

IST-EJ-XONE



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SAFETY



WARNING! Do not install or use the EJ-XONE pump if damaged during transport, handling or use. Damage may lead to bursting and cause injury or damage to property

Warning signs:



Exhaust air



Suction power



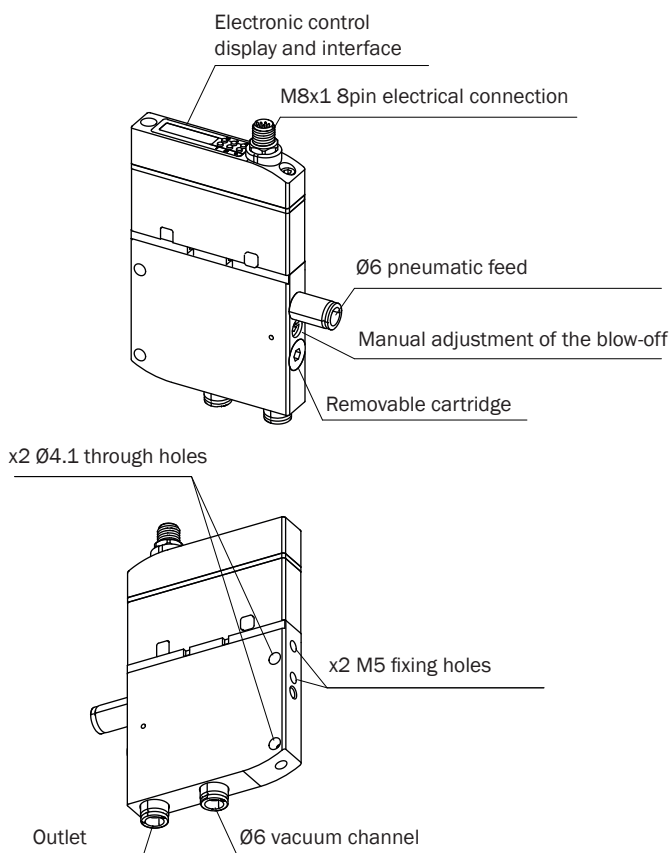
The pump outlet must not be obstructed



Wear ear protection if working at a distance of less than 2-3 m from the vacuum ejector in operation.

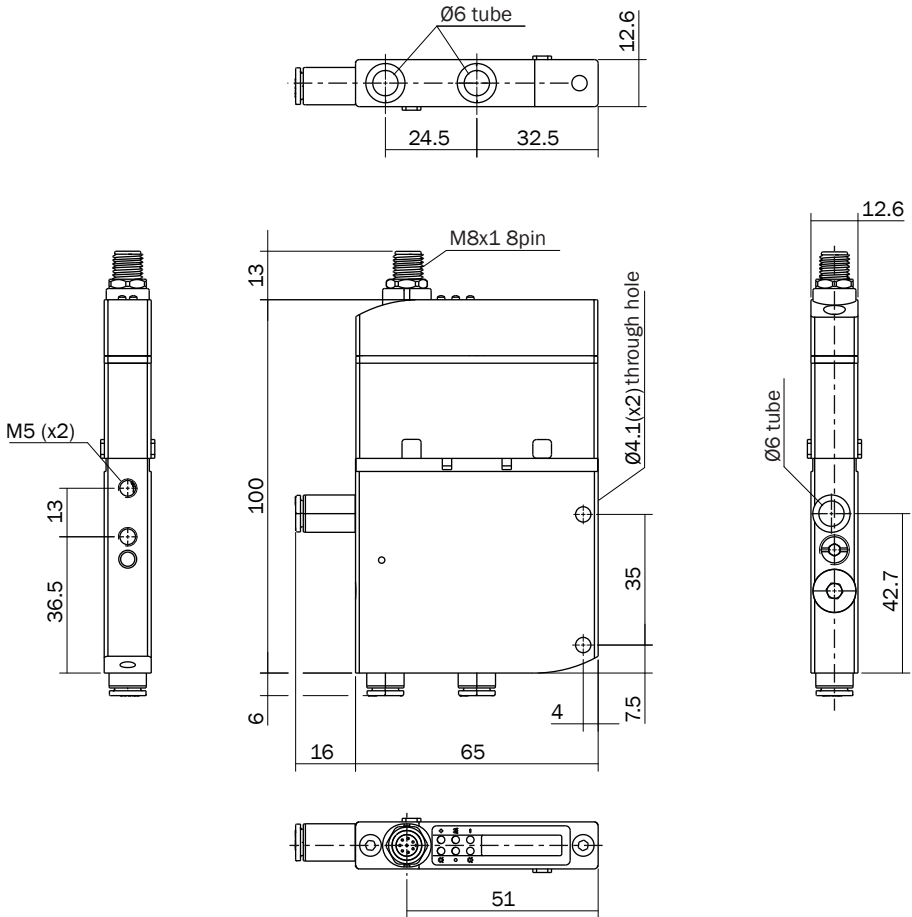
General features

- Vacuum pump based on highly efficient multistage Gimatic EJ-M (medium) cartridges.
- Configurations with vacuum generation and blow-off solenoid valves.
- Energy-saving system with manual and automatic modes that saves up to 95% of compressed air for sealed applications involving an integrated non-return valve.
- 7-segment display with intuitive and easy-to-read pump menu and status messages.
- Blow-off mechanism electrically controlled by a pin or activated automatically for each cycle, and highly reliable in case of low or fluctuating feed pressure.
- Electrical connection with 8-pin M8 connector.
- Manually adjustable blow-off flow rate.
- Compressed air connection: $\Phi 6$ female.
- Vacuum connection: $\Phi 6$ female.



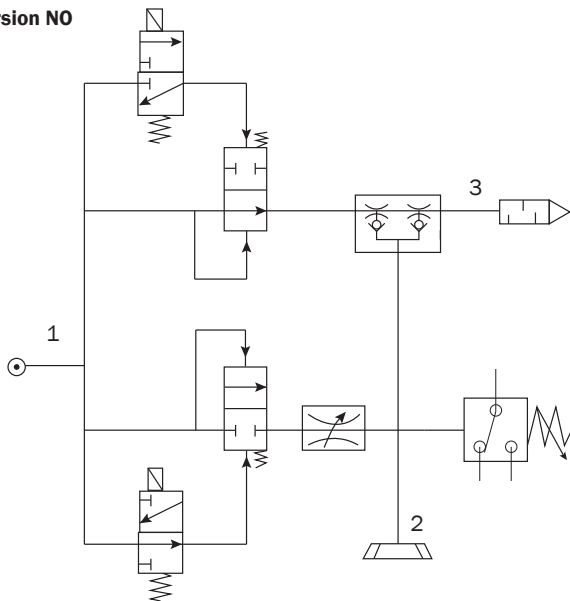
Overview

- Single pump
- Pump in set

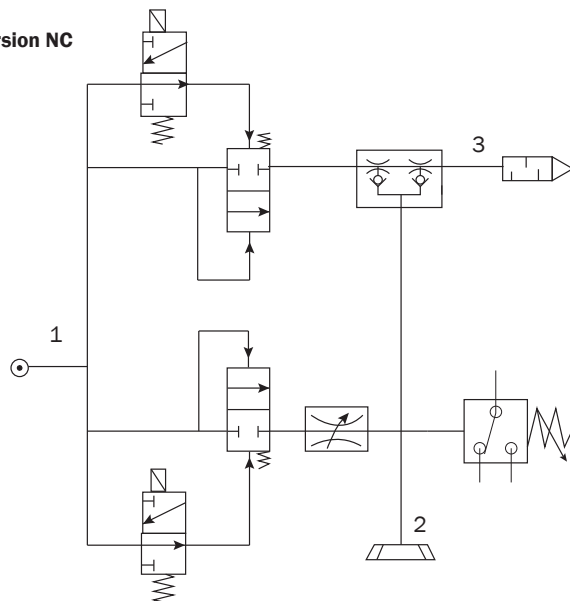


PNEUMATIC CIRCUIT

EJ-XONE... version NO



EJ-XONE... version NC



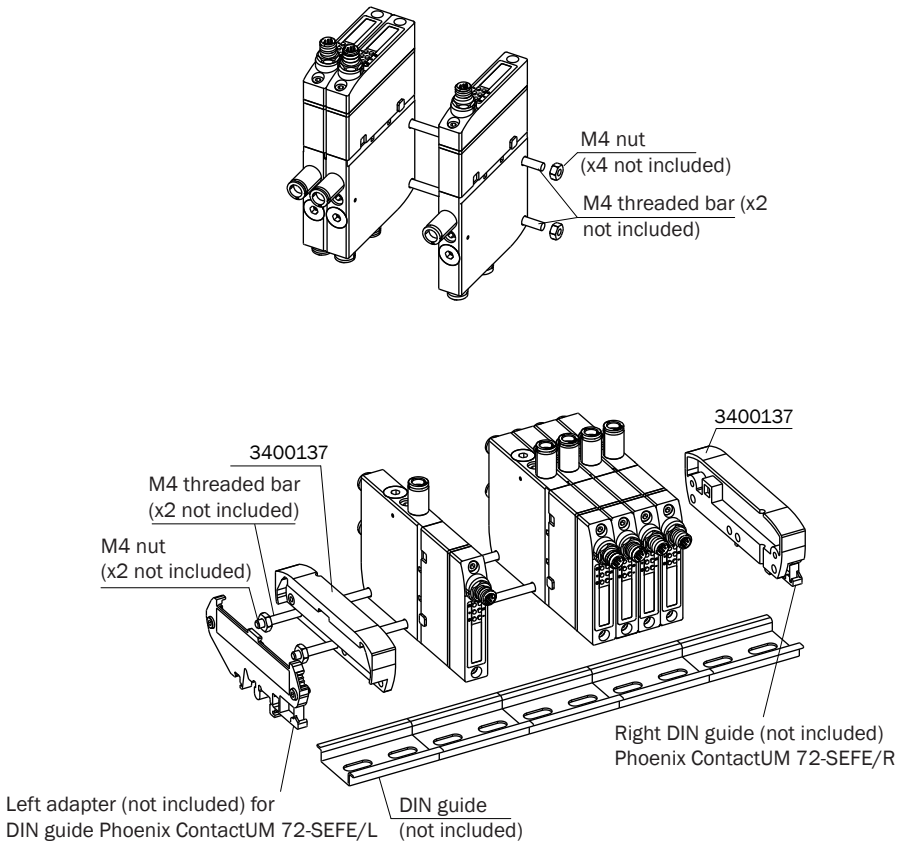
INSTALLATION

Use the 2 M5 holes provided for fixing and make sure to leave the pump outlet free. Below are the recommended pipe diameters (compressed air and vacuum) to ensure top performance. Avoid constrictions, excessively long lengths and small fittings.

Cartridge	Vacuum connection	Compressed air connection
3300017 (EJ-M-HV-2-NR) 3300013 (EJ-M-HF-2-NR) 3300009 (EJ-M-LP-2-NR)	M7/ Ø6 tube	M7/ Ø6 tube

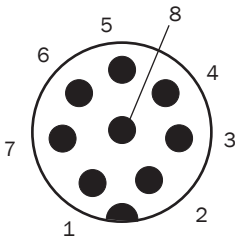
The indications are valid for tubes with a maximum length of 2 metres.
The quality of the compressed air must meet the requirements of DIN ISO 8573-1 class 4.

INSTALLATION OF SET



ELECTRICAL INSTALLATION

To properly power the pump, use a stabilised 24Vdc power supply (min 1A). Electrical connection: M8 8-pole male. Digital inputs and outputs: 0-24Vdc, max 200mA.

	Pin nr.	Name	Description	Colour
	1	GRIP-ON	Gripped piece digital output	White
	2	24V	+24Vdc	Brown
	3	SENS	Analogue output proportional to the vacuum switch signal	Green
	4	VAC	Vacuum valve control digital input	Yellow
	5	ES-ON	Energy saving status digital output active	Grey
	6	BLW	Blow-off valve control digital input	Pink
	7	GND	GND	Blue
	8	ERROR	Pump digital output in error	Red

Pin 1: the GRIP-ON digital output is activated if the vacuum switch signal is greater than or equal to the vacuum threshold set by the user to indicate the piece has been gripped.

Pin 2: device feed +24Vdc

Pin 3: the analogue output SENS is generated from the output signal of the vacuum switch and is updated regardless of the operating status of the pump. The signal is calibrated to generate a voltage from 0 to 5V.

Pin 4: the VAC digital input accepts an input voltage of 0-24V.

Pin 5: the ES-ON digital output is activated if the vacuum level reaches the ES high threshold and remains activated for as long as Energy Saving is active.

Pin 6: the BLW digital input accepts an input voltage of 0-24V.

Pin 7: device feed GND

Pin 8: the digital output ERROR indicates any pump fault status (time limit exceeded to generate vacuum, vacuum switch failed, a valve malfunction or excessive temperature of the pump).

All digital inputs and outputs can operate in PNP or NPN logic depending on the product order code.

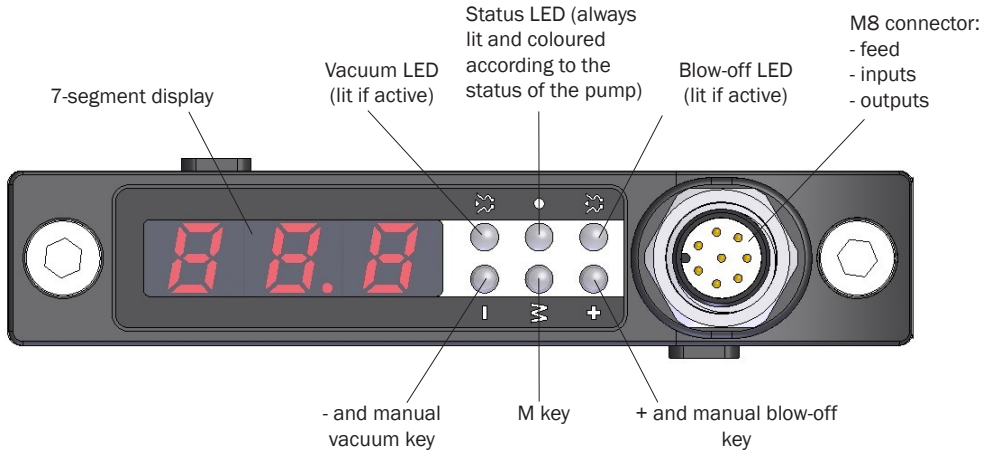
MANUAL OVERRIDE

Press and hold the "-" key (manual vacuum) for at least 3 seconds to activate the vacuum valve or the "+" key (manual blow-off) to activate the blow-off valve. This feature requires the pump to be powered up, and compressed air.

DISPLAY

Normal operation

The EX-XONE pump interface consists of a display, three keys, three status signal LEDs and the connector for feed and management of the inputs/outputs.



The 7-segment display has three red digits and, during normal operation, displays the pressure detected by the vacuum gauge in the pump (note that all pressures displayed are to be understood as depressions, the "-" sign is omitted). The unit of measurement for pressure is set to kPa by default and can be changed in the menu.

Three LEDs indicate the status of the pump:

- Vacuum LED:
 - lit -> vacuum activated
 - flashing -> vacuum activated with Energy Saving enabled
 - off -> vacuum deactivated
- Blow-off LED:
 - lit -> blow-off activated
 - off -> blow-off deactivated
- Status LED:
 - green -> operation OK, no piece gripped
 - yellow -> operation OK, piece gripped
 - red -> error status
 - blue -> menu active

MENU PARAMETERS

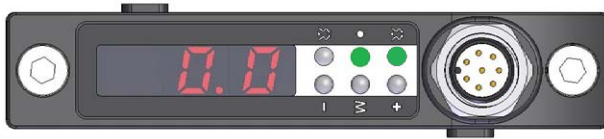
To change a parameter, access the menu by pressing the "M" key for 3 seconds then briefly press "M" to scroll to the next parameter. The value of the parameter is displayed two seconds after the parameter is selected: this value can be changed with the "-" or "+" keys and confirmed by pressing the "M" key for 3 seconds.

When the set parameter is changed, the value shown on the display starts flashing to indicate that it is NOT saved in the memory, or remains steady if it is already saved in the memory. When you exit the menu or go to the next parameter, the provisional value (even if modified) will not be saved automatically. Press and hold the "M" key (3 sec) to confirm the changed value.

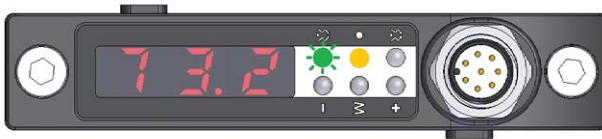
Press the "M" key again (3 sec) To exit the menu.

no.	Display screen	Explanation of parameter
1	vth	<p>Vacuum threshold [-1 ÷ -99]kPa, default: -30kPa</p> <p>Gripped piece threshold Threshold value that discriminates whether or not a piece is gripped based on the vacuum level measured.</p>
2	blt	<p>Blow-off type [INPUT, AUTO], default: INPUT</p> <p>Type of blow-off The blow-off can be activated by the BLW (INPUT) digital input or automatically for each cycle (AUTO) when the generation of vacuum is stopped</p>
3	blD	<p>Blow-off duration [0.1 ÷ 10]sec, default: 0.3sec</p> <p>Duration of blow-off Duration of blow-off (used only for automatic blow-off)</p>
4	ES	<p>Energy Saving [ON, OFF], default: ON</p> <p>Enabling of energy saving See chapter on Energy Saving</p>

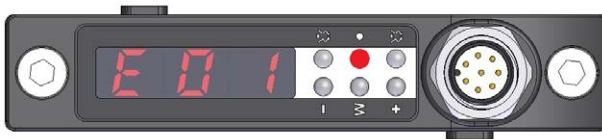
5	AEC	Auto Exclude [ON, OFF], default: ON Disabling of energy saving See chapter on Energy Saving
6	ESL	Energy Saving low [-1 ÷ -99]kPa, default: -50kPa Lower threshold applied for Energy Saving See chapter on Energy Saving
7	ESH	Energy Saving high [-1 ÷ -99]kPa, default: -70kPa Upper threshold applied for Energy Saving See chapter on Energy Saving
8	UOM	Unit of measurement [kPa, mBar, inHg, %], default: kPa Unit of measurement Units of measurement of the vacuum level detected (in the interest of ease, the units of measurement will be displayed with a letter: [P], [B], [H], [%])
9	VtO	Vacuum timeout [0 ÷ 60]sec, default: 10sec Time limit within which the measured vacuum level must reach the gripped piece threshold. If it is not reached, error E01 appears 0 -> limit time disabled
10	ERR	Error info Numeric error code (if any)

Examples of screens:

Pump in normal operation, generation of blow-off active (blow-off LED lit), no piece gripped (status LED green).



Pump in normal operation, generation of vacuum active with Energy Saving enabled (vacuum LED flashing), piece gripped (status LED yellow).



Pump in error status (status LED red). The error code is displayed in alternation with the current pressure value.

INTEGRATED FEATURES

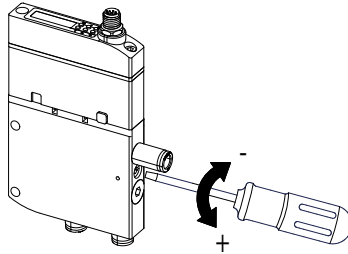
- BLOW-OFF

The EX-XONE pump has two integrated types of blow-off which can be selected in the menu.

- INPUT: Blow-off is electrically activated by the BLW pin.

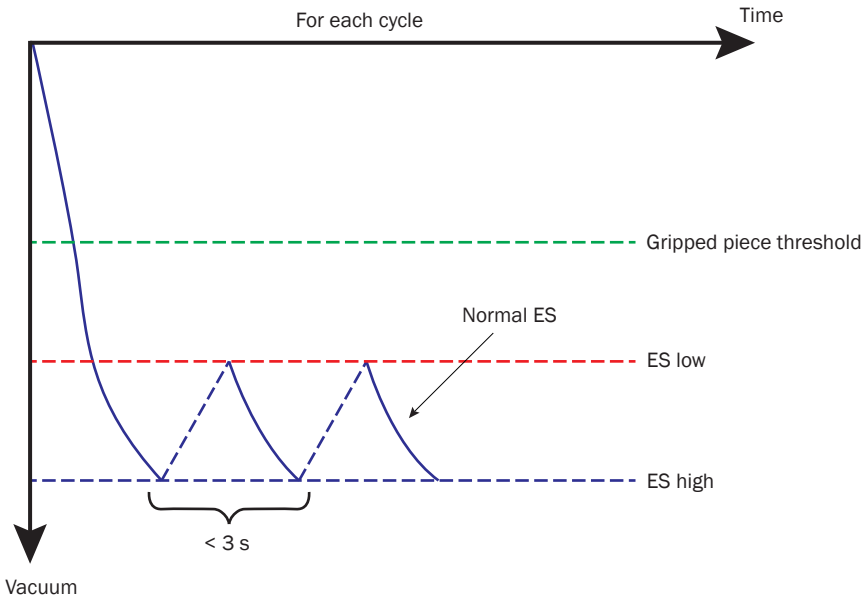
- AUTO: Blow-off is carried out automatically for each cycle for the duration set in the menu.

The blow-off flow rate can be adjusted mechanically in both modes as indicated below:



- ENERGY SAVING (ES)

When energy saving is enabled in the menu and there are no leaks, this feature saves a large amount of compressed air by stopping the generation of vacuum and retaining the vacuum in the circuit (it is not to be considered a safety system, however, if the compressed air/power supply cuts out). The vacuum is retained by means of a valve on the cartridge and the blow-off feature must therefore be activated to release the object being handled. The ES low and ES high thresholds must be set in the menu (see graph below for operation).



- AUTOMATIC ENERGY SAVING (AES)

If ENERGY SAVING is enabled in the menu, the AES feature is activated by setting the ES low and ES high values, respectively, to -98 kPa and -99 kPa. It allows automatic setting of the energy saving intervention thresholds for each cycle, based on the maximum vacuum level achievable on the material being handled.

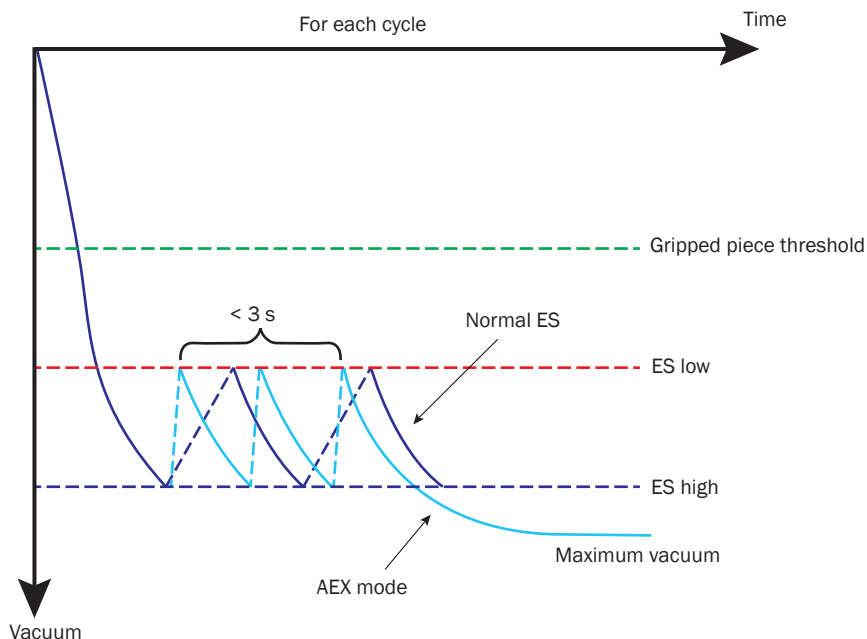
- AUTO EXCLUDE (AEX)

If the handled object is too porous or, in general, if there are leaks in the vacuum circuit such that ENERGY SAVING cannot be used, the AUTO EXCLUDE feature is activated to create the maximum vacuum.

In particular, when activated in the menu, the AUTO EXCLUDE feature disables the ES feature in all those cases in which there is an excessive number of re-activations of the vacuum valve in a short period of time. This feature also prevents frequent activations, extending the life of the vacuum solenoid valve.

≥ 2 re-activations in 3 seconds: the pump is activated to generate continuous vacuum

< 2 re-activations in 3 seconds: the pump continues to run in ES mode



PNEUMATIC FEATURES	
Max feed pressure	8bar
Min feed pressure	4bar
Max air consumption for vacuum generation	58NI/min
Max air consumption for blow-off	168NI/min
Max flow rate for blow-off	93NI/min
Max flow rate for suction	38NI/min
Max pressure for blow-off (zero flow rate)	2.3bar
Valve opening time	≤ 12ms
Valve closing time	≤ 5ms
Feed	Dry air
Pneumatic feed connection	M7 / Ø6 female tube
Vacuum channel connection	M7 / Ø6 female tube
Max vacuum level	-95kPa

GENERAL FEATURES	
Operating temperature range	0 – 60 °C
Weight	145g (with fittings)
IP rating	IP54
Materials	Al, PA66, SS, TPU, PC, NBR
Feed	24 Vdc (±10%)
Electrical connection	M8 8-pole male
Manual commands	Yes, monostable buttons
Vacuum transducer response time	1ms
Vacuum level analogue output	0-5Vdc
Valve commands	digital PNP/NPN

OPERATION

- Continuous and manual adjustment of the blow-off flow rate
- Status indicated by display and integrated LEDs
- Energy saving feature with manual or automatic thresholds
- Automatic disabling of energy saving feature for porous materials
- Automatic detection of gripped piece with integrated vacuum switch
- Logical selection of PNP or NPN digital signals based on product order code
- 7-segment display and RGB status LEDs

PUMP ERROR CODES

ER code	Brief description	Detailed description
E01	Vacuum time-out	Gripped piece vacuum level NOT reached within the time limit set in the parameter "Vacuum t-out"*
E11	Vacuum generation fault	Error reading vacuum level: faulty transducer or blocked vacuum channel
E21	Vacuum valve fault	Abnormal absorption of the vacuum generation valve, possible electrical failure of the valve or control circuit
E22	Blow-off valve fault	Abnormal absorption of the blow-off generation valve, possible electrical failure of the valve or control circuit
E31	High temperature	An excessive temperature of the device has been detected: some features may be compromised

When an error occurs, the pump stops running, activates the ERROR output, goes into standby, and ignores the status of the inputs. Normal operation can only be restored by the user: enter the menu, scroll through the screens to "Error info" and hold down the "+" key for 3 seconds. If no damage has occurred, the pump will resume normal operation when you exit the menu.

*Only in case of error E01: this error can be resolved simply by stopping vacuum generation, i.e. by deactivating the "-" key and the VAC input in the case of a normally closed (NC) model, or by activating the "-" key or VAC input in the case of a normally open (NO) model.

ORDER CODES

Code	Alias
3400113	EJ-XONE-M-HF-2-NO-PNP
3400114	EJ-XONE-M-HV-2-NO-PNP
3400115	EJ-XONE-M-LP-2-NO-PNP
3400116	EJ-XONE-M-HF-2-NC-PNP
3400117	EJ-XONE-M-HV-2-NC-PNP
3400118	EJ-XONE-M-LP-2-NC-PNP
3400125	EJ-XONE-M-HF-2-NO-NPN
3400126	EJ-XONE-M-HV-2-NO-NPN
3400127	EJ-XONE-M-LP-2-NO-NPN
3400128	EJ-XONE-M-HF-2-NC-NPN
3400129	EJ-XONE-M-HV-2-NC-NPN
3400130	EJ-XONE-M-LP-2-NC-NPN

Example: EJ-XONE-M-HF-2-NO-PNP

EJ-XBSV: family code (fixed)

M: type of ejector

HF: ejector class (HF: high flow, HV: high vacuum, LP: low feed pressure)

2: stages of the cartridge

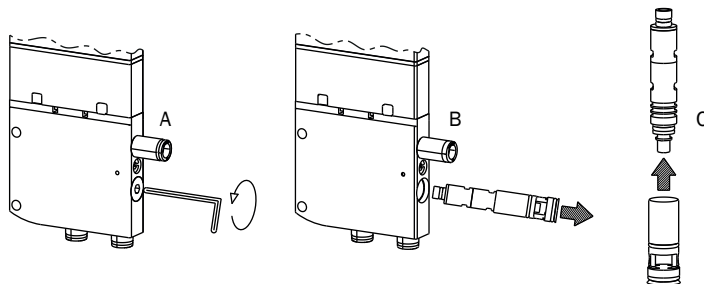
NO: default condition of the vacuum generation channel (NO: normally open, NC: normally closed)

PNP: digital input/output logic (PNP: PNP logic, NPN: NPN logic)

MAINTENANCE AND REPLACEMENT OF THE CARTRIDGE

Access to the vacuum generation cartridge

The EJ-XONE series pumps are designed to ensure quick and easy maintenance and replacement of the main components. The cartridge cap can be removed and gently slipped off the main body of the pump using an Allen key.

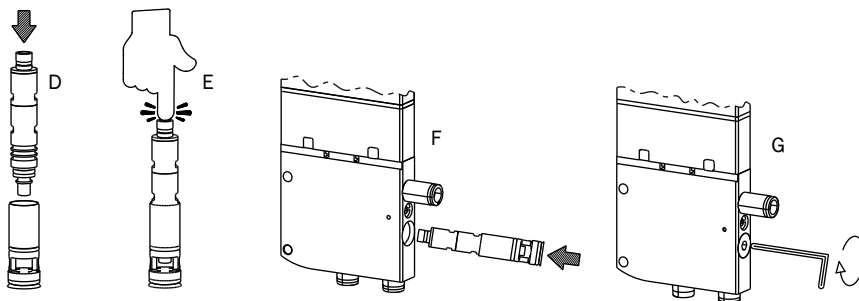
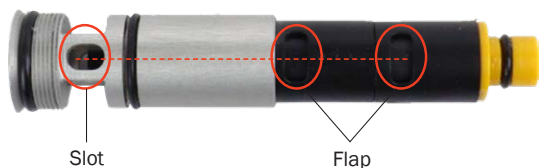


Replacement and refitting

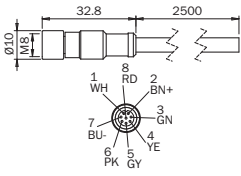
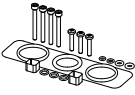
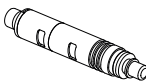
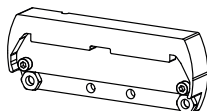
Before refitting the cartridge, check that all seals are in the correct positions.

Clean the seat of the cartridge, removing any foreign matter with tweezers or a jet of pressurised air. Place the vacuum generation cartridge on its axis in its seat in the cap, and push it in until you hear a click confirming that it has reached its mechanical stroke end stop and the gasket is correctly engaged. Insert the cap inside the body and screw it back in with the Allen screw, taking care not to damage the seal.

Caution: for a correct operation of the pump, it is necessary to introduce the cartridge inside the holder paying attention to align the flaps to the slot as shown in the photo.



SPARE PARTS AND ACCESSORIES

Drawing	Code (Alias)	Description
	CFGM800825P	Female M8 connector with cable in PUR, 2.5m
	3400114-KITU (EJ-XONE-M-KITU)	Kit of spare seals
	3300017 (EJ-M-HV-2-NR)	HV cartridge with NR (yellow)
	3300013 (EJ-M-HF-2-NR)	HF cartridge with NR (green)
	3300009 (EJ-M-LP-2-NR)	LP cartridge with NR (grey)
	3400137 (EJ-XONE-M-PH)	side panel for mounting in set on DIN rail compatible with Phoenix (cross reference: UM 72-SEFE/L and UM 72-SEFE/R)