

Product name : Permanent magnetic chuck (circular) TC-160B

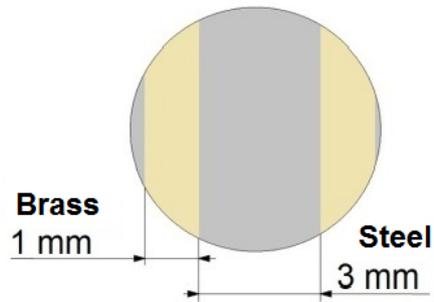
PERFORMANCE PARAMETERS

External diameter	160 [mm]
Height	55 [mm]
Magnet type	Neodymium
Maximum working temperature	≤ 80 °[C]
pole layout	poprzeczny do kierunku obróbki, 3 + 1 mm
with separable magnetic field	yes
Magnetic field switcher	yes, one for all planes
handling mode	ręczny
for the small parts holding	yes
Number of axis to attach details	1
force needed to mount (to attract) items	100
Weight	7.5 [kg]

TC series circular permanent magnetic chucks are designed to clamp ferromagnetic workpieces (i.e. iron, structural steel, alloy steel, cast iron) during grinding, milling and electrical discharge machining. In the case of materials with high magnetic properties (steels with high iron content), the chucks can be used as holders in turning operations.

The chuck can be mounted using the grooves at its bottom or the four threaded holes (see the attachments). The body of the chuck consists of a single block of steel, while its top plate is made from steel and brass lamellas placed interchangeably. TC series circular chucks use neodymium magnets, thanks to which the maximum magnetic clamping force of approx. 100 N/cm² is achieved. The magnetic field can be turned on with the use of a lever (Allen wrench), by turning the lever to the right by 180°. To turn the field off, the lever should be turned inversely.

The rigid structure of the chuck enables very precise machining, while its tightness allows using the chuck for operations involving coolant or operations in full submersion. The simplicity of the design ensures a long and reliable operation of the device. A lack of electrical power supply makes the chuck completely safe during the operation. The pole pitch (3.0 + 1.0 mm) enables firm clamping at a small height of the magnetic field, thanks to which the workpieces clamped can be thin. Pole pitch diagram:



The clamping force depends on the following parameters:

- type of material (the clamping force increases proportionally to the content of iron in steel):

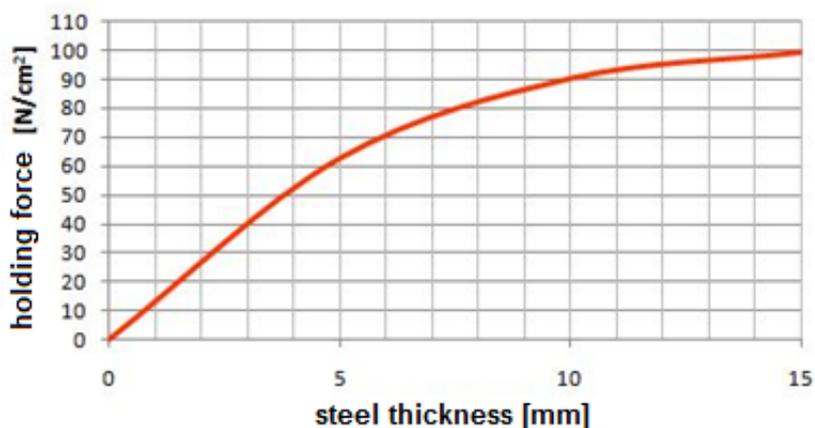
- Armco iron 100%
- low-carbon steel 90% (St3s)
- high-carbon steel 80% (St45)
- alloy steel 70% (Corrax)
- high-alloy steel 65% (1.2436)
- cast iron 50%

- roughness of the surface of the chuck and the workpiece clamped:

- for Ra up to 0.08 μm 100%
- for Ra up to 0.20 μm 90%
- for Ra up to 1.25 μm 70%
- for Ra up to 6.30 μm 50%
- for Ra up to 25.00 μm 30%

- thickness of the workpiece clamped (the tests were carried out for plates with the size of 20 x 20 mm made of Armco iron):

Graph of holding force depending on the material thickness



- **contact area** - in order to ensure good holding, workpieces cannot be shorter than 3 mm and additionally, in the case of small surfaces, they should be surrounded with auxiliary plates. The maximum clamping force per sq. cm is obtained for workpieces with an area of approx. 4 sq. cm. A further increase in the workpiece area does not translate into a higher clamping force. It is also important that the workpiece clamped is parallel to the chuck, because every roughness, even the smallest, causes a decrease of the clamping force. The design of the chuck allows regenerating the working area by grinding it to 5 mm of the thickness.

The circular permanent magnetic sine chucks available in our offer are presented below:

Typ of the chuck	Dimensions [mm]						Weight [kg]	
	D	H	L	Pole pitch	D2	D3		M
TC-110B	110	50	80	3+1	70	90	4x M8	4,6
TC-125B	120	52	95		90	110	4x M8	5,5
TC-150B	150	50	117		110	130	4x M8	6,5
TC-160B	160	52	129		120	140	4x M10	7,5
TC-200B	200	55	169		on request			11,5
TC-250B	200	55	213		on request			19,5
TC-300B	300	55	270		on request			27,5

TECHNICAL DRAWING

