SAE Aerospace
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AEROSPACE INFORMATION REPORT

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Superseding AIR1361

Transmission Interlocks

RATIONALE

Based on review of the subject document, it is recommended to declare the subject specification “STABILIZED”. Attached for your review and approval is a copy of the subject document.

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This document has been declared "Stabilized" by the SAE AGE-2C, Vehicle Maintenance and Aircraft Servicing Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. BACKGROUND

Over the years, numerous incidents have occurred where pieces of airline mobile support equipment have inadvertently slipped into gear resulting in the vehicle moving either forward or backwards creating hazards to personnel, equipment, and facilities. This situation is compounded by the fact that some mobile service vehicles utilized within the airline industry operate, while parked, at higher than engine idle speeds.

2. SCOPE

The following recommendations and suggestions are made for consideration for procurement of new equipment, or modification to existing equipment where practical. Excluded from this AIR is mobile ground equipment, such as fork lift trucks and front end loaders, that have a functional requirement for simultaneous vehicle motion and accessory operation.

3. RECOMMENDATIONS

3.1 All units equipped with an automatic transmission should be procured with the transmission shift sequence conforming to FMVSS #102. If the transmission shift lever is steering column mounted or operates in a transverse vertical plane, the shift positions should be P, R, N, D, L, in a clockwise direction while seated in the operator's position. If the shift lever operates in a longitudinal vertical plane, the shift pattern should P, R, N, D, L, going from the front of the vehicle to the rear, while seated in the operator's position. This pattern, although recognized as not always following the direction of travel of a vehicle, is consistent with that utilized in the standard automobile and will thus permit easier transition for the user from his own private automobile to airline mobile support equipment.

3.2 On units presently in service where the transmission pattern is not as described above, it is sometimes possible to reverse the shift linkage shaft at the transmission to conform to the above pattern. If this is accomplished, a new shift pattern indicator must be installed at the operator's position.

3.3 Based upon standardization of the above shift pattern, which is highly desirable and recommended, it is further recommended that all vehicles be equipped with some form of interlocks to insure that the vehicle stays locked in the P or N position when utilized. There are several methods by which this can be accomplished, as listed in Section 4.

3.4 Consideration may be given by some operators to the elimination of the park position since some automatic transmission designs rely upon a pawl or pin to retain the selector in the P position. It has been the experience of some that these have a tendency to wear or break permitting the selector to easily slip into a drive position, which is generally detented. If the vehicle engine is operating at a high RPM, the unit may inadvertently move. Even with the vehicle engine operating at normal idle speed, an overheated transmission can occur if the vehicle slips into gear and is held by the parking brake, resulting in a potential fire hazard. This can generally be avoided by placing a block plate over the P position of the shift quadrant and using one or more of the methods described in section 4 to protect against inadvertent motion of the vehicle.