Motor Auto body repair

There are two basic methods of joining metal together in the automobile assembly:

- Mechanical methods (Figure 6-1)
- Metal welding methods (Figure 6-2)

Welding is one method of repair in which heat is applied to the pieces of metal to fuse them together in to the shape desired. For all practical purposes, welding can be divided in to the three main categories:

- ***Pressure welding***. This is a method in which the metal is heated to a softened state by electrodes, pressure is applied, and the metal is joined. Of the various types of pressure welding, electric resistance welding (spot welding) is an indispensable welding method used in automobile manufacturing and to a lesser degree in repair operations.
- ***Fusion welding***. Pieces of metal are heated to the melting point. Joined together (usually with a filler rod), and allowed to cool.
- ***Braze welding***. Metal with a melting point that is lower than the pieces of base metal to be joined is melted over the joint of the pieces being welded (without melting the pieces of base metal). Braze welding is classified as either soft or hard brazing, depending on the temperature at which the brazing materials that melts at temperatures below 850 degrees Fahrenheit and hard brazing is done with brazing materials that melt at temperatures above 850 degree Fahrenheit.

As shown in table 6-1, there are distinct welding methods within each respective category many of these methods within each respective category many of these methods can be used in the auto body shop.

Welding Characteristics

Joint welding is indispensable in the restoration of collision damage vehicles. The characteristics of welding can be summarized as follows.

- Since the shape of welding joints in limitless it is the perfect method for joining anybody structure, while still maintaining body integrity.
- Weight can be reduced (no fasteners are necessary)
- Air and water tightness are excellent
- Production efficiency is very high
- The strength of a welded joint is greatly influenced by the level of skill of the operator.
- The surrounding panels will warp if too much heat is used.

Welding in the Auto Body Shop

New welding techniques and equipment have entered the auto body repair picture, replacing the one time popular arc and oxyacetylene processes (Figure 6-3). The reason for this is that the new steel alloys used in to day's cars can

not be welded properly with the latter two processes. At the present time gas metal arc welding (GMAW) –better known as metal inert gas (MIG) welding –offers more advantages than other methods for welding high strength steel (HSS) and high strength, low alloy (HSLA) steel component parts used in unibody cars. As described in chapter 7, most of the applications of HSS and HSLA steels are confined to body structures.