

AF3

Machine à affûter Notice d'instructions

Grinding machine Instruction notice

Schleifmaschine Gebrauchsanleitung

Afiladora Boletín de instrucciones

Macchina affilatrice Istruzioni per l'uso

SETTING UP THE GRINDING WHEEL.

Set the grinding wheel on machine as follows:

1. Unscrew screw **A** (see illustration **B**). Insert pin \varnothing 5 mm (supplied with accessories). Revolve grinding wheel slowly until pin locates in hole in shaft of spindle.
2. Insert socket wrench and unscrew nut and washer. Set up wheel and insert steel nut inside wheel. Tighten nut.
3. Make certain that the grinding wheel is securely tightened but without excess that would result in damaging the wheel.
4. Do not forget to replace screw **A**.

INTERCHANGING THE GRINDING WHEEL.

The same procedure is followed when the grinding wheel has to be interchanged or replaced.

Two sorts of grinding wheels are used:

1. Silicone Carbide Wheels for grinding high speed steel cutters.
2. Diamond wheels for grinding carbide cutters.

DRESSING UP THE GRINDING WHEEL.

In order to sharpen steel cutters properly, the silicone carbide wheel has to run true. This is accomplished by dressing up the wheel with a diamond dresser.

Diamond dresser:

- N° 52.097 for \varnothing 3.17 (1/8") collet
N° 52.096 for \varnothing 4.36 (11/64") collet
N° 52.094 for \varnothing 6.35 (1/4") collet

can be supplied with machine, upon request.

How to insert the diamond dresser:

1. Move locating finger **D** out of the way.
2. Swivel index finger **G** until it locates into any groove of tool head.
3. Open collet by moving knurled knob **J** (illustr. **A**).
4. Insert diamond dresser into collet.
5. Tighten knurled knob **J**.
The diamond dresser should protrude approximately 1/2" (12 mm) from the collet.
6. Loosen barrel **U**.
7. Swivel tool head **B** until indicator line **M1** on tool head lines up with line **D** on protractor.
8. Make sure knob **E** is loose.
9. Diamond dresser should be approximately 0.5 mm (1/32") away from the grinding wheel. If the tool head **B** is too far to the right, loosen lever **K**. Move knob **F** anti-clockwise as far as possible and push tool head carriage to the left until diamond dresser is 0.5 mm (1/32") away from the wheel. Lock lever **K**.

10. Move diamond dresser gradually towards the wheel by turning knob **F** clockwise and at the same time swing tool across face of wheel until dressing is completed.

It is advisable to dress grinding wheel prior to each use.

N.B.: Use diamond dresser only on silicone carbide wheels.

PERMANENT DIAMOND DRESSING UNIT (ref. 52200) illustr. C

This unit is permanently fitted on the machine by replacing barrel **U** with the longer screw supplied with the unit.

Make sure that the spacing ring is fitted as shown on the illustration **C**.

MAINTENANCE OF DIAMOND WHEELS.

To obtain maximum service of those wheels, the following precautions should be taken:

1. Never use them to grind steel cutters.
2. Take only very slight grinding passes.
3. Should the edge of the wheel become a little rounded off after a long time of use, you can send us back the wheel for re-conditioning. In any case, never try to dress diamond wheels like steel grinding wheels.
4. When diamond wheel gets a glossy surface, it does not grind very well any more. It should be cleaned by rubbing a pumice-stone across face of wheel.

Never use another material for this cleaning. The pumice-stone wears out very quickly when pressed on wheel, which is quite

ADJUSTING THE MACHINE**TO GRIND SINGLE LIP CONICAL CUTTERS.**

First of all, make sure that tool head **B** is in correct position close to the wheel. If tool head is too far away, follow same instructions as for dressing wheel (see paragraph 9 above).

1. Lock screw **L** into relative hole **L** (see picture 1).
2. Spin index finger **G** until it locates into groove **R**. If index finger **G** does not locate into groove **R**, back off knurled screw **Q** after having loosened set screw **S**. When screw **Q** is tightened as far as it will go with index finger **G** located groove **R** tool head is then at a 40° clearance angle.
3. Insert cutter into collet, protruding about 12 mm (1/2").
4. Allow flat of locating finger **O** to locate flat of cutter properly. To adjust tension of locating finger, operate knurled screw **P**.
5. Tighten collet by moving knurled knob **J**.
6. Move locating finger **O** out of the way far as possible. If more or less clearance is desired, lift index finger **G** to be clear of groove and turn screw **Q** to desired clearance angle. (See clearance angle on scale (**CL**) graduated from 25° to 50°).
7. Lift index finger **G** out of groove and give half turn to be in free position.

The most widely used cutting angles are 22.5°, 30° and 45° angles (half engraved angle).

In order to facilitate and simplify setting of these angles, we have indicated them on the right hand side of protractor **D**.

When right index mark **M1** is set at **C1** of protractor, the left index **M0** will then automatically be at 18° on protractor (half-engraved angle **c** is then 22.5°).

When index line **M1** is set at **C2**, then index **M0** will be at 37° on protractor. (Half engraved angle **c** is then 45°).

When index line **M1** is set at **C3**, then index line **M0** will be at 24° on protractor. (Half engraved angle **c** is then 30°).

Setting **C1** results in a 45° engraving angle

Setting **C2** results in a 90° engraving angle

Setting **C3** results in a 60° engraving angle

These angles are achieved when the angle **b** (complementary to cutting angle) is set at a 40°. As the clearance angle **b** is increased, the cutting angle becomes greater; as the angle **b** is decreased the cutting angle becomes less.

MATERIALS TO BE ENGRAVED	ANGLES TO BE USED		
	a (MO)	b	c (1/2 engraved angle)
Cast-iron, steel	25°	25°	27°
Brass, bronze, aluminium.	21.5°	35°	25°
Plastics	18°	40°	22.5°
	24°	40°	30°
Perspex	37°	40°	45°

GRINDING SINGLE LIP CONICAL CUTTERS.

1. Switch on motor and begin roughing out. To this end, gradually approach cutter to wheel by turning very slowly micrometric knob **F**, clockwise, with left hand.
2. With right hand, hold knurled knob **J** and swing tool head across face of wheel while partially spinning cutter on itself. In that way, conical grinding is obtained in form of numerous facets, which allows wheel to wear out evenly, without heating cutter too much. Overheating cutter would result in unhardening steel cutters.
3. After having made as many facets as possible and compensated for worn or damaged parts, rotate cutter until it has reached an absolute apex.
4. Carefully examine cutter point. If the point is not correctly

TIPPING OF THE CUTTER POINT.

For very fine engraving, the cutter remains acute. In most cases however it is preferable to tip off the point to obtain the proper width of cut. This prevents cutter from breaking off and allows it to keep its cutting edge longer in good condition.

1. Tipping is usually very slight and is done with the hand by presenting the cutter point on grinding wheel according to the proper angle.
2. For wider tipping, do not remove cutter from collet and proceed as follows.
3. The cutter being at 40° (scale CL), spin tool head until edge of casting V comes in contact with the index finger G and hold it to this position.
4. Push locating finger back and out of the way to avoid interference with the grinding wheel.
5. Move index line M 1 to T on protractor.
6. With the left hand, turn micrometric knob F to move tool head and smoothly bring cutter point in contact with grinding wheel. Operate very slightly to obtain a fine point (width A or B).
7. For accurate tipping, place a feeler gauge between cutter point and grinding wheel. Then remove feeler gauge and turn knob F to compensate for thickness of feeler gauge, this resulting in a zero setting.
8. Then move knob F as many thousandths as necessary with the thought in mind that the cutting width will be determined by a combination of the angle of the cutter and amount of material taken off the apex during tipping operation.

For example: If cutter has a half engraved angle of 20° and knob F is moved .010" (25/100 mm), the resulting tip will be approximately .012" (30/100 mm).

If cutter has a half engraved angle of 30° and knob F is moved .010" (25/100 mm), the resulting tip will be approximately .012" (30/100 mm).

If cutter has a half engraved angle of 40° and knob F is moved .010" (25/100 mm), the resulting tip will be approximately .017" (43/100 mm).

Note: With use of a V-cutter, the width of line varies as engraving depth increases.

PARALLEL CUTTER.

1. Set index line MO on O of protractor.
2. Set cutter as above mentioned for conical cutters.
3. Loosen knurled screw L in order to enable the tool head to rotate 360°.
4. Loosen knob E and bring pin to pin stop X by lifting tool head.
5. Tighten knob E.
6. Loosen lever K and move tool head to the necessary length of parallel cutter required.
7. Tighten lever K, hold tool head and loosen knob E.

Note: Pin now acts as a stop for forward travel of the tool head, resulting in a set limit for a required cutter length.

8. Bring cutter against grinding wheel, spinning the cutter, gradually removing material.

Measure cutter with a micrometer. When proper diameter has been reached, grind clearance as follows:

9. Relocate screw L in lodging L. Start grinding from the clearance edge and remove material until you have just touched the cutting edge. Do not pass this point, or the cutter will be undersized. (To facilitate this operation, apply layout blue on cutter.)
10. Tip off cutter as described previously.

STONING.

After grinding on the machine, it is necessary to take off the burrs that remain on cutting, clearance and tip edges. This can be done by sticking the cutter in a piece of hard wood but a better result will be obtained by pressing flat side of cutter

GRINDING MEDIAN FLAT SIDE OF CUTTER.

On too worn out cutters, it can be desirable to prolong the median flat side of cutter by making a new middle face.

This grinding is done by setting index lines as follows:

1. Set cutter on 40° (scale CL).
2. Insert finger G into notch R 1.
3. Set index line M 1 on O.

Be careful not to grind farther than the axis of the cutter, which would result in causing it to be completely useless.

TO REPLACE MOTOR BELT.

Remove the two screws Z, remove the wheel-guard and replace belt.

ADJUSTING THE EXCENTRATION.

To obtain a good sharpening, a good setting of the cutter without any excentration is necessary.

Now, due to the tolerances allowed for the various parts of the cutter-arbor, the cutter excentration practically cannot be avoided.

It is therefore necessary to correct this excentration.

After a first sharpening, check the cutter shape. The cutting edge must be shorter than the clearance edge and line ED (see fig. I and II) must be horizontal or slightly sloping down.

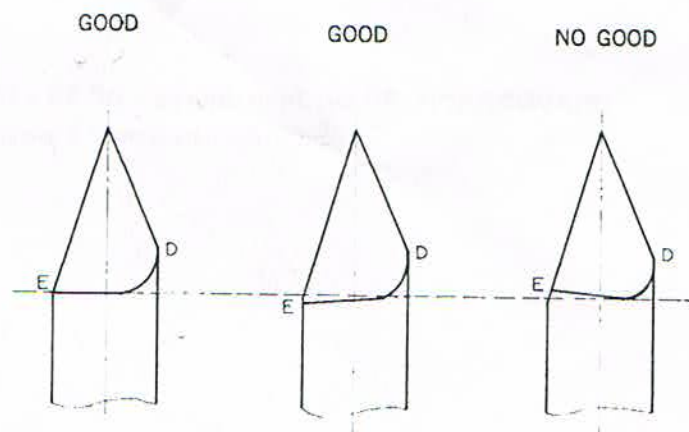
If line ED goes up, the sharpening is no good and the cutter does not cut. It is therefore necessary to move the cutter as follows:

1. Unlock both hexagon hollowed screws located on the black ring (fig. 1).
2. Keep finger G in notch R.
3. Turn the spindle about 30° after you have slightly unscrewed screw L.

In case the result obtained would not be in accordance with illustration (fig. I and II) move the cutter once more as above mentioned.

When the cutter setting is satisfactory and the sharpening correct, the Grinding Machine is adjusted for all the following sharpenings.

In case only the collet would be removed, a new adjustment may eventually be necessary.





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