



MILTURN
TECHNOLOGIES

ROLLS-ROYCE 4

WFL M100

KAP2_E Januar 00

2.0 SETUP OF MACHINE

2.1 Transport

2.2 Cleaning

2.3 Foundation and setting up

2.4 Alignment

2.5 Putting into Operation

WFL

WFL Werkzeugmaschinenfabrik Linz GesmbH
vormals Teil der Voest-Alpine Steinel GesmbH
A-4030 Linz • Austria • Wahringerstraße 36
Tel (+43 70) - 69411 - 0 • Fax 69411 - 8172
Internet www.wfl.at • E-Mail office@wfl.at



2.1 Transport

The machine should be transported with appropriate care. Especially during lifting or lowering operations, impacts and shocks must be avoided.

Advisably, the machine should be handled by means of a crane.

Prior to transport the sliding protection cover must be open. Next, move the tailstock into its right-hand end position. The compound slide as well as the steady rest slide have to move to the middle.

In order to lift the machine a transport device plus eight ropes are used. These are fixed to the machine bed via the four bolts provided for this purpose (cf. schematic diagram).

Varnished surfaces and edges must be protected by elastic pads (eg. of hard rubber) where ropes touch these areas.

The chip conveyor as well as all components not directly connected to the basic machine (switch cabinet, operator panel, band filter unit etc.) are transported separately.

After setup, all transport safety devices have to be removed.

Transport dimensions of the base machine, distance between center 5000

(cf. illustration)

Over all length (max.)	m	9,3
Over all width (max.)	m	2,9
Over all height (max.)	m	3,8
Total weight of the base machine	kg	ca.33000

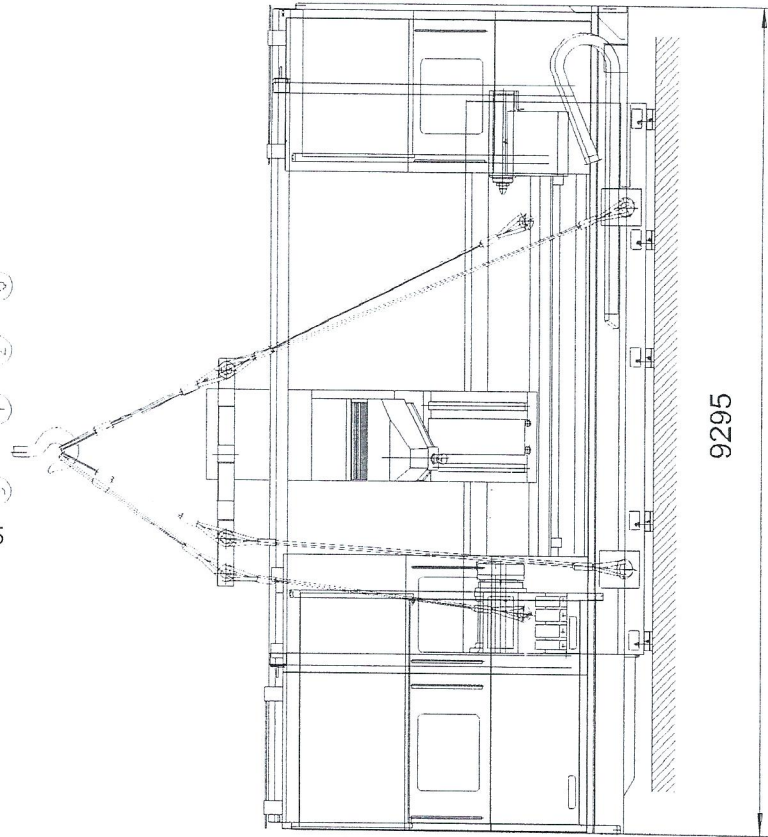
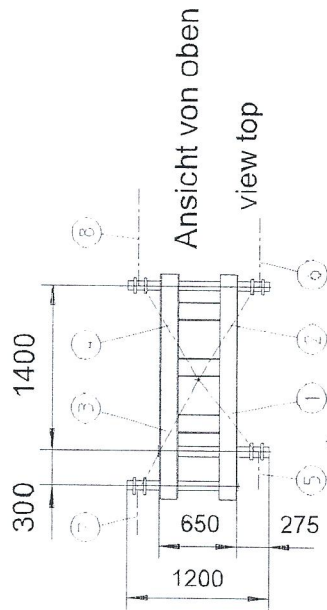
(without toolmagazine, switch cabinet, shaving exhaust installation and coolant equipment)

Weight of supplied parts

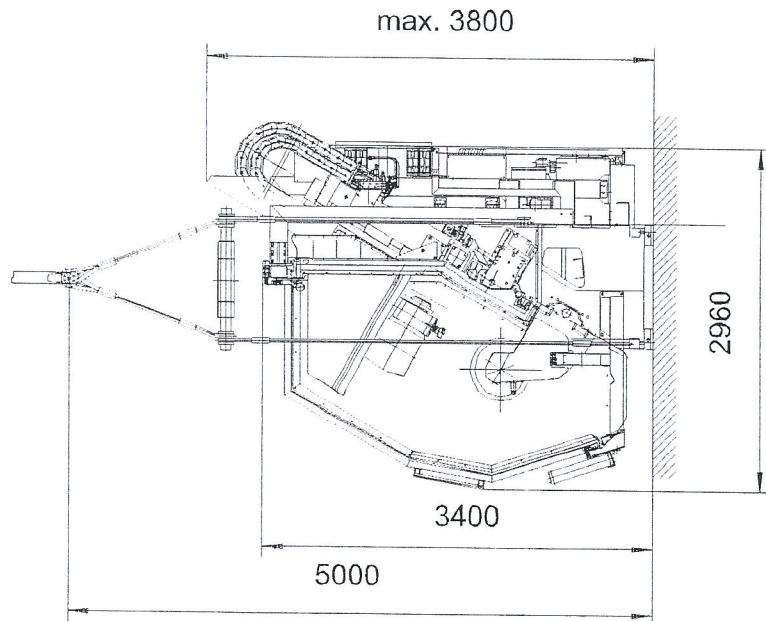
Total weight toolmagazine (without tools)	kg	ca. 2000
Total weight - covering of toolmagazine	kg	ca. 500
Total weight switch cabinet	kg	ca 1100
Panel - machine	kg	ca. 250
Total weight shaving exhaust installation	kg	ca. 1000
Coolant filtration system	kg	ca. 300
Coolant cooler	kg	ca. 280

**2.1.1 Transport plan**

(Transport devices Identno. 188958/01)



Transportplan M100 x 5000			Weight 33 000 Kg					
Rope No.	1	2	3	4	5	6	7	8
length mm	1150	1250	1350	1350	3700	4100	3000	3100
Rope dia. mm	36s	36s	36s	36s	36s	36s	36s	36s





2.2 Cleaning

To protect the machine against corrosion during transport, all bright parts have been provided with rust proofing paint.

Before setting up the machine this paint should be removed with a suitable solvent (washing petroleum or cleansing oil), using a soft rag (do not use steel wool!).

Oil all bright parts with non-corrosive oil after the rust protection paint has been removed.

Please note that none of the sliding parts should be moved until the anti-rust paint has been stripped and the sliding parts have been oiled.



Attention !

Do not use benzine or nitrodilution for cleaning. Likewise, compressed air is not permitted for cleaning purposes. The sliding shield incorporates a highly sensitive sight pane; use only water and soap, paraffin or white spirit for cleaning !



2.3 Foundation and setting up

In order to set up the lathe a proper foundation must be available. The foundation shall be prepared in accordance with the attached foundation drawing and must be well set.

Only with surfaces with a minimum carrying capacity of 30N/mm² (acc. to DIN 1164) is there no need to provide any special foundation.

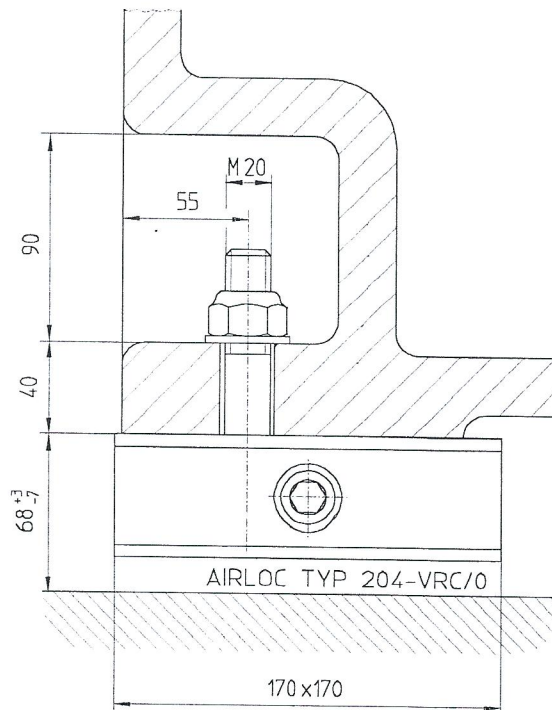
**Notice:**

The machine's load points must also be taken into account (depending on centre distance!).

When placing the machine on unsupported ceilings, a structural engineer must be involved in the calculations.

Anchoring - machine bed:

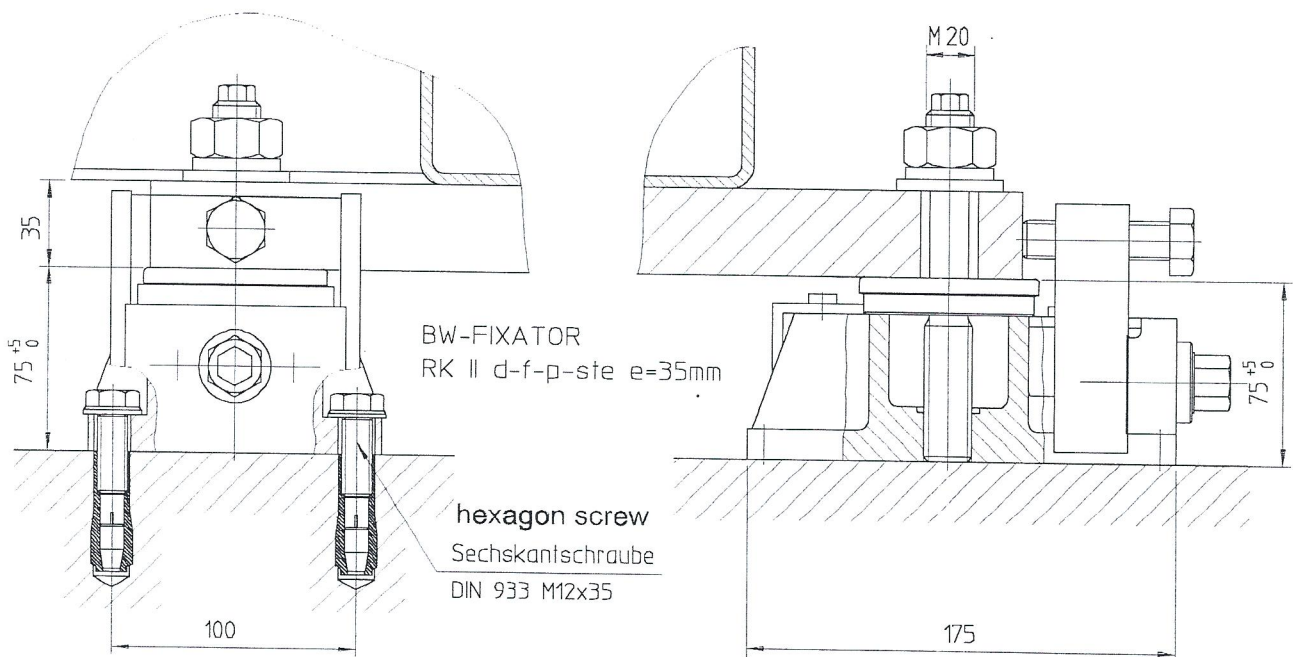
(cf. foundation plan)

Detail - machine bed



Anchoring - toolmagazine bracket:
(cf. foundation plan)

Detail - toolmagazine bracket





2.4 Alignment

2.4.1 Alignment of base machine

Alignment of the machine should be entrusted to specialised staff.

Prior to alignment of the machine and the tool magazine, the holes for the anchor bolts must be drilled.

In order to achieve the desired working accuracy of the lathe, the machine must be carefully levelled on its foundation.

For this purpose, high-sensitivity spirit levels are fixed length and crosswise on the bed and on the cross slide, respectively.

Levelling proper is done by means of the levelling elements.

The requisite tolerances for linearity can be seen in the Inspection Report (cf. chapter 3).

Once the machine is fully aligned, carefully tighten the nuts on the stone bolts or tie rods, paying due attention to the maximum load of the levelling pads.

2.4.2 Alignment of the magazine bracket

After aligning the machine, the magazine is placed on fixing elements next to the base machine; these can be laterally and vertically adjusted.

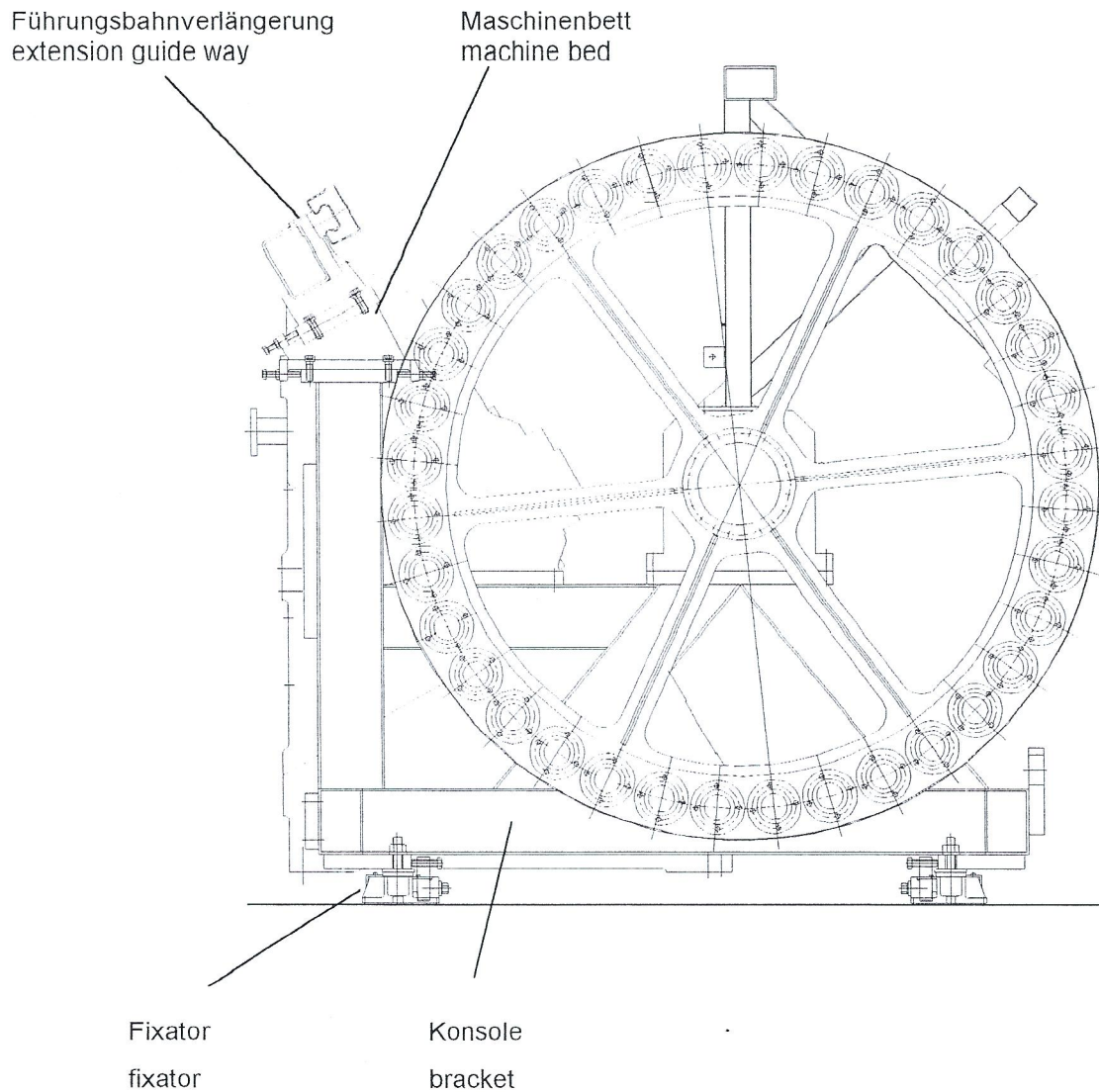
By means of a levelling rod and a spirit level the guideway extension, at the rear of the magazine, is aligned to the guide rail of the bed, whereupon the extension is bolted and pinned at the interface.

Make sure that there is no gap left at the joint.

Subsequently, the nuts on the fixing elements are tightened (see illustration).



Illustration to 2.4.2 Alignment of toolmagazine bracket





2.5 Putting into Operation

Prior to starting the machine for the first time, attention must be paid to relevant sections of this operating manual (cleaning, lubrication chart, instructions for lubrication etc.).

Connect the electric system of the machine to line voltage by actuating the main switch on the control cabinet.

The machine is delivered with all electric drives ready for connection, i.e. the motors as well as all switching devices required for manipulating the machine have been installed and wired in accordance with VDE and professional association provisions.

Connect the power line to the main switch in the switch cabinet (cf. foundation drawing - the latter will also indicate all pneumatic and coolant connections).

Prior to connection, compare voltage and frequency with the values on the rating plate.

After connection, check the direction of rotation of the main motor, and invert two phases of the main connection if there has been any error.

Moreover, check all doors of the machine casing, and the casings in front of the switch cabinet and the tool magazine are properly closed, since only in this condition can the machine axes be traversed.

This is especially important after maintenance and repair work in the rear section of the machine.



Attention !

By no means must these safety devices be removed or short-circuited !



3.0 TECHNICAL DESCRIPTION

3.1 Technical Data

3.2 Inspection certificate - Laser measuring

3.3 Speed - output diagram

3.4 Admissible workpiece weights

3.5 Working area schematic

3.6 Schematic of cams for NC axis

3.7 Turning spindle head

3.8 Component description

3.9 Tool system



3.1 Technical Data

General data

Ambient temperature (min.)	°C	0
Ambient temperature (max.)	°C	35
Ambient temperature under full load (max.)	°C	30
Admissible temperature variation within one hour	K	10
Admissible temperature variation within three minutes	K	1
Relative atmospheric humidity (max.)	%	75
Noise level (max.)	dB(A)	80

Working range

Center distance	mm	5000
Swing over telescopic cover	mm	910
Swing over slide	mm	850
Height of working spindle above floor level	mm	1283

Main spindle left side

Spindle head DIN 55026, form A	size	15
Spindle dia. in the front bearing	mm	240
Spindle dia. in the rear bearing	mm	220
Spindle bore	mm	165
Passage in the draw tube	mm	*

* depending on the chuck



Main drive with gear

Drive output (100% duty cycle)	kW	60
Torque at the spindle (step 1/2 max.)	Nm	4472 / 1118
Overall speed range	min ⁻¹	5 - 1600
Speed range for step 1	min ⁻¹	5 - 400
Speed range for step 2	min ⁻¹	20 - 1600

Compound slide upstairs

Three-phase current servo drives		
Feed force, longit. (Z-axis)	daN	3000
Feed force, transv. (X-axis)	daN	3150
Ball screw spindle dia. / pitch - longit./transv.	mm	63x20/63x10
Rapid traverse speed longit./transv.	m/min	15/15
Longit. stroke (Z-axis)	mm	5370
Transv. stroke (X-axis)	mm	900(+860 / -40)

Milling and boring attachment

Max. power at spindle (100 % duty cycle)	kW	25
Max. torque at spindle (100 % duty cycle)	Nm	300
Spindle dia. in the front bearing	mm	100
Overall speed range	min ⁻¹	10-4000
Y - stroke Y-axis	mm	500 (+300,-200)
Rapid traverse speed Y-axis	m/min	12.5
Feed force Y-axis	daN	2000
Ball screw spindle dia. / pitch Y-axis	mm	40x5
Torque B-axis	Nm	1200
Positioning B-axis	degrees (°/s)	200° (-110°, +90°)



Coolant circuit

Capacity	Kcal/h	3440 (4000 Watt)
Rust protection in the cooler circulation	25% / 75%	Tyfocor / wather
Temperature range	°C	25±1
Working pressure	bar	9

Tool magazine 108 places

Max.take up of tools	piece	108
Tool holder for the spindle	Fa.SANDVIK	Capto C8
Max. tool diameter (adjacent tool places may be occupied)	mm	110
Max. tool diameter (adjacent tool places next must be kept free)	mm	250
Max. lenght of tool from zero point (special tools)	mm	500 (800)
Max. projection of tool	mm	150
Max. weight of tool	kg	20
Transport speed - slide	m/min	100

Tailstock

Quill diameter	mm	180
Quill travel	mm	200
Quill force adjustable (7-63 bar)	daN	540-4860
Inside taper of quill MT	size	6
Eccentric adjustment of quill - X-axis	mm	-0.055/+0.235
POSITION DRIVE -- OPTION		
Rapid traverse speed	m/min	10
Ball screw spindle dia./pitch	mm	63x20
Feed force, longitudinal	daN	1000



C - axis

Max. speed at the main spindle	min ⁻¹	20
Max. torque at the main spindle	Nm	3000
Smallest programmable increment	degrees	0,001°
Holding moment of disk brake	Nm	6000

Chucking equipment

3-jaw chuck THW 630 – 160R, SCHUNK
feed adjustment by client !

Clamping cylinder SIN – SM 175, SMW

Speed max.	min ⁻¹	5000
Actuating force at 40 bar	daN	8600
Pressure max.	bar	70

Steady rest

SLU – Z – 5, Fa.SMW

Clamping range (max.)	mm	50-310
Operation pressure (min./max.)	bar	8/60
Piston dia.	mm	100
Clamping force/roller (max.)	daN	2000
Roller surface speed (max.)	m/min	700
Centring accuracy over the whole range	mm	0,06
Repeating accuracy	mm	0,01

Chip conveyor

Discharge height	mm	~1100
Band width	mm	~450



Hydraulic system

Tank volume	l	140
Oil viscosity	ISO VG	46 / 68
Delivery	l/min	24
Hydraulic pressure (max.)	bar	70

Central lubricating system

Tank volume	l	15
Oil viscosity	ISO VG	68
Delivery	l/min	0,5
Hydraulic pressure (max.)	bar	27

Lubricating of gearing-main drive

Tank volume	l	26
Oil viscosity	ISO VG	68
Delivery	l/min	9
Hydraulic pressure (max.)	bar	20

Pneumatic

Consumption	l/min	150
Pneumatic pressure	bar	6