

# THEORY OF A COLLAPSIBLE COLUMN

## AND WHAT YOU SHOULD KNOW BEFORE INSTALLING



**Figure 1**



**Figure 2**



**Figure 3**

Ididit collapsible columns are designed to collapse upon impact from either end. To help you further understand this valuable safety feature, we have included a general guide to the physics of a steering column impact and its effects on different steering column applications.

In general, there are two different types of steering column impacts that can occur during an accident.

**IMPACT 1** - The gearbox and shaft hit the bottom of the column.

This is caused by the frame collapsing and pushing toward the firewall.

This type of impact will cause the column to shear the shaft pins internally and shorten the shaft and outer housings of the lower half of the column. Following U.S. Federal Motor Vehicle Safety Standards, the ididit collapsible column will collapse into itself 5 inches (127mm). In order for this to occur, the floor mount must allow the column to slip towards the driver as it absorbs the impact. This slipping action can only take place at the lower mount. When choosing or designing your lower mount, please consider the fact that it must shear or slip with less than 550 lbs of pressure. ididit offers a mount that meets these requirements, and can be adapted to most vehicles (*see Figure 1 & 2*).

**Figure 1: Collapsible Floor Mount**

*Part Numbers:*

1 1/2" 2401110010

1 3/4" 2401210010

2" 2401010010

2 1/4" 2402010010

**Figure 2: Collapsible Floor Mount with Plate**

*Part Numbers:*

1 1/2" 2401120010

1 3/4" 2401220010

2" 2401020010

2 1/4" 2402020010

**IMPACT 2** - The impact of the driver hitting the wheel.

As previously described, our collapsible column will collapse from either end. As a column collapses from the engine side, the upper mount must absorb that energy in order to stop the column from hitting the driver. This will require the upper mount to be rigid one way (must absorb at least 750 lbs of pressure from engine impact), but slip the other way (must absorb 550 lbs of pressure from driver impact) in order for the column to collapse forward (*away from the driver*). (*see Figure 1 & 2*).

**Figure 3: Collapsible Underdash Mount**

*Part Numbers:*

2" 2301410010

2 1/4" 2301310010



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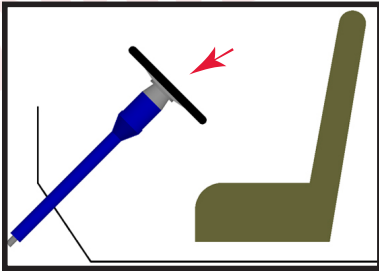


Figure 4

The following demonstrates the relationship between seat belt usage and column positioning:

**LAP BELT** - Your lap belt creates a pivot point which will cause you to impact the steering wheel at a forward and downward arc. This means you will impact the wheel/collapsible column within the designed approach angle. This scenario is most common with Street Rod columns as they tend to have more of a vertical angle when installed in the firewall (*see Figure 4*).

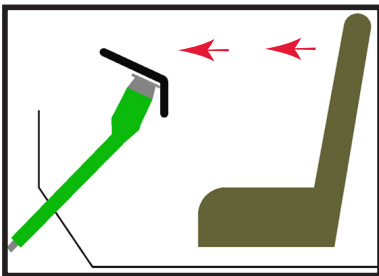


Figure 5

**NO SEAT BELT** - Unfortunately we see this happen, and it's never pretty. Figure 5 shows the result of the unprotected driver lifting off the seat and impacting the steering wheel with full force. Due to the vertical angle of the column, the steering wheel is unable to stop the driver from hitting the windshield. While you should always wear a seat belt, Figures 6 and 7 demonstrates how changing the angle of the column to a more horizontal position, will allow it to collapse properly upon impact and will give the body less tendency to go over the wheel and into the windshield. Lesson being, wear your seat belt.

**SEAT BELT WITH SHOULDER HARNESS** - This is the ideal system. Combining the safety of the seat belt & shoulder harness with the horizontal angle of the column (shown in Figures 6 & 7) will help keep you in your seat, and allow our collapsible column do it's job properly - *lessen the impact of the crash*.

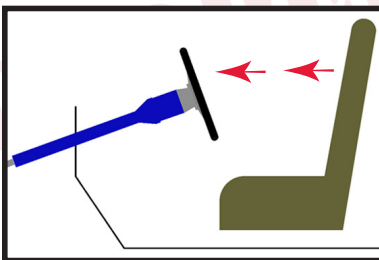


Figure 6

Figure 7 represents an alternative safety system. In this system, the column is angled in a more horizontal position which alleviates the column from hitting the engine upon impact. This installation allows the column to stop at the firewall and allows the output shaft to be offset, positioning it lower in order to clear the engine. This in conjunction with a collapsible intermediate shaft is a great way to keep you safe and secure. With this system, the rack or gearbox can take a hit and the collapsible intermediate shaft will absorb the force.

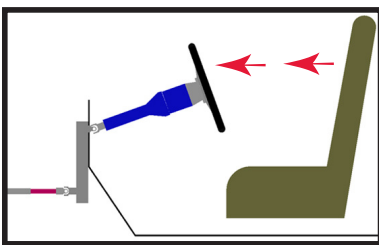


Figure 7

We have provided you with this information to help give you a better understanding of the different system theories. Each application will vary and proper installation is vital for the collapsible column to function as designed. We, at ididit care about our customer and the quality of our parts. We cannot be responsible for improper installation that restricts the function of the collapsible steering column. Please read all of the instructions carefully.

For more information on these systems and regulations go to [www.fmcsa.gov](http://www.fmcsa.gov) and search for code # 571.203 and 571.204. Additional information was gathered from The Society of Automotive Engineers Recommended Practice # J944

