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SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

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Superseding J647 APR90

TRANSMISSIONS—SCHEMATIC DIAGRAMS

Foreword—This reaffirmed document has been changed only to reflect the new SAE Technical Standards Board format.

1. ***Scope***—The following schematic diagrams exemplify the SAE recommended method of illustrating automotive transmission arrangements. They were developed to standardize industry practice and facilitate a clear understanding of the functional interrelations of the gearing, clutches, hydrodynamic drive unit, and other transmission components.

   Two variations of diagrams are used: Transmission in neutral and in gear. For illustrative purposes, some typical transmissions are shown.

2. ***References***—There are no referenced publications specified herein.

3. ***Transmission in Neutral***—Figure 1 illustrates a five-speed countershaft transmission which is constant mesh in all forward gears. Each gear is identified according to the particular transmission speed it provides when engaged, for example: 1st, 2nd, 3rd, and so forth. The number of teeth in each gear is indicated. Synchronized and positive jaw clutches are schematically represented with a drive dog and mating slot in the affected gear. Two drive plates and one driven plate are used to designate the plate clutch assembly. The reverse idler gear is shown out of position for clarity.

   Figure 2 illustrates a planetary gear transmission in neutral with clutches and bands shown disengaged. Brake bands and clutches are designated as 1st, 2nd, 3rd, reverse, and so forth in accordance with their use. Gear sets are designated as G1, G2, G3, and so forth. The number of teeth in each gear is shown.

   Figure 3 illustrates a three-speed planetary gear transmission with split torque path and external gear final drive (differential not illustrated).

   Figure 4 illustrates a four-speed transmission with chain drive connecting the two axes (differential not illustrated).

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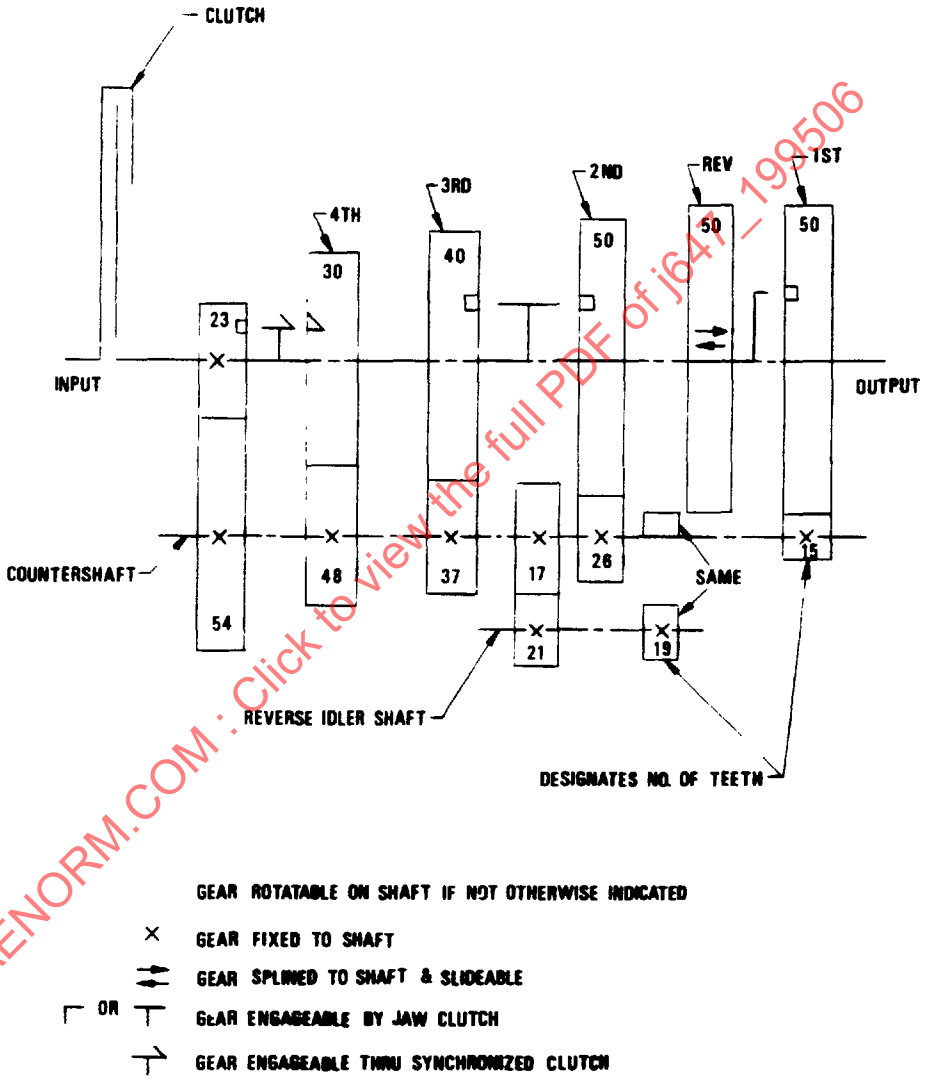

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FIGURE 1—FIVE-SPEED TRANSMISSION DIAGRAM—NEUTRAL

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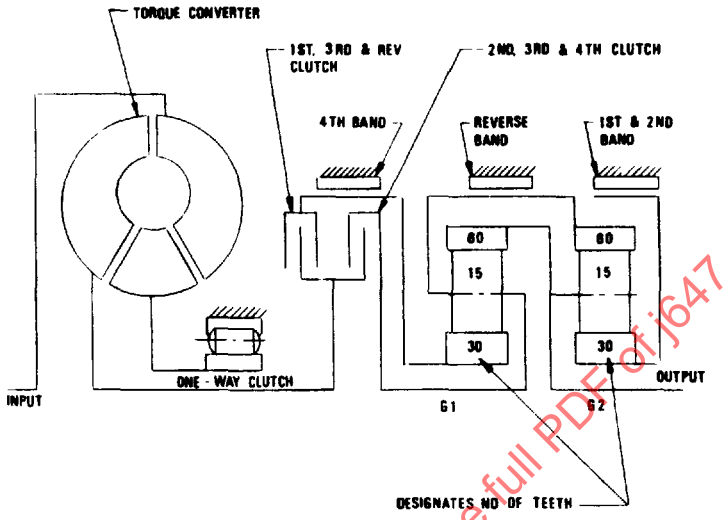

FIGURE 2—FOUR-SPEED TRANSMISSION DIAGRAM—NEUTRAL

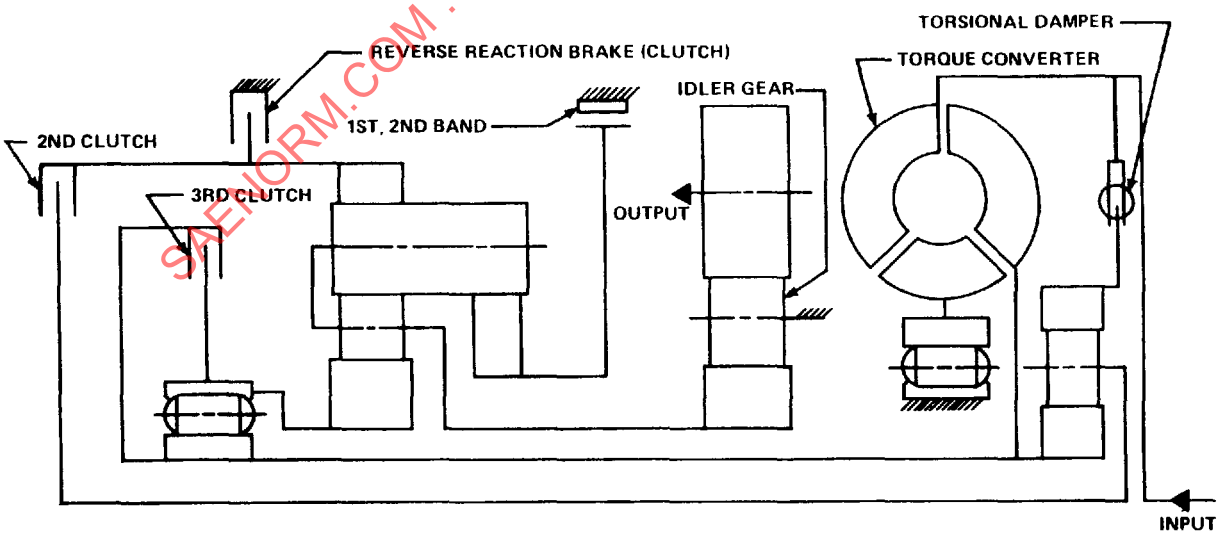

FIGURE 3—THREE-SPEED TRANSMISSION WITH SPLIT TORQUE PATH—NEUTRAL

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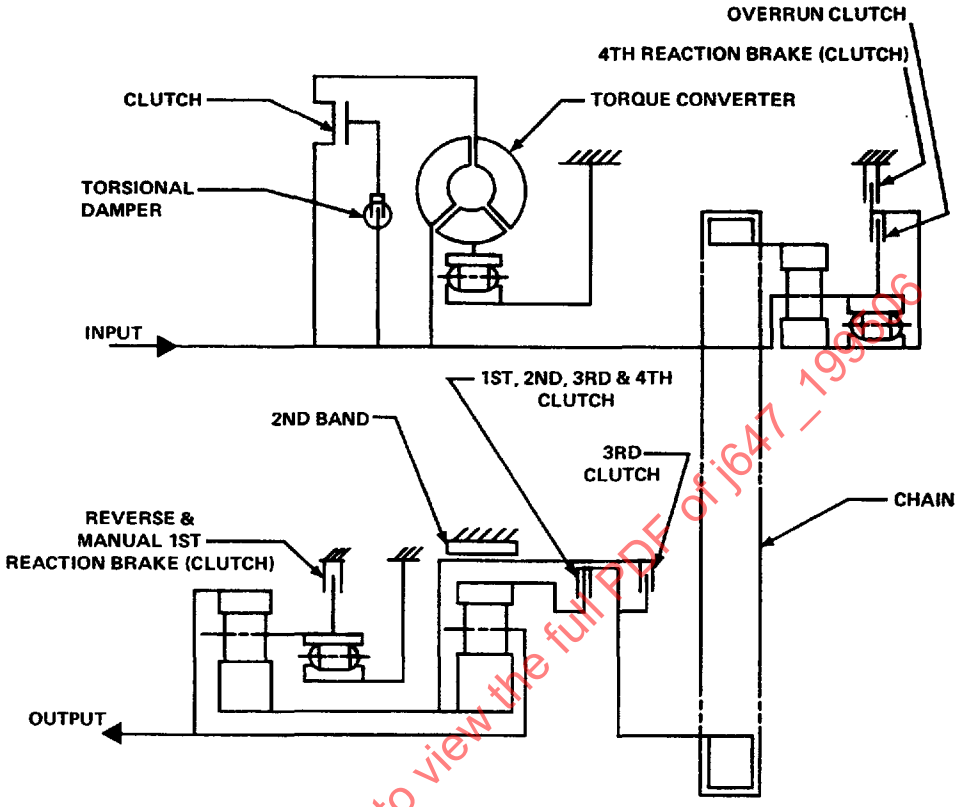

FIGURE 4—FOUR-SPEED TWO AXES TRANSMISSION—NEUTRAL

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4. Transmission in Gear

4.1 Figures 5 and 6 illustrate the countershaft transmission and the planetary gear transmission in gear with the torque path denoted by straight bold arrows. Curved arrows indicate direction of shaft rotation. Active members are designated with sections crosshatched.

4.2 Countershaft Transmission (Figure 5)—In third, for example, the mainshaft third gear is clutched to the output shaft. This is schematically illustrated by means of the drive dog engaging the slot in the gear.

4.3 Planetary Gear Transmission (Figure 6)—Second gear is illustrated. The pertinent brake band is crosshatched to denote brake application. Additional information added to this diagram is optional:

a. The rpm of the sun gear, ring gear, and carriers are designated for 100 rpm input speed.
b. Clutch plate speed differential is designated for 100 rpm input speed.
c. The torque of the sun gear, ring gear, and carrier is designated for 1.00 "T" input torque.

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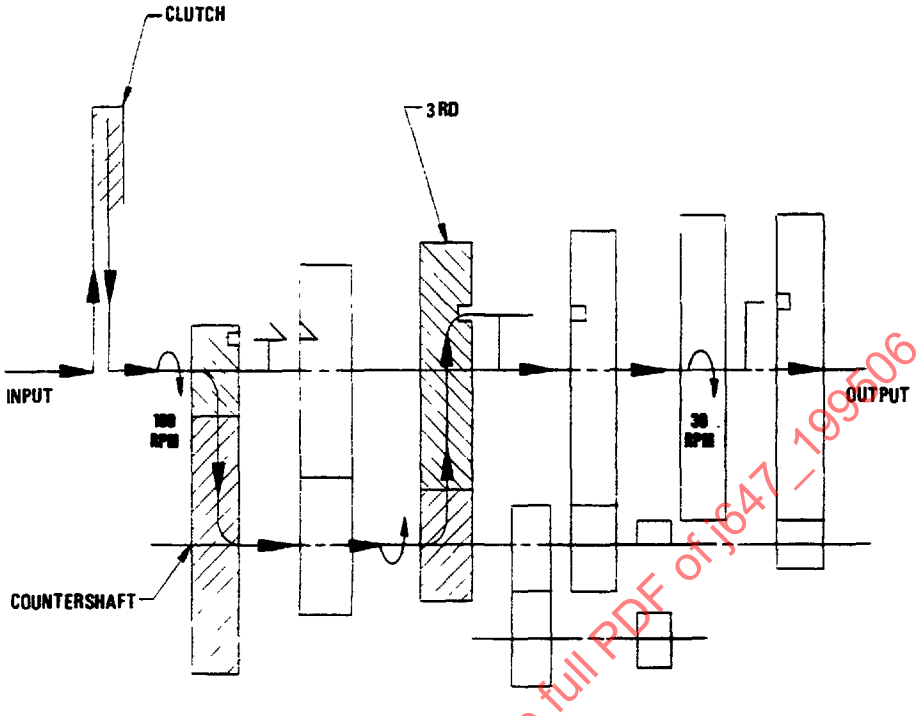

FIGURE 5—FIVE-SPEED TRANSMISSION DIAGRAM—3RD SPEED

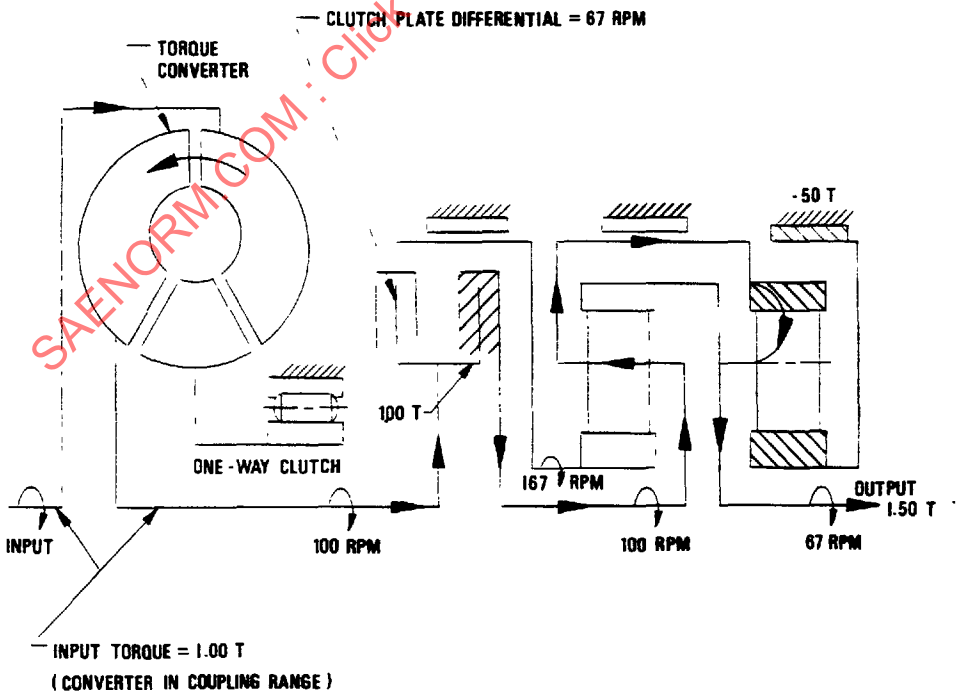

FIGURE 6—FOUR-SPEED TRANSMISSION DIAGRAM—2ND SPEED

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