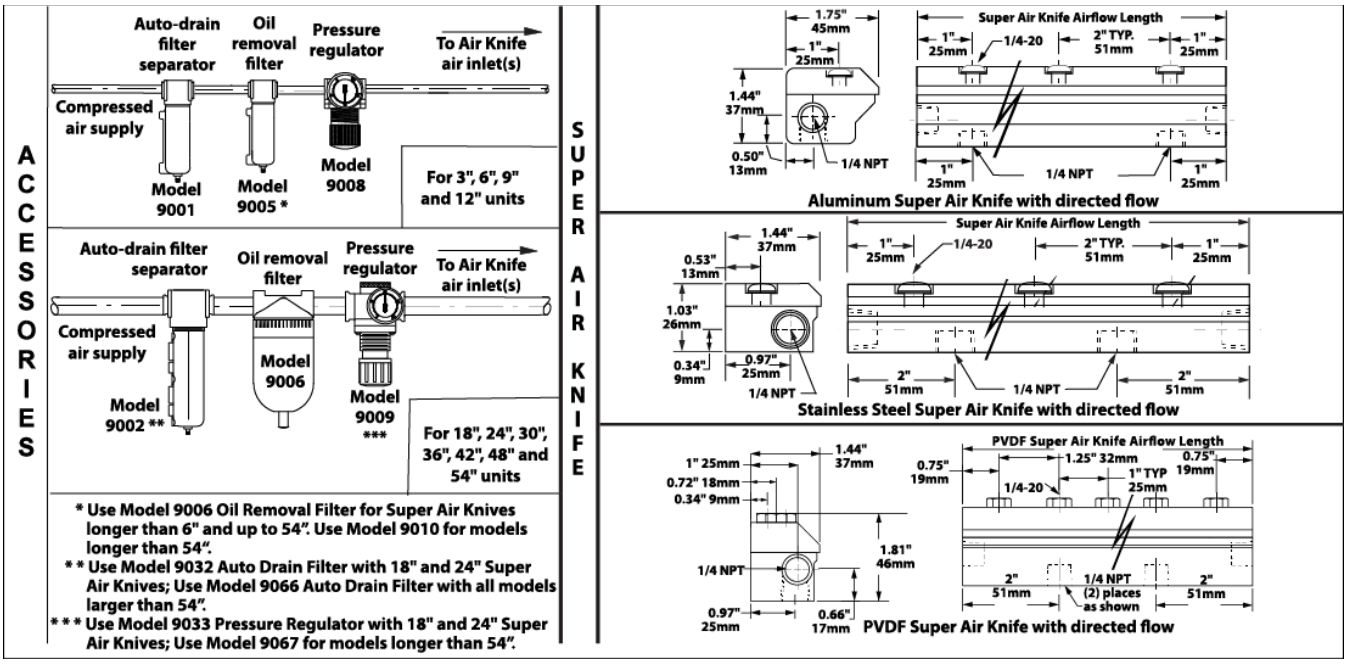
EXAIR® CE EXAIR TECHELP 1-800-903-9247

# SUPER AIR KNIFE INSTALLATION & MAINTENANCE




## COMPRESSED AIR LINE SIZES

Compressed air lines should be sized to hold pressure drops to a minimum. Do not use restrictive fittings or undersized lines that can "starve" the Super Air Knife by causing excessive line pressure drop.

The following table shows the recommended infeed pipe sizes. If compressed air hose is used, always go one size larger than the recommended pipe size due to the smaller I.D. of hose. (Example: Consider 1/2" I.D. hose the equivalent of 3/8" pipe.)
For 24" (610mm) to 42″ (1067mm) long Air Knives, it is best to supply both ends. When lengths exceed 42″ (1067mm), the compressed air must be supplied at ends and the center. Model 9076, 9077, 9078 and 9079 Universal Air Knife Plumbing Kits (sold separately) provide the appropriate size hose and fittings for coupling inlets on the same Super Air Knife. The standard gap setting is .002" (0.05mm). For larger gap settings, it is best to supply both ends of the Air Knife in order to maintain uniform flow. (see Super Air Knife Shim Set)

**SUPER AIR KNIFE RECOMMENDED INFEED PIPE SIZES** Single Air Knife Installation

**Infeed Pipe Size Length of Run**

| Super Air Knife Length | Model Numbers | **10'** (3m) | **50'** (15.2m) | **100'** (30.5m) |
|---|---|---|---|---|
| 3" (76mm) | 110003, 110003SS, 110003SS-316, 110003-PVDF | 1/4" | 3/8" | 1/2" |
| 6" (152mm) | 110006, 110006SS, 110006SS-316, 110006-PVDF | 1/4" | 3/8" | 1/2" |
| 9" (229mm) | 110009, 110009SS, 110009SS-316, 110009-PVDF | 3/8" | 1/2" | 3/4" |
| 12" (305mm) | 110012, 110012SS, 110012SS-316, 110012-PVDF | 3/8" | 1/2" | 3/4" |
| 18" (457mm) | 110018, 110018SS, 110018SS-316, 110018-PVDF | 1/2" | 3/4" | 1" |
| 24" (610mm) | 110024, 110024SS, 110024SS-316, 110024-PVDF | 1/2" | 3/4" | 1" |
| 30" (762mm) | 110030, 110030SS, 110030SS-316, 110030-PVDF | 3/4" | 1" | 1" |
| 36" (914mm) | 110036, 110036SS, 110036SS-316, 110036-PVDF | 3/4" | 1" | 1-1/4" |
| 42" (1067mm) | 110042, 110042SS, 110042SS-316, 110042-PVDF | 3/4" | 1" | 1-1/4" |
| 48" (1219mm) | 110048, 110048SS, 110048SS-316, 110048-PVDF | 3/4" | 1" | 1-1/4" |
| 54" (1372mm) | 110054, 110054SS, 110054SS-316, 110054-PVDF | 3/4" | 1" | 1-1/4" |
| 60" (1524mm) | 110060, 110060SS. 110060SS-316 | 1" | 1-1/4" | 1-1/4" |
| 72" (1829mm) | 110072, 110072SS, 110072SS-316 | 1" | 1-1/4" | 1-1/2" |
| 84" (2134mm) | 110084, 110084SS, 110084SS-316 | 1" | 1-1/4" | 1-1/2" |
| 96" (2438mm) | 110096, 110096SS, 110096SS-316 | 1-1/4" | 1-1/4" | 1-1/2" |
| 108" (2743mm) | 1100108, 1100108SS, 1100108SS-316 | 1-1/4" | 1-1/2" | 2" |

## COMPRESSED AIR SUPPLY

A Super Air Knife has compressed air inlets on each end and on the bottom. Knives 24"-47" should use the 2 inlets at opposite ends of the knife. Knives 48"-59" should use the 2 inlets at opposite ends plus 1 near the middle on the bottom of the knife. Knives 60"-83" use 2 inlets at opposite ends plus 2 inlets equally spaced on the bottom of the knife. Knives 84" and longer use 2 inlets at opposite ends plus 3 inlets equally spaced on the bottom of the knife. With proper filtration and separation of dirt, moisture and oil from the compressed air supply, the Super Air Knife will operate for years with no maintenance required. Use a 5 micron or smaller filter separator on the compressed air supply. Use Model 9001 Automatic Drain Filter Separator for


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units up to 12" (305mm), Model 9032 for 18" (457mm) & 24" (610mm) units, Model 9002 for 30" (762mm) to 54″ (1372mm) and Model 9066 for all other units larger than 54″ (1372mm). To prevent problems associated with oil, use an oil removal filter. Use a 0.03 micron or smaller oil removal filter on the compressed air supply. Use Model 9005 Oil Removal Filter for units up to 6" (152mm), Model 9006 Oil Removal Filter for units 6" (152mm) to 54″ (1372mm) and Model 9010 Oil Removal Filter for units longer than 54″ (1372mm). The oil removal filter should be used downstream from the automatic drain filter separator. Filters should be used close to each Super Air Knife, within 10 to 15' (3 to 4.6m) is best.

The Super Air Knife is designed to use normal shop air supplies up to 100 PSIG (6.9 BAR, 689 kPa). For infinite control of flow and force, pressure may be regulated. Use Model 9008 Pressure Regulator for lengths up to 12" (305mm), Model 9033 Pressure Regulator for 18" (457mm) and 24" (610mm) lengths, Model 9009 Pressure Regulator for 30" (762mm) to 54″ (1372mm) and Model 9067 Pressure Regulator for units longer than 54″ (1372mm). Super Air Knives are designed for 250 PSIG (17.2 BAR, 1.72 MPa) Max.

If air preparation units other than EXAIR models are being used, please note the following:

- PRESSURE REGULATORS – Must be pressure relieving and rated for a supply pressure of 250 PSIG (17.2 BAR, 1.72 MPa). Suggested operating pressure is 5-125 PSIG (0.3-8.6 BAR, 34-862 kPa). For models 12" (305mm) and under, flow should be minimum 50 SCFM (1416 SLPM). For models over 12" (305mm) and up to 24" (610mm), flow should be minimum 90 SCFM (2549 SLPM). For models over 24" (610mm), flow should be minimum 185 SCFM (5239 SLPM).
- AUTO DRAIN FILTER SEPARATORS – Must be rated for a supply pressure of 250 PSIG (17.2 BAR, 1.72 MPa) and have 5 micron filtration. For models 12" (305mm) and under, flow should be minimum 50 SCFM (1416 SLPM). For models over 12" (305mm) and up to 24" (610mm), flow should be minimum 90 SCFM (2549 SLPM). For models over 24" (610mm), flow should be minimum 185 SCFM (5239 SLPM).
- OIL REMOVAL FILTERS – Must be rated for a supply pressure of 250 PSIG (17.2 BAR, 1.72 MPa) and have 0.03 micron filtration. For models 6" (152mm) and under, flow should be minimum 37 SCFM (1048 SLPM). For models over 6" (152mm), flow should be minimum 185 SCFM (5239 SLPM).

## USING THE SUPER AIR KNIFE

The Model 9060 Universal Air Knife Mounting System (included in deluxe kits or sold separately) can be articulated into any position to provide secure, precise positioning for any air knife. The Super Air Knife can also be supported by the compressed air pipe or by using the ¼-20 threaded holes on the bottom.

The force (combination of mass flow and velocity) of a Super Air Knife is reasonably constant up to a 12" (305mm) distance. Force is lower at distances greater than 12" (305mm). However, many applications are successful at 18" (457mm), 24" (610mm) or more.

The high velocity airstream thickens as it flows away from the Super Air Knife. At 6" (152mm), it is 3" (76mm) thick and at a 12" (305mm) distance, 5" (127mm) thick. If the application requires a thin "knife" of air, mount the Super Air Knife close. This gives a high velocity, thin sheet of air that has lower mass flow. As the distance from the product surface to the Super Air Knife increases, the thickness of the sheet of air increases, velocity decreases and mass flow increases. By moving the Super Air Knife in and out from the material, the optimum operating distance may be determined.

**Note:** Sharp edges might be present on any of these products. Please take appropriate precautions when handling.

## SUPER AIR KNIFE SHIM SET

Force and flow through the Super Air Knife may be easily increased by adding shims to open the air gap. The Super Air Knife is supplied with a .002" (0.05mm) thick shim installed. It sets the air slot to a .002" opening. To increase the air gap, use a shim set (included with the Super Air Knife Kits). A shim set includes shims of .001" (0.03mm), .003" (0.08mm) and .004" (0.10mm) thickness for aluminum models or (3) .002" (0.05mm) thickness shims for stainless steel models. By changing and stacking them, gaps may be set from .001" to .010" (0.03 to 0.25mm) for aluminum Super Air Knives and .002" to .008" (0.05 to 0.20mm) for stainless steel. Individual shims are available. When increasing the air gap, be sure the piping, valves, filter and regulator is sized to meet the new air volume requirement (SCFM/LPM).

To change shims, remove the assembly bolts. Inspect the Super Air Knife and shim(s) to assure no dust, dirt or chips are on matching surfaces or in the plenum chamber. For aluminum or stainless steel knives, replace or add a shim(s), and re-tighten bolts to 7.5 ft. lbs. For CPVC, PVC or PVDF knives, contact an application engineer. Note that the mating parts (body & cap) do not align flush. The flat surface of the cap extends past the body to direct the airflow in a perfectly straight line. The air opening cannot be dead-ended, which meets OSHA requirements.

## TROUBLESHOOTING & MAINTENANCE

**If There Is A Reduction In Flow Or Force From The Super Air Knife**, check the pressure by installing a gauge in one of the unused inlets. Large pressure drops are possible due to undersized lines, restrictive fittings and clogged filter elements.

**For replacement or repair filter and regulator parts, contact EXAIR at 1-800-903-9247 or techelp@exair.com. Call (513) 671-3322 for outside the US and Canada.**

## CLEANING

If contaminants have clogged the Super Air Knife, inspect the unit by disassembling. The Super Air Knife consists of two component parts and between them is a shim that sets the gap the compressed air exhausts through. This shim is usually .002" (0.05mm) thick although thicker shims can be used. Inspect each part for dust or dirt contamination and a possible oil film in the area of the slotted nozzle. Clean each part and re-tighten bolts.

Occasionally, there is a buildup which occurs on the face of the Super Air Knife as a result of vapors in the atmosphere. Clean this surface with a solvent and a clean rag. To prevent contaminants from getting pushed back into the slot, perform this procedure with a small amount of compressed air passing through the Super Air Knife.

**If you have any questions or problems, please contact an EXAIR Application Engineer at:**

**Toll Free: 1-800-903-9247 (US & Canada)**
**Toll Free Fax: 866-329-3924 (US & Canada)**
**E-mail: techelp@exair.com**

**Telephone: 513 671-3322 outside of US & Canada**
**Fax: 513 671-3363 outside of US & Canada**
**Website: www.exair.com**

For more information about this product, visit "Frequently Asked Questions"
FAQ at EXAIR.com

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