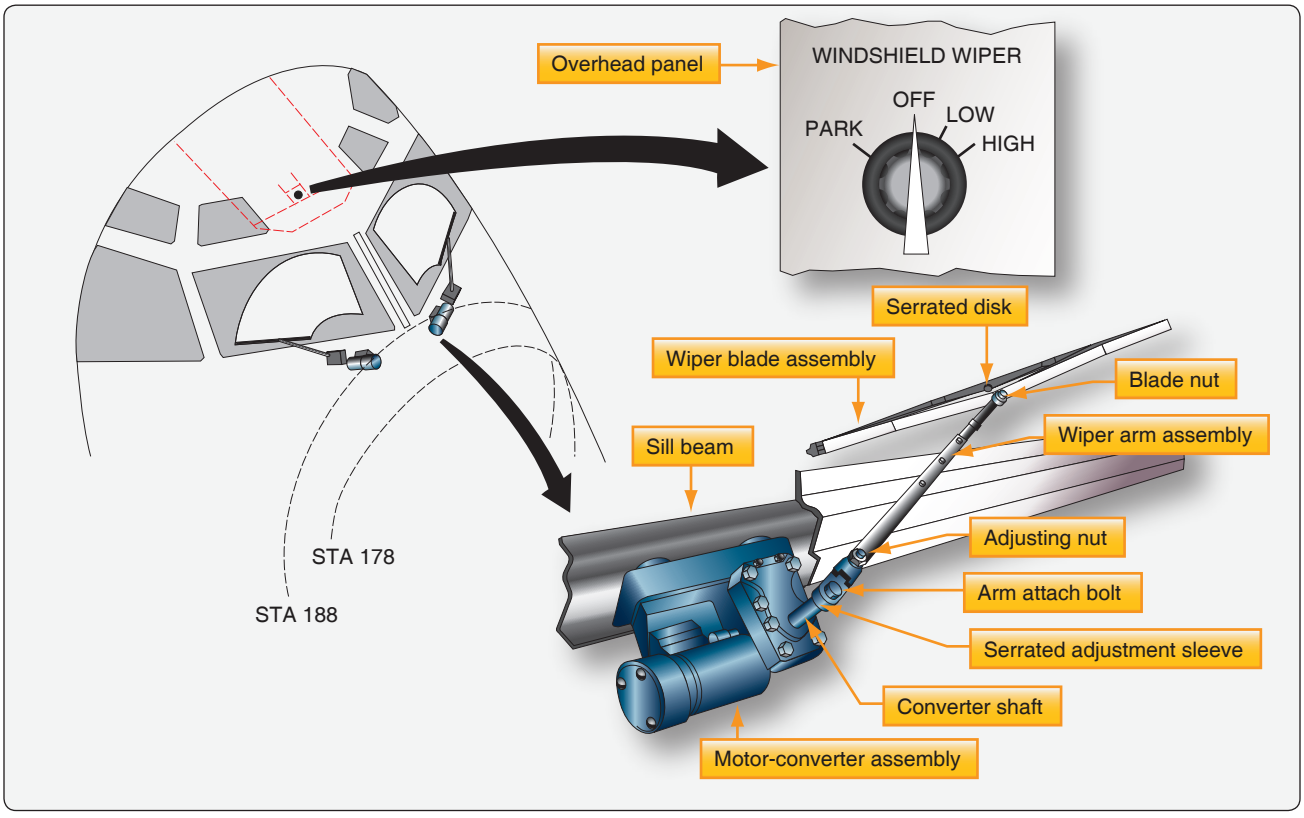

Figure 15-40. *Windshield wiper assembly/installation on a transport catgory aircraft. The motor-converter is mountd under the aircraft skin.*

Chemical Rain Repellant

Water poured onto clean glass spreads out evenly. Even when the glass is held at a steep angle or subjected to air velocity, the glass remains wetted by a thin film of water. However, when glass is treated with certain chemicals, a transparent film is formed that causes the water to behave very much like mercury on glass. The water draws up into beads that cover only a portion of the glass and the area between beads is dry. The water is readily removed from the glass. This principle lends itself quite naturally to removing rain from aircraft windshields. The high-velocity slipstream continually removes the water beads, leaving a large part of the window dry.

A rain repellant system permits application of the chemical repellant by a switch or push button in the cockpit. The proper amount of repellant is applied regardless of how long the switch is held. On some systems, a solenoid valve controlled by a time delay module meters the repellent to a nozzle which sprays it on the outside of the windshield. Two such units exist — one each for the forward glass of the pilot and copilot. *[Figure 15-41]*

This system should only be used in very wet conditions. The rain repellant system should not be operated on dry windows because heavy undiluted repellant restricts window visibility. Should the system be operated inadvertently, do not operate the windshield wipers or rain clearing system as this tends to increase smearing. Also, the rain repellant residues caused by application in dry weather or very light rain can cause staining or minor corrosion of the aircraft skin. To prevent this, any concentrated repellant or residue should be removed by a thorough fresh water rinse at the earliest opportunity. After application, the repellant film slowly deteriorates with continuing rain impingement. This makes periodic reapplication necessary. The length of time between applications depends upon rain intensity, the type of repellant used, and whether windshield wipers are used.

Windshield Surface Seal Coating

Some aircraft models use a surface seal coating, also called hydrophobic coating that is on the outside of the pilot's/copilot's windshield. *[Figure 15-42]* The word hydrophobic means to repel or not absorb water. The windshield hydrophobic coating is on the external surface of the windows (windshields). The coatings cause raindrops to bead up and roll off, allowing the flight crew to see through the windshield with very little distortion. The hydrophobic windshield coating reduces the need for wipers and gives the flight crew better visibility during heavy rain.