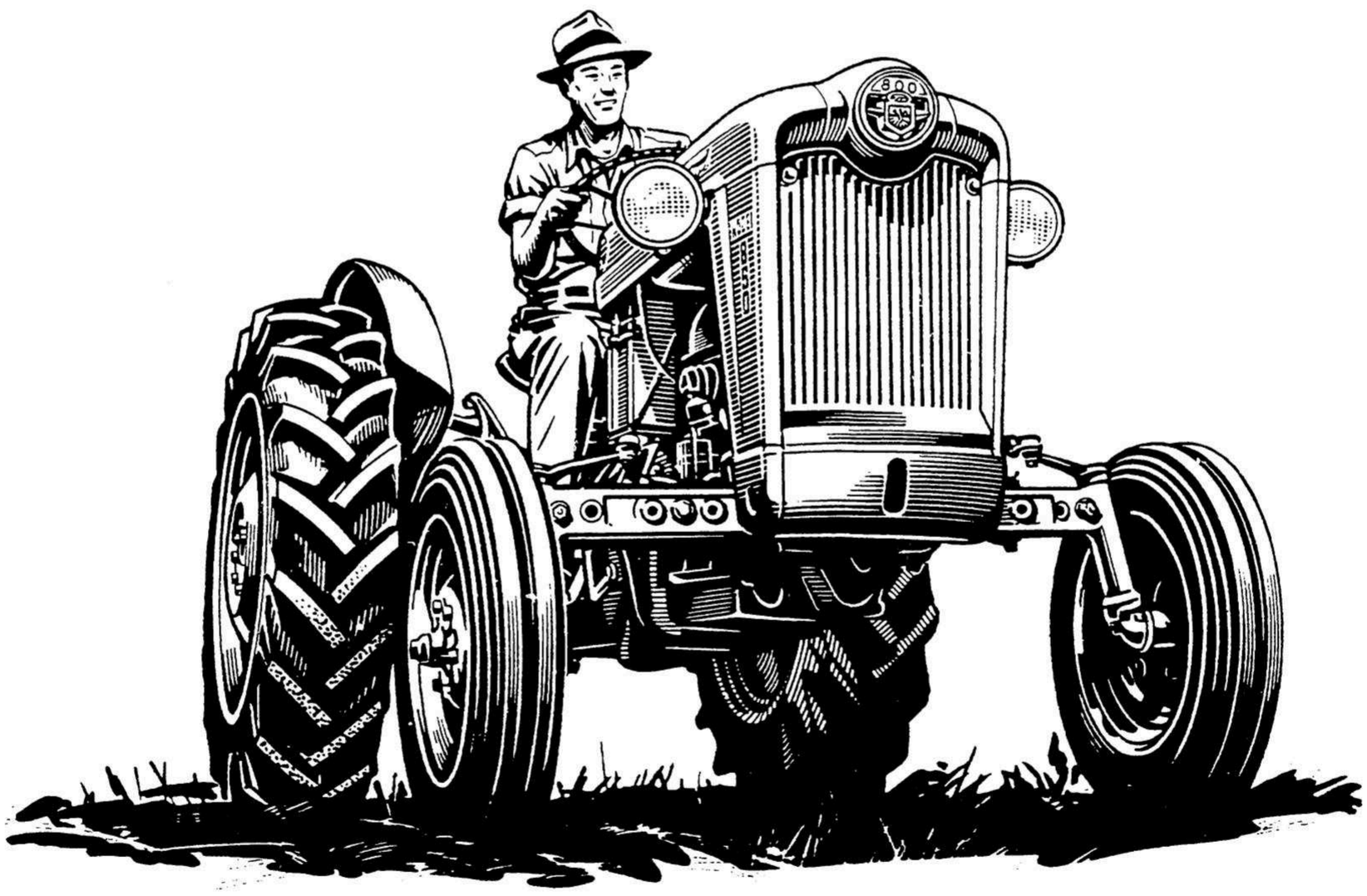
FORD

Service Manual

Tractor Series
600, 700, 800, 900, 501,
601, 701, 801, 901, 1801,
2000, and 4000

1954 – 1964

40060090



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Part TWO

CLUTCH, TRANSMISSIONS, REAR AXLE AND POWER TAKE-OFF

Chapter

II

Transmissions

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7. DESCRIPTION AND OPERATION – SELECT-O-SPEED TRANSMISSION

The Select-O-Speed Transmission is available in three models. The basic transmission remains unchanged for all tractors, and the differences exist only in the following Power Take-Off options:

No P.T.O.

Single speed independent engine-driven P.T.O.

Two speed independent engine-driven P.T.O., and proportional ground speed P.T.O.

The transmission provides for ease of control and high efficiency in the utilization of engine power and engine fuel. It is a manually selected, hydraulically controlled system, which transmits power from the engine through four planetary gear sets, providing the ten forward speed ratios and two reverse speed ratios to the final drive of the tractor. Park and Neutral positions are also provided.

A brief description and the principles of operation of the major assemblies in the transmission are discussed in this section. All design and operational differences between the transmission models are fully explained.

PLANETARY GEAR TRAIN

For purposes of identification, the four planetary gear systems used in the transmission have been labeled from front to rear, "A", "B", "C", and "D", as shown in Figure 1. The ten forward and two reverse speeds are obtained by controlling the movement of the elements within the planetary gear systems.

Each of the planetary gear systems is comprised of three elements; a sun gear, a carrier with three pinions, and a ring gear, as shown in Figure 2. The three pinions are mounted within the carrier frame and rotate on needle bearings around pinion shafts, which are secured to the carrier frame. The sun gear, which is centered between the pinions, has external teeth. The ring gear, which encompasses the pinions, has internal teeth. All of the gears in the planetary system are constantly in mesh.

When a planetary system is connected to a source of power, all of the components in the system will rotate unless an external force is applied to hold an element. The sun gear, carrier, and the ring gear, can rotate on the central axis of the system and the pinions will rotate on their own axes at the same time as they are being carried around the central axis.

Planetary Gear Power Flow

Depending upon which element of a planetary system is held, power can be applied or taken out at the sun gear, carrier, or ring gear. The general flow of power through the planetary system will be as follows:

1. Applying power to the sun gear and holding the ring gear forces the pinions to rotate on their own axes and "walk" within the ring gear, taking the carrier

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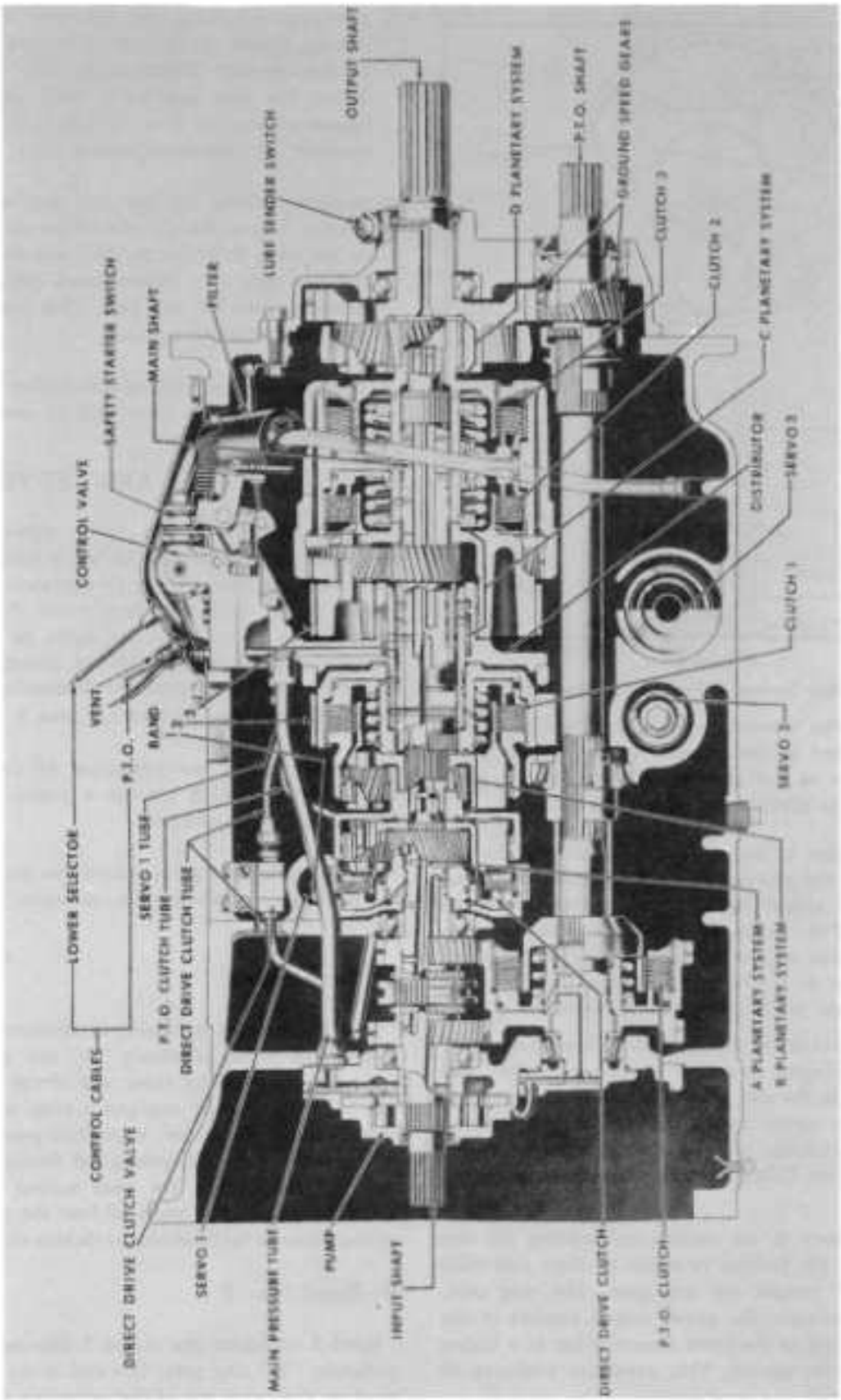


Figure 1
The Two Speed Independent P.T.O. and Proportional Ground Speed P.T.O. Select-O-Speed Transmission–Sectional View

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