

AGRICULTURAL GUIDE

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Combines

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The conventional combine

Figure 1 illustrates the operation of a conventional grain combine. The crop is fed tangentially into a cross-mounted, cylinder-concave assembly. Threshing occurs through the impact of the cylinder bars on the incoming crop. Much of the separation occurs through the open grate concave. Separation of the remaining grain from the straw is accomplished with straw walkers. A cleaning shoe, with chaffer and sieve, is used for scalping and final cleaning.

Other types of combines

New Holland (Figure 2) has two longitudinally mounted, axial, threshing and separating rotors. Threshing occurs in the concaves at the front of the rotors. Separation of the grain from the straw is accomplished along the full length of the rotor. A rear

beater-grate assembly performs the final separation. A conventional cleaning shoe is used for scalping and final cleaning. Three different sizes of this combine are currently being produced. They are the TR76, TR86 and TR96.

Case International (Figure 3) has a single, longitudinally-mounted, axial-flow, threshing and separating rotor. Threshing occurs at the front section of the rotor; separation of the grain from the straw is accomplished along the full length of the rotor in both the threshing and separation concaves. A rear beater aids in straw discharge. A conventional cleaning shoe is used for scalping and final cleaning. The company produces five models: the 1620, 1640, 1660, 1680 and 1470 Hillside, as well as a pull type version.

Massey-Ferguson and **White** (Figure 4) also have a single, longitudinally-mounted axial threshing and separating rotor. Threshing occurs at the front section of the rotor. Separation of the grain from the straw is

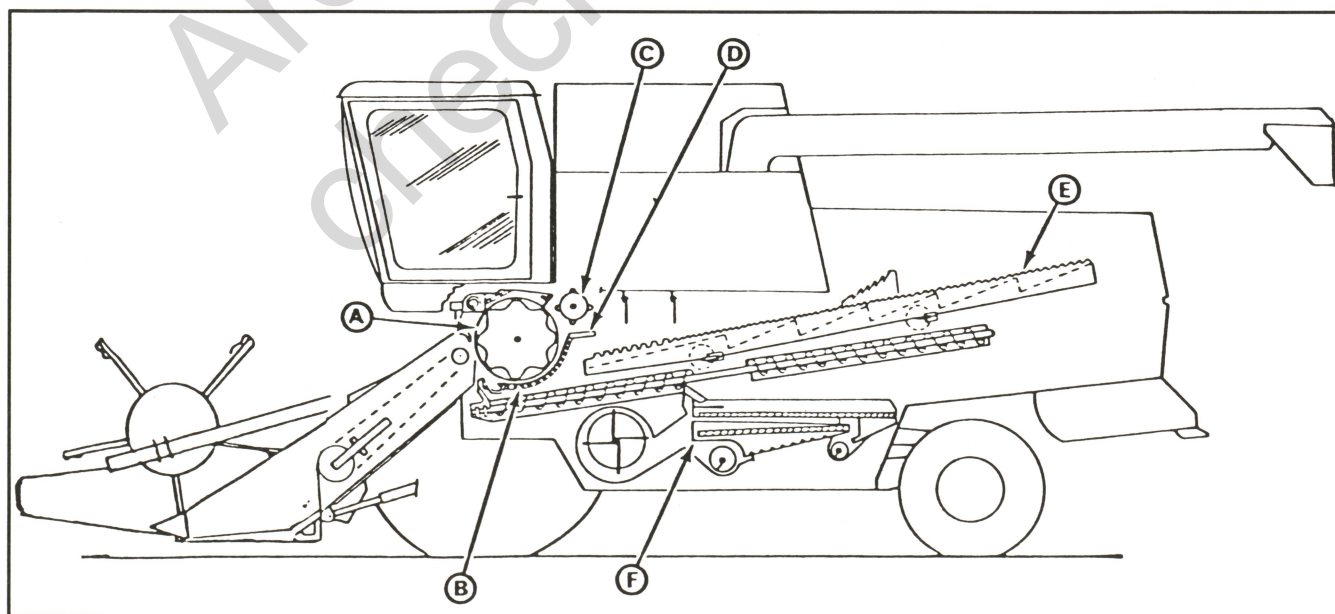


Figure 1. John Deere 8820: (A) cylinder, (B) concave, (C) back beater, (D) beater grate, (E) straw walkers, (F) shoe.

accomplished along the full length of the rotor in both the threshing and separation concaves. A conventional cleaning shoe is used for scalping and final cleaning. Massey-Ferguson is producing the 9720. The White models are the 9320 and 9720.

Deutz-Allis/Gleaner (Figure 5) has a different design than New Holland, Case International, and Massey-Ferguson combines. The threshing and separating rotor (cylinder) is mounted crosswise, with the crop fed tangentially into one end of the rotor. Threshing and separation occurs along the full length of the rotor, as the crop spirals sideways along the rotor. A paddle and impeller assembly discharges the crop from the outlet end of the rotor. A conventional

cleaning shoe, combined with accelerator rolls and a high velocity air blast, is used for scalping and final cleaning. Three sizes of this combine are available, the R5, R6, and R7.

Claas of America, Inc. (Figure 6) has three models, the 106, 112CS, and the 116CS, which use a cylinder system. In place of the conventional system of separating and cleaning, Claas has eight synchronized, serrated, separating cylinders, with corresponding concaves, following a six-rasp-bar threshing cylinder. The synchronized, positive-output cylinders carry the crop over the concaves in a thin layer. Grain falls onto the cleaning sieve, and crop residue passes through to the double straw spreaders.

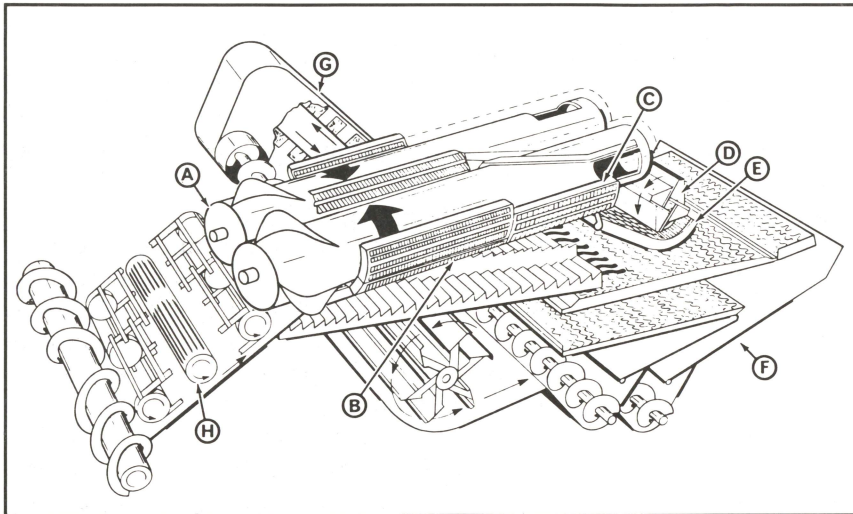


Figure 2. New Holland TR96: (A) rotors, (B) threshing concave, (C) separating concave, (D) back beater, (E) beater grate, (F) shoe, (G) tailings return, (H) stone ejection roller.

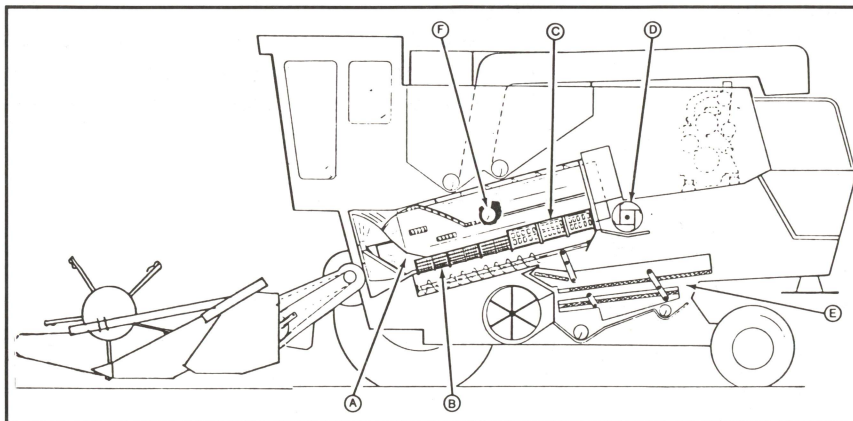


Figure 3. Case International 1660: (A) rotor, (B) threshing concaves, (C) separating concaves, (D) back beater, (E) shoe, (F) tailings return.

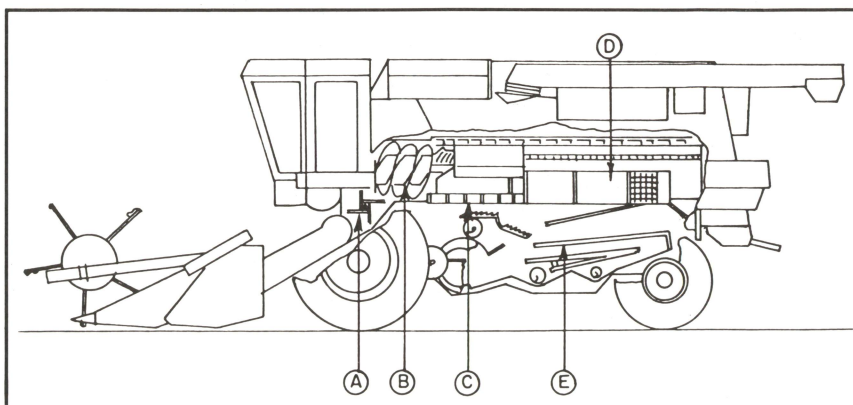


Figure 4. White 9720: (A) feed impeller, (B) rotor, (C) threshing concaves, (D) separating concaves, (E) shoe.

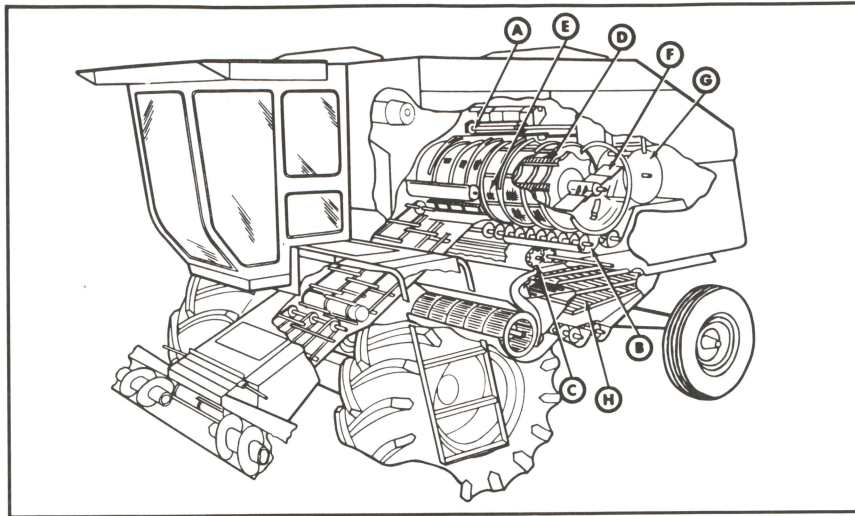


Figure 5. Deutz-Allis R6: (A) cage sweep, (B) distribution augers, (C) accelerator rolls, (D) rotor, (E) concave, (F) paddles, (G) impeller, (H) shoe.

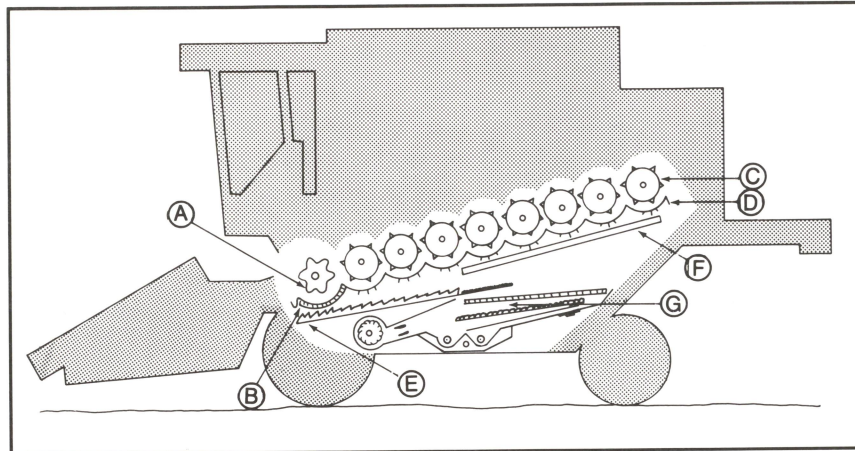


Figure 6. "Cylinder System Combine": (A) cylinder, (B) concave, (C) separator cylinder, (D) separator concave, (E) preparation pan, (F) returns pan and (G) upper and lower frog mouth sieve.

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