


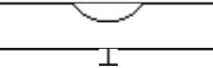















































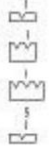









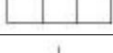




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








## GENERAL

	Tubes: Tube, supply tube, return tube, part frame and symbol 8.1.1 Tubes: Internal and external pilot line,
	leaking oil tube, rinse tube, air exhaust tube 8.1.2 Tubes: Frame for various components 8.1.3 Connections
	and connections: Flexible tube 8.2.8
	Connections and connections: Pressure connection, closed 8.2.9
	Unions and connections: Plug in a fluid tube 8.2.10
	<b>Unions and connections: Union of tubes 9.6.1.2</b>
	<b>Joints and connections: Pipe crossing 9.6.1.3</b>
	<b>Unions and connections: Flexible tube 7.4.1.1/6.4.1.1</b>
	Fittings and connections: Three-way connection 7.4.1.2/6.4.1.2
	<b>Fittings and connections: Quick release, without check valves, coupled 7.4.1.6/6.4.1.6</b>
	<b>Unions and connections: Quick release with two non-return valves, coupled 7.4.1.8/6.4.1.8</b>
	<b>Unions and connections: Quick release, without check valves, uncoupled 7.4.1.3/6.4.1.3</b>
	<b>Unions and connections: Quick release with two non-return valves, released 7.4.1.5/6.4.1.5</b>
	<b>Power Sources: Power Source pneumatics 9.6.4.1</b>

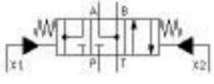
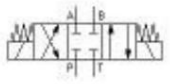
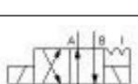

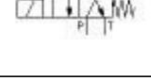
	<b>Power Sources: Power Source</b> hydraulics 9.6.4.2
	<b>Accessories: Open container in contact with the atmosphere</b>
	<b>Accessories: Closed container with lid</b>
	<b>Accessories: Tank connection with termination on oil level</b>
	<b>Accessories: Tank connection with low oil level termination</b>
	<b>Unions and connections: Closed exhaust intake</b>
	<b>Manual override: Applying pressure 8.5.10</b>
	<b>Manual Override: Applying Traction 8.5.11</b>
	<b>Manual override: Applying pressure and traction 8.5.12</b>
	<b>Manual override: Turning 8.5.13</b>
	<b>Manual activation: By lever 8.5.16</b>
	<b>Manual operation: By pedal 8.5.17</b>
	<b>Manual activation: By element tipper 8.5.18</b>
	<b>Mechanical drive: By cam 8.5.20</b>
	<b>Mechanical drive: By roller 8.5.22</b>
	<b>Mechanical drive: Through lever with roller, actuation in one direction of movement 7.1.1.6/6.1.1.6</b>
	<b>Mechanical drive: By antenna head 8.5.24</b>
	<b>Activation applying pressure: Pneumatic drive 8.5.29</b>
	<b>Activation applying pressure: Hydraulic drive 8.5.28</b>

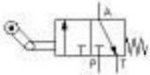
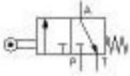
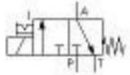
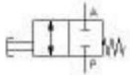

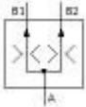





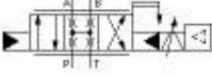
	<b>Actuation by applying pressure: Pneumatic actuation, with control surfaces of different sizes 8.5.25</b>
	<b>Activation applying pressure: Reset by pneumatic spring 7.1.1.8</b>
	<b>Electrical drive: By coil of a turn; direction of effect towards the regulating element 7.1.1.11/6.1.1.8</b>
	<b>Electrical activation: By single-turn coil; direction of effect moving away from the regulatory element 7.1.1.12/6.1.1.9</b>
	<b>Electric drive: By means of a two-turn coil; direction of the effect in both directions, from and towards the regulating element 7.1.1.13/6.1.1.10</b>
	<b>Electrical drive: By stepper motor 7.1.1.7/6.1.1.7</b>
	<b>Electric drive: By electric motor with continuous rotation 9.4.2</b>
	<b>Electric drive: By coil single turn, direction of effect towards the regulating element, infinitely adjustable 7.1.1.14/6.1.1.11</b>
	<b>Electric actuation: By single-turn coil, direction of effect moving away from the regulating element, continuous adjustment 7.1.1.15/6.1.1.12</b>
	<b>Electric actuation: By means of a two- turn coil, direction of action towards and from the regulating element, infinitely adjustable 7.1.1.16/6.1.1.13</b>
	<b>Combined actuation: By means of a coil and pilot valve (pneumatic) 7.1.1.17</b>
	<b>Combined drive: Through coil and pilot valve (hydraulic)</b>
	<b>Combined drive: By coil or auxiliary manual drive and servo-piloted valve (pneumatic)</b>
	<b>Combined drive: By coil or auxiliary manual drive and servo-piloted valve (hydraulic)</b>

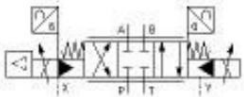
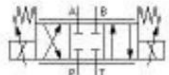
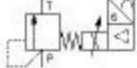
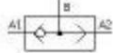





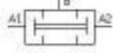
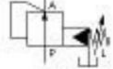

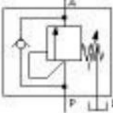
	<b>Combined operation: By means of coil or auxiliary manual override</b>
	<b>operation: By means of coil or manual auxiliary operation with interlock</b>
	<b>components: Interlock</b>
	<b>Mechanical components: Spring return</b>
	<b>Mechanical components: Centered by spring</b>
	<b>Basic symbols: Functional unit for valves, with maximum 4 connections</b>
	<b>Basic symbols: Functional unit for valves with 2 ports</b>
	<b>Basic symbols: Functional unit for valves with 3 connections</b>
	<b>Basic symbols: Functional unit for valves with 4 connections</b>
	<b>Basic symbols: (1) Functional unit for valves with 5 connections</b>
	<b>Basic symbols: (2) Functional unit for valves with 5 connections</b>
	<b>Basic symbols: 2 switching positions</b>
	<b>Basic symbols: 3 switching positions</b>
	<b>Basic symbols: (1) Ways and senses of the flow with a valve</b>
	<b>Basic symbols: (2) Ways and senses of flow with a valve</b>
	<b>Basic symbols: (3) Ways and senses of flow with a valve</b>
	<b>Basic symbols: (4) Ways and senses of flow with a valve</b>







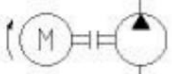




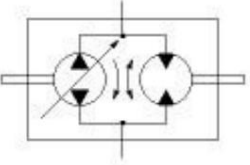


	<b>Basic symbols: (5) Ways and senses of flow with a valve</b>
	<b>Basic symbols: (1) Flow paths with a valve</b>
	<b>Basic symbols: (2) Flow paths with a valve</b>
	<b>Basic symbols: (3) Flow paths with a valve</b>
	<b>Basic symbols: (4) Flow paths with a valve</b>
	<b>Basic symbols: (6) Ways and senses of flow with a valve</b>
	<b>Basic symbols: (7) Ways and senses of flow with a valve</b>
	<b>Basic symbols: (8) Ways and senses of flow with a valve</b>
	<b>Basic symbols: (9) Ways and senses of flow with a valve</b>

## HYDRAULICS

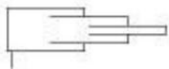
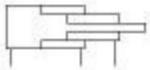
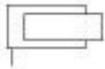
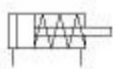

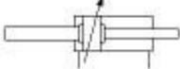
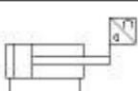
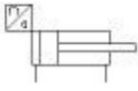
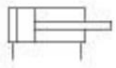






	Manifold valves: 4/3-way valve, hydraulically actuated, unloaded center position, spring-centered 6.1.2.14
	Manifold valves: 4/3-way valve with two solenoid coils, direct actuation, closed center position, spring-centered 6.1. 2.12
	Manifold valves: 4/2-way valve with two solenoid coils, direct actuated, detenting (dual-coil solenoid valve) 6.1.2.9
	Manifold valves: 4/2-way valve with solenoid coil, spring return 6.1.2.3
	Manifold valves: 4/2-way valve with solenoid coil, hydraulic pilot control, spring reset 6.1.2.10
















	Manifold valves: 3/2-way valve, roller lever actuation in one direction, spring reset, normally closed position 6.1.2.5 Manifold valves: 3/2-way valve, roller
	actuation, spring reset, normal closed position Distributor valves: 3/2-way valve with solenoid coil, direct actuation, spring reset and auxiliary manual actuation with interlocking 6.1.2.7
	Manifold valves: 3/2-way seat valve with solenoid coil and limit switch 6.1.2.17
	Manifold valves: 2/2-way valve (2 ports, 2 switching positions for 2 flow directions), push-button actuation, spring return, normally closed position 6.1.2.1
	Flow regulating valves: 2-way flow regulating valve, adjustable
	Flow regulating valves: Flow divider
	Flow control valves: Flow control, fixed
	Flow control valves: Flow control, adjustable 6.1.4.1
	Flow regulating valves: One-way flow regulator, adjustable 6.1.4.2
	Flow regulating valves: 3-way flow regulating valve, adjustable 6.1.4.5
	Flow Control Valves: Throttle Orifice, Fixed
	Dynamic proportional valves: 4/3-way servo valve, pilot operated, solenoid coil with two windings, with mechanical return of the spool position in the pilot phase 6.1.6.5




		Dynamic proportional valves: 4/3-way control valve, piloted with a control solenoid, with positioning control of the main control phase and pilot control, with integrated electronics, 6.1.6.4 Dynamic proportional valves: 4/3
		proportional valve 6.1.6.1 Proportional pressure regulating valves: Proportional pressure relief valve, direct actuated, with positioning control of the
		solenoid coil and integrated electronics 6.1.7.3 Blocking valves (pressure relief valves, backstop and circuit selectors): Circuit selector (OR function) 6.1.5.5
		
		Blocking valves (check valves and circuit selectors): Check valve with spring 6.1.5.2
		Blocking valves (non-return valves and circuit selectors): Non-return valve 6.1.5.1
		Blocking valves (check valves and circuit selectors): Check valve with spring, unlockable 6.1.5.3
		Blocking valves (non-return valves and circuit selectors): 3-way tap 8.2.12
		Blocking valves (check valves and circuit selectors): Double check valve, unlockable 6.1.5.4
		Pressure regulating valves: Simultaneity valve (AND function)
		Pressure regulating valves: 2-way pilot-operated pressure reducing valve with external pilot oil outlet 6.1.3.5
		Pressure regulating valves: Tank charging valve
		Pressure regulating valves: Sequence valve, internally piloted, with shut-off valve 6.1.3.3

		Pressure regulating valves: 3-way pressure reducing valve 6.1.3.9
		Pressure regulating valves: 2-way direct operated pressure reducing valve with external pilot oil outlet 6.1.3.4
		Pressure regulating valves: Pressure limiting valve, direct operated, adjustable 6.1.3.1
		Pressure Regulating Valves: Shutoff/Stop Valve
		Shut-off valves (non-return valves and circuit selectors): Shut-off valve 8.7.23
		Quarter turn actuator/rotary unit with limited angle of rotation and two directions of rotation 6.2.6
		Hydraulic pump and electric motor with coupling shaft
		Hydraulic pump with constant displaced volume
		Hydraulic variable displacement pump with variable displacement direction of flow with the same direction of rotation 6.2.2
		Hydraulic motor with constant displaced/absorbed volume and two directions of rotation
		Electric motor
		Speed multiplier ( simplified representation) 6.2.15
		Hydraulic pump with variable displaced volume 6.2.1
		Reversible hydraulic motor/pump unit with two flow directions and variable displaced volume, external leakage oil line and two directions of rotation 6.2.3

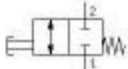
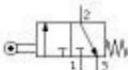
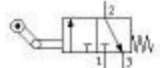

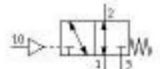
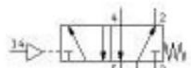

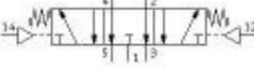
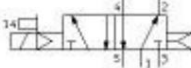
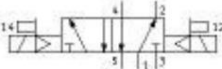


	Telescopic cylinder, single acting 6.3.7
	Telescopic cylinder, double acting 6.3.8
	Single acting cylinder – plunger 6.3.6
	Single-acting cylinder with one-sided piston rod, spring area with leakage oil port 6.3.1
	Single acting pressure intensifier that converts a pneumatic pressure $p_1$ into a higher hydraulic pressure $p_2$ 6.3.15
	Double-acting cylinder with bilateral rod with different diameters, with adjustable end-of-travel cushioning on both sides
	Double-acting cylinder with displacement measuring system on the rod
	Double-acting cylinder with integrated displacement measuring system
	Double-acting cylinder with one-sided rod 6.3.2
	Tachometer 6.4.3.15
	Temperature indicator (thermometer) 6.4.3.7
	flow indicator
	Flowmeter with digital display 6.4.3.14
	Optical indicator 6.4.3.1
	Fluid level switch with four normally closed contacts 6.4.3.10


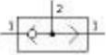
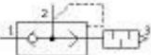




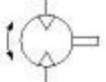

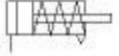

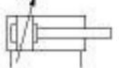
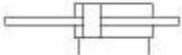

	Pressure indicator (manometer) 6.4.3.4
	Torque meter 6.4.3.16
	Differential pressure gauge 6.4.3.5
	Flowmeter 6.4.3.13
	Fluid level indicator (sight glass) 6.4.3.9
	Digital indicator 6.4.3.2
	Filter 6.4.4.1
	Filter with manometer 6.4.4.5
	Centrifugal separator 6.4.4.12
	Tank breather filter 6.4.4.2
	Strainer with shut-off valve with optical contamination indicator and contact switch 6.4.4.9
	Temperature regulator 6.4.5.5
	Heater 6.4.5.4
	Chiller without flow lines for the flow direction of the refrigerant fluid 6.4.5.1
	Hydropneumatic accumulator, fluid separation by bladder (bladder accumulator) 6.4.6.2
















	Gas bottle 6.4.6.4
	Hydropneumatic accumulator, fluid separation by diaphragm ( diaphragm accumulator) 6.4.6.1
	Hydropneumatic accumulator, fluid separation by piston (piston accumulator ) 6.4.6.3



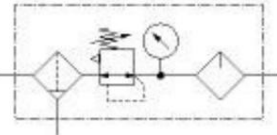

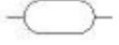

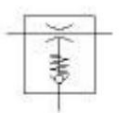


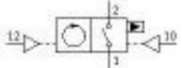

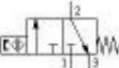
## PNEUMATICS

	Way valves: 2/2-way valve (2 ports, 2 switching positions for 2 two directions of flow), pressure actuated, spring return, normally closed position 7.1.2.1
	Way valves: 3/2-way valve, roller actuated, spring reset, normal closed position
	Way valves: 3/2-way valve, roller lever actuation in one direction, spring return, normal closed position 7.1.2.7
	Way valves: 5/2-way valve, pressure actuated, detenting
	Way valves: Pneumatic 3/2- way valve, compressed air actuation on one side, spring return, normally closed position
	Way valves: Pneumatic 5/2- way valve, compressed air actuation on one side, spring return
	Way valves: 5/2-way bistable pneumatic valve, compressed air actuation on two sides
	Way valves: 5/3-way pneumatic valve , compressed air actuation on both sides, spring centered, exhaust center 7.1.2.23
	Way valves: 5/2-way solenoid valve, coil actuation and pneumatic pilot control, reset by pneumatic spring, manual auxiliary actuation 7.1.2.20
	Way valves: 5/2-way bistable solenoid valve, actuated on both sides with coil and servo pilot, manually actuated

	assistant
	Way valves: 5/3 way positioning valve, direct actuation
	Way valves: 5/3-way valve, pressure center, lever actuation, in all positions with interlock
	7.1.2.18 Way valves: 5/3-way solenoid valve, closed center, actuation by means of a loop and pneumatic pilot control, spring centering, manual override on both sides
	Pressure regulating valves: Pressure limiting valve, direct operated, adjustable
	Pressure regulating valves: Sequence valve with air release, adjustable
	Pressure regulating valves: Pressure regulating valve without exhaust, adjustable
	Pressure regulating valves: Pressure regulating valve with exhaust, adjustable
	Pressure regulating valves: Simultaneity valve (logical function of AND)
	Flow control valves: Throttling valve, fixed
	Flow control valves: Throttle valve, adjustable
	Flow regulating valves: Throttle and non-return valve, adjustable
	Block valves (check and selector valves): Check valve
	Block valves (check and selector valves): Check valve with spring

		Shut-off valves (check and selector valves): Releaseable check valve, with spring 7.1.5.3
		Shut-off valves (check and selector valves): Selector valve ( OR logic function) 7.1.5.5
		Shut-off valves (check and selector valves): Selector valve ( OR logic function) 7.1.5.5
		Block valves (check and selector valves): Block valve 8.7.23
		Compressor 7.2.4
		Vacuum pump 7.2.6
		Motor with one direction of flow 7.2.3
		Motor with alternate directions of flow and two directions of rotation 7.2.5
		Quarter turn actuator / Rocker actuator with limited angle of rotation 7.2.1
		Single Acting Cylinder, Spring Return, Offline Exhaust
		Double Acting Single Rod Cylinder 7.3.2
		Double acting cylinder with adjustable cushioning on both sides
		Double acting double rod cylinder
		Converter of a pneumatic pressure into a hydraulic pressure of equal magnitude, or vice versa 7.3.12

		Single acting pressure intensifier, to convert a pneumatic pressure $p_1$ into a higher hydraulic pressure $p_2$ 7.3.13
		Double acting rodless cylinder, with adjustable cushioning on both sides (linear pneumatic actuator)
		Bellows 7.3.14
		Flexible tube cylinder (pneumatic muscle) 7.3.15
		Gripper (external), double acting, with permanent magnet in piston 7.3.17
		Gripper (inside), double acting, with permanent magnet in piston 7.3.18
		Optical indicator 7.4.3.1
		Digital display 7.4.3.2
		Pressure measuring device (manometer) 7.4.3.4
		Differential pressure measuring device 7.4.3.5
		Filter 7.4.4.1
		Filter with manometer 7.4.4.3
		Liquid separator with manual exhaust 7.4.4.19
		Filter with separator, with manual exhaust 7.4.4.20
		Liquid separator with automatic exhaust 7.4.4.21

	Air dryer 7.4.4.24
	Lubricator 7.4.4.25
	Compressed air maintenance unit (filter with manual evacuation, regulating valve with adjustable exhaust, pressure gauge and lubricator (complete presentation) 7.4.4.17
	Compressed air maintenance unit with lubricator (simplified presentation) 7.4.4.17
	Air receiver 7.4.5.1
	Vacuum generator 7.4.6.1
	Single-stage vacuum generator, with integrated non-return valve 7.4.6.2
	Suction cup 7.4.7.1
	Reflex detector (reflection detector)
	Counter with preselector
	Pulse counter, with pneumatic output signal 7.1.2.10
	Pneumatic position detector