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# **INSTRUCTIONS FOR MODELS UPH & UPHS HIGH FLOW, HIGH PURITY GAS REGULATORS**

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**THIS BOOKLET CONTAINS PROPRIETARY INFORMATION  
OF ADVANCED SPECIALTY GAS EQUIPMENT CORP. AND IS  
PROVIDED TO THE PURCHASER SOLELY FOR USE IN CONJUNCTION  
WITH MODELS UPH AND UPHS REGULATORS.**

## **IMPORTANT**

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These instructions are for experienced operators who know the general principles and safety precautions to be observed in handling specialty gases and operating pressure regulation equipment. If you are not certain you fully understand the safety precautions for handling gases, we urge you to obtain and read the Material Safety Data Sheet (MSDS) for each gas being used.

Do not permit untrained persons to install, operate, or maintain this regulator. Do not attempt to install or operate this regulator until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your Advanced Specialty Gas Equipment Distributor.

**Be sure this information reaches the operator. Your supplier has extra copies.**



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## **SAFETY PRECAUTIONS**

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Protect yourself and others. Read and understand the following instructions before attempting to use these regulators. Failure to understand and follow these instructions could result in serious personal injury and/or damage to equipment.

- Know and understand the physical and chemical properties of the gas being used.
- Observe general precautions for the use of gases.
- Observe safety precautions for the gas being used.
- Read and follow precautions on cylinder labels.
- Never use these regulators with gases not compatible with the materials of construction. The use of gases not compatible with the materials of construction may cause damage to equipment or injury to personnel.
- If flammable gases are used with these regulators, do not locate the regulators near open flames or any other source of ignition.
- If toxic or flammable gases are used with these regulators, emergency equipment applicable to the gases in use should be available in the operating area.
- Many gases can cause asphyxiation by displacing oxygen in the atmosphere. Make certain the area where regulators are operated is well ventilated. Provide a device to warn personnel of oxygen depletion in the work area.
- Do not release toxic or flammable gases in the vicinity of personnel. Use this equipment only in well ventilated areas. Vent gases to the outside atmosphere, and in an area away from personnel. Be sure that venting and disposal methods are in accordance with Federal, State and local requirements. Locate and construct vent lines to prevent condensation or gas accumulation. Be sure the vent outlet cannot be obstructed by rain, snow, ice, insects, birds, etc. Do not interconnect vent lines; if more than one vent is needed, use separate lines.
- Relief devices should be installed and properly vented in all gas handling systems to protect against regulator failure and overpressurization.
- Never use oil or grease on these regulators. Oil and grease are easily ignited and may combine violently with some gases under pressure.
- Never connect a regulator to a supply source having a pressure greater than the maximum rated pressure of the regulator. Refer to Product Specifications (see page 8) for maximum inlet pressures.

## DESCRIPTION

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The Models UPH and UPHS are single stage manually adjustable gas regulators specially suited for applications requiring both high flow and diffusion resistance. The Type 316L Stainless Steel diaphragm minimizes diffusion of air and eliminates “off gassing” associated with elastomeric diaphragms. This high purity design permits vacuum purging without damage to internal parts.

The Model UPH is for noncorrosive gases; Model UPHS is suitable for use with corrosive gases.

## OPTIONAL EQUIPMENT

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Panel Mounting Ring (PM3803) – A special panel mounting ring permits the regulator to be mounted on a panel, using a single 1½ in. diameter hole.

**Note:** Ring cannot be used with Models UPH-3-250 or UPHS-3-250 regulators.

Bonnet Vent Connector – An adaptor for the regulator bonnet vent hole which provides a ½ in. NPT female port for connecting a vent line;

**Note:** Connector is not required for Models UPH-3-250 or UPHS-3-250 regulators.

Part No. for Model UPH	SG5645
Part No. for Model UPHS	SG5647

Purge Assemblies – (Series SG3890) provide a means to introduce the purge gas into the system after the service gas cylinder has been connected. They are also used to remove toxic, corrosive and/or flammable gases before opening the system to the atmosphere during cylinder changeout.

## INSTALLATION

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**WARNING:** Before attempting to install and operate these regulators, read and fully understand the safety precautions on page 3 in this booklet. Failure to follow the safety precautions may result in serious personal injury and/or damage to equipment.

1. Inspect the regulator and cylinder valve for physical damage and contamination. Do not connect the regulator if you detect oil, grease or damaged parts. If the regulator is contaminated or damaged contact your Advanced Specialty Gas Equipment Distributor to have the regulator properly cleaned or repaired (see "Repairs"). Contact your gas supplier if the cylinder valve is damaged or contaminated.

**Note:** Make sure that the components and materials used in this gas handling system are compatible with the gas and have the proper pressure rating.

2. Close the regulator by turning the pressure adjusting knob counterclockwise until it reaches the stop. Do not turn the adjustment knob past the stop. Damage to the regulator could result.
3. Secure cylinder in place using a suitable restraining device recommended by your gas supplier (such as a Model SG6202 bench clamp, or Model SG6203 wall clamp).
4. If the process gas is nonhazardous, connect regulator directly to the cylinder valve. Securely tighten connection nut.  
If the process gas is hazardous (flammable, toxic and/or corrosive) or sensitive to atmospheric contaminants, connect a purge assembly between the cylinder valve and regulator. See instructions provided with the purge assembly for installation procedure.
5. Ensure that the delivery line is at atmospheric pressure before connecting regulator. Connect the regulator outlet to the delivery line.

## LEAK TESTING AND PURGING

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1. If it is nonhazardous, use the process gas to leak test and purge the regulator and gas delivery system.  
If the process gas is hazardous (flammable, toxic and/or corrosive) or sensitive to atmospheric contaminants, use clean dry nitrogen to leak test and purge the regulator and gas delivery system.
2. Isolate downstream side of gas delivery system by closing instrument or process isolation valve.
3. Stand to one side of the regulator and slowly open the purge gas. Check inlet gauge for pressure into the regulator.
4. Open the regulator by turning the pressure adjusting knob clockwise until the desired pressure is indicated on the outlet gauge. This will immediately pressurize the downstream side of regulator.
5. Leak check all connections with either a soap solution, such as Snoop<sup>®</sup> or a gas leak detector.

**Note:** These regulators do not vent downstream system pressure when the pressure adjusting knob is turned counterclockwise to reduce delivery pressure. For applications where atmospheric constituents could contaminate your gas system, install a vent valve on the downstream system to vent pressure. Connect outlet of vent valve to a safe disposal area.

6. Purge entire system of air if the process gas is hazardous or sensitive to atmospheric contaminants.
7. Vent system to atmospheric pressure. Close system vent valve. Close regulator by turning pressure adjusting knob counterclockwise.

## OPERATION

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**WARNING: Never operate a regulator under any circumstances if it is leaking or otherwise malfunctioning. DO NOT repair any leaks while system is under pressure. Damage to equipment and/or injury to personnel may result.**

1. Close the regulator by turning the pressure adjusting knob counterclockwise until it reaches the stop. Do not turn the adjustment knob past the stop. Damage to the regulator could result.
2. Ensure that any purge and system vent valves are closed.
3. Slowly open cylinder valve to admit process gas to regulator.
4. Turn regulator pressure adjusting knob clockwise until desired delivery pressure is indicated on delivery gauge.

**Note:** Do not exceed maximum working pressure of downstream system components.

## SHUTDOWN

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1. If regulator is not to be removed from service, close cylinder or process supply valve. Always keep cylinder or supply valve closed whenever the system is not in use.
2. Close regulator by turning pressure adjusting knob counterclockwise until it reaches the stop. This will prevent a sudden pressure surge from damaging downstream components when gas flow is restarted.

## REMOVAL FROM SERVICE

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1. Close cylinder or process supply valve. Always keep cylinder or supply valve closed whenever system is not in use.

**WARNING: Hazardous gases must be discharged into a safety vent. Be sure to use a venting procedure that is environmentally acceptable and complies with Federal, State and local requirements.**

2. Vent the system until both pressure gauges read zero psig. If regulator was used with a hazardous gas. Purge the regulator and entire system with clean dry nitrogen gas. Continue purging until the hazardous gas level in the system is below the TLV for the gas.
3. After purging and/or venting is complete, close regulator by turning pressure adjusting knob counterclockwise until it reaches the stop.

**CAUTION: Always remove regulator and reinstall cylinder cap before moving cylinder.**

4. Remove regulator from cylinder or supply line.

## REPAIRS

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If a regulator leaks or malfunctions, take it out of service immediately. Do not attempt to repair these regulators. Repairs should be made by Advanced Specialty Gas Equipment Corp. who have the special tools, test equipment and trained personnel required to make a safe repair. Contact your Advanced Specialty Gas Equipment Distributor to arrange for repair.

*Warranty Repairs* are only available through Advanced Specialty Gas Equipment Corp., and will be performed at no charge for parts and labor. For information on warranty, see the last page of this instruction booklet.

*Non-Warranty Repairs* are available through your distributor. Upon receipt at the factory, the regulator will be inspected and you will be contacted by your distributor with a repair cost estimate. No item will be repaired until approval is received. There will be an evaluation charge assessed for equipment not repaired.

## SPECIFICATIONS

Maximum Inlet Pressure	See Tables 1 & 2
Inlet Pressure Gauge	See Tables 1 & 2
Delivery Pressure Range	See Tables 1 & 2
Delivery Pressure Gauge	See Tables 1 & 2
Gauge Size	2½ in. Dial
Operating Temp. Range	-65°F to +170°F
Flow Coefficient	$C_v = 0.6$
Flow Capacity	See Figures 3–6
Supply Pressure Effect	<1.0 psi per 100 psi
Inlet Connections	
Model UPH	CGA 296, 320, 326, 346, 350, 510, 540, 580, 590 or 660 as ordered
Model UPHS	CGA 290, 320, 326, 330, 346, 350, 510, 580, 590, 660 or 705 as ordered
Outlet Connection	¼ in. NPT female
Weight (approx.)	5 lbs.

**Table 1, Brass Regulators**

Part No.	Inlet Pressure (psig)		Delivery Pressure (psig)	
	Max.	Gauge	Range	Gauge
UPH-3-15-(CGA)	3000	0-4000	2- 15	*
UPH-3-75-(CGA)	3000	0-4000	4- 75	0-100
UPH-3-150-(CGA)	3000	0-4000	10-150	0-200
UPH-3-250-(CGA)	3000	0-4000	20-250	0-400
UPH-2-15-(CGA)	800	0-1000	2- 15	*
UPH-2-75-(CGA)	800	0-1000	4- 75	0-100
UPH-2-150-(CGA)	800	0-1000	10-150	0-200
UPH-2-250-(CGA)	800	0-1000	20-250	0-400
UPH-1-15-(CGA)	300	0- 400	2- 15	*
UPH-1-75-(CGA)	300	0- 400	4- 75	0-100
UPH-1-150-(CGA)	300	0- 400	10-150	0-200
UPH-1-250-(CGA)	300	0- 400	20-250	0-400

**Note:** Insert applicable CGA connection number to complete part number. Example: UPH-3-150-580.

\* This is a compound gauge with a range of 30 in. Hg vacuum to 0 to 30 psig.



**Table 2, Stainless Steel Regulators**

Part No.	Inlet Pressure (psig)		Delivery Pressure (psig)	
	Max.	Gauge	Range	Gauge
UPHS-3-15-(CGA)	3000	0-4000	2- 15	*
UPHS-3-75-(CGA)	3000	0-4000	4- 75	0-100
UPHS-3-150-(CGA)	3000	0-4000	10-150	0-200
UPHS-3-250-(CGA)	3000	0-4000	20-250	0-400
UPHS-2-15-(CGA)	800	0-1000	2- 15	*
UPHS-2-75-(CGA)	800	0-1000	4- 75	0-100
UPHS-2-150-(CGA)	800	0-1000	10-150	0-200
UPHS-2-250-(CGA)	800	0-1000	20-250	0-400
UPHS-1-15-(CGA)	300	0- 400	2- 15	*
UPHS-1-75-(CGA)	300	0- 400	4- 75	0-100
UPHS-1-150-(CGA)	300	0- 400	10-150	0-200
UPHS-1-250-(CGA)	300	0- 400	20-250	0-400

**Note:** Insert applicable CGA connection number to complete part number. Example: UPHS-3-150-580.

\* This is a compound gauge with a range of 30 in. Hg vacuum to 0 to 30 psig.

## **MATERIALS OF CONSTRUCTION**

Body and Gauges	
Model UPH	Brass
Model UPHS	Type 316 Stainless Steel
Bonnet	Electroless Nickel-Plated Brass
Other Metal Parts	
Exposed to Gas	Type 316 Stainless Steel
Seat	Kel-F <sup>®</sup>
Diaphragm	Type 316L Stainless Steel
Seals	Viton <sup>®</sup> and Teflon <sup>®</sup>

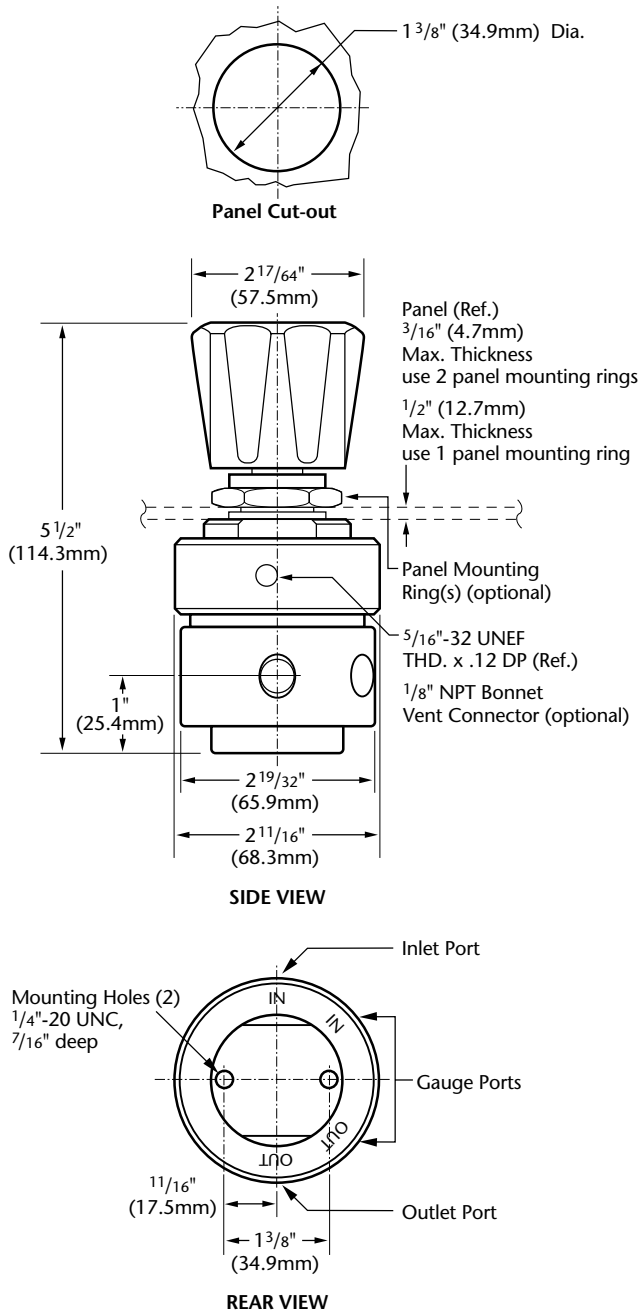


Figure 1 – Models UPH-3-15, UPH-3-75, UPH-3-150, UPHS-3-15, UPHS-3-75 and UPHS-3-150 Regulators

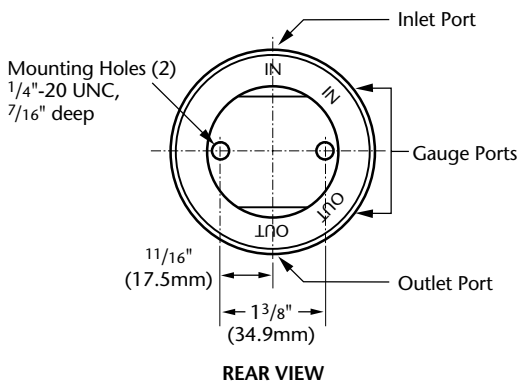
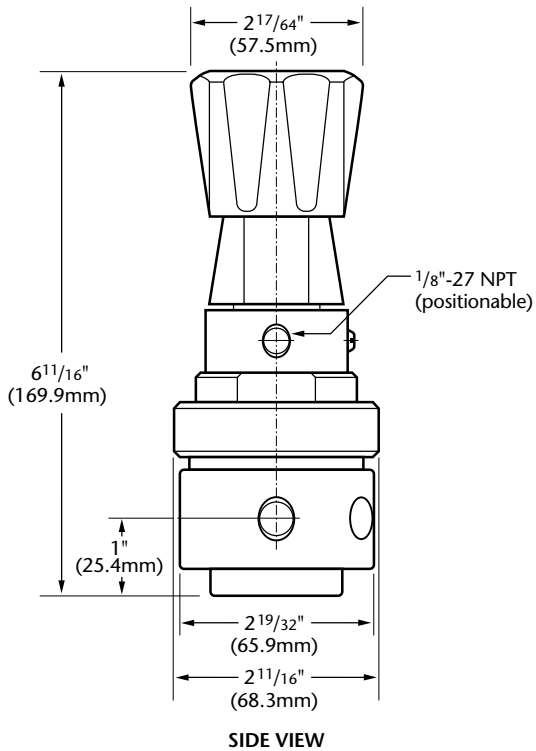


Figure 2 – Models UPH-3-250 and UPHS-3-250 Regulators

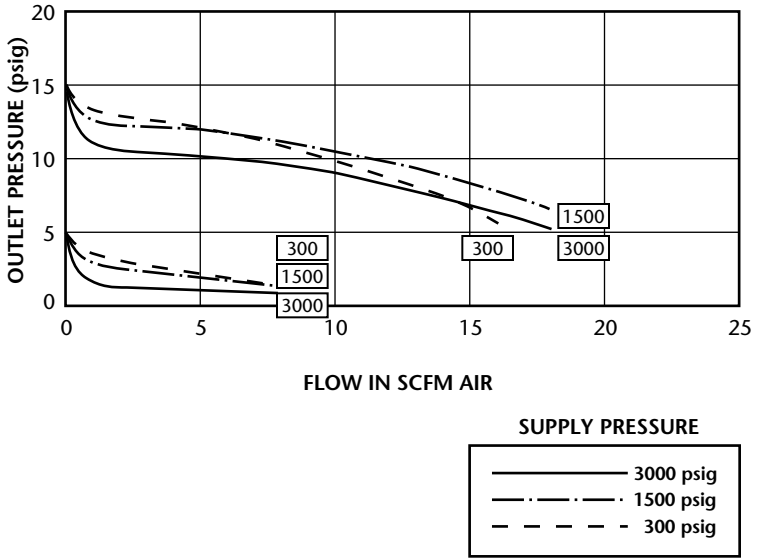


Figure 3 – Typical Performance  
Models UPH-3-15 and UPHS-3-15

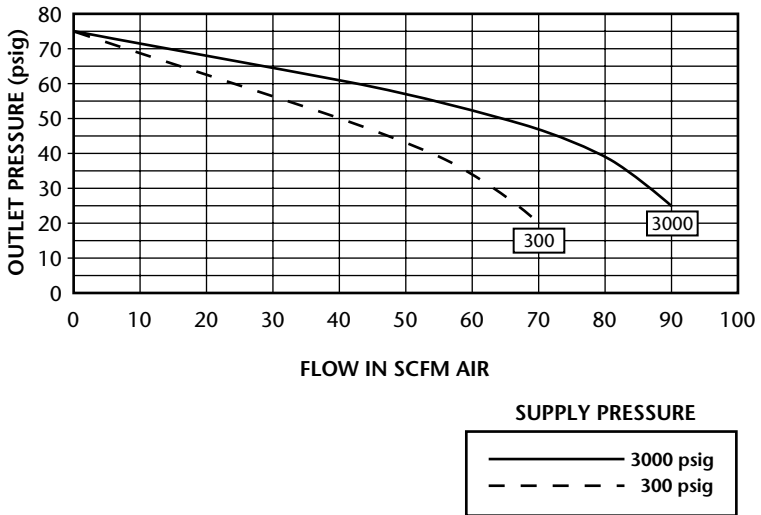


Figure 4 – Typical Performance  
Models UPH-3-75 and UPHS-3-75

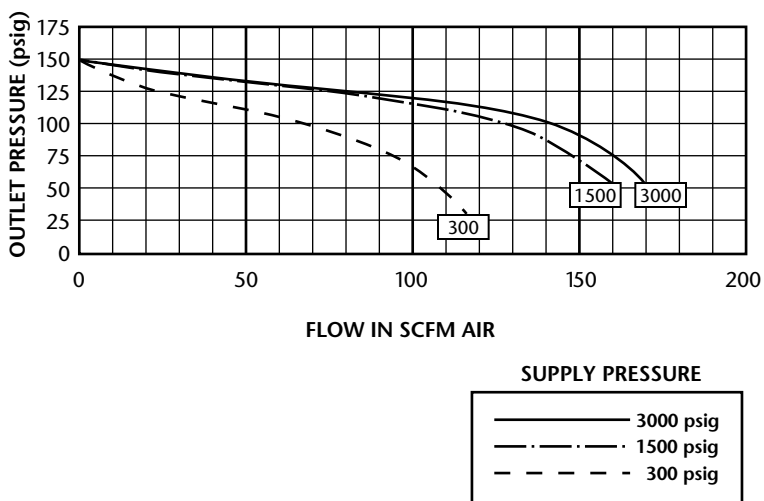


Figure 5 – Typical Performance  
Models UPH-3-150 and UPHS-3-150

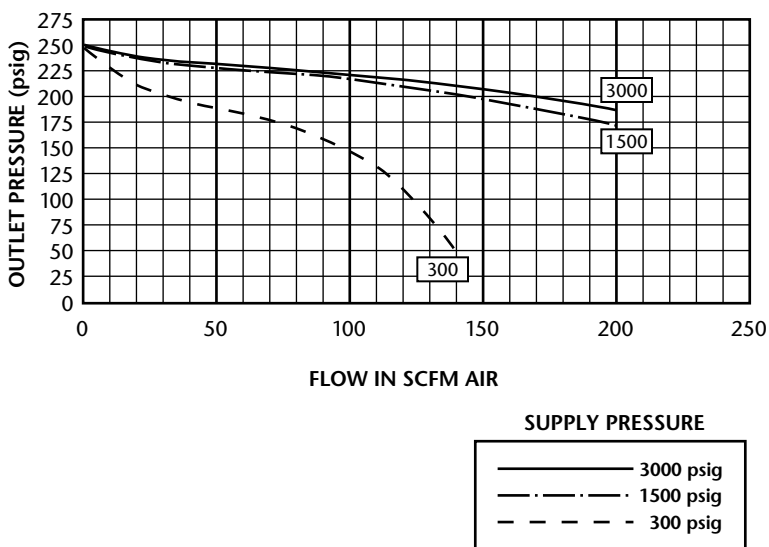


Figure 6 – Typical Performance  
Models UPH-3-250 and UPHS-3-250

## **WARRANTY**

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Advanced Specialty Gas Equipment Corp.,(the Company), warrants to the initial purchaser of each regulator described herein, that such equipment will be free from defects in material and workmanship which result in breakdown or failure under normal use during a period of 12 months from date of shipment by the Company if used and maintained according to Advanced Specialty Gas Equipment written instructions. Purchaser is aware that this equipment is designed for specific applications and that using this equipment with the wrong or improperly purged gas or at the wrong pressure may damage or corrode the unit and cause personal injury. This warranty does not cover damage or malfunction due to corrosion. Purchaser must confirm that this equipment is compatible with the gas being passed through it. If there is any doubt about compatibility, consult your Advanced Specialty Gas Equipment Corp. distributor.

The Company's liability under this warranty shall be limited to the repair, or at its option, replacement or refund of the purchase price, of such equipment which proves to be defective, provided; however, that this warranty shall only apply if the purchaser (1) gives the Company written notice within ten (10) days after discovery of such defect, (2) immediately on discovery of the claimed defect, discontinues all use of such equipment, and (3) returns such equipment freight prepaid to plant of manufacture.

**THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SPECIFIED HEREIN. NO WARRANTIES ADVANCED SPECIALTY GAS EQUIPMENT CORP.(OTHER THAN WARRANTY OF TITLE AS PROVIDED IN THE UNIFORM COMMERCIAL CODE) SHALL BE IMPLIED OR OTHERWISE CREATED UNDER ANY APPLICABLE LAW, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.** No claim against the Company of any kind, whether as to equipment delivery or for nondelivery of equipment and whether or not based on contract, warranty, negligence, strict liability in tort or otherwise, shall be greater in amount than the purchase price of the equipment in respect of which such claim is made. Without limiting the generality of the foregoing, Advanced Specialty Gas Equipment Corp. shall not be liable for any special, indirect, or consequential damage, such as failure of parts resulting from corrosion.

If it is determined by Advanced Specialty Gas Equipment Corp. that the equipment is to be repaired or replaced under the terms of this warranty, the cost of returning said equipment to the initial purchaser will be paid by the Company. If, however, equipment returned to the Company in connection with a claim under this warranty is found by the Company not to be defective hereunder, then such equipment will be returned to the initial purchaser, shipping charges collect, and additionally, a service charge will be paid by the purchaser to the Company to cover the cost of handling and testing such equipment.

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