



CATLOW Cam Twist Breakaways using Rare Earth Permanent Magnets: FAQ

Frequently asked Questions:

- What kind of magnet is used in the Cam Twist Breakaway?

Catlow uses a licensed proprietary array of “Rare Earth” Neodymium-Iron-Boron permanent magnets.

- How powerful are these magnets?

Magnet alloys are typically compared by their Energy Density which in the C.G.S. unit system is Millions*Gauss*Oersted (MGOe). The field generated by a magnet is largely based on the alloy type, the magnet geometry, and the surrounding environment. Magnets common in industry like horseshoe magnets have an energy density between 5 to 8 MGOe while ceramic loudspeaker magnets have an Energy Density range of 2 – 4 MGOe. Both of these magnets have low energy densities, but they are used in a Magnetic Circuit that amplifies and focuses the magnetic field to the work-piece resulting in enhanced performance. The magnet alloy, Neodymium Iron Boron (rare Earth), used in the Cam Twist has Energy Densities in excess of 45 MGOe. The magnets are also integrated into our patented geometry that further enhances the magnetic field for truly large gains relative to the small package size. These gains result in a unit that is able to hold hundreds of pounds, but has virtually no discernable emanating field outside of our Cam Twist product. The combination of the recent advancements in magnetic alloy technology, combined with our patented arrangement allowed with the Cam Twist, to be functional and practical. 15 to 20 years ago a similar magnetic breakaway was just not possible because of cost and the required large size.

The downside to high Energy Density material is cost. Rare Earth magnets are stronger than other permanent magnet types, but they are also significantly more expensive. By using our patented magnet arrangement we were able to reduce the magnet mass and thereby still provide a product at an excellent cost relative to market value.



- How long will a permanent magnet last?

A permanent magnet will retain its magnetism unless it is affected by a strong outside magnetic or electrical force, or elevated temperatures. If they are not exposed to any of these conditions, permanent magnets may lose magnetism on their own, however this degradation is very slow, on the order of one percentage point every ten years or so. None of these conditions exist in the present petroleum fueling applications as a breakaway. One percent is 2.3 to 3 pounds of force, still well within the specification.

- What force does it take to pull the Cam Twist Breakaway apart?

The CTM75 (3/4" conventional) and the CTMVA (Vac-assist breakaway) are designed to pull in the 230-pound range. The CTM75-HD and CTM100 are larger with more magnets and designed to pull in the 300-pound force range.

- How can I separate the breakaway with just two wrenches?

Catlow has designed an internal "Cam" that when twisted uses an incline plane to force the unit apart. The twisting force is in the 20 to 30 foot pound range.

- I have many drive offs at my facility; will the breakaway get weak?

No. The unit can be separated and reconnected many times. It has completed UL 567 that requires 100 cycles of separation and reconnection. Since the magnets are located in the whip hose side of the breakaway, any contamination is unlikely. Inspect and lubricate the o-rings, reconnect and check the unit for leaks. As with any drive-off event, follow recommended practices to determine if there are any other leaks in the fueling system.

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