

CONFIRMED
DECEMBER 2007

Specification for

Graphical symbols for coal preparation plant flowsheets

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Solid Mineral Fuels Standards Policy Committee (SFC/-) to Technical Committee SFC/5, upon which the following bodies were represented:

British Coal Corporation
Coal Preparation Plant Association
Minerals Engineering Society

This British Standard, having been prepared under the direction of the Solid Mineral Fuels Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 1 May 1992

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First published August 1962
Second edition November 1986
Third edition May 1992

The following BSI references relate to the work on this standard:
Committee reference SFC/5
Draft for comment 91/54121 DC

ISBN 0 580 20752 8

Amendments issued since publication

Amd. No.	Date	Comments

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Foreword

This British Standard has been prepared under the direction of the Solid Mineral Fuels Standards Policy Committee. It is a revision of, and supersedes, BS 3553:1986, which is withdrawn.

The technical changes in this edition are as follows.

- a) The symbols for items 37 and 38 have been modified slightly to align them with the corresponding symbols in ISO 561:1989.
- b) For items 52 and 53, the pressure variant of the filters is included.
- c) For item 68, the vacuum variant is included.
- d) A spiral separator (item 69) is represented by a different symbol and both a two-product variant and a three-product variant are included.
- e) A probability screen (item 70) has been introduced.

The items numbered 69, 70, 71 and 72 in BS 3553:1986 have been renumbered as 71, 72, 69 and 73 respectively.

This British Standard is related to ISO 561:1989, published by the International Organization for Standardization (ISO). The items numbered from 1 to 70 in this standard correspond to those numbered from 1 to 70 in ISO 561:1989, with the following differences.

- 1) Some symbols are slightly different, but are still easily recognizable.
- 2) The vacuum variant of the belt filter (item 68) is not included in ISO 561:1989.
- 3) The spiral separator (item 69) is referred to as a “spiral” in ISO 561:1989.

Items 71, 72 and 73 in this British Standard are not included in ISO 561:1989.

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 16, 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.

0 Introduction

The symbols included in this standard have been selected in accordance with the following principles.

- The items of plant listed should be widely used for coal preparation purposes, and should be required by the user of the flowsheet to be identified thereon.
- The symbols should be both easy to draw and readily distinguishable one from another.
- Each symbol should preferably give some indication of the principle of the operation involved, but should not represent the appearance of any particular type of machine.

1 Scope

This British Standard specifies basic symbols for use in flowsheets and other diagrams relating to coal preparation plant.

NOTE1 BS 3567 gives guidance on preparing basic process and equipment flowsheets.

NOTE2 Attention is drawn to the graphical symbols specified in BS 1553; they should be used on flowsheets representing the general engineering aspects of coal preparation plant.

NOTE3 Symbols relating to process controls can be obtained from BS 1646-1.

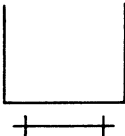
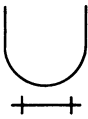

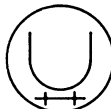
NOTE4 The titles of the publications referred to in this standard are listed on the inside back cover.

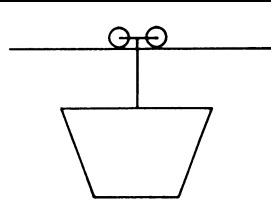
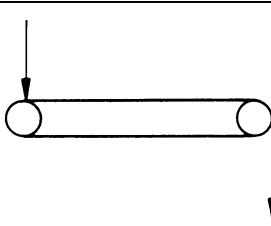
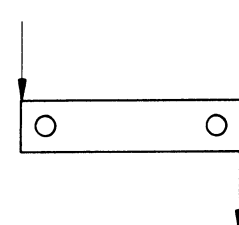
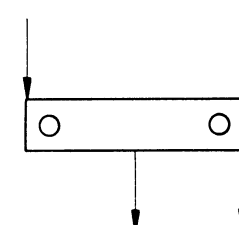
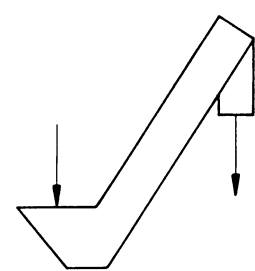
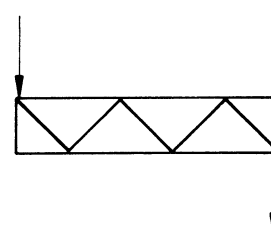
2 Conventions for the drawing of symbols

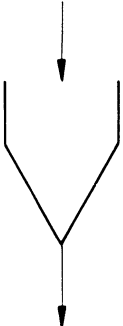
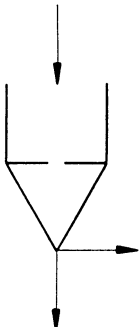
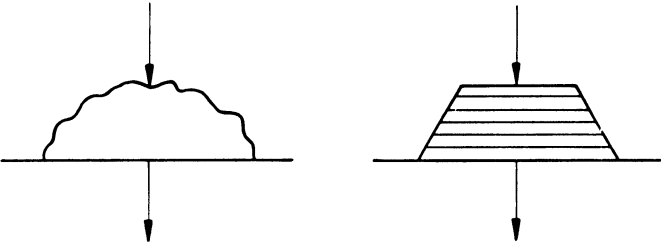
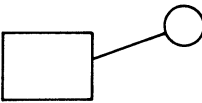
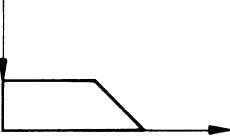
The following conventions shall be adopted for drawing the symbols in this standard.

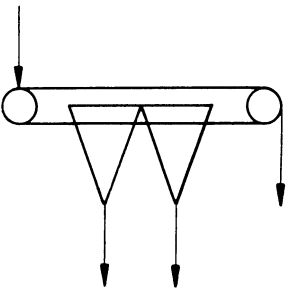
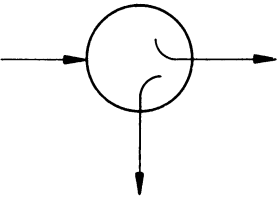
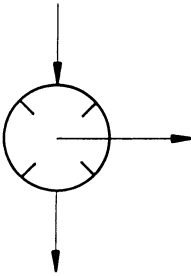
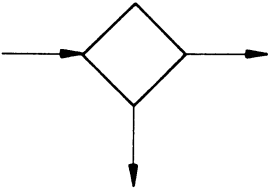
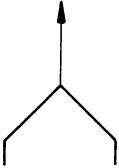
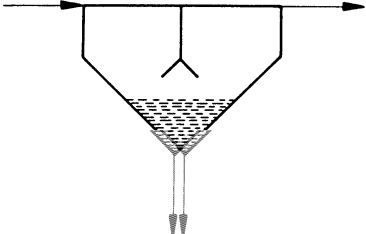
- The lines for plant symbols shall be thicker than those for product flow, but all lines shall be of the same density.
- The flowlines shall enter the symbol from above or from the left and shall leave the symbol downwards or to the right.
- Where there is more than one entry or exit to or from an item of plant, the number of entry and exit arrows shall be varied accordingly.

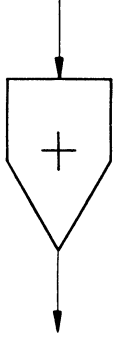
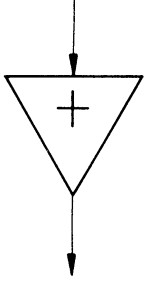
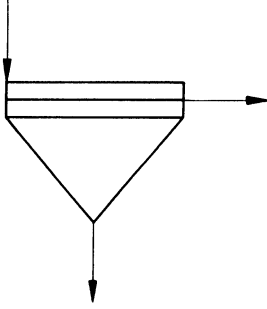
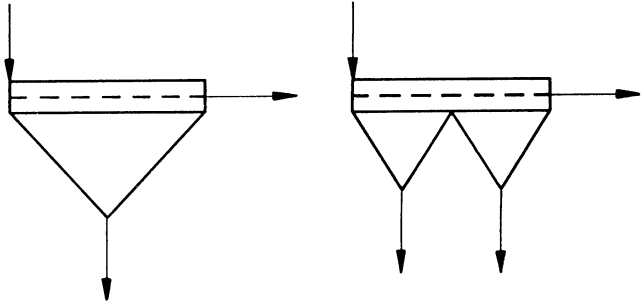
3 Symbols

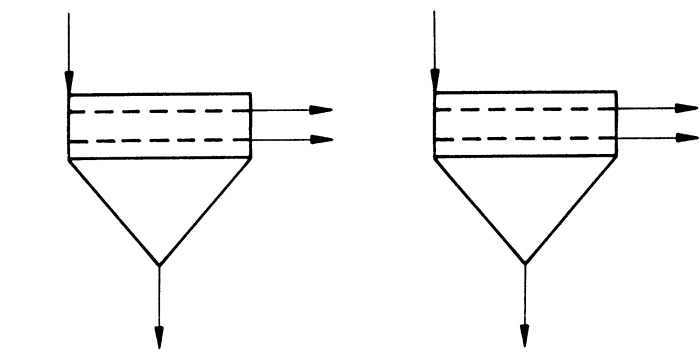
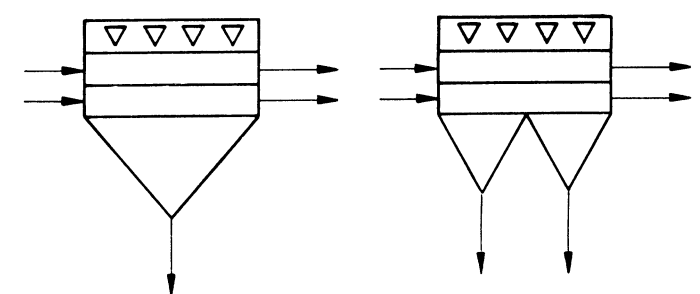
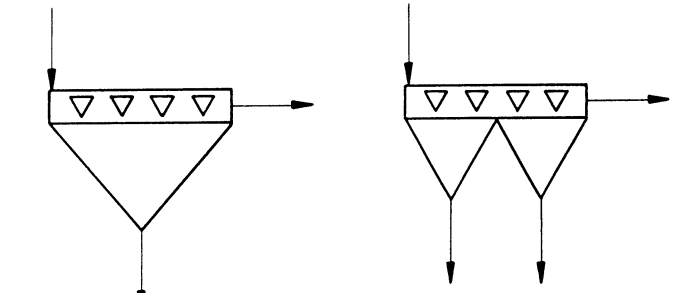
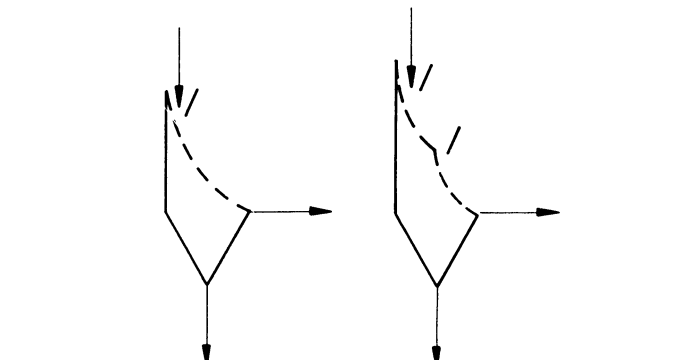
No.	Item	Symbol
1	Wagon	
2	Tub	
3	Wagon tippler	
4	Tub tippler	

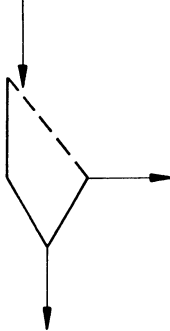
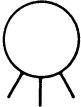
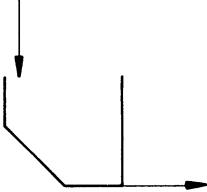
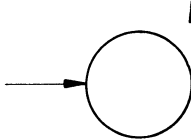
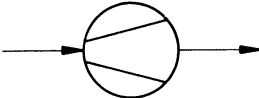
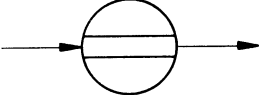
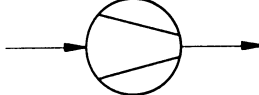
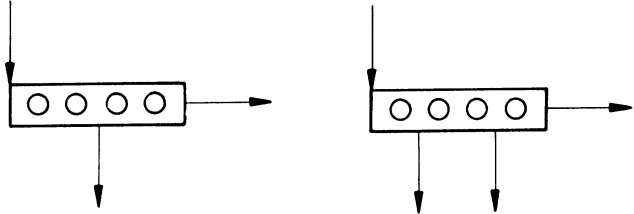
No.	Item	Symbol
5	Aerial ropeway	
6	Conveyor	
7	Scraper conveyor (a) One discharge (b) Two discharges	  <p>(a) (b)</p>
8	Elevator	
9	Screw conveyor	

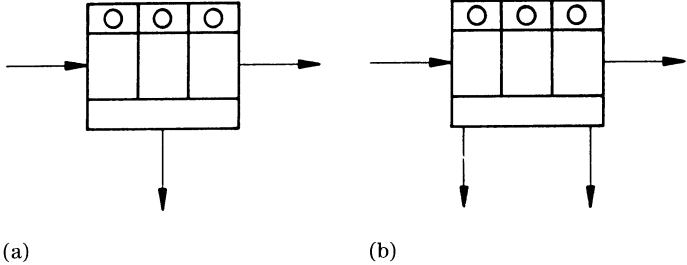
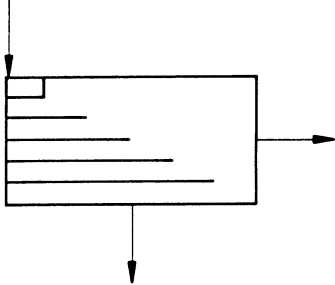
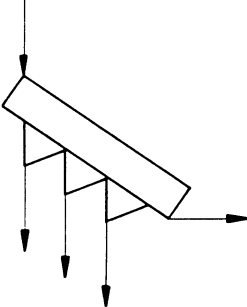
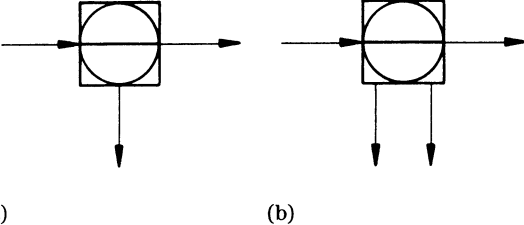
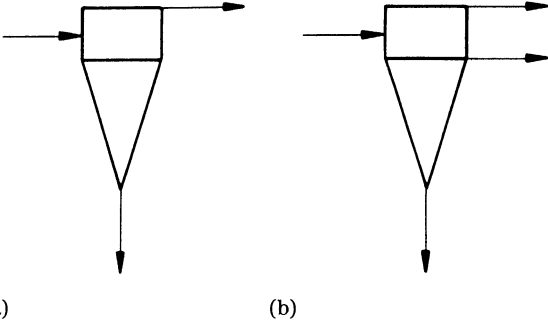
No.	Item	Symbol
10	Bunker	
11	Bunker (drainage)	
12	(a) Stockpile (b) Layered stockpile	 <p data-bbox="735 1395 762 1417">(a)</p> <p data-bbox="1121 1395 1149 1417">(b)</p>
13	Bucket wheel reclaimer	
14	Feeder	

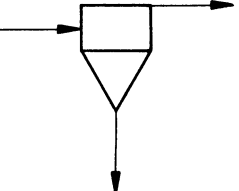
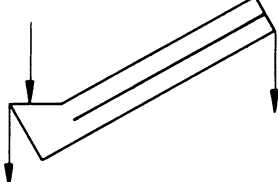
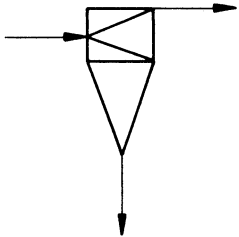
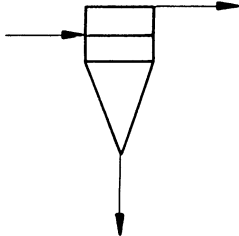
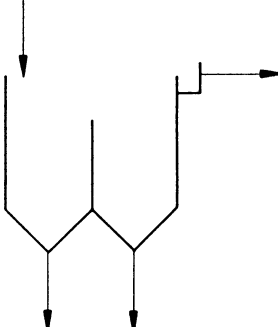
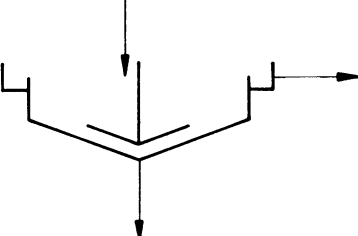
No.	Item	Symbol
15	Picking belt	
16	Picking table (circular)	
17	Rotary breaker	
18	De-duster	
19	Dust aspiration point	
20	Dust collector	

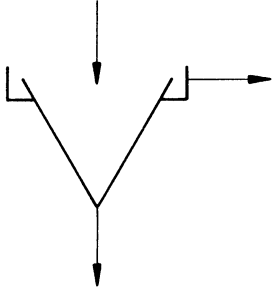
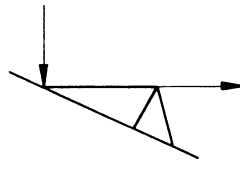

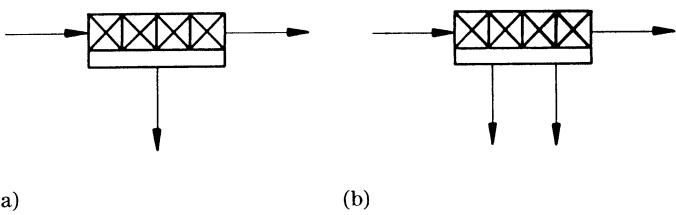
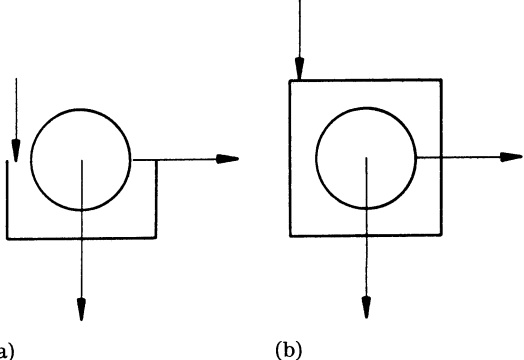
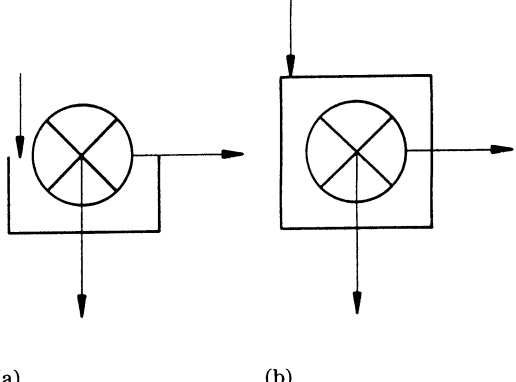
No.	Item	Symbol
21	Crusher	
22	Pulverizer	
23	Grizzly screen Bar screen	
24	Screen (a) One under-product (b) Two under-products	 <p data-bbox="746 1771 778 1800">(a)</p> <p data-bbox="1098 1771 1129 1800">(b)</p>

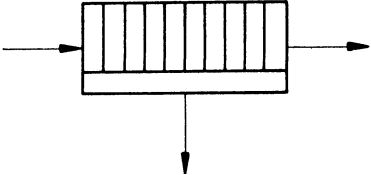
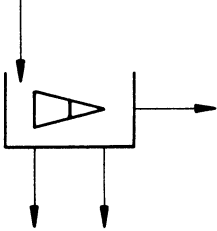
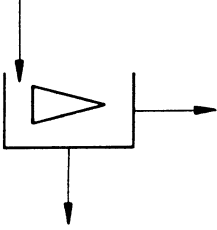
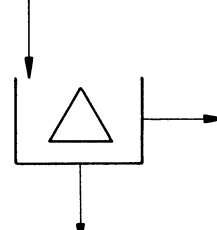
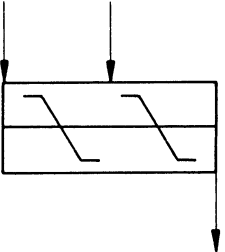
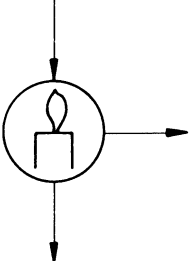
No.	Item	Symbol
25	Double deck screen (a) One under-product (b) Two under-products	 <p>(a) (b)</p>
26	Partitioned deck screen (a) One under-product (b) Two under-products	 <p>(a) (b)</p>
27	De-watering screen (a) One under-product (b) Two under-products	 <p>(a) (b)</p>
28	Sieve bend Curved screen (a) Single (b) Double	 <p>(a) (b)</p>

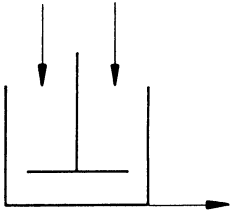
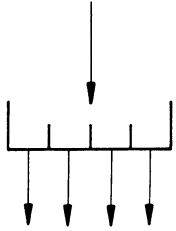
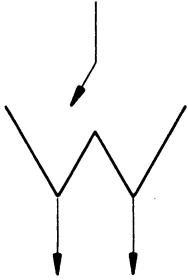
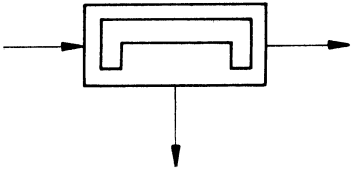
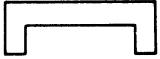
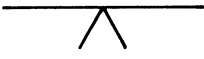
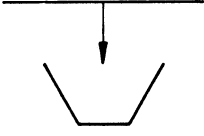
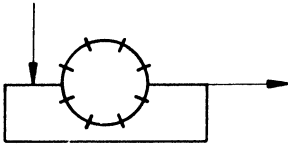
No.	Item	Symbol
29	Fixed screen	
30	Water spray	
31	Pump sump	
32	Pump	
33	Vacuum pump	
34	Fan	
35	Compressor	
36	Dry cleaner (a) Two products (b) Three products	 <p style="text-align: center;">(a) (b)</p>

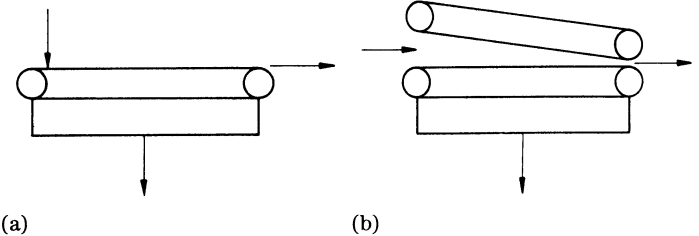
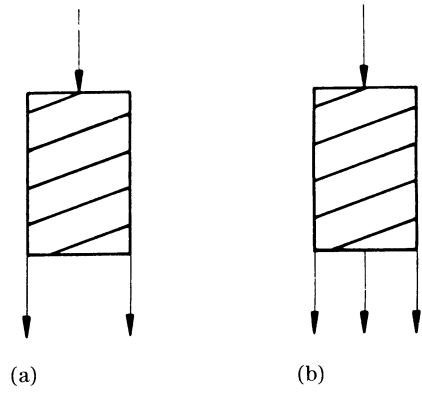
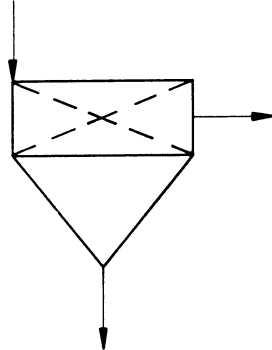
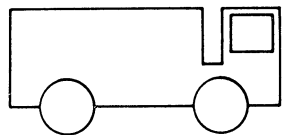
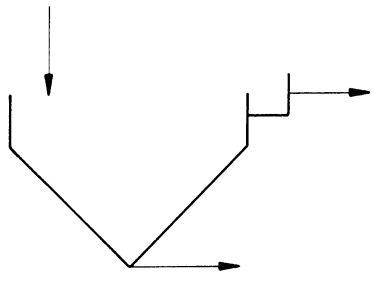
No.	Item	Symbol
37	Jig (a) Two products (b) Three products	
38	Concentrating table	
39	Trough washer	
40	Dense medium separator (a) Two products (b) Three products	
41	Cyclone separator (dense medium) (a) Two products (b) Three products	

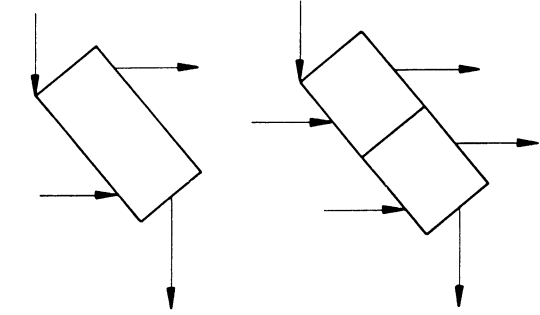
No.	Item	Symbol
42	Cyclone separator (water)	
43	Classifier	
44	Cyclone classifier	
45	Cyclone thickener	
46	Spitzkasten	
47	Thickener	

No.	Item	Symbol
48	Settling cone Conical settling tank	
49	Settling pond	
50	Conditioner	
51	Froth flotation cells (a) Two products (b) Three products	
52	Drum filter (a) Vacuum (b) Pressure	
53	Disc filter (a) Vacuum (b) Pressure	

No.	Item	Symbol
54	Pressure filter	
55	Screen-bowl centrifuge	
56	Solid-bowl centrifuge	
57	Basket centrifuge	
58	Mixer	
59	Dryer (thermal)	

No.	Item	Symbol
60	Mixing tank	
61	Distributor	
62	Splitter box	
63	Magnetic separator (medium)	
64	Magnetic separator (tramp iron)	
65	Weigher	
66	Mechanical sampler	
67	Reagent feeder	

No.	Item	Symbol
68	Belt filter (a) Vacuum (b) Pressure	
69	Spiral separator (a) Two products (b) Three products	
70	Probability screen	
71	Lorry	
72	Dense medium sump	

No.	Item	Symbol
73	Centrifugal dense medium separator (a) Two products (b) Three products	 <p style="text-align: center;">(a) (b)</p>

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Publication(s) referred to

BS 1553, *Specification for graphical symbols for general engineering.*

BS 1553-1, *Piping systems and plant.*

BS 1553-2, *Graphical symbols for power generating plant.*

BS 1553-3, *Graphical symbols for compressing plant.*

BS 1646, *Symbolic representation for process measurement control functions and instrumentation.*

BS 1646-1, *Basic requirements.*

BS 3567, *Code of practice for preparation of flowsheets for the design of coal preparation plant.*

ISO 561, *Coal preparation plant — Graphical symbols*¹⁾.

¹⁾ Referred to in the foreword only.

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