Installation and Maintenance Manual Multistage Ejector

ZL212 Series

1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

A Caution	Indicates a hazard with a low level of risk, which if not avoided, could result in minor or moderate injury.
A Warning	Indicates a hazard with a medium level of risk, which if not avoided, could result in death or serious injury.
🛦 Danger	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

2 Specifications

2.1 Specifications

Specification of ejector

()

Model	ZL212	ZL212-G	ZL212-Dx-Q
Nozzle diameter	∲ 1.2 x 2		
Max. suction flow rate	200 l/min (ANR)		
Air consumption	126 l/min (ANR)		
Max. vacuum pressure	-84kPa		
Max. operating pressure	0.7Mpa		
Supply pressure range	0.2 to 0.5Mpa		
Standard supply pressure	0.4Mpa		
Operating temperature range	5 to 50°C		
Option	No option (Standard)	With vacuum pressure gauge	With vacuum pressure switch
Enclosure		Equivalent to IP30	

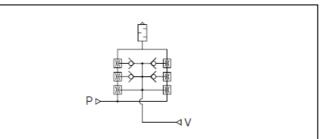
Valve Specifications (SYJ700 series)

Fluid		Air	
Operating pressure range	Internal pilot type	0.15 to 0.7MPa	
Ambient and fluid tem	perature	-10~50°C (No freezing.)	
Response time (at 0.5	MPa)	30 ms or less	
Max. operating freque	ncy	5 Hz	
Effective sectional area		0.25 Cv	
Manual override (Manual operation)		Non-locking push type	
		Lock driver operation type, Lock manual operation type	
Pilot exhaust method		Pilot valve separate exhaust, Main valve, Pilot valve	
		common exhaust	
Lubrication		Not required	
Mounting orientation		Unrestricted	
Shock / Vibration resistance		150/30 m/s ²	
Enclosure		Dust proof	

Digital vacuum pressure switch specifications (ZSE30A type)

Rated pressure range	0.0 to -101.0kPa		
Set pressure range	10.0 to -105.0kPa		
Proof pressure	500kPa		
Min. Regulating unit	0.1kPa		
Applicable Fluid	Air, inert gas, Non-flammable gas		
Devuer events veltere	12 to 24VDC±10%, Ripple (p-p) 10% or less		
Power supply voltage	(With power supply polarity protection)		
Current consumption	40mA or less		
Switch output	NPN or PNP open collector 1 output		
Switch output	NPN or PNP open collector 2 output (selectable)		
Max. load current	80mA		
Max. applied voltage	28V (With NPN output)		
Residual voltage	1V or less (With load current of 80mA)		

2.2 Circuit Symbols



3 Installation

3.1 Installation

Warning

 Do not install the product unless the safety instructions have been read and understood.

3.2 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact. Check the product specifications.
- · Do not mount in a location exposed to radiant heat.

Warning

- The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications. Since the products specified here can be used in various operating conditions, their compatibility with the specific pneumatic system must be based on specifications or after analysis and/or tests to meet specific requirements.
- Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced personnel.

• Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.

2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.

3) Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Supply air into the system

gradually to create back pressure, i.e. incorporate a soft-start valve).Do not use this product outside of the specifications. Contact SMC

if it is to be used in any of the following conditions:1) Conditions and environments beyond the given specifications, or if the

product is to be used outdoors.

2) Installations in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.3) An application which has the possibility of having negative effects on

people, property, or animals, requiring special safety analysis.

A Caution

• Ensure that the air supply system is filtered to 5 microns.

	oonse time out protection	(Response time selections with anti-chattering function: 20, 100, 500, 1000, 2000ms) Short circuit protection					
tability		Short circuit protection					
Í		Short circuit protection ±0.2%F.S. ±1digit					
esis							
	Hysteresis mode Window comparator	Adjustable (can be set from 0) (note)					
	mode						
æ	Output voltage	1 to 5v±2.5%F.S.					
oltag	Linearity	\pm 1%F.S. or less					
> 0	Output impedance	Approx. 1k Ω					
	Output current	4 to 20mA±2.5%F.S.					
	Linearity	\pm 1%F.S. or less					
Current output	Load impedance	Max. load impedance: 300Ω with power supply voltage of 12V 600Ω with power supply voltage of 24V					
		Min. lad impedance:50 Ω					
Display method Indicator accuracy Indicator		4-digit 7-segment indicator LCD 2-color display (Red and green) ±2%F.S.±1digit(at 25℃±3℃ ambient temperature) Light up when output is ON OUT1: Green OUT2:Red					
				Enclosure		IP40	
				Ambient temperature		Operating:0 to 50°C,Stored:-10 to 60°C (No freezing or condensation)	
Ambient humidity		Operating and stored:35 to 85%RH(No condensation)					
Withstand voltage		1000VAC for1 min, between live parts and enclosure					
Insulation resistance		50MΩ or more between live parts and enclosure (at 500VDC)					
Vibration proof		10 to 150Hz 1.5mm or20m/s ² amplitude in X,Y,Z directions for 2 hours each					
Impact resistance		100m/s ² X,Y,Z directions3 times each					
Temperature characteristics		±2%F.S.(based on 25°C)					
Lead wire		Oil resistant heavy-duty vinyl cable 3 wire					
	y meth or accor Enclos Ambie Withst Insula Vibrati Impac rature vire	Output impedance Output current Linearity Load impedance y method or accuracy Enclosure Ambient temperature Ambient humidity Withstand voltage Insulation resistance Vibration proof Impact resistance rature characteristics					

Vacuum pressure gauge specification

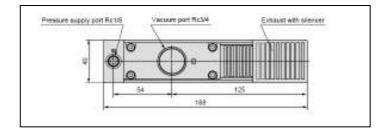
Model No.	GZ30S		
Fluid	Air		
Pressure range	-100 to 100kPa		
Scale angle	230°		
Accuracy	±3% F. S. (full span)		
Class	Class 3		
Operating temperature range	0 to 50°C		
Material	Case: Polycarbonate / ABS resin		

3.3 Piping

Warning

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1.5 to 2 threads exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

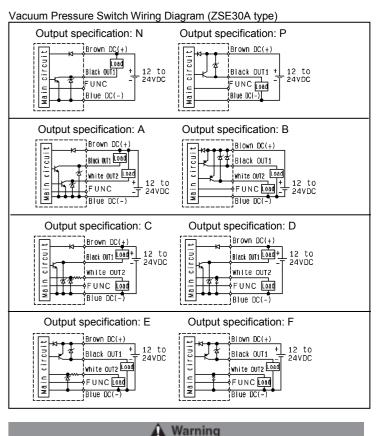
Thread	Tightening Torque	
M5	By hand + 1/6 turn with a wrench (1/4 turn for miniature fittings)	
Rc 1/8	7 to 9	



3.4 Electrical Connection

Caution

- When DC power is connected to a solenoid valve equipped with light and/or surge voltage suppressor, check for polarity indications.
- · For polarity indications:
- No diode to protect polarity: if polarity connection is wrong, the diode in the valve or switching device at control equipment or power supply may be damaged.
- With diode to protect polarity: if polarity connection is wrong, the valve does not switch.



Wiring electronic Pressure Switch

Confirm wire colours and terminal numbers when wiring.

Since incorrect wiring can lead to breakage or failure of the switch as well as malfunction, perform wiring after confirming wiring colours and terminal numbers with the instruction manual.

· Avoid repeatedly bending or stretching lead wires.

Broken lead wires will result from applying bending stress or stretching force to the lead wires. In the event that lead wires are damaged creating a possibility of malfunction, replace the entire product. (For cases in which the lead wires cannot be replaced through grommets.)

Confirm proper insulation of wiring.

Be certain that there is no faulty wiring insulation (contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

Do not wire with power lines or high voltage lines.

Wire separately from power lines or high voltage lines, avoiding parallel wiring or wiring in the same conduit. Control circuits containing switches may malfunction due to noise from other lines.

Do not allow short circuiting of loads.

Use caution, as switches will be damaged if a load is short circuited. Be especially careful not to reverse the power supply line (Brown) and the output line (Black).

3.5 Mounting

A Warning

Read the instruction manual carefully.

The product should be mounted and operated with a good understanding of its contents. Also, keep the manual where it can be easily referred to at any time.

Ensure space for maintenance.

- Ensure the necessary space for maintenance activities.
- Be sure to tighten screws with the proper torque.
- When mounting, tighten screws with the recommended torque.
- Do not obstruct the exhaust port of the ejector.
- If the exhaust port is obstructed when mounted, a vacuum will not be generated.

A Warning

Electronic Pressure Switch

Do not use if equipment does not operate properly.

Verify correct mounting by suitable function and leakage inspections after air and power are connected following mounting or maintenance.

ZL212-TFK34GB

• Do not drop or bump.

Do not drop, bump or apply excessive impact (1000m/s²) when handling. Even if the switch body is not damaged, the switch may suffer internal damage that will lead to malfunction.

- Hold the product from the body side when handling. The tensile strength of the power cord is 49N, and pulling it with a force greater than this can cause failure. Hold by the body when handling.
- Turn the setting trimmer gently using a watchmakers screwdriver. Turn the setting trimmer gently using a watchmakers screwdriver. Do not turn beyond the stoppers located at both ends. If the trimmer is broken, adjustment will be impossible.

Pressure port

Do not insert wire, etc., from the pressure port. This will damage the pressure sensor, making it impossible to obtain normal operation.

3.6 Air Supply Circuit

🛕 Warning

- When designing the air supply circuit ensure that pipe sizes have sufficient capacity to prevent any pressure drop within the generator, this also applies to valves and fittings.
- The supply air should be clean and oil free.

Vacuum circuit

Ensure that the piping from generator to vacuum pad is kept as short as possible to prevent restriction and leakage.

Vacuum pads

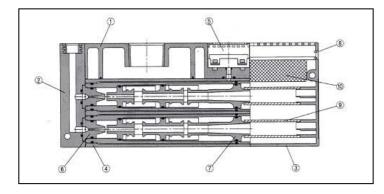
When installing vacuum generators the rule is one generator \rightarrow one vacuum pad. If this rule is ignored then possible loss of vacuum during pick-up will occur.

4 Maintenance

4.1 General Maintenance

A Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous. Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.



Parts List

No.	Description	Note			
1	Suction Cover				
2	Front Cover A	Without Valve			
3	End Plate				
4	Body				
5	Vacuum Sensor Unit				
6	Nozzle				
7	Diffuser				
8	Detent Plug	Other than vacuum switch			
	Lead Wire Cover	Vacuum switch specification			

Replacement Parts

No.	Description	Material	Part No.
9	Sound absorbing material A	PVF	ZL212-SP01
10	Sound absorbing material	PVF	(Set No. for 9 & 10)

When ordering a vacuum pressure gauge or digital vacuum pressure switch separately, use the part numbers shown in the option specifications on page 3.

5 Contacts					
AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00		
BELGIUM	(32) 3 355 1464	LITHUANIA	(370) 5 264 8126		
BULGARIA	(359) 2 974 4492	NETHERLANDS	(31) 20 531 8888		
CZECH REP.	(420) 541 424 611	NORWAY	(47) 67 12 90 20		
DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600		
ESTONIA	(372) 651 0370	PORTUGAL	(351) 21 471 1880		
FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111		
FRANCE	(33) 1 6476 1000	SLOVAKIA	(421) 2 444 56725		
GERMANY	(49) 6103 4020	SLOVENIA	(386) 73 885 412		
GREECE	(30) 210 271 7265	SPAIN	(34) 945 184 100		
HUNGARY	(36) 23 511 390	SWEDEN	(46) 8 603 1200		
IRELAND	(353) 1 403 9000	SWITZERLAND	(41) 52 396 3131		
ITALY	(39) 02 92711	UNITED KINGDOM	(44) 1908 563888		

SMC Corporation

URL: http:// www.smcworld.com (Global) http:// www.smceu.com (Europe) Specifications are subject to change without prior notice from the manufacturer. © 2013 SMC Corporation All Rights Reserved.