USE AND INSTALLATION OF THE MEECH-ARTX STAINLESS STEEL MODEL 60015 COLD STREAM AIR GUN

1. COMPRESSED AIR SUPPLY

Air supplies are plagued with condensed water vapour and droplets in the air lines. This condensation leads to rust and dirt in the air lines. Also, some compressors will allow oil or oil vapour to enter the air line.

Small orifices in the MEECH-ARTX Vortex Tube, Control Cooler, or Model 60015 Cold Stream Air Gun may become clogged with the rust, dirt, and water droplets. A 5-micron filter will separate 99% of the foreign material from the air supply, allowing virtually maintenance-free operation. The use of an oil filter with an effective filtration of 0.01 ppm will remove the oil droplets for a cleaner air supply.

Keep in mind that the current line or air hose might contain dirt or oil and should be blown out before installation. Also, pipe thread sealant or tape must be carefully applied to avoid clogging product orifices.

When the temperature of the air inside the Vortex Tube. Control Cooler or Model 60015 Cold Stream Air Gun reaches 0°c the water vapour in the air will start to freeze. If this poses a problem with the ice clogging the orifices of the generator inside the tube, an air dryer must be used to lower the dew point to keep out the water vapour. A dryer rated at - 19°c will produce a dew point low enough to eliminate the water vapour freezing in the orifices of the generator.

2. COMPRESSED AIR SUPPLY LINE SIZE

To obtain maximum performance from the MEECH-ARTX products, accurate measures of air pressure (psi)and air volume (cfm) must be obtained.

Line Pressure of 70-90 psi (5 - 6 Bar) can be present without a sufficient volume (cfm) of air. To ensure that both pressure and volume are present to efficiently operate the MEECH-ARTX products, a line size of 3/8" pipe or 1/2" hose should be used for applications up to 10ft from the main header. Use 1/2" and 3/4" hose up to 20ft and 3/4" pipe and 1" hose up to 50ft from the header.

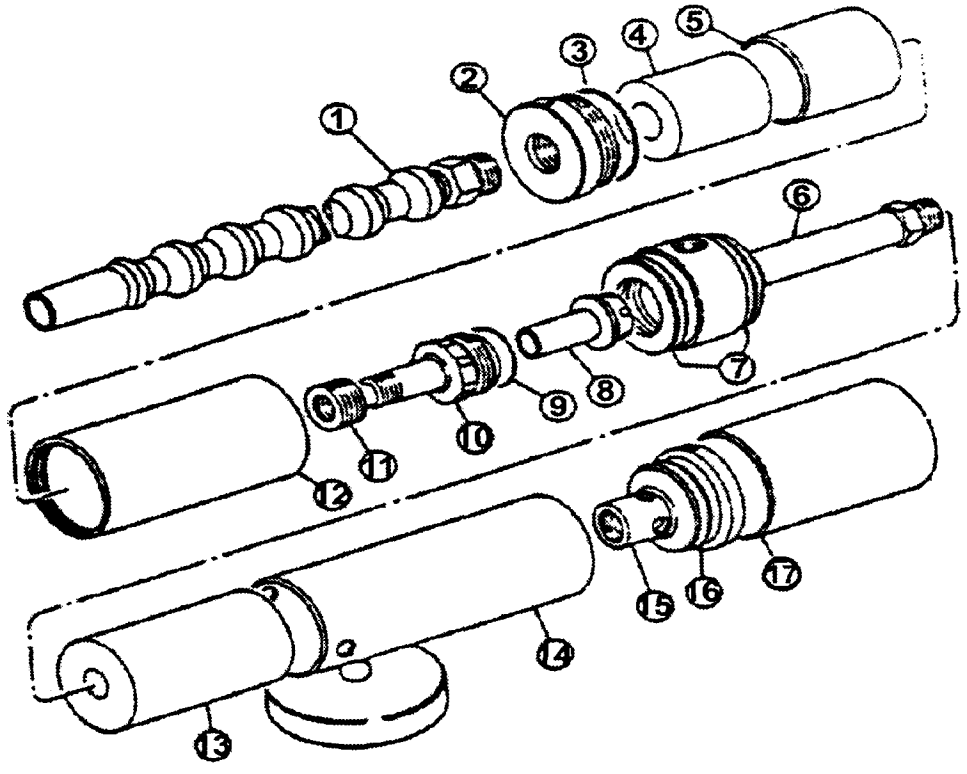
3. USE AND INSTALLATION OF THE STAINLESS STEEL MEECH- ARTX MODEL 60015 COLD STREAM AIR GUN

The Model 60015 Cold Stream Air Gun is designed to provide maximum cooling. This unit is factory set to put 70% of the incoming compressed air at your disposal for spot cooling.

The volume of air can be changed by replacing the 15 cfm (420 LPM)generator installed in the unit with any one of the generators that are included with your Model 60015 Cold Stream Air Gun. The higher cfm generators will provide you with more volume of cooling but at slightly higher temperatures. The temperature of the air will increase 4° - 6°C (8° - 10°F) for each of the generators from the 10 cfm (280 LPM) generator. The volume of cold air will remain at 70% of the incoming compressed air.

4. CHANGING THE GENERATOR ON THE MODEL 60015 COLD STREAM AIR GUN

A single point spanner wrench can be used to loosen and remove the cold end threaded cap (2). The cold end muffler assembly (12) can then be turned by hand and removed exposing the cold end cap (10). Once removing the 1" hex cold cap the stationary generator (8) and O ring (9) can be pulled from the spin chamber by hand and replaced with the desired cfm generator. Remember to replace the O ring and tighten the cold cap to properly seat the new generator.



1. Snap Flex Line
2. Cap
3. O Ring
4. Cold Muffler
5. Muffler Sleeve
6. Vortex Tube
7. O Ring
8. Generator
9. O Ring
10. Cold Cap
11. Adapter
12. Cold Tube
13. Hot Muffler
14. Hot Tube Assembly
15. Retainer
16. O Ring
17. Cap

5. CLEANING AND MAINTENANCE

The MEECH-ARTX Model 60015 Cold Stream Air Gun has no moving parts. Clean compressed air moving through the tube will not cause wear on the parts and will provide you with the same service for an indefinite period of time.

Occasionally, dirt, water or oil may enter the tube from the compressed air supply and hinder the performance. When this happens, simply take the unit apart, Clean the parts, and reassemble, tightly replacing the cold end cap to properly seat the generator.

USE AND INSTALLATION OF THE MEECH-ARTX STAINLESS STEEL CONTROL COOLER

1. COMPRESSED AIR SUPPLY

Air supplies are plagued with condensed water vapour and droplets in the air lines. This condensation leads to rust and dirt in the air lines. Also, some compressors will allow oil or oil vapour to enter the air line.

Small orifices in the MEECH-ARTX Vortex Tube, Control Cooler, or Model 60015 Cold Stream Air Gun may become clogged with the rust, dirt and water droplets. A 5-micron filter will separate 99% of the foreign material from the air supply, allowing virtually maintenance free operation. The use of an oil filter with an effective filtration of 0.01 micron will remove the oil droplets for an even cleaner air supply.

Keep in mind that the current line or air hose might contain dirt or oil and should be blown out before installation. Also, pipe thread sealant or tape must be carefully applied to avoid clogging product orifices and provides more even cooling throughout the cabinet.

When the temperature of the air inside the Vortex tube, Control Cooler or Model 60015 Cold Stream Air Gun drops to 0°c, the water vapour in the air will start to freeze. If this poses a problem with the ice clogging the orifices of the generator inside the tube, an air dryer must be used to lower the dew point to keep out the water vapour. A dryer rated at - 19°c will produce a dew point low enough to eliminate the water vapour freezing in the orifices of the generator.

2. COMPRESSED AIR SUPPLY LINE SIZE

To obtain maximum performance from the MEECH-ARTX products, accurate measurements of air pressure (psi) and air volume (cfm) must be obtained.

Line pressure of 70-90 psi can be present without a sufficient volume (cfm) of air. To ensure that both pressure and volume are present to efficiently operate the MEECH-ARTX products, a line size of 3/8" pipe of 1/2" hose should be used for applications up to 10ft from the main header. Use 1/2" pipe and 3/4" hose up to 20ft and 3/4" pipe and 1" hose up to 50ft from the header.

3. USE AND INSTALLATION OF STAINLESS STEEL CONTROL COOLER

The MEECH-ARTX generator determines the volume of air through the Vortex Tube. These generators are rated for 10, 15, 25 and 35 cfm at 80 psi (280, 420, 700, 900 LPM at 5.5 Bar). To ensure that your air compressor can generate these volumes, the horsepower of the compressor can be multiplied by 4 to determine the cfm capacity. A multiple of 5 can be used to newer compressors over 30 horsepower.

The standard model Control Cooler is equipped with a 25 cfm (700 LPM) generator. This will provide 1500 BTU of cooling (380 kcal/h). This is sufficient to cool a cabinet that is 6 ft x 6ft x 2ft (1.8 x 1.8 x 0.6 mm) from a 55°c maxium inside temperature to 32°c provided 80 psi (5.5 Bar) air is available, with dry 23°c compressed air going into the MEECH- ARTX Control Cooler.

When 80 psi (5.5 Bar) is not available, the potential BTUs of cooling must be reduced by 25% at 60 psi (4 Bar), or 50% at 40 psi (2.5Bar).

The thermostat Model 70325 is very useful at controlling compressed air usage as it only operates when cooling is needed.

4. OPERATION OF COOLING

The MEECH-ARTX stainless steel Control Cooler is factory-set to deliver the maximum cooling needed to maintain a desired temperature inside your control panel.

At 80 psi (5.5 Bar), 17.5 cfm (70% of 25 cfm) of cold air will exit from the Vortex Tube into a panel, providing 1500 BTU of cooling. The bladder valve will automatically release hot air from the cabinet, maintaining a positive pressure inside the cabinet of 8 inches water column.

The automatic release of air through the bladder valve enables you to close off open conduit entrances, louvers and air leaks. A sealed cabinet is also more efficient, as the cold air enters only the cabinet and doesn't escape to the atmosphere, generating increased compressed air usage.

5. INSTALLATION AND MOUNTING

The dimensional drawing (fig.1) indicates the way the Control Cooler should be mounted regardless of whether you ordered Model 70025, the Control Cooler only, or Model 70125, containing the Control Cooler, filter and ducting kit for continuous cooling.

Also, the drawing shows the thermostat and solenoid valve if you ordered Model 70325. Remember that the range of the thermostat is very large and even a 1/16 turn of the thermostat screw would vary the temperature by 10°c. For this reason, the factory setting of 32°c should not be changed unless there are severe conditions.

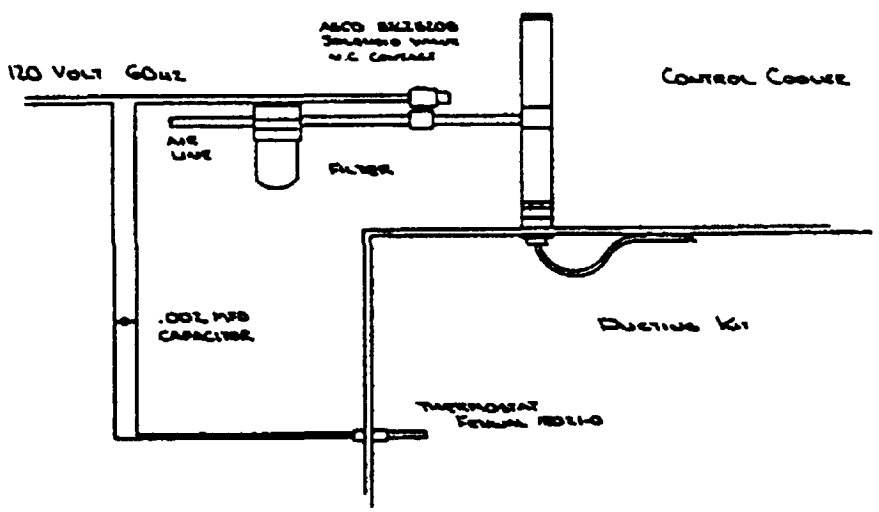


FIGURE 1. Dimensional Drawing.

The Control Cooler requires a standard electrical knockout of 3/4". The thermostat requires a 1/2" standard electrical knockout for installation,.

6. DUCTING

The 10 ft of vinyl ducting connects to the cold end of the Control Cooler inside the electrical cabinet.
The ducting allows more efficient use of the cold air by routing the cold air to the hottest spots. By punching a hole in the tube by the hot spot, the cold air cools more effectively, restricting the high temperature increase of the particular hot control.

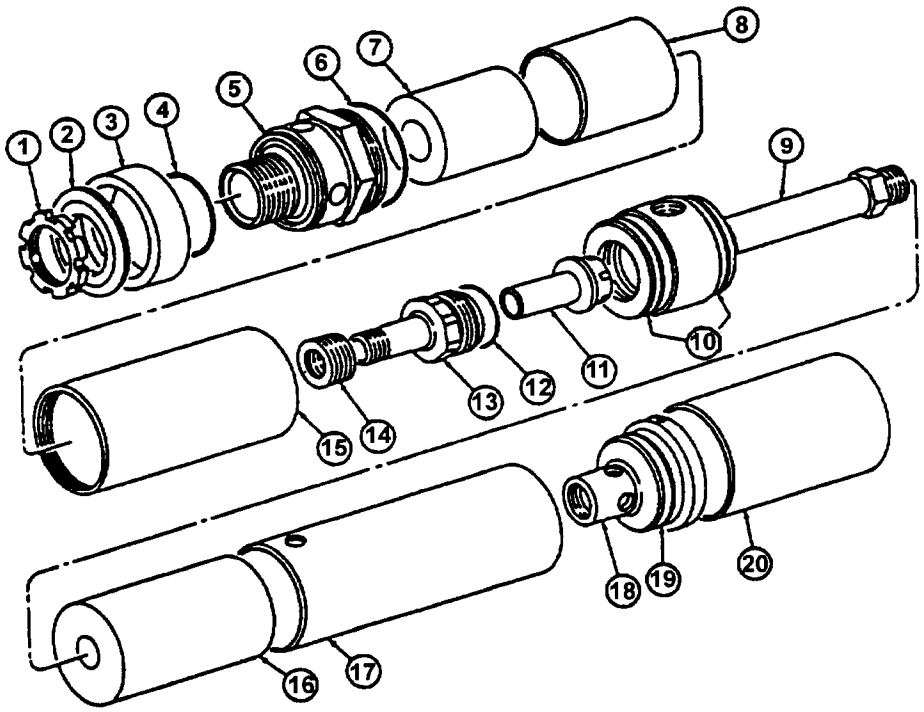
The open end of the ducting should be placed at the bottom of the cabinet. As the cold air exits from the tubing, it rises as it heats and provides more even cooling throughout the cabinet.

7. CLEANING AND MAINTENANCE

The MEECH-ARTX Stainless Steel Control Cooler has no moving parts. Clean, compressed air moving through the tube will not cause wear on the parts and will provide you with the same service for an indefinite period of time.

Occasionally, dirt, water or oil may enter the tube from the compressed air supply and hinder the performance. When this happens, simply take the unit apart, clean the parts, and resemble, tightly replacing the cold end cap to properly seat the generator.

FIGURE 2. Parts and Assembly.



1. Locknu
2. Washer
3. Exhaust Valve
4. O Ring
5. Cold End Filter
6. O Ring
7. Muffler-Cold
8. Muffler Sleeve
9. Vortex Tube
10. O Ring (-029)
11. Generator
12. O Ring(-116)
13. Cold Cap
14. Adapter
15. Cold Tube
16. Muffler-Hot
17. Hot Tube
18. Retainer
19. O Ring
20. Cap