

CLEARDRIVE®

IMPROVING A CLASSIC

Over the last 40+ years, the TORX® drive system has proven to be a remarkable and reliable drive recess that is found in products all over the world's marketplace... and it is still growing! But while the product has proven itself, a new improvement on the system has been developed. It is called the ClearDrive® feature. The ClearDrive® feature was developed and patented by Illinois Tool Works (ITW) to solve the problem of organic coatings that would fill the recess during the dip-spin process, thereby compromising the drive system. ClearDrive® allows the coatings to escape from the recess via the channels added to the TORX® recess virtually eliminating recess-fill. As a 2011 PACE Award Finalist, the design has been well received in the industry and rapidly gaining attention as it is proving to reduce manufacturing costs as scrap and sorting are dramatically reduced.



FEATURES

- ▶ Flutes are added to the traditional internal TORX® or TORX PLUS® drive recess
- ▶ Incorporated into one piece cold-heading punch- no added operations

BENEFITS

- ▶ Flutes aid in drainage of excess coating
- ▶ Potential to eliminate recess sorting
- ▶ Reduces assembly damage with improved bit engagement
- ▶ Use dip-spin instead of Alloy Electroplating



TORX® drive system



TORX® drive system with ClearDrive®

COST SAVINGS

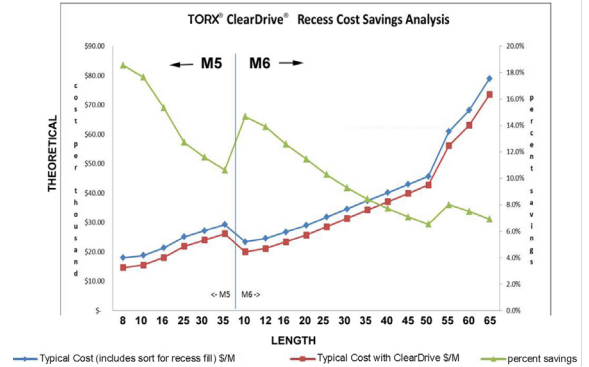
- ▶ 8-18% cost savings thru elimination of special processing and sorting
- ▶ Elimination of scrapped fasteners with clogged recess saves on cost
- ▶ 20-30% in costs by using dip-spin process in place of Alloy Electroplates



There are times when some coating will be trapped in the "channels" after processing. This channel fill is acceptable as it does not interfere with the drive recess.

COST SAVINGS ANALYSIS RESULTS

- ▶ Significant savings of 8-18% are achievable thru elimination of special processing and sorting.
- ▶ Parts converting to the ClearDrive® feature will see further improvements to the bottom line thru the elimination of scrap.



DIMENSIONAL DATA

DRIVE TYPE	DRIVE SIZE	HEAD STYLE	COATING	LOT SIZE	REJECT QTY	REJECT %
TORX®	(20) T20	Round Washer HD	Magni 565	40,000	4,006	10.015%
ClearDrive®	(20) CLR20	Round Washer HD	Magni 565	42,000	363	0.864%
TORX®	(25) T25	Round Washer HD	Magni 565	35,000	7,700	22.000%
TORX®	(25) T25	Pan Head	Magni 565	62,500	17,400	27.840%
TORX®	(25) T25	Pan Head	Magni 565	85,000	29,800	35.059%
ClearDrive®	(25) CLR25	Round Washer HD	Magni 565	31,000	21	0.068%
ClearDrive®	(25) CLR25	Pan Head	Magni 565	59,090	7	0.012%
TORX®	(30) T30	Pan Head	Magni 565	-	Typical	7-20%
TORX®	(30) T30	Oval Countersunk	Magni 565	-	Typical	20-30%
ClearDrive®	(30) CLR30	Pan Head	Magni 567	59,000	153	0.259%
TORX®	(40) T40	Flat Head	Magni 565	154,767	10,667	6.892%
TORX®	(40) T40	Flat Head	Magni 565	128,651	9,300	7.229%
TORX®	(40) T40	Flat Head	Magni 565	109,757	7,800	7.107%
TORX®	(40) T40	Flat Head	Magni 565	9,233	700	7.582%
TORX®	(40) T40	Flat Head	Magni 565	7,772	1,200	15.440%
TORX®	(40) T40	Flat Head	Magni 565	18,610	2,000	10.747%
TORX®	(40) T40	Flat Head	Magni 565	126,219	14,800	11.726%
TORX®	(40) T40	Flat Head	Magni 565	16,259	1,495	9.195%
TORX®	(40) T40	Flat Head	Magni 565	112,641	8,045	7.142%
ClearDrive®	(40) CLR40	Flat Head	Magni 565	6,195	13	0.210%
ClearDrive®	(40) CLR40	Flat Head	Magni 565	11,932	14	0.117%
ClearDrive®	(40) CLR40	Pan Head	Magni 577	5,000	7	0.140%
ClearDrive®	(40) CLR40	Pan Head	Magni 565	5,570	1	0.018%

The information above is a recess fill study in which data was accumulated following hand/visual sorting. The numbers compare the regular TORX® drive recess against TORX® drive with the ClearDrive® feature. In using ClearDrive®, parts rejection dropped dramatically in all size comparisons resulting in potentially large savings being realized.