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British Standard Guide to

Stock control

Part 1. Introduction to management of stock control

Guide du contrôle des stocks

Partie 1. Introduction à la gestion du contrôle des stocks

Leitfaden für die Lagerkontrolle

Teil 1. Einführung in die Handhabung der Lagerkontrolle

British Standards Institution

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Foreword

This Part of BS 5729 has been prepared under the direction of the Quality Management and Statistics Standards Committee.

In all manufacturing concerns, capital is tied up in stocks of one form or another. Reducing this capital to and maintaining it at the minimum level consistent with efficiency is the objective of stock control systems.

Undoubtedly, large sums can be saved by effective stock control, particularly in medium to large undertakings, but even in small organizations there is every reason for exercising a form of stock control, with excellent results.

Stock control demands careful preparation, discipline and determination to work amicably in a team involving all the other functions of the organization. However, the reward can more than justify the effort.

This British Standard, in five Parts, gives comprehensive guidance in those areas that are considered essential for efficient stock control. The Parts are as follows:

- Part 1 Introduction to management of stock control
- Part 2 Demand assessment
- Part 3* Replenishment of stock
- Part 4 Data processing
- Part 5 Storekeeping

Compliance with a British Standard does not of itself confer immunity from legal obligations.

* In course of preparation.

British Standard Guide to

Stock control

Part 1. Introduction to management of stock control

0. Introduction

This Part of BS 5729 deals with the management of stock including the objectives of stockholding, the need to set targets for stockholding and the mechanisms available for achieving the targets.

Subsequent Parts of the standard deal with detailed methods and techniques which may be applicable in different industrial and commercial organizations.

Stock is defined in BS 5191 as:

stock All the tangible material assets of a
inventory company other than the fixed assets; comprising all the finished or saleable products, all the items to be incorporated into the finished products, and all the items to be consumed in the process of manufacturing the product or in the carrying out of the business.

It is probably true to say that industry and commerce in general tend to carry larger stocks than are necessary. If the capital cost involved in stock holding is to be utilized effectively, the organizations concerned have to fully understand their need for stock and closely examine all the cost aspects involved in maintaining that stock.

Another important factor, often overlooked in stock holding situations, is the accumulation of obsolete items. Quite often the items concerned may have little or no value, but the mere fact that they occupy space implies a definite cost to the company.

Principally because of the ever-increasing cost of materials and 'space' it is becoming increasingly important that the function of 'stock controller' be recognized as a vital part of any organization that holds stock to any significant level. It has also to be recognized that this job calls for a reasonably high level of understanding and ability. It should not be thought of simply as that of an experienced storekeeper or purchasing clerk, and furthermore, the office of stock controller should carry both support from top management and a measure of executive authority.

It is typically the case that 55 % of a manufacturing company's annual turnover and 90 % of that for a distributive organization can be concerned with the procurement of materials, and a considerable proportion of that may be stock items. Also in manufacturing industry it is not uncommon for two-thirds of working capital to be accounted for in stocks; in wholesaling and retailing the stock often absorbs over 90 % of the working capital and it becomes vital to achieve the maximum stock turnover as well as adequate margins. It is therefore essential that the role and authority of the stock controller

be adequately defined. It should never be possible for new items to be introduced as 'stock lines' without thorough investigation of alternatives. It is also an essential part of the stock control function to maintain adequate 'catalogues' of stock and/or 'preferred' items.

It is also essential that the stock controller be aware of the many different ways in which procurement can be effected, as this may have a direct influence on the application of the various stock control techniques.

The final important aspect of the stock controller's function is the correct provision of financial information in the form of budgets for stock holding. Coupled with this information there needs to be understanding at the highest level of management of the concept of customer service levels and their associated costs, so that company policy can be specifically stated both for the guidance of stock controllers, and as a 'bench' mark against which to measure the effectiveness of the stock control function.

Speculative stockholding is often an important consideration both in terms of stockholding to avoid price increases in commodity markets and as an insurance against supply failure (e.g. industrial disputes, where an item is a vital spare part).

1. Scope

This Part of BS 5729 introduces the concepts and objectives of stock control as a part of management strategy; it outlines methods of setting target stock levels and their achievement.

Included in this Part of this standard is an explanation of how stock forms part of the total business and how target levels can be set which are demanding but achievable. This is followed by guidance on the setting of control rules or parameters at the item-by-item level, leading to the identification of problem items and taking action to overcome the problems. Finally there is guidance on the measurement of progress towards the target levels set by management.

NOTE. The titles of the publications referred to in this standard, are listed on the inside back cover.

2. Definitions

For the purposes of this Part of this British Standard the terms and definitions given in BS 3138 and BS 5191 apply.

3. Objectives of stock control

3.1 General. The objectives of stock control, as mentioned briefly in the foreword, are the following:

and maintenance of the total investment in stock at the minimum consistent with:

- (a) adequate customer service;
- (b) operating efficiency;
- (c) physical limitations;

taking into account the operating policies of the organization.

3.2 Conflicting factors. Often there is an unavoidable conflict between several factors, such as the following.

- (a) Purchasing and production departments prefer to order in reasonably large batches with infrequent delivery.
- (b) Production departments need adequate buffer stocks (safety stocks) to separate each process from the previous and following ones.
- (c) Sales departments want plenty of finished stock to give good customer service.
- (d) Finance departments want to minimize working capital.
- (e) Maintenance departments want to hold stocks against the risk of plant breakdown.
- (f) Seasonal stocks may be required to enable continuous production to be decoupled from peak demands (e.g. toys at Christmas).
- (g) Policy stocks are often held as a hedge against supply shortages, especially for market (high volume) commodities.

3.3 Need for balanced approach. *Real* minimum stock can be achieved only if the future can be foretold exactly:

an impossibility. Therefore the investment in stock has to be balanced against the ability to predict accurately the market demand and lead times necessary to control the stock. The problems of control include:

- (a) the closer the degree of control, the higher the cost in number and calibre of staff needed to operate the system;
- (b) the more complex the control scheme, the greater the chance of error.

The whole art of stock control lies in designing and installing a procedure that affords the right balance between these conflicting factors whilst attaining the correct degree of control. It is therefore a subject of paramount importance to manufacturing, to wholesaling and to retailing.

3.4 Functional relationships. In industry the subject of stock control is closely linked to many other functions including production planning and control, purchasing and distribution.

NOTE. Stock control, with ordering based on reorder levels or reorder cycles, can form the basis of a production control system. Nothing in this standard should be taken to imply that such production control systems are preferable to other methods.

Figures 1 and 2, taken from BS 5191, show these functional links for an industrial organization and how stock is distributed within the factory.

For wholesaling and retailing there are different links involving merchandising and transportation to and from depots which may be sited centrally and/or distributed around the country. Figure 3, also taken from BS 5191, shows the wholesale-retail chain of distribution in schematic form.

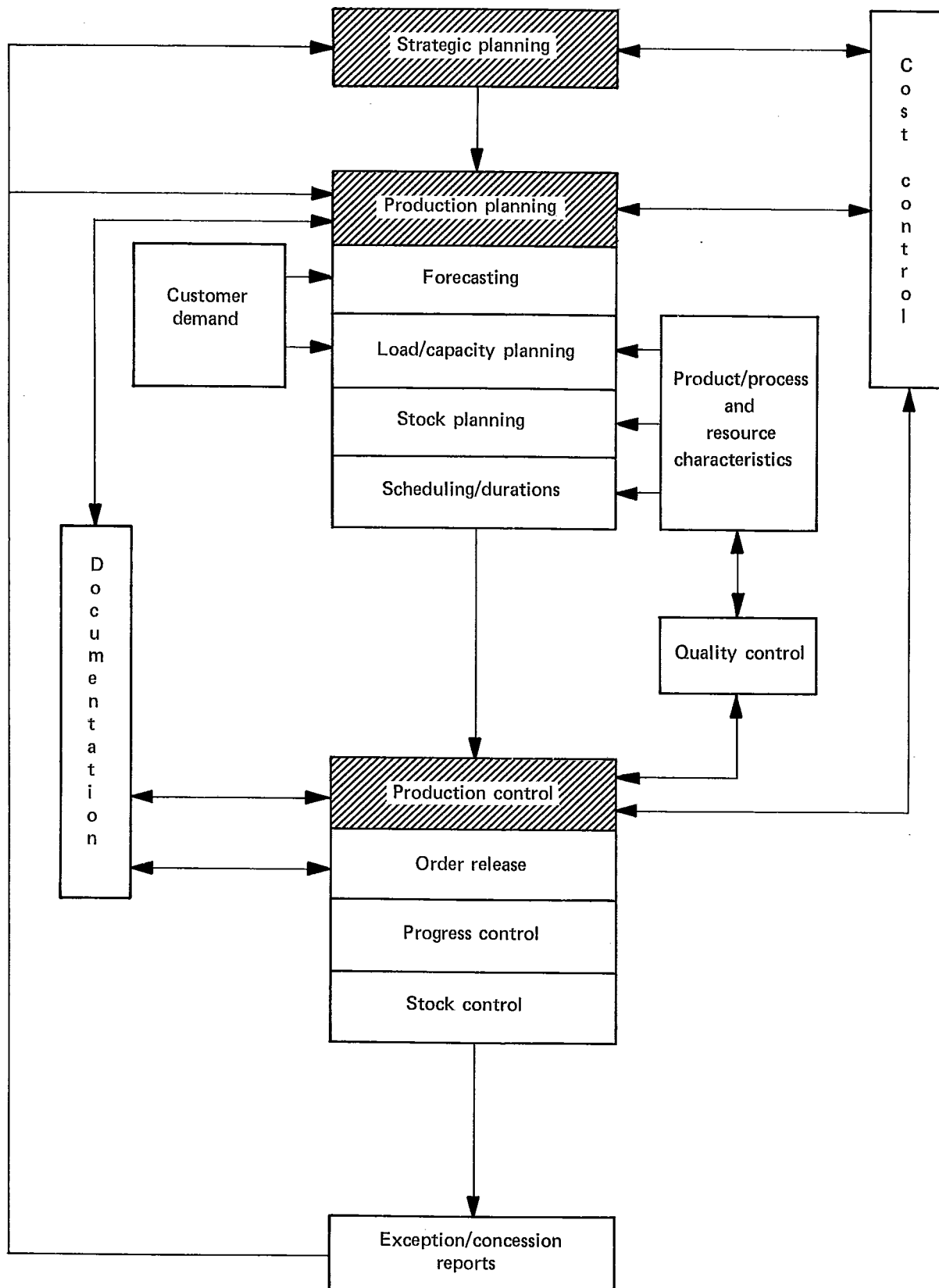


Figure 1. Functional relationships

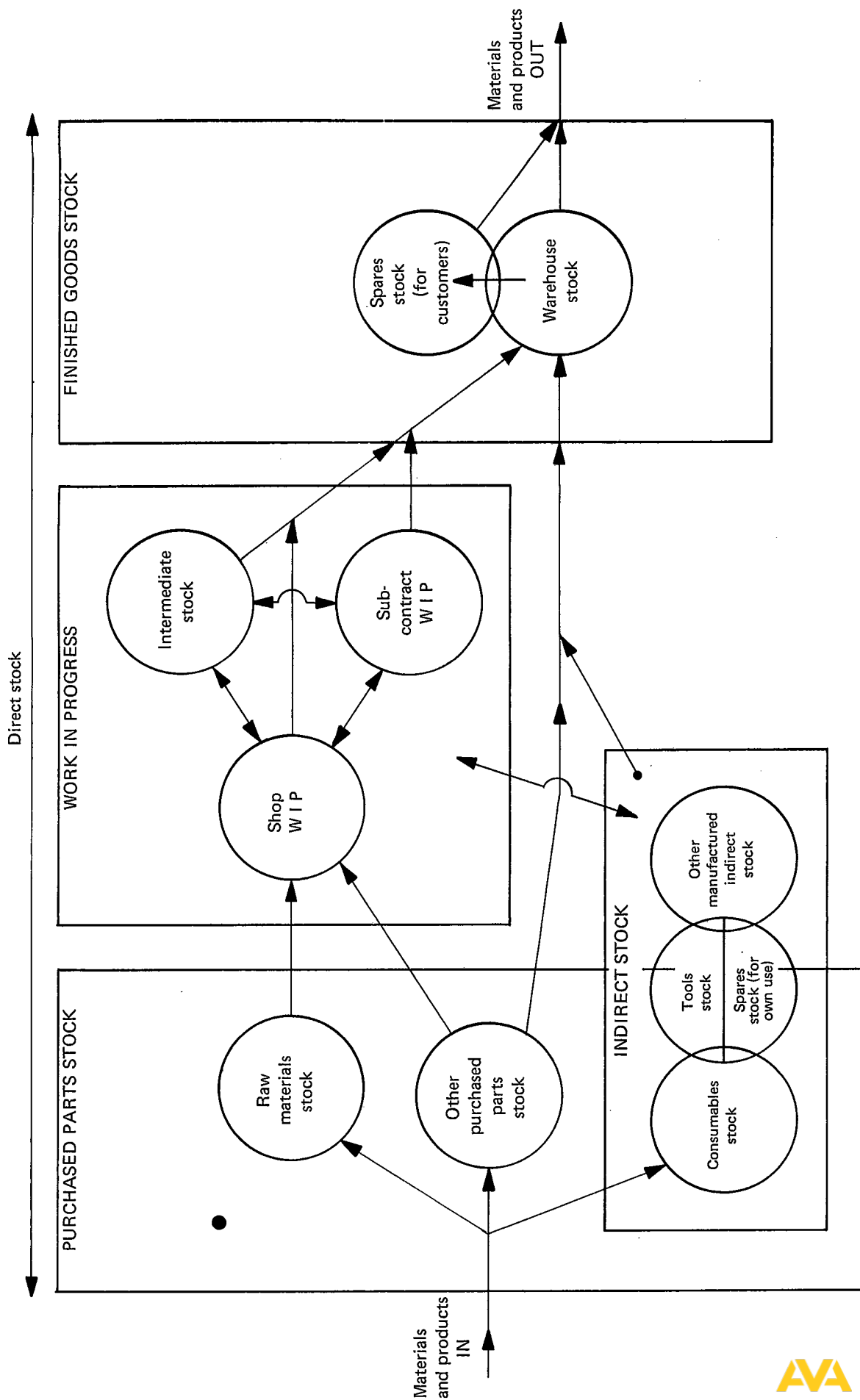


Figure 2. Stock diagram for production control in a manufacturing company

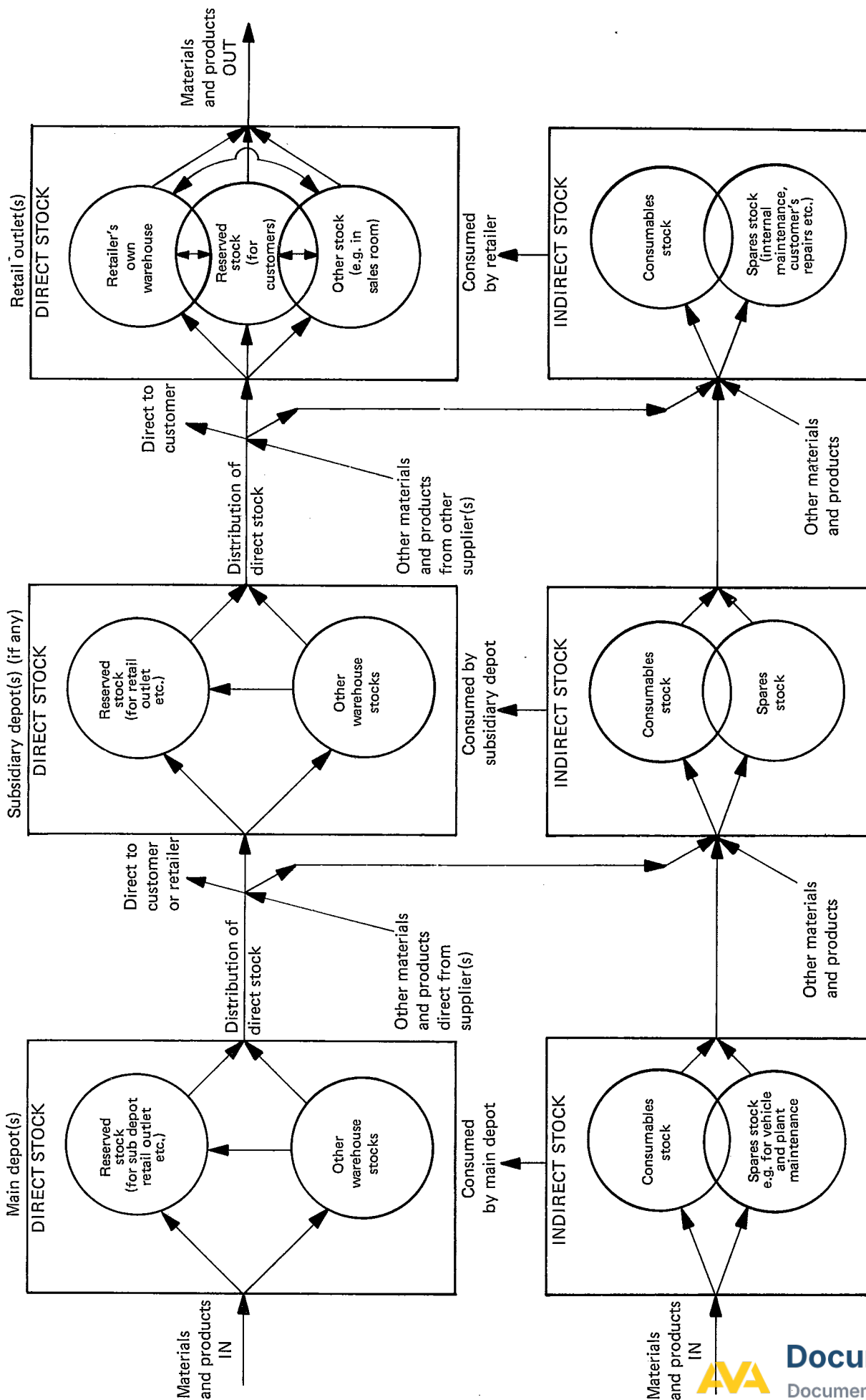


Figure 3. Stock diagram for wholesale/retail/distributive organization(s)

3.5 Why are stocks held? Among the main reasons for holding stock are:

- (a) providing time to do things (lead time, etc.);
- (b) decoupling demand from supply (e.g. buffer stocks) be it between manufacturer and customer, between two machine tools in an automated transfer flow line, between wholesaler and retailer, or retailer and customer;
- (c) improving customer service (safety stocks) closely related to decoupling;
- (d) policy or investment considerations (stocking etc. of the commodities against possible price rises or scarcity, against industrial action at a supplier, against failure of a vital component in a production process, etc.);
- (e) economics of production (batching) or buying (discounts);
- (f) inability perfectly to control processes (e.g. scrap, calibration after manufacture, blending and sorting).

This standard emphasizes the essential function of stock holding, in permitting a desired level of customer service whilst 'decoupling' the variable customer demand from the different supply rate that suits manufacturing or purchasing (e.g. constant rate from a flow line to single batch manufacture).

3.6 Types of stock. To justify the many reasons for holding stock there are many categories into which stock may be divided.

- (a) *Policy stocks.* These are stocks which are held for investment or speculative reasons. This occurs if buying or manufacture is more advantageous now than later because of expected price increases.
- (b) *Special safety stocks.* These are stocks held over and above normal safety stocks (see item (f)) for special reasons, so that the risk of running out of stock is minimized.

Two very different examples of policy safety stocks are:

- (1) stocks held by a car manufacturer against possible industrial action at a supplier. (These are often built up in the months preceding pay negotiations, etc.);
- (2) stocks of expensive spare parts held because of the cost of shutting down a processing plant, etc. while replacement parts are obtained from source if a failure occurred. (Analogous to the spare tyre carried in the boot of the car.)
- (c) *Transport stocks.* These are the stocks that have to be held because of the time taken to transport goods from one place to another. They are often a very significant part of the wholesale-retail distribution stockholding.
For example, at any one time an exporting car manufacturer may have 10 000 cars being transported by sea, road or rail, representing, say, £50 000 000 of capital tied up and involving large annual interest charges.
- (d) *Seasonal stocks.* These are stocks deliberately held to enable production or purchasing to be carried on at a more constant rate throughout the year when customer demand is strictly seasonal.

Typical examples are toys, which are made almost continuously throughout the year but have a Christmas peak of about 80 % of sales, and conversely frozen peas which are harvested in about one month of the year yet sold almost steadily throughout the year. Other examples are ice cream, garden implements, Christmas cards and decorations, fireworks, cough mixture and sun-tan lotion.

(e) *Working or cycle stocks.* Working stocks, or cycle stocks as they are sometimes called, are the essential part of the stock that one has because of the need to buy or manufacture in larger quantities than are needed for immediate use.

This is, of course, done to achieve:

- (1) lower unit price, through discounts;
- (2) lower transport costs;
- (3) reduced buying office and accounting work;
- (4) more economical batch sizes for manufacturing.

However, it carries the penalties of higher stock holding costs.

(f) *Safety stocks.* These are stocks held for two distinct reasons:

- (1) to deal with demand variability while replenishment is under way (i.e. during the lead time);
- (2) to cope with variation in lead times.

Demand variability covers such problems as:

- intermittent scrapping of components during manufacture;
- varying product mix of manufacture;
- Varying life of products/replacement parts (e.g. light bulbs, machine tools, cutters);
- intermittent breakdown/repair;
- weather (day to day rather than seasonal);
- customer 'whim' (especially in retailing).

Lead time variability includes such problems as:

- late supplier delivery;
- late ordering;
- transportation delays.

3.7 Stock group classification. Stocks are also classified into groups including the following.

- (a) *Raw materials.* This may be sub-divided into, for example, ferrous, non-ferrous and precious metals, and even further subdivided by shape, e.g.:
plate, bar, rod, sheet, tube, girder
(or perhaps metal, sand, wood, paper, fuel, etc.).
- (b) *Purchased parts.* This is usually subdivided into product groups.
- (c) *Work in progress (WIP).* This is usually subdivided into groups according to place or stage of manufacture, including:
foundry, forge, machine shop, fabrication shop, assembly shop, cable shop, awaiting inspection, at sub-contractors.
- (d) *Intermediate stock.* This is the part of work in progress held in a store or warehouse rather than on the shop floor.
- (e) *Indirect stock.* This is stocks of consumables and spares, e.g.: