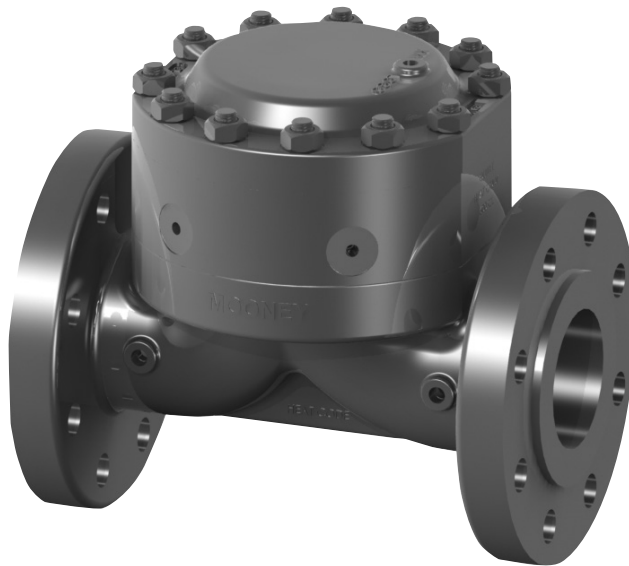


# Flowgrid™ Noise Controller

Instruction Manual (Rev.C)



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## Scope

This manual provides instructions for installation, operation and maintenance of the **Mooney™** Flowgrid Noise Controller. The manual is divided into the following sections.

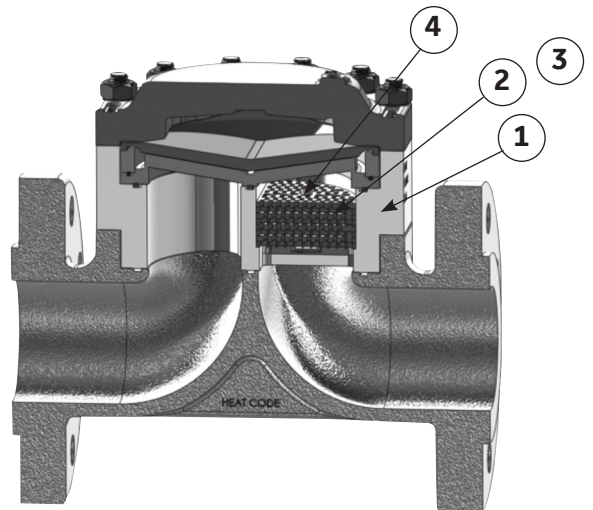
## Product Description

The Noise Controller is a noise reducing device for the Mooney Flowgrid regulator. The Noise Controller can be thought of as an “energy absorber;” reducing noise and vibrations. The unit has several unique features that add to its value:

- Reduction of noise measured up to 25 dBA
- Top entry design providing ease of installation and maintenance
- Decreases turbulence and vibrations
- Durability – designed to last as long as the regulator
- Performance – full ANSI rating on both inlet and outlet

Materials of Construction	
Housing	Carbon Steel
Plates	SST
Plate Screws	SST
Seals	Nitrile
Housing Studs	ANSI B7

Table 1 - Materials of Construction



- 1 The housing is located between the Flowgrid body and the Flowgrid topworks. The Noise reduction plates reside inside the housing and are bolted to the housing.
- 2 The Noise Flow Plates are assembled inside the housing and cause the noise reduction.
- 3 The Noise Grid Plates are assembled inside the housing and create a space between the Flow Plates while still maintaining the isolated flow channels.
- 4 The Noise Plate Bolting (4) attach the Noise plate assembly to the housing.

Specifications	
Size (in)	1, 2, 2 (AC), 3, 4, 6, 8, 10, 12
Size (DN)	25, 50, 50 AC, 80, 100, 150, 200, 250, 300
ANSI Class	150, 300, 600
Temperature Working Emergency	-20°F to 150°F (-29°C to 66°C) -40°F to 175°F (-40°C to 79°C)
Maximum Operating Differential	800 psi (55 bar) <sup>1</sup>
Maximum Emergency Differential	1000 psi (69 bar) <sup>1</sup>
Maximum Inlet Pressure	1480 psig (102 bar) <sup>1</sup>
Flow Direction	Unidirectional

<sup>1</sup>May be limited by body rating.

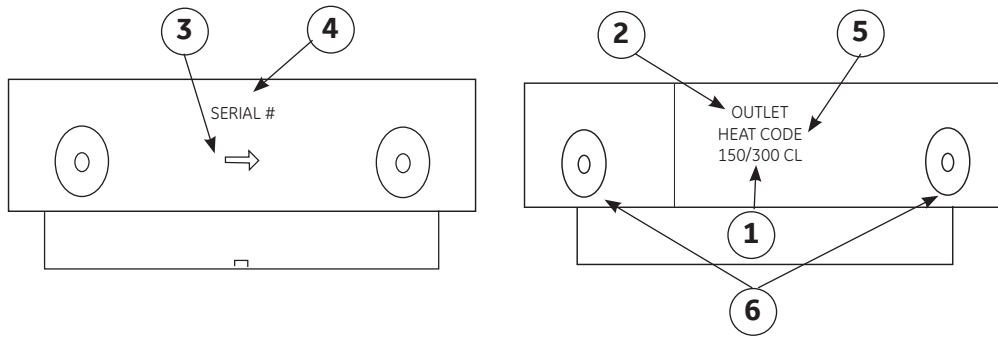
**Table 2 - Specifications**

Size	Noise Controller (approximate)	Flowgrid & Controller Maximum Weight <sup>2</sup>	Lifting Point Connections on Housing	Increase in Flowgrid Height
1"	8 lbs. (4 kg)	20 lbs. (9 kg)	No	2.3 in (58 mm)
2"	15 lbs. (7 kg)	56 lbs. (25 kg)	No	2.6 in (66 mm)
2" AC	40 lbs. (18 kg)	128 lbs. (58 kg)	Yes (4 pts, external)	2.8 in (71 mm)
3"	40 lbs. (18 kg)	134 lbs. (61 kg)	Yes (4 pts, external)	2.8 in (71 mm)
4"	46 lbs. (21 kg)	191 lbs. (87 kg)	Yes (4 pts, external)	2.8 in (71 mm)
6"	74 lbs. (34 kg)	404 lbs. (183 kg)	Yes (4 pts, external)	2.9 in (74 mm)
8"	140 lbs. (64 kg)	790 lbs. (358 kg)	Yes (4 pts, external)	3.4 in (86 mm)
10"	148 lbs. (67 kg) (qty 2, 6" units)	1050 lbs. (476 kg)	Yes (4 pts, external)	2.9 in (74 mm)
12"	280 lbs. (127 kg) (qty 2, 8" units)	1680 lbs. (762 kg)	Yes (4 pts, external)	3.4 in (86 mm)

<sup>2</sup>Maximum possible weight of Flowgrid with a Noise Controller. Weight will vary depending on Flowgrid models.

**Table 3 - Approximate Weight**

## Noise Controller Markings



**Figure 1 - Noise Controller Markings**

1. American National Standards Institute (ANSI) pressure class rating of the Controller.
2. The flow direction is marked on the Housing ("OUTLET").
3. The flow direction is indicated with a flow arrow.
4. The serial number is stamped on the housing.
5. The material heat code.
6. Lifting points (not connected to system pressure)

# Principles of Operation

The Noise Controller retrofits on most Mooney Flowgrid regulators. To understand the principles of operation for the Flowgrid, please refer to the Flowgrid manual. The Noise Controller acts as an energy absorber, reducing sound and vibrations.

The Noise Controller is a noise reduction device that mounts into the existing Flowgrid assembly. After the gas flow exits the standard Flowgrid throttle plate, it is required to pass through a series of flow channels created by the Noise Plate Assembly. As the gas passes through these channels, the noise energy is dissipated, causing an overall reduction in regulator noise.

## Installation

### **⚠️ WARNING**

Personal injury, equipment damage, or leakage due to explosion of accumulated gas or bursting of pressure containing parts may result if this regulator is over pressured or is installed where service conditions could exceed the limits given in the specification of this manual or on the nameplate, or where conditions exceed any ratings of the adjacent piping or piping connections.

Verify the limitations of both regulator and pilot to ensure neither device is over pressured. To avoid such injury or damage, provide pressure relieving or pressure limiting devices (as required by Title 49, Part 192, of the U.S. code of Federal Regulations, by the National Fire Codes of the National Fire Protection Association, or applicable codes) to prevent service conditions from exceeding those limits.

Additionally, physical damage to the regulator could break the pilot off the main regulator, causing personal injury and/or property damage due to explosion of accumulated gas. To avoid such injury and damage, install the regulator in a safe location.

### **⚠️ WARNING**

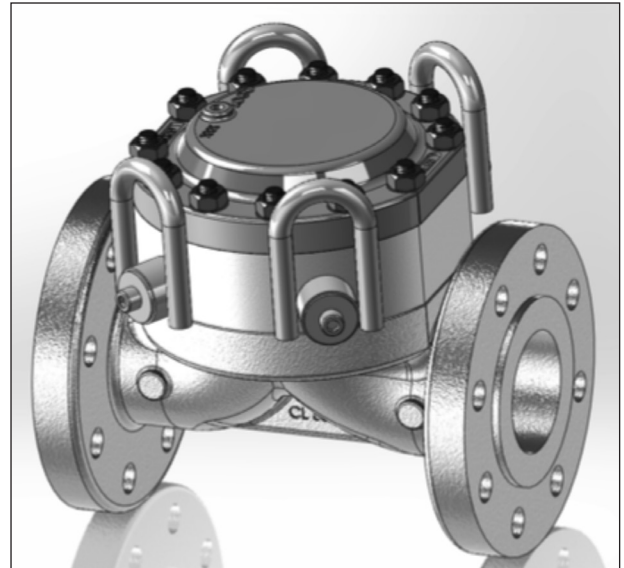
Gas Regulators installed in confined or enclosed spaces should be provided with adequate ventilation to prevent the possibility of gas buildup or accumulation from leaks and venting. Leaks or vented gas may accumulate causing personal injury, death, or property damage. Pilot spring cases and the regulator enclosure should be vented to a safe area away from air intakes, or any hazardous location. The vent lines and stacks must be protected against condensation and clogging.

The Noise Controller can be installed in one of two ways; (1) already assembled in the Flowgrid, (2) as a kit to be installed in an already installed Flowgrid.

## Install Combined Flowgrid and Mooney Noise Controller:

See Flowgrid IOM for installation instructions.

Lifting: Use hoist rings attached to the side of the Controller to lift the assembly.



## Install Mooney Noise Controller on existing Flowgrid installation:



1. Personnel: Installation of the Mooney Noise Controller should be made by qualified personnel familiar with high pressure piping and pilot operated regulators.
2. Isolation: Safely isolate and depressurize the existing Flowgrid regulator.

## **! WARNING**

**Before disassembly, make sure the regulator has been isolated from the process by closing block valves on the inlet and outlet sides of the regulator. Safely release pressure and process fluid from body and pilot system. Failure to complete these steps can result in personal injury and property damage.**

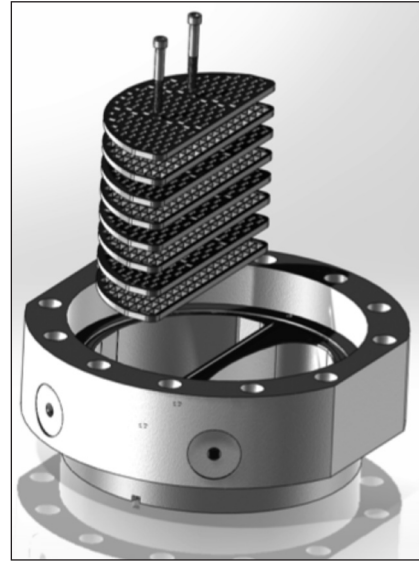
3. Disassembly: Disconnect pilot tubing from Flowgrid body and remove all Flowgrid components, including the body studs, leaving the body installed in-line.
4. Prior Inspection: Inspect the Noise Controller assembly for any damage that might have occurred in shipping. Make sure the body, pilot lines, and inlet piping are clear and free from foreign material. Verify that the Noise Plate assembly is installed in the Noise Controller Housing. Do not disassemble the Noise Plate Assembly.
5. Orientation: The Noise Controller may be installed on a Flowgrid that is oriented in any position – the best position being one that provides easiest access for pilot adjustment and regulator maintenance.
6. Kit Studs: Install the longer body studs into the body, provided in the KIT.
7. Body Seal: Install the Flowgrid body seal into the seal groove in the body.
8. Controller Installation: Place the Noise Controller onto the Flowgrid body using hoist rings attached to the side of the Controller. Ensure that the side marked 'Outlet' on the housing is facing the outlet side of the body.

## **! WARNING**

**The Noise Controller may require manual or assisted lifting. It is the end user's responsibility to ensure the lifting means (product lifting points or equipment) is properly installed, torqued, and inspected for use in accordance with local codes and standards. Sizes above 3" in weight and assemblies over 40 lbs, (18kg) require the use of another person or equipment aided lifting. When lifting or moving equipment suitable for an individual, added care should be taken to prevent extended or strained motion and positioning.**

9. Body Seal: Install the body seal into the seal groove in the Controller Housing.
10. Install the remaining Flowgrid components directly onto the Noise Controller, see Flowgrid IOM for installation instructions.
11. Pilot Tubing: Some new pilot tubing will be required, depending on the existing pilot orientation.

## **Service Noise Plate Assembly:**



After a period of service, cleaning or replacement of the Noise Plate Assembly may be required.

1. Personnel: Servicing of the Noise Controller should be made by qualified personnel familiar with high pressure piping and pilot operated regulators.
2. Isolation: Safely isolate and depressurize the existing Flowgrid regulator.

## **! WARNING**

**Before disassembly, make sure the regulator has been isolated from the process by closing block valves on the inlet and outlet sides of the regulator. Safely release pressure and process fluid from body and pilot system. Failure to complete these steps can result in personal injury and property damage.**

3. Disassembly: Disconnect pilot tubing from Flowgrid body and remove all pilot and Flowgrid components, leaving the housing and regulator body.
4. Plate Cap screws: Remove the Noise Plate cap screws and discard.
5. Noise Plates: Carefully remove the Noise Plates one at a time. The plate cap screws or some other tool can be used to lift the plates out. Make sure that no damage occurs to the plates during removal.
6. Inspection and Cleaning: Inspect each plate for debris or erosion. If debris is found in the plates, it can be removed with an abrasive tool or process as long as no damage occurs to the plate. If erosion has occurred to any of the plates, the Noise Plate Assembly must be replaced.
7. Re-assembly: It is critical that the Noise Plates are assembled in the proper order. Note that on one side of each plate is located a number (1 through 8). If no numbers can be located on the plates, the Noise Plate Assembly must be replaced. Locate the plate with the number '1'. Install this

plate first with the number facing the top of the housing. Next locate the plate with the number '2'. Install this plate next with the number facing the top of the housing. Follow this process to the last plate with the number '8'. The numbers on the plates must always face the top of the housing when installed, starting with '1' on the bottom of the assembly and ending with '8' on the top of the assembly.

## **WARNING**

**If the Noise Plates are not assembled in the proper order, the combined Flowgrid with the Noise Controller could have a much higher Cg or a much lower Cg than the published value.**

8. Plate cap screws: Install new cap screws with Blue loctite applied to the threads. Torque all of the cap screws to 50 in-lbs (5.65 nm), taking care to cross-tighten the screws to prevent the plate from cocking. Once all the cap screws are tightened, re-torque in a cross-torquing pattern all of the screws to 70 in-lbs (7.91 nm).

## Maintenance

Regulator parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends on severity of service conditions or the requirements of local, state, and federal regulations.

## **WARNING**

**Before disassembly, make sure the regulator has been isolated from the process by closing block valves on the inlet and outlet sides of the regulator. Safely release pressure and process fluid from body and pilot system. Failure to complete these steps can result in personal injury and property damage**

## Hydro test

The Noise Controller housing is rated to full line pressure. The noise plates do not need to be removed for hydro testing. The hydro test may be performed without any Controller modifications. Please refer to the Flowgrid manual for further hydro testing requirements.

## Safety Guidelines

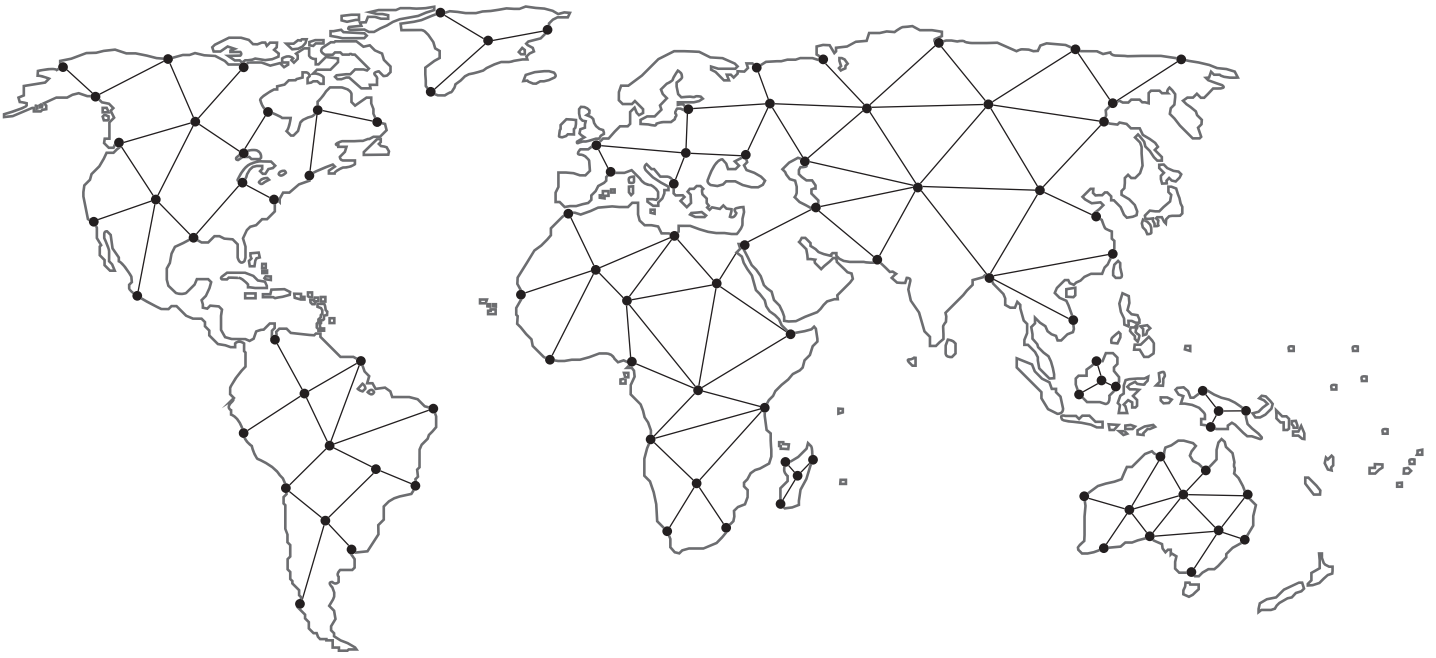
1. The Noise Controller may be installed, serviced, or maintained at elevated heights or at top(s) of equipment. The end user shall properly use fall protection and appropriate safety equipment and practices to prevent the dropping of tools or equipment when working at elevation. The end users shall be properly trained in accordance with local regulations and requirements.
2. The Noise Controller may be installed in locations where surfaces present slip or loss of footing conditions to the end user. Additional measures should be considered during installation to prevent the collection or condensation of

fluids/media or the occurrence of slip or trip hazards.

3. The Noise Controller is intended to reduce the noise level exposure but may result in end assemblies that are still considered elevated noise levels outside allowable limits for end user exposure. Site monitoring and testing shall be performed to verify any need for engineering or administrative controls to eliminate or reduce hazardous noise levels.
4. The Noise Controller may be installed in areas subjecting the end user to cramped or strained working positions. Additional policies and procedures shall be considered to reduce or remove the end user exposure to these conditions.
5. The Noise Controller must be installed, put into service, used and maintained in compliance with national and local regulations and in accordance with the requirements for potentially explosive atmospheres.
6. The Noise Controller must be installed, put into service and maintained by qualified and competent professionals who have undergone suitable training for instrumentation used in areas with potentially explosive atmospheres and knowledgeable of possible sources of ignition (eg. mechanical sparks, spark generating tools or equipment, etc.)
7. The Noise Controller can be installed in poorly ventilated or confined areas, or in areas that may contain gases other than oxygen, which can lead to a risk of oxygen depletion and/or personnel asphyxiation. Additional protection must be used in such installations.
8. Personal protective equipment (PPE) and safety equipment must be used in accordance with local requirements.
9. Products must be installed, serviced, and maintained in accordance with all local and national codes and standards by properly qualified (licensed/certified/trained) personnel.
10. Prior to installing, maintaining, servicing, or inspecting the product or equipment, ensure the system or process is in a safe state (eg. depressurized, adjusted to ambient temperature, properly secured, process properly contained/isolated, etc.)
11. Prior to commissioning or returning the equipment to service, local codes and standards may require that testing (eg. overpressure, leakage, mechanical or electrical operation, etc.) be conducted to verify the installation. Additional protection shall be taken into consideration to protect the end user from exposure to the hazards associated to the failure modes of the testing.
12. Leak testing is required during the installation and maintenance procedure. If a leak is detected refer to the Flowgrid manual for a solution.
13. Note that there should be a buddy-system implemented when working in cramped or confined spaces and breaks should be scheduled to ensure safe working conditions.
14. In location where condensation could form on or around the equipment the end user must take additional precautions to prevent the risk of wet or slippery surfaces and should watch for possible trip or slip conditions.

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