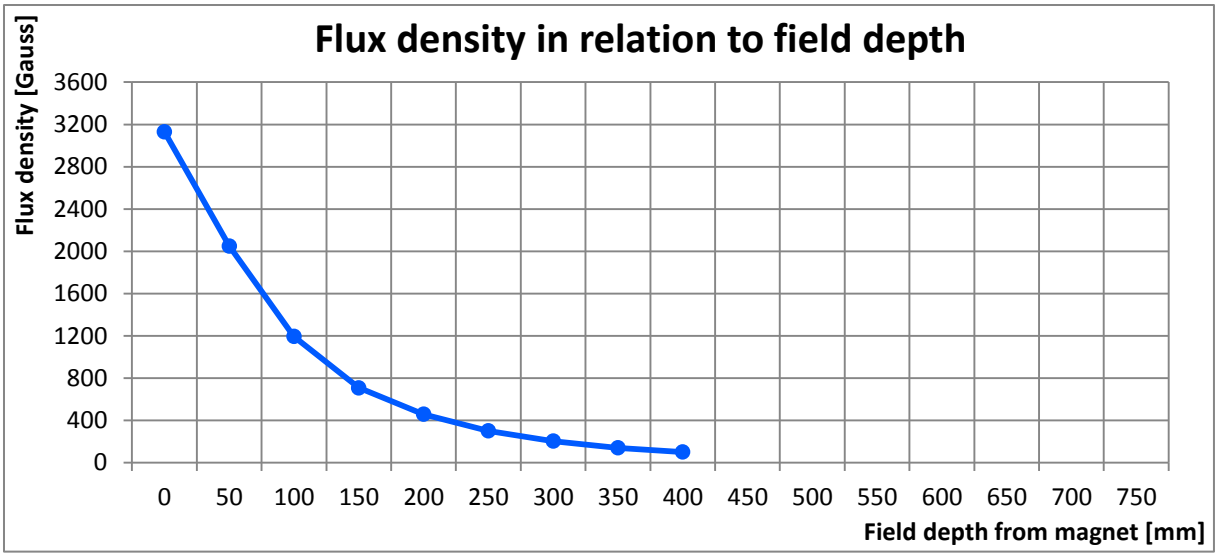
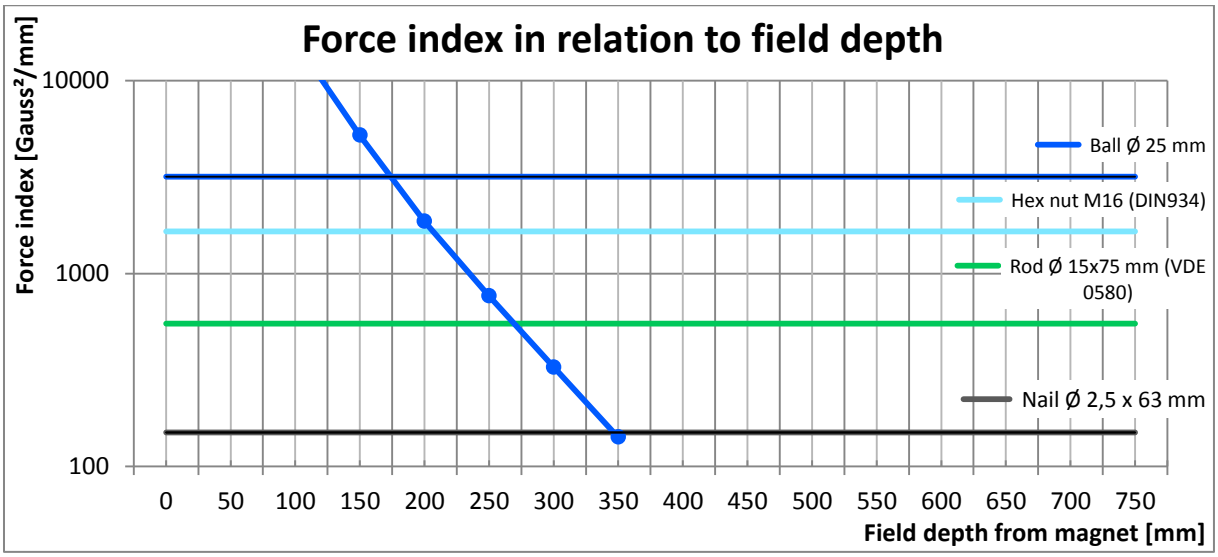
Test engineer	Emil Novák
Test date	13-5-2019
ERP reference	-
Test report number	TR1905021
Product key	ROP-N3-C-065-W-G-R-B-B-B-NA
Object of test	RONC065330
Magnet type	Neodymium duo pole
Tesla meter	HGM09s, ser. number: 01113110
Tesla meter probe	HGM.T02.45.35.6., s.n.: 151113046
Ambient temperature	20 [C°]

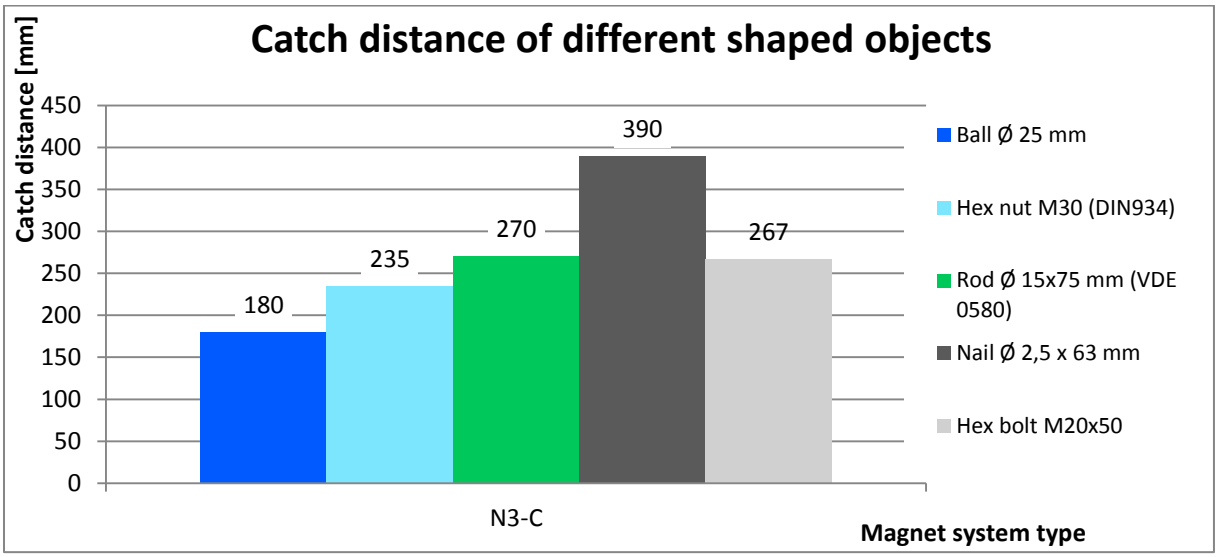
Air gap	Flux density (cold state)	Force index (cold state)
[mm]	[Gauss]	[Gauss²/mm]
0	3129	
50	2050	39668
100	1194	16035
150	707	5204
200	458	1864
250	300	765
300	203	327
350	139	142
400	101	
450		
500		
550		
600		
650		
700		
750		
800		
850		
900		

Test objects		
Ball Ø 25 mm	180	[mm]
Hex nut M16 (DIN934)	-	[mm]
Hex nut M30 (DIN934)	235	[mm]
Nail Ø 2,5 x 63 mm	390	[mm]
Rod Ø 15x75 mm (VDE 0580)	270	[mm]
Rod Ø 20x120 mm (VDE 0580)	-	[mm]
Hex bolt M20x50	267	[mm]

Distance of 400 gauss	240	[mm]
Max [Gauss]	-	[mm]



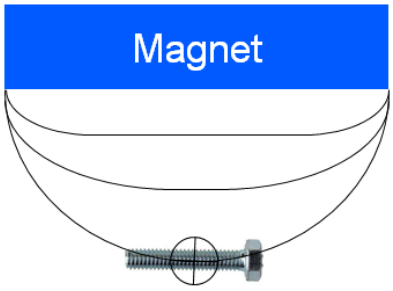


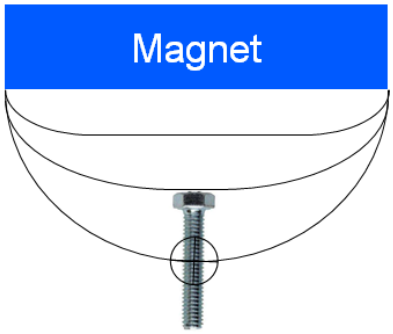


Notes:
- Flux density values measured from magnet (from wear plate = 0 mm)

Orientation:

When measuring a magnet, the orientation of the particle to be caught is very important. We believe that, placing the particle **always** horizontal, and the **centre** of the particle being zero, will give the most representative situation in comparison to the field. A bolt for example can be placed horizontally or vertically. The vertical situation is way easier to catch, but very unlikely to occur in practice.





Size, shape and material:

The main factor that determines the type of magnet required, is the amount of Force Index (Gauss^2/mm) that is needed to remove a target size and shape of ferrous from a burden of product material travelling at a certain belt speed.

Size

The size of an object is far less important than the shape of a ferrous particle to be caught. Theoretically the shape determines the catching distance. However, in the field, a ferrous particle is most likely underneath some material or some material sticks to it, making it heavier. This negatively affects the catching distance. This phenomenon will play a larger role with small sized particles compared to large sized particles.

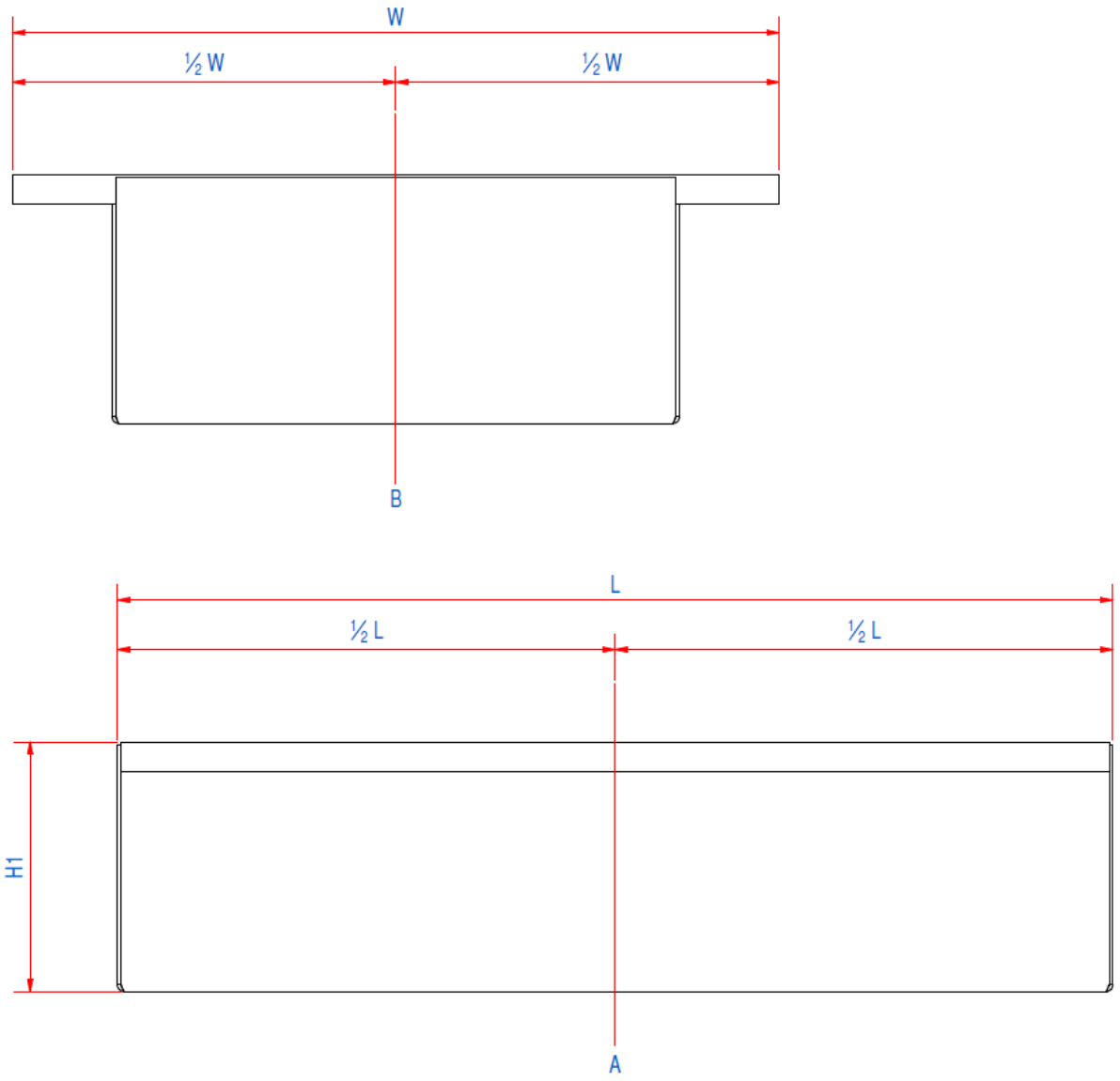
Shape

Nails, beams, rods, plates and other oblong shapes are relatively easy to remove as they are easily orientated north-south and present a larger surface area to the magnet. Spherical shaped ferrous like; nuts, cubes, balls and spheres are very difficult to remove.

Material

Ferrous material is attracted by a magnet. The degree of magnetization of a material in response to a magnetic field is called permeability. Simply stated: the higher the proportion of Fe, the higher the permeability, the easier the particle is to catch.

Test objects	[Gauss²/mm]	[10^{-8} Tesla²/m]	Photo
Ball Ø 8 mm	3181	31810	
Ball Ø 25 mm	3181	31810	
Hex nut M16 (DIN934)	1650	16500	
Hex nut M20 (DIN934)	1650	16500	
Hex nut M30 (DIN934)	1650	16500	
Nail Ø 2,5 x 63 mm	150	1500	
Ø 15 x 70 mm (VDE 0580)	550	5500	
Ø 20 x 120 mm (VDE 0580)	550	5500	
Hex bolt M20x70	267	2670	
Crown closure	200	2000	
Cube 12x12x12 mm	1600	16000	



Dimension	Length [mm]	
W	635	The measurement spot of the main pole is located on the cross section of line **A** and **B**, right against the wear plate is the **0 mm mark** (start point for measuring). Performing a flux density measurement of **increasing steps of 50 mm** gives a clear view on the performance and the condition of the magnet.
H1	207	