



SOLENOID OPERATORS AND SPARE PART KITS

Spare part kits General operating and maintenance instructions Troubleshooting guide

A

SPARE PARTS KITS

General

ASCO offers spare parts kits for most of its products. Each kit contains the internal parts that would require replacement in normal service :

- discs, springs, diaphragms, seals, etc.
- coils (see Section J, page V1100)

Solenoid operator parts (enclosure etc.), the solenoid valve base, the body and the cover are not normally included in the kits. Special kits with the solenoid operator's component parts and mounting brackets are available (see catalogue pages or contact us).

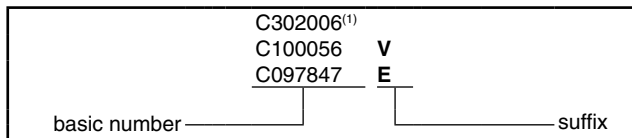
To order ASCO spare parts kits

Refer to the catalogue pages for the catalogue numbers of the spare parts and accessories.

For an example, see Section C, page **V205**:

catalogue number	spare parts kit n°.		mounting bracket n°.
	~	=	
SCG262C001	C302006	C302058	164706-001
SCG262C002/011/014/016	C302014	C302058	164706-001
SCG262C006/015	C302016	C302060	164706-001
SCG262C012	C302008	C302060	164706-001
SCG262C079	C302012	-	164706-001
SCG262C095	C302010	-	164706-001
SCE262C031	C302012	-	164706-001
SCE262C091	C097847	C100056	212299-001
SCE262C093	C097848	C100056	212299-001
SCB262C035	C302043	C302074	212299-001
SCB262C092	C302043	C302074	212299-001
SCB262C094	C302043	C302074	212299-001

Ordering examples are provided to help identify the right spare parts kit:



For an example, see Section C, page **V223** :

15-digit product code	spare parts kit n°.		mounting bracket n°.
	~	=	
E262K109S1N00F8	M200007N00	-	M200094A00
E262K109S1N00H1	-	M200007N00	
E262K138S1N00F8	M200018N00	-	M200094A00
E262K138S1N00H1	-	M200034N00	

If you need help in ordering spare parts kits or cannot find the exact listing of your valve catalogue number, contact your nearest ASCO source.

GENERAL OPERATING AND MAINTENANCE INSTRUCTIONS

These general instructions complete the specific instructions for each device, and the operating instructions or documents delivered with the product. Malfunctions, damage or injury may occur if these instructions are not followed.

General

ASCO components are designed to be operated in accordance with the limits specified on the nameplate, in the operating and maintenance instructions, or in the documents delivered with the product. All applicable directives, legislation, orders and standards, as amended from time to time, as well as state-of-the-art practices and procedures must be observed for the intended scope of application of the product. Where applicable, take all appropriate measures to ensure the requirements are met.

All assembly, operation, use, and maintenance must be performed by qualified, authorised personnel.

Personnel working with the components must be familiar with the applicable safety regulations and requirements relating to the components, apparatus, machinery and electrical installations (for valves, solenoid valves, electronic control equipment, air service equipment).

Assembly

- Preparation

- Check the preliminary storage conditions required for the component. They must be in accordance with the product's specifications.
- Carefully remove the components from their packaging.
- **Power off and depressurise the apparatus**, machinery, or installation designed to receive the component. Stipulate power off and depressurisation requirements to guard against any unauthorised intervention.
- Make sure that the unit, its components, and their environment are clean, and protect them against deterioration.
- Do not modify the device.
- Make sure that the fluid is compatible with the materials it contacts.

Air, water, or oil is used in general (in cases where oil is used as a fluid, make sure that it does not vaporise within the component's operating temperature range).

The operator or user must make sure that the gas or liquid group corresponds to the product's classification. (Oxygen is a hazardous group 1 gas. It can lead to higher classifications: contact us for more information.)

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- Connection

- Connect all the ports of the component that may come in contact with the fluid.
- Clean the conduits that will connect to the component.
- Be sure to observe the direction of flow of the fluid.
- Use only the provided connection possibilities.
- Ensure that no foreign matter enters the circuit, in particular when making the connection leakproof.
- Be sure to observe the allowed bend radius for tubing; do not restrict the ports for fluid circulation.
- Tubes and connection elements must not exert any force, torque, or strain on the product.
- Use appropriate tools and locate assembly tools as close as possible to the connection point.
- Be sure to observe the recommended torque when tightening tubing connections.
- Connections must be made to last.

⚠ Improper installation may cause undesirable hydraulic effects that can reduce the life of the device (erosion, cavitation, waterhammer etc.)

- Operation

Operation is authorised only after having duly verified that the apparatus, machinery or installation in which the component has been incorporated complies with the applicable directives, legislation, orders and standards, as amended from time to time.

- Use

- Do not subject the components to loads or forces other than those for which they are designed.
- Do not operate the component under pressure unless its ports are connected to conduits.
- This component is not designed to operate submerged in a liquid. Make sure that water cannot enter the control system.
- Make sure to prevent the device from freezing in the event that temperatures fall below +5°C.

- Maintenance

We recommend you to periodically check the correct operation of the components and clean them. The checking and cleaning frequency depends on the type of fluids used, and the operating and environmental conditions.

Before any maintenance work is done, **power off and depressurise** the component, apparatus, machinery or installation to prevent any unauthorised intervention.

Make sure that the component and its environment are clean.

- Environment

Components must be disposed of in compliance with applicable environmental regulations when taking apparatus or machinery out of service and carrying out their final destruction, or dismantling the installation.

- Special instructions

SOLENOID VALVES

Remarks concerning voltage spikes:

Due to their physical design, all solenoids, solenoid-actuated valves, or relays have a coil which produces an inductance. Switching off the current will create inductive voltage spikes liable to cause electrostatic discharge in nearby wiring.

The only way to eliminate these parasitic voltages is for the user to use appropriate attenuation devices such as, in particular, diodes, Zener diodes, varistors, RC (resistor/capacitor) components, or filters.

The characteristics and wiring of these devices depend exclusively on specific requirements, which can only be determined individually by the user. Additional protective measures may be required according to the assembly method and the location where the device is used.

Our solenoid valves and pilot valves are designed to operate with devices compliant with EN 61131-2.

Assembly:

- In order to protect the equipment, install an adequate strainer or filter upstream from and as close as possible to the component.
- All power cables must have a sufficient cross-section and a sufficient insulation. They must be installed in a compliant manner.
- All electrical connections must be made by trained and qualified personnel only and be in accordance with your local regulations and standards.
- **Before starting any work, turn off the electrical current to power off the components.**
- All screw terminals must be tightened to the appropriate torque prior to operation.
- Depending on the voltage, electrical components must be grounded according to local standards and regulations.

The electrical connection is either made by detachable spade plug connectors with an IP65 protection rating (when properly mounted), by screw terminals embedded in a coil with metal enclosure, by spade terminals, or by flying leads/cables embedded in the coil.

Operation: Before pressurising the system, first carry out an electrical test. Apply power to the coil several times and listen for the metallic „click“ indicating the solenoid operator is working.

Personnel working with the components must be familiar with electric controls, such as redundancies and feedback (electronic controls), where applicable.

Use: The coils are designed for continuous operation and may therefore become hot.

If the solenoid valve is easily accessible, provide for means of protection to prevent accidental contact that may cause burns.

Maintenance: Before any maintenance work is done, turn off the electrical current to power off the components.

AIR SERVICE EQUIPMENT

Assembly: All ports on the device that may come in contact with pressurised fluids must be connected to a conduit or an associated component (example: exhaust silencer, etc.).

Use: Personnel working with the components must be familiar with electric controls, such as redundancies and feedback (electronic controls), where applicable.

Environment: In order to prevent noise nuisance due to system purging by certain components (especially with compressed air), it is recommended to use noise reduction systems.

TROUBLESHOOTING

All valves are quite simple and very reliable. Many of the problems originate outside the valves themselves.

Excessive solenoid noise (hum or chatter) can be caused by:

- Low voltage
- Faulty relay or improper electrical control signal
- Loose solenoid parts
- Foreign matter on the core or in the core tube
- Worn core or core tube
- Damaged spring
- Excessive system pressure

When troubleshooting 4- or 5-way valves controlling cylinders, it is important to follow the instructions provided with the valve and check the actuators/cylinders in the system.

Full-size piping for pressure inlet and exhaust should normally be installed. Some of these valves require flow control devices (flow regulators) to be installed between the cylinder and the valve (not in the valve's exhaust port).

Because faulty cylinder operation is often caused by the cylinder itself, it should be checked for:

- Misalignment between the piston rod and connected load.
- Lack of lubrication.
- Worn and leaking piston cups which allow fluid to exhaust through the valve.
- Foreign matter in the flow regulators.
- System overloading, low line pressure, or undersized hoses or fittings.

If the problem does not appear to be in the cylinder, the valve should be checked.

TROUBLESHOOTING GUIDE		
Problem	Probable cause	Possible solution
Direct operated valve		
Valve will not operate when valve circuit is energised (working state)	Low voltage or no voltage to solenoid coil	Check voltage. For most valves, voltage should be higher than or at least equal to 85% of the nominal voltage (Un) of nameplate rating.
	Burned out coil	See "Coil failure" on following page.
	Excessive foreign matter jamming core	Clean valve; install strainer close to valve inlet.
	Binding core or damaged core tube	Replace parts (contact us).
Valve will not close or shift when valve circuit is de-energised (rest state)	Excessive fluid pressure	Reduce pressure to valve nameplate pressure rating.
	Coil not de-energised	Check power supply control circuit.
	Excessive foreign matter jamming core in core-tube	Clean valve; install strainer close to valve inlet.
	Damaged disc or seat causing internal leakage	Replace with new parts.
	Binding core or damaged core tube	Replace parts (contact us).
	Damaged spring	Replace with new spring. Never elongate or shorten spring.
Pilot operated valve		
Pilot operated valve Valve will not operate when valve circuit is energised (working state)	Low voltage or no voltage to solenoid coil	Check voltage. For most valves, voltage should be higher than or at least equal to 85% of the nominal voltage (Un) of nameplate rating.
	Burned out coil	See "Coil failure" on following page.
	Excessive foreign matter jamming core	Clean valve; install strainer close to valve inlet.
	Binding core or damaged core tube	Replace parts (contact us).
	Excessive fluid pressure	Reduce pressure to valve nameplate pressure rating.
	Insufficient pressure drop across the valve	Valve might be oversized. Replace valve by one having a smaller orifice. Increase pressure, if possible.
	Damaged diaphragm or piston	Replace damaged parts.
Valve will not close or shift when valve circuit is de-energised (rest state)	Plugged or restricted pilot orifice	Clean valve and pilot orifice.
	Coil not de-energised	Check power supply control circuit.
	Excessive foreign matter jamming core in core-tube	Clean valve; install strainer close to valve inlet.
	Damaged disc or seat causing internal leakage	Replace with new parts.
	Binding core or damaged core tube	Replace parts (contact us).
	Damaged spring	Replace with new spring. Never elongate or shorten spring.
	Plugged bleed orifice	Clean orifice.
	Damaged pilot seat or pilot disc	Replace with new parts
	Damaged diaphragm or piston	Replace with new parts.
	Insufficient pressure drop across the valve	Valve might be oversized. Replace valve by one having a smaller orifice. Increase pressure, if possible.

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TROUBLESHOOTING GUIDE		
Problem	Probable cause	Possible solution
All valves		
Wire drawing	Dirt or foreign matter is lodged on seat	Preferably install new valve. Install strainer close to valve inlet.
Coil failure	Overvoltage	Check voltage at coil. Voltage must conform to nameplate rating.
	Damaged core or core tube causing inrush current to be drawn continuously	Check for damaged core and core tube, or damaged spring. Check for scale or foreign matter on the core or inside the core tube. Clean thoroughly and replace any damaged parts (contact us).
	Excessive foreign matter jamming core in core tube	
	Excessive fluid pressure	Reduce pressure or install suitable valve.
	Excessive ambient or fluid temperature	Refer to the data listed for temperature classes E, F and H (Section A, page V030).
	Missing solenoid parts	Install missing coil or housing and other metal parts or properly install incorrectly assembled metal parts. The metal parts and housing (if used) form part of the magnetic circuit and are required to provide the impedance needed to limit current draw.
	Moisture inside solenoid enclosure	Waterproof the entrance conduit to prevent entry of moisture. If valve is mounted outdoors, check to see that <ul style="list-style-type: none"> - coil connector is properly mounted (and connector seal is in place); - enclosure (if used) is weatherproof and seal is in place and in good condition. Use appropriate sealant where required. Select solenoids for use in damp or humid atmospheres: <ul style="list-style-type: none"> - IP65 = moulded coil and connector (most catalogue valves) - IP67 = valve or coil with M12 connection and connector (series 302, M12 coil) - IP67 = metal enclosure (example WP/WS/etc.).
	ATEX 94/9/EC versions: Binding core, excessive supply voltage, excessive ambient or fluid temperature may cause the thermal fuse to open	No reset possible. Replace the solenoid operator/coil (contact us).
Pressure operated valves		
Valve will not operate when operator is supplied with pilot pressure (working state)	Pressure operated valve	Check the pressure on the supply side of the valve; it must correspond to the values indicated on the nameplate. Caution: Observe the minimum pilot pressure values for the valve in NO or NC function with fluid entry above disc or back pressure.
Internal leaks	Incorrect outlet pressure; disc/seat etc. not leaktight	Disassemble the valve body and clean the internal parts. Replace disc seal or valve, if necessary. Make sure to use recommended types of fluids. Do not use "compact" type valves (page V405) or cast iron valves with flanges on steam circuits.
Leaks at pilot connection	Incorrect pilot pressure	Check that pilot valve is properly tightened on valve operator. Observe tightening torques. When installing a pilot valve with mounting pad to ISO 15218, check for correct position of mounting interface surface and seal supplied with the valve. Install the pilot directly on the mounting interface/seal.
Wire drawing	Dirt or foreign matter is lodged on seat	Preferably install new valve. Install strainer close to valve inlet.