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The American Society of
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A N A M E R I C A N N A T I O N A L S T A N D A R D

GRAPHICAL SYMBOLS FOR DIAGRAMS, PART 1: GENERAL INFORMATION AND INDEXES

ASME Y14.40.1-2002
(Identical to ISO 14617-1: 2002)

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FOREWORD

This Standard is the adoption as an American National Standard of ISO 14617-1: 2002. The ASME Y14 Standards Committee, Engineering Drawing Practices and Related Documentation, is responsible for this Standard and supervises the United States participation in the ISO Technical Committee 10 activity responsible for the development and maintenance of its counterpart ISO 14617-1 through the U.S. Technical Advisory Group for ISO/TC 10.

This Standard is *identical* to ISO 14617-1: 2002 as that term is defined in ISO/IEC Guide 21: 1999 and is part of a series of standards providing graphical symbols for diagrams in a variety of technical disciplines. The titles in this series include:

- Part 1: General Information and Indexes
- Part 2: Symbols Having General Application
- Part 3: Connections and Related Devices
- Part 4: Actuators and Related Devices
- Part 5: Measurement and Control Devices
- Part 6: Measurement and Control Functions
- Part 7: Basic Mechanical Components
- Part 8: Valves and Dampers
- Part 9: Pumps, Compressors and Fans
- Part 10: Fluid Power Converters
- Part 11: Devices for Heat Transfer and Heat Engines
- Part 12: Devices for Separating, Purification and Mixing
- Part 15: Installation Diagrams and Network Maps

Other parts are under preparation.

Suggestions for improvement of this Standard are welcome. They should be sent to The American Society of Mechanical Engineers, Attention: Secretary, Y14 Standards Committee, Three Park Avenue, New York, NY 10016.

This Standard was approved as an American National Standard on December 19, 2002.

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Engineering Drawing and Related Documentation Practices

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GRAPHICAL SYMBOLS FOR DIAGRAMS, PART 1: GENERAL INFORMATION AND INDEXES

1 SCOPE

This Standard serves as an introduction to all the other parts. In particular, it gives information on the creation and use of registration numbers for identifying graphical symbols used in diagrams, rules for the presentation and application of these symbols, and examples of their use and application. It includes two indexes: an alphabetic index and an index of registration numbers, both concerned uniquely with ASME Y14.40.2 to ASME Y14.40.12, and an index of cross-references to related items found in other International Standards.

For the fundamental rules of creation and application of graphical symbols in diagrams, see ASME Y14.40.0.

2 REFERENCE

The following reference contains provisions that, through reference in this text, constitute provisions of this Standard. The latest edition shall apply.

ASME Y14.40.0, Basic Rules for the Design of Graphical Symbols for Use in the Technical Documentation of Products

Publisher: The American Society of Mechanical Engineers (ASME International), Three Park Avenue, New York, NY 10016; Order Department: 22 Law Drive, Box 2300, Fairfield, NJ 07007

3 TERMS AND DEFINITIONS

For the purposes of this Standard, the following terms and definitions apply.

3.1

function: activity proper to anything, mode of action by which it fulfills its purpose.

EXAMPLE: to measure, to control, to indicate.

3.2

product: thing produced by natural process or manufacture; result.

EXAMPLE: an element, a component or a device.

3.3

component: constituent part of equipment that cannot be physically divided into smaller parts without losing its character.

3.4

device: assembly of components to perform a required function.

EXAMPLE: an actuating device, a centrifuge.

3.5

element: part of a component.

EXAMPLE: a filter element in a filter, a contact in an electromechanical relay.

3.6

graphical symbol: visually perceptible figure used to transmit information independently of language.

3.7

terminal line: line of a graphical symbol ending at a connect node.

NOTE: A connect node is a location on a graphical symbol intended for connection.

3.8

connecting line: graphical symbol representing a functional connection, a mechanical link, a pipeline, a duct, or an electric connection.

4 ARRANGEMENT OF THE ASME Y14.40 SERIES OF STANDARDS

4.1 Domains of Application

The ASME Y14.40 series of standards consists of a number of separate standards (parts) covering graphical symbols for use in most technical fields.

4.2 Subdivision of Parts

Each Standard in this series is divided into sections that each deal with graphical symbols for a particular group of generic products or functions. When appropriate, paragraphs are given subparagraphs, as follows using the example of para. 7 from ISO 14617-2:

Paragraph 7	Directions
Subparagraph 7.1	Symbols of Basic Nature
Subparagraph 7.2	Application Rules for the Symbols in Para. 7.1
Subparagraph 7.3	Symbols Giving Supplementary Information
Subparagraph 7.4	Application Rules for the Symbols in Para. 7.3
Subparagraph 7.5	Application Examples

Where certain subparagraphs are further subdivided, this has been done along the following lines. Take, for example, 4.3 in ISO 14617-2:

Subparagraph 4.3	Symbols Giving Supplementary Information
Subparagraph 4.3.1	Input and Output Labels
Subparagraph 4.3.2	General Functions
Subparagraph 4.3.3	Mathematical Operations
Subparagraph 4.3.4	Change of Discrete State at Specified Values of a Characteristic Quantity
Subparagraph 4.3.5	Logic Negation, Logic Inversion, Inputs and Outputs for Auxiliary Power Supply

When a cross-reference is made to a particular graphical symbol or application rule or application example, its location is given within parentheses after the registration number of the symbol, rule or example.

EXAMPLE 1: "See R101 (4.2.1)" directs the reader to application rule R101, located in para. 4.2.1.

When cross-referencing to another part, (standard in this series), the part number is also included.

EXAMPLE 2: A cross-reference to symbol 142 in ASME Y14.40.2 is given as "See 142 (2-4.3.2.28)."

5 REGISTRATION NUMBERS

IMPORTANT: A direct relationship does not necessarily exist among graphical symbols, application rules, and application examples using registration numbers that share the same numerals. For example, while graphical symbol 101 correlates to both application rule R101 and application example X101, it correlates as well to application examples X102 to X114; whereas symbol 114, to take just one other example, is unrelated to R114 and X114.

5.1 Graphical Symbol

Each graphical symbol is assigned a unique registration number. In principle, this number is arbitrarily chosen. No information can be derived from it. The registration number will remain unchanged throughout the lifetime of the corresponding graphical symbol,

including in future revisions of this publication. If a graphical symbol is changed in the future, the registration number shall be supplemented with one or more characters. If the graphical symbol is substantially changed, it shall instead be given a new registration number.

5.2 Application Rule

Each application rule has a registration number in the same way as the graphical symbols, except that the registration number starts with the letter R (e.g., R101).

5.3 Application Example

Each application example has a registration number in the same way as the graphical symbols, except that the registration number starts with the letter X (e.g., X101).

6 PRESENTATION OF GRAPHICAL SYMBOLS

6.1 General

The ASME Y14.40 series establishes graphical symbols to be used in diagrams such as overview diagrams, flow diagrams, and circuit diagrams.

6.2 Graphical Symbols of Same Shape but Different Meaning

Graphical symbols having the same shape but different meanings have different registration numbers. This implies that it is possible to distinguish between same-shape graphical symbols in a CAD (computer-aided design) system, provided that each symbol has been recalled from a CAD library using the appropriate registration number.

For a person reading a diagram, the intended meaning can normally be recognized by the context of the diagram. When this is not possible, graphical symbols having the same shape shall be provided with supplementary information. For examples, see the symbols for connections in ASME Y14.40.3 and the rules for adding symbols giving supplementary information such as application rule R402 in the same part.

6.3 Different Forms of Graphical Symbols

In some cases, different forms of a graphical symbol can occur. These different forms are given separate registration numbers. The primary reason for having two or more forms for the same symbolization is that they convey differing amounts of information.

Symbols having different forms and differing amounts of information (e.g., those for use in overview diagrams and those for use in circuit diagrams) are marked Form 1, Form 2, etc. This marking is also used in some cases where the different forms contain the same amount of information, but where more than one form is justified because of different application methods in the rules for preparing diagrams.

6.4 Dimensions of Graphical Symbols

The graphical symbols in the ASME Y14.40 series have been designed in accordance with the rules given in ASME Y14.40.0. The module size $M = 2.5$ mm has been used. For small graphical symbols, the symbol is shown double its normal size, applying the same module and the same line width. Such symbols are marked "200%." For the auxiliary grid system defined in ASME Y14.40.0, the module $0.25 M$ has been used.

6.5 Descriptions

In those cases where ISO and IEC have the same term for different items, the term has been provided with ISO and IEC superscripts (e.g., line^{ISO} and line^{IEC}).

7 APPLICATION RULES AND EXAMPLES

The application rules give information on how to design composite symbols and how to apply the graphical symbols in a diagram. The application examples are to be regarded as guidelines.

In order to facilitate their use, the application examples are accompanied by information on which graphical symbols have been used to compose the examples shown.

EXAMPLE: "101, 123" in 2-4.5.8 signifies that the example X108 is built up from graphical symbols 101 and 123.

8 USE OF GRAPHICAL SYMBOLS

8.1 Choice of Graphical Symbols

Rules for the choice of graphical symbols are given in the standards for the preparation of diagrams.

8.2 Dimensions of Graphical Symbols

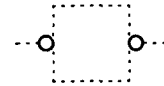
Symbols may be increased in size, for example, in order to allow all terminals to be represented. They may also be reduced in size. In both cases, the original line width shall be maintained.

Further rules for the use of graphical symbol sizes and line widths are given in the standards dealing with the preparation of diagrams.

8.3 Auxiliary Lines

In some cases the symbol has been shown together with auxiliary lines in order to indicate its correct location in relation to other symbols or the recommended location of connecting lines. Such auxiliary lines are not part of the symbol and are shown dotted (very short dashes).

EXAMPLE 1: Symbol 181 — logic negation — shown at an outline of a symbol indicated by a dotted rectangle.



EXAMPLE 2: An auxiliary line indicating the correct location of the symbol for a connection to a two-way valve, symbol 2101.



8.4 Variants of Graphical Symbols

The rules for diagram layout give the possibility of arranging circuits horizontally or vertically, and of arranging circuits for feedback and similar signals in a direction opposite to the normal one. For that purpose, different variants of the graphical symbols exist. The rules for the creation of the different variants are given in ASME Y14.40.0.

9 LETTERING

For lettering, see ASME Y14.40.0.

10 INDEXES

The alphabetic index can be used to find a graphical symbol for a certain component, device, or function wherever the meaning (description) is known. This index also covers the application examples.

The registration number index can be used to locate a graphical symbol whose registration number is already known.

ALPHABETICAL INDEX

This alphabetical index can be used to find a graphical symbol for a certain component, device, or function if its meaning (description) is already known. The index also covers the application examples.

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Acoustic signalling device	866	5-10.1.4	– Manual ~ in the form of removable handle	686	4-5.1.6
Active area			– Manual ~ in the form of treadle	690	4-5.1.10
– Double-acting hydraulic actuator with different ~s	721	4-6.1.11	– Manual ~ operated by pulling	683	4-5.1.3
– Double-acting pneumatic actuator with different ~s	722	4-6.1.12	– Manual ~ operated by pushing	682	4-5.1.2
Actuating device	741	4-7.1.1	– Manual ~ operated by pushing and pulling	684	4-5.1.4
– of double-acting diaphragm actuator type	X743	4-7.5.3	– Manual ~ operated by turning	685	4-5.1.5
– of electric motor type	X2131	8-4.5.4.1	– Manual ~ with special shape for safety purpose	691	4-5.1.11
– of pneumatic motor type	X742	4-7.5.2	– operating when actual temperature is less than set value	X717	4-6.5.5
– of single-acting fluid cylinder type	X741	4-7.5.1	– Single-acting diaphragm ~	725	4-6.1.15
– operated by pneumatic power stored inside actuator	X747	4-7.5.7		X2136	8-4.5.4.6
– operating with touch effect	X744	4-7.5.4		X2138	8-4.5.4.8
– Spring-operated ~ with manual spring charging	X745	4-7.5.5		X2152	8-5.5.2
– Spring-operated ~ with spring charging by electric motor	X746	4-7.5.6	– Single-acting hydraulic ~	717	4-6.1.7
– Spring-loaded ~	X2005	7-4.5.5	– Single-acting pneumatic ~	718	4-6.1.8
Actuating devices	-	4-7	Actuators		
Actuator			– Automatic ~	-	4-6
– Cam-operated ~	714	4-6.1.4	See also <i>Hydraulic actuators, Pneumatic actuators, Manually operated actuators</i>		
– Device for restricted access to ~	692	4-5.1.12	Additional simplifications	-	3-9
– Double-acting diaphragm ~	726	4-6.1.16	Adjustability	201	2-5.1.1
– Double-acting ~ of fluid cylinder type	X2107	8-4.5.1.7			8-4.3.1.3
– Double-acting hydraulic ~	719	4-6.1.9			8-5.3.3
– Double-acting, hydraulic ~ with different active areas	721	4-6.1.11			9-4.3.1
– Double-acting, pneumatic ~	720	4-6.1.10			10-4.3.1
– Double-acting pneumatic ~ with different active areas	722	4-6.1.12			10-5.3.1
– Flow-target-operated ~	716	4-6.1.6	– Non-linear ~	202	2-5.1.2
		7-4.1.5	– Pre-set ~	203	2-5.1.3
– Fluid-level-operated ~	715	4-6.1.5			8-4.3.1.4
		7-4.1.4			8-5.3.4
– in the form of a double-acting fluid cylinder	724	4-6.1.14	– Resistor with continuous ~	X203	2-5.5.3
	X713	4-6.5.3	– Resistor with electric-motor-operated ~	X205	2-5.5.5
	X2107	8-4.5.1.7	– Resistor with manual ~	X204	2-5.5.4
– in the form of a hydraulic motor with alternative directions of flow	2407	4-6.1.17	– Resistor with pre-set ~	X201	2-5.5.1
– in the form of a pneumatic motor	X712	4-6.5.2	– Resistor with ~ in five steps	X202	2-5.5.2
– in the form of a pneumatic motor with alternative directions of flow	2408	4-6.1.18	See also <i>Variability</i>		
– in the form of a single-acting fluid cylinder	723	4-6.1.13	Adjustable capacity		
– Manual ~	681	4-5.1.1	– Hydraulic pump with ~	X2401	10-4.5.1
– Manual ~ in the form of key	687	4-5.1.7		X2402	10-4.5.2
– Manual ~ in the form of lever	688	4-5.1.8	– Liquid pump with ~	X2301	9-4.5.1
– Manual ~ in the form of pedal	689	4-5.1.9		X2302	9-4.5.2
			– Over-center hydraulic pump with ~	X2407	10-4.5.7
			Adjustable gain		
			– Amplifier with ~	X207	2-5.5.7
			Adjustable hydraulic rotary torque converter	X2431	10-5.5.1

Description	Registration number	Location (Part-subpara.)
Adjustable restrictor (valve)	X2211	8-6.5.3.1
– with adjustable flow in one direction and restricted flow in the other	X2212	8-6.5.3.2
Adjustable speed	X2213	8-6.5.3.3
– Hydraulic motor with ~	X2415	10-4.5.15
– Hydraulic pump driven by shaft with ~	X2404	10-4.5.4
– Liquid pump driven by shaft with ~	X2303	9-4.5.3
Adsorption pump	2335	9-5.1.5
	2336	9-5.1.6
Affected area	2177	8-6.3.7
Air conditioner for pneumatic systems	2691	12-7.1.1
Air fin cooler with induced draft	X2505	11-4.5.5
Air lubricator	X2674	12-6.5.4
Alarm		
– High pressure ~	X1062	6-7.5.22
– Indicating and transmitting of level, registering, and ~	X1065	6-7.5.25
Alarming	1051	6-7.3.1.1
All-or-nothing relay		
– Electromechanical ~ with some contacts delayed	X653	4-4.5.3
– Electromechanical, ~ the whole relay delayed when coil is energized	X654	4-4.5.4
Alternative directions		
– Direction of propagation, energy, or signal flow, ~ (half-duplex)	250	2-7.1.8
		6-4.3.3
– Gas pump, compressor, fan with ~ of flow	2304	9-4.1.4
– Hydraulic pump/motor with ~ of flow	2413	10-4.1.13
– Hydraulic motor with ~ of flow	2407	10-4.1.7
– Hydraulic pump with ~ of flow	2403	10-4.1.3
– in general, except for energy and signal flow	245	2-7.1.5
	246	2-7.1.6
– Limited circular motion in ~	X253	2-7.5.8
– Liquid pump with ~ of flow	2303	9-4.1.3
– of circular motion	256	2-7.1.14
– of propagation, energy, or signal flow (half-duplex)	250	2-7.1.8
– Pneumatic motor with ~ of flow	2408	10-4.1.8
– Pneumatic pump, compressor with ~ of flow	2404	10-4.1.4
– Pneumatic pump/motor with ~ of flow	2414	10-4.1.14
– Rectilinear motion in ~ with intermediate dwell	X256	2-7.5.11
Amplification	115	2-4.3.2.5
		6-7.3.3.1
Amplifier	891	5-12.1.1
	892	5-12.1.2
– Differential ~	X910	5-12.5.10
– Summing ~	X909	5-12.5.9
– with adjustable gain	X207	2-5.5.7
– with return channel	893	5-12.1.3
	894	5-12.1.4
– with the gain compensated for frequency variations	X110	2-4.5.10
Analogue signal	234	2-6.1.14
		6-4.3.5
Analogue signal processing		
– Devices for ~	-	5-12

Description	Registration number	Location (Part-subpara.)
AND-elements		
– Component consisting of two identical ~	X346	2-11.5.3
	X347	2-11.5.4
AND-function (Logic ~)	142	2-4.3.2.28
		6-7.3.3.12
Angle		
– Measuring transducer for ~	X769	5-4.5.19
Angled globe type spring-loaded vacuum valve operating when pressure is lower than set value	X2125	8-4.5.3.5
Angled two-way valve	2102	8-4.1.2
Anti-clockwise rotation	X250	2-7.5.5
	X251	2-7.5.6
	X2416	10-4.5.16
	X2417	10-4.5.17
	X2419	10-4.5.19
	X2422	10-4.5.22
	X2423	10-4.5.23
	2038	7-5.1.12
Anti-siphon trap		
Approximately constant force, motion, or flow	223	2-6.1.3
Area		
– Affected ~	2177	8-6.3.7
Areas		
– Double-acting hydraulic actuator with different active ~	721	4-6.1.11
– Double-acting pneumatic actuator with different active ~	722	4-6.1.12
Arrestor		
– Flame ~	2036	7-5.1.10
Automatic actuators	-	4-6
Automatic closing		
– Quick-release coupling element of female type with ~	567	3-8.1.6
– Quick-release coupling element of male type with ~	566	3-8.1.5
– Quick-release coupling element which fits into another coupling element of the same type with ~	568	3-8.1.7
Automatic operation	144	2-4.3.2.30
– of final controlling element	1022	6-6.1.2
– of pump	X1031	6-6.5.11
– of valve controlled by analogue signal	X1028	6-6.5.8
	X1035	6-6.5.15
– of valve with infinite number of stable positions	X1034	6-6.5.14
	X1036	6-6.5.16
– of valve with automatic return to closed position	X1026	6-6.5.6
– of valve with automatic return to open position	X1027	6-6.5.7
– of valve with automatic return towards closed position	X1029	6-6.5.9
– of valve with automatic return towards open position	X1030	6-6.5.10
– of valve with two stable positions, open and closed	X1032	6-6.5.12
	X1033	6-6.5.13
Automatic return		
– Control-switch operated by turning with ~ from two extreme positions	X686	4-5.5.6

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
- device	654	4-4.1.9	Bistable element		
- Directional control valve with ~	X688	6-6.3.4	- RS- ~	X112	2-4.5.12
- Single-acting hydraulic cylinder with ~	X2442	4-5.5.8	Bleed line	422	3-4.1.10
- Manually operated control-switch with ~	X685	10-6.5.2	Blind	2043	7-5.1.17
- Manually operated valve with ~	X1022	4-5.5.5	- flange pair	517	3-6.1.7
- Valve with diaphragm actuator and ~	X2101	6-6.5.2	- Spectacle ~ in closed position	2044	7-5.1.18
Auxiliary location		8-4.5.1.1	- Spectacle ~ in open position	2045	7-5.1.19
- in central control room	1102		Blocking device	664	4-4.1.20
- in local control room or on local control panel	1104	6-7.3.4.2			6-6.3.9
Auxiliary power supply		6-7.3.4.4	Boiler	2531	11-7.1.1
- Input or output for ~	183		- feed-water vessel with deaerator	X2071	7-6.5.11
Averaging		2-4.3.5.3	- of electrode type	X2533	11-7.5.3
- Device for ~	X903		- of fired type	X2531	11-7.5.1
- function component	X105	5-12.5.3	- with dome	2532	11-7.1.2
Back-pressure control valve, self-operating	X2132	2-4.5.5	- with superheater	X2534	11-7.5.4
Back-up		8-4.5.4.2	Boilers	-	11-7
- function	-		Bore		
- Temperature indication and control performed by computer with ~ by discrete device	X1081	6-9	- Reduced ~	2130	8-4.3.2.10
Bag	2068	6-9.5.1	Boss with		
Bag filter	X2606	7-6.1.8	- insertion pipe	803	5-5.1.3
Ball	2014	12-4.5.6	- Temperature sensor in a ~ well	X801	5-5.5.1
	2015	7-4.1.20	- well	801	5-5.1.1
Ball type	2122	7-4.1.21	Brake		
- control valve, operated by diaphragm actuator or by manual actuator	X2138	8-4.3.2.2	- applied in unactuated state	2012	4-4.1.5
- Spring-loaded-non-return valve	X2115	8-4.5.4.8			7-4.1.18
- three-way valve with double-acting cylinder actuator	X2107	8-4.5.2.5	- disengaged in unactuated state	2011	4-4.1.4
Barrel	2067	8-4.5.1.7			7-4.1.17
Basic elements (for actuators and actuating devices)	-	7-6.1.7	- Solenoid-operated ~ applied at no-voltage	X652	4-4.5.2
Bath scrubber	X2622	4-4	Branches		
Beam		12-4.5.22	- Connection with <i>n</i> parallel identical ~	601	3-9.1.1
- Non-guided, electromagnetic ~	411		- Eight connections, four of them branching	X602	3-9.5.2
Bearing	2006	3-4.1.7	- Three parallel identical ~	X601	3-9.5.1
Bed filter		7-4.1.12	Branching of a bundle	X607	3-9.5.7
- of fixed type	X2609			X608	3-9.5.8
- of fluidized type	X2610	12-4.5.9	Brazed joint	515	3-6.1.5
Bed filter element		12-4.5.10	Buffer head	2007	7-4.1.13
- of fixed type	2603		Buffer		
- of fluidized type	2604	12-4.1.4	- Hydraulic ~	X2007	7-4.5.7
Bellows		12-4.1.5	- Spring equipped ~	X2006	7-4.5.6
- Expansion ~	533	3-7.1.3	Bundle		
Belt filter	X2608		- Branching of a ~	X607	3-9.5.7
Bias	162	12-4.5.8		X608	3-9.5.8
		2-4.3.3.2	- Exit from or entrance into a ~	603	3-9.1.3
		6-7.3.3.16	Bunker	2064	7-6.1.4
- Device for ~	X904		- Open ~	X2074	7-6.5.14
- function component	X103	5-12.5.4	Burst of sinusoidal flow	226	2-6.1.6
Bidirectional information bus type	443	2-4.5.3	Bus		
Bimetal	327	3-4.3.7	- Bidirectional information ~ type	443	3-4.3.7
Binary logic elements	-	2-10.1.5	- Unidirectional information ~ type	442	3-4.3.6
Binary logic functions	-		Butterfly type	2126	8-4.3.2.6
Binary signal	236	2-6.1.16	Cable (pipe unit)	449	3-4.3.14
		6-4.3.7	- Four pipelines forming a unit	X421	3-4.5.14
Biologic filter	X2634	12-4.5.34	- Four pipelines, two of them forming a ~	X422	3-4.5.15
Biologic type	2623	12-4.3.11	Cam driven mechanical counter with output closing at each <i>n</i> events	X877	5-8.5.7
			Cam profile	713	4-6.1.3
			- and roller	X711	7-4.1.3
			Cam-operated actuator	714	4-6.5.1
			Candle filter	X2606	4-6.1.4
					12-4.5.6

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Cap			Cistern for atmospheric pressure	2061	7-6.1.1
– End ~	518	3-6.1.8	Clock	842	5-8.1.2
Capacitive type	IEC	5-4.3.1.13	– Master ~	843	5-8.1.3
Capillary type	432	3-4.3.2	Clocks	-	5-8
Cartridge filter	X2606	12-4.5.6	Clock-wise rotation	X249	2-7.5.4
Cascade control				X250	2-7.5.5
– Temperature-flow rate ~	X1105	6-10.5		X251	2-7.5.6
Catalytic type	2661	12-5.3.1		X2304	9-4.5.4
– Purifier of ~	X2651	12-5.5.1		X2305	9-4.5.5
Central control room				X2306	9-4.5.6
– Auxiliary location in a ~	1102	6-7.3.4.2		X2405	10-4.5.5
– Primary location in a ~	1101	6-7.3.4.1		X2406	10-4.5.6
– Temperature indication in a ~	X1075	6-7.5.35		X2407	10-4.5.7
– Temperature indication in a ~, instrument not accessible to operator	X1076	6-7.5.36	Closed end of pipeline or duct	503	3-5.1.3
Centrifugal filter	X2614	12-4.5.14	Closed flow path	2172	8-6.3.2
Centrifuge			Closed flow path of a leak-free valve	2173	8-6.3.3
– Decanter ~	X2620	12-4.5.20	Closed tank for atmospheric pressure	X2061	7-6.5.1
– High-speed ~	X2619	12-4.5.19	Clutch		
– rotor	2608	12-4.1.9	– disengaged in unactuated state	2009	4-4.1.2
Change					7-4.1.15
– of pipe dimension; pipe reducer	516	3-6.1.6	– engaged in unactuated state	2010	4-4.1.3
Change of state when the characteristic quantity					7-4.1.16
– is approximately equal to the set value	175	2-4.3.4.5	– Solenoid-operated ~, disengaged at no-voltage	X651	4-4.5.1
– is equal to the set value	174	2-4.3.4.4	Coil		
– passes the set value from above	172	2-4.3.4.2	– Heating or cooling ~	2501	11-4.1.3
		8-4.3.1.6	Column		
– passes the set value from below	171	2-4.3.4.1	– Tray ~, fractionating ~	X2625	12-4.5.25
		8-4.3.1.5		X5626	12-4.5.26
– passes the upper set value from below or the lower set value from above	173	2-4.3.4.3	Combined non-return valve and manually actuated stop valve	X2112	8-4.5.2.2
Characteristic quantity			Combustion engine		
– Actuator operating when the ~ passes the set value	733	4-6.1.19	– External ~	2583	11-10.1.3
– Change of state when the ~ is approximately equal to the set value	175	2-4.3.4.5	– Internal ~	2582	11-10.1.2
– Change of state when the ~ is equal to the set value	174	2-4.3.4.4	– Internal ~ with reciprocating pistons	X2581	11-10.5.1
– Change of state when the ~ passes the set value from above	172	2-4.3.4.2	– Internal ~ with rotating pistons	X2582	11-10.5.2
		8-4.3.1.6	Comparing	140	2-4.3.2.26
– Change of state when the ~ passes the set value from below	171	2-4.3.4.1			6-7.3.3.11
		8-4.3.1.5	Compensated		
– Change of state when the ~ passes the set value from above	173	2-4.3.4.3	– Amplifier with gain ~ for frequency variations	X110	2-4.5.10
Characteristics for force, motion, mass flow, magnetic flow, and signals	-	2-6	– output	128	2-4.3.2.14
Check function: See <i>Non-return function</i>			– Pressure and temperature ~ flow control valve	X2216	8-6.5.3.6
Check valve: See <i>Non-return valve</i>				X2217	8-6.5.3.7
Chemical type	2622	12-4.3.10	– Pressure ~ flow control valve	X2214	8-6.5.3.4
Circular motion				X2215	8-6.5.3.5
– Direction of ~	255	2-7.1.13	– Pressure ~ flow control valve with overflow to reservoir	X2218	8-6.5.3.8
		12-4.3.2		X2219	8-6.5.3.9
– limited in alternative directions	X253	2-7.5.8	– Pressure ~ flow divider	X2220	8-6.5.3.10
– with alternative directions	256	2-7.1.14	Compensating input	127	2-4.3.2.13
– with unspecified direction	254	2-7.1.12	Complex		
		12-4.3.1	– device	101	2-4.1.1
Circular shape	445	3-4.3.10	– function	145	2-4.3.2.31
				145	6-7.3.3.14
			Component consisting of		
			– one AND-element and three OR-elements	X348	2-11.5.5
			– two identical AND-elements	X346	2-11.5.3
				X347	2-11.5.4

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Component selecting the highest input signal as output signal	X106	2-4.5.6	Control		
Components (in general)	-	2-4	- Cascade ~	X1105	6-10.5
Compression filter, compression by piston, screw, plate or membrane	X2612	12-4.5.12	- Flow rate feedback ~	X1104	6-10.4
Compressor	2302	9-4.1.2		X1108	6-10.8
	2402	10-4.1.2	- Flow rate feedback ~, based on square root value of flow rate	X1106	6-10.6
- with alternative directions of flow	2304	9-4.1.4	- Flow rate feedback ~ with automatic closing of valve at flow rate higher than set value	X1107	6-10.7
Compressors	-	9-4	- Indication and feedback ~ of electric reactive power	X1061	6-7.5.21
Compressors for fluid power	-	10-4	- Manual, remote ~ of a control valve with indication of the set value	X1103	6-10.3
Computer			- Manual, remote of ~ valve with infinite number of stable positions and indication of valve position	X1102	6-10.2
- Function performed by a ~ with back-up	X1081	6-9.5.1	- Manual, remote ~ of a valve with automatic return to closed position	X1101	6-10.1
Computing	1075	6-7.3.1.25	- Temperature-flow rate cascade ~	X1105	6-10.5
- Flow rate ~	X1072	6-7.5.32	- with back-up	-	6-9
	X1073	6-7.5.33	Control damper with double-acting fluid cylinder	X2153	8-5.5.3
- Level ~	X1074	6-7.5.34	Control line (fluid power systems)	422	3-4.1.10
Condenser	X2501	11-4.5.1	Control panel		
Condensers	-	11-4	- Auxiliary location in a local control room or on a local ~	1104	6-7.3.4.4
Conductive electrode type	IEC	5-4.3.1.14	- Primary location in a local control room or on a local ~	1103	6-7.3.4.3
Connection			Control room		
- Functional ~	401	3-4.1.1	- Auxiliary location in a central ~	1102	6-7.3.4.2
		6-4.1.1	- Auxiliary location in a local ~ or on a local control panel	1104	6-7.3.4.4
- Internal ~	451	3-4.3.16	- Primary location in a central ~	1101	6-7.3.4.1
- Internal ~ in pressure relief valve	X435	3-4.5.18	- Primary location in a local ~ or on a local control panel	1103	6-7.3.4.3
- joints	-	3-5	Control valve		
- joints of specified design	-	3-6	- Ball type ~, operated by diaphragm actuator or by manual actuator	X2138	8-4.5.4.8
- of test point	1066	6-7.3.1.16	- Diaphragm-operated de-superheater control valve	X2136	8-4.5.4.6
- with <i>n</i> parallel, identical branches	601	3-9.1.1	- Direct hydraulically operated directional ~	X2164	8-6.5.1.4
Connections	-	3-4		X2165	8-6.5.1.5
- between three components (bundle)	X606	3-9.5.6	- Directional leak-free ~ with two ports and two positions	X2183	8-6.5.1.23
- Crossing of symbols for ~	X401	3-4.5.1	- Directional servo- ~ valve with positive overlapping in mid-position	X2175	8-6.5.1.15
- Eight ~, four of them branching (single-line representation)	X602	3-9.5.2	- Directional servo- ~ with negative overlapping in mid-position	X2176	8-6.5.1.16
- Joint of ~	501	3-5.1.1	- Directional ~ with four ports and three distinct positions, automatic return to mid-position	X2003	7-4.5.3
		6-4.1.2	- Directional ~ with four positions, operated by a lever and with one stable position and automatic return from the other positions	X688	4-5.5.8
- Three ~ (single-line representation)	X341	2-11.5.1	- Directional ~ with pilot valve	X2171	8-6.5.1.11
	X342	2-11.5.2		X2172	8-6.5.1.12
- Three ~ with changed sequence (single-line representation)	X605	3-9.5.5		X2173	8-6.5.1.13
- Three ~ with reversed sequence (single-line representation)	X604	3-9.5.4		X2174	8-6.5.1.14
- Three ~ with the same sequence between two components (single-line representation)	X603	3-9.5.3			
- Fixed portion of ~	576	3-8.1.8			
- Movable portion of ~	577	3-8.1.9			
Connectors	-	3-8			
Constant force, motion, or flow	221	2-6.1.1			
		9-4.3.2			
		10-4.3.3			
Constant force, motion, or flow	222	2-6.1.2			
		9-4.3.3			
		10-4.3.4			
Contactors					
- Electropneumatically operated ~	X405	3-4.5.5			
Container for atmospheric pressure	2061	7-6.1.1			
Continuous pneumatic-hydraulic					
- converter	2435	10-5.1.2			
- intensifier	2436	10-5.1.4			
Continuous variability	212	2-5.3.2			

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
- Directional ~ with three ports and three positions	X2181	8-6.5.1.21	- Feedback ~ with internal set point adjustability	X911	5-12.5.11
	X2182	8-6.5.1.22	- Feedback ~ for rotational speed	X912	5-12.5.12
- Directional ~ with three ports and two positions	X2179	8-6.5.1.19	- Feedback ~ with PID characteristic and many inputs	X913	5-12.5.13
	X2180	8-6.5.1.20	Controlling	792	5-4.3.2.2
- Electrically operated directional ~	X2177	8-6.5.1.17		1053	6-7.3.1.3
	X2178	8-6.5.1.18	Controlling unit		
- Electrohydraulically or manually operated directional ~ with spring return to resting position (mid-position)			- Hydraulic ~	X107	2-4.5.7
	X2168	8-6.5.1.8	Conversion	111	2-4.3.2.1
- Electropneumatically operated directional ~ with spring return	X2167	8-6.5.1.7		112	2-4.3.2.2
- Float-operated ~	X2134	8-4.5.4.4	- Devices for purification by ~	-	12-5
- Flow ~, pressure and temperature compensated	X2216	8-6.5.3.6	- of analogue flow rate signal to digital form	X1071	6-7.5.31
	X2217	8-6.5.3.7	- of fluid or mechanical energy by intermediate fluid step: Devices for ~	-	10-5
- Flow ~, pressure compensated	X2214	8-6.5.3.4	- of mechanical energy to fluid energy or vice versa: Devices for ~	-	10-4
	X2215	8-6.5.3.5	- without connection between input and output circuits	113	2-4.3.2.3
- Flow ~, pressure compensated, with overflow to reservoir	X2218	8-6.5.3.8		114	2-4.3.2.4
	X2219	8-6.5.3.9	Converter		
- Lever-operated directional ~, detained in all three positions	X2169	8-6.5.1.9	- Adjustable hydraulic rotary torque ~	X2431	10-5.5.1
- Lever operated directional ~ with three positions and spring return to resting position (mid-position)	X2163	8-6.5.1.3	- DC to DC ~	X111	2-4.5.11
- Manually operated directional ~, detained in both positions with restricted access to the actuator	X2170	8-6.5.1.10	See also <i>Pneumatic-hydraulic converter, Signal converter, Torque converter</i>		
- Manually operated directional ~ with spring return to resting position	X2161	8-6.5.1.1	Converting	1075	6-7.3.1.25
- Manually operated needle type ~	X2137	8-4.5.4.7	Cooler		
- Manually or electrically operated directional ~ with spring return	X2166	8-6.5.1.6	- Air fin ~ with induced draft	X2505	11-4.5.5
- Pneumatically operated directional ~ with spring return to resting position	X2162	8-6.5.1.2	- Water-sprayed ~	X2504	11-4.5.4
- Self-operating back-pressure ~	X2132	8-4.5.4.2	Cooling coil	2501	11-4.1.3
- Self-operating pressure reducing ~	X2133	8-4.5.4.3	Cooling tower	2521	11-6.1.1
- with actuating device of electric motor type	X2131	8-4.5.4.1		X2521	11-6.5.1
See also <i>Directional control valve</i>			- with forced draft	X2523	11-6.5.3
Control-switch			- with induced draft	X2522	11-6.5.2
- Manually operated ~	X685	4-5.5.5	Cooling towers	-	11-6
- Manually operated ~ with manually disengaged latch	X657	4-4.5.7	Correlation	263	2-7.3.3
- Manually operated ~ with electrically disengaged latch	X658	4-4.5.8	- between the rotational direction of an hydraulic pump with alternative directions of flow and the direction of flow	X261	2-7.5.15
- Manually operated multi-position ~	X656	4-4.5.6	- between two motions	X260	2-7.5.14
- operated by lever with four operation directions	X684	4-5.5.4	- for a reversible liquid pump	X2307	9-4.5.7
- operated by pulling	X682	4-5.5.2	- for a reversible hydraulic pump	X2408	10-4.5.8
- operated by pushing	X681	4-5.5.1	Counter	841	5-8.1.1
- operated by pushing and pulling	X683	4-5.5.3	- Cam driven mechanical ~ with output closing at each <i>n</i> events	X877	5-8.5.7
- operated by turning	X687	4-5.5.7	- counting downwards with pre-set to <i>n</i> events	X872	5-8.5.2
- operated by turning with automatic return from the two extreme positions	X686	4-5.5.6	- Electromechanical ~	X873	5-8.5.3
Controller			- Electromechanical ~ indicating a new event when the electrical pulse disappears (postponed action)	X874	5-8.5.4
- Feedback ~	895	5-12.1.5	- Electromechanical ~ with electrical reset to 0	X876	5-8.5.6
	896	5-12.1.6	- Electromechanical ~ with manual reset to 0	X875	5-8.5.5
			- with reset to 0	X871	5-8.5.1
			Counter-clockwise: See <i>Anti-clockwise</i>		
			Counting devices	-	5-8

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Coupling			– any position	659	4-4.1.15
– Clamped flange ~	513	3-6.1.3			6-6.3.6
– Flange ~	511	3-6.1.1	– any position, drift to the left permitted	660	4-4.1.16
– Flexible ~	512	3-6.1.2			6-6.3.7
– Quick-release ~	X563	3-8.5.1	Device for		
Coupling element			– averaging	X903	5-12.5.3
– Quick-release ~ of female type	564	3-8.1.3	– bias	X904	5-12.5.4
– Quick-release ~ of female type with automatic closing	567	3-8.1.6	– division	X902	5-12.5.2
– Quick-release ~ of male type	563	3-8.1.2	– high limitation	X906	5-12.5.6
– Quick-release ~ of male type with automatic closing	566	3-8.1.5	– high limitation, where the input value can be negative	X908	5-12.5.8
– Quick-release ~ which fits into another coupling element of the same type	565	3-8.1.4	– low limitation	X907	5-12.5.7
– Quick-release ~ which fits into another coupling element of the same type with automatic closing	568	3-8.1.7	– mixing	2671	12-6.1.1
Critical flow nozzle	774	7-5.1.4	– restricted access	692	4-5.1.12
Critical flow nozzle type	774	5-4.3.1.6	– reverse function	X905	5-12.5.5
Crossing of symbols for connections	X401	3-4.5.1	– separating	2601	12-4.1.1
Cryo pump	2339	9-5.1.9	– summing	X901	5-12.5.1
Cushion	2444	10-6.1.11	Device serving as heat pump or refrigerator	X2553	11-8.5.3
– Double-acting hydraulic cylinder with adjustable ~ on each side of the piston	X2444	10-6.5.4	Devices (in general)	-	2-4
Cyclone separator	X2618	12-4.5.18	Devices for		
Cyclonic type	2621	12-4.3.3	– analogue signal processing	-	5-12
Damper			– conversion of fluid or mechanical energy by intermediate fluid step	-	10-5
– Control ~ with double-acting fluid cylinder	X2153	8-5.5.3	– conversion of mechanical energy to fluid energy or vice versa	-	10-4
– Multi-leaf ~	X2151	8-5.5.1	– mixing	-	12-6
– Three-way ~ with diaphragm actuator	X2152	8-5.5.2	– purification by conversion	-	12-5
– Two- or three-way ~	2151	8-5.1.1	– separating	-	12-4
Dampers	-	8-5	– storage	-	7-6
DC to DC converter	X111	2-4.5.11	Diaphragm	2003	7-4.1.9
De-superheater control valve, diaphragm-operated	X2136	8-4.5.4.6	Diaphragm	2004	7-4.1.10
De-superheater, humiditor	X2503	11-4.5.3	– -operated de-superheater control valve	X2136	8-4.5.4.6
Dead band	137	2-4.3.2.23	– Pressure vessel with ~	X2073	7-6.5.13
		5-12.3.5	– type	2003	5-4.3.1.3
		6-7.3.3.8		2128	8-4.3.2.8
Deaerator			Diaphragm actuator		
– Boiler feedwater vessel with ~	X2070	7-6.5.10	– Double-acting ~	726	4-6.1.16
Decanter centrifuge	X2620	12-4.5.20	– operating a valve	X2101	8-4.5.1.1
Delay	123	2-4.3.2.9		X2102	8-4.5.1.2
		6-7.3.3.2		X2132	8-4.5.4.2
Delay device	651	4-4.1.6	– Single-acting ~	725	4-6.1.15
		6-6.3.1	Difference	1054	6-7.3.1.4
	652	4-4.1.7	Difference pressure transmitting and indication	X1054	6-7.5.14
		6-6.3.2	Differential		
– with delay in both directions	653	4-4.1.8	– amplifier	X910	5-12.5.10
		6-6.3.3	– type	793	5-4.3.2.3
Delay element with switch-on delay	X108	2-4.5.8		X768	5-4.5.18
Delayed output	X113	2-4.5.13	Diffusion pump	2332	9-5.1.2
Density	1054	6-7.3.1.4	Diffusion-ejector pump	2333	9-5.1.3
Detent for detaining in			Digital signal	235	2-6.1.15
– discrete position	655	4-4.1.11			6-4.3.6
		6-6.3.5	– Conversion analogue to ~	X1071	6-7.5.31
– discrete position, shown in disengaged position	656	4-4.1.12	Dimension		
– discrete position, shown in engaged position	657	4-4.1.13	– Change of pipe ~	516	3-6.1.6
			Direct hydraulically operated directional control valve	X2164	8-6.5.1.4
				X2165	8-6.5.1.5
			Direction		
			– Correlation between rotational and flow ~s of a hydraulic pump	X261	2-7.5.15

Description	Registration number	Location (Part-subpara.)
– in general, except for energy and signal flow	241	2-7.1.1
	242	2-7.1.2
– Motor rotating in anti-clockwise ~ with pump in clockwise ~	X250	2-7.5.5
	X251	2-7.5.6
– of circular motion	255	2-7.1.13
		12-4.3.2
– of mass flow in pipeline	X242	2-7.5.1
– of mass flow in valve	X243	2-7.5.2
– of propagation, energy, or signal flow (simplex)	249	2-7.1.7
		6-4.3.2
– Unspecified ~ of circular motion	254	2-7.1.12
		12-4.3.1
– Working ~ of hydraulic power	243	2-7.1.3
– Working ~ of pneumatic power	244	2-7.1.4
Directional control valve		
– Direct hydraulically operated ~	X2164	8-6.5.1.4
– Direct hydraulically operated ~, different affecting areas	X2165	8-6.5.1.5
– Direct pneumatically operated ~, spring return to resting position	X2162	8-6.5.1.2
– Directional leak-free control valve, two ports, two positions	X2183	8-6.5.1.23
– Electrically operated ~	X2177	8-6.5.1.17
	X2178	8-6.5.1.18
– Electrohydraulically or manually operated ~, spring return	X2168	8-6.5.1.8
– Electropneumatically operated ~, spring return	X2167	8-6.5.1.7
– Leak-free ~ with two ports and two positions	X2183	8-6.5.1.23
– Lever-operated ~, detained in all positions	X2169	8-6.5.1.9
– Lever operated ~, three positions, spring return	X2163	8-6.5.1.3
– Manually operated ~, detained in both positions, restricted access to actuator	X2170	8-6.5.1.10
– Manually operated ~, spring return to resting position	X2161	8-6.5.1.1
– Manually or electrically operated ~, spring return	X2166	8-6.5.1.6
– with four ports and three distinct positions, automatic return to mid-position	X2003	7-4.5.3
– with four positions, operated by lever, one stable position and automatic return from other positions	X688	4-5.5.8
– with pilot valve	X2171	8-6.5.1.11
	X2172	8-6.5.1.12
	X2173	8-6.5.1.13
	X2174	8-6.5.1.14
– with three ports, three positions	X2181	8-6.5.1.21
	X2182	8-6.5.1.22
– with three ports, two positions	X2179	8-6.5.1.19
	X2180	8-6.5.1.20
Directional servo-control valve with negative overlapping in mid-position	X2176	8-6.5.1.16
Directional servo-control valve with positive overlapping in mid-position	X2175	8-6.5.1.15
Directions	-	2-7

Description	Registration number	Location (Part-subpara.)
– Propagation, energy, or signal flow in two simultaneous ~ (full-duplex)	251	2-7.1.9
		6-4.3.4
– Rectilinear motion in two ~ with dwell	X257	2-7.5.12
See also <i>Alternative directions</i>		
Disc		
– Rupturing ~	2035	7-5.1.9
– type	2126	8-4.3.2.6
– with knife	2606	12-4.1.7
Disc and plate (knife) separator	X2615	12-4.5.15
Dish-washer	X2624	12-4.5.24
Displacement type: See <i>Positive</i> –		
Displacer	771	7-4.1.6
– type	771	5-4.3.1.2
Display unit	851	5-9.1.1
Displaying discrete state	1052	6-7.3.1.2
Displays	-	5-9
Dividing	161	2-4.3.3.1
		6-7.3.3.15
Division		
– Device for ~	X902	5-12.5.2
Dome		
– Boiler with ~	2532	11-7.1.2
Double L-bore in four-way valve	2115	8-4.3.1.9
Double-acting diaphragm actuator	726	4-6.1.16
Double-acting fluid cylinder	724	4-6.1.14
– Actuator in form of ~	X713	4-6.5.3
	X2153	8-5.5.3
– with adjustable cushions	X2444	10-6.5.4
– with double-ended piston rod	X2443	10-6.5.3
Double-acting hydraulic actuator	719	4-6.1.9
– with different active areas	721	4-6.1.11
Double-acting hydraulic cylinder	2442	10-6.1.5
– different piston areas, adjustable cushions	X2444	10-6.5.4
– of telescopic type	2450	10-6.1.9
Double-acting pneumatic actuator	720	4-6.1.10
– with different active areas	722	4-6.1.12
Double-acting pneumatic cylinder	2448	10-6.1.6
– of telescopic type	2451	10-6.1.10
– with double-ended piston rod	X2443	10-6.5.3
Drain funnel	2040	7-5.1.14
Drain line	422	3-4.1.10
Drift		
– to the left permitted	660	4-4.1.16
		6-6.3.7
Duct	405	3-4.1.5
– Closed end of ~	503	3-5.1.3
– elements	-	7-5
– Insulated ~	X322	10.5.2
– Planned ~	412	3-4.1.8
– with thermal insulation	X322	3-4.5.7
Ducts		
– Group of ~	406	3-4.1.6
– Group of planned ~	413	3-4.1.9
– Joint of ~	501	3-5.1.1
Duplex: See <i>Full-duplex</i>		
Dwell		
– at return point	X257	2-7.5.12
– Intermediate ~	X255	2-7.5.10
– Intermediate ~, alternative directions	X256	2-7.5.11

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Effect			– Alternative directions of ~	250	2-7.1.8
– Magnetic field ~	119	2-4.3.2.6	– Direction of ~	249	6-4.3.3
– Proximity ~	121	2-4.3.2.7			2-7.1.7
– Touch ~	122	2-4.3.2.8	– Directions of ~ simultaneously in both directions possible	251	6-4.3.2
Ejector pump	2331	9-5.1.1			2-7.1.9
Electric electrode type	IEC	11-7.3.4			6-4.3.4
Electric heating element type	IEC	11-7.3.3	Engines with reciprocating or rotary pistons	-	11-10
Electric induction liquid pump	2352	9-6.1.2	Entrainment pumps	-	9-5
	2353	9-6.1.3	Entrance into a bundle	603	3-9.1.3
Electric induction type	IEC	11-7.3.5	Entrapment pump	2335	9-5.1.5
Electric liquid pump	2351	9-6.1.1	Entrapment pumps	-	9-5
Electric motor and pump, motor rotating anti-clockwise, pump rotating clockwise	X250	2-7.5.5	Envelope (tank)	301	2-9.1.1
	X251	2-7.5.6			11-4.1.1
Electric pumps	-	9-6			12-4.1.2
Electric type	435	3-4.3.5	Envelopes	-	2-9
Electric variable	1055	6-7.3.1.5	Equipment	101	2-4.1.1
Electrically insulating mechanical link, shaft, wire	404	3-4.1.4		-	2-4
– Flexible ~	X404	3-4.5.4	Even flow		
Electro-thermal type	IEC	12-4.3.8	– Liquid pump with substantially ~	X2309	9-4.5.9
Electrode furnace	X2536	11-7.5.6	Events		
Electrode type			– Number of ~	1076	6-7.3.1.26
– Conductive ~	IEC	5-4.3.1.14	Exhaust valve		
– Electric ~	IEC	11-7.3.4	– Pilot-operated non-return valve	X2233	8-6.5.4.3
Electrohydraulically operated two-stage pressure relief valve	X2196	8-6.5.2.6	Exit from a bundle	603	3-9.1.3
	X2197	8-6.5.2.7	Expansion		
Electrohydraulically or manually operated directional control valve with spring return to resting position (mid-position)	X2168	8-6.5.1.8	– bellows	533	3-7.1.3
Electromagnetic			– loop	531	3-7.1.1
– Non-guided ~ beam	411	3-4.1.7	– sleeve	532	3-7.1.2
– separator	X2628	12-4.5.28	External combustion engine	2583	11-10.1.3
– type	IEC	12-4.3.5	Extremely		
Electromechanical all-or-nothing relay			– high	1084	6-7.3.2.4
– some contacts delayed	X653	4-4.5.3		1085	6-7.3.2.5
– whole relay delayed	X654	4-4.5.4	– low	1089	6-7.3.2.9
Electromechanical counter	X873	5-8.5.3		1090	6-7.3.2.10
– indicating when the pulse disappears (postponed action)	X874	5-8.5.4	Facsimile	151	2-4.3.2.35
– electrical reset to 0	X876	5-8.5.6	Fan	2302	9-4.1.2
– manual reset to 0	X875	5-8.5.5	– with alternative directions of flow	2304	9-4.1.4
Electromechanical indicator	864	5-10.1.2	Feedback control		
– with automatic return	X893	5-10.5.1	– Flow rate ~	X1101	6-10.4
– without automatic return (manual reset)	X894	5-10.5.2		X1108	6-10.8
Electromechanical position indicator	865	5-10.1.3	– Flow rate ~ and automatic closing	X1107	6-10.7
Electropneumatically operated			– Flow rate ~, square root value	X1106	6-10.6
– contactor	X405	3-4.5.5	– of electric reactive power	X1061	6-7.5.21
– control valve with spring return	X2167	8-6.5.1.7	Feedback controller	895	5-12.1.5
Electrostatic				896	5-12.1.6
– separator	X2627	12-4.5.27	– for rotational speed	X911	5-12.5.11
– type	IEC	12-4.3.4	– with PID characteristic and many inputs	X912	5-12.5.12
Emergency acting	1076	6-7.3.1.26	Female type	X913	5-12.5.13
Emergency stop			– Quick-release coupling element of ~	564	3-8.1.3
– Manual actuator with special shape	691	4-5.1.11	Filter	X2601	12-4.5.1
Enabling input	126	2-4.3.2.12		X2602	12-4.5.2
End			– Bag ~, candle ~, leaf ~, cartridge ~	X2606	12-4.5.6
– cap	518	3-6.1.8	– Bed ~, fixed type	X2609	12-4.5.9
– Closed ~ of pipeline or duct	503	3-5.1.3	– Bed ~, fluidized type	X2610	12-4.5.10
Energy flow			– Belt ~, roll ~	X2608	12-4.5.8
			– Biologic ~	X2634	12-4.5.34
			– Centrifugal ~	X2614	12-4.5.14
			– Compression ~	X2612	12-4.5.12
			– press	X2611	12-4.5.11

Description	Regis- tration number	Location (Part- subpara.)
– with rotating drum	X2603	12-4.5.3
– with rotating drum and scraper	X2604	12-4.5.4
– with spray	X2607	12-4.5.7
Filter element	2602	12-4.1.3
– Bed ~, fixed type	2603	12-4.1.4
– Bed ~, fluidized type	2604	12-4.1.5
Final controlling element		
– Automatic operation of ~	1022	6-6.1.2
– Manual operation of ~	1021	6-6.1.1
Final controlling elements		
– Operation of ~	-	6-6
Finned tube	2502	11-4.1.4
Fired heater	X2537	11-7.5.7
Fired type	2541	11-7.3.2
		12-4.3.9
– Boiler of ~	X2531	11-7.5.1
Fittings	-	3-7
– for sensors and measuring transducers	-	5-5
Fixed portion of a connector pair	576	3-8.1.8
Flag	716	7-4.1.5
Flame arrestor	2036	7-5.1.10
Flange		
– Blind ~ pair	517	3-6.1.7
Flange coupling, flange pair	511	3-6.1.1
– Clamped ~	513	3-6.1.3
Flare	2591	11-11.1.1
Flexible coupling	512	3-6.1.2
Flexible, electrically insulating mechanical link, shaft	X404	3-4.5.4
Flexible mechanical link	X402	3-4.5.2
	X403	3-4.5.3
Flexible pipeline, hose	X411	3-4.5.11
	X412	3-4.5.12
Flexible pipelines, two of them of flexible type	X413	3-4.5.13
Flexible type	444	3-4.3.8
	452	3-4.3.9
Float-operated control valve	X2134	8-4.5.4.4
Float type	715	5-4.3.1.1
Flow		
– Approximately constant ~	223	2-6.1.3
– Burst of sinusoidal ~	226	2-6.1.6
– Constant ~	221	2-6.1.1
		9-4.3.2
		10-4.3.3
	222	2-6.1.2
		9-4.3.3
		10-4.3.4
– Hydraulic pump with pulse-shaped ~	X2410	10-4.5.10
– Hydraulic pump with sinusoidal ~	X2411	10-4.5.11
– Pulse-shaped ~	225	2-6.1.5
		9-4.3.4
		10-4.3.6
– Saw-tooth shaped ~	227	2-6.1.7
– Sinusoidal ~	224	2-6.1.4
		10-4.3.5
– to open air	2174	8-6.3.4
Flow control valve		
– Pressure and temperature compensated ~	X2216	8-6.5.3.6
	X2217	8-6.5.3.7

Description	Regis- tration number	Location (Part- subpara.)
– Pressure compensated ~	X2214	8-6.5.3.4
	X2215	8-6.5.3.5
– Pressure compensated ~, with overflow to reservoir	X2218	8-6.5.3.8
	X2219	8-6.5.3.9
Flow divider, pressure compensated ~	X2220	8-6.5.3.10
Flow elbow type	776	5-4.3.1.8
Flow nozzle	773	7-5.1.3
– Critical	774	7-5.1.4
– Flow rate measuring transducer, sensor of ~ type	X760	5-4.5.10
Flow nozzle type	773	5-4.3.1.5
– Critical ~	774	5-4.3.1.6
Flow path		
– Closed ~	2172	8-6.3.2
– Closed ~, leak-free	2173	8-6.3.3
– Open ~	2171	8-6.3.1
Flow straightener	2032	7-5.1.6
Flow rate	1056	6-7.3.1.6
– computing	X1072	6-7.5.32
	X1073	6-7.5.33
– feedback control	X1104	6-10.4
	X1108	6-10.8
– feedback control, square root	X1106	6-10.6
– feedback control, automatic closing	X1107	6-10.7
– indication	X1048	6-7.5.8
– measuring transducer, sensor of flow nozzle type	X760	5-4.5.10
– sensor	X759	5-4.5.9
– transmitting and registering of ratio	X1053	6-7.5.13
Flow-target operated actuator	716	4-6.1.6
		7-4.1.5
Fluid cylinder		
– Actuating device, the main element of which is single-acting ~	X741	4-7.5.1
– Actuator in the form of a double-acting ~	X713	4-6.5.3
– Actuator in the form of a double-acting ~	724	4-6.1.14
– Actuator in the form of a single-acting ~	723	4-6.1.13
See also <i>Hydraulic cylinder, Pneumatic cylinder</i>		
Fluid cylinders	-	10-6
Fluid motor: See <i>Hydraulic motor, Pneumatic motor</i>		
Fluid motors	-	10-4
Fluid-level-operated actuator	715	4-6.1.5
		7-4.1.4
Force	1073	6-7.3.1.23
– Approximately constant ~	223	2-6.1.3
– Constant ~	221	2-6.1.1
		9-4.3.2
		10-4.3.3
	222	2-6.1.2
		9-4.3.3
		10-4.3.4
– Pulse-shaped ~	225	2-6.1.5
		9-4.3.4
		10-4.3.6
– Saw-tooth shaped ~	227	2-6.1.7
– Sinusoidal ~	224	2-6.1.4
		10-4.3.5
Four-way valve	2104	8-4.1.4

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
– with actuating device of electric motor type	X2105	8-4.5.1.5	Grouping		
Fraction	1056	6-7.3.1.6	– Label ~	107	2-4.3.1.2
Fractionating column	X2625	12-4.5.25	Half-duplex	250	2-7.1.8
– with passage for gas	X2626	12-4.5.26			6-4.3.3
Freezer	2551	11-8.1.1	Hand	1058	6-7.3.1.8
	X2552	11-8.5.2	Handle		
Freezers	-	11-8	– Manual actuator in the form of a removable ~	686	4-5.1.6
Frequency	1069	6-7.3.1.19	Heat exchanger	X2501	11-4.5.1
Full-duplex	251	2-7.1.9	– of double-pipe type	2515	11-5.1.5
		6-4.3.4	– of floating type	2512	11-5.1.2
Functional connection	401	3-4.1.1	– of plate type	2516	11-5.1.6
		6-4.1.1	– of spiral type	2517	11-5.1.7
Functional links and junctions	-	6-4	– Regenerative pre-heater	2518	11-5.1.8
Functional type			– type	2501	11-7.3.6
– Pure ~	431	3-4.3.1			12-4.3.7
		6-4.3.1	– with coil-shaped tubes	2514	11-5.1.4
Functional unit	101	2-4.1.1	– with straight tubes	2511	11-5.1.1
Functional units	-	2-4	– with three flow paths	X2502	11-4.5.2
Functions	-	2-4			12-4.3.7
Funnel			– with U-shaped tubes	2513	11-5.1.3
– Drain ~	2040	7-5.1.14	Heat exchangers	-	11-4
Furnace	2533	11-7.1.3	– with specified design	-	11-5
– Electrode ~	X2536	11-7.5.6	Heat pump	2551	11-8.1.1
Furnaces	-	11-7		X2551	11-8.5.1
Gain			– Device serving as a ~ or refrigerator	X2553	11-8.5.3
– Amplifier with adjustable ~	X207	2-5.5.7	Heat pumps	-	11-8
Gas	322	2-10.1.2	Heater		
Gas discharge tube			– Fired ~	X2537	11-7.5.7
– Protective ~	X321	2-10.5.1	Heating		
Gas holder	X2066	7-6.5.6	– Electric ~ element type	IEC	11-7.3.3
Gas pump	2302	9-4.1.2	Heating coil	2501	11-4.1.3
– of positive displacement type	X2310	9-4.5.10	High	1081	6-7.3.2.1
– with alternative directions of flow	2304	9-4.1.4	– Extremely ~	1084	6-7.3.2.4
See also <i>Pneumatic pump</i>				1085	6-7.3.2.5
Gas turbine	2573	11-9.1.3	– limitation: See below		
Gas turbines	-	11-9	– or low	1091	6-7.3.2.11
Gas-lift pump	2334	9-5.1.4	– pressure alarm	X1062	6-7.5.22
Gate type	2124	8-4.3.2.4	– selection: Component selecting ~	X106	2-4.5.6
Gauge	1057	6-7.3.1.7	– Very ~	1082	6-7.3.2.2
Gear pair				1083	6-7.3.2.3
– Mechanical ~	2008	4-4.1.1	High limitation	133	2-4.3.2.19
		7-4.1.14			5-12.3.1
– Mechanical ~, higher rotational speed on the output side than that on the input side	X249	2-7.5.4		134	2-4.3.2.20
General purpose valves	-	8-4			5-12.3.2
Generator: See <i>Tachometer generator</i> , <i>Steam generator</i> , etc.			– Device for ~	X906	5-12.5.6
Getter ion pump	2338	9-5.1.8	– Device for ~, input value can be negative	X908	5-12.5.8
Getter pump	2335	9-5.1.5	High-speed centrifuge	X2619	12-4.5.19
	2337	9-5.1.7	Higher or lower quantity level		
Globe type	2121	8-4.3.2.1	– Transition to a ~	132	2-4.3.2.18
– Non-return valve of ~	X2113	8-4.5.2.3			11-8.3.3
– Spring-loaded safety valve of ~	X2114	8-4.5.3.4	Higher quantity level		
– Two-way valve of ~ with quick-acting coupling	X2106	8-4.5.1.6	– Transition to a ~	130	2-4.3.2.16
Group of			Highest value		11-8.3.1
– pipelines, ducts	406	3-4.1.6	– Selection of ~	138	2-4.3.2.24
– planned pipelines, ducts	413	3-4.1.9	Hose type	2129	6-7.3.3.9
			Humidifier	X2521	8-4.3.2.9
					11-6.5.1

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Humiditor	X2503	11-4.5.3	Hydraulic stepping motor	X2421	10-4.5.21
Humidity	1063	6-7.3.1.13	Hydraulic torque converter		
Hydraulic actuator			– Adjustable ~	X2431	10-5.5.1
– Double-acting ~	719	4-6.1.9	434	3-4.3.4	
– Double-acting ~ with different active areas	721	4-6.1.11	Hydraulic type	X2241	8-7.5.1
– Single-acting ~	717	4-6.1.7	Hygienic valve	X2242	8-7.5.2
Hydraulic buffer	X2007	7-4.5.7		X2243	8-7.5.3
Hydraulic controlling unit	X107	2-4.5.7		X2244	8-7.5.4
Hydraulic cylinder				-	8-7
– Double-acting ~	2442	10-6.1.5	Hygienic valves		
– Double-acting ~ of telescopic type	2450	10-6.1.9	Hysteresis	124	2-4.3.2.10
– Double-acting ~ with different piston areas and cushions	X2444	10-6.5.4			6-7.3.3.3
– Single-acting ~ of extension type	2441	10-6.1.1	Identical branches		
– Single-acting ~ of retraction type	2446	10-6.1.3	– Connection with n parallel, ~	601	3-9.1.1
– Single-acting ~ of retraction type with spring return	X2442	10-6.5.2	– Connection with three parallel ~	X601	3-9.5.1
– Single-acting ~ of telescopic type	2443	10-6.1.7	Identical items		
Hydraulic motor	2405	10-4.1.5	– Three ~	343	2-11.1.3
– Actuator in the form of ~	2407	4-6.1.17	– Two ~	342	2-11.1.2
– Reversible ~	X2420	10-4.5.20	– Two or more ~	344	2-11.1.4
– Rotodynamic ~	X2414	10-4.5.14		345	2-11.1.5
– Semi-rotary ~	2415	10-4.1.15	Impact on process	1072	6-7.3.1.22
– Stepping ~	X2421	10-4.5.21	In-line rotary mixer	X2672	12-6.5.2
– with adjustable speed	X2415	10-4.5.15	In-line static mixer	X2673	12-6.5.3
– with alternative directions of flow	2407	10-4.1.7	Indicating	148	2-4.3.2.32
– with anti-clockwise rotation	X2416	10-4.5.16		1059	6-7.3.1.9
	X2417	10-4.5.17	– and transmitting of level, registering, alarming	X1065	6-7.5.25
– with anti-clockwise rotation, independent direction of flow	X2419	10-4.5.19	– measuring instrument	832	5-7.1.2
– with positive displacement with adjustable capacity	X2413	10-4.5.13	Indication		
	X2418	10-4.5.18	– Correlation ~	263	2-7.3.3
Hydraulic power source: See <i>Working direction of hydraulic power</i>			– Measuring point inside vessel, temperature transmitting and ~	X1059	6-7.5.19
Hydraulic pump	2401	10-4.1.1	– of affected area	2177	8-6.3.7
– driven by a shaft with adjustable speed	X2404	10-4.5.4	– of differential pressure	X1054	6-7.5.14
– of uni-flow type	X2409	10-4.5.9	– of flow rate	X1048	6-7.5.8
– Over-center ~, adjustable capacity	X2407	10-4.5.7	– of level in vessel	X1957	6-7.5.17
– Reversible ~	X2408	10-4.5.8	– of level in vessel by viewing	X1058	6-7.5.18
– Rotodynamic ~, external leakage	X2403	10-4.5.3	– of position without detention	658	4-4.1.14
– with alternative directions of flow	2403	10-4.1.3	– of positions of controlled element	701	4-5.3.1
– with built-in electric motor (wet rotor)	X2425	10-4.5.25		702	4-5.3.2
– with clockwise rotation	X2405	10-4.5.5		703	4-5.3.3
	X2406	10-4.5.6		704	4-5.3.4
– with positive displacement, adjustable capacity	X2402	10-4.5.2	– Temperature ~ and control performed by computer with backup by discrete device	X1081	6-9.5.1
	X2401	10-4.5.1	– Temperature ~ in a central control room	X1075	6-7.5.35
– with positive displacement, pulsating flow	X2410	10-4.5.10	– Temperature ~ in a central control room; instrument not accessible to operator	X1076	6-7.5.36
– with positive displacement, sinusoidal flow	X2411	10-4.5.11	– Temperature ~ in a local control room or on a local control panel	X1077	6-7.5.37
See also <i>Liquid pump</i>			Indication and feedback control of reactive power	X1061	6-7.5.21
Hydraulic pump/motor	2409	10-4.1.9	Indicator		
– with alternative directions of flow	2413	10-4.1.13	– Electromechanical position ~	865	5-10.1.3
– with anti-clockwise rotation	X2422	10-4.5.22	– Electromechanical ~	864	5-10.1.2
	X2423	10-4.5.23	– Electromechanical ~ with automatic return	X893	5-10.5.1
– with different directions of flow	2411	10-4.1.11	– Electromechanical ~ without automatic return (manual reset)	X894	5-10.5.2
Hydraulic rotary torque converter	2434	10-5.1.5	– Mechanical ~	863	5-10.1.1
– Adjustable ~	X2431	10-5.5.1	– Over-current relay with mechanical ~ without automatic return (manual reset)	X895	5-10.5.3
Hydraulic semi-rotary motor	2415	10-4.1.15	Induction		
	X2412	10-4.5.12			

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
~ Electric ~ pump	2352	9-6.1.2	~ Rectilinear motion with ~	X254	2-7.5.9
	2353	9-6.1.3	Internal combustion engine	2582	11-10.1.2
~ Electric ~ type	IEC	11-7.3.5	~ with reciprocating piston(s)	X2581	11-10.5.1
Infinite number of intermediate positions of valve	2175	8-6.3.5	~ with rotating pistons	X2582	11-10.5.2
	X1026	6-6.5.6	Internal connection	451	3-4.3.16
Information bus			~ in a pressure relief valve	X435	3-4.5.18
~ of bidirectional type	443	3-4.3.7	Inversion		
~ of unidirectional type	442	3-4.3.6	~ Logic ~	182	2-4.3.5.2
Information processing function	1041	6-7.1.1	Ion exchange separator	X2633	12-4.5.33
~ performed by time-sharing	1042	6-7.1.2	Ion exchange type	2624	12-4.3.12
~ with enabling	X1043	6-7.5.3	Ionizing radiation		
~ with negated enabling (disabling)	X1044	6-7.5.4	~ Sensor for ~	X764	5-4.5.14
~ with negated input	X1041	6-7.5.1	~ type	IEC	11-7.3.1
~ with negated output	X1042	6-7.5.2	Item		
~ with retained output signal	X1045	6-7.5.5	~ One ~ only	341	2-11.1.1
Information processing functions	-	6-7	Items		
Inherent variability	204	2-5.1.4	~ Three identical ~	343	2-11.1.3
~ Non-linear ~	205	2-5.1.5	~ Two identical ~	342	2-11.1.2
Input			~ Two or more identical ~	344	2-11.1.4
~ by keyboard	153	2-4.3.2.37		345	2-11.1.5
~ Compensating ~	127	2-4.3.2.13	Jacket	2131	8-4.3.2.11
~ Enabling ~	126	2-4.3.2.12	Jacketed (sleeved) pipeline	X409	3-4.5.9
~ for auxiliary power supply	183	2-4.3.5.3	~ with thermal insulation	X410	3-4.5.10
~ label	106	2-4.3.1.1	Jet motor	2574	11-9.1.4
Input and output circuits			~ Turbo-fan ~	2575	11-9.1.5
~ Signal converter, measuring transducer without connection between ~	755	5-4.1.5	Joint		
	756	5-4.1.6	~ screwed	514	3-6.1.4
Insertion pipe	802	5-5.1.2	~ welded, brazed, or soldered	515	3-6.1.5
~ Boss with ~	803	5-5.1.3	Joint of		
~ Temperature sensor in an ~	X802	5-5.5.2	~ connections	501	3-5.1.1
Instrument					6-4.1.2
~ Indicating ~	832	5-7.1.2	~ multiple electrically insulating mechanical links	X509	3-5.5.9
~ Integrating ~	834	5-7.1.4	~ multiple functional links, links, or pipelines	X506	3-5.5.6
~ Recording ~	833	5-7.1.3	~ mechanical parts permitting motion of the parts in two or more dimensions	2005	3-5.1.2
Insulated pipeline or duct	X322	2-10.5.2			7-4.1.11
Insulating			Key		
~ Electrically ~ mechanical link, shaft, wire	404	3-4.1.4	~ Manual actuator in the form of a ~	687	4-5.1.7
~ material	325	2-10.1.3	Keyboard		
Insulation			~ Input by ~	153	2-4.3.2.37
~ Jacketed (sleeved) pipeline with thermal ~	X410	3-4.5.10	Knife		
~ Pipeline or duct with thermal ~	X322	3-4.5.7	~ Disc with ~	2606	12-4.1.7
~ Pipeline with thermal ~, heated or cooled by a separate circuit	X408	3-4.5.8	L-bore		
Integral, total	1067	6-7.3.1.17	~ Double ~ in four-way valve	2115	8-4.3.1.9
Integrating	1067	6-7.3.1.17	~ in three- or four-way valve	2113	8-4.3.1.7
Integrating measuring instrument	834	5-7.1.4	Label		
Intensifier			~ Input or output ~	106	2-4.3.1.1
~ Continuous pneumatic-hydraulic pressure ~	2436	10-5.1.4	Label grouping	107	2-4.3.1.2
~ Linear pneumatic-hydraulic pressure ~	2432	10-5.1.3		X114	2-4.5.14
Interlocking device	666	4-4.1.22	Latching device	661	4-4.1.17
		6-6.3.10			6-6.3.8
Intermediate dwell			~ Control-switch with ~	X657	4-4.5.7
~ Rectilinear motion in alternative directions with ~	X256	2-7.5.11	~ shown in disengaged position	662	4-4.1.18
~ Rectilinear motion with ~	X255	2-7.5.10	~ shown in engaged position	663	4-4.1.19
Intermediate positions			Launcher	2042	7-5.1.16
~ Infinite number of ~ of valve	2175	8-6.3.5	Leaf filter	X2606	12-4.5.6
Intermediate stop			Leak-free valve		
			~ Closed flow path of ~	2173	8-6.3.3
			Leakage connection		

Description	Registration number	Location (Part-subpara.)
Hydraulic pump with ~	X2403	10-4.5.3
Length	1057	6-7.3.1.7
Level	1062	6-7.3.1.12
– computing	X1074	6-7.5.34
– indication	X1057	6-7.5.17
– operated actuator	715	4-6.1.5
– sensor	X751	5-4.5.1
– Transition to a higher or lower quantity ~	132	2-4.3.2.18
		11-8.3.3
– Transition to a higher quantity ~	130	2-4.3.2.16
		11-8.3.1
– Transition to a lower quantity ~	131	2-4.3.2.17
		11-8.3.2
Level measuring transducer		
– of float type	X752	5-4.5.2
– of optical type, separate source	X755	5-4.5.5
– of sonic type, integral source	X753	5-4.5.3
– of sonic type, separate source	X754	5-4.5.4
Lever		
– Control-switch operated by ~, four operation directions	X684	4-5.5.4
– Directional control valve, operated by ~	X688	4-5.5.8
– Manual actuator in form of ~	688	4-5.1.8
Lever-operated directional control valve		
– detained in all positions	X2169	8-6.5.1.9
– three positions with spring return to resting position (mid-position)	X2163	8-6.5.1.3
Lift-type non-return valve	X2113	8-4.5.2.3
Limit	261	2-7.3.1
Limitation		
– Device for high ~	X906	5-12.5.6
– Device for high ~, input value can be negative	X908	5-12.5.8
– Device for low ~	X907	5-12.5.7
– High ~	133	2-4.3.2.19
		5-12.3.1
		6-7.3.3.4
	134	2-4.3.2.20
		5-12.3.2
		6-7.3.3.5
– Low ~	135	2-4.3.2.21
		5-12.3.3
		6-7.3.3.6
	136	2-4.3.2.22
		5-12.3.4
		6-7.3.3.7
– of high values of flow rate signal	X1069	6-7.5.29
Limited circular motion in alternative directions	X253	2-7.5.8
Linear fluid motor		
– Double-acting ~	724	4-6.1.14
– Double-acting, hydraulic ~	2442	10-6.1.5
– Single-acting ~	723	4-6.1.13
	2441	10-6.1.1
– Single-acting ~ of hydraulic, telescopic type	2443	10-6.1.7
Linear fluid motors	-	10-6
Linear pneumatic-hydraulic converter	2431	10-5.1.1
Linear pneumatic-hydraulic pressure intensifier	2432	10-5.1.3

Description	Registration number	Location (Part-subpara.)
Link		
– Electrically insulating mechanical ~	404	3-4.1.4
– Flexible, electrically insulating mechanical ~	X404	3-4.5.4
– Flexible ~	X402	3-4.5.2
	X403	3-4.5.3
– Mechanical ~	402	3-4.1.2
	403	3-4.1.3
Links		
– Joint of two mechanical parts permitting motion in two or more dimensions	2005	3-5.1.2
Liquid	321	2-10.1.1
Liquid pump	2301	9-4.1.1
– driven by shaft with adjustable speed	X2303	9-4.5.3
– Electric induction ~	2352	9-6.1.2
	2353	9-6.1.3
– Electric ~	2351	9-6.1.1
– of over-center type	X2306	9-4.5.6
– of positive displacement type, adjustable capacity	X2301	9-4.5.1
– of uni-flow type	X2308	9-4.5.8
– Reversible ~	X2307	9-4.5.7
– Rotodynamic ~ with adjustable capacity, actuator shown	X2302	9-4.5.2
– with substantially even flow	X2309	9-4.5.9
– with alternative directions of flow	2303	9-4.1.3
– with built-in electric motor (wet rotor)	X2311	9-4.5.11
– with clockwise rotation	X2304	9-4.5.4
	X2305	9-4.5.5
See also <i>Hydraulic pump</i>		
Local control panel		
– Auxiliary location in a local control room or on a ~	1104	6-7.3.4.4
– Primary location in a local control room or on a ~	1103	6-7.3.4.3
– Temperature indication in a local control room or on a ~	X1077	6-7.5.37
Local control room		
– Auxiliary location in a ~ or on a local control panel	1104	6-7.3.4.4
– Primary location in a ~ or on a local control panel	1103	6-7.3.4.3
– Temperature indication in a ~ or on a local control panel	X1077	6-7.5.37
Location		
– Auxiliary ~ in a central control room	1102	6-7.3.4.2
– Auxiliary ~ in a local control room or on a local control panel	1104	6-7.3.4.4
– Primary ~ in a central control room	1101	6-7.3.4.1
– Primary ~ in a local control room or on a local control panel	1103	6-7.3.4.3
Logic		
– AND-function	142	2-4.3.2.28
		6-7.3.3.12
– elements (Binary ~)	-	5-11
– functions (Binary ~)	-	6-8
– inversion	182	2-4.3.5.2
– negation	181	2-4.3.5.1
		6-7.3.3.18
– OR-function	143	2-4.3.2.29
		6-7.3.3.13

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Loop			Manual switching	X1046	6-7.5.6
– Expansion ~	531	3-7.1.1	Manually operated		
Low	1086	6-7.3.2.6	– actuators	-	4-5
– Device for ~ limitation	X907	5-12.5.7	– control-switch	X685	4-5.5.5
– Extremely ~	1089	6-7.3.2.9	– directional control valve: See below		
	1090	6-7.3.2.10	– multi-position control-switch	X656	4-4.5.6
– High or ~	1091	6-7.3.2.11	– needle type control valve	X2137	8-4.5.4.7
– limitation	135	2-4.3.2.21	Manually operated control-switch		
		5-12.3.3	– with electrically disengaged latch	X658	4-4.5.8
		6-7.3.3.6	– with manually disengaged latch	X657	4-4.5.7
	136	2-4.3.2.22	Manually operated directional control valve		
		5-12.3.4	– detained in both positions, restricted		
		6-7.3.3.7	access to actuator	X2170	8-6.5.1.10
– Very ~	1087	6-7.3.2.7	– with spring return to resting position	X2161	8-6.5.1.1
	1088	6-7.3.2.8	Manually or electrically operated directional		
Lower quantity level			control valve with spring return	X2166	8-6.5.1.6
– Transition to ~	131	2-4.3.2.17	Manually or electrohydraulically operated		
		11-8.3.2	directional control valve with spring return		
Lowest value			to resting position (mid-position)	X2168	8-6.5.1.8
– Selection of ~	139	2-4.3.2.25	Mass flow		
		6-7.3.3.10	– Direction of ~ in pipeline	X242	2-7.5.1
Lubricator			– Direction of ~ in valve	X243	2-7.5.2
– Air ~	X2674	12-6.5.4	Master clock	843	5-8.1.3
Magnet			Material of other type	328	2-10.1.6
– Permanent ~	326	2-10.1.4	Materials	-	2-10
– Permanent ~ type	326	12-4.3.6	Measurement		
Magnetic field effect	119	2-4.3.2.6	– in pipeline	X1012	6-5.5.2
Male type			– inside pressure vessel	X1011	6-5.5.1
– Quick-release coupling element of ~	563	3-8.1.2	– Point of ~	1011	6-5.1.1
Manual	1058	6-7.3.1.8			6-5
Manual actuator	681	4-5.1.1	– Torque ~	795	5-4.3.2.5
– in form of a key	687	4-5.1.7	Measuring instrument		
– in form of a lever	688	4-5.1.8	– Indicating ~	832	5-7.1.2
– in form of a pedal	689	4-5.1.9	– Integrating ~	834	5-7.1.4
– in form of a removable handle	686	4-5.1.6	– Recording ~	833	5-7.1.3
– in form of a treadle	690	4-5.1.10	Measuring instruments	-	5-7
– operated by pulling	683	4-5.1.3	Measuring point inside vessel, temperature		
– operated by pushing	682	4-5.1.2	transmitting and indication	X1059	6-7.5.19
– operated by pushing and pulling	684	4-5.1.4	Measuring transducer	753	5-4.1.3
– operated by turning	685	4-5.1.5		754	5-4.1.4
– with special shape for safety purpose	691	4-5.1.11		759	5-4.1.8
Manual operation of				796	5-4.3.2.6
– final controlling element	1021	6-6.1.1	– for angle	X769	5-4.5.19
– valve	X1021	6-6.5.1	– for flow rate	X760	5-4.5.10
– valve with automatic return to closed			– for pressure	X758	5-4.5.8
position	X1022	6-6.5.2	– for temperature, voltage as output,		
– valve with delayed automatic return to			contact closing when temperature is		
closed position	X1023	6-6.5.3	greater than set value	X770	5-4.5.20
– valve with infinite number of stable			– Level ~ of float type	X752	5-4.5.2
positions	X1025	6-6.5.5	– Level ~ of optical type, separate source	X755	5-4.5.5
– valve with two stable positions	X1024	6-6.5.4	– Level ~ of sonic type, integral source	X753	5-4.5.3
Manual, remote control of			– Level ~ of sonic type, separate source	X754	5-4.5.4
– control valve with indication of set value	X1103	6-10.3	– Position ~ of differential transformer type	X768	5-4.5.18
– valve with infinite number of stable			– Pressure ~	X758	5-4.5.8
positions, indication of valve position	X1102	6-10.2	– Signal converter or ~	X765	5-4.5.15
– valve with automatic return to closed			– Temperature ~ with built-in sensor of		
position	X1101	6-10.1	semiconductor type	X762	5-4.5.12
Manual reset			– utilizing the synchro effect	760	5-4.1.9
– Electromechanical counter with ~ to 0	X875	5-8.5.5	– without connection between input and		
Manual setting of set value of feedback			output circuits	755	5-4.1.5
control function	X1047	6-7.5.7		756	5-4.1.6

Description	Registration number	Location (Part-subpara.)
Measuring transducers	-	5-4
Measuring transformers	-	5-6
Mechanical elements	-	7-4
Mechanical gear pair	2008	4-4.1.1 7-4.1.14
- with higher rotational speed on the output side than that on the input side	X249	2-7.5.4
Mechanical indicator	863	5-10.1.1
- in over-current relay	X895	5-10.5.3
Mechanical link	402	3-4.1.2
	403	3-4.1.3
- Electrically insulating ~	404	3-4.1.4
- Flexible ~	X402	3-4.5.2
	X403	3-4.5.3
- Flexible, electrically insulating ~	X404	3-4.5.4
- Joint of ~ s	501	3-5.1.1
Mechanically driven		
- compressors	-	9-4
- compressors for fluid power	-	10-4
- fans	-	9-4
- pumps	-	9-4
- pumps for fluid power	-	10-4
Membrane	2003	7-4.1.9
	2004	7-4.1.10
Membrane type	2003	5-4.3.1.3
Mixer	X2671	12-6.5.1
- In-line rotary ~	X2672	12-6.5.2
- In-line static ~	X2673	12-6.5.3
Mixing		
- Device for ~	2671	12-6.1.1
- Devices for ~	-	12-6
Mixing element		
- rotary	2672	12-6.1.2
- static	2673	12-6.1.3
Moisture	1063	6-7.3.1.13
Momentarily	1063	6-7.3.1.13
Momentary and partial reversal of motion	262	2-7.3.2
Monitoring		
- Television transmission and ~	X1060	6-7.5.20
Motion		
- in alternative directions, circular	256	2-7.1.14
- Approximately constant ~	223	2-6.1.3
- Constant ~	221	2-6.1.1
		9-4.3.2
		10-4.3.3
	222	2-6.1.2
		9-4.3.3
		10-4.3.4
- Direction of circular ~	255	2-7.1.13
		12-4.3.2
- Limited circular ~ in alternative directions	X253	2-7.5.8
- Momentary and partial reversal of ~	262	2-7.3.2
- Oscillating ~	228	2-6.1.8
- Pulse-shaped ~	225	2-6.1.5
		9-4.3.4
		10-4.3.6
- Reciprocating ~	X252	2-7.5.7
- Rectilinear ~ with alternative directions and intermediate dwell	X256	2-7.5.11
- Rectilinear ~ with dwell at the return point	X257	2-7.5.12
- Rectilinear ~ with intermediate dwell	X255	2-7.5.10

Description	Registration number	Location (Part-subpara.)
- Rectilinear ~ with intermediate stop	X254	2-7.5.9
- Rectilinear ~ with partial reversal at an intermediate position	X258	2-7.5.13
- Saw-tooth shaped ~	227	2-6.1.7
- Sinusoidal ~	224	2-6.1.4
		10-4.3.5
- Unspecified direction of circular ~	254	2-7.1.12
		12-4.3.1
Motions		
- Correlation between two ~	X260	2-7.5.14
Motor and pump		
- Electric ~; motor rotating anti-clockwise, pump clockwise	X250	2-7.5.5
	X251	2-7.5.6
Motors: See <i>Electric motors, Fluid motors, Hydraulic motors, Pneumatic motors, etc.</i>		
Movable portion of connector pair	577	3-8.1.9
Moving part of non-return valve	2163	8-6.1.3
Multi-function	1071	6-7.3.1.21
Multi-leaf damper	X2151	8-5.5.1
Multi-line representation		
- Transition between ~ and single-line representation	602	3-9.1.2
Multi-position control-switch	X656	4-4.5.6
Multi-variable	1071	6-7.3.1.21
Multiplying	1073	6-7.3.1.23
Needle type	2125	8-4.3.2.5
Needle type control valve		
- Manually operated ~	X2137	8-4.5.4.7
Negation (Logic ~)	181	2-4.3.5.1
		6-7.3.3.18
Negative-going pulse	230	2-6.1.10
Negative-going step	232	2-6.1.12
Non-guided, electromagnetic beam	411	3-4.1.7
Non-ionizing, electromagnetic radiation		
- Sensor for ~	X763	5-4.5.13
Non-linear adjustability	202	2-5.1.2
Non-linear, inherent variability	205	2-5.1.5
Non-return function	2111	8-4.3.1.1
		8-5.3.1
Non-return valve		
- Combined ~ and manually actuated stop valve	X2112	8-4.5.2.2
- Moving part of a ~	2163	8-6.1.3
- of globe type; lift-type	X2113	8-4.5.2.3
- of swing-type	X2114	8-4.5.2.4
- Pilot-controlled double ~	X2234	8-6.5.4.4
- Pilot-operated ~ closed by pilot pressure	X2232	8-6.5.4.2
- Pilot-operated ~ opened by pilot pressure against return spring	X2233	8-6.5.4.3
- Seat of ~	2162	8-6.1.2
- Spring-loaded ~	X2231	8-6.5.4.1
- Spring-loaded ~ of ball type	X2115	8-4.5.2.5
- Weight-loaded ~	X2111	8-4.5.2.1
Nozzle		
- Critical flow ~	774	7-5.1.4
- Critical flow ~ type	774	5-4.3.1.6
- Flow ~	773	7-5.1.3
- Flow ~ type	773	5-4.3.1.5

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
– Spray ~	2037	7-5.1.11	Partial		
		11-4.1.2	– Momentary and ~ reversal of motion	262	2-7.3.2
		12-4.1.10	– Rectilinear motion with ~ reversal	X258	2-7.5.13
Nuclear reactor, hot-water type	X2532	11-7.5.2	Pedal		
Nuclear type	IEC	11-7.3.1	– Manual actuator in the form of ~	689	4-5.1.9
Number of events	1076	6-7.3.1.26	Perforating	152	2-4.3.2.36
One item only	341	2-11.1.1	Permanent magnet	326	2-10.1.4
Open air			– separator	X2629	12-4.5.29
– Flow to ~	2174	8-6.3.4	– type	326	12-4.3.6
Open bunker	X2074	7-6.5.14	Pig receiver	2042	7-5.1.16
Open flow path	2171	8-6.3.1	Pilot-controlled double non-return valve	X2234	8-6.5.4.4
Open store	2065	7-6.1.5	Pilot-operated non-return valve		
Operation			– closed by pilot pressure	X2232	8-6.5.4.2
– Automatic ~	144	2-4.3.2.30	– opened by pilot pressure against return spring	X2233	8-6.5.4.3
– Automatic ~ of final controlling element	1022	6-6.1.2	Pilot valve		
– Automatic ~ of pump	X1031	6-6.5.11	– Directional control valve with ~	X2171	8-6.5.1.11
– Automatic ~ of valve	X1026	6-6.5.6		X2172	8-6.5.1.12
	X1027	6-6.5.7		X2173	8-6.5.1.13
	X1028	6-6.5.8		X2174	8-6.5.1.14
	X1029	6-6.5.9	Pipe		
	X1030	6-6.5.10	– Boss with insertion ~	803	5-5.1.3
	X1032	6-6.5.12	Pipe break valve		
	X1033	6-6.5.13	– Directional leak-free control valve, two ports, two positions	X2183	8-6.5.1.23
	X1034	6-6.5.14	– closing when flow rate is higher than set value	X2122	8-4.5.3.2
	X1035	6-6.5.15	Pipe		
	X1036	6-6.5.16	– Insertion ~	802	5-5.1.2
– Manual ~ of final controlling element	1021	6-6.1.1	Pipe reducer	516	3-6.1.6
– Manual ~ of valve	X1021	6-6.5.1	Pipe unit	449	3-4.3.14
	X1022	6-6.5.2	Pipeline	405	3-4.1.5
	X1023	6-6.5.3	– Closed end of ~	503	3-5.1.3
	X1024	6-6.5.4	– elements	-	7-5
	X1025	6-6.5.5	– ends	-	3-5
– of final controlling elements	-	6-6	– ends of specified design	-	3-6
Optical type	IEC	5-4.3.1.19	– Exit or entrance of individual ~	603	3-9.1.3
OR-function (Logic ~)	143	2-4.3.2.29	– Flexible ~, hose	X411	3-4.5.11
		6-7.3.3.13		X412	3-4.5.12
Orifice plate	772	7-5.1.2		X413	3-4.5.13
Orifice plate type	772	5-4.3.1.4	– Insulated ~	X322	2-10.5.2
Oscillating motion	228	2-6.1.8	– Jacketed (sleeved) ~	X409	3-4.5.9
Other type (of material)	328	2-10.1.6	– Jacketed (sleeved) ~, with thermal insulation	X410	3-4.5.10
Output			– of circular shape	445	3-4.3.10
– Compensated ~	128	2-4.3.2.14	– of flexible type	444	3-4.3.8
– for auxiliary power supply	183	2-4.3.5.3	– of rectangular shape	446	3-4.3.11
– label	106	2-4.3.1.1	– of twisted type	448	3-4.3.8
– Over-current relay with delayed ~	X113	2-4.5.13	– Planned	412	3-4.1.13
– Postponed ~	129	2-4.3.2.15	– Twisted ~ of rectangular shape	X406	3-4.5.6
Over-center hydraulic pump with adjustable capacity	X2407	10-4.5.7	– with thermal insulation	X322	3-4.5.7
Over-center liquid pump	X2306	9-4.5.6	– with thermal insulation, heated or cooled by separate circuit	X408	3-4.5.8
Over-current relay	X113	2-4.5.13	Pipelines		
– with mechanical indicator without automatic return (manual reset)	X895	5-10.5.3	– Four pipelines forming a unit	X421	3-4.5.14
Page printing	150	2-4.3.2.34	– Four pipelines, two of them forming a unit	X421	3-4.5.14
Pair			– Four pipelines, two of them of flexible type	X413	3-4.5.13
– Blind flange ~	517	3-6.1.7	– Group of ~	406	3-4.1.6
– Clamped flange ~	513	3-6.1.3	– Group of planned ~	413	3-4.1.9
– Flange ~	511	3-6.1.1	– Joint of ~	501	3-5.1.1
– Mechanical gear ~	2008	4-4.1.1			
		7-4.1.14			
Parallel identical branches	X601	3-9.5.1			
– Connection with n ~	601	3-9.1.1			

Description	Registration number	Location (Part-subpara.)
- Three pipelines in single-line representation	X431	3-4.5.16
	X432	3-4.5.17
- Twisting of ~	450	3-4.3.15
- Two ~ (inlet and outlet) connected to a heat exchanger or heating radiator	X349	2-11.5.6
Piston type	2127	8-4.3.2.7
Pitot tube type	778	5-4.3.1.10
Planned		
- Group of ~ pipelines, ducts	413	3-4.1.9
- pipeline, duct	412	3-4.1.8
Plant	101	2-4.1.1
Plants	-	2-4
Plate for separating	2607	12-4.1.8
Plug	577	3-8.1.9
Plug type	2123	8-4.3.2.3
Plunger	711	4-6.1.1
		7-4.1.1
Plunger type	2127	8-4.3.2.7
Pneumatic actuator		
- Double-acting ~	720	4-6.1.10
- Double-acting ~ with different active areas	722	4-6.1.12
- Single-acting ~	718	4-6.1.8
Pneumatic cylinder		
- Double-acting ~	2448	10-6.1.6
- Double-acting ~ with double ended piston rod	X2443	10-6.5.3
- Double-acting ~ of telescopic type	2451	10-6.1.10
- Single-acting ~ of extension type	2445	10-6.1.2
- Single-acting ~ of retraction type	2447	10-6.1.4
- Single-acting of telescopic type	2449	10-6.1.8
Pneumatic motor	2406	10-4.1.6
- Actuating device, the main element of which is ~	X742	4-7.5.2
- Actuator in the form of ~	X712	4-6.5.2
- Rotodynamic ~	X2424	10-4.5.24
- Semi-rotary ~	2416	10-4.1.16
- with alternative directions of flow	2408	10-4.1.8
Pneumatic power		
- Actuating device operated by ~ stored inside the actuator	X747	4-7.5.7
Pneumatic power source: See <i>Working direction of pneumatic power</i>		
Pneumatic pump	2402	10-4.1.2
- with alternative directions of flow	2404	10-4.1.4
See also <i>Gas pump</i>		
Pneumatic pump/motor	2410	10-4.1.10
- with alternative directions	2414	10-4.1.14
- with one direction	2412	10-4.1.12
Pneumatic semi-rotary motor	2416	10-4.1.16
Pneumatic type	433	3-4.3.3
Pneumatic-air lubricator	X2674	12-6.5.4
Pneumatic-hydraulic converter		
- Continuous ~	2435	10-5.1.2
- Linear ~	2431	10-5.1.1
Pneumatic-hydraulic pressure intensifier		
- Continuous ~	2436	10-5.1.4
- Linear ~	2432	10-5.1.3
Pneumatically operated directional control valve with spring return	X2162	8-6.5.1.2

Description	Registration number	Location (Part-subpara.)
Point of measurement	1011	6-5.1.1
-	-	6-5
- in pipeline	X1012	6-5.5.2
- inside pressure vessel	X1011	6-5.5.1
Port	561	3-8.1.1
Ports	-	3-8
Position	1057	6-7.3.1.7
- Electromechanical ~ indicator	865	5-10.1.3
- Indication of ~ without detention	658	4-4.1.14
- measuring transducer of differential transformer type	X768	5-4.5.18
- Transitory ~	2176	8-6.3.6
Positions		
- Indication of ~ of controlled element	701	4-5.3.1
	702	4-5.3.2
	703	4-5.3.3
	704	4-5.3.4
- Infinite number of intermediate ~ of valve	2175	8-6.3.5
Positive displacement type	2321	9-4.3.5
		10-4.3.8
- Hydraulic motor of ~	X2413	10-4.5.13
- Hydraulic pump of ~	X2401	10-4.5.1
	X2402	10-4.5.2
	X2410	10-4.5.10
	X2411	10-4.5.11
	X2301	9-4.5.1
- Liquid pump of ~		
Positive-going		
- pulse	229	2-6.1.9
- step	231	2-6.1.11
Postponed action		
- Electromechanical counter with ~	X874	5-8.5.4
Postponed output	129	2-4.3.2.15
Power	1060	6-7.3.1.10
- indication	X1049	6-7.5.9
Power source: See <i>Working direction of hydraulic power, pneumatic power</i>		
Power supply		
- Input or output for auxiliary ~	183	2-4.3.5.3
Pre-heater		
- of regenerative type	2518	11-5.1.8
Pre-set adjustability	203	2-5.1.3
		8-4.3.1.4
		8-5.3.4
		10-4.3.2
- Resistor with ~	X201	2-5.5.1
Press filter	X2611	12-4.5.11
Pressure	1066	6-7.3.1.16
- and temperature compensated flow control valve	X2216	8-6.5.3.6
		8-6.5.3.7
- compensated flow control valve	X2214	8-6.5.3.4
	X2215	8-6.5.3.5
- Continuous pneumatic-hydraulic ~ intensifier	2436	10-5.1.4
- Linear, pneumatic-hydraulic ~ intensifier	2432	10-5.1.3
- measuring transducer	X758	5-4.5.8
- pilot switch	X716	4-6.5.4
- testing facility by direct connection to the process flow	X1052	6-7.5.12
- transmitting	X1051	6-7.5.11

Description	Regis- tration number	Location (Part- subpara.)	Description	Regis- tration number	Location (Part- subpara.)
Pressure reducing control valve			– of diffusion type	2332	9-5.1.2
– of self-operating type	X2133	8-4.5.4.3	– of diffusion-ejector type	2333	9-5.1.3
Pressure reducing valve	X2198	8-6.5.2.8	– of ejector type	2331	9-5.1.1
	X2199	8-6.5.2.9	– of entrapment type	2335	9-5.1.5
– Single-stage, hydraulic ~	X2200	8-6.5.2.10	– of gas-lift type	2334	9-5.1.4
– Two-stage ~	X2201	8-6.5.2.11	– of getter type	2337	9-5.1.7
Pressure relief valve			– of getter ion type	2338	9-5.1.8
– Electrohydraulically operated two-stage ~	X2196	8-6.5.2.6	See also <i>Liquid pump, Hydraulic pump,</i>		
	X2197	8-6.5.2.7	<i>Gas pump, Pneumatic pump, etc.</i>		
– Single-stage ~	X2191	8-6.5.2.1	Pumping system	X101	2-4.5.1
	X2192	8-6.5.2.2	Pure functional type	431	3-4.3.1
– Single-stage ~ with external drain	X2193	8-6.5.2.3			6-4.3.1
– Two-stage ~ with provision for remote control	X2194	8-6.5.2.4	Purge line	422	3-4.1.10
	X2195	8-6.5.2.5	Purification by conversion		
Pressure sensor	X756	5-4.5.6	– Devices for ~	-	12-5
– of strain gauge type	X757	5-4.5.7	Purifier		
Pressure vessel	2062	7-6.1.2	– of catalytic type	X2651	12-5.5.1
	2063	7-6.1.3	– using conversion	2651	12-5.1.1
	X2072	7-6.5.12	Pushing		
– with diaphragm	X2073	7-6.5.13	– Control-switch operated by ~	X681	4-5.5.1
– with external electric heater	X2070	7-6.5.10	– Manual actuator operated by ~	682	4-5.1.2
– with heating or cooling jacket	X2069	7-6.5.9	Pushing and pulling		
Primary location			– Control-switch operated by ~	X683	4-5.5.3
– in a central control room	1101	6-7.3.4.1	– Manual actuator operated by ~	684	4-5.1.4
– in a local control room or on a local control panel	1103	6-7.3.4.3	Quality	1067	6-7.3.1.17
Printing	149	2-4.3.2.33	Quantity	1076	6-7.3.1.26
– Page ~	150	2-4.3.2.34	– Actuator operating when characteristic ~ passes set value	733	4-6.1.19
Process			– Change of state when characteristic ~ is equal to set value	174	2-4.3.4.4
– Impact on ~	1072	6-7.3.1.22	– Change of state when characteristic ~ is approximately equal to set value	175	2-4.3.4.5
Processing (functions): See <i>Information processing</i>			– Change of state when characteristic ~ passes set value from below	171	2-4.3.4.1
Profile					8-4.3.1.5
– Cam ~	713	4-6.1.3			
		7-4.1.3			
– Cam ~ and roller	X711	4-6.5.1	– Change of state when characteristic ~ passes upper set value from below or lower set value from above	173	2-4.3.4.3
Propagation			– Change of state when characteristic ~ passes set value from above	172	2-4.3.4.2
– Alternative directions of ~ (half-duplex)	250	2-7.1.8	Quantity level		8-4.3.1.6
		6-4.3.3	– Transition to higher or lower ~	132	2-4.3.2.18
– Direction of ~ (simplex)	249	2-7.1.7			11-8.3.3
		6-4.3.2	– Transition to higher ~	130	2-4.3.2.16
– Directions of ~ simultaneously in both directions possible (full-duplex)	251	2-7.1.9			11-8.3.1
		6-4.3.4	– Transition to lower ~	131	2-4.3.2.17
Protective gas discharge tube	X321	2-10.5.1			11-8.3.2
Proximity effect	121	2-4.3.2.7	Quick-acting valve	X2004	7-4.5.4
Pulling			– closing by spring actuator when temperature is higher than 125°C	X2123	8-4.5.3.3
– Control-switch operated by ~	X682	4-5.5.2	Quick-release coupling	X563	3-8.5.1
– Manual actuator operated by ~	683	4-5.1.3	Quick-release coupling element		
Pulsating flow			– fitting into another coupling element of the same type	565	3-8.1.4
– Hydraulic pump with ~	X2410	10-4.5.10	– fitting into another coupling element of the same type and with automatic closing	568	3-8.1.7
Pulse			– of female type	564	3-8.1.3
– Negative-going ~	230	2-6.1.10	– of female type with automatic closing	567	3-8.1.6
– Positive-going ~	229	2-6.1.9	– of male type	563	3-8.1.2
Pulse-shaped force, motion, or flow	225	2-6.1.5	– of male type with automatic closing	566	3-8.1.5
		9-4.3.4			
		10-4.3.6			
Pump					
– of adsorption type	2336	9-5.1.6			
– of cryo type	2339	9-5.1.9			

Description	Registration number	Location (Part-subpara.)
Quick-release couplings	-	3-8
Radiation	-	2-8
Radiation	1068	6-7.3.1.18
- Sensor for ionizing ~	X764	5-4.5.14
- Sensor for non-ionizing ~	X763	5-4.5.13
Radioactive type	IEC	5-4.3.1.18
Rate of change		
- Time ~	1061	6-7.3.1.11
Ratio	1056	6-7.3.1.6
Reaction vessel with spray nozzles	X2635	12-4.5.35
Receiver	794	5-4.3.2.4
Receiving		
- Transmitting and ~ ultrasonic type	IEC	5-4.3.1.17
Receiving ultrasonic type	IEC	5-4.3.1.16
Reception	253	2-7.1.11
Reciprocating motion	X252	2-7.5.7
Reciprocating or rotary pistons		
- Engines with ~	-	11-10
Reciprocating steam engine	2581	11-10.1.1
Recording	149	2-4.3.2.33
	1068	6-7.3.1.18
- measuring instrument	833	5-7.1.3
- of flow rate with summation of volume	X1056	6-7.5.16
- temperature meter	X851	5-7.5.4
Rectangular shape	446	3-4.3.11
- Twisted pipeline with ~	X406	3-4.5.6
Rectilinear motion		
- with alternative directions and intermediate dwell	X256	2-7.5.11
- with dwell at return point	X257	2-7.5.12
- with intermediate dwell	X255	2-7.5.10
- with intermediate stop	X254	2-7.5.9
- with partial reversal at intermediate position	X258	2-7.5.13
Reduced bore	2130	8-4.3.2.10
Refrigerator	2551	11-8.1.1
	X2552	11-8.5.2
- Device serving as heat pump or ~	X2553	11-8.5.3
Refrigerators	-	11-8
Regenerative pre-heater	2518	11-5.1.8
Registering	149	2-4.3.2.33
	1068	6-7.3.1.18
- Flow rate ~ of ratio between two flow rates	X1053	6-7.5.13
- Indicating and transmitting of level, ~, and alarming	X1065	6-7.5.25
- Temperature ~ by scanning	X1055	6-7.5.15
- Voltage ~	X1050	6-7.5.10
Release valve		
- Self-operating ~	2181	8-8.1.1
Relief valve		
- Electrohydraulically operated two-stage pressure ~	X2196	8-6.5.2.6
	X2197	8-6.5.2.7
- Single-stage pressure ~	X2191	8-6.5.2.1
	X2192	8-6.5.2.2
- Single-stage pressure ~ with external drain	X2193	8-6.5.2.3
- Spring-loaded globe type ~	X2135	8-4.5.4.5

Description	Registration number	Location (Part-subpara.)
- Two-stage pressure ~ with provision for remote control	X2194	8-6.5.2.4
	X2195	8-6.5.2.5
Remote control		
- Manual, ~ of control valve with indication of set value	X1103	6-10.3
- Manual, ~ of valve with infinite number of stable positions and indication of valve position	X1102	6-10.2
- Manual, ~ of valve with automatic return to closed position	X1101	6-10.1
Removable handle		
- Actuator with ~	686	4-5.1.6
Reset		
- Electromechanical counter with manual ~ to 0	X875	5-8.5.5
Resistor		
- adjustable in five steps	X202	2-5.5.2
- with continuous adjustability	X203	2-5.5.3
- with electric-motor-operated adjustability	X205	2-5.5.5
- with manual adjustability	X204	2-5.5.4
- with non-linear inherent variability	X206	2-5.5.6
- with pre-set adjustability	X201	2-5.5.1
Resolving	794	5-4.3.2.4
Restricted access		
- Device for ~ to actuator	692	4-5.1.12
- to actuator of directional control valve	X2170	8-6.5.1.10
Restriction with pre-set adjustability	X2031	7-5.5.1
Restrictor	2031	7-5.1.1
Restrictor valve	X2141	8-4.5.5.1
Restrictor (valve)		
- Adjustable ~	X2211	8-6.5.3.1
	X2212	8-6.5.3.2
- with adjustable flow in one direction and restricted flow in the other	X2213	8-6.5.3.3
Return		
- Automatic ~ device	654	6-6.3.4
		4-4.1.9
Reversal		
- Momentary and partial ~ of motion	262	2-7.3.2
- Rectilinear motion with partial ~ at intermediate position	X258	2-7.5.13
Reverse	163	2-4.3.3.3
		6-7.3.3.17
Reverse function		
- component	X104	2-4.5.4
- Device for ~	X905	5-12.5.5
Reversible		
- hydraulic motor	X2418	10-4.5.18
	X2420	10-4.5.20
- hydraulic pump	X2408	10-4.5.8
- liquid pump	X2307	9-4.5.7
Ridged shape	447	3-4.3.12
Roll filter	X2608	12-4.5.8
Roller	712	4-6.1.2
		7-4.1.2
- Cam profile and ~	X711	4-6.5.1
Rotatable stator type	791	5-4.3.2.1
Rotary mixer	X2671	12-6.5.1
	X2672	12-6.5.2

Description	Registration number	Location (Part-subpara.)	Description	Registration number	Location (Part-subpara.)
Rotary mixing element	2672	12-6.1.2	– type	IEC	5-4.3.1.20
Rotary type	2405	5-4.3.1.11	Sensing	1055	6-7.3.1.5
Rotation			Sensor	751	5-4.1.1
– Electric motor and pump, motor rotating anti-clockwise, pump clockwise	X250	2-7.5.5		752	5-4.1.2
	X251	2-7.5.6	– Flow rate ~	X759	5-4.5.9
Rotodynamic type	2322	9-4.3.6	– for ionizing radiation	X764	5-4.5.14
		10-4.3.9	– for non-ionizing radiation	X763	5-4.5.13
– Hydraulic motor of ~	X2414	10-4.5.14	– Level ~	X751	5-4.5.1
	X2403	10-4.5.3	– Pressure ~	X756	5-4.5.6
– Liquid pump of ~	X2302	9-4.5.2	– Pressure ~, strain gauge type	X757	5-4.5.7
– Pneumatic motor of ~	X2424	10-4.5.24	– Temperature ~ in boss with well	X801	5-5.5.1
RS-bistable element	X112	2-4.5.12	– Temperature ~ in insertion pipe	X802	5-5.5.2
Rupturing disc	2035	7-5.1.9	– Temperature ~, thermocouple type	X761	5-4.5.11
Safety			Sensors	-	5-4
– acting	1076	6-7.3.1.26	Separating		
– function	2112	8-4.3.1.2	– Device for ~	2601	12-4.1.1
		8-5.3.2	– Devices for ~	-	12-4
– Manual actuator with special shape for ~ purpose	691	4-5.1.11	– Plate for ~	2607	12-4.1.8
Safety valve			Separator		
– Globe type spring-loaded ~	X2124	8-4.5.3.4	– Cyclone ~	X2618	12-4.5.18
– opening when the pressure p is higher than the set value	X2121	8-4.5.3.1	– Disc and plate (knife) ~	X2615	12-4.5.15
– Spring-loaded ~	X2002	7-4.5.2	– Electromagnetic ~	X2628	12-4.5.28
– Spring-loaded ~ detained open after operation	X655	4-4.5.5	– Electrostatic ~	X2627	12-4.5.27
– Weight-loaded ~	X2001	7-4.5.1	– Permanent-magnet ~	X2629	12-4.5.29
Salinity meter	X846	5-7.5.3	– Settling ~	X2616	12-4.5.16
Saw-tooth shaped force, motion, or flow	227	2-6.1.7	– Settling ~ with space for reject and with reject outlet	X2617	12-4.5.17
Scanning	1060	6-7.3.1.10	– Thermal ~ using direct-heating source	X2632	12-4.5.32
– Temperature registering by ~ and alarm	X1055	6-7.5.15	– Thermal ~ using electrical heating	X2631	12-4.5.31
Scraper	2605	12-4.1.6	– Thermal ~ using heating or cooling coil	X2630	12-4.5.30
Screen	2602	12-4.1.3	Sequence		
	X2601	12-4.5.1	– Three connections with changed ~	X605	3-9.5.5
	X2602	12-4.5.2	– Three connections with reversed ~	X604	3-9.5.4
– Vibrating ~	X2605	12-4.5.5	Servo-control valve		
– with rotating drum	X2603	12-4.5.3	– Directional ~ with negative overlapping	X2176	8-6.5.1.16
– with rotating drum and scraper	X2604	12-4.5.4	– Directional ~ with positive overlapping	X2175	8-6.5.1.15
Screwed joint	514	3-6.1.4	Set value		
Scrubber			– Actuator operating when characteristic quantity passes ~	733	4-6.1.19
– Bath ~	X2622	12-4.5.22	– Change of state when characteristic quantity passes ~ from above	172	2-4.3.4.2
– Spray ~	X2621	12-4.5.21			8-4.3.1.6
Seat of non-return valve	2162	8-6.1.2	– Change of state when characteristic quantity passes from below	171	2-4.3.4.1
Selection of					8-4.3.1.5
– highest value	138	2-4.3.2.24	– Change of state when characteristic quantity is approximately equal to ~	175	2-4.3.4.5
		6-7.3.3.9	– Change of state when characteristic quantity is equal to ~	174	2-4.3.4.4
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222	2-6.1.2	Constant force, motion, or flow	325	2-10.1.3	Insulating material
	9-4.3.3		326	2-10.1.4	Permanent magnet
	10-4.3.4			12-4.3.6	Permanent-magnet type
223	2-6.1.3	Approximately constant force, motion, or flow	327	2-10.1.5	Bimetal
			328	2-10.1.6	Material of other type
224	2-6.1.4	Sinusoidal force, motion, or flow	341	2-11.1.1	One item only
	10-4.3.5		342	2-11.1.2	Two identical items
225	2-6.1.5	Pulse-shaped force, motion, or flow	343	2-11.1.3	Three identical items
	9-4.3.4		344	2-11.1.4	Two or more identical items
	10-4.3.6		345	2-11.1.5	Two or more identical items
226	2-6.1.6	Burst of sinusoidal flow	401	3-4.1.1	Functional connection
227	2-6.1.7	Saw-tooth shaped force, motion, or flow		6-4.1.1	
228	2-6.1.8	Oscillating motion	402	3-4.1.2	Mechanical link, shaft
229	2-6.1.9	Positive-going pulse	403	3-4.1.3	Mechanical link, shaft, wire
230	2-6.1.10	Negative-going pulse	404	3-4.1.4	Electrically insulating mechanical link, shaft, wire
231	2-6.1.11	Positive-going step	405	3-4.1.5	Pipeline, duct
232	2-6.1.12	Negative-going step	406	3-4.1.6	Group of pipelines, ducts
233	2-6.1.13	Stepping function	411	3-4.1.7	Non-guided, electromagnetic beam
	10-4.3.7		412	3-4.1.8	Planned pipeline, duct
234	2-6.1.14	Analogue signal	413	3-4.1.9	Group of planned pipelines, ducts
	6-4.3.5		422	3-4.1.10	Pilot (control), drain, purge, or bleed line in fluid power systems
235	2-6.1.15	Digital signal			Pure functional type
	6-4.3.6		431	3-4.3.1	Capillary type
236	2-6.1.16	Binary signal		6-4.3.1	
	6-4.3.7		432	3-4.3.2	Pneumatic type
241	2-7.1.1	Direction in general, except for energy and signal flow	433	3-4.3.3	Hydraulic type
242	2-7.1.2	Direction in general, except for energy and signal flow	434	3-4.3.4	Electric type
			435	3-4.3.5	Unidirectional information bus type
243	2-7.1.3	Working direction of hydraulic power	442	3-4.3.6	Bidirectional information bus type
244	2-7.1.4	Working direction of pneumatic power	443	3-4.3.7	Flexible type
245	2-7.1.5	Alternative directions in general, except for energy, propagation, and signal flow	444	3-4.3.8	Circular shape
			445	3-4.3.10	Rectangular shape
			446	3-4.3.11	Ridged shape
246	2-7.1.6	Alternative directions in general, except for energy, propagation, and signal flow	447	3-4.3.12	Twisted pipeline, or duct
			448	3-4.3.13	Cable
			449	3-4.3.14	Twisting of pipelines
249	2-7.1.7	Direction of propagation, energy, or signal flow (simplex)	450	3-4.3.15	Internal connection
			451	3-4.3.16	Flexible type
250	6-4.3.2	Alternative directions of propagation, energy, or signal flow (half-duplex)	452	3-4.3.9	Joint of connections
	2-7.1.8		501	3-5.1.1	
251	6-4.3.3	Directions of propagation, energy, or signal flow, simultaneously in both directions possible (full-duplex)		6-4.1.2	
	2-7.1.9		503	3-5.1.3	Closed end of pipeline or duct
			511	3-6.1.1	Flange coupling, flange pair
252	6-4.3.4	Transmission	512	3-6.1.2	Flexible coupling
	2-7.1.10		513	3-6.1.3	Clamped flanged coupling
253	2-7.1.11	Reception	514	3-6.1.4	Screwed joint
254	2-7.1.2	Circular motion, unspecified direction	515	3-6.1.5	Welded, brazed, or soldered joint
	12-4.3.1		516	3-6.1.6	Change of pipe dimension, pipe reducer
255	2-7.1.13	Direction of circular motion	517	3-6.1.7	Blind flange pair
	12-4.3.2		518	3-6.1.8	End cap
256	2-7.1.14	Alternative directions of circular motion	531	3-7.1.1	Expansion loop
261	2-7.3.1	Limit	532	3-7.1.2	Expansion sleeve
262	2-7.3.2	Momentary and partial reversal of motion	533	3-7.1.3	Expansion bellows
			561	3-8.1.1	Port

Regis- tration number	Location (Part- subpara.)	Description	Regis- tration number	Location (Part- subpara.)	Description
563	3-8.1.2	Quick-release coupling element of male type	689	4-5.1.9	Manual actuator in the form of a pedal
564	3-8.1.3	Quick-release coupling element of female type	690	4-5.1.10	Manual actuator in the form of a treadle
565	3-8.1.4	Quick-release coupling element which fits into another coupling element of the same type	691	4-5.1.11	Manual actuator with special shape for safety purpose
566	3-8.1.5	Quick-release coupling element of male type with automatic closing	692	4-5.1.12	Device for restricted access to actuator
567	3-8.1.6	Quick-release coupling element of female type with automatic closing	701	4-5.3.1	Indication of positions of a controlled element
568	3-8.1.7	Quick-release coupling element which fits into another coupling element of the same type with automatic closing	702	4-5.3.2	Indication of positions of a controlled element
576	3-8.1.8	Fixed portion of a connector pair; socket	703	4-5.3.3	Indication of positions of a controlled element
577	3-8.1.9	Movable portion of a connector pair; plug	704	4-5.3.4	Indication of positions of a controlled element
601	3-9.1.1	Connection with n parallel, identical branches	711	4-6.1.1	Plunger; tracer
602	3-9.1.2	Transition between multi-line and single-line representation	712	7-4.1.1	
603	3-9.1.3	Exit from or entrance into a bundle	712	4-6.1.2	Roller
651	4-4.1.6	Delay device	713	7-4.1.2	
652	6-6.3.1	Delay device	713	4-6.1.3	Cam profile
653	4-4.1.7	Delay device with delay in both directions	714	7-4.1.3	
654	6-6.3.2	Automatic return device	714	4-6.1.4	Cam-operated actuator
655	4-4.1.8	Detent for detaining in a discrete position	715	4-6.1.5	Fluid-level-operated actuator
656	6-6.3.3	Detent for detaining in a discrete position in disengaged position	715	5-4.3.1.1	Float type
657	4-4.1.9	Detent for detaining in a discrete position in engaged position	716	7-4.1.4	Fluid-level-operated actuator
658	6-6.3.4	Indication of position without detention	716	4-6.1.6	Flow-target-operated actuator
659	4-4.1.10	Detent for detaining in any position	717	7-4.1.5	
660	6-6.3.6	Detent for detaining in any position; drift to the left permitted	717	4-6.1.7	Single-acting hydraulic actuator
661	4-4.1.11	Latching device	718	4-6.1.8	Single-acting pneumatic actuator
662	6-6.3.7	Latching device in disengaged position	719	4-6.1.9	Double-acting hydraulic actuator
663	4-4.1.12	Latching device in engaged position	720	4-6.1.10	Double-acting pneumatic actuator
664	6-6.3.8	Blocking device	721	4-6.1.11	Double-acting hydraulic actuator with different active areas
665	4-4.1.13	Trip-free mechanism	722	4-6.1.12	Double-acting pneumatic actuator with different active areas
666	6-6.3.9	Interlocking device	723	4-6.1.13	Actuator in the form of a single-acting fluid cylinder
681	4-5.1.1	Manual actuator	724	4-6.1.14	Actuator in the form of a double-acting fluid cylinder
682	4-5.1.2	Manual actuator operated by pushing	725	4-6.1.15	Single-acting diaphragm actuator
683	4-5.1.3	Manual actuator operated by pulling	726	4-6.1.16	Double-acting diaphragm actuator
684	4-5.1.4	Manual actuator operated by pushing and pulling	733	4-6.1.19	Actuator operating when a characteristic quantity passes a set value
685	4-5.1.5	Manual actuator operated by turning	741	4-7.1.1	Actuating device
686	4-5.1.6	Manual actuator in the form of a removable handle	751	5-4.1.1	Sensor
687	4-5.1.7	Manual actuator in the form of a key	752	5-4.1.2	Sensor
688	4-5.1.8	Manual actuator in the form of a lever	753	5-4.1.3	Signal converter, measuring transducer
			754	5-4.1.4	Measuring transducer
			755	5-4.1.5	Signal converter, measuring transducer without connection between input and output circuits
			756	5-4.1.6	Signal converter, measuring transducer without connection between input and output circuits
			757	5-4.1.7	Thermocouple
			759	5-4.1.8	Tachometer generator
			760	5-4.1.9	Measuring transducer utilizing the synchro effect
			771	5-4.3.1.2	Displacer type
				7-4.1.6	Displacer
			772	5-4.3.1.4	Orifice plate type
				7-5.1.2	Orifice plate

Regis- tration number	Location (Part- subpara.)	Description	Regis- tration number	Location (Part- subpara.)	Description
773	5-4.3.1.5	Flow nozzle type	1067	6-7.3.1.17	Quality/Integral, total/Integrating, summing
	7-5.1.3	Flow nozzle	1068	6-7.3.1.18	Radiation/Registering, recording
774	5-4.3.1.6	Critical flow nozzle type	1069	6-7.3.1.19	Speed, frequency/Switching
	7-5.1.4	Critical flow nozzle	1070	6-7.3.1.20	Temperature/Transmitting
775	5-4.3.1.7	Venturi tube type	1071	6-7.3.1.21	Multi-variable/Multi-function
	7-5.1.5	Venturi element	1072	6-7.3.1.22	User's choice/Impact on process by valve, pump, etc.
776	5-4.3.1.8	Flow elbow type			
777	5-4.3.1.9	Variable area flow type	1073	6-7.3.1.23	Weight, force/Multiplying
778	5-4.3.1.10	Pitot tube type	1074	6-7.3.1.24	Unclassified
791	5-4.3.2.1	Rotatable stator type	1075	6-7.3.1.25	User's choice/Converting, computing
792	5-4.3.2.2	Controlling	1076	6-7.3.1.26	Number of events, quantity/Emergency or safety acting
793	5-4.3.2.3	Differential type			
794	5-4.3.2.4	Resolving/Receiver	1081	6-7.3.2.1	High
795	5-4.3.2.5	Torque measurement/Transformer	1082	6-7.3.2.2	Very high
796	5-4.3.2.6	Measuring transducer; transmitter	1083	6-7.3.2.3	Very high
801	5-5.1.1	Boss with well	1084	6-7.3.2.4	Extremely high
802	5-5.1.2	Insertion pipe	1085	6-7.3.2.5	Extremely high
803	5-5.1.3	Boss with insertion pipe	1086	6-7.3.2.6	Low
831	5-7.1.1	Thermometer	1087	6-7.3.2.7	Very low
832	5-7.1.2	Indicating measuring instrument	1088	6-7.3.2.8	Very low
833	5-7.1.3	Recording measuring instrument	1089	6-7.3.2.9	Extremely low
834	5-7.1.4	Integrating measuring instrument	1090	6-7.3.2.10	Extremely low
841	5-8.1.1	Counter	1091	6-7.3.2.11	High or low
842	5-8.1.2	Clock	1101	6-7.3.4.1	Primary location in a central control room
843	5-8.1.3	Master clock	1102	6-7.3.4.2	Auxiliary location in a central control room
851	5-9.1.1	Display unit			
863	5-10.1.1	Mechanical indicator	1103	6-7.3.4.3	Primary location in a local control room or on a local control panel
864	5-10.1.2	Electromechanical indicator			
865	5-10.1.3	Electromechanical position indicator	1104	6-7.3.4.4	Auxiliary location in a local control room or on a local control panel
866	5-10.1.4	Acoustic signalling device			
891	5-12.1.1	Amplifier	2001	7-4.1.7	Weight
892	5-12.1.2	Amplifier	2002	4-4.1.10	Spring
893	5-12.1.3	Amplifier with return channel		7-4.1.8	
894	5-12.1.4	Amplifier with return channel	2003	5-4.3.1.3	Membrane type; diaphragm type
895	5-12.1.5	Feedback controller		7-4.1.9	Membrane; diaphragm
896	5-12.1.6	Feedback controller	2004	7-4.1.10	Membrane; diaphragm
1011	6-5.1.1	Point of measurement	2005	3-5.1.2	Joint of two mechanical parts permitting motion of the parts in two or more dimensions
1021	6-6.1.1	Manual operation of a final controlling element		7-4.1.11	
1022	6-6.1.2	Automatic operation of a final controlling element	2006	7-4.1.12	Bearing
1041	6-7.1.1	Information processing function	2007	7-4.1.13	Buffer head
1042	6-7.1.2	Information processing function performed by time-sharing	2008	4-4.1.1	Mechanical gear pair
				7-4.1.14	
1051	6-7.3.1.1	Alarming	2009	4-4.1.2	Clutch, disengaged in unactuated state
1052	6-7.3.1.2	Displaying discrete state		7-4.1.15	
1053	6-7.3.1.3	Controlling	2010	4-4.1.3	Clutch, engaged in unactuated state
1054	6-7.3.1.4	Density/Difference		7-4.1.16	
1055	6-7.3.1.5	Electric variable/Sensing	2011	4-4.1.4	Brake, disengaged in unactuated state
1056	6-7.3.1.6	Flow rate/Ratio, fraction		7-4.1.17	
1057	6-7.3.1.7	Gauge, position, length/Viewing	2012	4-4.1.5	Brake, applied in unactuated state
1058	6-7.3.1.8	Hand		7-4.1.18	
1059	6-7.3.1.9	Indicating	2013	7-4.1.19	Wheel
1060	6-7.3.1.10	Power/Scanning	2014	7-4.1.20	Ball
1061	6-7.3.1.11	Time/Time rate of change	2015	7-4.1.21	Ball
1062	6-7.3.1.12	Level	2031	7-5.1.1	Restrictor
1063	6-7.3.1.13	Moisture, humidity/Momentarily	2032	7-5.1.6	Flow straightener
1064	6-7.3.1.14	User's choice	2033	7-5.1.7	Silencer
1065	6-7.3.1.15	User's choice	2034	7-5.1.8	Viewing glass
1066	6-7.3.1.16	Pressure/Connection of test point	2035	7-5.1.9	Rupturing disc
			2036	7-5.1.10	Flame arrestor

Regis- tration number	Location (Part- subpara.)	Description
2037	7-5.1.11 11-4.1.2 12-4.1.10	Spray nozzle
2038	7-5.1.12	Siphon, anti-siphon trap
2039	7-5.1.13	Vent
2040	7-5.1.14	Drain funnel
2041	7-5.1.15	Stack
2042	7-5.1.16	Pig receiver: launcher
2043	7-5.1.17	Blind
2044	7-5.1.18	Spectacle blind in closed position
2045	7-5.1.19	Spectacle blind in open position
2061	7-6.1.1	Container, tank, cistern for atmospheric pressure
2062	7-6.1.2	Pressure or vacuum vessel
2063	7-6.1.3	Pressure or vacuum vessel
2064	7-6.1.4	Bunker
2065	7-6.1.5	Open store
2066	7-6.1.6	Shelf store
2067	7-6.1.7	Barrel
2068	7-6.1.8	Bag
2101	8-4.1.1	Two-way valve
2102	8-4.1.2	Angled two-way valve
2103	8-4.1.3	Three-way valve
2104	8-4.1.4	Four-way valve
2111	8-4.3.1.1 8-5.3.1	Non-return function; check function
2112	8-4.3.1.2 8-5.3.2	Safety function
2113	8-4.3.1.7	L-bore in a three- or four-way valve
2114	8-4.3.1.8	T-bore in a three- or four-way valve
2115	8-4.3.1.9	Double L-bore in a four-way valve
2121	8-4.3.2.1	Globe type
2122	8-4.3.2.2	Ball type
2123	8-4.3.2.3	Plug type
2124	8-4.3.2.4	Gate type
2125	8-4.3.2.5	Needle type
2126	8-4.3.2.6	Disc or butterfly type
2127	8-4.3.2.7	Piston type, plunger type
2128	8-4.3.2.8	Diaphragm type
2129	8-4.3.2.9	Hose type
2130	8-4.3.2.10	Reduced bore
2131	8-4.3.2.11	Jacket
2151	8-5.1.1	Two- or three-way damper
2161	8-6.1.1	Valve for fluid power systems
2162	8-6.1.2	Seat of a non-return valve
2163	8-6.1.3	Moving part of a non-return valve
2171	8-6.3.1	Open flow path
2172	8-6.3.2	Closed flow path
2173	8-6.3.3	Closed flow path of a leak-free valve
2174	8-6.3.4	Flow to open air
2175	8-6.3.5	Infinite number of intermediate positions of a valve
2176	8-6.3.6	Transitory position
2177	8-6.3.7	Affected area
2181	8-8.1.1	Self-operating release valve, steam trap or vent
2301	9-4.1.1	Liquid pump
2302	9-4.1.2	Gas pump, vacuum pump, compressor, fan
2303	9-4.1.3	Liquid pump with alternative directions of flow

Regis- tration number	Location (Part- subpara.)	Description
2304	9-4.1.4	Gas pump, compressor, fan with alternative directions of flow
2321	9-4.3.5 10-4.3.8	Positive displacement type
2322	9-4.3.6 10-4.3.9	Rotodynamic type
2323	9-4.3.7	Turbo-molecular type
2331	9-5.1.1	Ejector pump
2332	9-5.1.2	Diffusion pump
2333	9-5.1.3	Diffusion-ejector pump
2334	9-5.1.4	Gas-lift pump
2335	9-5.1.5	Entrapment pump
2336	9-5.1.6	Adsorption pump
2337	9-5.1.7	Getter pump
2338	9-5.1.8	Getter ion pump
2339	9-5.1.9	Cryo pump
2351	9-6.1.1	Electric liquid pump
2352	9-6.1.2	Electric induction liquid pump
2353	9-6.1.3	Electric induction liquid pump
2401	10-4.1.1	Hydraulic pump
2402	10-4.1.2	Pneumatic pump, compressor
2403	10-4.1.3	Hydraulic pump with alternative directions of flow
2404	10-4.1.4	Pneumatic pump with alternative directions of flow
2405	5-4.3.1.11 10-4.1.5	Rotary type, turbine type
2406	10-4.1.6	Hydraulic motor
2407	4-6.1.17 10-4.1.7	Pneumatic motor
		Actuator in the form of a hydraulic motor with alternative directions of flow
		Hydraulic motor with alternative directions of flow
2408	4-6.1.18 10-4.1.8	Actuator in the form of a pneumatic motor with alternative directions of flow
		Pneumatic motor with alternative directions of flow
2409	10-4.1.9	Hydraulic pump/motor
2410	10-4.1.10	Pneumatic pump/motor
2411	10-4.1.11	Hydraulic pump/motor acting as a pump with one direction of flow and as a motor in the other direction of flow
2412	10-4.1.12	Pneumatic pump/motor acting as a pump with one direction of flow and as a motor in the other direction of flow
2413	10-4.1.13	Hydraulic pump/motor acting as a pump with alternative directions of flow or as a motor with alternative directions of flow
2414	10-4.1.14	Pneumatic pump/motor acting as a pump with alternative directions of flow or as a motor with alternative directions of flow
2415	10-4.1.15	Hydraulic semi-rotary motor
2416	10-4.1.16	Pneumatic semi-rotary motor
2431	10-5.1.1	Linear pneumatic-hydraulic converter
2432	10-5.1.3	Linear pneumatic-hydraulic pressure intensifier
2434	10-5.1.5	Hydraulic rotary torque converter

Regis- tration number	Location (Part- subpara.)	Description	Regis- tration number	Location (Part- subpara.)	Description
2435	10-5.1.2	Continuous pneumatic-hydraulic converter	2571	11-9.1.1	Steam turbine
2436	10-5.1.4	Continuous pneumatic-hydraulic intensifier	2572	11-9.1.2	Steam turbine with center inlet
2441	10-6.1.1	Single-acting hydraulic extension cylinder with single-ended piston rod	2573	11-9.1.3	Gas turbine
2442	10-6.1.5	Double-acting hydraulic cylinder with single-ended piston rod	2574	11-9.1.4	Jet motor
2443	10-6.1.7	Single-acting hydraulic telescopic cylinder	2575	11-9.1.5	Turbo-fan jet motor
2444	10-6.1.11	Cushion	2581	11-10.1.1	Reciprocating steam engine
2445	10-6.1.2	Single-acting pneumatic extension cylinder with single-acting piston rod	2582	11-10.1.2	Internal combustion engine
2446	10-6.1.3	Single-acting hydraulic retraction cylinder with single-ended piston rod	2583	11-10.1.3	External combustion engine
2447	10-6.1.4	Single-acting pneumatic retraction cylinder with single-ended piston rod	2591	11-11.1.1	Flare
2448	10-6.1.6	Double-acting pneumatic cylinder with single-ended piston rod	2601	12-4.1.1	Device for separating
2449	10-6.1.8	Single-acting pneumatic telescopic cylinder	2602	12-4.1.3	Screen or filter element
2450	10-6.1.9	Double-acting hydraulic telescopic cylinder	2603	12-4.1.4	Bed filter element of fixed type
2451	10-6.1.10	Double-acting pneumatic telescopic cylinder	2604	12-4.1.5	Bed filter element of fluidized type
2501	11-4.1.3	Heating or cooling coil	2605	12-4.1.6	Scraper
	11-7.3.6	Heat exchanger type	2606	12-4.1.7	Disc with knife
	12-4.3.7		2607	12-4.1.8	Plate for separating
2502	11-4.1.4	Finned tube	2608	12-4.1.9	Centrifuge rotor
2511	11-5.1.1	Heat exchanger with straight tubes	2621	12-4.3.3	Cyclonic type
2512	11-5.1.2	Heat exchanger of floating type	2622	12-4.3.10	Chemical type
2513	11-5.1.3	Heat exchanger with U-shaped tubes	2623	12-4.3.11	Biological type
2514	11-5.1.4	Heat exchanger with coil-shaped tubes	2624	12-4.3.12	Ion exchange type
2515	11-5.1.5	Heat exchanger of double-pipe type	2651	12-5.1.1	Purifier using conversion
2516	11-5.1.6	Heat exchanger of plate type	2661	12-5.3.1	Catalytic type
2517	11-5.1.7	Heat exchanger of spiral type	2671	12-6.1.1	Device for mixing
2518	11-5.1.8	Regenerative pre-heater	2672	12-6.1.2	Rotary mixing element
2521	11-6.1.1	Cooling tower	2673	12-6.1.3	Static mixing element
2531	11-7.1.1	Boiler, steam generator	2691	12-7.1.1	Air conditioner for pneumatic systems
2532	11-7.1.2	Boiler with dome	IEC	5-4.3.1.13	Capacitive type
2533	11-7.1.3	Furnace	IEC	5-4.3.1.14	Conductive electrode type
2541	11-7.3.2	Fired type	IEC	5-4.3.1.16	Receiving ultrasonic type
	12-4.3.9		IEC	5-4.3.1.12	Strain gauge type
2551	11-8.1.1	Heat pump, refrigerator, or freezer	IEC	5-4.3.1.15	Transmitting ultrasonic type
			IEC	5-4.3.1.17	Transmitting and receiving ultrasonic type
			IEC	5-4.3.1.18	Radioactive type
			IEC	5-4.3.1.19	Optical type
			IEC	5-4.3.1.20	Semiconductor type
			IEC	11-7.3.1	Ionizing radiation type, nuclear type
			IEC	11-7.3.4	Electric electrode type
			IEC	11-7.3.3	Electric heating element type
			IEC	11-7.3.5	Electric induction type
			IEC	12-4.3.8	Electro-thermal type
			IEC	12-4.3.5	Electromagnetic type
			IEC	12-4.3.4	Electrostatic type