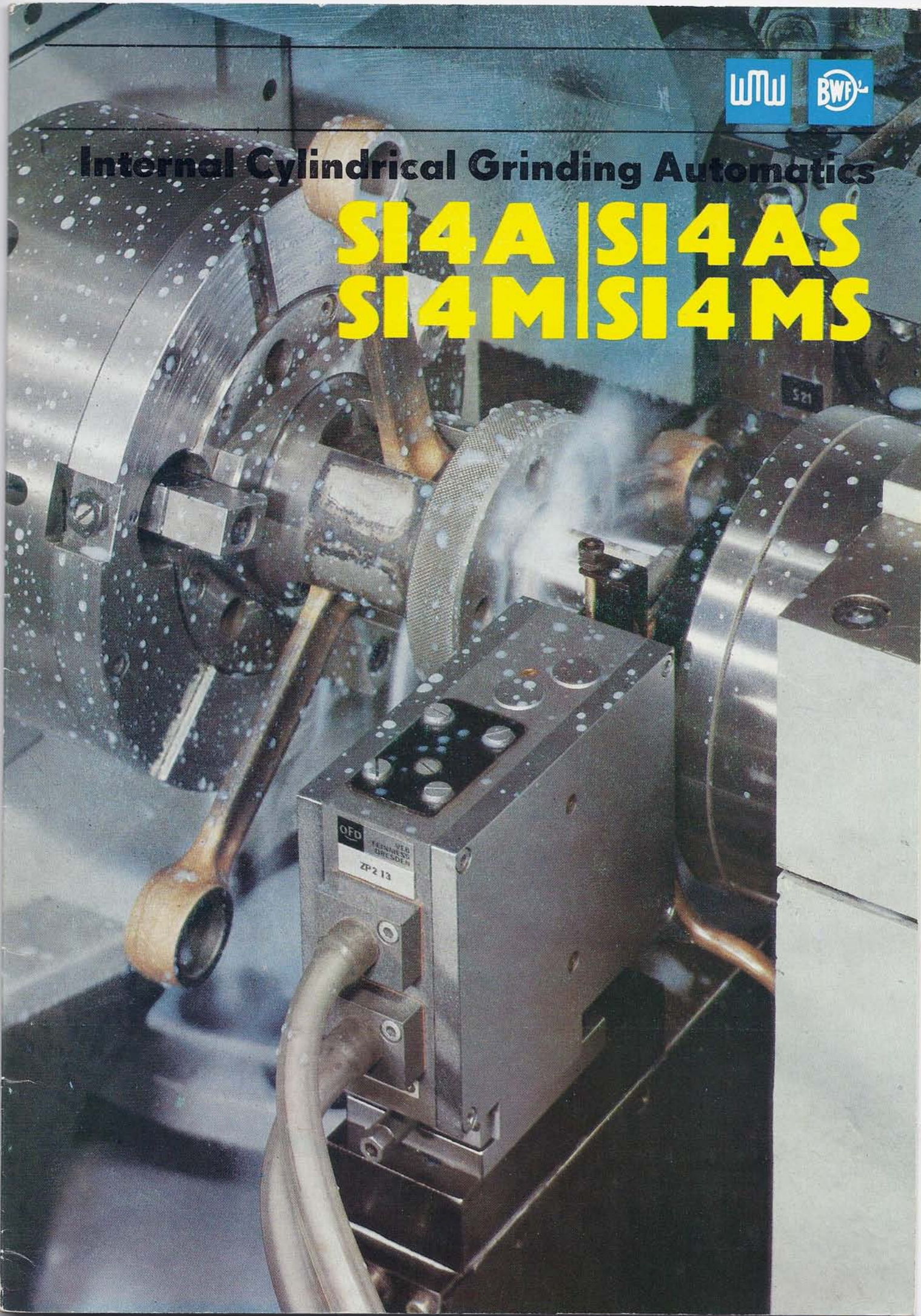




Internal Cylindrical Grinding Automatics

SI4A | SI4AS SI4M | SI4MS



We are the solution producer

if you have problems with internal cylindrical grinding, if you search for improved, more economic grinding technology.

We, the 2600 engaged employees of Berliner Werkzeugmaschinenfabrik, the biggest manufacturer of internal cylindrical grinding machines in Europe. We have acquired the necessary experiences. We are maintaining close contact with our customers. We are

among the first ones when it is time to be flexible and operative, to put promptly in practice novel technical trends and developments — hand in hand with our knowledge gathered over decades.

So we have grown a well-reputed, internationally appreciated manufacturer of internal cylindrical grinding machines.

Surely you know our universal internal cylindrical grinding machine SI 4

preferably to be used in the single-job and small-batch production.

The further developed SI 4 A including its versions represents the automatic type to be applied in the medium-, large-batch and mass production.

Consequently, we are able to deliver, within one constructional size, machines covering a large-scale assortment of workpieces — and certainly the best solution for your grinding problem.



Final assembly bay of internal cylindrical grinding machines

Title illustration: Chuck guard partially removed for demonstration

BWF Internal cylindrical grinding automatics For the economic solution of your grinding problems

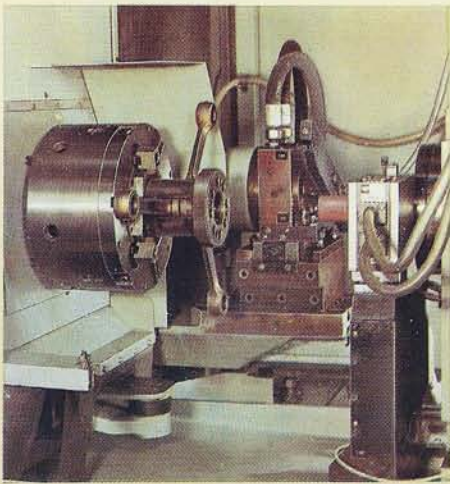
SI 4 A

Internal cylindrical grinding automatic with face grinding attachment

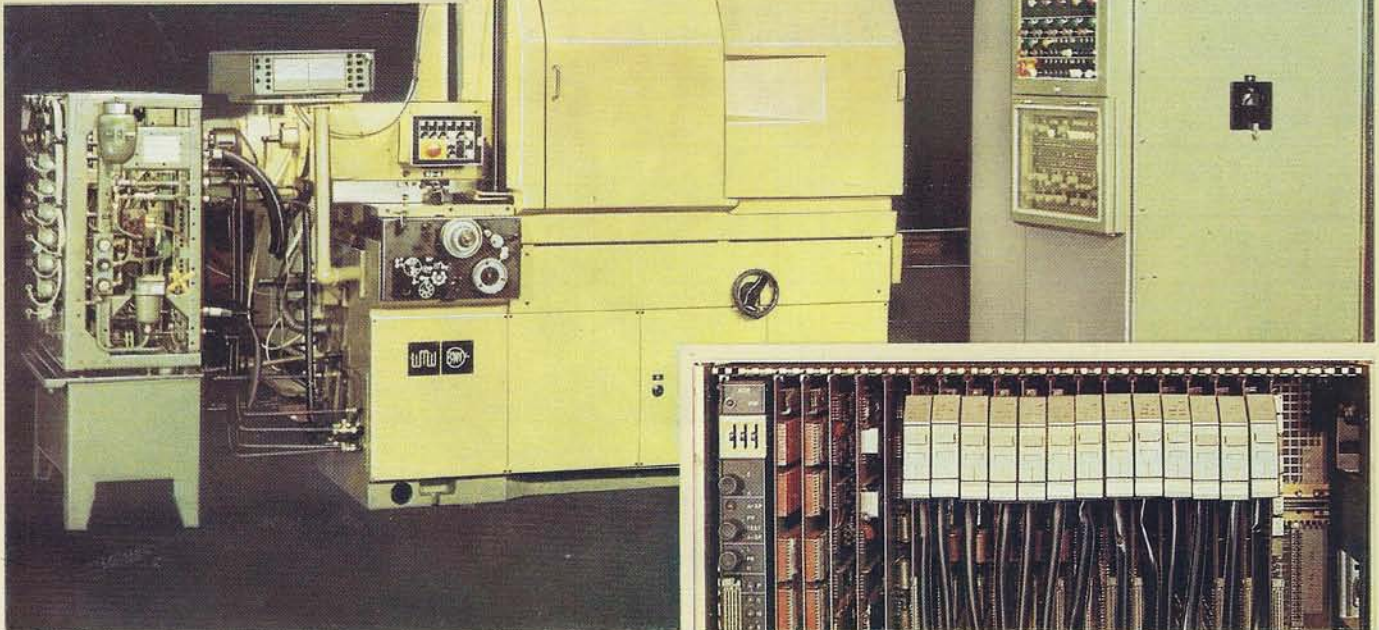
The cutting depth is optionally fed by hand or hydraulically in automatic mode.

SI 4 M

Internal cylindrical grinding automatic with automatic work loading attachment



Tooling zone
(Chuck guard partially removed for demonstration)



Programmable logic controller

SI 4 AS

Internal cylindrical grinding automatic with automatic face grinding attachment

SI 4 MS

Internal cylindrical grinding automatic with automatic face grinding attachment and automatic work loading attachment.

Tooling zone

Face grinding attachment
SI 4 AS
SI 4 MS

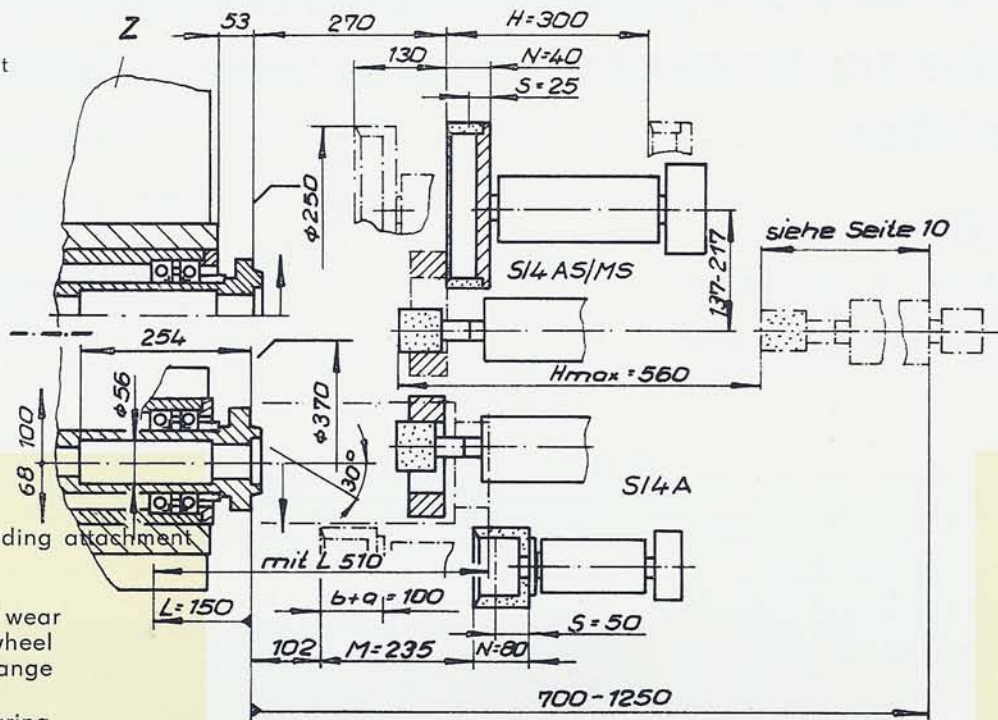
Infeed
SI 4 AS
SI 4 MS

Infeed
SI 4 AS
SI 4 MS

SI 4 A with face grinding attachment

L = Steady rest
H = Stroke
S = Grinding wheel wear
N = New grinding wheel
M = Real grinding range
Z Infeed slide

a Infeed travel by gearing
max. 70 mm
b Hydraulic rapid approach/rapid
retraction travel 0 ... 50 mm



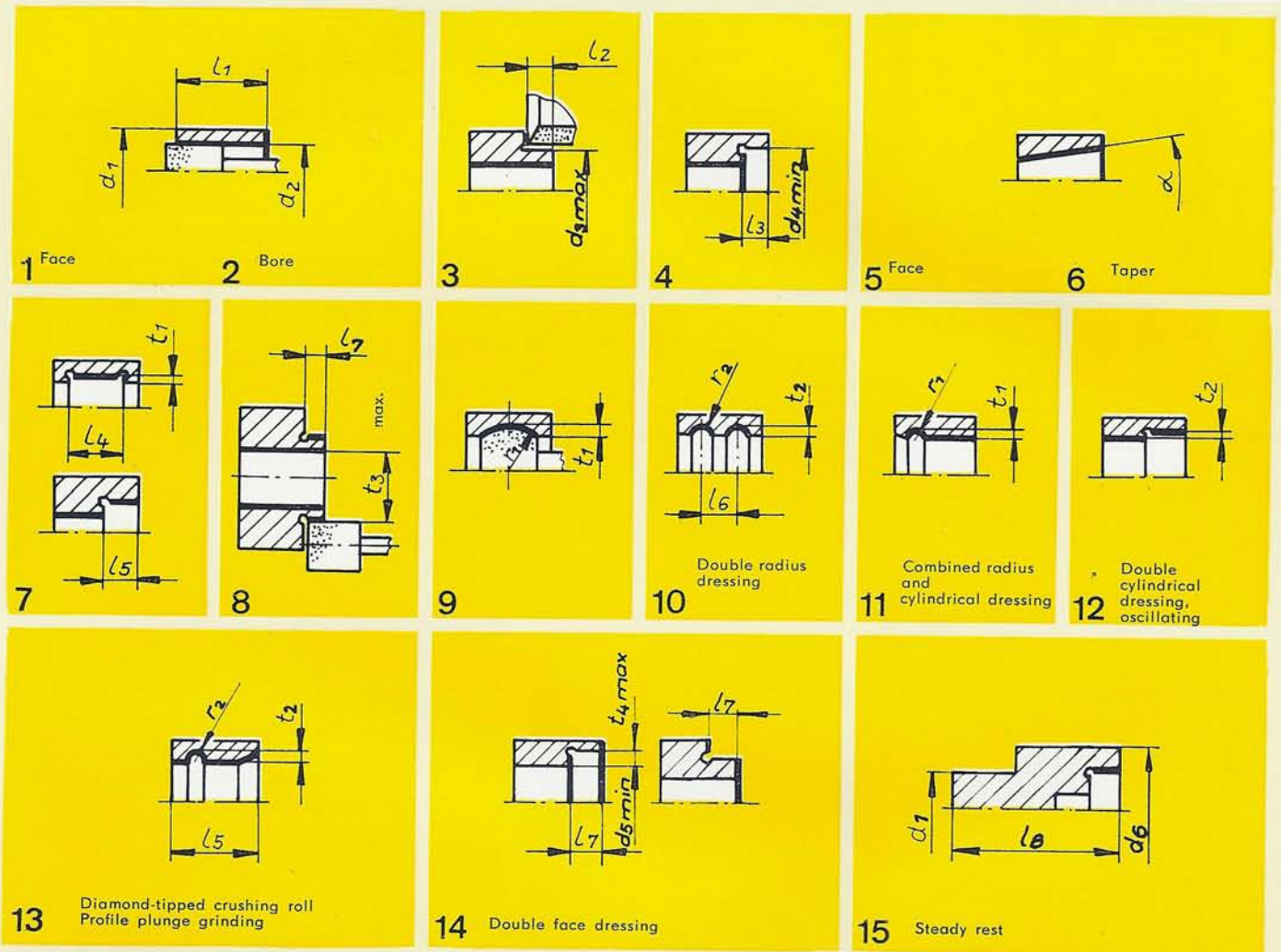
Versions Working ranges

	d ₁ Sp. Ø	d ₂	d ₃	d ₄ min	d ₅	d ₆	r ₁ max	r ₂ max	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	t ₁	t ₂	t ₃	t ₄	α max
SI 4 A																					
without face grinding attachment	300	160	—	—	—	—	35	—	120	—	—	40	40	—	—	480	8	4	120	—	60°
with face grinding attachment	300	160	180	60	60	—	—	—	160	30	30	40	40	—	15	—	4	4	120	—	60°
with special dresser	300	160	—	—	—	—	35	10	160	—	—	—	40	60	15	—	8	4	—	25	60°
with steady rest	100	100	—	—	—	125	—	—	200	—	—	40	40	—	—	—	—	4	—	—	50°
SI 4 M																					
Work loading attachment	200	160	—	—	—	—	—	—	100	—	—	40	40	—	—	—	8	4	—	—	60°
SI 4 AS																					
simultaneously	300	40-160	180	—	—	—	—	—	150	50	—	40	—	—	—	—	8	4	—	—	45°
sequentially	300	160	180	—	—	—	—	—	150	50	—	40	—	—	—	—	8	4	—	—	45°
SI 4 MS																					
simultaneously	200	40-160	180	—	—	—	—	—	100	50	—	40	—	—	—	—	8	4	—	—	45°
sequentially	200	160	180	—	—	—	—	—	100	50	—	40	—	—	—	—	8	4	—	—	45°

BWF Internal cylindrical grinding automatics

Versatile machining capabilities

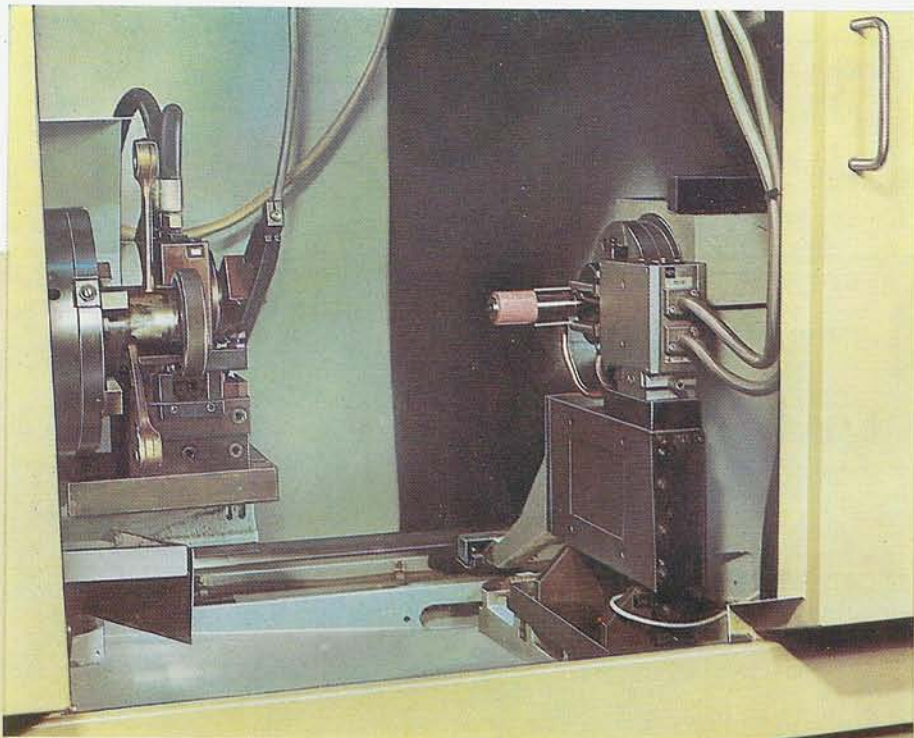
Versions Machining capabilities



Variant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SI 4 A without face grinding attachment		●				●	●	●	●	●	●	●	●		●
SI 4 A with face grinding attachment	●	●	●	●	●	●	●	●				●		●	●
SI 4 M without face grinding attachment		●				●	●	●				●			
SI 4 AS	●	●	●		●	●	●					●			
SI 4 MS	●	●	●		●	●	●					●			

BWF Internal cylindrical grinding automatics

Tailored to your production conditions



SI 4 A

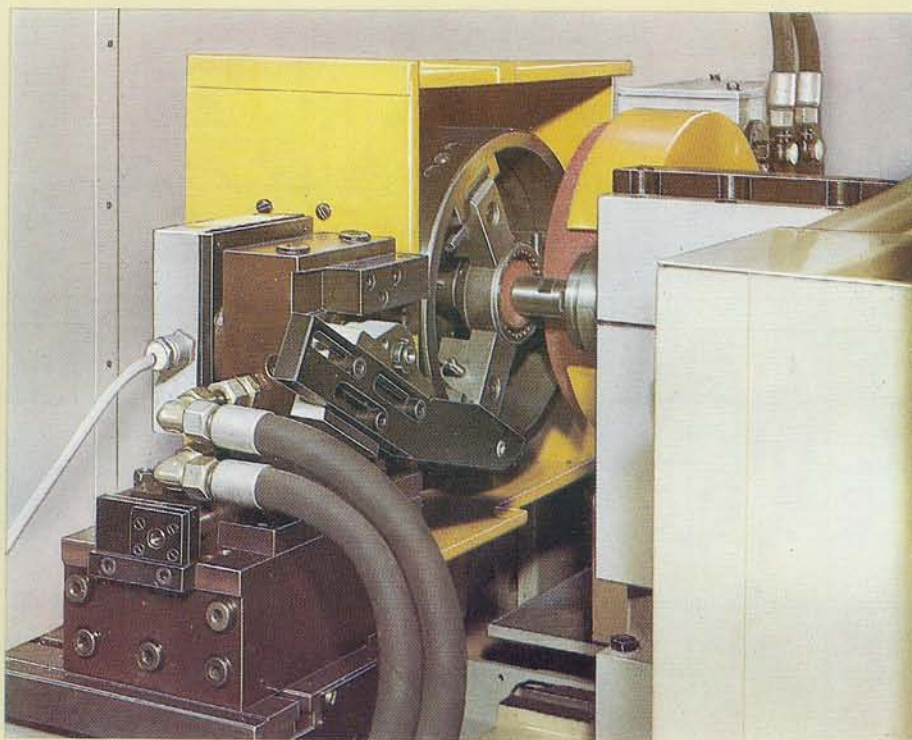
**Internal cylindrical grinding automatic
for the medium-batch and large-batch
production**

The SI 4 A can additionally be equipped with an automatic face grinding attachment mounted on the work spindle headstock. The bore and face are machined in sequence.

Maximum grinding wheel peripheral speed

Bore: 60 m/s

Face: 35 m/s



SI 4 AS

**Internal cylindrical grinding automatic
for the medium-batch and large-batch
production**

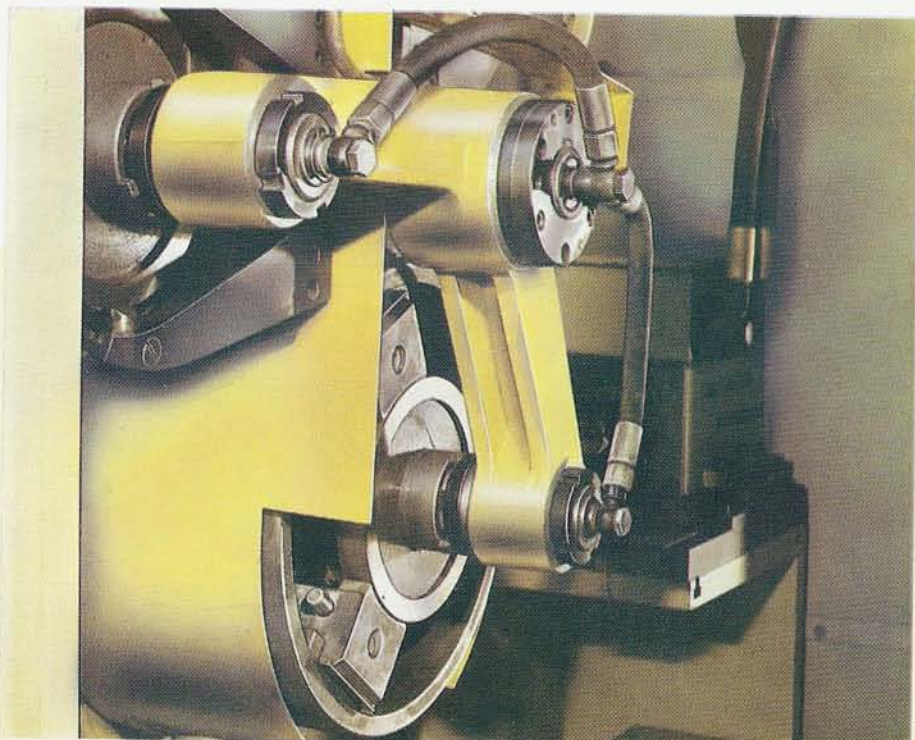
The automatic face grinding attachment is mounted behind the internal grinding spindle support. Depending on the work geometry the bore and face can be ground simultaneously.

Maximum grinding wheel peripheral speed

Bore: 60 m/s

Face: 30 m/s

The SI 4 A and SI 4 AS operate both in oscillating and plunging mode.



SI 4 M

Internal cylindrical grinding automatic with automatic work loading attachment for the medium-batch and large-batch production.

Maximum grinding wheel peripheral speed
Bore: 60 m/s

Tandem arm moved-in to load the new workpiece into the chuck and, at the same time, to place the machined workpiece in the unloading chute. (Swivelling angle: 120 degrees)



SI 4 MS

Internal cylindrical grinding automatic with automatic work loading attachment and face grinding attachment

Maximum grinding wheel peripheral speed
Bore: 60 m/s
Face: 30 m/s

Tandem arm moved-out from the ready position to pick-up the machined workpiece from the chuck and, at the same time, to pick-up the new workpiece from the feeding chute. (Swivelling angle: 120 degrees)

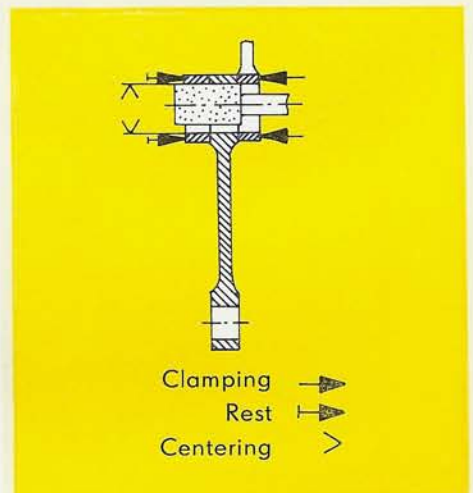
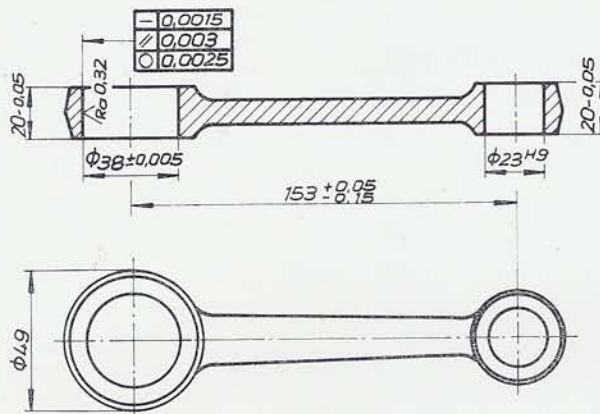
The SI 4 M and SI 4 MS operate both in oscillating and plunging mode.

Both machine versions are prepared to be linked in production lines.

BWF Internal cylindrical grinding automatics

Accurate

SI 4 A

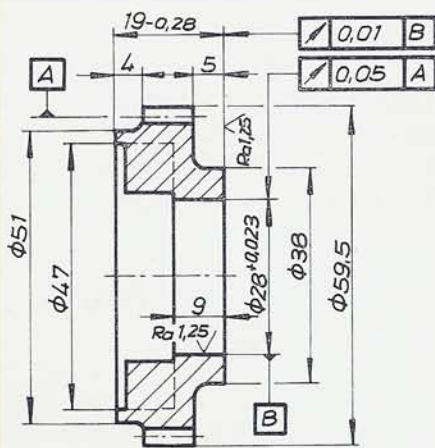


Workpiece: Connecting rod,
diameter 38 mm
Material: 16 Mn Cr 5
Hardness: HRC 60 ± 2

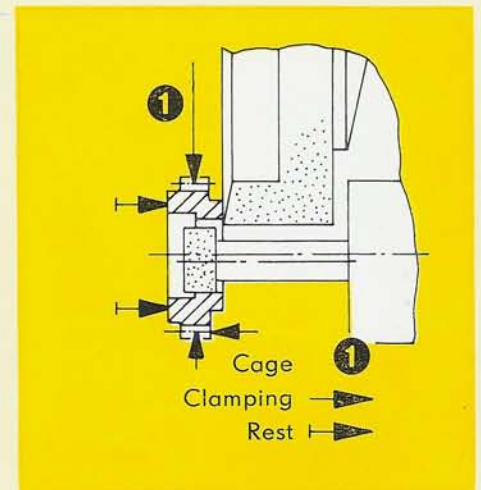
Allowance: 0.45 mm/diameter
Setup: Cassette in axial
chuck (see title
illustration)
Machining: Grinding the bore in
automatic mode by
electric grinding
spindle
3 workpieces in one
setup

Grinding wheel
peripheral
speed: 50 m/s
Measuring
device: Electronic in-process
size controller
Piece time: 107 s including 15 s
loading time

SI 4 AS



Face: 0.10 mm
Setup: Diaphragm chuck
with axial clamping
components
(power-operated
chuck)
Machining: Simultaneous grind-
ing the bore and
face in automatic
mode by belt-driven
grinding spindles



Workpiece: Driving gear
Material: 16 Mn Cr 5
Hardness: HRC 60 ± 2
Allowances
Bore: 0.25 mm/diameter

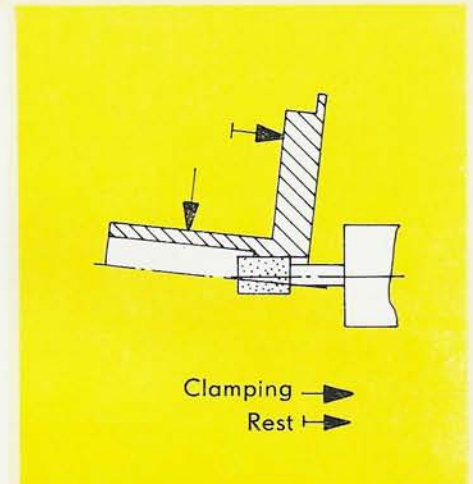
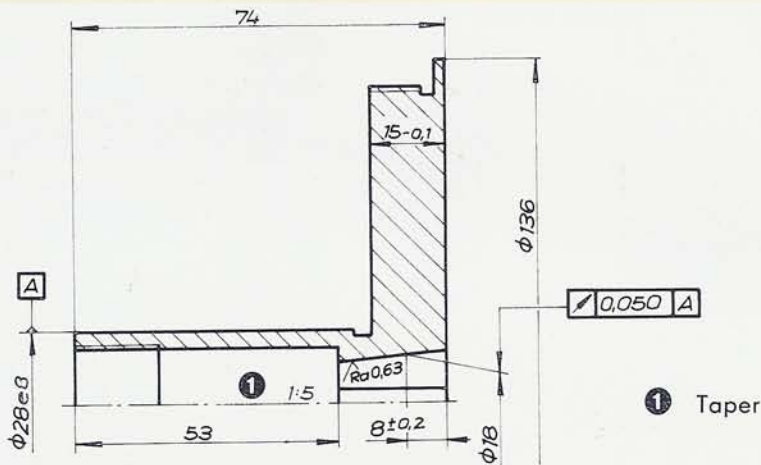
Grinding wheel
peripheral
speeds:
Bore: 38 m/s

Face: 35 m/s
Measuring
device: Gauge-matic unit
Bore: Diamond sizing
Face: Diamond sizing
Piece time: 40 s including 10 s
loading time

High-efficiency

Machining examples

SI 4 M

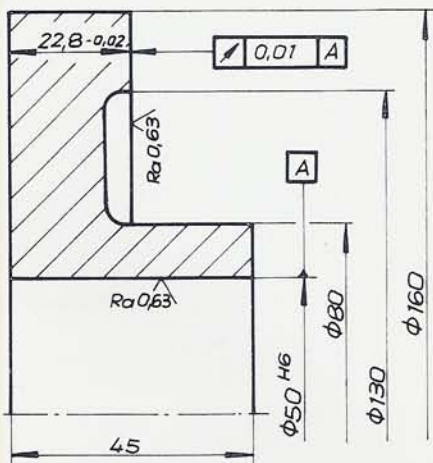


Workpiece: Clutch bushing
Material: C 45
Hardness: Hardened and tempered, 700 N mm^{-2}

Allowance: 0.3 mm/diameter
Setup: Sliding jaw chuck (power-operated)
Machining: Grinding the bore in automatic mode by electric grinding spindle

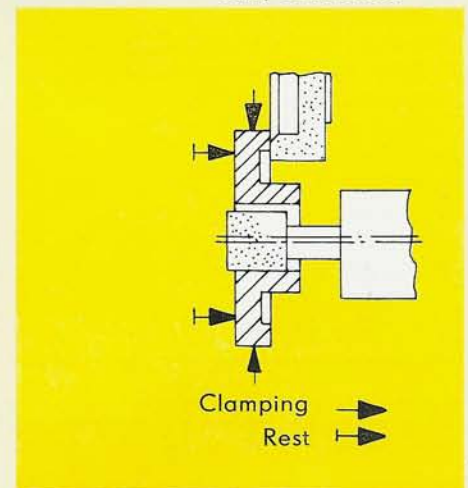
Measuring device: Diamond sizing
Piece time: 36 s including 8 s loading time
Work loading: Machine-integrated work loading attachment automatically controlled.

SI 4 MS



Grinding wheel peripheral speed: 47 m/s

Face: 0.2 mm
Setup: Sliding jaw chuck (power-operated)
Machining: Simultaneous grinding the bore and face in automatic mode by belt-driven grinding spindles



Workpiece: Flange
Material: 16 Mn Cr 5
Hardness: HRC 58 ± 2
Allowances: Bore: 0.3 mm/diameter

Grinding wheel peripheral speeds:
Bore: 47 m/s
Face: 35 m/s
Measuring device: Bore: Diamond sizing

Face: Diamond sizing
Piece time: 50 s including 8 s loading time
Work loading: Machine-integrated work loading attachment automatically controlled

BWF Internal cylindrical grinding automatics

Standard accessories

- complete electric and hydraulic equipments
- infinitely variable work spindle drive
- taper fine setting device for swivelling the work spindle headstock
- micro-electronic controller (PLC)

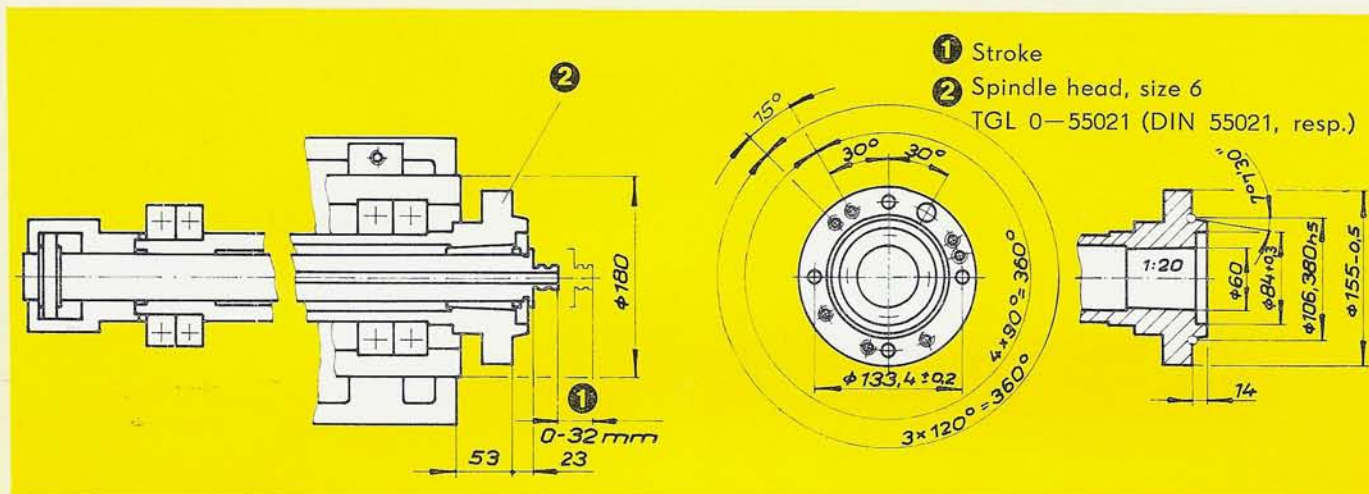
- tooling zone complete cover
- grinding wheel guard
- dresser console
- preselectable controlling cycles for several dressing modes
- machine lamp 12 V
- 1 set of tools
- 1 instruction manual
- work loading attachment (Si 4 M/SI 4 MS)
- automatic face grinding attachment (Si 4 AS/SI 4 MS)
- Face dresser (SI 4 AS/SI 4 MS)

Work spindle

The work spindle has been designed as sleeve-type spindle and runs in high precision angular contact ball bearings.

The load carrying capacity including clamping device amounts to 150 kg. The hydraulic clamping unit is flange-mounted on the left-hand side of the work spindle headstock. Its clamping force is adjustable within 50 . . . 900 kp. The clamping device is hydraulically operated.

Clamping devices of foreign make can also be attached, if requested.



Special accessories

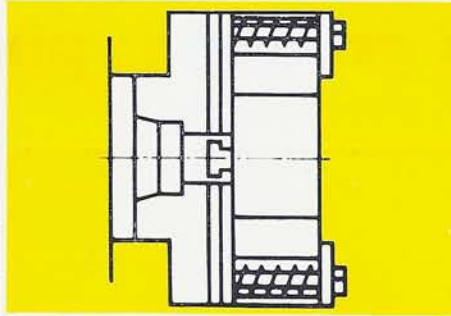
Designation/type	Clamping diameter (mm)		Outer diameter and maximum length of the clamping device (mm)
	d max.	d min.	
Face plate PLV 315	315	40	312 x 120
Clamping plate 300	—	—	300 x 50
Adapter flange	—	—	252 x 66
Precision three-jaw chuck DHAP 160	120	10	160 x 160
Precision three-jaw chuck DHAP 250	200	18	250 x 178
Four-jaw chuck DHKA 250	200	20	250 x 182
Diaphragm chuck BWF-make	200	20	300 x 162
Axial chuck 110	110	10	220 x 191
Axial chuck 200	200	80	300 x 211
Sliding jaw chuck 110	110	20	250 x 175
Sliding jaw chuck 160	160	90	310 x 173
Sliding jaw chuck 200	200	140	370 x 265
Ring wedge chuck 160	132	10	160 x 150
Ring wedge chuck 250	210	20	250 x 185

Work-tailored equipments

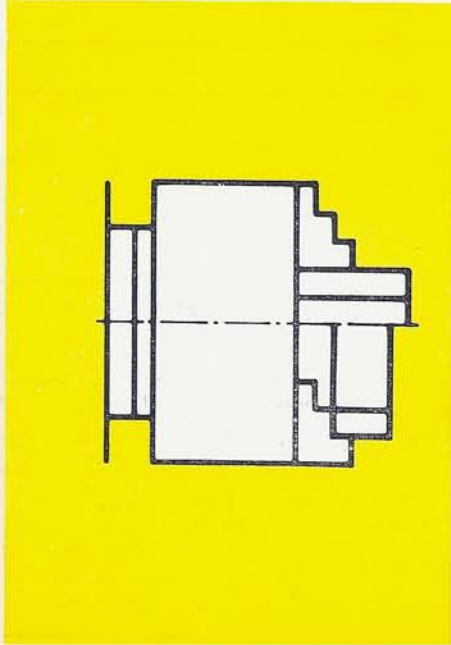
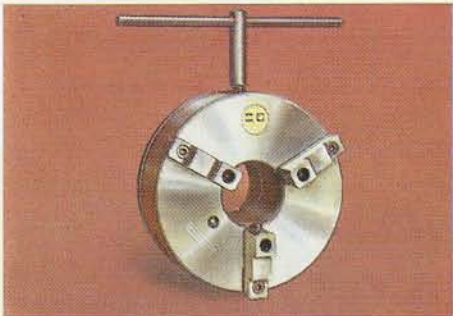
Tailored to specific machining tasks we design and manufacture complete equipments to achieve optimum grinding technology.

These equipments generally consist of the clamping device and work-tailored adapter components.

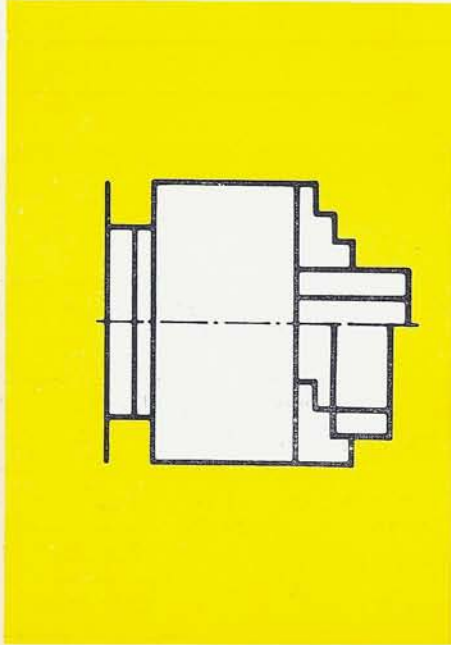
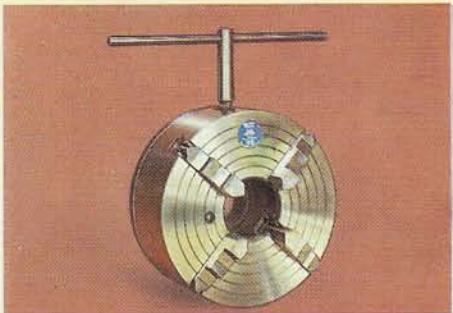
Clamping devices



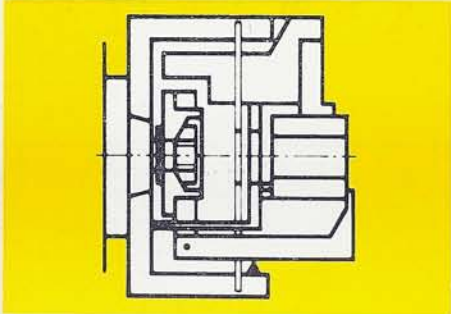
Face plate



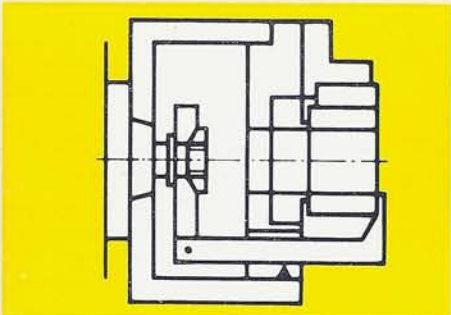
Precision three-jaw chuck



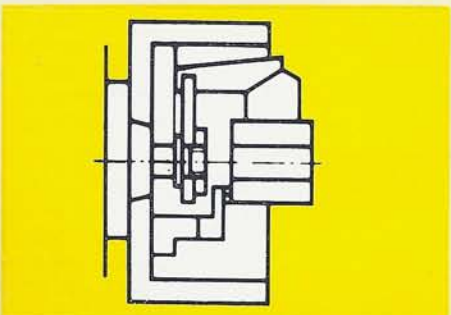
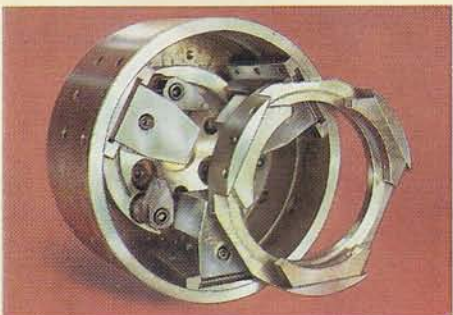
Precision four-jaw chuck



Diaphragm chuck
(Basic chuck, without work-tailored adapter components)

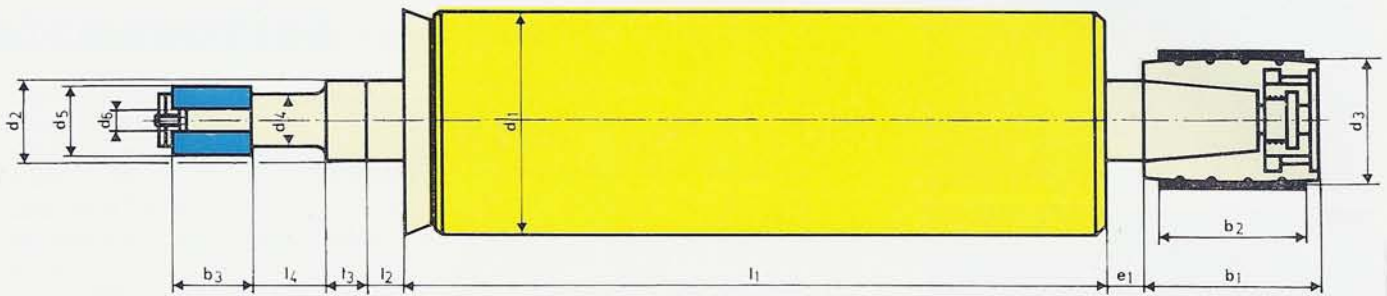


Axial chuck
(Basic chuck, without work-tailored adapter components)



Sliding jaw chuck

High-precision grinding spindle - type SPV

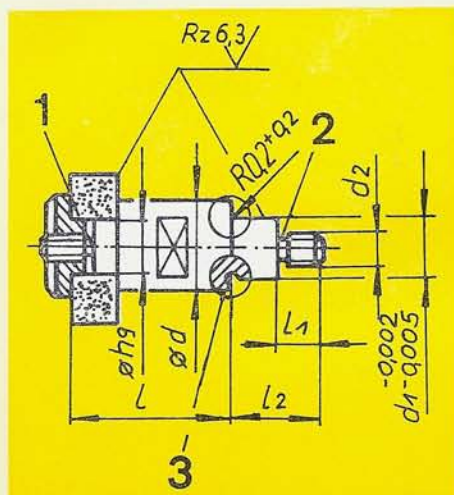


1) These screw-in mandrels have no shoulder ($d_4 = d_2$)

The pulley diameters and speeds included in parenthesis are preferably used.

Designation of grinding spindle		Pulley					Speed	Screw-in mandrel			Grinding wheel			Working range		
Type $d_1 \times l_1 - d_2$	Abbreviation (engraved)	mm l_2	mm e_1	mm d_3	mm b_1	mm b_2	max. rpm	Designation	d_4 mm	l_4 mm	l_3 mm	d_5 mm	b_3 mm	d_6 mm	Bore	
															Max. dia. mm	Max. depth mm
SPV 60x250-15/2	9.6-4.3/2	12	7	32 (28)	40	20	33 000 (29 000)	SZ 03- 9x20	9	20	9	16	16	6	24	30
								SZ 03-12x32	12	32		20	20	6	30	46
								SZ 03-15x40	15	40		1)	25	25	8	38
SPV 60x250-18/2	9.6-4.4/2	14	8	40 (32)	50	40	27 000 (25 000)	SZ 04- 9x25	9	25	12	20	20	6	30	40
								SZ 04-13x32	13	32		25	25	8	38	48
								SZ 04-18x40	18	40		1)	32	32	10	48
SPV 80x250-23/2	9.8-4.5/2	16	10	50 (40)	63	40	21 000 (20 000)	SZ 05-13x32	13	32	13	25	25	8	38	48
								SZ 05-18x40	18	40		32	32	10	48	60
								SZ 05-23x50	23	50		1)	40	40	13	60
SPV 80x250-28/2	9.8-4.6/2	20	13	50 (45)	71	40	19 000 (18 000)	SZ 06-18x40	18	40	14	32	32	10	48	60
								SZ 06-22x50	22	50		40	32	13	60	72
								SZ 06-28x63	28	63		1)	40	40	16	68
SPV 100x315-33/2	9.10-5.7/2	25	14	63 (50)	80	50	16 000	SZ 07-22x50	22	50	16	40	32	13	60	72
								SZ 07-28x63	28	63		50	40	16	68	90
								SZ 07-33x80	33	80		1)	50	50	20	75
SPV 100x315-38/2	9.10-5.8/2	28	16	71 (63)	90	50	13 500 (13 000)	SZ 08-22x50	22	50	20	40	40	13	60	78
								SZ 08-28x63	28	63		50	40	16	75	90
								SZ 08-38x80	38	80		1)	63	50	20	95
SPV 125x315-48/2	9.12-5.10/2	32	18	80 (71)	100	50	12 000 (11 500)	SZ 10-28x63	28	63	25	50	40	16	75	90
								SZ 10-35x80	35	80	25	63	50	20	95	115
								SZ 10-48x100	48	100	1)	80	50	32	120	160

Special accessories sub-assemblies



Mounting dimensions of screw-in mandrels for SPV-type spindles

1 and 2 — Thread groove TGL 0-76 (DIN 76)

3 — Recess

Variant 1

16 Mn Cr 5, case-hardened, case-hardening technique 5, case-hardening depth 0.3 mm, HRC 58 ± 2 , with recess acc. to TGL 0-509 (DIN 509)

Variant 2

16 Mn Cr 5, case-hardened, hardening technique 5, case-hardening depth 0.3 mm, HRC 58 ± 2 , with radius $R 0.2 + 0.2$ mm

Variant 3

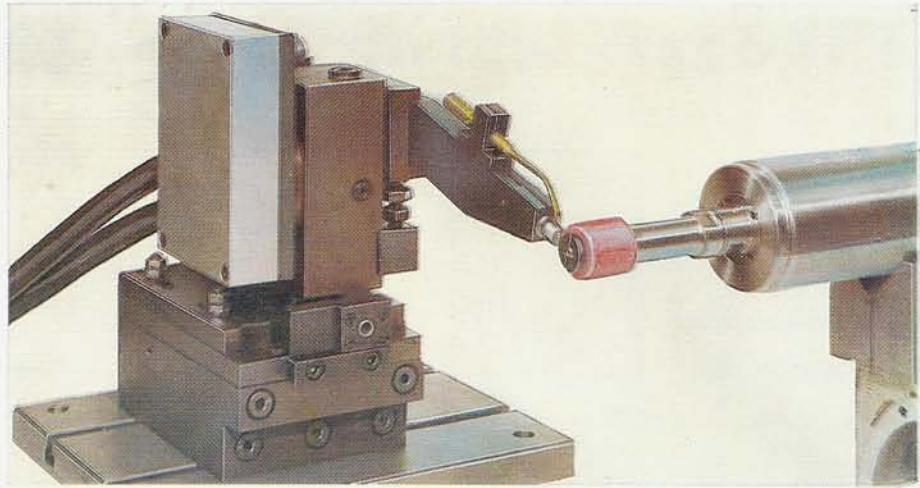
50 Cr V 4, hardened and tempered to $120 \dots 130 \text{ kp mm}^{-2}$, with radius $R 0.2 + 0.2$ mm

Cylindrical dresser
 Radius and cylindrical dresser
 Automatic two-position grinding unit
 Cylindrical dresser being lockable both in longitudinal and cross directions.
 Driving unit for belt-driven grinding spindles ($n = 11,500 \dots 29,000$ rpm)
 Electric grinding spindles including frequency converter ($30,000 \dots 105,000$ rpm)
 Face grinding attachment, automatically controlled (SI 4 A)
 Gab elimination control module
 Electronic in-process size controller of type FMD
 Measuring fingers
 Two-position stop
 Work clamping unit
 Steady rest
 Sine bar for taper adjustment 60°
 Coolant attachment
 Filtering unit with magnetic separator
 Connector for central coolant supply system
 Adapter sleeves for grinding spindle support
 Diamond holders
 Chuck changing device
 Machine cover
 Oil-mist device
 Gear loading unit (SI 4 M/SI 4 MS)

Type	diameter x length — d/mm	Variants with l = mm															l ₁ mm	l ₂ mm	d ₁ mm	d ₂ mm	Flat belt mm	
		20	30	40	50	60	70	80	90	100	110	120	130	140	150							
SPV	60x250-15	1	1	1	2	3												12	23	8,2	M8	32x1000x1
SPV	60x250-18	1	1	1	1	2	3											14	26	10,2	M10x1	32x1000x1
SPV	80x250-23	1	1	1	1	1	2	2	3									19	38	13,2	M12x1	40x1000x1
SPV	80x250-28	1	1	1	1	1	1	2	2	3								26	51	16,2	M14x1,5	40x1000x1
SPV	100x315-33	1	1	1	1	1	1	1	1	1	1	2	2					29	57	18,2	M16x1,5	40x1000x1
SPV	100x315-38	1	1	1	1	1	1	1	1	1	1	1	1					38	72	22	M20x2	60x1020x1
SPV	125x315-48	1	1	1	1	1	1	1	1	1	1	1	1	1	1			41	82	26	M24x2	60x1020x1

Cylindrical dresser

The cylindrical dresser is hydraulically operated. The position of the dressing diamond is corrected by the fine adjustment of the rapid retraction travel of the infeed slide.



Radius and cylindrical dresser

This radius and cylindrical dresser generates radii ranging from 0 to 35 mm, sub-divided in four groups, in automatic mode.



Diamond holders

For the individual dressers different diamond holders are required (not included in the delivery).

Diamond holder

B-BSK 5-0,75 carat
Kegel 1:20

D-BSK 5, 0,23 carat

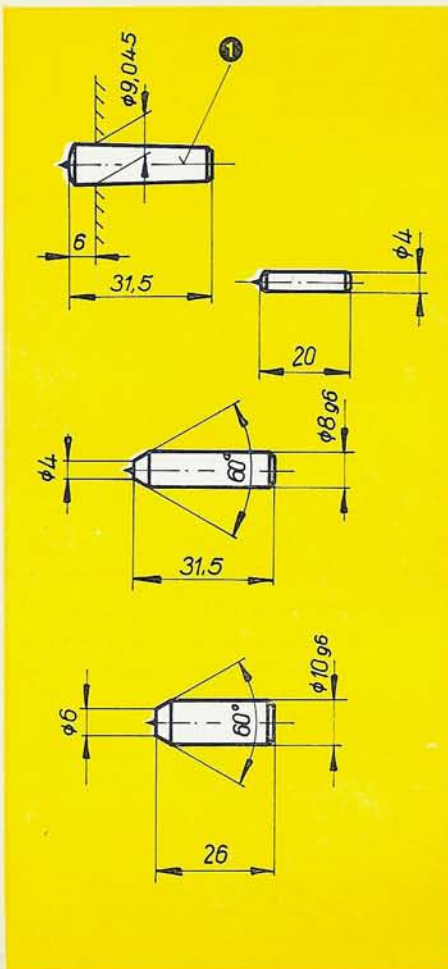
F 8 x 31,5
BSK 5, 0,5 carat

F 10 x 26
BSK 5, 0,5 carat

F 10 x 33
BSK 5, 0,5 carat

F 10 x 33
F 10 x 5, 1 carat

MKO



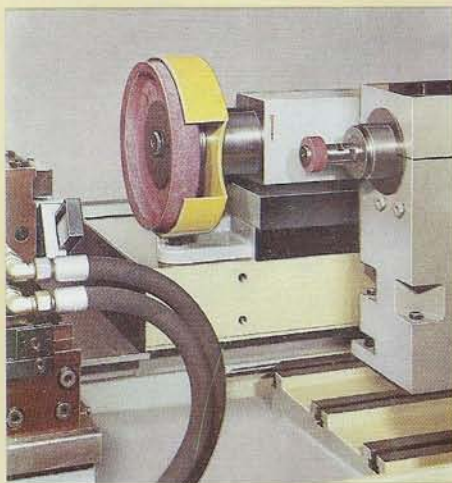
Dresser	Machine version
Face dresser	SI 4 A
Radius dresser Radius 0 ... 5	SI 4 A
Radius dresser Radius 5 ... 20	SI 4 A
Cylindrical dresser	SI 4 A; SI 4 AS SI 4 M; SI 4 MS
Radius dresser Radius 20 ... 35	SI 4 A
Face dresser	SI 4 AS SI 4 MS



Face grinding attachment (SI 4 A)

The face grinding attachment is hydraulically swivelled-in and swivelled-out. The cutting depth is fed either manually to stop and by precision dial, resp., or hydraulically in automatic mode. The dressing amount is automatically compensated.

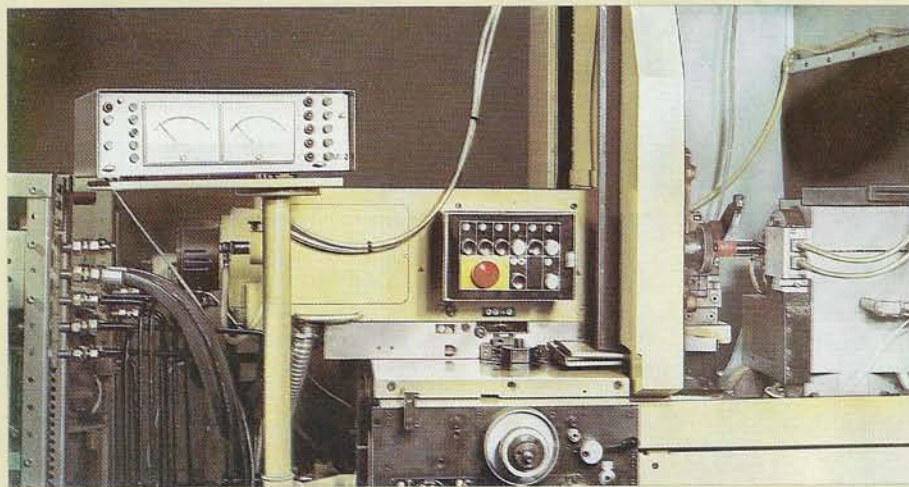
Grinding wheel peripheral speed, m/s	30 (35)
Face grinding spindle speed, rpm	4270
Cup-type grinding wheel diameter, mm	125x51x80 (160x50x76) 80x32x50 63x20x40
Driving power, kW	2.2 (4)



Automatic face grinding attachment (SI 4 AS, SI 4 MS)

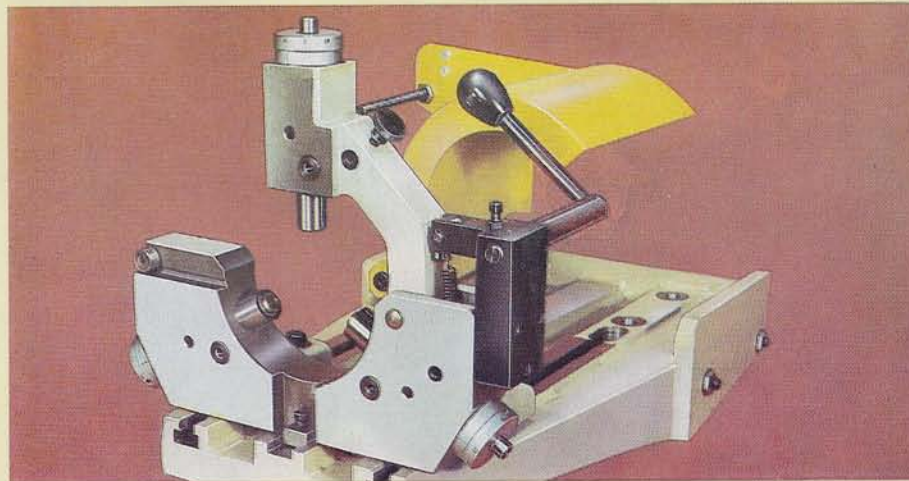
The automatic face grinding attachment is mounted on a second slide moving in parallel to the internal grinding table.

Swing, max., mm	420
Grinding wheel diameter, max., mm	250
mm	250x40x76
Grinding wheel dimensions, Work length, max.	
SI 4 AS), mm	128
(SI 4 MS), mm	100
(depending on the clamping device)	



Measuring devices (optional)

- Diamond sizing:
Dimensional accuracy of the grinding diameter maintained by dressing compensation
Class of accuracy: IT 5 ... IT 7
- Size control:
Electronic in-process two-point size controller of type FMD MS 2 (see illustration)
Class of accuracy: IT 3 ... IT 5
Foreign-make units are also attachable.



Steady rest

Work length (depending on the clamping device), mm	300 ... 500
Swing of the workpiece between clamping device and steady rest, mm	200
Swing of clamping device, max., mm	200
Centering diameter	
— with long sleeves, mm	26 ... 90
— with short sleeves	
Taper angle, max., mm (depending on the work length), dgrs	70 ... 125
Axial adjusting travel, mm	60
	180

Special designs

As completion to the large-scale special accessories and work-tailored equipments, special designs developed to meet specific machining requirements are deliverable. These special designs are to be agreed upon with the manufacturer.

Diamond-tipped crushing roll dresser

The swivelling angle of the crushing roll is adjustable within the range from 45° above grinding spindle centre line down to 2° below grinding spindle centre line.

This adjusting range provides two dressing modes:

- Swivelling-in to the centre of the grinding wheel
- Swivelling-in below the centre of the grinding wheel

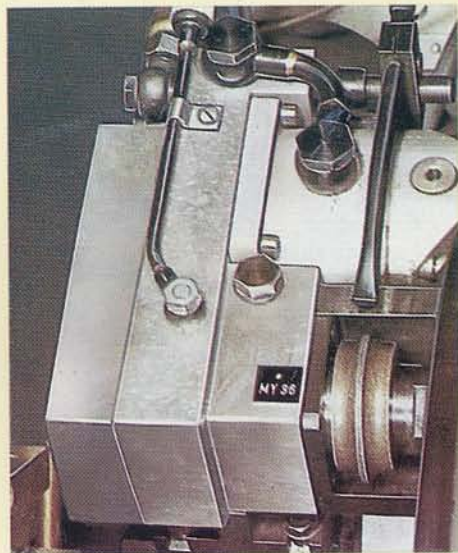
The diamond-tipped crushing roll is hydraulically swivelled-in, the swivelling rate adjustable.

Its speed driven by a hydraulic gear-type rotary motor via toothed belt is also adjustable and amounts to 1500 rpm at a pump pressure of 1.5 ... 1.7 MPa

Both conventional and climb-up dressing is possible.

The dressing shaft is oil-mist lubricated.

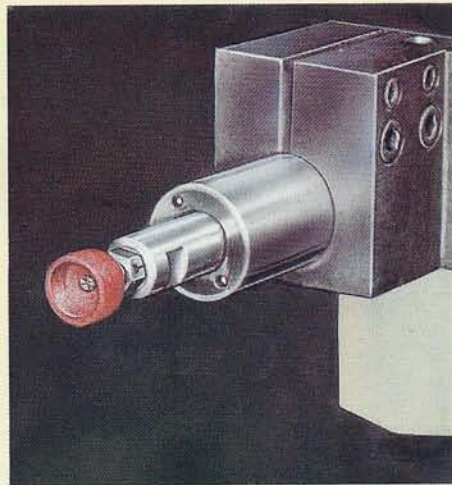
(The diamond-tipped crushing roll dresser is not included in the delivery.)



Turbo dresser

The turbo dresser is used for dressing CBN-grinding wheels (Cubic Boron Nitride).

The speed amounts to 32,000 rpm with a nominal driving pressure 0.6 MPa and driving power 200 Watts.



With lower driving pressure the speed decreases.

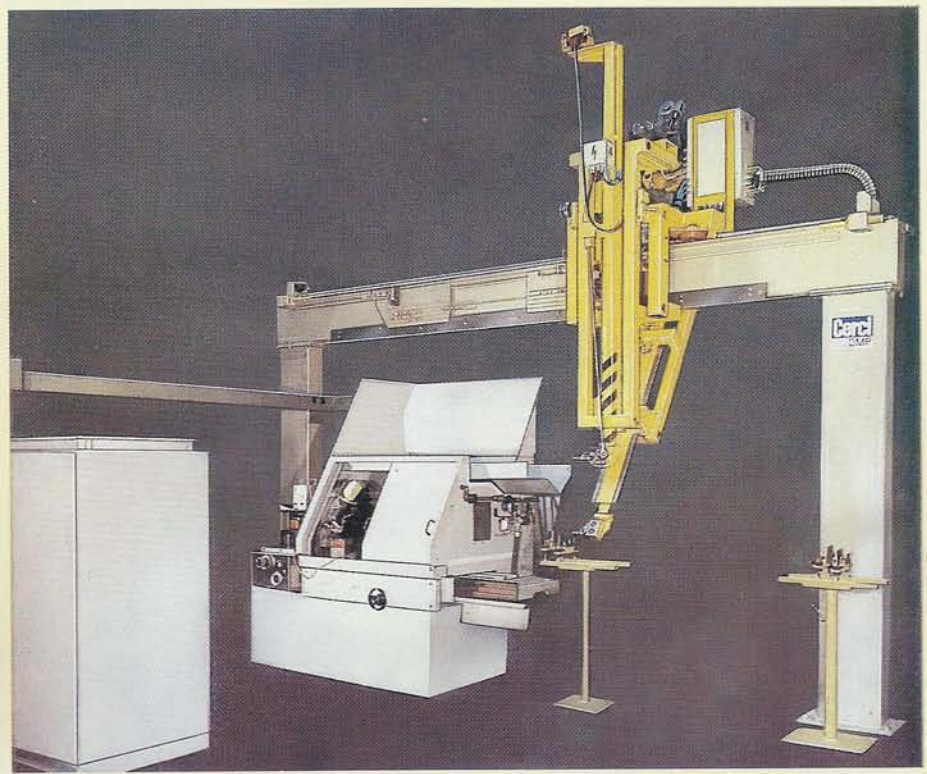
The turbo dresser is to be completed with an air-conditioning unit including filter, water separator and oil-mist device.

(The dressing wheel is not included in the delivery.)

Work loading by industrial robot

Besides the application of the SI 4 A and its versions in the medium- and large-batch production the integration of the machines in flexible manufacturing systems (FMS) or work loading by industrial robot are gaining ground.

The illustration shows an example of a SI 4 A loaded by a gantry-type industrial robot handling articulated drive shafts for cars.

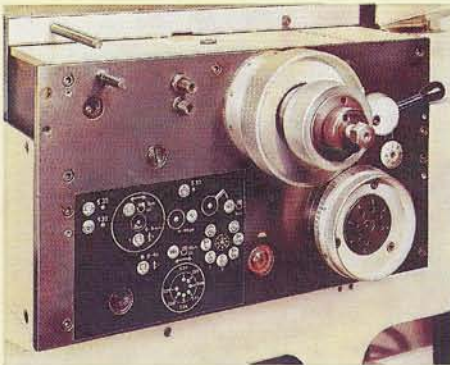


BWF Internal cylindrical grinding automatics

Sophisticated design Convincing details

Automatic infeed gearing

The automatic infeed gearing is driven by an infinitely variable d.c. motor. Owing to the total controlling range 1:3000 variable infeed rates can be set matched to nearly all workpieces to be ground in practice.



Low-temperature hydraulics

The controlling valves are ingeniously arranged apart from the machine. The assembly dimensions and operating pressure correspond to internationally recommended values.

Owing to the pressure-compensated pump the oil temperature does not exceed few degrees above room temperature.

BWF Internal cylindrical grinding automatics

Easy to maintain
Easy to operate

Easy to maintain

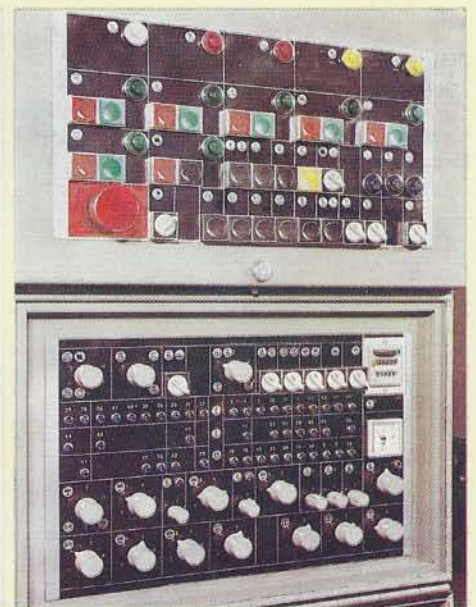
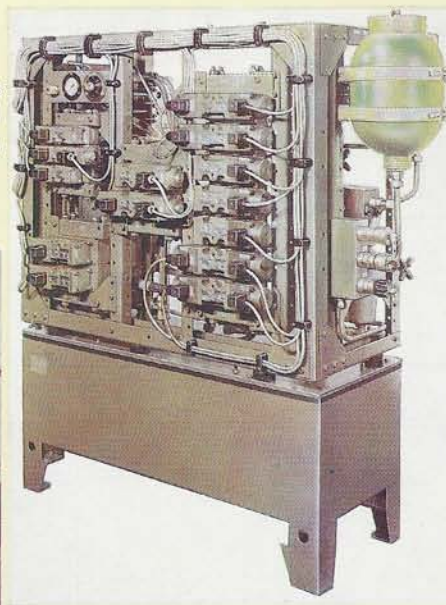
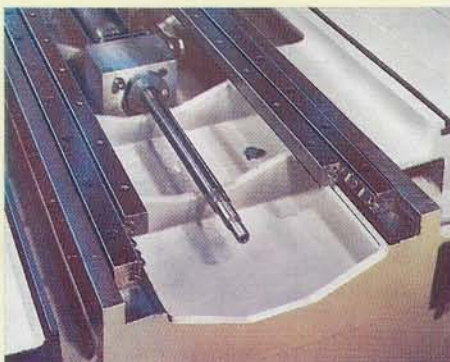
- life lubrication of all slides
- external hydraulic package with outside mounted controlling devices
- unhindered accessibility to machine-internal sub-assemblies through large, removable covers
- reliable programmable logic controller monitored by diagnosis routines

Easy to operate

- Pre-setting of all important machining data such as speeds — rates — dressing cycles
- separate, ingenious controlling panels to operate the work spindle headstock, face grinding attach- and grinding cycles
- display of the grinding sequence by pilot lamps
- automatic sequence of events

Pre-loaded antifriction guide-ways

The pre-loaded antifriction guide-ways for all slides are sturdily designed and guarantee outstanding accuracy, high rigidity, stick-slip-free travel and extraordinary damping ability.

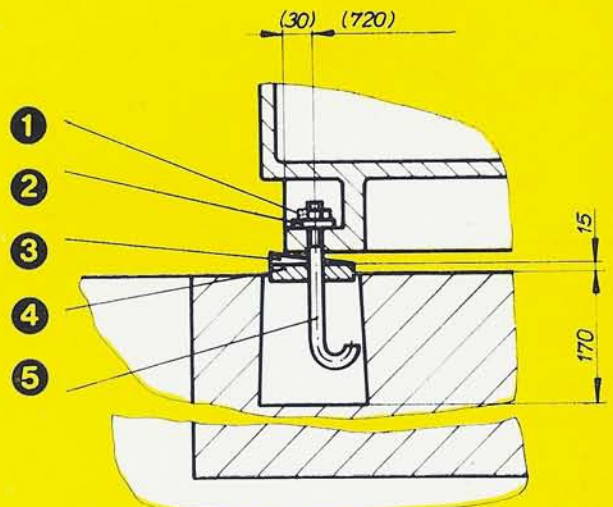
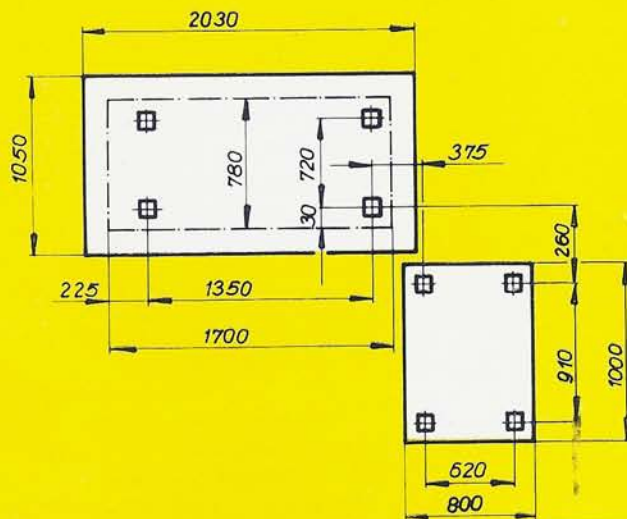
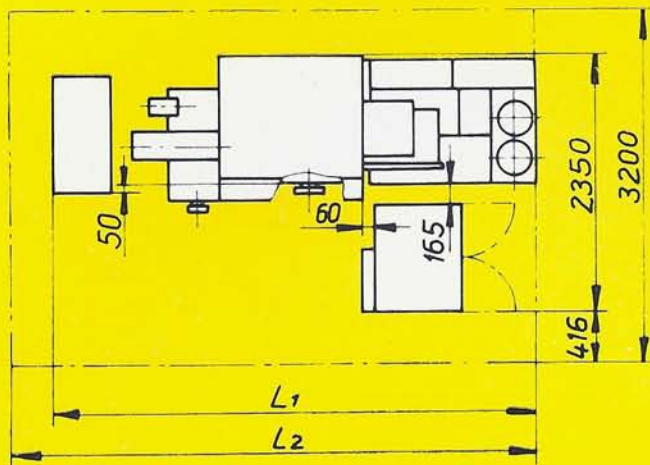
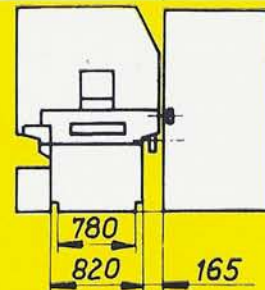
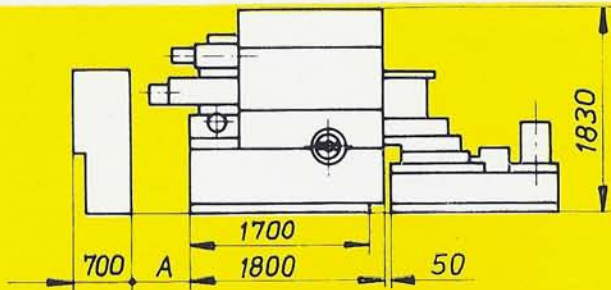


Technical data

BWF-Internal cylindrical grinding automatics

		SI 4 A	SI 4 AS	SI 4 M	SI 4 MS
Internal diameter to be ground, max.	mm	160	160	160	160
Internal diameter to be ground, min.	mm	5	5	5	5
Grinding length, max.	mm	200 (250)	200	100	100
Taper angle to be ground, max.	degrs	60	45	60	45
Grinding length with face to be ground, max.	mm	200	150	—	100
Swing, max.					
without face grinding attachment,					
without splash-water guard	mm	450 (500)	—	—	—
with splash-water guard	mm	370	—	315	—
with face grinding attachment,					
without splash-water guard	mm	370	—	—	—
with splash-water guard	mm	—	315	—	315
Work spindle speeds, infinitely variable	rpm	70-775 130-1375	70-775 130-1375	70-775 130-1375	70-775 130-1375
Grinding table travel, max.	mm	560	560	560	560
Grinding table travelling rate, infinitely variable	m/min	0.5-12	0.5-12	0.5-12	0.5-12
Number of double strokes, max.	ds. p. m.	200	200	200	200
Infeed travel, max.	mm	0.65 (1.3)	0.65 (1.3)	0.65 (1.3)	0.65 (1.3)
Infeed rate, infinitely variable	mm/min	0.02-10	0.02-10	0.02-10	0.02-10
Rapid advance travel	mm/min	10	10	10	10
Rapid return travel	mm/min	60	60	60	60
Infeed travel, intermittent	mm	0.001-0.025	—	0.001-0.025	—
Rapid retraction travel, infinitely variable	mm	0-8 (0-14)	0-8 (0-14)	0-8 (0-14)	0-8 (0-14)
Rapid retraction rate	m/min	1	1	1	1
Adjusting travel	mm	160	160	160	160
Travelling rate of the infeed slide	mm/min	60	60	60	60
Dressing infeed, 50 steps	mm	0.001-0.05	0.001-0.05	0.001-0.05	0.001-0.05
Centre height	mm	1155	1155	1155	1155
Mains connection, operating voltage	V	380	380	380	380
controlling voltage	V	220/60 24/12	220/60 24/12	220/60 24/12	220/60 24/12
frequency	cps	50	50	50	50
Total power required, acc. to grinding spindle	kW	10-18	10-18	16-24	16-24
Compressed air supply (grinding spindle with oil-mist lubrication)	MPa	0.6	0.6	0.6	0.6
Hydraulic oil quantity required	l	100	160	100	160
Coolant quantity required,					
without face grinding attachment	l	200	—	200	—
with face grinding attachment	l	400	400	—	400
Space required, length	mm	4390	4580	4390	4580
width	mm	2350	2390	2350	2390
height	mm	1830	1830	1830	1830
Net-weight	kg	4950	5450	4950	5650
Gros-weight	kg	6300	7150	6300	7350
Automatic face grinding attachment					
Face grinding wheel diameter	mm	125	250	—	250
Face grinding diameter, max.	mm	250	200	—	200
Width of face ring, max. ($R_a - R_i$)	mm	50	60	—	60
Internal grinding diameter with simultaneous face grinding, min.	mm	—	30	—	30
Infeed rate, infinitely variable	mm/min	0.1-10	0.1-10	—	0.01-10
Rapid advance travel	mm/min	60	60	—	60
Rapid return travel	mm/min	60	15	—	15
Dressing infeed	mm	0.01-0.3	0.01-0.1	—	0.01-0.1
Driving power	kW	2.2	7.5	—	7.5

Floor area and foundation plan



Standard design

A = 530; L₁ = 4390; L₂ = 4800

Equipped with steady rest

A = 710; L₁ = 4570; L₂ = 4980

- 1 M 20 TGL 0-934
- 2 21 TGL 0-125
- 3 Levelling wedge 90 x 40 x 12
Slope 1:10
- 4 Steel plate 20 x 80 x 160
with centre hole dia. 22
- 5 BM 20 x 200
TGL 0-529

The offer comprises, among others, heavy-duty grinding wheels for internal cylindrical grinding with a maximum admissible peripheral speed 60 m/s as well as for antifriction bearing grinding with a maximum admissible peripheral speed 80 m/s. The grinding wheel outer diameter ranges from 4 upto 1600 mm. The grinding wheels are made of artificial abrasives „Corundum“ and „Silicon carbide“.

High-duty grinding wheels offered by



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„7. Oktober“ Berlin
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Lohrmannstrasse 19 - 21
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Our further production programme

Universal internal cylindrical grinding machine **SI 4**

Universal-internal cylindrical grinding machine **SI 4/AI-CNC**

Internal cylindrical grinding automatic with automatic face grinding attachment **SI 6/1 ASA x 315**

Internal cylindrical grinding machines **SI 6/1 A x 315/500/710, SI 8 x 500**

Internal cylindrical grinding machines with manually controlled face grinding attachment

SI 6/1 AS x 315/500/710, SI 8 S x 500

Internal cylindrical grinding machines as special design for main spindles and similar workpieces

SI 6/1 AL x 315/500/710

SI 6/1 ALS x 315/500/710

Internal cylindrical grinding machines as special design with electromagnetic clamping unit and sliding shoe work support upto 630 mm work diameter

SI 8 G x 500

Antifriction bearing internal cylindrical grinding automatics

SIW 3 B; SIW 4 B; SIW 5 B

Antifriction bearing internal plunge-grinding automatics

SIW 3 E; SIW 4 E; SIW 5 E

Antifriction bearing universal internal cylindrical grinding automatics

SIW 3 U; SIW 4 U

Antifriction bearing universal internal cylindrical grinding automatic, manually loaded

SIW 5

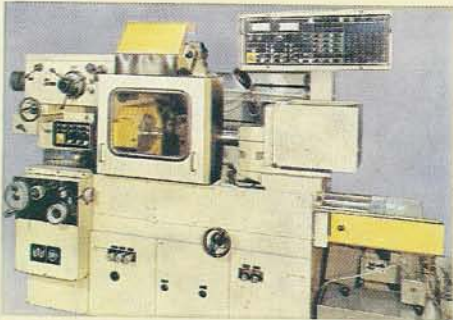
Automatic production lines for anti-friction bearing inner and outer rings

Automatic single-spindle turret lathes

DAR 46, DAR 71/1

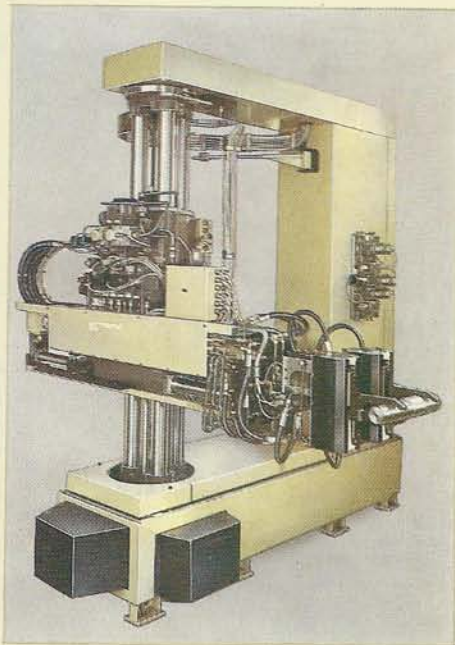
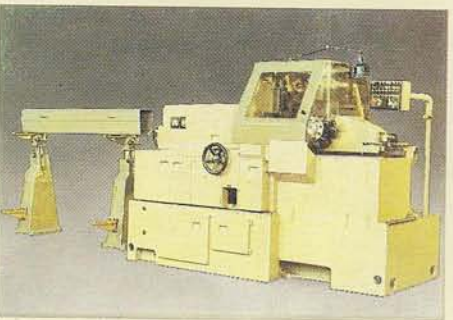
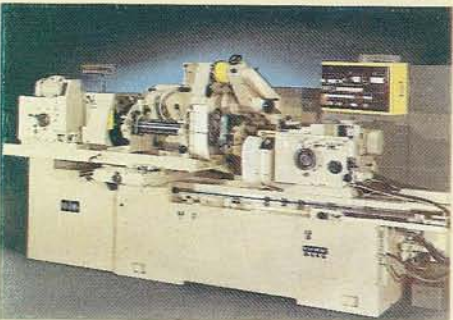
Industrial robot with 40 kg payload and five degrees of freedom

IR 2



SI 4
SI 6
DAR 71/1

IR 2



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