



## REAL STEEL CROSS MEMBERS

Thank you for purchasing an APEX Real Steel cross member. These cross members are uniquely adjustable for a wide variety of transmissions. See the attached images and/or diagram to illustrate the layout of the parts.

NOTE: Because these cross members are made to fit several transmissions there may be parts left over when you complete your installation. Don't panic, this is normal.

Installation of a Real Steel cross member is easy, but there are some key measurements and values you should be aware of before starting. Your transmission cross member has three functions:

1. Support and stabilize the transmission
2. Set the angle of the engine and transmission
3. Determine driveline angles (in concert with the rear end)

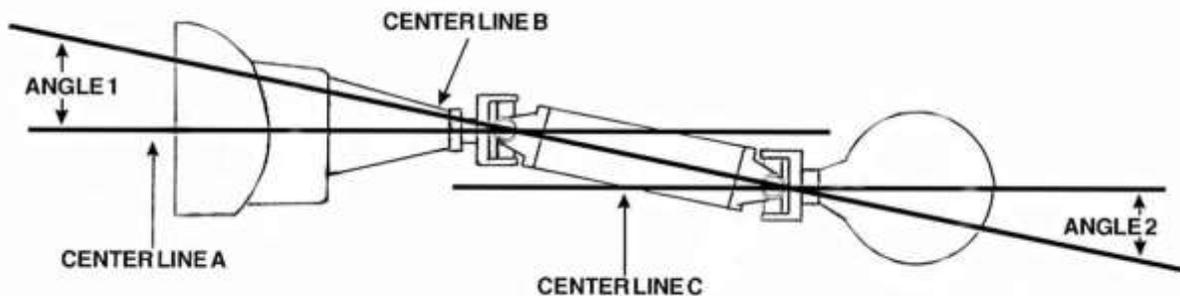
**1. Support** - Real Steel cross members are designed to withstand the weight of your transmission as well as extremely high engine torque. Make sure all of your fasteners are properly secured to insure the transmission is stable under load. You can use a variety of isolator mounts with this cross member, including the APEX IsoTech mount, polyurethane or rubber. **Solid mounts are not recommended unless your engine is also solid mounted.**

**2. Powertrain Angle** - Your car, no matter the make or model, was designed to have a  $-3^{\circ}$  angle on the transmission. That is, the back of the transmission should be lower than the bell housing. You can measure this with a simple angle finder set on your output shaft or flange (image right). Your intake deck is machined at  $+3^{\circ}$  so that when you lean your engine back at negative three degrees the carb will be level. Adjust your cross member to achieve the correct powertrain angle. If your body height, ride height or engine position has been modified you may need to shim the mount or purchase one of our IsoTech low profile mounts to achieve the desired angle.



**NOTE:** EFI makes it possible to set more radical angles for your powertrain because it does not rely on level float bowls like a carburetor. However, the driveline angles at your u-joints are important for a smooth, steady driveshaft rotation. Even with EFI you should try to maintain the  $-3^\circ$  powertrain angle.

**3. Driveline Angles** - As stated previously, the down angle of your transmission has a direct affect on the driveline angles. You should not use the height of your transmission to determine the accuracy of these angles. Your rear end should be adjustable to allow for fine tuning of the driveline angle. The diagram below is a good illustration of ideal driveline angles.



In the diagram Angle 1 is defined as the intersecting angle between the centerline of your transmission output shaft and the centerline of the driveshaft. Angle 2 is defined as the intersecting angle between the centerline of the driveshaft and the center line of your pinion.

The ideal angles are dictated by the optimum operating range of a u-joint, which is generally accepted to be between  $1.5$  and  $3^\circ$ . Referring to the diagram, Angle 1 and Angle 2 should be equal and opposite, that is if Angle 1 is  $2.5^\circ$  then Angle 2 should be  $-2.5^\circ$ .

Setting your driveline angles properly will eliminate noise, harmonic vibration, and u-joint wear and tear.