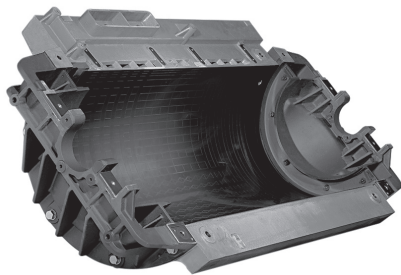
Examples of Application



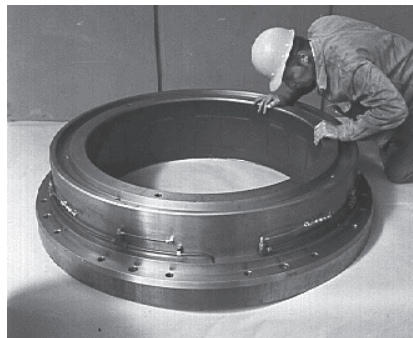
ill. 8:
Slide of a grinding machine, hydrostatic guiding system, guiding dimensions
6000 x 230 mm, direct forming-to-size of hydrostatic pockets



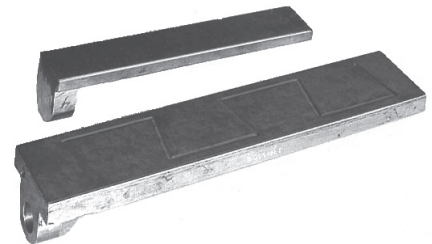
ill. 9:
Polymeric concrete-component for demonstration
purposes with directly moulded V-guides



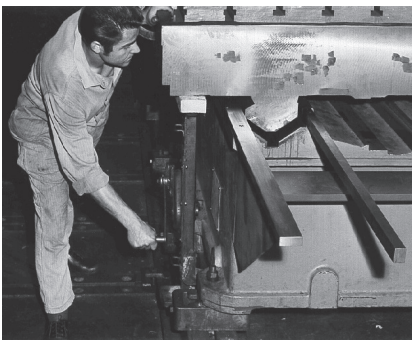
ill. 10:
half-shell of a laser gun, diam. 550 mm, 1200 mm
long, cylindricity < 15 µm, vacuum channels directly
moulded (see also: accessories, groove foil)



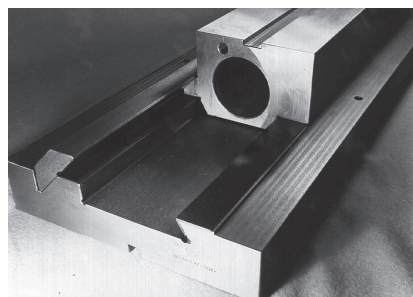
ill. 11:
Hydrostatic bearing ring of a crank-stroke milling
machine with moulded pockets



ill. 12:
Coated gibs with directly moulded lubrication grooves



ill. 13:
V-guides of the table of a milling machine
For the separation of the counter guiding of big com-
ponents additional means are used (e. g. a winch) to
relieve the crane.



ill. 14:
Guiding system of a slide

Example of Application

Coating of the Guideways of a Horizontal Milling Machine - Spatula Method

1) This guideway system of the bottom slide is consisting of two horizontal flat guideways 'a', a vertical flat guideway 'b', a vertical guideway with V-ledge 'c' and two retainer gibs for cover strips 'd' (ill.1).

2) Pre-machining of the surfaces to be coated is provided by rough-planing or rough-milling to obtain the surface shown by ill. 2. By rough-milling, a similar surface shall analogously be created by circular scores. The theoretical layer thickness over the score tips shall be at least 1 mm. All counter surfaces used for the forming-to-size, which have to be finished and to be optimally aligned, are treated with a separator and smoothened with a soft rag.

It is also recommendable to treat those areas of the free surfaces with the separator on which - during moulding - the compound may escape, and wherever possible, to protect them with an adhesive tape.

The preparations of a coating process do also include determination of a measuring and aligning method to produce the layer thickness and the necessary position of the bottom slide, relative to the guideway of the slide and to the spindle axis. Suitable devices and gauges have to be at immediate disposal, as during the moulding process, the time available to align the bottom slide is limited.

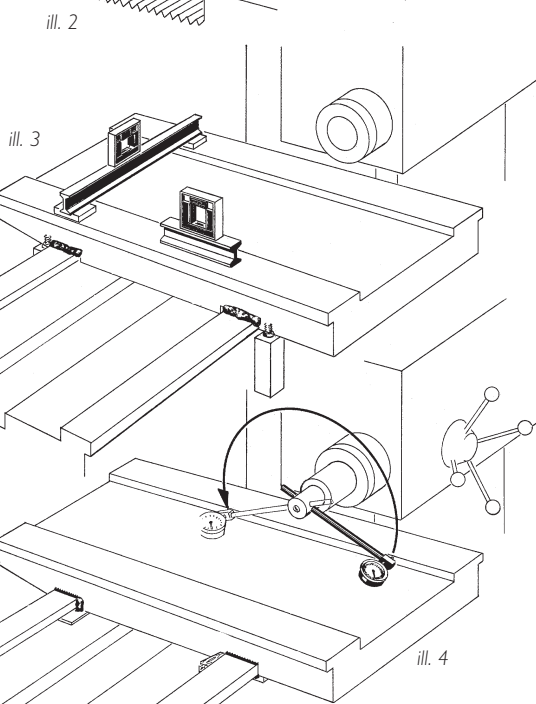
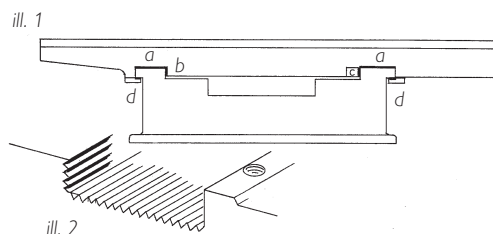
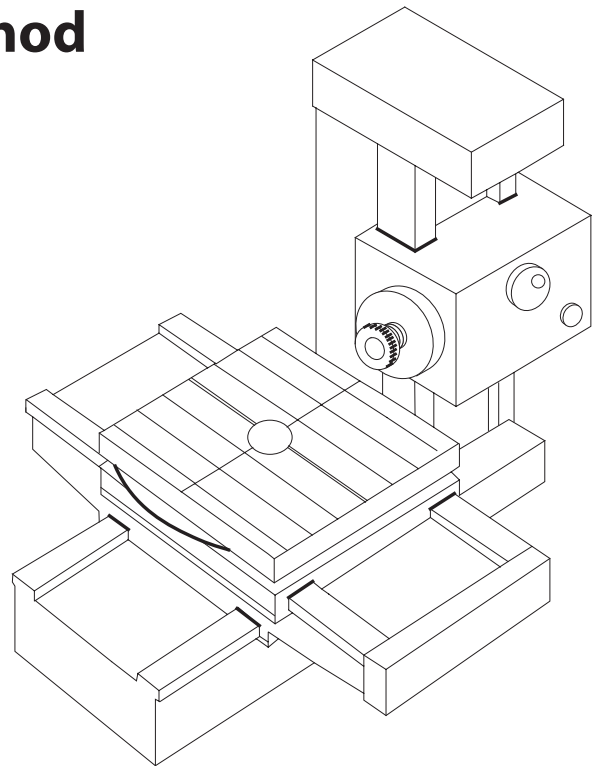
3) After applying by spatula the slideway coating onto the surfaces a and b, the bottom slide will be turned, will be laid on the bottom guideways, slowly and as much as possible parallel, and - following the water levels - it will be aligned exactly into longitudinal and transversal direction, e.g. by means of

setting screws in the thread bores for the cover gibs (ill. 3). If necessary, surface b has to be coated in a separate operation.

4) To verify the rectangular position of the bottom-slide guiding to the axis of the spindle, a device as shown by ill. 4 is used. The position has to be corrected by means of two wedges at the front vertical guideway between bed and bottom slide.

Take care, when removing the coating escaped both at the long and at the front sides. Do not knock it off.

In case of a mechanical re-machining or when correcting by scraping, please follow the application guidelines. Turn the bottom slide



and position it onto the bed and verify it as described under 3) and 4).

Apply the slideway coating by spatula on the cover gibs d and mount them.

Do not forget the separator on the retainer gibs! After hardening of the compound, dismantle the cover gibs and machine them as described.

Mill in the lubrication grooves and - if required - open by boring any lube-oil bores which might have been closed when applying the coating.

Forming-to-size of the guideway of the transversal slide or of the spindle-slide guideway will be carried out analogously, with reference to the geometrical assignable values.

Example of Application

Coating of the Guideways of the Bottom Slide of a Turning Lathe - Spatula Method

1) This guideway system of the bottom slide is consisting of a V-guide system 'a', a flat guideway 'b' and two retainer gibs 'c', 'd' (ill.1).

2) Pre-machining of the surfaces to be coated is provided by rough-planing or rough-milling to obtain the surface shown by ill. 2. By rough-milling, a similar surface shall analogously be created by circular scores. The theoretical layer thickness over the score tips shall be at least 1 mm. All counter surfaces used for the forming-to-size, which have to be finished and to be optimally aligned, are treated with a separator and smoothed with a soft rag. It is also recommendable to treat those areas of the free surfaces with the separator on which - during moulding - the compound may escape, and wherever possible, to protect them with an adhesive tape.

The preparations of a coating process do also include determination of a measuring and aligning method to produce the layer thickness and the necessary position of the plane slide relative to the guideway of the bed and to the spindle axis. Suitable devices and gauges have to be at immediate disposal, as during the moulding process, the time available to align the bottom slide is limited.

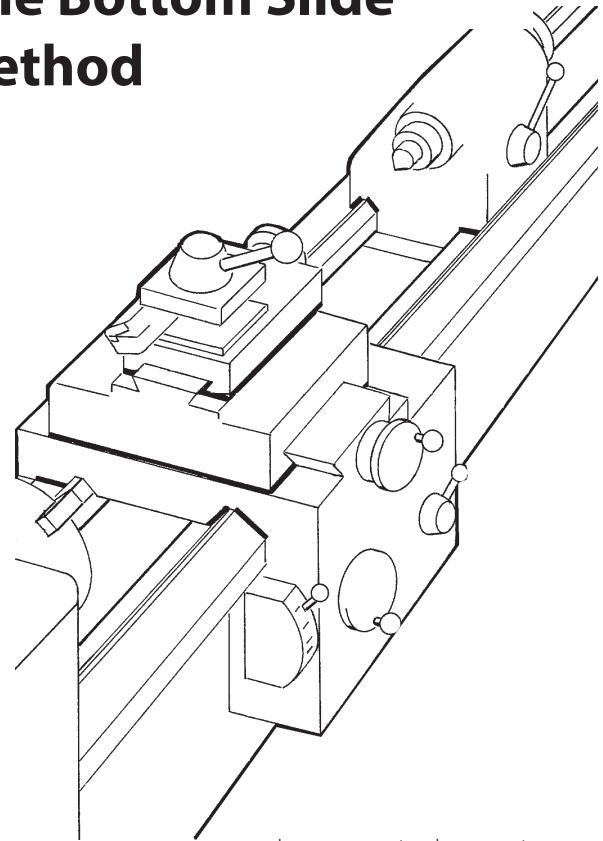
3) After applying by spatula the anti-friction coating onto the surfaces a and b, the bottom slide will be turned, will be laid on the bottom guideways, slowly and as much as possible parallel, and - following the water levels - it will be aligned exactly into longitudinal and transversal direction, e.g. by means of setting screws in the thread bores for the cover gibs (ill. 3).

4) To verify the rectangular position of the plane-slide guiding to the axis of the spindle, a device as shown is used. The position has to be corrected by means of two wedges at the front vertical guideway between bed and bottom slide.

After about 24 hours, the bottom slide has to be lifted off and the surfaces a) and b) to be scraped with 5-8 mm long strokes.

Take care, when removing the coating escaped both at the long and at the front sides. Do not knock it off.

In case of a mechanical machining



or when correcting by scraping, please follow the application guidelines.

Turn the bottom slide and position it onto the bed and verify it as described under 3) and 4).

5) Apply the slideway coating by spatula on the cover gibs c) and d) and mount them.

Do not forget the separator on the retainer gibs! After hardening of the compound, dismantle the cover gibs and re-machine them as described.

Mill-in the lubrication grooves and - if required - open by boring any lube-oil bores which might have been closed when applying the coating.

Forming-to-size of the guideways of the longitudinal slide or of the tailstock slide will be carried out analogously, with reference to the geometrical assignable values.

