GENERAL SAFETY INFORMATION

Intended Use

V-Series Air Control Devices

User Instructions for 3M[™] Vortex Cooling Assembly V-100, 3M[™]

V-300 and 3M[™] Low Pressure Connector Assembly V-400.

IMPORTANT: Keep these User Instructions for reference

Vortemp[™] Heating Assembly V-200, 3M[™] Air Regulating Valve Assembly

A WARNING

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he 3M™ V-Series Air Control Devices are designed to be used with certain 3M headgear, breathing tube and supplied air hose to form a complete NIOSH approved respiratory system M headaear (respiratory inlet covering) may include a tight fitting facepiece. Joose fitting facepiece, hood, helmet or some combination of these

hat serves as a respiratory protective covering for the nose and mouth area. Refer to the enclosed 3MTM V-Series Ar Control Device NDSH poroval label for approved system configurations

ist of Warnings and Cautions within these User Instructions A WARNING

aduct halpe protect project certain sichorne contaminante. Missine may recult in eicknesse or deal

e length of compressed air hose W-3020 used depends on the specifi cations of the low-pressure air pump utilized. Some pumps specify In Finguro 1000) minimum of 50 or 100 feet of hose to allow adequate cooling of the air heated by the pump's mechanism. Read the pump's instructions srequity before selecting the compressed air hose W-3020 length that will be used. ND PUMP IS TO BE USED WHICH COLLO LASE AR OTTER 11MA1 1007 (1715) TO INTER THE COMPRESSED AIR MISS W-3020, Air hoter than 1607 (1715) will cause the hose to degrade. ch would adversely affect respirator performance and may result in sickness or death.

To meet the NDSH requirement in 42 CFR 84, subpart 84.150 for minimum and maximum ainflow (6 to 15 schm, 170 to 425 ipm), the air control devices approved for use with 3M headgear must be operated within the supply pressure ranges and hose lengther stated in the Special or Chicles Use Instructions: Failure to do so may adversely affect registrator performance and result in sickness or death. u must comply with OSHA Standard 29 CFR 1910.134, which states that, "Airline couplings shall be incompatible with outlets for other ga na mas compy with comparing an address of the Fried States was a state was a state of the provide the state of the states of the states and t

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 Commotify Specification G-7.1-1997 in the United States. In Carada, refer to CSA Standard 2180.1, table for the quality of compressed breathing air. Failure to do so may result in sickness or death.

he 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 onlinue downstream in concentrated form and adversely affect the performance of the respirator and result in sickness or death. se of equipment described in these User Instructions must be in accordance with applicable health and safety standards, respirator selection bles contained in such publications as ANSI Z88.2-1992, CSA Standard Z94.4, or pursuant to the recommendations of an industrial gienist. Before occupational use of these respirators, a written respiratory protection program must be implemented meeting all th requirements of OSNA 29 CFR 1910.134 such as training. If testing, medical evaluation, and applicable OSNA substance specific standards in Canada, CSA standard 294.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. Each nerson using this respirator must read and understand the information in these //www.instructions.before use. Use of this respirator h qualified persons, or use not in accordance with these User Instructions may adversely affect product performance and result n sickness or death. o 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 NIOSH approval label in 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 (AP ecommended for the applicable headgear or the APF mandated by specific government standards, whichever is lower. Refer to the Use Instructions provided with the applicable headpear

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 stop
- Breathing becomes difficult.
- You feel dizzy or your vision is impaire You taste or smell contaminants

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

Never alter or modify this assembly

Air supply piping, fittings, 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

IMPORTANT

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

General Description The 3M Air Control Valve Assemblies are designed to be used with approved 3M headgear (respiratory inlet covering), breathing tube and

upplied air hose to form a complete NIOSH approved Type C or CE supplied air system.

3MTM Vortex Cooling Assembly V-100 The 3MTM Vortex Cooling Assembly is designed to provide those 3M headgear which are approved for use with it, a continuous airflow ranging The same variable control of control of control of the control device also provide set to include and inter target the control of control of the control of

M™ Vortemp™ Heating Assembly V-200

The 3M™ Vortemp™ Heating Assembly is designed to provide those 3M headgesr which are approved for use with it, a continuous airflow ranging between 6 and 15 cfm (170 to 425 lpm). This air control device also provides the abiity to warm the compressed air supply by as much as 50°F (28°C). The device warms the air as supplied by the compressed air source – not the ambient air. The control knob is set manually between upper and lower limits to suit the warming comfort requirements of the user.

3M™ Air Regulating Valve Assembly V-300

The 3M™ Air Regulating Valve 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 lpm). The control knob (sirflow) is set manually between upper and lower limits to suit the comfort equirements of the user.

3M™ Low Pressure Connector Assembly V-40

The 3M™ Low Pressure Connector Assembly is designed to provide those 3M headgear which are approved for use with it, a continuous airflo ranging between 6 and 15 cfm (170 to 425 (pm). When used as part of an approved system with the 3MTM Supplied Air Hose W-3020, the V-400 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 1.05 kg/cm²), dependent on hose length

Assigned Protection Factor (APF)

Pater to the User Instructions for the specifi c headquar to be used to determine the APF for the 3MTM Supplied Air System using V-Series Air Control Devices Consult 3MTMTechnical Data Bullein #175 for additional information on APFs and supporting test data.

NIOSH Approval

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 oxyge 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

or higher quality

E- Use only the pressure ranges and hose lengths specified in the User's Instructions .I- 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. 0- 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 doming.

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 bell clip, and a belt. The W-268 cotton lines bell may be adjusted to accommodate waist sizes between 25 and 42 inches (64 and 107 centimeters). The W-2217, S204-22 and SUP-117 bells may accommodate waist sizes to boll inches (127 centimeters).

Air Control Device	Quick Disconnect Plug Type
V-100	Industrial Interchange, 1/4* MPT, 1/4* Body Size, Steel
V-200	Industrial Interchange, 1/4* MPT, 1/4* Body Size, Steel
V-300	Industrial Interchange, 1/4* MPT, 1/4* Body Size, Steel
V-400	Industrial Interchange, 1/4" MPT, 3/8" Body Size, Steel

3M[™] Supplied Air Hose and Pressure Requirement

All approved 3M beadnear except: 1-501, 1-503, 1-505, 1-701, 1-703, 1-705, 1-901 and 1-905. 3M[™] 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

excent 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 rest excent 1 -501 1 -503 1 -505 1 -701 1 -703 1 -705 1 -901 1 -905

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 Range
	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/cm ²)
V-100	125 - 200 ft (38.1 - 61.0 meters)	N/A	N/A	69 - 82 psig (4.9 - 5.7 kg/cm ²)
	225 - 300 ft (68.6 - 91.4 meters)	N/A	N/A.	75 - 91 psig (5.3 - 6.4 kg/cm²)
	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/cm ²)
V-200	125 - 200 ft (38.1 - 61.0 meters)	N/A	N/A	71 - 78 psig (5.0 - 5.5 kg/cm ²)
	225 - 300 ft (68.6 - 91.4 meters)	N/A	N/A.	77 - 88 psig (5.4 - 6.2 kg/cm ²)
	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)
V-300	125 - 200 ft (38.1 - 61.0 meters)	N/A	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/cm ²)
	N/A	N/A	25 ft (7.6 m)	6 - 11 psig (0.4 - 0.8 kg/cm ²)
V-400	N/A	N/A	50 ft (15.2 m)	7 - 13 psig (0.5 - 0.9 kg/cm²)
	N/A	N/A	100 ft (30.5 m)	8 - 15 psig

3M headgear: L-501, L-503, L-506, L-701, L-703, L-705, L-901 and L-905

meters) No connections are allowe

L-705, L-901, L-905

						CSA Standard Z I	au. For the autionity having jurisor	coon in your region. Failure to do so may result in sickness o	r death.
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 Range		the Compressed quality of compressed	Gas Association Commodity Specifi assed breathing air. Failure to do s	s at least the requirements of the specification for Grade D brea ication G-7.1in the United States. In Canada, refer to CSA stands o may result in sickness or death. 25 ceio (8.75 ko/cm ²) maximum. Dirt. oil and water, unless trace	ard Z180.1, table for the
	25 ft (7.6 m)	25 ft (7.6 m)	N/A	60-65 psig (4.2-4.6 kg/cm ²)	L L	continue downst	ream in concentrated form and adv	ersely affect the performance of the respirator and may result	in sickness or death.
	50 ft (15.2 m)	50 ft (15.2 m)	N/A	65-70 psig (4.6-4.9 kg/cm²)	1	3M™ V-100 IIIL	PONENTS AND REPLACEM Istrated Parts List (Fig. 2)		
/-100	100 ft (30.5 m)	100 ft (30.5 m)	N/A	70-75 psig (4.9-5.3 kg/cm²)		tem Number	Part Number V-111	Description Vortex mutther kit	Quantity Required
	200 ft (60.9 m)	N/A	N/A	80-85 psig (5.6-6.0 kg/cm ²)	3	3		Retainer (included in item 1) Turbine cap** O-ring	1
	300 ft (91.4 m)	N/A	N/A	85-90 psig (6.0-6.3 kg/cm²)	6	5		o-nng Special washer Generator	1
	25 ft (7.6 m)	25 ft (7.6 m)	N/A	60-65 psig (4.2-4.6 kg/cm²)	1	7		Generator Screw 6/32 x 3/16 Washer-Inck #6	1
	50 ft (15.2 m)	N/A	N/A	60-68 psig (4.2-4.8 kg/cm²)	ŝ	9	W-1279-2 W-3186-2	Plug-quick disconnect (Ind. Interchange) Plug-quick disconnect (Schrader)	1
/-200	100 ft (30.5 m)	N/A	N/A	70-72 psig (4.9-5.1 kg/cm²)		10	W-1403	Elbow connector Foam pad and fastener	1
	200 ft (60.9 m)	N/A	N/A	75-80 psig (5.3-5.6 kg/cm ²)		12		Body tube** Control knob**	1
	300 ft (91.4 m)	N/A	N/A	85-90 psig (6.0-6.3 kg/cm²)		14		Tube assembly** 0-ring	1
						16	W-2963 W-3217	Waist belt, cotton 42 in x 1.5 in Waist belt, decontaminable 54 in x 1.5 in	
					1	17		Holder	1

25 ft (7.6 m)	25 ft (7.6 m)	N/A	25-30 psig (1.8-2.1 kg/cm²)	21 V V
50 ft (15.2 m)	50 ft (15.2m)	N/A	30-35 psig (2.1-2.5 kg/cm²)	**Cannot be ordered. I
100 ft (30.5 m)	100 ft (30.5 m)	N/A	35-40 psig (2.5-2.8 kg/cm²)	2
200 ft (60.9 m)	N/A	N/A	45-50 psig (3.2-3.5 kg/cm²)	
300 ft (91.4 m)	N/A	N/A	50-55 psig (3.5-3.9 kg/cm²)	
NA	N/A	25 ft (7.6 m)	6-11 psig (0.4-0.8 kp/cm ²)	
N/A	N/A	50 ft (15.2 m)	7-13 psig (0.5-0.9 kg/cm²)	Fig. 2: V-100 3M™ V-200 Illust
N/A	N/A	100 ft (30.5 m)	8-15 psig	Item Number P

A WARNING

Many older compressed air systems may provide air that is unfit 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 seecific.

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

any naticulate matter should also be removed as they may affect performance of the sir control devices. The schematic diagram of the sir purifier

and pressure regulator equipment shows what should be installed in the main airline ahead 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 cartridge to help remove oil mist and vapors, condensed moisture, particulate, odors and vapors. They come competelely assembled and are ready for connection between the compressor and supplied air respirator system. These air filtering

Note: Carbon monoxide- Although it is theoretically possible that oil lubricated compressors can create carbon monoxide (CO) if the compressor

whether and the based of the state of the st

A WARNING nt 42 CFR 84, subpart 84,150 for minimum and maximum airflow (6 to 15 cfm, 170 to 425 lpm), the air cont

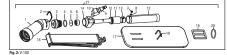
You must comply with DSHA standard 29 CFR 1910.134, which states that, "Ariline couplings shall be incompatible with outlets for other gas systems by prevent inadvertent servicing of ariline respirators with nonrespirable gases or oxygen." In Canada, refer to be requirements of CSA Standard 2718.10 or the sulfnorth having priordicine in your region. Failure to do so may result in sickness or death.

Cable tie

0-ring

The length of compressed air hose W-3020 used depends on the specifications of the low-pressure air pump utilized. Some pumps specifi

a 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 put V-150 Vortex Cooling Tube (no helt) V-115 Vortex spare parts kit-includes item 4, 5, 6, 7, 8, 11, 15 d Must be returned to distributor for factory renair.

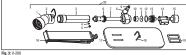


Description

strated Parts List (Fig. 3) Part Number

V-211	Vortemp™ muffler kit
	Retainer (included in item 1)
	Tube housing**
	Screw 6/32 x 3/16
	Washer - lock #6
	0-ring
	Tube assembly**
W-1403	Elbow connector
W-1279-2	Plug-quick disconnect (Ind. Interchange)
W-3186-2	Plug-quick disconnect (Schrader)
	Generator
	Special washer
	0-ring
	Turbine cap**
	Valve-ball**
	Vortemp™, cold muffler
W-2963	Waist belt, cotton 42 in x 1.5 in
W-3217	Waist belt, decontaminable 54 in x 1.5 in
	Holder
	Cable tie
	Slide
V-250	Vortemp™ Heating Tube (no belt)
V-215	Vortemp [™] spare parts kit-includes item 4, 5, 6, 10, 11, 12, 15

"Cannot be ordered. Must be returned to distributor for factory rena



3MTM V

tem Nu

Fig. 4: V-30

Item Number

W-3135-10

W-3252-2

W-3251-2

W-2963

/-300 II	lustrated Parts List (Fig	1.4)	
mber	Part Number	Description	Quantity Require
	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	Spare parts kit-includes Item 3, 4, 5, 6, 7, 8	
		11 \	
	2 3 4 5	1 R	
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(DA)	\) 1) 00 00		
1.10	<i>y</i> -		
	-		

3M™ V-400 Illustrated Parts List (Fig. 5) Part Number Quantity Required V-211 Vortemp™ muffler kit

Retainer (included in item 1)	1
Retaining Ring	1
Screen	1
Muffler Disc (10 pk)	2
Plug-quick disconnect (Ind. Interchange)	
Plug-quick disconnect (Schrader)	
Weist halt cotton 42 in x 15 in	

L-shaped slots (Fig. 6).

this User Instructions

essure must be kept within safe limits, 125 psig (8.75 kg/cm²) maximum. Dirt, oil and water, unless trapped or filtered out, may winstream in concentrated form and adversely affect the performance of the respirator and may result in sickness or death. OMPONENTS AND REPLACEMENT PARTS 0 Illustrated Parts List (Fig. 2) Part Number Descriptio Vortex muffler kit Retainer (included in item 1 Turbine cap** 0-ring Special washer

Compressor Volume

Discussion on Respirable Air

lubricated compressors

eet the NIOSH requ

uirements - Approximately 20 CFM (566 lpm) per 3M™ Air Control Device.

Noise Level - Less than 80 dBA within the headnear: excludion external nois

Precautions must be observed when using compressed air for breathing purposes.

'Formation of carbon monoxide in air compressors. Am. Ind. Hvg. Assoc. J (40). June 1979. pp. 548-55

and regulating devices do not ensure Grade D breathing air as required

N/A	N/A	80-85 psig (5.6-6.0 kg/cm ²)	3	
N/A	N/A	85-90 psig (6.0-6.3 kg/cm²)	4 5	
25 ft (7.6 m)	N/A	60-65 psig (4.2-4.6 kg/cm²)	5	
N/A	N/A	60-68 psig (4.2-4.8 kg/cm²)	9 W	 I-1279-2 I-3186-2

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 (7.6, 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,

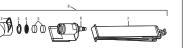
(0.6 - 1.0 kg/cm devices approved for use with 3M headopar must be operated within the supply pressure ranges and hose lengths stated in the Special of ritical Use Instructions. Failure to do so may adversely affect respirator performance and result in sickness or death.

Fig. 1: Air purification and regulation equipment

Am incomparts: Conv. 2004, Educe, Levin, Front, Front,

W-3217 520-02-23 GVP-117 W-3036

Waist helt, decontaminable 54 in x 1.5 in Waiet helt, decontaminable 50 in y 2 in Waist helt, decontaminable 50 in x 2 in Low pressure connector (no belt) 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

Quantity Required

Use of equipment described in these User Instructions must be in accordance with applicable health and safety standards, respirator alaction tables contained in such aublications as ANCI 788.2 CSA Standard 704.4 or nursecant to the amountainteed on industries tion tables contained in such publications as Area 26.2, LSA standard 244.4, or pursuant to the recommensions of an industrial nois. Before occupational use of these respirations, a written respiratory protection program must be implemented meeting all the rements of OSHA 29 CFR 1910.134 such as training, fit testing, medical evaluation, and applicable OSHA substance specific standards. In Canada, CSA standard Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate.

A WADNING

Each person using this respirator must read and understand the information in these User Instructions before use. Use of this respirator strained 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 manufactured by 3M as described in these User instructions or on the NIOSH approviate 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

in sickness or death.

respirator where:

V-100, V-200, and V-300

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.
- 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 stop
 Breathing becomes difficult.
- You feel dizzy or your vision is impaired
- You taste or smell contaminant
- Your face, eyes, nose or mouth become(s) initiated.
 You suspect that the concentration of contaminants may have reached levels at which this respirator may no longer provide adequate protection Never alter or modify this assemb
- 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.
- 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 headgear. The tube must not be adjusted to a length less than 12 inches (30.5 cm).
- 2. Connect the breathing lube 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 acrew the 3M[™]V-199 adapter into the cutlet 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-shaped stots on the adapter outlet. Press in straight and twist so that the locking tubes are enjaged at the end of the L-shaped stots (Fig. 6).
- 3. Adjust and buckle the waist belt with air control device comfortably around your waist.
- 4. Connect the supplied air hose to the air supply and the 3M™ 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 acceptable air pressure ranges.
- 5. Don the headoese and adjust for maximum comfort in a non-contaminated area per the specific headoeser 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 headoear. 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 3M™ V-199 adapter into the outlet port of the air control device. Position the breathing tube so that the two locking studs are eligible with the openings of the two L-shaped slots on the adapter outlet. Press in straight and twist so that the locking studs are engaged at the end of the
- 3. 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 Assembl Adjust the pressure to within the acceptable range as per the Special or Critical Use Instructions Pressure section
- 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 288.2-1992, Practices for Respiratory Protection. In Canada, follow CSA Standard 294.4 or the requirements of the authority having jurisdiction in your region.

Waist 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.

UP TO THE NEED FOR INSTRUMENTATION TO CALIBRATE FOR PROPER AIRFLOW, THE VORTEX AIR COOLER IS TO BE DISASSEMBLED ONLY To the extent shown in rig. 2 do not loces no remove the set screws in the control know fitm 13 because of catical positioning of the value mot the need to use instrumentation for proper allustment of the mainer on return to the factory to the control know of the set of use in the control know of the control know of the control know of the control know of the set of use in the control know of the set of use in the control know of the control know of the control know of the control know of the set of use in the control know of the set of use in the control know of the set of use in the control know of the set of use in the set of use in the control know of the set of use in the control know of the set of use in t FOR REPAIR IF THE CONTROL KNOB COMES OFF

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 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 accustic foam pad hallway between the exhaust holes and wrap it around the 3M[™] Scotchmate[™] strips. Make sure that the ends of the accustic foam pad do not overlap, but rather form a snug butt fit.
- Holding the acoustic foam pad in place with two fingers of one hand, use the other hand to carefully slide the body tube over acoustic foan Internet you used the second second point we implies on one many, use one user many to care our and body lube (Vet accused toom and the tube assembly with a slight twisting motion. Apply a small amount of medium strength thread locker to the machine screw. Secure the body tube with the machine screw.

DUE TO THE NEED FOR INSTRUMENTATION TO CALIBRATE FOR PROPER AIRFLOW, THE VORTEMP™ HEATING TUBE IS TO BE DISASSEMBLED DNLY TO THE EXTENT SNOWN IN RIG. 3. DO NOT LOOSEN OR REMOVE THE SET SOREWS IN THE TUBE ASSEMBLY (TEM 7) BECAUSE OF CATION POSITIONING OF THE VAULE AND THE NEED TO USE INSTRUMENTATION FOR PROPER ADJISTIMENT OF THE ARFLOW, RETURN TO THE

To clean the tube assembly, simply flush with scop 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.

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

V-300 and V-400

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 drv 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.

oubleshooting 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.

roubleshooting Chart V-40

Symptom	Possible Causes	Remedy
Inadequate airflow.	Compressor filters plugged.	Change filters.
	Muffler plugged with oil.	Replace multier discs.
	Air pressure too low.	Increase air.
	F&R panel filter plugged.	Change filter.
	Kink in air hose.	Straighten hose out.
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.

IMPORTANT NOTIC

WARRANTY: In the event any 3M OH&ESD product is found to be defective in material, workmanship, or not in conformation with any express warrantly for a specific purpose. SM's only obligation and your exclusive remedy shall be, at SM's option. To recain replace or refund the purchas price of such parts or products upon timely notification thereof and substantiation that the product has been stored, maintained and used in econtance with 3M's written instructions

EXCLUSIONS TO WARRANTY: THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, Fitness for a particular purpose or other warranty of quality, except of title and against patent infringement.

LIMITATION OF LIABILITY: Except as provided above, 3M shall not be liable or responsible for any loss or damage, whether direct, indirect, indirect, and a second s



