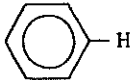



Table 15.17  $^{13}\text{C}$ - $^1\text{H}$  Coupling constants. The values given are near average. Electronegative substituents, and increasing bond angle strain both cause increases in the coupling constants

System		$J/\text{Hz}$
$\begin{array}{c}   \\ -\text{C}-\text{H} \\   \end{array}$	$^1J_{\text{CH}}$	125
$\text{Cl}_3\text{C}-\text{H}$		208
$\diagup\text{C}=\text{C}-\text{H}$		150-80
		160
$-\text{C}\equiv\text{C}-\text{H}$		250
$\begin{array}{c}   \\ -\text{O}-\text{C}-\text{H} \\   \end{array}$		140
$\begin{array}{c}   \\ \diagup\text{N}-\text{C}-\text{H} \\   \end{array}$		133
$\text{O}=\text{C}-\text{H}$		170-220
$\text{N}\equiv\text{C}-\text{H}$		270
<hr/>		
$\begin{array}{c}   \quad   \\ -\text{C}-\text{C}-\text{H} \\   \quad   \end{array}$	$^2J_{\text{CH}}$	10
$\begin{array}{c}   \quad   \\ \text{O}=\text{C}-\text{C}-\text{H} \\   \quad   \end{array}$		0-30
<hr/>		
$\begin{array}{c}   \quad   \\ -\text{C}-\text{C}- \\   \quad   \end{array}$	$^1J_{\text{CC}}$	35
$\diagup\text{C}=\text{C}\diagdown$		80
$-\text{C}\equiv\text{C}-$		55 (170 in $\text{HC}\equiv\text{CH}$ )
$\begin{array}{c}   \\ \text{O}=\text{C}-\text{C}- \\   \quad   \end{array}$		50-60
		55-60

$$^1J_{\text{C,H}} = 500 \cdot s \text{ (Hz)}$$

$s$  = degree of  
s-character in  
the bond

$sp^3$   
 $sp^2$

$$^1J_{\text{C,H}} = 500 \cdot 0.25 = 125 \text{ Hz}$$

$$^1J_{\text{C,H}} = 500 \cdot 0.33 = 167 \text{ Hz}$$