

SUPPLEMENT 5-A

FUNCTIONAL FLOW BLOCK DIAGRAM

The purpose of the functional flow block diagram (FFBD) is to describe system requirements in functional terms.

- Proper sequencing of activities and design relationships are established including critical design interfaces.

Objectives

The FFBD is structured to ensure that:

- All life cycle functions are covered.
- All elements of system are identified and defined (e.g. prime equipment, training, spare parts, data, software, etc.).
- System support requirements are identified to specific system functions.

Characteristics

The FFBD is functionally oriented—not solution oriented. The process of defining lower-level functions and sequencing relationships is often referred to as functional decomposition. It allows traceability vertically through the levels. It is a key step in developing the functional architecture from which designs may be synthesized.

Figure 5-3 shows the flow-down structure of a set of FFBDs and Figure 5-4 shows the format of an FFBD.

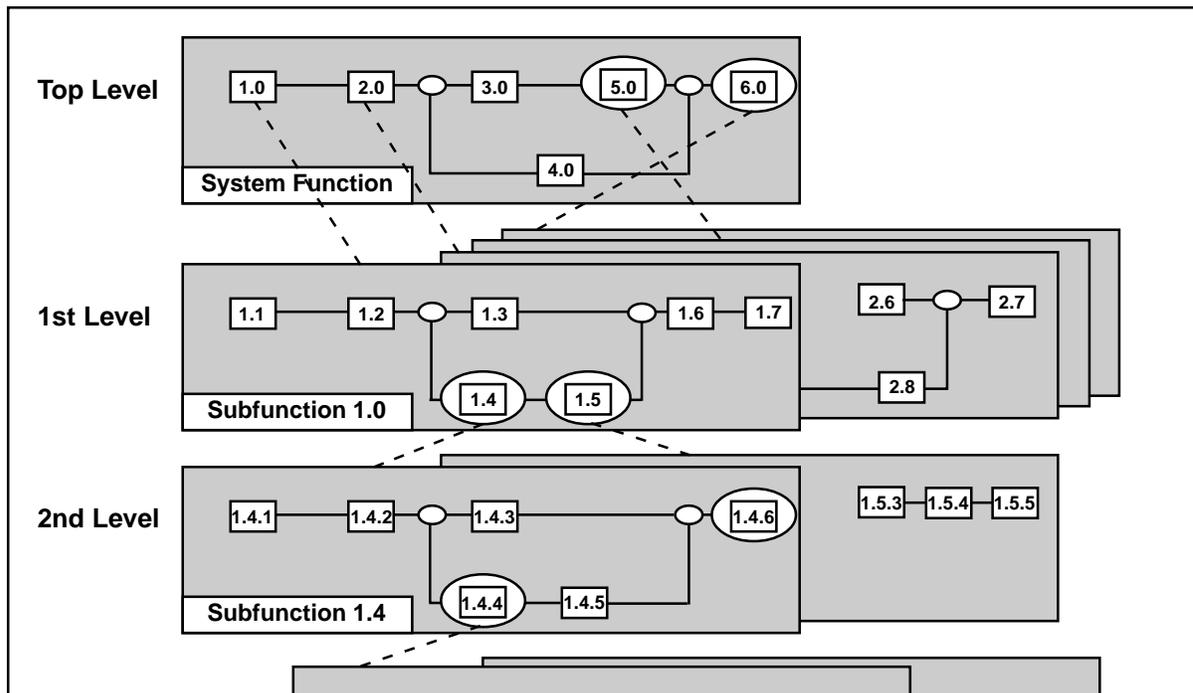


Figure 5-3. FFBD Traceability and Indenture

Key FFBD Attributes

Function block: Each function on an FFBD should be separate and be represented by single box (solid line). Each function needs to stand for definite, finite, discrete action to be accomplished by system elements.

Function numbering: Each level should have a consistent number scheme and provide information concerning function origin. (E.g., top level—1.0, 2.0, 3.0, etc; first indenture (level 2)—1.1, 1.2, 1.3, etc; second indenture (level 3)—1.1.1, 1.1.2, 1.1.3, etc.) These numbers establish identification and relationships that will carry through all Functional Analysis and Allocation activities and facilitate traceability from lower to top levels.

Functional reference: Each diagram should contain a reference to other functional diagrams by using a functional reference (box in brackets).

Flow connection: Lines connecting functions should only indicate function flow and not a lapse in time or intermediate activity.

Flow direction: Diagrams should be laid out so that the flow direction is generally from left to right. Arrows are often used to indicate functional flows.

Summing gates: A circle is used to denote a summing gate and is used when AND/OR is present. AND is used to indicate parallel functions and all conditions must be satisfied to proceed. OR is used to indicate that alternative paths can be satisfied to proceed.

GO and NO-GO paths: “G” and “bar G” are used to denote “go” and “no-go” conditions. These symbols are placed adjacent to lines leaving a particular function to indicate alternative paths.

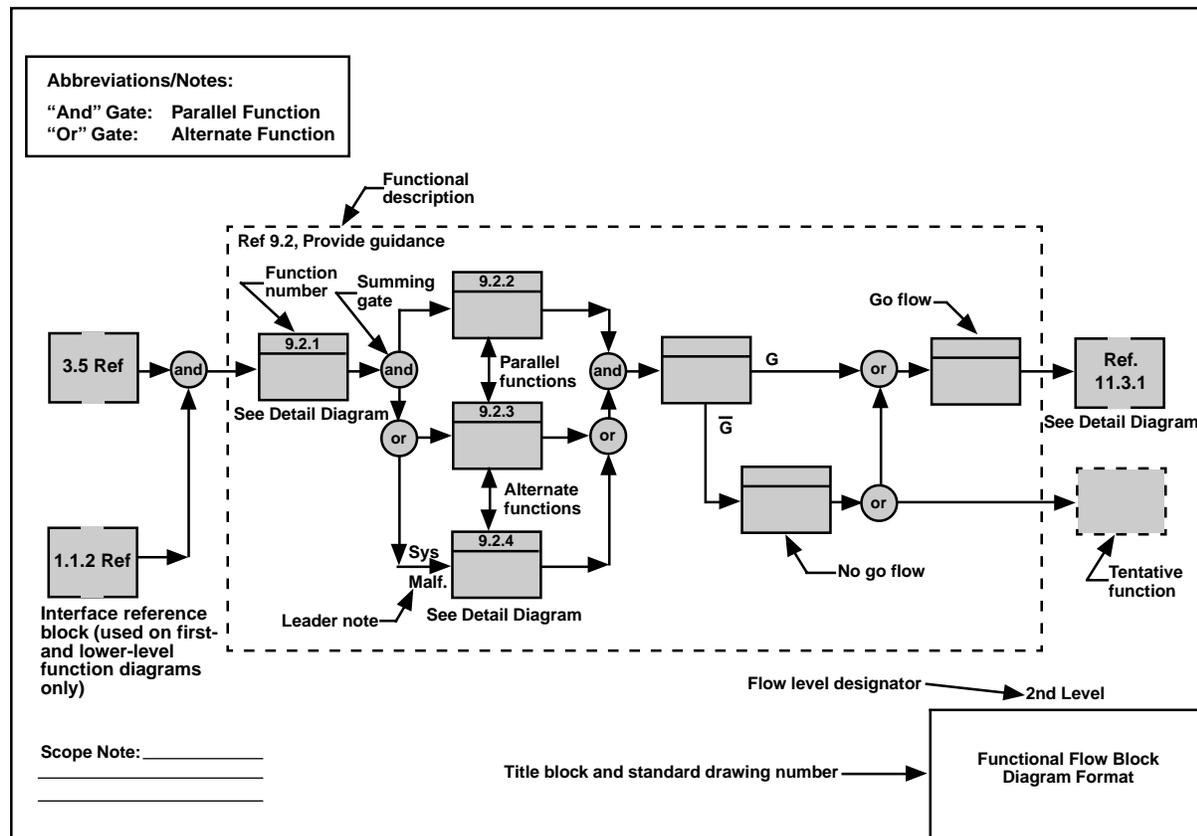


Figure 5-4. Functional Flow Block Diagrams (FFBD) Format