



I. INTRODUCTION

Relief vents are used on liquid storage tanks and other process vessels or systems to prevent structural damage due to excess internal pressure or vacuum.

Storage tanks are pressurized when liquid is pumped in, compressing the existing vapor or when rising temperatures cause increased evaporation or expansion of existing vapor. Conversely, a vacuum condition may be created when pumping out or due to falling temperature. To prevent tank damage, vapor must be allowed into or out of the tank at specified pressure/vacuum conditions. The volume rate of venting depends upon the tank size, volatility of the tank contents, the pumping rates and the temperature. Refer to API Standard 2000, ISO 28300, or local regulations for the procedures to determine venting requirements.

A relief vent must be carefully maintained by a qualified valve technician. It should only be assembled under clean conditions, preferably in a service shop environment. Carefully read and understand this manual before installing or attempting to repair a vent.

For information not contained in this manual, please contact:

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II. DESIGN AND FUNCTION

The Groth Model 5000 Series are high flow capacity free vents designed to be used on tanks containing non-volatile liquids and on vent pipe extremities. These devices contain no moving parts and allow storage vessels to freely in-breathe or out-breathe to the atmosphere.

III. SAFETY WARNINGS

This section is an overview of safety guidelines that should be followed during the installation, operation and maintenance of Groth Pressure/Vacuum Relief Valves. To understand the context of these instructions and warnings, it is necessary to completely read and understand the contents of this manual.

The purpose of a relief vent is to prevent excessive pressure or vacuum in a tank or process system. The vent must be designed for the proper Maximum Allowable Working Pressure (MAWP) and flow requirements of the system. Consult API Standard 2000, ISO 28300, or local regulations for tank protection sizing procedures. An improperly specified or functioning relief vent may result in structural damage to the tank or system, and can cause severe personal injury or death.

If the vent has been exposed to process vapors while in service, observe all plant procedures and Material Safety Data Sheets (MSDS) for the products in the system when inspecting or servicing the vent. Take appropriate safety precautions regarding eye protection, respiration and skin contact.

IV. INSPECTION AND STORAGE

The relief vent is carefully packaged to prevent damage or contamination during shipping. Inspect all equipment when it is received; report any damage to the carrier immediately. The vent should be protected during handling and storage. Keep all the ports plugged to prevent intrusion of foreign

materials. Before installation, inspect the unit for indications of physical damage or internal contamination. If these are observed, the vent must be disassembled, cleaned and repaired before installation.

V. INSTALLATION

WARNING: The vent should be installed in a vertical position. Other orientations are allowed, but care must be taken to avoid orienting the vent such that condensate collects in the vent body.

To achieve nominal flow capacity, the tank nozzle bore must be at least the same nominal dimension as the relief vent inlet body.

This series of vents all have 150# ANSI flange drilling, unless otherwise specified. Torque guidelines are listed in Table 1. The vents are NOT rated for full flange pressure and do not require high bolting torque. Consult factory for special applications.

The following guidelines should be observed at installation:

1. Remove all packing material from the valve before installation.
2. Inspect the gasket seating surface of the tank nozzle flange. It must be clean, free of scratches, corrosion, tool marks, and flat.
3. Aluminum vents are furnished as a standard with flat face flanges; they should only be installed on a mating flat face flange with a full faced gasket.
4. Inspect the gasket; make sure that the material is suitable for the application.
5. Lubricate all studs and nuts with an appropriate thread lubricant. If the vent will see high temperature service or stainless steel fasteners are used, apply an anti-seize compound such as moly-disulfide.
6. Center the gasket within the bolt circle.
7. Set the vent carefully on the nozzle. Install the studs and tighten nuts hand tight. For studs selection for blind tapped holes see Table 1.
8. Torque all fasteners to half the value listed in Table 1, in a staggered, alternating pattern.
9. Make sure that the flanges are not distorted and that the gasket is evenly compressed. Make up the final torque and check that no further nut rotation occurs at the torque value specified on Table 1.

**Table 1 – Bolt Torque & Stud Specifications – ANSI #150
Flange Connections**

Mounting Flange	Bolt Torque – lb-ft(N-m)		Number of Bolts	Studs
	Raised Face	Flat Face		Thread
2"	30(41)	60(81)	4	5/8" – 11
3"	54(73)	108(146)	4	5/8" – 11
4"	45(57)	78(106)	8	5/8" – 11
6"	90(122)	150(203)	8	3/4" – 10
8"	126(171)	228(309)	8	3/4" – 10
10"	138(187)	246(334)	12	7/8" – 9
12"	186(252)	348(472)	12	7/8" – 9

VI. MAINTENANCE INSTRUCTIONS

The vent should be inspected annually for corrosion and hardware tightness.

Groth Corporation has representatives throughout the world.
Contact Groth Corporation or visit us on the web for the authorized representative in your area.



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