

Glossary of

Production planning and control terms

UDC 001.4:658.5

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

BSI
Documents

AVA

Document Sharing Hub

Co-operating organizations

Technical Committee M/136 “Production Control Terminology”, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations.

- British Computer Society
- British Production and Inventory Control Society
- British Railways Board
- British Ship Research Association
- Department of Industry: National Engineering Laboratory
- Department of Industry: National Physical Laboratory
- Electricity Supply Industry in England and Wales
- Engineering Employers’ West of England Association
- Institute of Cost and Management Accountants
- Institute of Work Study Practitioners
- Institution of Production Engineers
- Management Consultants’ Association
- Ministry of Agriculture Fisheries and Food
- Ministry of Defence
- National Building Agency
- Post Office
- Royal Institute of British Architects
- Society of Motor Manufacturers and Traders Limited
- Trades Union Congress
- University of Birmingham

This British Standard, having been approved by Technical Committee M/136, “Production Control Terminology” was published under the authority of the Executive Board on 28 February 1975

© BSI 08-1999

The following BSI references relate to the work on this standard:
Committee reference M/136
Draft for comment 72/62037 DC

ISBN 0 580 08572 4

Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
0 Introduction	1
1 General terms	3
2 Production planning terms	5
3 Production control terms	13
4 Documentation terms	19
Appendix A Related quality control terms	21
Appendix B Related cost control terms	21
Index	30
Figure 1 — Diagrammatic representation of glossary structure	2
Figure 2 — Assembly levels	4
Figure 3 — Stock diagram for production control in a manufacturing company	8
Figure 4 — Stock diagram for wholesale—retail—distributive organization(s)	9
Figure 5 — General and operation durations	12
Figure 6 — Stock levels	16
Figure 7 — Stock control systems	17
Figure 8 — Management accounting methods, principles and techniques	23
Figure 9 — The elements of cost	26
Figure 10 — Accounting ratios relating to production	27
Publications referred to	Inside back cover

Foreword

Although this is the first glossary published by BSI on this subject it should be noted that during the Second World War BSI produced a comprehensive standard, BS 1100 “*Office aid to the factory*”, which consisted of the following parts:

- *Part 1:1943 Principles of production control;*
- *Part 2:1944 Production control in the smaller factory;*
- *Part 3:1945 Application of production control;*
- *Part 4:1944 Pay roll methods including PAYE;*
- *Part 5:1944 Stock control and store keeping;*
- *Part 8:1946 Office mechanization;*
- *Part 9:1944 Drawing office organization;*
- *Part 10:1943 Office organization and practice.*

BS 1100 was subsequently transferred to the British Institute of Management (BIM) in July 1948 but was not further developed. Consequently BSI was approached in May 1972 to establish a BS vocabulary for production control — based on a draft submitted by a working party of the Department of Trade and Industry. In October 1972 the draft document submitted by DTI was circulated for public comment, following which a new BSI committee (M/136) was constituted to develop the draft for publication.

As a result of the comprehensive comments submitted, the draft has been completely restructured and expanded; in particular, new sections on documentation and forecasting have been added. Cost and works accounting terms have also been included in an appendix based on Part 1 of the 1974 edition of the ICMA¹⁾ publication “*Terminology of Accountancy*”, for the use of which acknowledgement is made.

The prime intention of this glossary is to facilitate communication and the spread of knowledge in this subject and also to provide an interface with related disciplines. With regard to the latter, particular note has been taken of the following British Standards:

- BS 3138, *Glossary of terms used in work study.*
- BS 4335, *Glossary of terms used in project network techniques.*
- BS 4778, *Glossary of general terms used in quality assurance.*

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

Throughout the development of this glossary, the BSI committee recognized that not only would it be utilized for standardization purposes as a guide to teachers and authors in the choice of a correct term or definition, but would also be of educational use to students. Consequently a series of diagrams illustrating the inter-relationships of various terms or groups of terms has been included.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 32, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ Institute of Cost and Management Accountants, 63 Portland Place, London W1.

0 Introduction

Contemporary industrial management is faced with a business environment which is increasingly competitive, creating a need for more effective planning and control of production resources. When BS 1100-1 was published in 1943 competition was for national survival, but it was recognized that better use of production resources, control of stock and customer deliveries were of critical importance. The authors wrote: "it is becoming increasingly clear that if more thought were given to methods of factory organization and production control, many of the problems would be largely remedied".

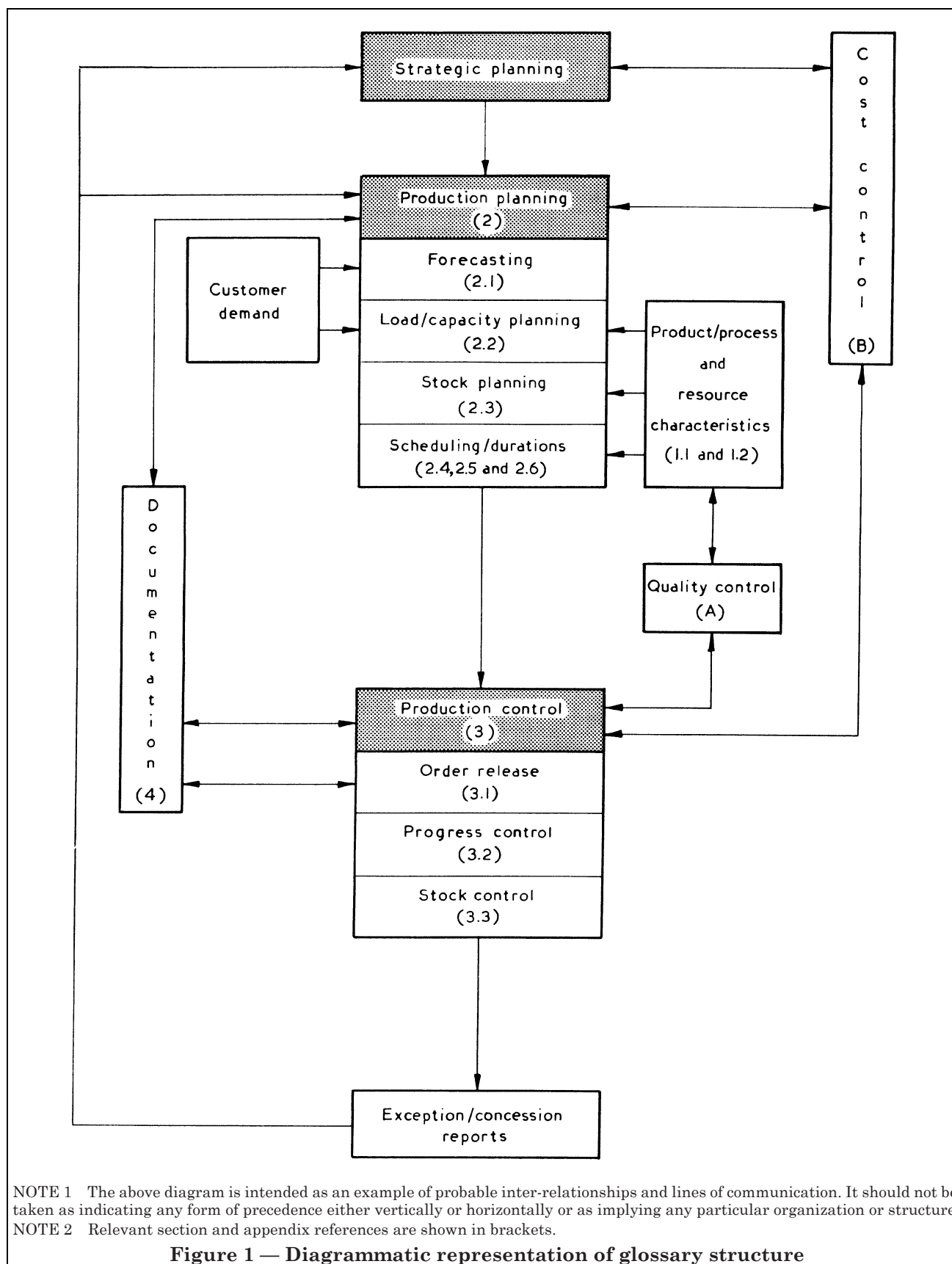
Times have changed little in this respect. Even with the advent of computers capable of processing vast amounts of data and the growth of various management sciences, the greater quantities, specialization, and quality levels demanded for the more complex products of today has posed greater problems, particularly with regard to the co-ordination and integration of production planning and control functions.

Production planning and control thus operates in a dynamic business environment where there are multiple and conflicting objectives at any instant of time. Another inevitable element is uncertainty in many forms — technical, demand, availability, time etc. Production may be continuous or intermittent, for stock or to customer order, and on a vast range of scale. These factors amongst others necessitate a variety of planning and control systems of varying sophistication using many different techniques.

It is not the purpose of this glossary to attempt to catalogue techniques but rather to define terms which describe the main concepts involved in this field. This glossary will, it is hoped, also have a positive educational role at all levels in industry and particularly for students. The majority of the terms are applicable to intermittent, rather than continuous, manufacture as typified by the production of discrete batches of products in the engineering industry. However, if the glossary proves to be useful there is no reason why terms used in continuous process and, possibly, service industries should not be included in future editions.

Prime functions of production planning and control upon which the structure of this glossary is based are shown in Figure 1. These involve organizational links with many departments within the typical company. Accordingly, for completeness, it was decided that related selections of quality control and cost control terms should be included, in appendices rather than in the main body of the glossary, to form an interface with related disciplines. Where possible definitions already established in these spheres were utilized to avoid duplication and proliferation.

In the larger types of organization it becomes increasingly difficult to discern lines of demarcation between departments. The current tendency to aim for an integrated management service and to differentiate more effectively between potential and achievement will no doubt have its effect on usage and require revisions of this glossary in the future.



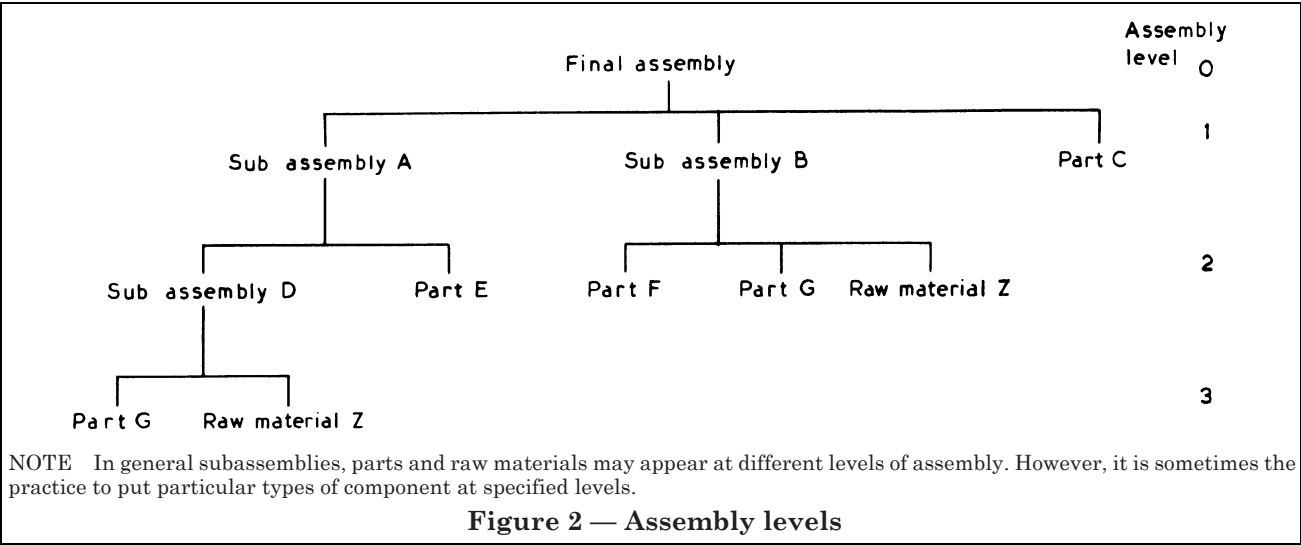
1 General terms

1.1 Basic

No.	Term	Definition
11001	production planning and control	Procedures and means by which manufacturing programmes and plans are determined, information issued for their execution and data collected and recorded to control manufacture in accordance with the plans (from BS 3138).
11002	production planning	The activities concerned with the analysis of requirements and establishment of the production methods, resources and programmes required.
11003	production control	The activities by which work orders, purchase orders and stores requisitions etc. are issued at the correct time to ensure that production operations proceed in accordance with the plans and programmes, and by which any variance between performance and the production plan is monitored and corrective action applied.

1.2 Product characteristics

12001	product	An end item or output from a work station, factory or other organizational group.
12002	product group	A number of products with one or more common characteristics which make it convenient to combine them for planning and control purposes, for example similar resource or similar marketing requirements.
12003	product mix	The proportions of different products being manufactured in a single work station, factory or other organizational group.
12004	raw material	Materials used as input to a production process resulting in finished products. NOTE The raw material for one organizational group may be the finished product of another.
12005	part component	A uniquely identifiable product that is considered indivisible for a particular planning or control purpose. NOTE A part for one organizational group may be the final assembly of another group, e.g. an electric motor.
12006	assembly	A combination of parts and possibly raw materials put together to make up a composite article.
12007	subassembly	Any assembly which is not a final assembly.
12008	final assembly	An assembly to which no further parts need to be added.
12009	assembly level	The relative position of a part or subassembly within a hierarchy of assemblies NOTE 1 It is recommended that a final assembly be designated assembly level 0; the subassemblies and/or parts constituting a final assembly should be designated assembly level 1, 2, and so on. NOTE 2 A particular part or subassembly may appear at more than one level in the hierarchy (see Figure 2).
12010	parts list bill of materials	A list of all parts, subassemblies and raw materials that constitute a particular assembly, showing the quantity of each required. NOTE The list may or may not be structured to show the assembly levels pertaining to each item on the list.



No.	Term	Definition
12011	where-used list used-on list	A list of all assemblies that use a particular part or assembly.
12012	design change	A change in the specification of a product which generally results in the issue of an amended drawing but does not normally result in a new product (e.g. the introduction of a different thread form in a particular product, or an alteration in tolerances on a machined part).
12013	modification	An alteration made to a physically existing product usually resulting in an improvement in performance and generally carried out as the result of a design change (e.g. replacing a plain bearing by a sealed roller bearing).
		NOTE The changes described in 12012, 12013, and 13004 may variously be: a) <i>Limited</i> , applying only to a specified quantity of product (e.g. the use of special glue on a batch of furniture for tropical use would be a “limited design change”). b) <i>Immediate</i> , applying to work that has not yet reached the first operation to which the change refers. (This cannot apply to modifications.) c) <i>Retrospective</i> , applying to all products sometimes including those already in service. (This cannot apply to design or method changes.)

1.3 Process and resource characteristics

13001	process planning	The activity which determines the operations required, and their sequence, to produce a part or assembly.
13002	operation	The smallest unit of work taken into account for a particular planning or control purpose. NOTE An operation may include more than one physical process, e.g. assembly of a set of parts into a finished product.
13003	route	The planned sequence of work centres or work stations for the manufacture of a product.
13004	method change	A change in the method of manufacture of a product; it may or may not be the result of a design change, and it does not generally alter the function of a product (e.g. the use of an alternative machining process, a change of tooling, or an alteration in the sequence of assembly).

No.	Term	Definition
13005	work station	The smallest set of resources for the purpose of planning and control that form a productive unit at a particular location.
13006	work centre	A set of work stations grouped for convenience of planning or work flow.
13007	machine group	A work centre the machines of which all have some similar functional property. NOTE This type of work centre is commonly associated with <i>functional plant layout</i> .
13008	cell	A work centre the work stations of which jointly have the capability to manufacture similar products. NOTE This type of work centre is commonly associated with <i>group technology</i> .
13009	resource	That which is necessary for the execution of an operation (see also 22007). NOTE This definition applies to the production control environment and is less general than that given in BS 4335 which relates to resources used in project network analysis and makes reference to the ways in which those resources can be manipulated.
13010	capacity	The capability of a production facility under specified operating conditions.
13011	physical capacity	A statement of the capability of a production facility in terms of its physical constraints, e.g. maximum dimensions of parts which can be processed.
13012	loading capacity	The quantity of work that can be accepted at a production facility under specified operating conditions and contingencies (e.g. number of hours of machining that can be performed in a working day).

2 Production planning terms

2.1 Forecasting

21001	forecast	An extrapolation of the past into the future; it may include an anticipation of future influences and events. NOTE Techniques currently used include the following: a) simple averages, which may be total or moving; b) weighted averages, including smoothing; c) statistical regression; d) adaptive techniques.
21002	forecast demand	A forecast of future orders for a product.
21003	forecasting horizon	The longest future time interval covered by the forecast; this may be divided into forecast periods.
21004	forecasting error	The difference between actual demand and forecast demand.
21005	tracking signal	An indicator of the effectiveness of a forecast in following demand data which reports when the forecasting error exceeds specified control limits

No.	Term	Definition
21006	demand pattern	A time-based representation of past demands, which may be from a number of sources, and may be analysed into the following elements: a) <i>Trend</i>, the general direction in which demand is changing over a period of time. b) <i>Cyclic</i>, the oscillations about a trend of demand. The period of these cycles may be related to the calendar seasons. c) <i>Random variation</i>, the unpredictable element in the demand pattern.
21007	weighting factor	A factor used to change the emphasis placed on existing demand data of varying age; it may be constant or related to time.
21008	smoothing	Reducing, by a mathematical process, the effect of short-term variation in existing data.
21009	smoothing constant	A factor, which multiplied by the forecasting error, is used to modify, the previous forecast to produce a new forecast. It is usually denoted by α .
21010	seasonal index	A set of numbers, giving relative values of demand during the periods of a year, which is used to modify forecasts obtained from any forecasting technique which ignores seasonal effects.

2.2 Load/capacity planning

22001	planning horizon	The longest time ahead for which plans are normally made. NOTE This period will vary depending upon the subject being planned as well as upon the organization doing the planning. For example, the planning horizon may be ten years for facilities, one year for materials.
22002	planned period	That duration of time for which a plan is formulated; usually either a fixed calendar period or a fixed time ahead from the current date.
22003	production programme	A list or chart showing products and the quantities which are to be produced in given periods of time.
22004	material requirements planning	The planning of requirements for parts based upon requirements for planning higher level assemblies. NOTE Material requirements planning is usually done level by level and for specified time periods.
22005	gross requirements	The total requirement for a particular part, not taking into account any stock of that part which is currently on hand.
22006	net requirement	The actual manufacturing or purchasing requirements for a particular part. NOTE The net requirements are calculated by deducting the available stock from the gross requirements.
22007	resource allocation	The general technique of scheduling activities and the resources required by those activities so that predetermined constraints of resource availability and/or time are not exceeded (see also 13009).
22008	load	The quantity of work assigned to a production facility, e.g. work station, work centre etc. NOTE Load can be divided into <i>live load</i> which is work-ready and waiting for the production facility, and <i>dead load</i> which is future work not yet ready for the production facility.

No.	Term	Definition
22009	loading	The systematic assignment of work to a production facility according to some rule. NOTE 1 Many techniques are used in practice but the main objectives are usually a compromise between such factors as: minimum operator-idle time; minimum machine-idle time; minimum throughput time; minimum change-over time. NOTE 2 It is common practice to carry out <i>on loading</i> of work at the production planning stage and <i>off loading</i> of work completed at the progress control stage.
22010	infinite capacity loading	Allocating operations, or groups of operations, to work centres or work stations assuming unlimited resources available, but otherwise respecting technological constraints, and required completion dates.
22011	finite capacity loading	Allocating operations, or groups of operations, to work centres or work stations having regard to the number of resources available, the capacity of each, other technological constraints, and required completion dates.

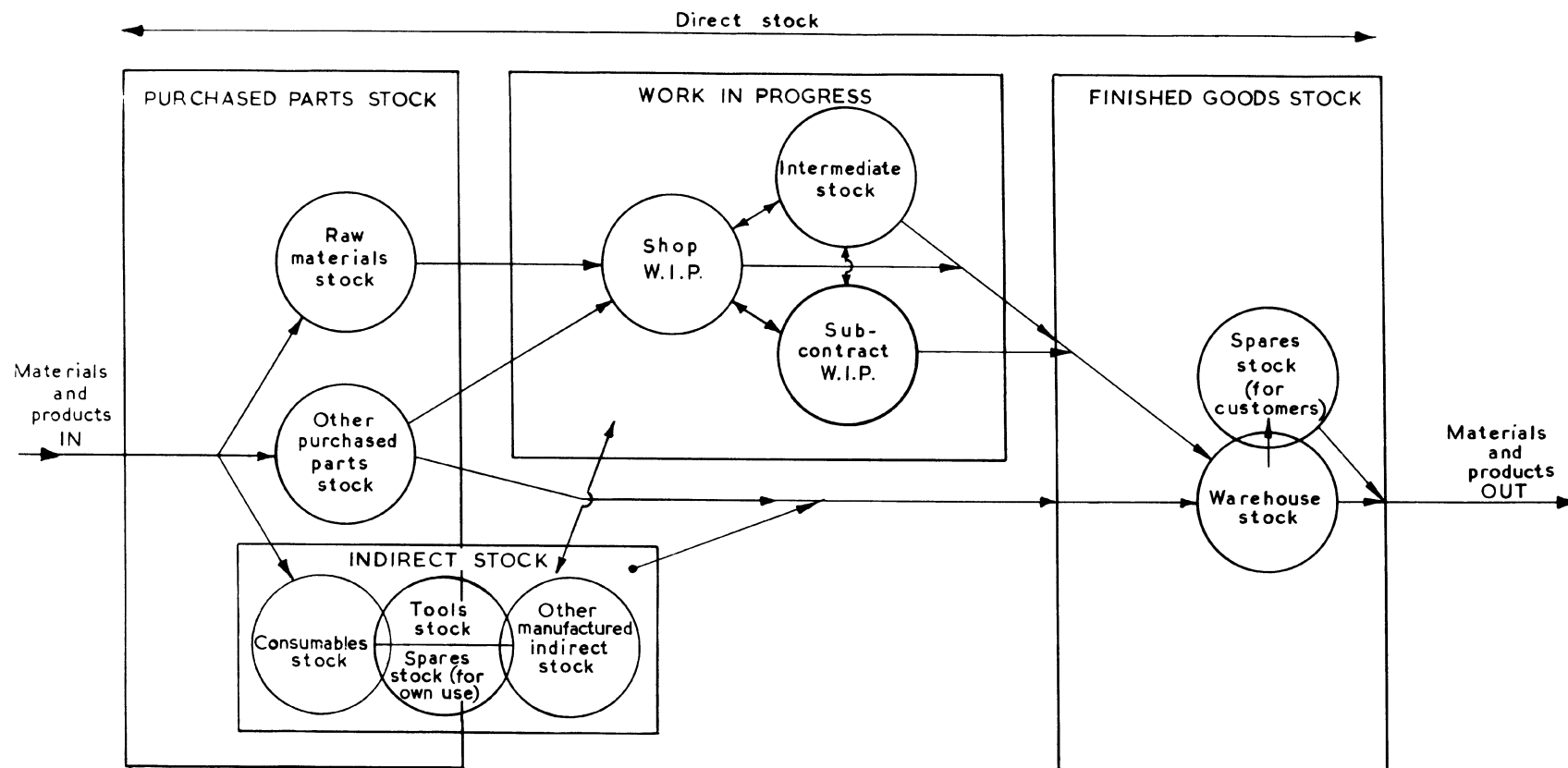


Figure 3 — Stock diagram for production control in a manufacturing company