What Axial Force is needed to push the bar material into collet on MANURHIN K'MX?



We have prepared a comparison of the measured clamping force on four different ground diameters of bars clamped in one collet. The testing was carried out using 5 types of collets: **smooth, serrated, supergrip, smooth S-slot** and **serrated with carbide coating.**

The measurements were carried out on the **MANURHIN K'MX 532 TREND** machine for all five types of collets. For comparison purposes, we then also carried out a test on the most commonly used serrated collet on our most powerful **MANURHIN K'MX 732 EVO** machine.
For testing were used collets SCHLENKER.

machine:	***serial number:***	***bar material:***	***inlet air pressure for clamping:***
MANHURIN K'MX 532 TREND	*V115L00397*	*ground steel 11 109*	*max. 0,55MPa*

tools:

4x test bar (length L=300mm), with dimensions:
- ***No. 1.:*** *ø 25.948 (lower value of* ***h9*** *tolerance)*
- ***No. 2:*** *ø 25,870 (lower value of* ***h11*** *tolerance)*
- ***No. 3.:*** *ø 25,790 (lower value of* ***h12*** *tolerance)*
- ***No.4.:*** *ø 26,000 (upper value of* ***h*** *tolerance)*

portable dynamometer - strain gauge ***TENZ2145B***

supergrip washer for centering the dynamometer per piece
clamping collet 164E (F38/72) - ***smooth***
clamping collet 164E (F38/72) - ***smooth S-slot***
clamping collet 164E (F38/72) - ***serrated***
clamping collet 164E (F38/72) - ***serrated with carbide coating***
clamping collet 164E (F38/72) - ***Supergrip***

TEST DESCRIPTION:

- The clamping force on bar No. 4 was adjusted on the main spindle according to the machine user manual.
- The bar was clamped into the spindle at a length of approximately 85 mm.
- A load was applied to the bar using the secondary spindle - the dynamometer was supported on one side against the bar, the other on the pad and the secondary spindle. The maximum force before pressing was read.
- The force on all bars was successively tested and measured in the same way (without any change in the clamping force setting).
- The test was performed for two different feeds in MPG mode, with set increments of 0.01 mm and 0.001 mm.

MEASURED VALUES:

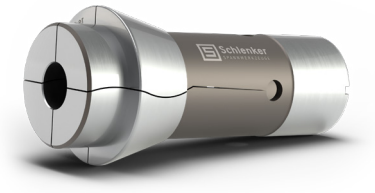
K'MX 532 TREND / clamping collet 164E (F38/72)
- **smooth**

bar number	bar diameter [mm]	force [kN] increment 0,01mm	force [kN] increment 0,001mm
4.	26,000	3,5	3,1
1.	25,948	2,4	2,1
2.	25,870	2,1	2,2
3.	25,790	2,1	2,4



K'MX 532 TREND / clamping collet 164E (F38R26. SOS)
- **smooth S-slot**

bar number	bar diameter [mm]	force [kN] increment 0,01mm	force [kN] increment 0,001mm
4.	26,000	8,0 (axis overload)	6,2
1.	25,948	5,9	5,0
2.	25,870	4,8	4,1
3.	25,790	3,4	3,2



K'MX 532 TREND / clamping collet 164E (F38/72)
- **serrated**

bar number	bar diameter [mm]	force [kN] increment 0,01mm	force [kN] increment 0,001mm
4.	26,000	5,1	4,8
1.	25,948	3,7	3,5
2.	25,870	3,0	3,0
3.	25,790	2,6	2,5



K'MX 732 EVO / clamping collet 164E (F38/72)
- **serrated**

bar number	bar diameter [mm]	force [kN] increment 0,01mm	force [kN] increment 0,001mm
4.	26,000	8,0 (axis overload)	6,3
1.	25,948	8,0 (axis overload)	5,4
2.	25,870	6,4	4,3
3.	25,790	4,2	4,0



K'MX 532 TREND / clamping collet 164E (F38/72)
- **supergrip**

bar number	bar diameter [mm]	force [kN] increment 0,01mm	force [kN] increment 0,001mm
4.	26,000	8,0 (axis overload)	7,6 (axis overload)
1.	25,948	8,0 (axis overload)	7,6 (axis overload)
2.	25,870	2,9	2,6
3.	25,790	2,5	2,3



K'MX 532 TREND / clamping collet 164E (F38R26.0 HM-Besch)
- **serrated with carbide coating**

bar number	bar diameter [mm]	force [kN] increment 0,01mm	force [kN] increment 0,001mm
4.	26,000	8,0 (axis overload)	7,6 (axis overload)
1.	25,948	8,0 (axis overload)	7,6 (axis overload)
2.	25,870	8,0 (axis overload)	7,6 (axis overload)
3.	25,790	8,0 (axis overload)	7,2

