

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 369

SYMBOLS FOR INDICATIONS
APPEARING ON MACHINE TOOLS

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BRIEF HISTORY

The ISO Recommendation R 369, *Symbols for Indications Appearing on Machine Tools*, was drawn up by Technical Committee ISO/TC 39, *Machine Tools*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1953 and led, in 1960, to the adoption of a Draft ISO Recommendation.

In October 1961, this Draft ISO Recommendation (No. 481) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Australia	Greece	Poland
Austria	Hungary	Portugal
Belgium	India	Sweden
Colombia	Ireland	Switzerland
Czechoslovakia	Italy	United Kingdom
France	Japan	U.S.A.
Germany	Norway	U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in April 1964, to accept it as an ISO RECOMMENDATION.

SYMBOLS FOR INDICATIONS APPEARING ON MACHINE TOOLS

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INTRODUCTION

SCOPE

This ISO Recommendation defines the symbols which may appear on machine-tool indicator plates or control buttons in order to give the operator all useful indications for the use of the machine.

These conventional symbols have been chosen so as to be understood in all countries, independently of the language spoken in each individual country.

They may be later supplemented by other symbols (see note below).

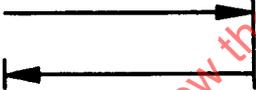
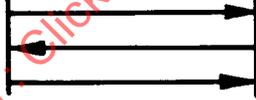
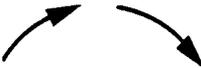
The existence of this ISO Recommendation, which includes a relatively large number of symbols, does not mean that all these symbols should appear on the machines. On the contrary, it is essential that a choice be made among the standardized symbols so as to use only those symbols which are strictly required for the use of each particular machine.

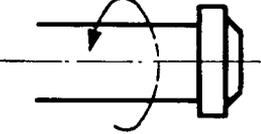
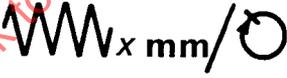
IMPORTANT NOTE

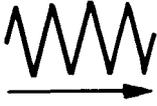
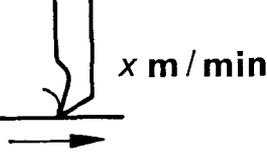
This ISO Recommendation should be considered only as a preliminary step, for immediate application.

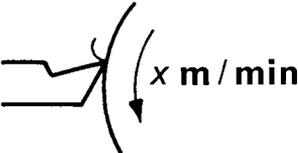
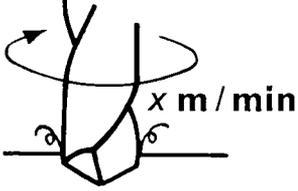
When it is revised later, taking account of the results of its application, it will be supplemented with other symbols which may appear as being necessary, and it may possibly be slightly amended in order to make some symbols more easily understood by the machine operators.

1. SYMBOLS FOR MOVEMENTS AND SPEEDS

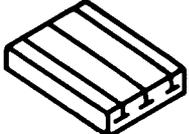
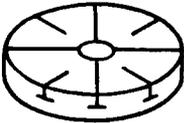
No.	Designations	Symbols	Observations
1	Direction of continuous rectilinear motion		
2	Rectilinear motion in two directions		
3	Interrupted rectilinear motion		
4	Limited rectilinear motion		
5	Limited rectilinear motion and return		
6	Oscillating rectilinear motion (continuous)		
7	Direction of continuous rotation		
8	Rotation in two directions		
9	Direction of interrupted rotation		
10	Limited rotation		

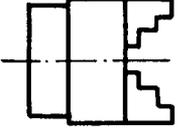
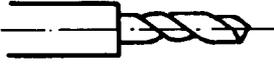
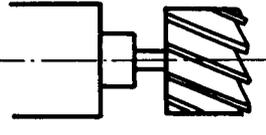
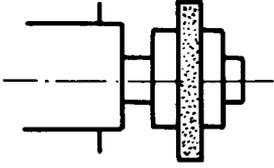
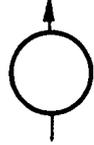
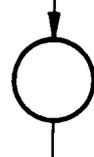
No.	Designations	Symbols	Observations
11	Limited rotation and return		
12	Oscillating rotary movement (continuous)		
13	Direction of spindle rotation		
14	One revolution		
15	Number of revolutions per minute (spindle speed)		<p>x being the value of the number of revolutions to appear, as the case may be, either before the symbol or in the corresponding numerical table.</p>
16	Feed		
17	Feed per revolution		<p>x being the value of the feed to appear, as the case may be, either before the symbol or in the corresponding numerical table (if the feed is expressed in inches or in feet, the symbolic abbreviation for unit mm should be replaced by in or ft).</p>
18	Feed per minute		<p>x being the value of the feed to appear, as the case may be, either before the symbol or in the corresponding numerical table (if the feed is expressed in inches or in feet, the symbolic abbreviation for unit mm should be replaced by in or ft).</p>
19	Reduced feed		<p>$1/x$ being the value of the ratio of the reduced feed to the normal feed (the symbol should be drawn with a pitch half the size if it is intended to show more clearly the distinction from the normal feed).</p>
20	Rapid feed		<p>$x/1$ being the value of the ratio of the rapid feed to the normal feed (the symbol should be drawn with a pitch twice the size if it is intended to show more clearly the distinction from the normal feed).</p>

No.	Designations	Symbols	Observations
21	Normal feed		The indication $\frac{1}{1}$ should be shown, as opposed to the two preceding symbols, only if the machine has also reduced or rapid feeds.
22	Direction of feed (orientation not specified)		Symbol to be applied, whatever the orientation of the feed may be, when it is self-evident and does not need to be specified. In the opposite case, see symbols below.
23	Longitudinal feed		
24	Transverse feed		
25	Vertical feed		
26	Rapid traverse		
27	Threading		
28	Increase of value (speed, for instance)		
29	Decrease of value (speed, for instance)		
30	Speed of planing cut		x being the value of the speed in metres per minute to be shown, as the case may be, either before the symbol or in the corresponding numerical table (if the speed is expressed in feet, the symbolic abbreviation for metre (m) should be replaced by ft).

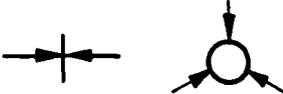
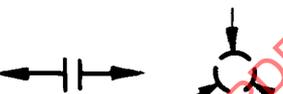
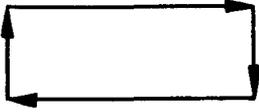
No.	Designations	Symbols	Observations
31	Speed of turning cut		<p>x being the value of the speed in metres per minute to be shown, as the case may be, either before the symbol or in the corresponding numerical table (if the speed is expressed in feet, the symbolic abbreviation for metre (m) should be replaced by ft).</p>
32	Speed of drilling cut		<p>x being the value of the speed in metres per minute to be shown, as the case may be, either before the symbol or in the corresponding numerical table (if the speed is expressed in feet, the symbolic abbreviation for metre (m) should be replaced by ft).</p>
33	Speed of milling cut (similar symbol for speed of grinding)		<p>x being the value of the speed in metres per minute to be shown, as the case may be, either before the symbol or in the corresponding numerical table (if the speed is expressed in feet, the symbolic abbreviation for metre (m) should be replaced by ft).</p>
34	Conventional milling		<p>x being the value of the speed in metres per minute to be shown, as the case may be, either before the symbol or in the corresponding numerical table (if the speed is expressed in feet, the symbolic abbreviation for metre (m) should be replaced by ft).</p>
35	Climb milling (down milling)		

2. SYMBOLS FOR ELEMENTS

No.	Designations	Symbols	Observations
41	Electric motor		
42	Rectangular work table or slide element		
43	Round work table or rotating element		

No.	Designations	Symbols	Observations
44	Turning spindle		
45	Drilling spindle		
46	Milling spindle		<p>The schematic sketch may be replaced, if required, by another similar sketch but in closer harmony with the actual shape of the machine element.</p>
47	Grinding spindle		
48	Pump (general symbol)		
49	Cooling pump		
50	Lubricant pump		
51	Hydraulic system pump		
52	Hydraulic motor		
53	Tracer		

3. SYMBOLS FOR MANOEUVRES

No.	Designations	Symbols	Observations
61	Stepless regulation		
62	Adjustable		Symbol to be used only by superimposition on another symbol representing the element to be adjusted.
63	Lock or tighten		
64	Unlock, unclamp (chuck open)		
65	Brake on		
66	Brake off		
67	Automatic (or semi-automatic) cycle		
68	Hand control		
69	Start, on		This symbol is green, and is preferably placed on the control button.