Air Preparation Applications

- Paint Booth
- Tools
- Cylinders
- Valves
- Air Motors
- Hoists
- And much more …….
The following information was prepared as a training aid and applications guide for sales personnel and customers.

The configurations provide a general idea of what products are needed. Pipe sizes and air flows will require different product sizes but generally the configurations will remain the same. Our catalog has information on different pipe size products and air flows.

If you need help with proper sizing, contact your local distributor or Master Pneumatic direct.
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SHOP LAYOUT DIAGRAM

AIR LINE PIPE SIZE

Figures in this chart (shown on the following page) are NPT pipe sizes on a 100 PSI air system to carry air with about a 1 PSI pressure loss. When measuring piping distances, to be on the safe side, count each pipe fitting as equal to a 5-foot length of pipe. At 80 PSI slightly less flow can be carried at the same 1 PSI loss, and a 125 PSI slightly more flow can be carried at the same loss by the same pipe size.

It is difficult to estimate the SCFM (standard cubic feet per minute) air flow that a pipe will have to carry. This varies with the application. On some applications, such as in a large plant with many branch circuits, the air flow will be at fairly steady rate. Other applications may call for a high surge of air for a brief period followed by a long no-flow period. If a compressor were running continuously at 100 PSI and its output flowing at a steady rate, its electric motor nameplate HP rating would indicate the approximate SCFM, figured at about 3 1/2 to 4 SCFM per HP.
For proper REMOVAL OF CONDENSATION
Main trunk and Air lines should have a 1/2° slope toward traps (HydroJectors)

See the following pages for additional air assembly configurations.

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SAMPLE AIR APPLICATIONS

COMPRESSOR ROOM

PAINT ROOM

This is one example of clean air to a paint gun application, note that the coalescing filter with differential pressure gauge is installed beyond the CD dryer can be 0.3 or 0.01 micron.

AIR OPERATED TOOLS

CFR: small lockout

Optional: lockout valve

Single point lubricator

Integral filter-regulator

5 micron with auto drain and pressure gauge

Coaxial elbow

Inlet Port

Tool hose

Air tool

Oil delivery line

Use of a Master Pneumatic integral filter/regulator and single point lubricator with pre-filled oil delivery line with optional V380 lockout to an air tool

AIR OPERATED TOOLS

Optional: lockout valve

Regulator with side mount pressure gauge

Single point lubricator

Coaxial elbow

Inlet Port

Tool hose

Air tool

Oil delivery line

Using a Master Pneumatic FRL with a single point lubricator with pre-filled oil delivery line with optional V40 lockout valve to air tool.
**SAMPLE AIR APPLICATIONS**

**FRL to MACHINE**

![Diagram of FRL to Machine setup]

- **5 micron auto drain filter**
- **Regulator with gauge**
- **Adjustable in-line lubricator**

**Note:** Lubricator should be installed horizontal and as close as possible to device it is to serve.

**OPTIONAL:**
- Lockout valve

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**BLOW OFF GUN**

Oil free clean air free

![Diagram of Blow Off Gun setup]

- **Optional:**
  - Lockout valve
  - 5 micron auto drain filter
  - 0.3 micron oil removing coalescing filter
- **Extra port:**
  - 1/4”, 3/8" or 1/2”

With the use of an extra port the blow off gun can be modularly installed in any position in the assembly, M/P catalog for details.

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**VALVE and CYLINDER APPLICATIONS**

![Diagram of Valve and Cylinder setup]

- **Regulator with gauge**
- **Optional:** 2nd lubricator
- **Silencer reclassifier**
- **1/8" female NPTF**
- **1/8" oil delivery line**

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An example of using a Master Pneumatic downstream single point lubricator to lubricate a cylinder, note that if required, a second lubricator could be installed depending on the size of the cylinder and lubrication requirements.

Page 7
Above shows the use of two downstream single point lubricators delivering lubrication to a reverse flow air motor, lubricant can be delivered in both forward and reverse operation. A frequency generator can be added to the single point lubricator in the event that more than one injection of lubrication is required due to length of cycle time.

Master Pneumatic Serv-Oil system to lubricate an air motor. An optional frequency generator can be added to the assembly if more than one injection of lubricant is required depending on length of operating cycle.
SAMPLE AIR APPLICATIONS

TEST ROOM & INSTRUMENT AIR

This is an example of air suitable for test room, instruments or other similar applications. Preceded by an optional lockout valve is a 5 micron auto drain filter followed by an M/P Filenco dryer, next is an oil removing coalescing filter which can be supplied with either a 0.3 or a 0.01 micron element and lastly an absorber for removing vapors and hydrocarbons.

AIR PRESS APPLICATIONS

Using Master Pneumatic Serv-Oil to lubricate a press. One lube point is injected directly into the ram area and the second is lubricating the internal pivot point.

FRL to AIR MOTOR

Optional lockout valve with a Master Pneumatic FRL, supplying lubrication to an air motor. Note that the lubricator needs to be installed horizontal and as close as possible to the device being lubricated.

SCORPION SPRAY SYSTEM
This is an example of the use of Serv-Oil in an air cylinder application. A cylinder installed in the horizontal position could possibly require two lube points, the same is true if installed vertically. Above shows a lube point and an optional second lube point.

In the event that it is necessary to lubricate a valve, this is an example of how it can be done using the Master Pneumatic Serv-Oil system. With the addition of the dual pneumatic pulse counter the valve can receive lubrication every 1, 5, 10, 25, 50, or 100 cycles.
**OPERATION SECTIONAL VIEWS**

- **PARTICULATE H2O REMOVING FILTER**
  - Centrifuging louvers
  - Full protective element shroud
  - Filter element
  - Double sump baffle
  - Non-turbulent zone (quiet zone)
  - Accumulated liquid contaminants

- **AUTOMATIC DRAIN FILTER IN OPERATION**
  - 98 PSI
  - 100 PSI
  - Upper drain piston, lifts drain valve disengaging seal.

- **INLINE LUBRICATOR**

- **FD100 MODEL SHOWN**
- **L28D AND L28W MODEL SHOWN**
- **R100 MODEL SHOWN**
- **IR100 MODEL SHOWN**

**GENERAL PURPOSE REGULATOR**
- Main valve spring
- Main valve
- Pitot port
- Relief valve
- Diaphragm
- Adjusting spring
- Adjusting knob
- Locking key
- Gauge port

**CONSTANT BLEED PRECISION REGULATOR**
- Valve spring
- Main regulating valve
- Fixed orifice
- Pitot
- Rolling diaphragm assembly
- Pilot chamber and pilot pressure
- Relief valve
- Relief valve spring
- 2 constant bleed holes 180 degrees apart. 0.090 dim.
- Adjusting dial

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Additional details include:
- Inlet port
- Sight feed cartridge
- Wick feed cartridge
- Automatic drain filter in operation
- Particulate H2O removing filter
- Centrifuging louvers
- Full protective element shroud

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OPERATION SECTIONAL VIEWS

LIQUID SIDE OF INJECTOR
- Liquid outlet port
- Check valve
- Liquid inlet port
- Metering pin
- Air port
- Adjusting screw

AIR SIDE OF INJECTOR
- Return spring
- Volume control
- Check valve

INJECTOR FOR MULTIPLE POINT LUBRICATOR
Push switch to desire setting for lube injection every 1, 5, or 10 tool cycles.

P70 SERIES SHOWN
Single point lubricator with built in 10 oz reservoir
- Flow sensing disc: open pressurizing injector
- Air exhausts when sensing disc is closed
- Adjustable counter: operates on 1, 5 or 10 tool cycles counter indicator button
- Transparent sight glass
- Manual override oil volume control
- Metering pin
- Oil metering chamber
- Check valve
- 1/8" oil delivery line

A60041 MODEL SHOWN
Single point lubricator with separate 10oz reservoir
- Prefilled tubing
- Pneumatic counter
- Injector
- Reservoir 10oz

A64041 MODEL SHOWN
Single point lubricator with built in 10 oz reservoir to be used downstream of the valve.
- 1/8" oil delivery line
- Transparent sight glass
- Manual override oil volume control
- Metering pin
- Oil metering chamber
- Check valve

D64041 MODEL SHOWN
- Transparent sight glass
- Manual override oil volume control
- Metering pin
- Oil metering chamber
- Check valve
OPERATION SECTIONAL VIEWS

Differential pressure gauge

Inlet port

Outlet port

Coalescing element

Accumulated liquid contaminants

Sight gauge

Automatic drain

Coalescing 0.3 or 0.01 micron filter

Clean air port

Outlet port

Wired screens

Multiple filter papers

Desiccant element

Wired screen

Accumulated liquid contaminants

Inlet port

Dryer filters

CD = clay desiccant

CDC = clay desiccant with activated carbon

MS = molecular sieve

Accumulated liquid contaminants

Vortex funnel

This product can also be supplied with the following:

Float drain

Accumulated liquid contaminants

BFC201 MODEL SHOWN

CD38 MODEL SHOWN