

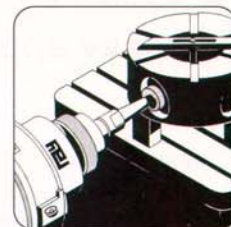
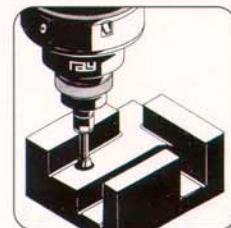
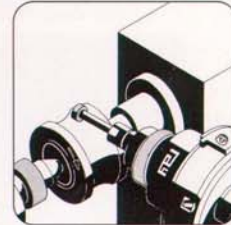
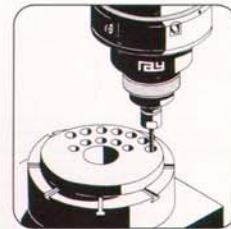


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RAY KSK 1000

Coordinate Grinding Head



Bores, surfaces and slots ...

... the flexible accessory to solve nearly all your
precision grinding problems.

Control unit ADIM MCR

Remote control with display

For the user who requires latest technology and flexible production capability



- Integrated load controlled frequency converter.
- Automatic zero setting of load display after reaching required r.p.m. value.
- Possibility for adjustment of load control in steps of 0.5% in connection with infeed speed of U-axis, which protects grinding wheel from being damaged and prevents unnecessary overload.
- Remote control for easier handling by operator is included in standard equipment of this MCR control unit.
- All important functions can be controlled by means of remote control.
- Display of U-axis and r.p.m. value of frequency spindle on two separate displays in LCD-technology.
- Easy reading from nearly all angles due to supertwisted-technology and background lighting.
- Interface for connection with machine control unit.
- Info key on frequency converter with error message on display.

Grinding programs

- Selection of **31 programs** possible for different feed rate/time values.
- Determination of grinding final point by FINAL POINT GRINDING
- Determination of grinding starting point by START POINT GRINDING
- Determination of spark out time by SPARK OUT TIME
- Automatic approach to work piece by TOUCH AUTOMATIC
- Program start with automatic approach by REPEAT WITH TOUCH
- Program start without automatic approach by REPEAT WITHOUT TOUCH

Control unit ADIM MC

For easy application in the manufacture of tools and molds

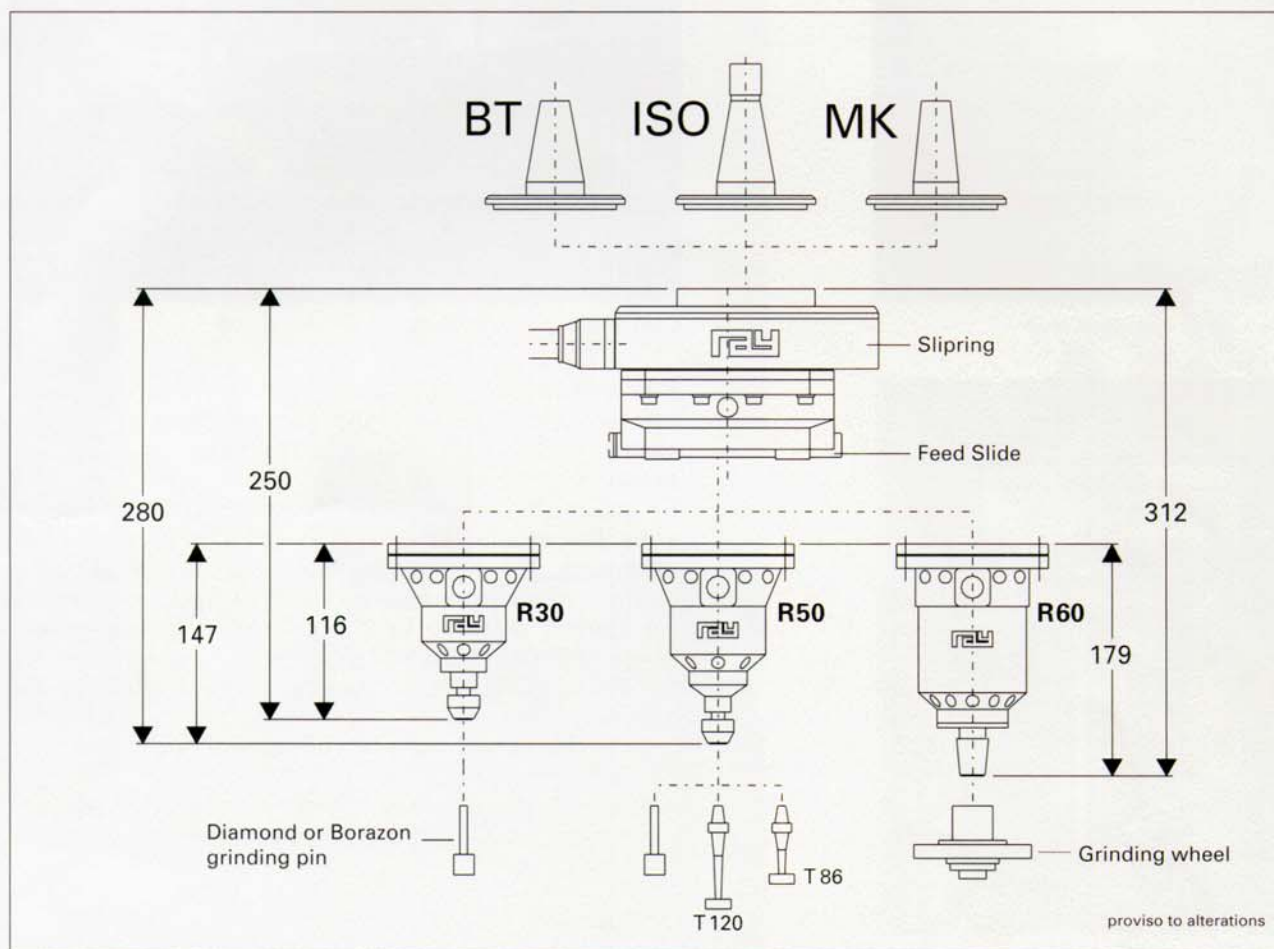


- Control unit for easy handling with integrated load-controlled frequency converter.
- Display of U-axis and r.p.m. value of frequency spindle on two separate displays in LCD-technology.
- Easy reading from nearly all angles due to supertwisted-technology and background lighting.
- U-axis feed-controlled by speed selector switch with 31 programs from 0.001 mm.
- Key SPEED U-AXIS displays speed of U-axis in all operating methods.
- Display indications in MM / INCH / RADIUS / DIAMETER.
- Spindle selections by means of key SPINDLE SELECT by indication of r.p.m. range.
- Automatic withdrawal of U-axis and simultaneous spindle stop in case of overload.
- Automatic zero setting of load display after reaching required r.p.m. value.
- Possibility for adjustment of load control in steps of 0.5% in connection with infeed speed of U-axis, which protects grinding wheel from being damaged and prevents unnecessary OVERLOAD.
- Info key on frequency converter with error message on display.
- All functions are operated by means of a foil keyboard on front panel.

Technical datas

- Input voltage 3-phases + earth
- Input capacity 3000 W
- Output capacity and characteristic lines according to preselected spindle
- Ambient temperature 0 to +40°C (32 to 100°F)
- Cooling by means of ventilator
- Weight approx. 22 kg (48 lbs.)

The **RAY coordinate grinding head KSK 1000** is made of high quality aluminium alloy and weighs together with spindle R50 only approx. 9 kg (20 lbs.). The sturdy and high precision unit can be mounted to almost any spindle head of vertical or horizontal NC- and CNC- controlled machine tools by various interchangeable fixingcones. Thus, application possibilities are opened to the user which normally can only be realised with expensive special machines.



Spindle R30

25 000–100 000 r.p.m.
600 W
Collets \varnothing 3/4 mm

Weight 1.8 kg

Spindle R50

10 000–40 000 r.p.m.
1 200 W
Collets \varnothing 3/4/6/8 mm

Weight 2.6 kg

Spindle R60

7 000–15 000 r.p.m.
1 500 W
Holding device for grinding flange wheel
Collets on request
Weight 4.5 kg

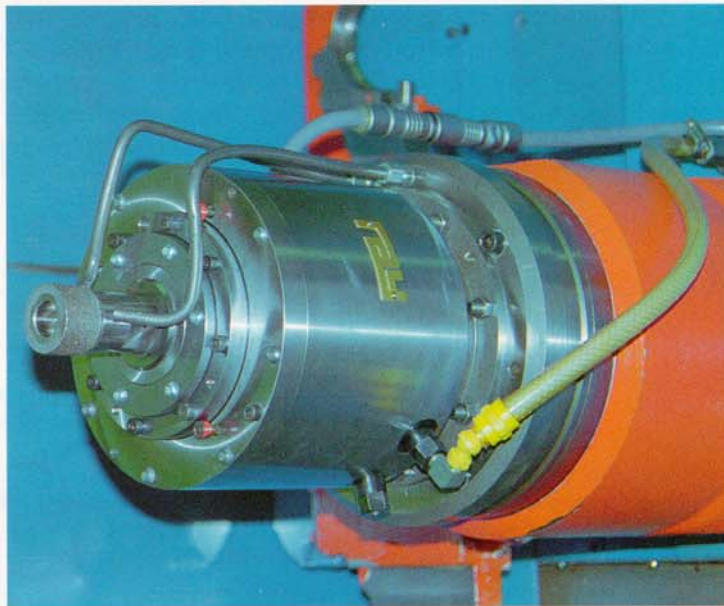
Capacity
Accuracy
Weight

Bore diameter
Bore depth

max. 230 mm (6")
max. 120 mm (5")
0.001 mm (0.00004")
approx. 9 kg (20 lbs.)



Oscillating apparatus HUB



Cam grinding head KUS 2500



Coordinate grinding head KSK 4000

RAY solves the problems of
internal grinding **surface grinding**
cam grinding **slot grinding**
external grinding

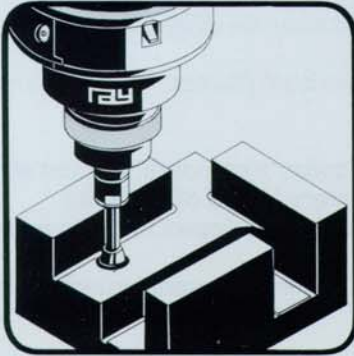
RAY Ltd. offers the coordinate grinding head in three sizes, the small head with a weight of 9 kg, the bigger one with 265 kg. Apart from coordinate grinding heads, we also manufacture high-frequency spindles for speeds of 6000 to 100 000 r.p.m. with a power range of 250 to 1500 Watt.

For the working of cams, we have developed the cam grinding head. Where this head cannot be employed any more, there is the possibility of using the oscillating apparatus.

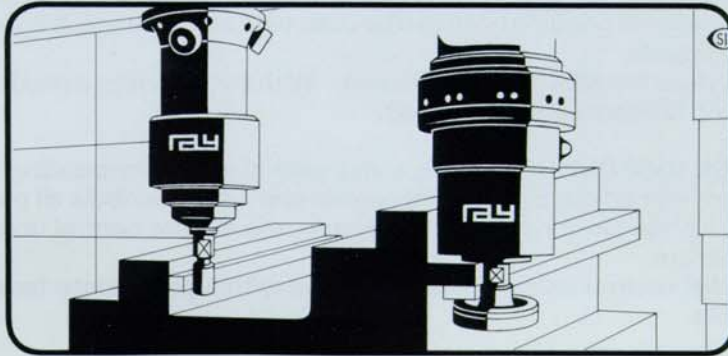
Ask for the corresponding leaflets, or even better ask your agent for a demonstration without obligation.



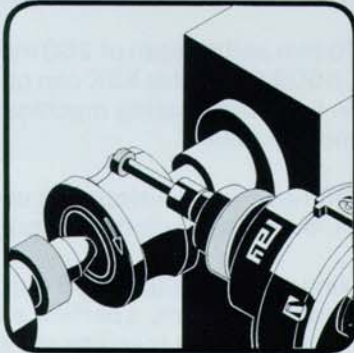
Working Examples



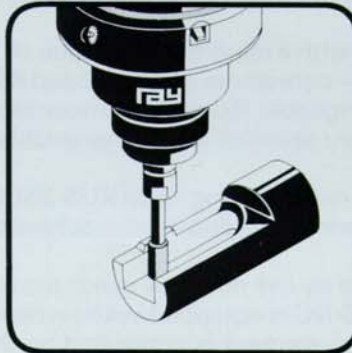
Surface grinding with KSK



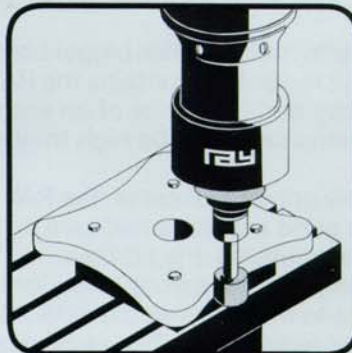
Grinding of slideway with cam grinding head KUS and spindle



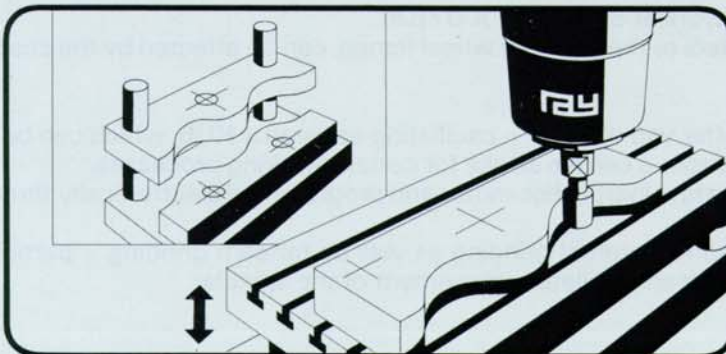
Grinding of profile-rolls with KSK



Slot grinding with KSK

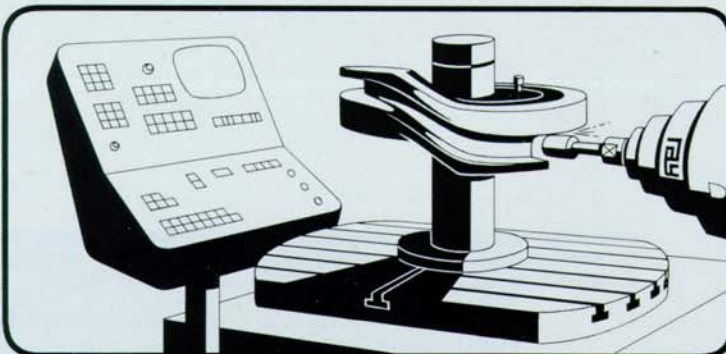


Cam grinding on CNC controlled milling machine with cam grinding head KUS

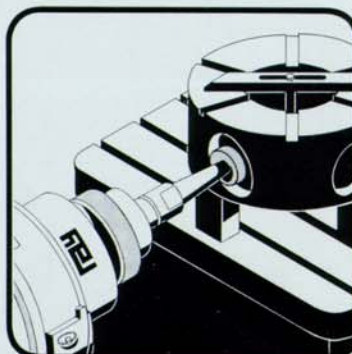


Grinding male/bottom die on CNC milling machine with OSCILLATING APPARATUS and spindle

Internal Grinding
Surface Grinding
Cam Grinding
Slot Grinding



Grinding of barrel-cam on CNC controlled milling machine with KSK



Horizontally grinding of bores with KSK and prolongation T 120

With our RAY – coordinate grinding head **KSK 1000**, technical possibilities are opening to you, which otherwise can only be realized with an expensive jig grinding machine.

Due to the fact that the KSK is made of high quality aluminium alloy, it weighs alone only 6,5 kg and together with a high-frequency spindle about 9 kg.

We offer three different kinds of high frequency spindles for speeds of 7 500–100 000 r.p.m.

The coordinate grinding head can be used with an exchangeable fixing cone on all jig-drilling and milling machine tools.

We produce the **KSK 1000** in two sizes. With both devices a maximum bore diameter of 150 mm and a depth of 120 mm can be achieved.

The **KSK 1000 CNC** is equipped with a control unit corresponding to today's standard. Almost all functions are carried out by a remote control unit which controls all planetary infeed of the slide.

To reduce the air-grinding to a minimum, the remote control unit is also equipped with an approach automatism.

This **CNC-control unit** is serially equipped with a parallel interface. Optionally a serial interface is also available.

The **KSK 1000 SAC** differs from KSK 1000 CNC only by the control system. The SAC-control unit is much more simplified and has no remote control unit. Therefore all keys are mounted on the control unit.

In order to machine also bigger bores with a maximum diameter of 310 mm and a depth of 250 mm, our product range also contains the RAY – coordinate grinding head **KSK 4000 CNC**. This KSK can be used vertically and by means of an exchangeable fixing cone mounted on jig borers, boring machines and machining centers. The high frequency spindles are exchangeable and movable.

To allow grinding of cams, the RAY – cam grinding head **KUS 2500 NC** has been developed. It enables you to grind any hardened cam on your CNC-controlled machine tool, but neither grinding of punches nor dies presents any problem.

The length of the cam is solely limited by the machine used; the maximum cam height is 55 mm.

Thanks to the fact that the KUS 2500 NC is equipped with an oscillating movement, a perfect surface finish is guaranteed. The oscillating movement is controlled by the spindle of the machine via a cam disc.

In order to make optimal use of the KUS 2500 NC, two special water-cooled RAY high-frequency spindles have been designed, which can work at 6 000–40 000 r.p.m.

A change of the fixing device, the collets or the grinding wheel flange, can be effected by the customer himself.

As an additional accessory, we can offer you the RAY – oscillating apparatus **HUB**, which can be fixed onto every machine tool-table. It produces a certain stroke for certain working processes.

The oscillating apparatus is driven by a low inertia disc motor and programmed electronically through a control desk.

The oscillating apparatus can be used for internal grinding as well as for cam grinding – particularly where the machine is not equipped with an oscillatory movement of the spindle.