INTERNATIONAL STANDARD

ISO 5784-3

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Fluid power systems and components — Fluid logic circuits —

Part 3 :
Symbols for logic sequencers and related functions

Transmissions hydrauliques et pneumatiques — Logique par les fluides —
Partie 3 : Symboles pour opérateurs séquentiels et fonctions connexes

Reference number
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Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5784-3 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

ISO 5784 consists of the following parts, under the general title *Fluid power systems and components — Fluid logic circuits:*

— *Part 1: Symbols for binary logic and related functions*

— *Part 2: Symbols for supply and exhausts as related to logic symbols*

— *Part 3: Symbols for logic sequencers and related functions*

Annexes A, B and C of this part of ISO 5784 are for information only.

Introduction

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within a circuit.

Graphic symbols are used in diagrams of hydraulic and pneumatic equipment and accessories for fluid power transmission.

Fluid power systems and components — Fluid logic circuits —

Part 3 :
Symbols for logic sequencers and related functions

1 Scope

This part of ISO 5784 defines graphical symbols for sequencers (step-by-step functions) and related functions and gives some rules concerning their use in circuit diagrams.

Symbols given in this part of ISO 5784 shall be used for all documents and circuit diagrams concerning sequencers and related functions for data processing, especially in fluid logic circuits.

This part of ISO 5784 may be used in conjunction with ISO 5784-1 and ISO 5784-2.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5784. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5784 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1219 : 1975, *Fluid power systems and components — Graphic symbols*.

ISO 5598 : 1985, *Fluid power systems and components — Vocabulary*.

ISO 5784-1 : 1988, *Fluid power systems and components — Fluid logic circuits — Part 1: Symbols for binary logic and related functions*.

ISO 5784-2 : — [1], *Fluid power systems and components — Fluid logic circuits — Part 2: Symbols for supply and exhausts as related to logic symbols*.

ISO 6358 : 1989, *Pneumatic fluid power — Components using compressible fluids — Determination of flow-rate characteristics*.

3 Definitions

For the purposes of this part of ISO 5784, the definitions given in ISO 5598 apply.

4 General

The two values of a binary variable characterizing logic states are represented by two arbitrarily chosen symbols. It has become usual practice to use the symbols 0 and 1 for this purpose.

As sequence functions are used more and more, it has become necessary to use standardized symbols.

It is also necessary at the same time to state some pneumatic and electric vocabulary in the area of sequencers (see ISO 6358).

This part of ISO 5784 specifies two types of symbols for sequence function modules:

1) Type "input → output", or "in/out", where the input signal "IN" implies an output "OUT" of module n (see annex A).

2) Type "step → return" or "step/return", where the step Sn (output n) implies output Sn + 1 of the following module, n + 1 (see annex B).

5 Composition of the symbols and rules for their use

5.1 General rules

The rules specified in 5.2 and 5.3 are applicable to all the symbols presented in this part of ISO 5784.

This part of ISO 5784 gives the most currently used sequencer functions and also shows how to apply the rules of symbol

1) To be published.

development, taking into account that these rules also allow the development of other symbols.

NOTE — The examples in this International Standard make use of the letters or numbers $X, Y, Z, S \ldots n - 1, n, n + 1, a, b, c \ldots$ (outside the symbol) to explain functions. This practice is used for convenience only and should not be taken as part of the requirements specified in this part of ISO 5784.

5.2 Composiiton of symbols

Rules concerning the composition of symbols are given in ISO 5784-1 and ISO 5784-2.

5.3 Signal flow and sequence evolution

The complete symbol for a sequencer is a rectangle.

In principle, the direction of

— evolution of sequences from 1 to n,

— flow of main signals: input, output or step, return signals,

— flow of input/output signals of end modules,

shall comply with the rules given in 5.3.1 and 5.3.2.

5.3.1 General shape of sequencer in vertical form (see figure 1)

The step evolution shall be from top to bottom.

The main signals (step signals) shall be from left to right.

The end module signals shall be in any direction of either side of the symbol. (See detailed symbols in clauses 6 and 7.)

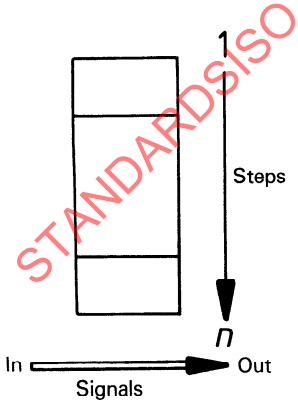


Figure 1

5.3.2 General shape of sequencer in horizontal form (see figure 2)

The step evolution shall be from left to right.

The main signals (input/output step signals) shall be from bottom to top.

The end module signals shall be in any direction on either side of the symbol. (See detailed symbols in clauses 6 and 7.)

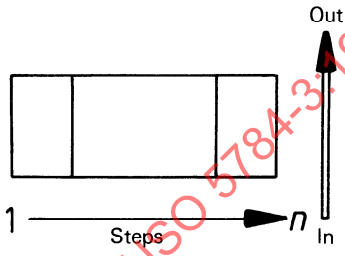


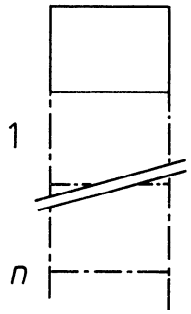
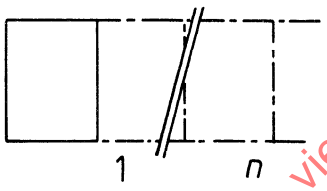
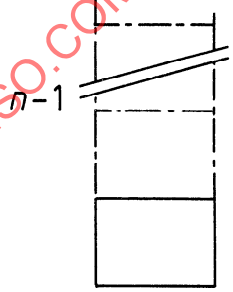
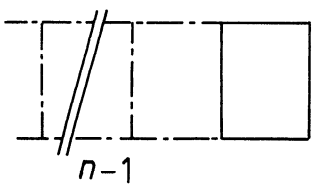
Figure 2

5.3.3 Other cases

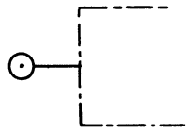
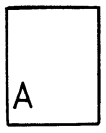
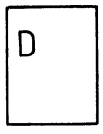
If the rules given in 5.3.1 and 5.3.2 are not applicable, see 5.6 in ISO 5784-1 : 1988.

6 Symbols for end module functions

6.1 General symbols

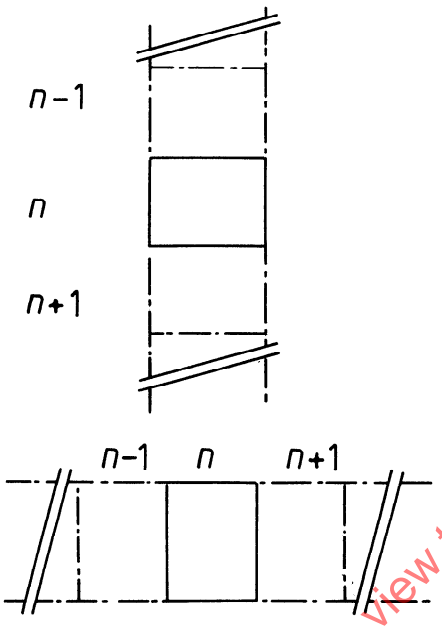
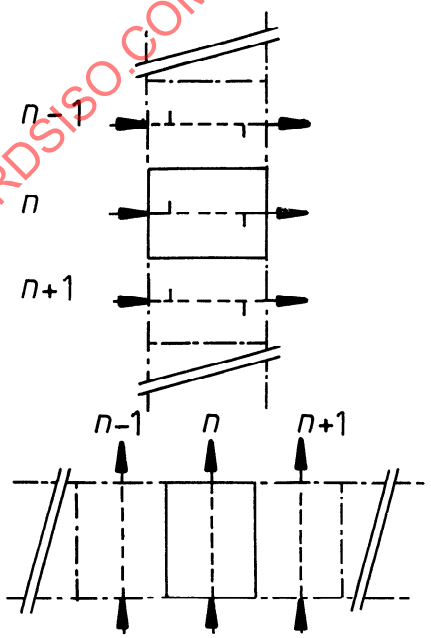
Code number	Graphical symbol	Description
6100-05/3		General symbol for input module
6100-06/3		
6100-10/3		General symbol for output module
6100-11/3		

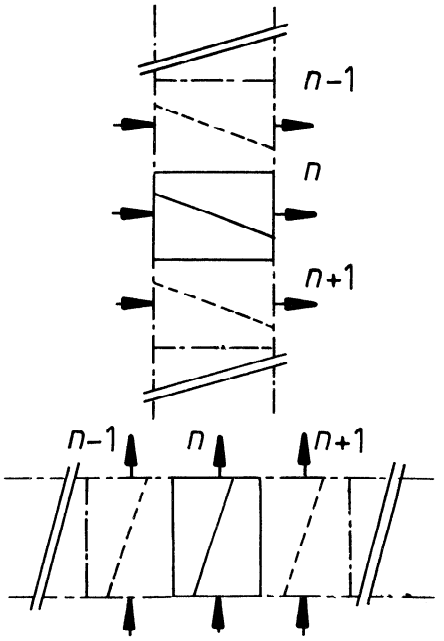
6.2 Input and output modules — Basic symbols for ports functions

Code number	Graphical symbol	Description
6200-05/5		Supply (see ISO 1219)
6200-10/3		Input port symbol on end module
6200-15/3		Output port symbol on end module
6200-20/3		Symbol for reset port
6200-25/3		Symbol for activation port
6200-30/3		Symbol for deactivation port

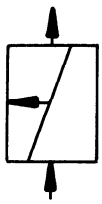
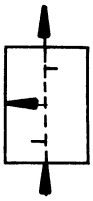
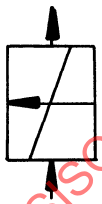
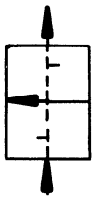
7 Symbols for step module functions

7.1 General symbols

Code number	Graphical symbol	Description
7100-05/3 7100-06/3		General symbol for step module function
7100-10/3 7100-11/3		General symbol for type "in/out" (1/0) step module function (input-output) See examples in annex A.

Code number	Graphical symbol	Description
7100-15/3 7100-16/3		General symbol for type "SR" (step/return) step module function (output-return) See examples in annex B.

7.2 Particular symbols for step modules

Code number	Graphical symbol		Description
	Type "SR" module	Type "in/out" module	
7200-05/3			Step module function which de-activates only the preceding module
7200-06/3			
7200-10/3			Step module function which de-activates all preceding modules
7200-11/3			

7.3 Basic complementary symbols for step modules

For the basic complementary symbols, see 8.1.3 in ISO 5784-1 : 1988.

Annex A
(informative)

General symbol for type "in/out" (input-output) step module function

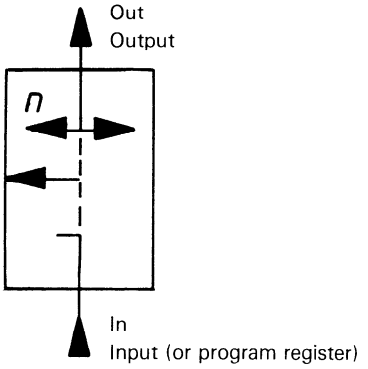
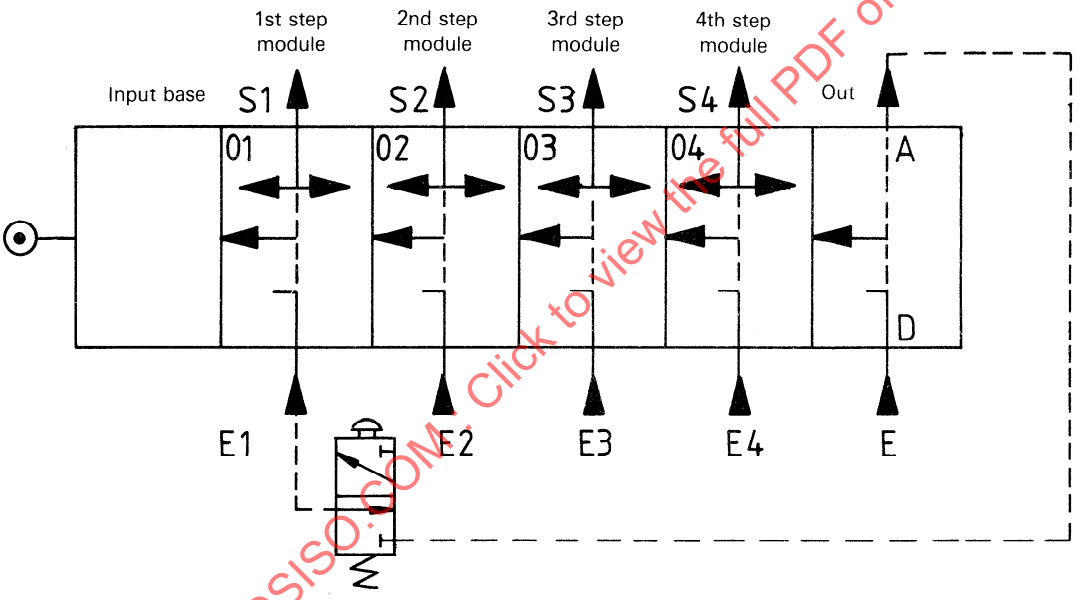


Figure A.1 — Register program — Type "in/out"



Alternative

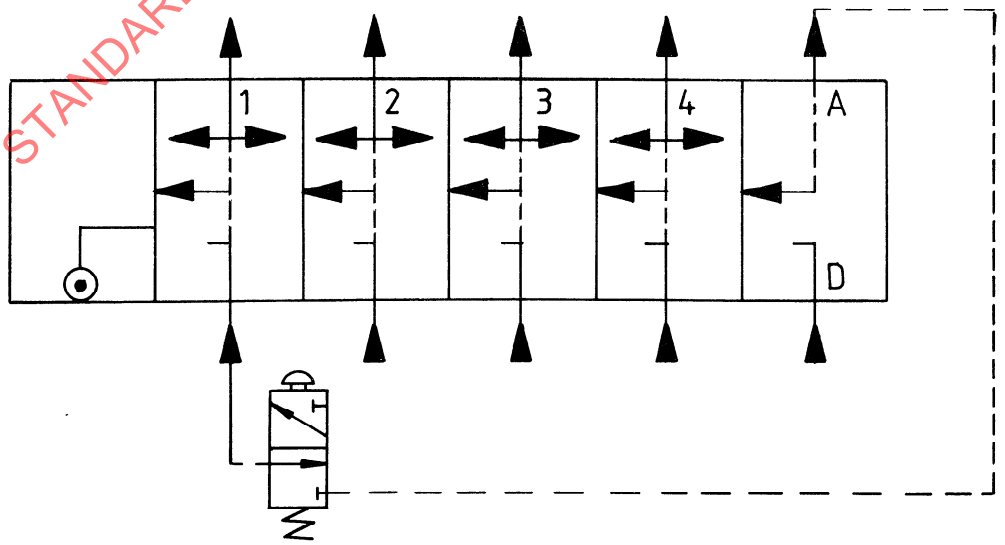


Figure A.2 — Examples — Type "in/out"