

## PRECISION BORING HEAD

**Type 205bh (ISO-TPGT)**  
**Ø10÷100mm ( \* Ø6÷100mm )**  
**3/8" ÷ 4" (\*Ø 2/5" ÷ 4")**

### INSTRUCTIONS FOR USE

No. 2620507



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## 1. Safety recommendations

- 1.1 Before clamping the head on the machine spindle, make sure that the head is not visibly damaged.
- 1.2 Assemble the tools and cartridges in the correct position on the slide. The point of blade should be directed towards the mark on slide.
- 1.3 The head 205bh is balanced neither statically nor dynamically. Therefore we recommend not exceed the maximum allowed speed for individual diameters of the boring range. The maximum allowed speeds are specified in the table of basic technical data in the chapter 4.
- 1.4 Do not start the machine spindle unless you check that slide arresting screw is tight. (Pos.18 on the Fig. 1)

## 2. Delivery conditions

The fine boring head is delivered in plastic case with foam plastic insert. The head is equipped with the primary accessories.

The exchangeable taper shanks and extension parts are not included in these accessories, it is necessary to order those separately.

List of the primary accessories

|     |  |          |
|-----|--|----------|
| 1.  | C* – boring tool $\varnothing$ 5,5 x $\varnothing$ 16x 23 0580 0550 K10<br>$\varnothing$ 6- 14mm, 0,24-0,55 in | 1 piece  |
| 2.  | D – boring tool 203.294<br>$\varnothing$ 10- 18mm, 0,39-0,70 in  | 1 piece  |
| 3.  | E – boring tool 203.300<br>$\varnothing$ 18- 26mm, 0,70-1,02 in  | 1 piece  |
| 4.  | F – holder 203.270<br>For knives units L + K   | 1 piece  |
| 5.  | G – holder 203.287<br>For knives units L + K   | 1 piece  |
| 6.  | L – insert holder 203.768<br>$\varnothing$ 26- 40mm, 1,02-1,57 in  | 1 piece  |
| 7.  | K – insert holder 203.751<br>$\varnothing$ 40- 60mm, 1,57-2,36 in  | 1 piece  |
| 8.  | M– insert holder 203.775<br>$\varnothing$ 60- 80mm, 2,36-3,15 in   | 1 piece  |
| 9.  | N – insert holder 203.782<br>$\varnothing$ 80-100mm, 3,15-3,93 in  | 1 piece  |
| 10. | Insert type 203.881 ( TPGT 080202L-W08 NS530 )   | 6 pieces |
| 11. | Screw for tool bit M2 x 5,2 (TUNGALOY CSTB-2L)   | 6 pieces |
| 12. | Screw M6 x 16 07150  | 4 pieces |
| 13. | Washer 6,4 021703.12   | 4 pieces |
| 14. | Screwdriver T7 x 50 (834607)   | 1 piece  |
| 15. | Key 3 – model 4986   | 1 piece  |
| 16. | Key 4 - 230710   | 1 pieces |
| 17. | Rubber ring 10 x 2 029281.1  | 1 piece  |
| 18. | Instruction manual   | 1 piece  |

\*this item is not delivered in standard accessories, must be ordered separately

**Boring tool C is delivered as non-standard accessories.**

### 3. Description of the head

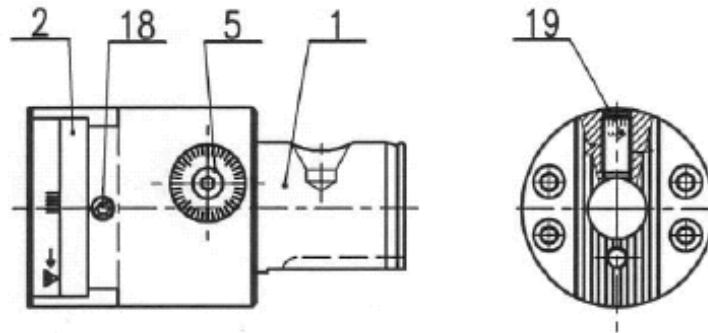


Fig. 1

#### PRIMARY POSITION OF THE SLIDE

##### Position 1 – BODY

The body is the basic part of the head. It is provided with the cylindrical shank with axial hole for the coolant supply to the cutting point. The slide is fit crosswise on the bottom side of the body.

##### Position 2 – SLIDE

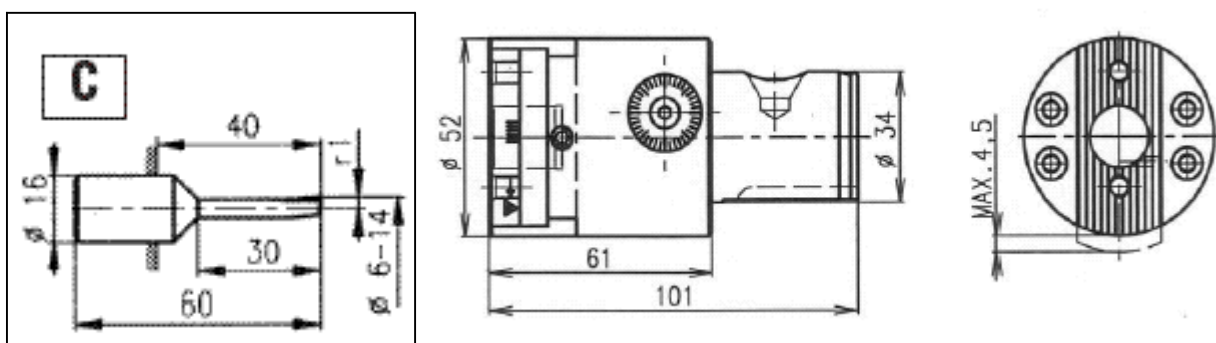
The slide has a bore  $\varnothing 16H7$  clamping of boring tools and holders. The slide is equipped with the longitudinal grooving and the threaded hole with M6 for clamping of cartridges M, N. The position of the slide is arrested to the body by means of the arresting screw (Pos. 18).

##### Position 5 – WORM WITH SCALE

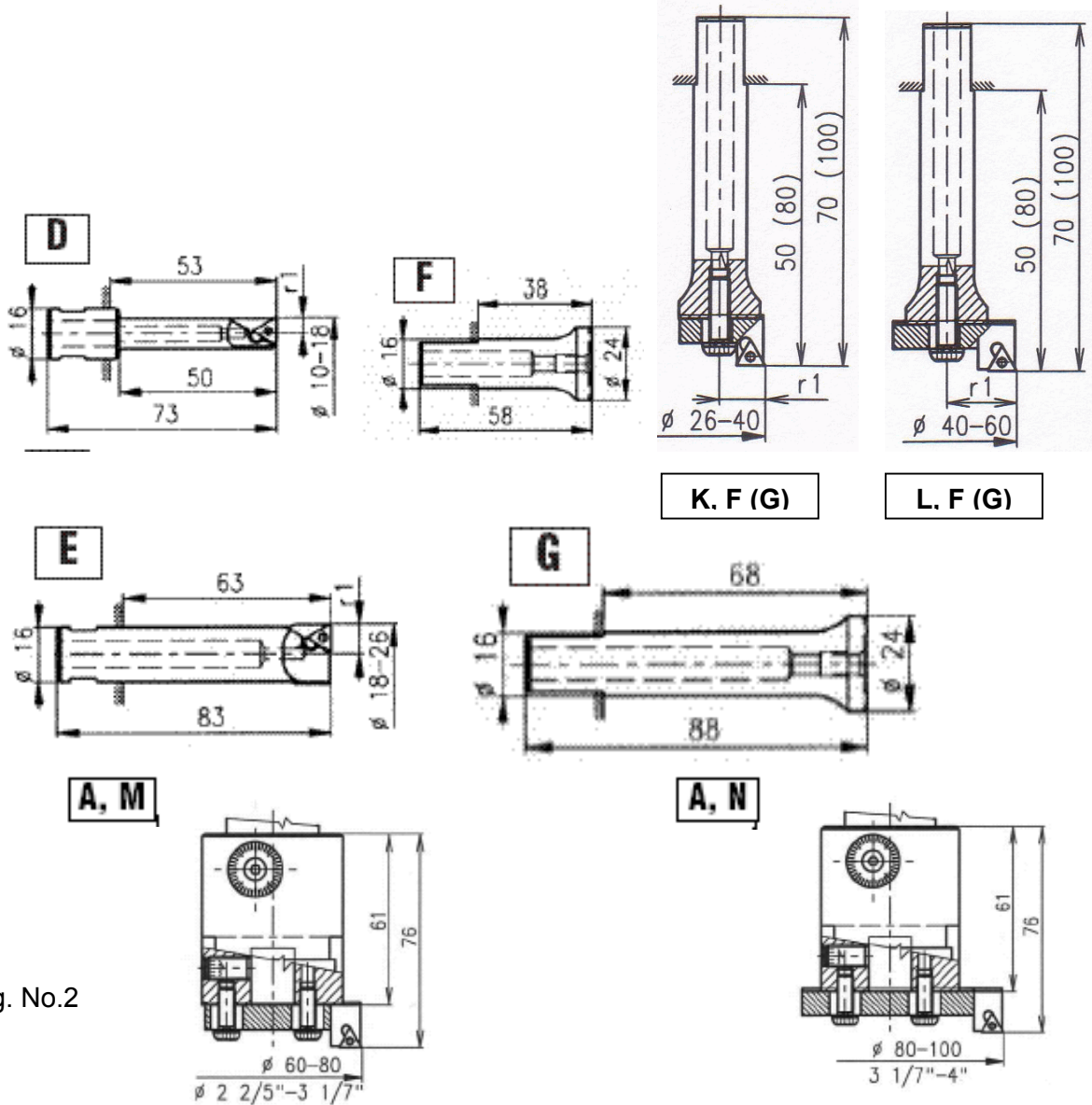
Worm with scale serves to setting the diameter. By turning the slide moves. Turning 1 division on scale results in 0,001 mm slide feed that will change the bore diameter by 0,002 mm.

When turning the scale make sure that the slide arresting screw (pos.18) is loose. Turning the scale by one complete rotation ( $360^\circ$ ) will feed the slide by 0,05 inch.

#### Dimensions



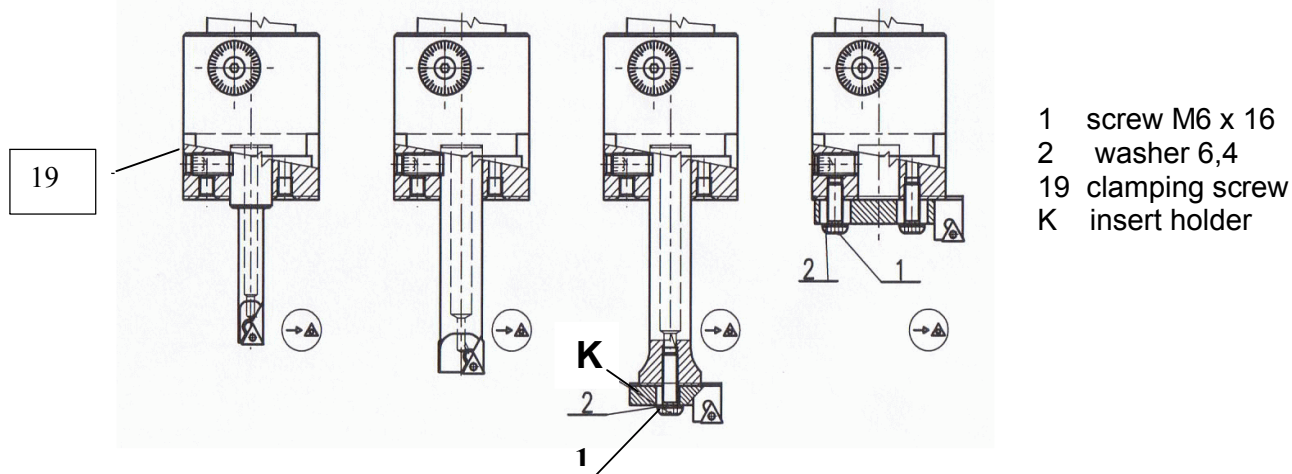
\*NON-STANDARD



#### 4. Basic technical data

| Parameter [mm] Ø                      | 6- 14                            | 10- 18    | 18- 26    | 26- 40       | 40- 60       | 60- 80    | 80-100    |
|---------------------------------------|----------------------------------|-----------|-----------|--------------|--------------|-----------|-----------|
| Parameter [inch] Ø                    | 0,24-0,55                        | 0,39-0,70 | 0,70-1,02 | 1,02-1,57    | 1,57-2,36    | 2,36-3,15 | 3,15-3,93 |
| Used elements                         | A + C                            | A + D     | A + E     | A + F(G) + L | A + F(G) + K | A + M     | A + N     |
| Weight of the set [kg]                | 1,19                             | 1,19      | 1,25      | 1,25 (1,29)  | 1,27 (1,31)  | 1,24      | 1,28      |
| Max. revolutions [min <sup>-1</sup> ] | 6000                             | 6000      | 5000      | 3.500        | 2500         | 1500      | 1000      |
| Max. depth of boring hole [mm]        | 29                               | 49        | 62        | 49(79)       | 49(79)       |           |           |
| Accuracy of adjustment                | 1 scale division = 0.0025 mm / Ø |           |           |              |              |           |           |
| Accuracy of boring                    | IT 6                             |           |           |              |              |           |           |

## 5. Clamping of the tools



a) Tools C, D, E and holders F and G are clamped into the bore  $\varnothing 16H7$  of the slide the way the flat on the clamping part faces to the clamping screw (Pos. 23). **and simultaneously the tool tip is directed to the mark on slide.**

Clamp bolt poz.19 is tightened key size 4 tightening torque 5Nm.

b) Holders F and G are fixed in the slide in the same way as tools. Insert holders K, L are put on the grooved heads of holders and are clamped by means of the screw and washer. Pay attention to the orientation of the point of the insert.

c) Insert holders M, N are mounted on the grooved face of the slide with two screws – see the figure. The driving insert with M6 thread is put in the bore  $\varnothing 16H7$  and it is fixed with the clamping screw (Pos. 23). Pay attention to the orientation of the point of the insert.

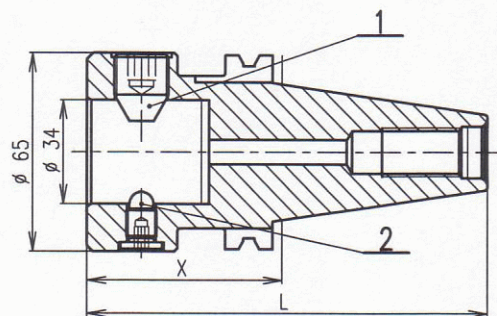
## 6. Clamping of the head on the machine spindle

The precision boring head is clamped by means of the cylindric connection in the exchangeable taper shank, which is the part of the modular clamping system MSK 34. The connection is fixed with the screw (Pos. 1) by tightening torque of 25 Nm. The screw (Pos. 2) is tightened and glued permanently, this screw is not a subject of manipulation. The figure with the table 4 shows the assortment of exchangeable taper shanks and their basic dimensions.

Warning! Insert the sealing ring in the bore of the taper shank before inserting the connection. The sealing rubber ring poz.17 (page No.2) makes possible the coolant flow through the head and it is included in the primary accessories.

### Exchangeable taper shanks

| Code    | Holder MSK AD34<br>Taper - type - norm | X [mm] | L [mm] |
|---------|--|--------|--------|
| 209 227 | ISO 40 DIN 69871AD+B                   | 65     | 133    |
| 209 234 | ISO 50 DIN 69871AD+B                   | 48     | 150    |
| 209 241 | ISO 40 DIN 2080                        | 45     | 139    |
| 209 258 | ISO 50 DIN 2080                        | 45     | 172    |
| 209 265 | MAS BT 40                              | 55     | 121    |
| 209 272 | MAS BT 50                              | 66     | 168    |
| 209 289 | CAT 40                                 | 65     | 133    |
| 209 269 | CAT 50                                 | 48     | 150    |



Fg.No.4

Make sure, that the spindle taper is clean before inserting the head in the machine spindle. The dirty surfaces are the most frequent reason of the unaccurate clamping.

## 7. Using the head

The precision boring head is designed for precise boring through and blind cylindric holes on boring or milling machines or CNC machining centres. We do not recommend to use the precision boring head for roughing. Tooling accessories make possible to bore the in length of tools. depths according to the used tools. It can be extended by using cartridges M and N and the extension element of the required length. (Fig. No.5).

### EXTENSION ELEMENT

| Kód     | L [mm] |
|---------|--------|
| 210 056 | 50     |
| 210 063 | 100    |
| 210 070 | 150    |

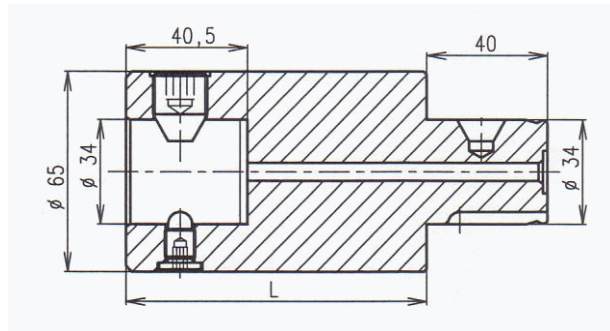


Fig. 5

### Recommended cutting conditions:

Table 2

| Material                        |   | Cutting conditions | v – cutting speed [m/min] |                   | Insert holders K, L, M, N |
|---------------------------------|---|--------------------|---------------------------|-------------------|---------------------------|
|                                 |   |                    | Tools D, E                | s – feed [mm/min] |                           |
| Structural steel<br>400 Mpa     | v | 60 – 150           | 150 - 230                 |                   |                           |
|                                 | s | 0,03 - 0,06        | 0,05 – 0,08               |                   |                           |
| Unalloyed steel<br>600 Mpa      | v | 80 – 120           | 125 - 200                 |                   | 100 - 170                 |
|                                 | s | 0,03 - 0,06        | 0,05 - 0,08               |                   | 0,05 - 0,1                |
| Alloyed steel<br>900 Mpa        | v | 70 – 100           | 110 - 180                 |                   | 90 - 150                  |
|                                 | s | 0,03 - 0,06        | 0,05 - 0,08               |                   | 0,05 - 0,1                |
| Special alloy steel<br>1200 Mpa | v | 60 – 90            |                           |                   |                           |
|                                 | s | 0,02 - 0,05        |                           |                   |                           |
| Grey iron<br>HB < 200           | v | 110 – 180          | 100 - 150                 |                   | 100 - 150                 |
|                                 | s | 0,03 - 0,07        | 0,05 - 0,08               |                   | 0,05 - 0,1                |
| Bronze                          | v | 110 – 180          | 200 - 280                 |                   | 180 - 280                 |
|                                 | s | 0,03 - 0,07        | 0,05 - 0,08               |                   | 0,05 - 0,1                |
| Aluminium<br>Al -alloy          | v | 160 – 200          | 200 - 280                 |                   | 100 - 280                 |
|                                 | s | 0,04 - 0,07        | 0,05 - 0,08               |                   | 0,04 - 0,08               |

If the tool vibrates we recommend to reduce the cutting speed until vibrations disappear.

**Recommended depth of cuts:** tool C .....0,05 - 0,3 mm  
Other tools .....0,05 - 0,5 mm

## 8. Adjusting the boring diameter

The scale of dial screw (Pos.5) and guideline on the body(Fig.1) are used for adjustment of the dimension. Maximum slide travel is 4,5 mm.

Keep following rule: the required diameter should be adjusted in the same direction of the scale rotation.

This method eliminates the axial backlash of the dial screw (dead travel).

### Method for adjusting the boring diameter

- a) Loosen the arresting screw (Pos. 18)
- b) Turn the scale anticlockwise for necessary value - the tool moves out to the greater diameter
- c) Tighten the arresting screw (Pos. 18) by tightening torque

If you overtravel the required dimension, return the scale by half revolution and readjust the size again.

## 9. Maintenance and storing

The precision boring head should be kept clean and the dial screw and the slide to be oiled if necessary. The head is turned on the side and a few drops of oil should be put into the lubricator. The contact surfaces are oiled by moving the slide. The excess oil will run out after turning the head back.

The head, protected with oil, should be stored in a dry nonaggressive place.

The repairs are provided by supplier and conducted by manufacturer.

## 10. Disposal of the packing

The packing consists of the plastic cassette and foam plastic insert. The packing can be liquidated by recycling.

## 11. Guarantee and guarantee conditions

The manufacturer NAREX MTE provides the guarantee on the head 205bh for 1 year from the day of sale. The guarantee relates hidden defects of material, incorrect construction or manufacturing. It does not apply to the incorrect use inconsistent with recommendations in this instructions for use. The guarantee will not be applied for dismantled heads and for heads modified without approval of the manufacturer. In case of claim please submit the documents proving your purchase.

Exchangeable inserts – available collection

| Řezná destička se 3 bříty<br>Cutting tip with 3 edges |            |            |            |                   | Karbíd<br>Carbid              |                    |                                     |  | Cermet                    |       |                       |  | Diamant<br>Diamond |  |     |
|---|------------|------------|------------|-------------------|-------------------------------|--------------------|-------------------------------------|--|---------------------------|-------|-----------------------|--|--------------------|--|-----|
|   |            |            |            |                   | nepovlakované<br>uncoated     |                    | povlakované<br>coated               |  | nepovlakované<br>uncoated |       | povlakované<br>coated |  | CBN                |  | PKD |
|   |            |            |            |                   |                               |                    |                                     |  | NS530                     | NS520 |                       |  |                    |  |     |
|   |            |            |            |                   | Úhel<br>čela<br>Angle<br>face | Značení<br>Marking | Objedná-<br>vací číslo<br>Order No. |  |                           |       |                       |  |                    |  |     |
|   |            |            |            |                   | $b_2$                         | $\gamma$           | $r_1$                               |  |                           |       |                       |  |                    |  |     |
|   | W08        | 11°        | 0,03       | TPGT080200        | –                             |                    |                                     |  |                           |       |                       |  |                    |  |     |
|   | <b>W08</b> | <b>11°</b> | <b>0,2</b> | <b>TPGT080202</b> | <b>203.881</b>                |                    |                                     |  |                           | ●     |                       |  |                    |  |     |
|   | W08        | 11°        | 0,4        | TPGT080204        | –                             |                    |                                     |  |                           | ○     |                       |  |                    |  |     |
| Einzelheit A<br>Detail A                              |            |            |            |                   |                               |                    |                                     |  |                           |       |                       |  |                    |  |     |
|   |            |            |            |                   |                               |                    |                                     |  |                           |       |                       |  |                    |  |     |
|   |            |            |            |                   |                               |                    |                                     |  |                           |       |                       |  |                    |  |     |
|   |            |            |            |                   |                               |                    |                                     |  |                           |       |                       |  |                    |  |     |
|   |            |            |            |                   |                               |                    |                                     |  |                           |       |                       |  |                    |  |     |
|   |            |            |            |                   |                               |                    |                                     |  |                           |       |                       |  |                    |  |     |

Uncoated CERMET ( TiN/Ti) with very wide spectrum of usage. It means fluent or fitful cut, coated or uncoated steel, alloy steel or un-alloy steel, nonferous – finishing operations.



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