

V-Series Air Control Devices

User Instructions for 3M™ Vortex Cooling Assembly V-100, 3M™ Vortemp™ Heating Assembly V-200, 3M™ Air Regulating Valve Assembly V-300 and 3M™ Low Pressure Connector Assembly V-400.

IMPORTANT: Keep these User Instructions for reference



A WARNING

GENERAL SAFETY INFORMATION

The 3MTM V-Series Air Control Devices are designed to be used with certain 3M headgear, breathing tube and supplied air hose to form a

3M headgear (respiratory intel covering) may include a tight fitting facepiece, loose fitting facepiece, hood, helmet or some combination of these that serves as a respiratory protective covering for the nose and mouth area. Refer to the enclosed 3M™ V-Series Air Control Device NIOSH approval label for approved system configuration

List of Warnings and Cautions within these User Instruction

This product helps protect against certain airborne contaminants. Misuse may result in sickness or death

The length of compressed air hose W-3020 used depends on the specifications of the low-pressure air nump utilized. Some numps specifi an minimum 10 or 100 feet of hose to allow are deputate coding of the air healed by the pump's mechanisms and as a minimum 100 or 100 feet of hose to allow adequate coding of the air healed by the pump's mechanisms throughly before selecting the compressed air hose W-3020 feet) that will be used. IN DPUMP 5TO BE USED WINDO DOLLO CAUSE AM HOTTER THAN 100°7 (TY*) TO BITEM THE COMMISSES AM RIOSE W-3020. Air hotter than 160°F (TY*) and cause the hose to be degrade. which would adversely affect respirator performance and may result in sickness or death.

To meet the NIOSH requirement in 42 CFR 84, subport 84 150 for minimum and maximum airfl ow (6 to 15 scfm 170 to 425 lom), the air control devices approved for use with 3M headgear must be operated within the supply pressure ranges and hose lengths stated in the Special or Critical Use Instructions. Failure to do so may adversely affect respirator performance and result in sickness or death. You must comply with OSHA Standard 29 CFR 1910.134, which states that, "Airline couplings shall be incompatible with outlets for other gas

systems to prevent inadvertent servicing of airline respirators with nonrespirable gases or oxygen." In Canada, refer to the requirements of CSA Standard 2180.1 or the authority having jurisdiction in your region. Failure to do so may result in sickness or death.

Your employer must provide breathing air that meets at least the requirements of the specification for Grade D breathing air, as described in the Compressed Gas Association Commodify Specification 6-7-1-1997 in the United States. In Canada, refer to CSA Standard 2180.1, table for the quality for compressed breathing air Failure to do so may result in sickness or default.

The line pressure must be kept within safe limits, 125 psig (8.75 kg/cm.) maximum. Dirt, oil and water, unless trapped or filtered out, may continue downstream in concentrated form and adversely affect the performance of the respirator and result in sickness or death.

Use of egipment described in these User Instructions must be in accordance with applicable health and safely standards, respirator selections contained and an applications as ANIS 288.2-1992, CSA Standard 294.6, or pursuant to the encommendation of an inclustrial hyperist Before occupational use of these respirators, a written respiratory protection program must be implemented meeting all the requirements of OSV4.2 CPR 1910.1.4 such as braining, filt testing, medical revelations, and application OSM4 substance specific standards. In Canada, CSA standard Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate,

Each person using this respirator must read and understand the information in these //ser/instructions before use. Use of this respirator h intrained or unqualified persons, or use not in accordance with these User Instructions may adversely affect product performance and result

Do not use if any parts are missing or damaged.

Do not use with parts or accessories other than those approved by 3M as described in these User Instructions or on the NICSH approval is for the respirator that you are using. Failure to do so may adversely affect respirator performance and result in sickness or death. Use of this respirator in atmospheres for which it is not NIOSH certified or designed may result in sickness or death. Do not wear this

- Atmospheres are oxygen deficient.

- Contaminant concentrations are unknow

- Contaminant concentrations are Immediately Dangerous to Life or Heath (IDLH).

Contaminant concentrations exceed the maximum use concentration (MUC) determined using the assigned protection factor (APF) recommended for the applicable headges or the APF mandated by specific government standards, whichever is lower. Refer to the User Instructions provided with the applicable headges.

Contaminants that are dangerous to your health include those that you may not be able to see or smell. Leave the contaminated area immediately if any of the following conditions occur. Failure to do so may result in sickness or death.

- Any part of the system becomes damaged

- Airflow into the respirator decreases or stops

Breathing becomes difficult You feel dizzy or your vision is impaired

You taste or smell contaminants.

- Your face eyes nose or mouth become(s) irritate You suspect that the concentration of contaminants may have reached levels at which this respirator may no longer provide adequate

Never alter or modify this assemble

Air supply piping, filtings, and compressors must have the capacity to deliver sufficient air volume (6 to 15 scfm, 170 to 425 lpm) to operate the air control device at the recommended pressure.

USE INSTRUCTIONS AND LIMITATIONS

Before use, the wearer must read and understand these User Instructions, Keep these User Instructions for reference.

The 3M Air Control Valve Assemblies are designed to be used with approved 3M headgear (respiratory inlet covering), breathing tube and supplied air hose to form a complete NIOSH approved Type C or CE supplied air system.

The SMT* Vortex Cooling Assembly is designed to provide those 3M headgear which are approved for use with it, a continuous airflow ranging between 6 and 15 cfm (170 to 425 jpm). This air control device also provides the ability to cost the compressed air supply by as much as 50°F (26°C). The device cost the air as supplied by the compressed air supply and air air the control known by be adjusted manually between upper and lower limits to suit the cooling comfort requirements of the user.

3MT VertrampTM Vesting, Assembly V-200.
The SMT VertrampTM Vesting Assembly designed to provide those 3M headgesr which are opproved for use with it, a continuous airflow maping between 6 and 15 cfm (710 to 425 (sps.). This size control device also provides the ability to warm the compressed air supply by as must be 50°F (28°C). The control knotion is set manually assemble 50°F (28°C). The control knotion is set manually assemble 50°F (28°C) and the arbitral star for control knotion is set manually assemble 50°F (28°C). The control knotion is set manually assemble 50°F (28°C) and control knotion is set manually assemble 50°F (28°C). The control knotion is set manually assemble 50°F (28°C) as a set manually assemble 50°F (28°C) as a set manually as a set ma

3M™ Air Regulating Valve Assembly V-300
The 3M™ Air Regulating Valve Assembly is designed to provide those 3M headgesr which are approved for use with it, a continuous sirflow ranging between 6 and 15 cfm (170 to 425 lpm). The control knob (airflow) is set manually between upper and lower limits to suit the comfort requirements of the user.

3M™ Low Pressure Connector Assembly V-400 The SMITH LOW Pressure Connector Assembly is designed to provide those 3M headgear which are approved for use with it, a continuous airflow ranging between 6 and 15 clm (170 to 425 (pm). When used as part of an approved system with the 3MITH Supplied Air Hose W-3020, the V-4000 (pm). will provide airflow within the specified range when the air pressure at the point of connection for the hose is between 4 and 15 psig (0.28 to

Assigned Protection Factor (APF) Refer to the User Instructions for the specific headgear to be used to determine the APF for the 3MTM Supplied Air System using V-Series Air Control Devices Consult 3MTM Technical Exta Bulletin #175 or additional information on APFs and supporting test data.

For a listing of the components of NIOSH approved 3M respirator systems using 3MTM V-Series Air Control Devices, refer to the NIOSH approval

NIOSH Cautions and Limitations

A- Not for use in atmospheres containing less than 19.5 percent oxygen.

B- Not for use in atmospheres immediately dangerous to life or health.

C- Do not exceed maximum use concentrations established by regulatory standards.

D- Air-line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Grade D

E- Use only the pressure ranges and hose lengths specified in the User's Instructions.

J- Failure to properly use and maintain this product could result in injury or death.

M-All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations

N- Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.

O-Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.

S- Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Instructions before donning. S- Special or Critical Use Instructions

Each 3MTM V-Series Air Control Device Assembly includes an air regulating device or connector with a quick disconnect plug, a belt clip, and a belt. The W-2963 cotton fiber belt may be adjusted to accommodate waist sizes between 25 and 42 inches (64 and 107 centimeters). The W-3217, 520-02-23 and GVP-117 belts may accommodate waist sizes up to 50 inches (127 centimeters).

strol Device	Quick Disconnect Plug Type	
	Industrial Interchange, 1/4" MPT, 1/4" Body Size, Steel	
	Industrial Interchange, 1/4" MPT, 1/4" Body Size, Steel	
	Industrial Interchange, 1/4" MPT, 1/4" Body Size, Steel	
	Industrial Interchange, 1/4" MPT, 3/8" Body Size, Steel	

3M™ Supplied Air Hose and Pressure Requirements

All approved 3M headgear except: L-501, L-503, L-505, L-701, L-703, L-705, L-901 and L-905.

3MTM Supplied Air Respirator System approvals allow you to combine up to three W-9435 or W-9445 hoses (25, 50, 100 feet or 7.6, 15.2, 30.5 meters) in any combination not to exceed 300 feet (91.4 meters). Refer to Table 1 for the supply air pressure requirements for all 3M approved headgear except those listed above For all 3M headgear, the W-3020 and W-2929 (coiled) hoses can only be used in single lengths of 25, 50, or 100 feet (7.62, 15.2, or 30.5 meters). No

Table 1: Pressure Schedule Table for 3M™ V-Series Air Control Devices

Air Control Device	High Pressure Hoses W-9435 and W-9445 (3/8" ID)	High Pressure Hose W-2929 (Coiled, 3/8" ID)	Low Pressure Hose W-3020 (1/2" ID)	Supply Pressure Rang
	25 - 100 ft (7.6 - 30.5 meters)	25, 50 or 100 ft (7.6, 15.2, 30.5 m)	N/A	62 - 72 psig (4.4 - 5.0 kg/cm²)
V-100	125 - 200 ft (38.1 - 61.0 meters)	N/A	N/A	69 - 82 psig (4.9 - 5.7 kg/cm²)
	225 - 300 ft (68.6 - 91.4 meters)	N/A	N/A	75 - 91 psig (5.3 - 6.4 kg/cm²)
V-200	25 - 100 ft (7.6 - 30.5 meters)	25, 50 or 100 ft (7.6 – 30.5 meters)	N/A	64 - 68 psig (4.5 - 4.8 kg/cm²)
	125 - 200 ft (38.1 - 61.0 meters)	N/A	N/A	71 - 78 psig (5.0 - 5.5 kg/cm²)
	225 - 300 ft (68.6 - 91.4 meters)	N/A	N/A	77 - 88 psig (5.4 - 6.2 kg/cm²)
V-300	25 - 100 ft (7.6 - 30.5 meters)	25, 50 or 100 ft (7.6, 15.2, 30.5 m)	N/A	30 - 35 psig (2.1 - 2.5 kg/cm²)
	125 - 200 ft (38.1 - 61.0 meters)	NA	N/A	33 - 50 psig (2.3 - 3.5 kg/cm²)
	225 - 300 ft (68.6 - 91.4 meters)	N/A	N/A	38 - 63 psig (2.7 - 4.4 kg/cm²)
	N/A	N/A	25 ft (7.6 m)	6 - 11 psig (0.4 - 0.8 kg/cm²)
V-400	N/A	N/A	50 ft (15.2 m)	7 - 13 psig (0.5 - 0.9 kg/cm²)
	N/A	NA	100 ft (30.5 m)	8 - 15 psig (0.6 - 1.0 kg/cm²)

3M beadness: 1-501, 1-503, 1-505, 1-701, 1-703, 1-705, 1-901 and 1-905

am neargean. Crobs, 1965, 1966, 1976, 1976, 1976, 1986 and 1986 ANT Supplied Air Respirator System approachs allow you to combine up to three 100-foot lengths of W-9435 or W-9445 hoses. The total combined hose length not to exceed 300 feet (91.4 meters). You may not combine 25 or 50-foot (7.6 or 15.2 meter) lengths of W-9435 and W-9445 hoses. Refer to Table 2 for the supply air pressure requirements for these approved headgear.

For all 3M headpear, the W-3020 and W-2929 (coiled) hoses can only be used in single lengths of 25, 50, or 100 feet (7.6, 15.24, or 30.5

Table 2: Pressure Schedule Table for 3M™ V-Series Air Control Devices Used With 3M Headgear L-501, L-503, L-505, L-701, L-703, L-705, L-901, L-905				
Air Control Device	High Pressure Hoses W-9435 and W-9445	High Pressure Hose W-2929	Low Pressure Hose W-3020	Supply Pressure Range

	(3/8" ID)	(Coiled, 3/8" ID)	(1/2" ID)	
	25 ft (7.6 m)	25 ft (7.6 m)	N/A	60-65 psig (4.2-4.6 kg/cm²)
	50 ft (15.2 m)	50 ft (15.2 m)	N/A	65-70 psig (4.6-4.9 kg/cm²)
V-100	100 ft (30.5 m)	100 ft (30.5 m)	N/A	70-75 psig (4.9-5.3 kg/cm²)
	200 ft (60.9 m)	N/A	N/A	80-85 psig (5.6-6.0 kg/cm²)
	300 ft (91.4 m)	N/A	N/A	85-90 psig (6.0-6.3 kg/cm²)
	25 ft (7.6 m)	25 ft (7.6 m)	N/A	60-65 psig (4.2-4.6 kg/cm²)
	50 ft (15.2 m)	N/A	N/A	60-68 psig (4.2-4.8 kg/cm²)
V-200	100 ft (30.5 m)	NA	N/A	70-72 psig (4.9-5.1 kg/cm²)
	200 ft (60.9 m)	N/A	N/A	75-80 psig (5.3-5.6 kg/cm²)
	300 ft (91.4 m)	N/A	NA	85-90 psig (6.0-6.3 kg/cm²)

F-300	25 ft (7.6 m)	25 ft (7.6 m)	NA	25-30 psig (1.8-2.1 kg/cm²)
	50 ft (15.2 m)	50 ft (15.2m)	NA	30-35 psig (2.1-2.5 kg/cm²)
	100 ft (30.5 m)	100 ft (30.5 m)	NA	35-40 psig (2.5-2.8 kg/cm²)
	200 ft (60.9 m)	NA	NA	45-50 psig (3.2-3.5 kg/cm²)
	300 ft (91.4 m)	N/A	NA	50-55 psig (3.5-3.9 kg/cm²)
f-400	NA	NA	25 ft (7.6 m)	6-11 psig (0.4-0.8 kg/cm²)
	NA	NA	50 ft (15.2 m)	7-13 psig (0.5-0.9 kg/cm²)
	NA	NA	100 ft (30.5 m)	8-15 psig (0.6-1.0 kg/cm²)

Requirements - Approximately 20 CFM (566 lpm) per 3M™ Air Control Device. Noise Level - Less than 80 dBA within the headgesr; excluding external noise

The length of compressed air hose W-3020 used depends on the specifications of the low-pressure air pump utilized. Some pumps specify minimum of 50 feet (15.2 meters) or 100 feet (30.5 meters) of hose to allow adequate cooling of the air heated by the p need the pump's instructions thoroughly before selecting the compressed air hose W-3020 length that will be used. NO PUMP IS TO BE USED WHICH COULD CAUSE AIR HOTTER THAN 160°F (71°C) TO ENTER THE COMPRESSED AIR HOSE W-3020. Air hotter than 160°F (71°C) will cause the hose to degrade, which would adversely affect respirator performance and may result in sickness or death.

Discussion on Respirable Air

many owns compresses are systems may provide air that is unlift for human respiration without secondary air treatment. This is due largely to the presence of objectionable oil vapors and odors. Rules and regulations governing air quality when using compressed air for respiration are quite specific. Many older compressed air outlams may require air that is until for human requiretion without agreentury air treatment. This is due tomak to the

Precautions must be observed when using compressed air for breathing purposes

Oil mist from the compressor lubricating oil must not be present when the air reaches the air control device. Excessive amounts of water vapor and and pressure regulator equipment shows what should be installed in the main airline shead of the connection for the breathing air hoses (Fig. 1). If a pre-assembled air filtering and regulating device is desired, 3M offers several compressed air filter and regulator panel assemblies. These assemblies contain a specially designed filter carbridge to help remove oil mist and vapors, condensed misture, particulates, odors and vapors y come completely assembled and are ready for connection between the compressor and supplied air respirator system. These air filtering and regulation devices do not ensure Goade D breathing air as required

Note: Carbon monoxide- Although it is theoretically possible that oil lubricated compressors can create carbon monoxide (CD) if the compressor overheats, studies have shown that the location of the compressor's air intake is the most likely source of carbon monacide contamination.

According to OSHA regulation [29 CFR (1910.134)(i)], periodic CO monitoring, rather than continuous CO monitoring with an starm, is acceptable. if the oil lubricated compressor is equipped with a high temperature alarm and automatic shut-down. In Canada, follow CSA 2180.1 regarding oil

Formation of carbon monoxide in air compressors. Am. Ind. Hvg. Assoc. J (40). June 1979, pp. 548-551.

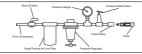


Fig. 1: Air purification and regulation equipmen

A WARNING	
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Compressed Gas Association Commodity Specification G-7.1in the United States. In Canada, refer to CSA standard 2180.1, table for the fity of compressed breathing air. Failure to do so may result in sickness or death. The line pressure must be kept within safe limits, 125 psig (8.75 kg/cm²) maximum. Dirt, oil and water, unless trapped or filtered out, ma continue downstream in concentrated form and adversely affect the performance of the respirator and may result in sickness or death

SYSTEM COMPONENTS AND REPLACEMENT PARTS 3M™ V-100 Illustrated Parts List (Fig. 2)

Item Number	Part Number V-111	Description Vortex muffler kit	Quantity Required
	******	Retainer (included in item 1)	
2			
3		Turbine cap**	1
4		0-ring	1
5		Special washer	1
6		Generator	1
7		Screw 6/32 x 3/16	1
8		Washer-lock #6	1
9	W-1279-2	Plug-quick disconnect (Ind. Interchange)	
	W-3186-2	Plug-quick disconnect (Schrader)	
10	W-1403	Elbow connector	1
11		Foam pad and fastener	1
12		Body tube**	1
13		Control knob**	1
14		Tube assembly**	1
15		0-ring	1
16	W-2963	Waist belt, cotton 42 in x 1.5 in	
	W-3217	Waist belt, decontaminable 54 in x 1.5 in	
17		Holder	1
18		Cable tie	1
19		Slide	1
20		0-ring	1

V-115 Vortex spare parts kit-includes item 4, 5, 6, 7, 8, 11, 15 "Cannot be ordered. Must be returned to distributor for factory repair.

Vortex Cooling Tube (no belt)

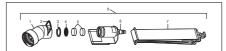
3M™ V-200 Illustrated Parts List (Fig. 3)

ımber	Part Number V-211	Description Vortemp TM muffler kit	Quantity Required
		Retainer (included in item 1)	1
		Tube housing**	1
		Screw 6/32 x 3/16	1
		Washer - lock #6	1
		0-ring	1
		Tube assembly**	1
	W-1403	Elbow connector	1
	W-1279-2	Plug-quick disconnect (Ind. Interchange)	
	W-3186-2	Plug-quick disconnect (Schrader)	
		Generator	1
		Special washer	1
		0-ring	1
		Turbine cap**	1
		Valve-ball**	1
		Vortemp™, cold muffler	1
	W-2963	Waist belt, cotton 42 in x 1.5 in	
	W-3217	Waist belt, decontaminable 54 in x 1.5 in	
		Holder	1
		Cable tie	1
		Slide	1
	V-250	Vortemp™ Heating Tube (no belt)	
	V-215	Vortemp™ spare parts kit-includes item 4, 5, 6, 10, 11, 12, 15	
t be order	red. Must be returned to dis	tributor for factory repair.	
		20	

N™ V-300 I	Illustrated Parts List (Fig	1.4)	
m Number	Part Number	Description	Quantity Required
	V-211	Vortemp™ muffler kit	1
		Retainer (included in item 1)	1
		Retaining ring	1
		Screen	1
	W-3135-10	Muffler Disc	2
		Nut	1
		0-ring	1
		0-ring	1
	W-1279-2	Plug-quick disconnect (Ind. Interchange)	
	W-3186-2	Plug-quick disconnect (Schrader)	
	W-2963	Waist belt, cotton 42 in x 1.5 in	
	W-3217	Waist belt, decontaminable 54 in x 1.5 in	
	520-02-23	Waist belt, decontaminable 50 in x 2 in	
	GVP-117	Waist belt, decontaminable 50 in x 2 in	
	V-350	Air regulating valve (no belt)	
	W-3036	Snora norte kit.includae Itam 2 A 5 6 7 8	

Item Number	Iustrated Parts List (Fig Part Number	Description	Quantity Res
1	V-211	Vortemp™ muffler kit	1
2		Retainer (included in item 1)	1
3		Retaining Ring	1
4		Screen	1
5	W-3135-10	Muffler Disc (10 pk)	2
6	W-3252-2	Plug-quick disconnect (Ind. Interchange)	
	W-3251-2	Plug-quick disconnect (Schrader)	
7	W-2963	Waist belt, cotton 42 in x 1.5 in	

Waist helt, decontaminable 54 in x 1 5 in Waist belt, decontaminable 50 in x 2 in Waist belt, decontaminable 50 in x 2 in Low pressure connector (no helf) Spare parts kit-includes item 3, 4, 5



3M™ V-Series Air Control Devices - optional parts not shown - Adapter V-199 for approved BT series breathing tubes

OPERATING INSTRUCTIONS

W-3036

Use of equipment described in these User Instructions must be in accordance with applicable health and safety standards, respirator selection tables contained in such publications as ANSI 288.2. CSA Standard 294.4. or pursuant to the recommendations of an industrial

hygienist. Before occupational use of these respirators, a written respiratory protection program must be implemented meeting all the requirements of OSMA 2-DFR 1910.13 such as training, it testing, medical evaluation, and applicable OSMA substance specific stand in Damada, CSA standard 234.4 requirements must be met andior requirements of the applicable principation, as appropriate to the propriate propriate program of the program of Each person using this respirator must read and understand the information in these User Instructions before use. Use of this respirator by untrained or unqualified persons, or use not in accordance with these User Instructions may adversely affect product performance and result

in sickness or death. Do not use if any parts are missing or damaged.

Do not use with parts or accessories other than those manufactured by 3M as described in these User Instructions or on the NIOSH approvalishel for the respirator that you are using. Failure to do so may adversely affect respirator performance and result in sickness or death.

Use of this respirator in atmospheres for which it is not NIOSH certified or designed may result in sickness or death. Do not wear this - Atmospheres are oxygen deficien

Contaminant concentrations are unknown

- Contaminant concentrations are Immediately Dangerous to Life or Heath (IDLH).
- Contaminant concentrations exceed the maximum use concentration (MUC) determined using the assigned protection factor (APF) recommended for the applicable headgear or the APF mandated by specific government standards, whichever is lower. Refer to the User instructions provided with the applicable headgear.
- ontaminants that are dangerous to your health include those that you may not be able to see or smell. Leave the contaminated area nmediately if any of the following conditions occur. Failure to do so may result in sickness or death.
- Any part of the system becomes damage Airflow into the respirator decreases or stop
- Breathing becomes difficult. You feel dizzy or your vision is impaired.
- Your face, eves, nose or mouth become(s) irritated. fou suspect that the concentration of contaminants may have reached levels at which this respirator may no longer provide adequate protection
- Never after or modify this assembly
- Air supply piping, fittings, and compressors must have the capacity to deliver sufficient air volume (6 to 15 cfm, 170 to 425 lpm) to operate the air control device at the recommended pressure.

V-100 V-200 and V-200

To use these 3M air control devices with approved 3M headgear, breathing tube and supplied air hose proceed as follows:

- 1. Connect one end of the breathing tube to the selected headgear. (Follow the directions in the specific headgear User Instructions.) Note: If the H-115 Breathing Tube Assembly is used, the tube length may be trimmed to suit the user. Trim only the end that will be connected to the headgesr. The tube must not be adjusted to a length less than 12 inches (30.5 cm).
- 2. Connect the breathing tube to the air control device. Connect the threaded end of the breathing tube to the threaded outlet on the air control device by screwing the two units together.
- Note: If using a BT series breathing tube, first screw the 3MTM V-199 adapter into the outlet port of the air control device. Position the breathing tube so that the two locking studs are aligned with the openings of the two L-adapter slots on the adapter outlet. Press in straight and twist so that the locking studs are engaged at the end of the L-shaped slots (Fig. 6).
- 3. Adjust and buckle the waist belt with air control device comfortably around your wais 4. Connect the supplied air hose to the air supply and the 3MTM air control device. Adjust the air pressure to within the acceptable range for the appropriate air control device, hose, and headgear. See the Special or Critical Use Instructions section of this User Instruction for
- 5. Don the headgear and adjust for maximum comfort in a non-contaminated area per the specific headgear User Instructions
- 6. Adjust the airflow for maximum comfort by rotating the control knob on the air control device. 7. Recheck the air pressure setting to ensure it is still in the acceptable range.

- To use this 3M air control device with approved 3M headgear, breathing tube and supplied air hose proceed as follows: Connect one end of the breathing tube to the selected headgear. (Follow the directions in the specific headgear Note: If the H-115 Breathing Tube Assembly is used, the tube length may be trimmed to suit the user. Trim only the end
- that will be connected to the headgear. The tube must not be adjusted to a length less than 12 inches (30.5 cm). . Connect the breathing tube to the air control device. Connect the threaded end of the breathing tube to the threade outlet on the air control device by screwing the two units togethe Note: If using a BT series breathing tube, first screw the 3MTM V-199 adapter into the outlet port of the air control device. Position the breathing tube so that the two locking studs are aligned with the openings of the two L-shaper
- slots on the adapter outlet. Press in straight and twist so that the locking studs are engaged at the end of the L-shaped slots (Fig. 6). Adjust and buckle the waist belt with low pressure connector assembly comfortably around your waist.
- Connect the supplied air hose W-3020 between the air pump and the 3M™ Low Pressure Connector Assembly Adjust the pressure to within the acceptable range as per the Special or Critical Use Instructions Pressure section of
- 5. Don the headgear and adjust for maximum comfort in a non-contaminated area per the specific headgear User

6. Recheck the air pressure setting to ensure it is still in the acceptable range. CLEANING, INSPECTION AND STORAGE

These air control devices have no moving parts except the control knob, so there is little to wear out. If proper filtration of compressed air is maintained, the muffler will stay clean and maintain its acoustic efficiency. Additional maintenance and care of respirators should be followed per ANSI Standard Z88.2-1992, Practices for Respiratory Protection. In Canada. follow CSA Standard Z94.4 or the requirements of the authority having jurisdiction in your region.

Naist Belt (W-2963) and Decontaminable Waist Belts (W-3217, 520-02-23, and GVP-117) The waist belt may be hand laundered with a mild detergent, a clean rinse and air-drying.

DUE TO THE MEED FOR INSTRUMENTATION TO CAURDATE FOR PROPER AIRE OW THE VIOLET AIR COOLER IS TO BE DISASSEMBLED ON DUE TO THE NEED FOR INSTRUMENTATION TO CALIBRATE FOR PROPER ARRICLAY, HE COLLECT IS TO BE DISSEMBLED ONLY.
TO THE EXTENT SHOWN IN FIG. 2. DO NOT LOOSEN OR REMOVE THE SET SCREWS IN THE CONTROL KNOB (THE SIZE SECALSE OF CRITICAL
POSITIONING OF THE VALVE AND THE NEED TO USE INSTRUMENTATION FOR PROPER ADJUSTMENT OF THE AIRFLOW. RETURN TO THE FACTORY.

To clean the tube assembly, simply flush with soap and water followed with a water rinse. Do not insert a brush in the tube. It is important to keep the slots of the generator (item 6) clean.

Over tightening of the turbine cap (item 3) on re-assembly can cause the generator slots to restrict, thereby reducing airflow. To replace the acoustic foam pad (item 11) proceed as follows:

Remove the machine screw (item 7) and slide off the body tube (item 12) from the vortex air cooler with a slight twisting motion Remove the acoustic foam pad (item 11).

Position one end of new acoustic foam pad halfway between the exhaust holes and wrap it around the 3M™ Scotchmate™ strips. Make sure that the ends of the acoustic foam pad do not overlap, but rather form a snug butt fit.

Holding the accustic foam pad in place with two fingers of one hand, use the other hand to carefully slide the body tube over accustic foam and the tube assembly with a slight twisting motion. Apply a small amount of medium strength thread locker to the machine screw. Secure the

19-240
DUE TO THE NEED FOR INSTRUMENTATION TO CALIBRATE FOR PROPER AIRFLOW, THE VORTEMP™ HEATING TUBE IS TO BE DISASSEMBLED COUNLY TO THE EXTERY SHOWN IN PIG. 3. DO NOT LOOSEN OR REMOVE THE SET SCREVEN IN THE TUBE ASSEMBLY ITEM? JOECAUSE OF CRITICAL POSITIONING OF THE WAYER AND THE NEED TO USE INSTRUMENTATION FOR PROPER AUSUSTMENT OF THE AIRFLOW, RETURN TO THE PRACTORY.

To clean the tube assembly, simply flush with scap and water followed with a water rinse. Do not insert a brush in the tube. It is important to keep the slots of the generator (item 10) clean.

liver tightening of the turbine cap (item 13) on reassembly can cause the generator slots to restrict, thereby reducing airflow.

Daily cleaning should be performed on the exterior of the air control device. Blow clean with compressed air. After extended use, the two disks (item 5, Fig. 4 and 5) inside of the low pressure adapter may become dirty from contaminants in the compressed air supply. They may be replaced by removing the retaining ring with the proper tool.

All 3M air control devices should be stored at ambient temperature in a dry environment that is protected against atmospheric contaminants.

3MTM V-Series Air Control Devices can be disposed of as normal waste or scrap metal unless contaminated with a hazardous material as a result of use. If contaminated, the air control device must be disposed of according to local environmental regulations.

TROUBLESHOOTING Troubleshooting Chart V-100 and V-200

Symptom	Possible Causes	Remedy
Vortex freezes up.	Excessive water in compressor air line.	Add air drier to compressor.
Inadequate airflow.	Not enough air pressure.	Increase air pressure within appropriate pressure schedule in this User Instruction.
Inadequate warming or cooling.	Dirty on inside.	Clean and provide adequate filtration of supplied air.
	Compressed airline pipe too small.	Increase airline pipe size.
	Compressor has insufficient capacity.	Use larger compressor.
	Incoming air temperature too high or too low.	Check compressor for overheating.
		Insulate or move any hoses or pipes, which are heating up due to ambient conditions.
Too much warming or cooling.	Control knob not adjusted.	Adjust control knob.
	Air pressure too high.	Lower air pressure within appropriate pressure schedule in this User Instruction.
Excessive airflow to headgear.	Air pressure too high.	Lower air pressure within appropriate pressure schedule in this User Instruction.

Troubleshooting Chart V-300

Symptom	Possible Causes	Remedy
Inadequate airflow.	Compressor filters plugged.	Change filters.
	Muffler plugged with oil.	Replace muffler discs.
	Air pressure too low.	Increase air pressure within appropriate pressure schedule in this User Instruction.
	F&R panel filter plugged.	Change filter.
	Kink in air hose.	Straighten hose out and inspect for damage.
Control knob won't turn.	Valve mechanism dirty.	Clean with blast of air.
No airflow.	Compressor off.	Turn compressor on.
	F&R panel valve closed.	Open F&R panel valve.
	F&R panel closed.	Open F&R panel regulator.
	Compressed air hose not connected.	Connect compressed air hose.

Troublecheeting Chart V. 400

ymptom	Possible Causes	Remedy
adequate airflow.	Compressor filters plugged.	Change filters.
	Muffler plugged with oil.	Replace muffler discs.
	Air pressure too low.	Increase air.
	F&R panel filter plugged.	Change filter.
	Kink in air hose.	Straighten hose out.
o airflow.	Compressor off.	Turn compressor on.
	F&R panel valve closed.	Open F&R panel valve.
	F&R panel closed.	Open F&R panel regulator.
	Compressed air hose not connected.	Connect compressed air hose.

IMPORTANT NOTICE

Fig. 6: V-199 Adapter

WARRANTY: In the event any 3M OHSESD product is found to be defective in material, workmanship, or not in conformation with any express WARMAN IT: In the event any and Unbacca product is routin to be detective in material, workmarking in on it in commitment way express warrantly for a specific purpose, "Mis only obligation and your exclusive memby shall be, at 3M's option, to perfain replace or mand the purchase price of such parts or products upon timely notification thereof and substantiation that the product has been stored, maintained and used in accordance with 3M's written instructions.

LIMITATION OF LIABILITY: Except as provided above, 3M shall not be liable or responsible for any loss or damage, whether direct, incidental, special or consequential, arising out of sale, use or misuse of 3M OH&ESO products, or the user's inability to use such products. THE SHAMPLING STO FORTH HERBING MAR FIGURITY.

Learn more about masks and respirators on our website.