



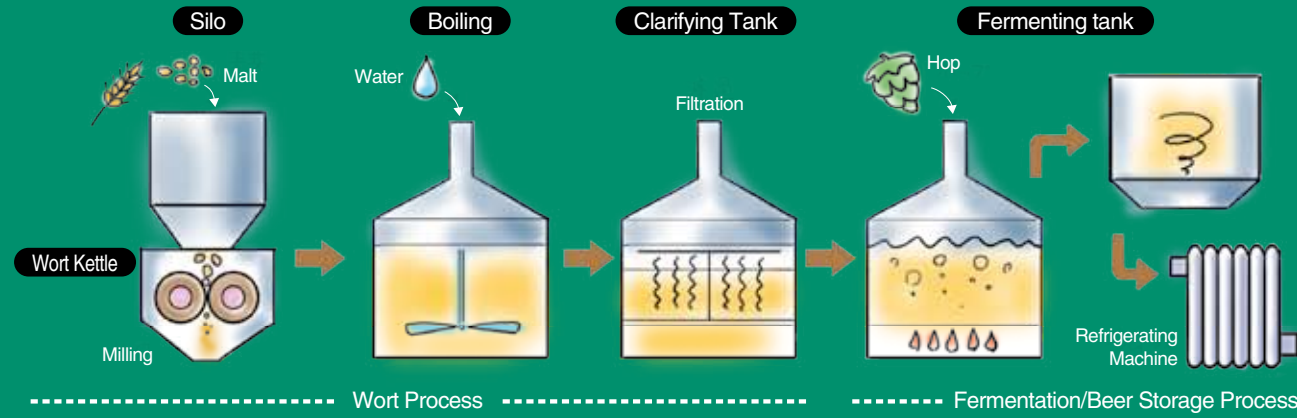
Equipment for BEER MANUFACTURING PROCESS



NP-E12-19A

Equipment System Diagram for Beer Manufacturing Process

<Brewing Process><Pre-Process>



Compressed Air Line

Air Preparation Equipment Line P.7, 9 to 10



1 Filter Regulator/IW

Filters impurities included in the air and regulates the pressure in the instrumentation equipment line.



2 Booster Relay/IL

Boosts the air flow rate. Makes the actuator drive speed of the industrial valve faster.



3 Positioner/IP

Controls the actuator of the industrial valve.



4 Lock-Up Valve/IL

Detects the air pressure drop and retains the opening position of the control valve until the air source restores its normal status.



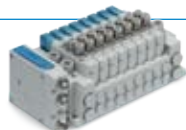
5 Air Dryer (For Panel Purging) /IDF

Pressurizes the inside of the control panel to prevent entry of external foreign objects. Prevents dew condensation caused by cooling the inside of the panel or dry air.



6 Solenoid Valve

Manifold valve for controlling the pilot air for the air operated sanitary valve, etc.



Reduced-wiring Fieldbus System



7 NAMUR Standards Solenoid Valve/VFN(□36)

Solenoid valve for driving the air operated sanitary valve, etc. Conforming to NAMUR standards



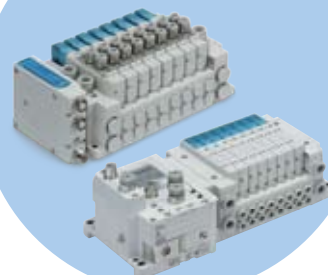
8 3 Port Solenoid Valve with Shutoff Valve/VQZ

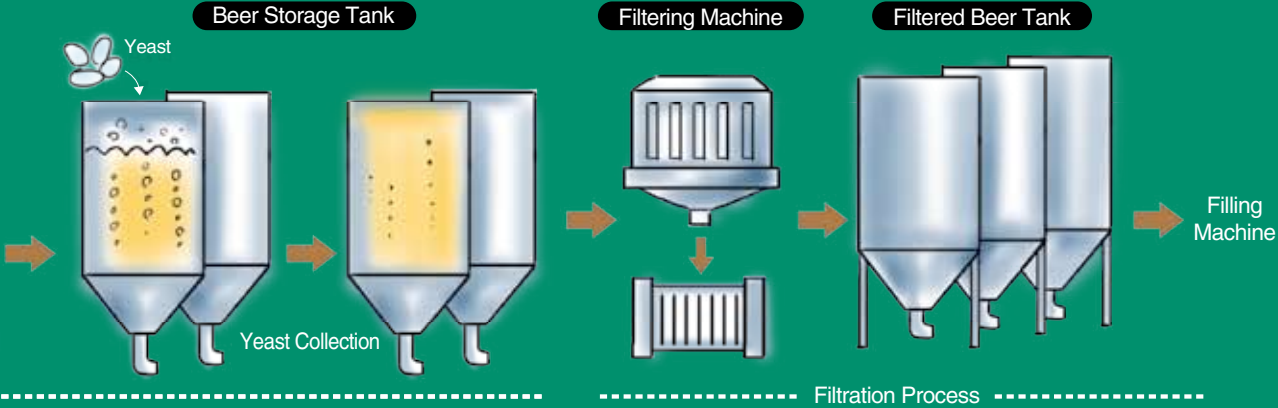
Solenoid valve for controlling block and vent and butterfly valves from a cabinet. VQZ 4/2 can replace 3/2 on same manifold



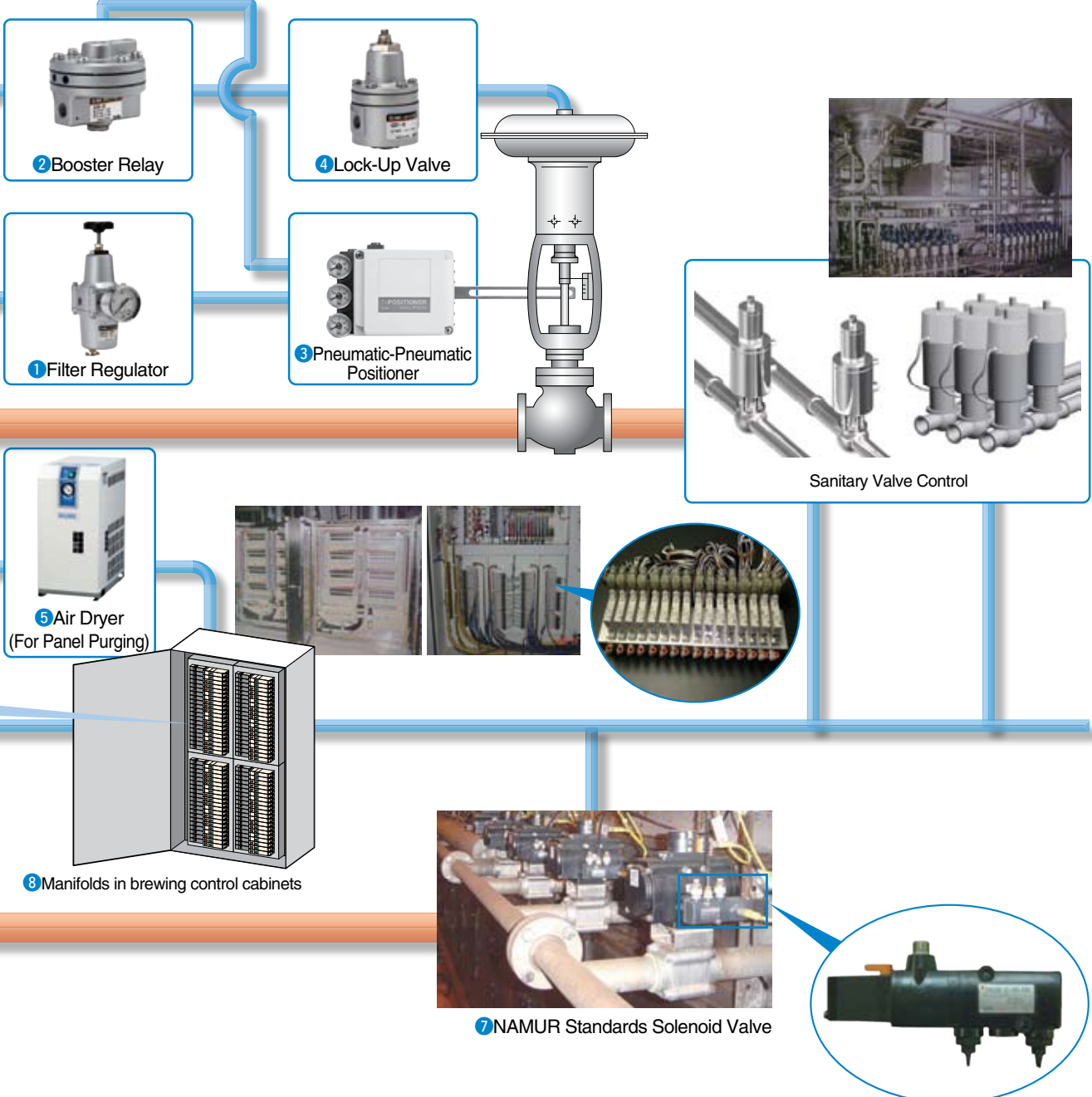
Beverage Line

6 Solenoid Valve Reduced-wiring Fieldbus System



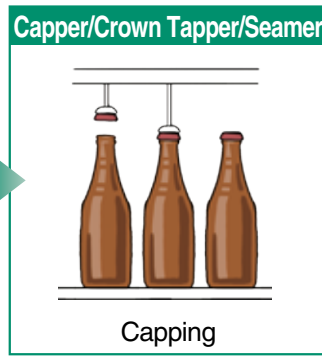
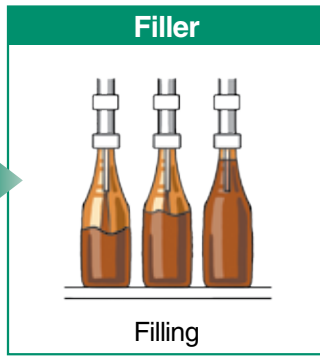
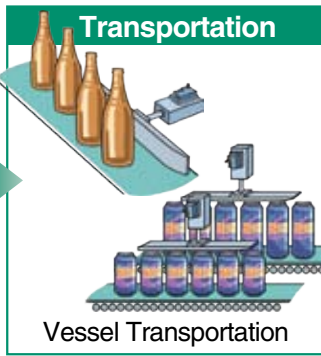
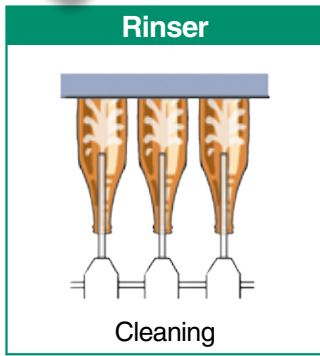


Instrumentation Equipment Line





Equipment System Diagram for Beer Manufacturing Process



Cleaning Fluid Control P.12

<Fluororesin Equipment>

- Air Operated Valve/ LV



- Fittings/LQ



- Tubing/ TL/TH/TD/TLM



- Process Pump/PAF



Adjustment of Line Width and Height (Fall Prevention)

Adjusts the width and height of the conveyor line according to the width and height of the vessel.

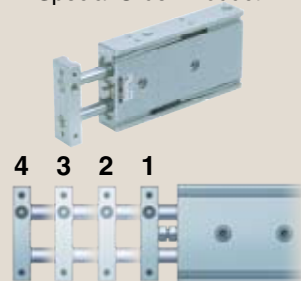
- Multiposition Cylinder P.14



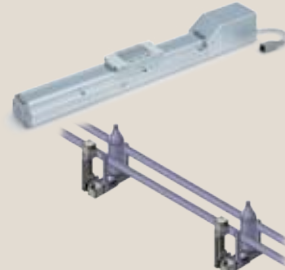
- 3 Position Cylinder/RZQ



- 4 Position Cylinder/CXS Special Order Product



- Electric Actuator/LEFS



Regulation of Pressure in Vessel Tank/Filling

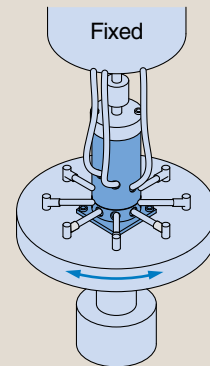
- Electro-Pneumatic Regulator/ ITV
- Precision Regulator/IR



Rotation Part

- Rotary Joint/MQR

Supplies the air to the rotary and swing shafts.



Press Part

- Standard Cylinder



Label

Label Sticking

Steam Tunnel

Shrink Label Adhesion

Inspection

Appearance Inspection

Static Electricity Prevention Measures

- Ionizer/IZ□

IZN10
IZS40
IZF10

Static Elimination of PET bottle

- Fall Prevention During Transportation
- Prevention of Dust Sticking

Static Elimination of Film

- Prevention of Dust Sticking
- Prevention of Winding Failure Caused by Wrinkle

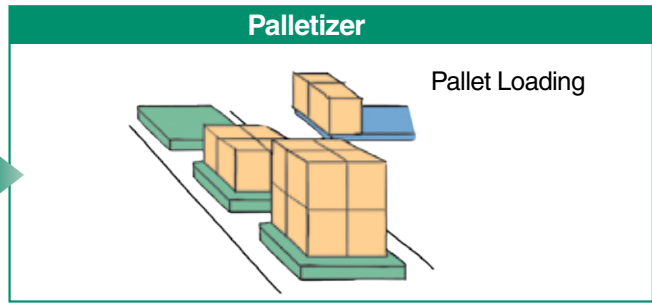
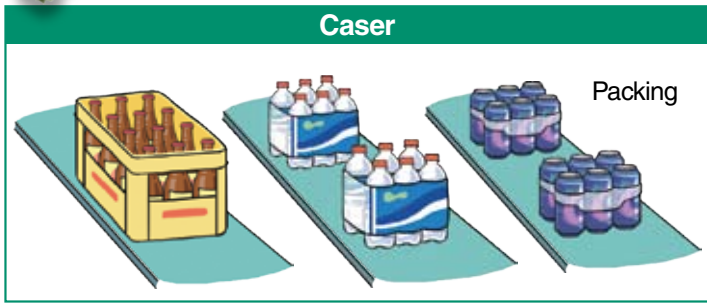
Steam Control

- 2 Port Valve for Steam/VXS

OK/NG Judgement

- 2 Port Valve/VX2
- Cylinder

Equipment System Diagram for Beer Manufacturing Process



Corrugated Fiberboard Packing

Paper Particle and Particle Dust Prevention Measures With Heavy-duty Scraper, Bellows and Dust Cover

- **With Heavy-duty Scraper**
Removes foreign objects sticking to the rod.
- **With Bellows and Dust Cover**

Heavy-duty Scraper
Foreign Object Removal

Corrugated Fiberboard Transportation

Corrugated Box Transfer/Transportation

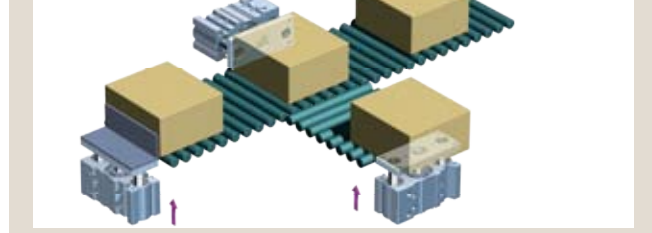
- Air Cylinder
- Guide Cylinder

Transportation of Box Workpieces

Guide Cylinder

Polyethylene Resin Packing

- Ionizer/IZ□



Directional Control Valves

Compact and lightweight design ensures installation of movable part in a narrow space.

- 4 Port Solenoid Valve/SJ
- 5 Port Solenoid Valve/SY
- 5 Port Solenoid Valve/SV
- Compact 5 Port Solenoid Valve/S0700
- Fieldbus System

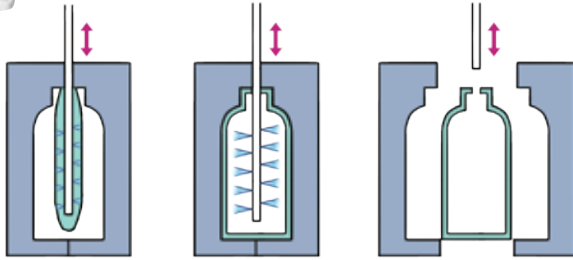
Vacuum Ejector

- Vacuum Ejector
- Pad Variations
- Air Suction Filter Variations
- Related Equipment for Vacuum System
- Pressure Sensor/ZSE30A(F)/ISE30A
- Pressure Sensor/PSE



PET Bottle Manufacture

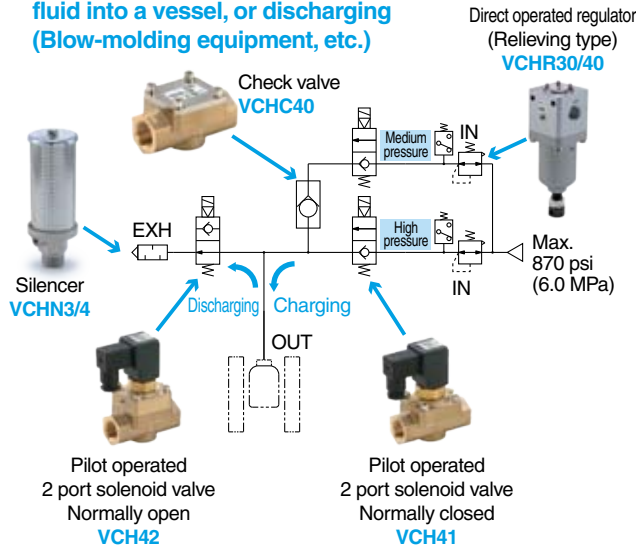
Blow Molding



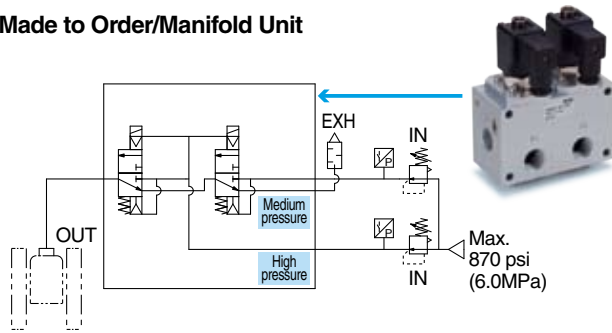
PET Bottle Manufacture

<5.0 MPa Pneumatic Equipment Variation>

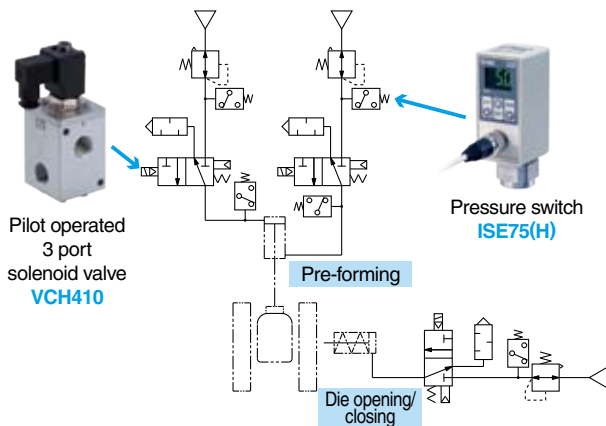
◎ Applications included air-blowing, charging fluid into a vessel, or discharging (Blow-molding equipment, etc.)



Made to Order/Manifold Unit

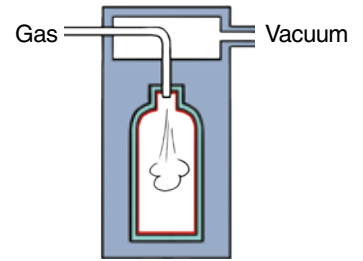


◎ Example of driving a cylinder



High Barrier (Deposition)

Evaporates a thin carbon film on the inner surface of the PET bottle. PET bottle with excellent oxygen and carbonic acid barrier capability.



Vacuum Deposition

- High Vacuum Valve/XL, XM/XY



- Process Gas Equipment



- Clean Gas Filter/SF



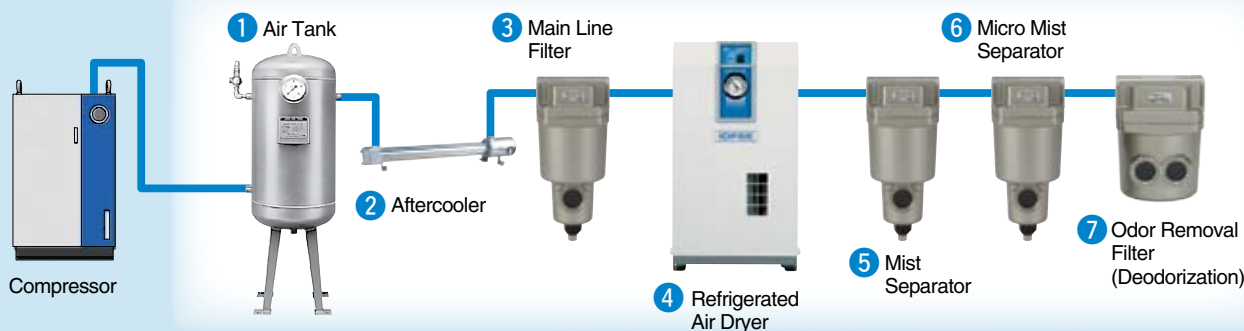
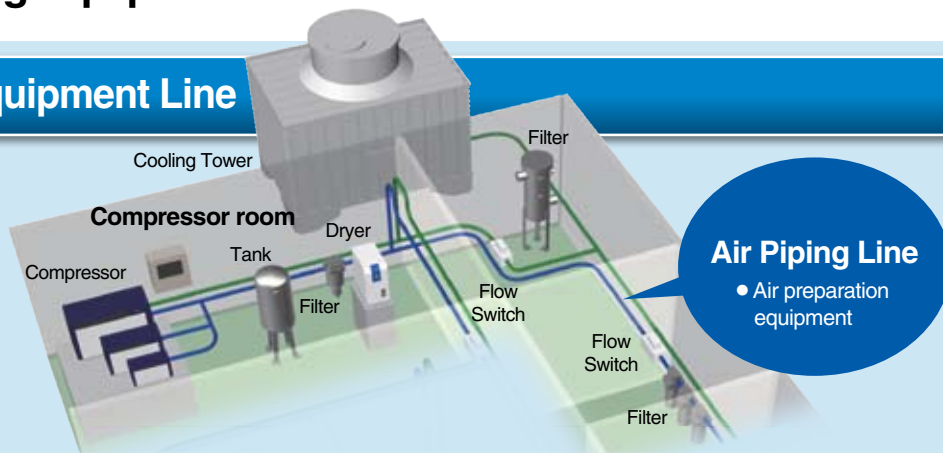
- Pressure Switch/ZSE/ISE





Brewery Piping Equipment

Air Preparation Equipment Line



1 Air Tank

Series AT

- Tank capacity 3.5 to 106 ft³ (100 to 3000 L)
- Port size 15A (1/2) to 4B flange



2 Aftercooler

Air-cooled Series HAA

- Applicable compressor 7.5 to 37 kW
- Air flow capacity: 35.3 to 201 scfm (1000 to 5700 L/min (ANR))



Water-cooled Series HAW

- Applicable compressor 2.2 to 110 kW
- Air flow capacity: 10.6 to 635.6 scfm 300 to 18000 L/min (ANR)



3 Main Line Filter

Series AFF

- Nominal filtration rating 3 μm (95% filtered particle size)
- Rated flow 10.6 to 1483 scfm (300 to 42000 L/min (ANR))
- Port size 6A (1/8) to 4B flange



4 Air Dryer

Series IDF

- Applicable compressor 0.75 to 370 kW
- Air flow capacity 3.53 to 2295 scfm (0.10 to 65.0 m³/min (ANR))



Series IDU

- Applicable compressor 2.2 to 37 kW
- Air flow capacity: 11.3 to 438 scfm (0.32 to 12.4 m³/min (ANR))

Refrigerant: R134a (HFC) R407C (HFC) Ozone destruction coefficient "0"



5 Mist Separator

Series AM

- Nominal filtration rating 0.3 μm (95% filtered particle size)
- Rated flow 10.6 to 1483 scfm (300 to 42000 L/min (ANR))
- Port size 6A to 50A (1/8 to 2)



7 Odor Removal Filter

Series AMF

- Nominal filtration rating 0.01 μm (95% filtered particle size)
- Rated flow 7.06 to 1412 scfm (200 to 40000 L/min (ANR))
- Port size 6A (1/8) to 6B flange



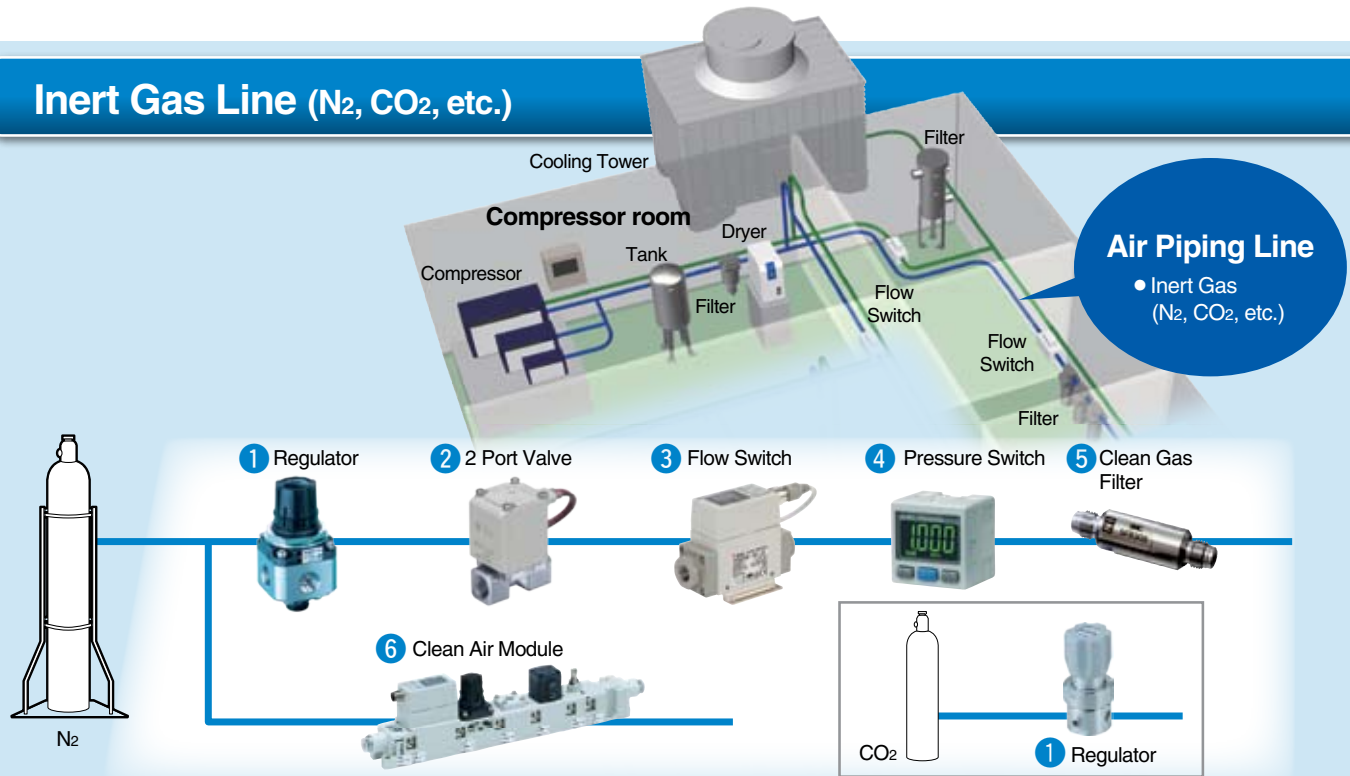
6 Micro Mist Separator

Series AMD

- Nominal filtration rating 0.01 μm (95% filtered particle size)
- Rated flow 7.06 to 1412 scfm (200 to 40000 L/min (ANR))
- Port size 6A (1/8) to 6B flange



Inert Gas Line (N₂, CO₂, etc.)



1 Regulator

Pressure adjustment

Series SRH

- Set pressure range 7.3 to 102 psi (0.05 to 0.7 MPa)
- Port size 6A to 15A (1/8 to 1/2)

Series AK

- Material SUS316
- Port size 1/4 to 1/2

2 2 Port Valve

Fluid control

Series VX

- Orifice diameter $\phi 2$ to $\phi 10$
- Port size 1/8 to 1/2

3 Flow Switch

Flow rate detection

Series PF2A

- Measurement flow rate 0.04 to 424 scfm (1 to 12000 L/min)
- Port size 6A to 50A (1/8 to 2)

4 Pressure Switch

Pressure detection

Series ISE

- Rated pressure range -15 to 145 psi (-0.100 to 1.000 MPa)
- Port size M5,6A (1/8),8A (1/4)

5 Clean Gas Filter

Particle separation/filtration

Series SF

- Nominal filtration rating 0.01 μm
- Port size 8A to 15A (1/4 to 1/2)

6 Clean Air Module

Modularization

Series LLB

A flow switch, regulator, 2 port valve, restrictor, and filter have been combined into a single unit. Easily obtains clean air.

- Nominal filtration rating 0.01 μm
- Port size 8A to 15A (1/4 to 1/2)

Piping Equipment

- Stainless Steel Fittings: Series KQG2/KFG2
- Clean One-touch Fittings: Series KP
- Fluororesin Tubing: Series TH/TL/TD/TPH/TPS





Air Preparation Equipment Selection Guide

145 psi = 1 MPa, 32°F = 0°C, 1 gal = 3.8 L, 1 scfm = 28.32 L/min

Main Line	Sub Line
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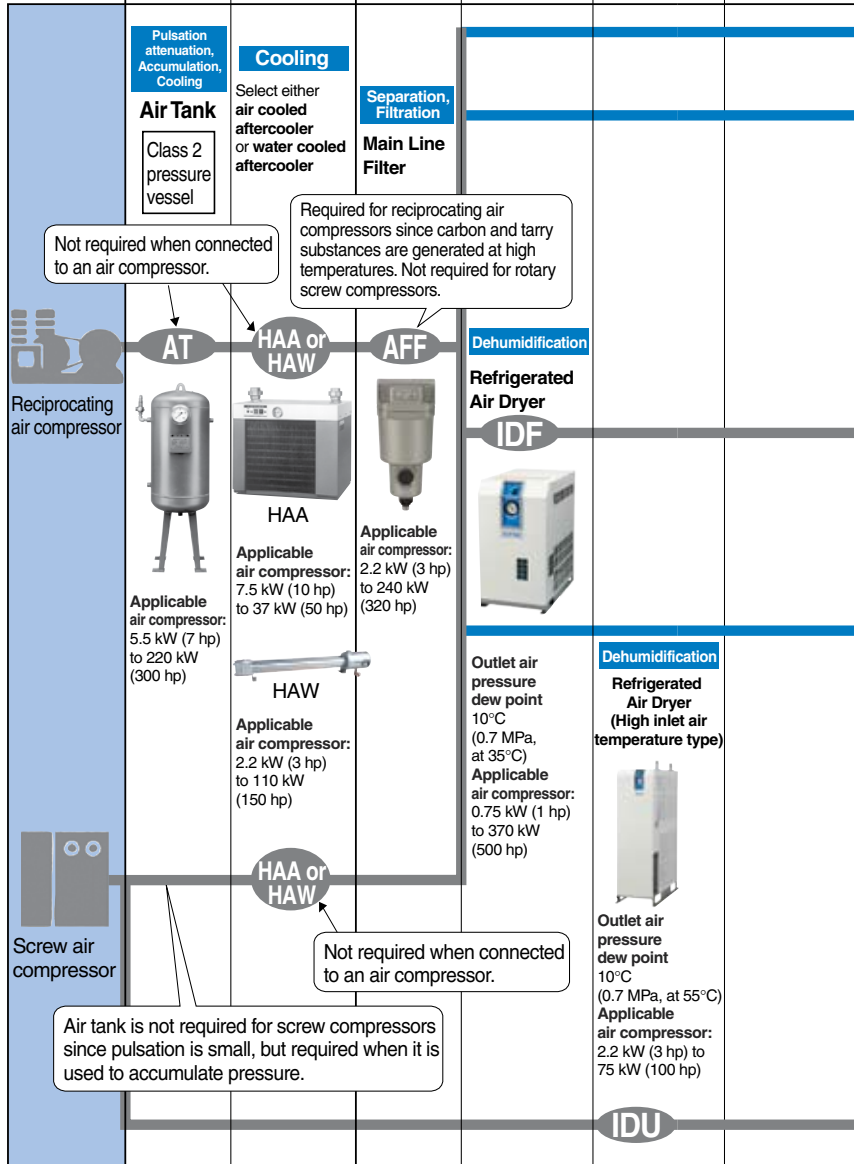
Class	Solid particle				Particle size μm	Concentration mg/m^3	Moisture Pressure dew point At air pressure of 0.7 MPa °C	Oil concentration mg/m^3		
	Max. number of particles/1 m ³									
	Particle size d μm									
	≤ 0.10	$0.10 < d \leq 0.5$	$0.5 < d \leq 1.0$	$1.0 < d \leq 5.0$						
1	Not specified	100	1	0	NA	NA	1	≤ 0.01		
2	Not specified	100000	1000	10			1	≤ -70	2	≤ 0.1
3	Not specified	Not specified	10000	500			2	≤ -40	3	≤ 1
4	Not specified	Not specified	Not specified	1000			3	≤ -20	4	≤ 5
5	Not specified	Not specified	Not specified	20000			4	$\leq +3$		
6	NA						≤ 5	≤ 5	5	$\leq +7$
7	NA						≤ 40	≤ 10	6	$\leq +10$

Indication: The degree of quality is indicated with 1, 4 and 2 for systems with solid particle "class 1," moisture "class 4" and oil "class 2."

System no.	Application	Impurity in compressed air						
		Moisture		Filtration	Oil mist concentration (1)	Cleanliness	Oil odor	Quality grade as system (2)
		Dew point	Moisture contents					

A	Water drop removed air	Atmospheric pressure dew point 6°C (0.7 MPa Pressure dew point 40°C)	7 g/m ³ (ANR) (0.7 MPa, at 25°C)	3 μm (Filtering efficiency) 99%	—	—	3, -, -
	• Air blowing (Simple removal of particles)	• General pneumatic tools					
B	Dry air	Atmospheric pressure dew point -14 to -23°C (0.7 MPa Pressure dew point 15 to 3°C)	1.7 g/m ³ (ANR) to 0.8 g/m ³ (ANR)	0.3 μm (Filtering efficiency) 99%	Max. 1 mg/m ³ (ANR) 0.8 ppm	—	3, 4, - 3, 5, - 3, 6, -
	• Used for the same applications as A, when temperature drop in the middle of piping is large.						
C	Dry air	Atmospheric pressure dew point -14 to -23°C (0.7 MPa Pressure dew point 15 to 3°C)	1.7 g/m ³ (ANR) to 0.8 g/m ³ (ANR)	0.3 μm (Filtering efficiency) 99%	Max. 1 mg/m ³ (ANR) 0.8 ppm	Yes	2, 4, 3 2, 5, 3 2, 6, 3
	• General pneumatic equipment						
D	Dry clean air	Atmospheric pressure dew point -14 to -23°C (0.7 MPa Pressure dew point 15 to 3°C)	1.7 g/m ³ (ANR) to 0.8 g/m ³ (ANR)	0.3 μm (Filtering efficiency) 99%	Max. 1 mg/m ³ (ANR) 0.8 ppm	—	1, 4, 2 1, 5, 2 1, 6, 2
	• High grade painting						
E	Dry clean air	Atmospheric pressure dew point -14 to -23°C (0.7 MPa Pressure dew point 15 to 3°C)	1.7 g/m ³ (ANR) to 0.8 g/m ³ (ANR)	0.3 μm (Filtering efficiency) 99%	Max. 1 mg/m ³ (ANR) 0.8 ppm	—	1, 4, 1 1, 5, 1 1, 6, 1
	• Without refrigerated air dryer on the sub line						
F	Deodorant air	Atmospheric pressure dew point -14 to -23°C (0.7 MPa Pressure dew point 15 to 3°C)	1.7 g/m ³ (ANR) to 0.8 g/m ³ (ANR)	0.3 μm (Filtering efficiency) 99%	Max. 1 mg/m ³ (ANR) 0.8 ppm	No	1, 4, 1 1, 5, 1 1, 6, 1
	• Stirring, transporting, drying and packaging						
G	Low dew point clean air	Atmospheric pressure dew point -30 to -60°C (0.7 MPa Pressure dew point -6 to -42°C)	0.5 g/m ³ (ANR) to 0.02 g/m ³ (ANR)	0.01 μm (Filtering efficiency) 99.99%	Max. 0.01 mg/m ³ (ANR) 0.008 ppm	Yes	(3) 1, 1, 1 1, 2, 1 1, 3, 1
	• Drying electric and electronic parts						
H	Low dew point clean air (For clean room)	Atmospheric pressure dew point -30 to -60°C (0.7 MPa Pressure dew point -6 to -42°C)	0.5 g/m ³ (ANR) to 0.02 g/m ³ (ANR)	0.01 μm (Filtering efficiency) 99.99%	Max. 0.01 mg/m ³ (ANR) 0.008 ppm	No	1, 1, 1 1, 2, 1 1, 3, 1
	• Blowing semi-conductor parts in the clean room						

Description	Air Tank		Air Cooled Aftercooler	Water Cooled Aftercooler	Main Line Filter	Refrigerated Air Dryer	
	AT	HAA, HAW	AFF	IDF	IDU		
Flow capacity (L/min (ANR))	Capacity: 100 to 3,000 L	1,000 to 5,700 300 to 18,000	300 to 42,000	100 to 65,000	320 to 12,500		
Max. inlet air temperature	100°C	70°C 70°C, 180°C (Varies by model)	60°C	50°C	80°C		
Filtration (Filtering efficiency)			3 μm (99%)				
Outlet oil mist concentration (Max.) (1)							
Outlet cleanliness							
Atmospheric pressure dew point (At inlet air pressure of 0.7 MPa)				-17°C At inlet temperature 35°C	-17°C At inlet temperature 55°C		



Note 1) When the inlet oil mist concentration (compressor discharge concentration) is approx. 30 mg/m³ (ANR) or less.

Note 2) This describes the grade of compressed air quality based on ISO8573-1: 2001 (JIS B8392-1: 2003), which is the maximum quality grade for the system. It varies, however, depending on the inlet air conditions.

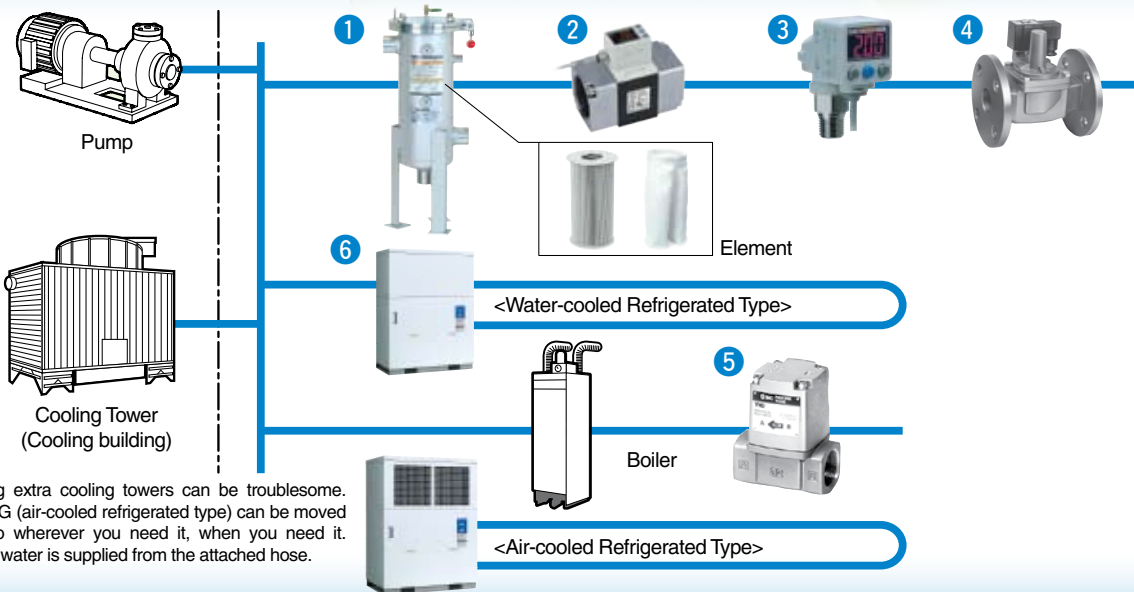
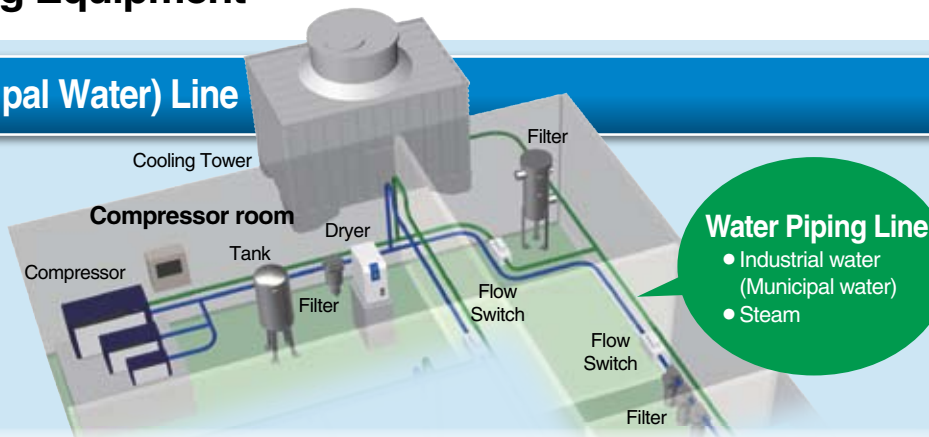
Note 3) Please contact SMC since this can be manufactured as a special order (depending on the operating conditions).

Local line											
Water Separator	Mist Separator	Heatless Air Dryer	Micro Mist Separator with Pre-filter	Micro Mist Separator	Membrane Air Dryer		Super Mist Separator	Odor Removal Filter	Clean Air Filter	Clean Gas Filter	
AMG	AM	ID	AMH	AMD	IDG		AME	AMF	SFD	SFA, SFB, SFC	
300 to 12,000		80 to 780	200 to 12,000	200 to 40,000	10 to 1,000	75 to 300 50 to 150	200 to 12,000	200 to 40,000	100 to 500	26 to 300	
60°C		50°C	60°C		50°C, 55°C (Varies by models)		50°C	60°C		80°C, 120°C (Varies by models)	
Water droplet removal ratio 99%	0.3 μm (99.9%)		0.01 μm (With 0.3 μm pre-filter)	0.01 μm (99.9%)			0.01 μm (99.9%)	0.01 μm (99.99%)	0.01 μm (99.99%)	0.01 μm (99.99%)	
	1 mg/m ³ (ANR) [≒ 0.8 ppm]		0.1 mg/m ³ (ANR) [≒ 0.08 ppm]				0.01 mg/m ³ (ANR) [≒ 0.008 ppm]	0.004 mg/m ³ (ANR) [≒ 0.0032 ppm]			
							Particles with 0.3 μm or more: 100 or less/ft ³ (35 or less/10L (ANR))			Particles with 0.1 μm or more: 0/6 L	
		-30°C -50°C At inlet temperature 35°C			-15°C -20°C At inlet temperature 25°C	-40°C -60°C At inlet temperature 25°C					



Brewery Piping Equipment

Industrial Water (Municipal Water) Line



Installing extra cooling towers can be troublesome. The HRG (air-cooled refrigerated type) can be moved easily to wherever you need it, when you need it. Cooling water is supplied from the attached hose.



1 Industrial Filter

Series FG/FQ/FN

- Nominal filtration rating 0.5 to 120 μm
- Port size Thread: 10A to 50A (3/8 to 2) Flange: 25A to 150A (1B to 6B)



2 Flow Switch

Series PF3W

- Measurement flow rate 0.13 to 66.0 gpm (0.5 to 250 L/min)
- Port size 10A to 40A (3/8 to 1 1/4)



3 Pressure Switch

Series ISE

- Rated pressure range - 15 to 290 psi (-0.100 to 2.000 MPa)
- Port size M5,6A (1/8), 8A (1/4)



4 2 Port Valve

Series VXP

- Orifice diameter $\phi 10$ to $\phi 50$
- Port size Thread: 8A to 50A (1/4 to 2) Flange: 32A to 50A



5 2 Port Valve (for Steam)

Series VND

- Orifice diameter $\phi 7$ to $\phi 50$
- Rated flow 7.06 to 1412 scfm (200 to 40000 L/min (ANR))
- Port size Thread: 6A to 50A (1/8 to 2) Flange: 32A to 50A



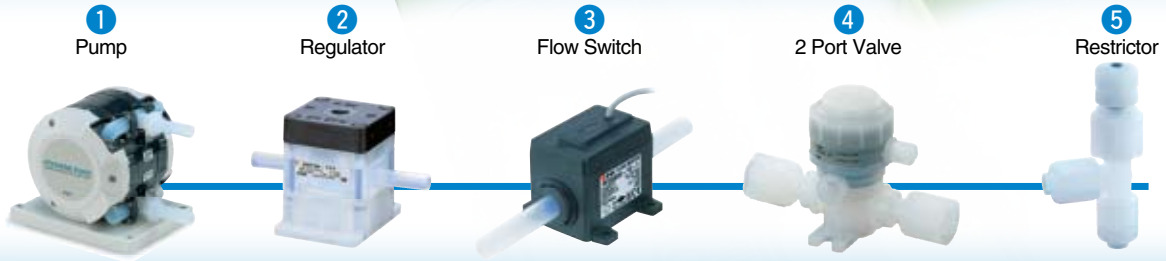
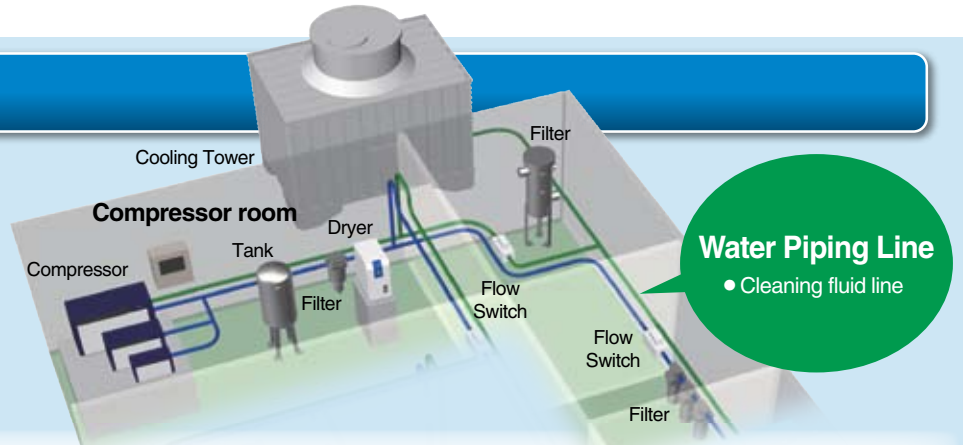
6 Circulating Fluid Temperature Controller Thermo-chiller

Series HR□

This equipment supplies temperature-controlled water to the heat source in a circular manner.



Cleaning Fluid Line



1 Pump

Process Pump: Series PA

- Discharge flow rate
0.26 to 11.9 gpm (1 to 45 L/min)
- Port size
Thread: (3/8, 3/4)/
10A, 20A
Tube extension:
1/2", 3/4"



2 Regulator

Series SRF

- Port size
Integral fitting:
Applicable tube O.D.
ø4 to ø19
Tube extension:
1/4" to 3/4"
- Set pressure range
2.9 to 58 psi
(0.02 to 0.4 MPa)



3 Flow Switch

Series PF2D

- Measurement flow rate
1.06 to 10.6 gpm (0.4 to 40 L/min)
- Port size
Tube extension:
3/8" to 3/4"



4 2 Port Valve

Series LV

- Port size
Thread: (1/8 to 1), 6A to 25A
Integral fitting: Applicable tube O.D.
ø3 to ø25
Tube extension:
ø3 to ø25
- Orifice diameter
ø2 to ø22



5 Restrictor

Needle Valve: Series LVN

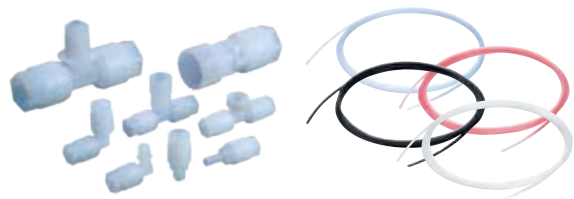
- Port size
Integral fitting:
Applicable tube O.D.
ø4 to ø12
- Orifice diameter
ø4.4 to ø10



Piping Equipment

Fluoro-resin Fittings: Series LQ

Fluoro-resin Tubing: Series TH/TL/TD/TLM





Equipment for Beer Manufacturing Process

Piping Equipment (Fittings and Tubing)

S Couplers

Series KK

- Fluid **Air, Water**
- Applicable tube O.D. $\phi 3.2$ to $\phi 16$
- Applicable hose I.D./ O.D. $5/8$ to $1 1/16$
- Port size **M5 to 25A (3/4)**



S Couplers/Stainless Steel 304

Series KKA

- Fluid **Air, Water**
- Port size **6A to 50A (1/8 to 1 1/2)**



One-touch Fittings

Series KQ2

- Fluid **Air**
- Applicable tube O.D. $\phi 4$ to $\phi 16$



Brass One-touch Fittings

Series KQB2

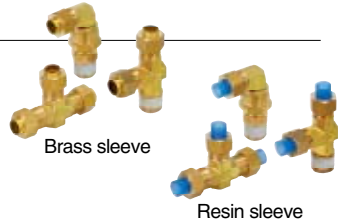
- Fluid **Air, Water**
- Applicable tube O.D. $\phi 4$ to $\phi 12$



Insert Fittings

Series KF

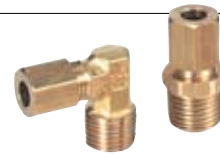
- Fluid **Air, Steam** (Brass sleeve)
- Air** (Resin sleeve)
- Applicable tube O.D. $\phi 4$ to $\phi 12$



Self-align Fittings

Series H/DL/L/LL

- Fluid **Air**
- Applicable tube O.D. $\phi 4$ to $\phi 12$



Stainless Steel 316 One-touch Fittings

Series KQG2

- Fluid **Air, Water, Steam**
- Applicable tube O.D. $\phi 4$ to $\phi 12$



Stainless Steel 316 Insert Fittings

Series KFG2

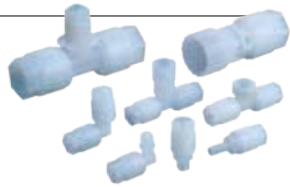
- Fluid **Air, Water, Steam**
- Applicable tube O.D. $\phi 4$ to $\phi 12$



Fluoropolymer Fittings

Series LQ

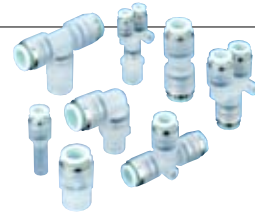
- Fluid **Deionized water, Chemicals, etc.**
(Please contact SMC for details.)
- Applicable tube O.D. $\phi 3$ to $\phi 25$



Clean One-touch Fittings

Series KP

- Fluid **Air, N₂, Water** (Deionized water)
(Please contact SMC for details.)
- Applicable tube O.D. $\phi 4$ to $\phi 12$



Tubing

Series T□

Note) Please contact SMC for details.

Series	Material	Fluid	O.D.
T	Nylon	Air, Water	$\phi 4$ to $\phi 16$
TS	Soft Nylon	Air	$\phi 4$ to $\phi 16$
TU	Polyurethane	Air, Water	$\phi 4$ to $\phi 16$
TUS	Soft Polyurethane	Air	$\phi 4$ to $\phi 12$
TUH	Hard Polyurethane	Air	$\phi 4$ to $\phi 12$
TPH, TPS	Polyolefin-based resin	Air, N ₂ , Water (Deionized water) Note)	$\phi 4$ to $\phi 12$
TH	FEP (Fluoropolymer)	Air, Water, Inert gas	$\phi 4$ to $\phi 12$
TD	Modified PTFE (Soft Fluoropolymer)	Air, Water, Inert gas	$\phi 4$ to $\phi 12$
TL	Super PFA	Note) Deionized water, Chemicals, etc.	$\phi 4$ to $\phi 19$

Length: Up to 500-meter rolls can be used, but the maximum roll length depends on tube materials and external diameter. Please consult SMC for details. (Made to Order)



Positioning Cylinder

Series MPC Multi-Position Cylinder

All in one package

- Cylinder
- Solenoid Valve
- Linear Positioner
- Controller

A pneumatic cylinder with integral position control needing only 0-10VDC or 4-20mA input signal. Position control is a continuous servo-loop, taking a feedback signal from the linear sensor. It will keep the target position by controlling pressure on the cylinder by way of opening and closing the solenoid valves. Unlike analog control for a servo valve, the solenoid valves mounted internally are a simple ON-OFF control.

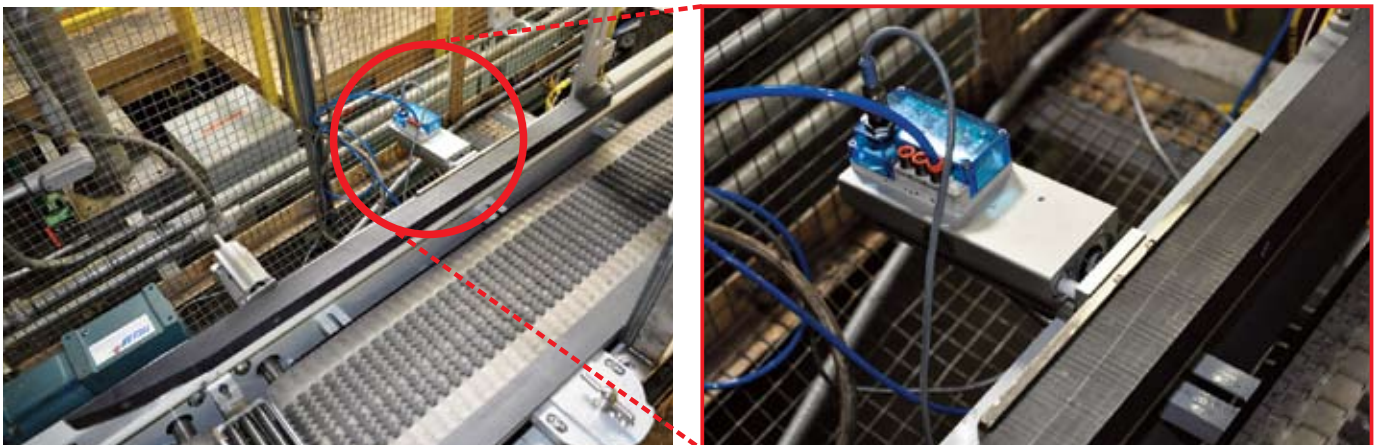


IDEAS ➡ INNOVATIONS

“Case Conveyor Rail Adjustment Application”

“Conveyors feed palletizers at a high rate of speed. The conveyor width is adjusted according to the case or carton size coming down the line. This process has been done manually by operators in the past which can lead to mistakes and/or shut downs while the task is performed. One operator handles several machines so it can take time to move from one machine to the next. The MPC has allowed this process to be fully automated. The operator can program via touch screen any changes to the conveyor line without leaving his position. The MPC can perform this function without all of the added devices required by using a servo motor. A closed loop is achieved with two connections.”

— Project Engineer “Brewery Production Plant”





Conforming to NAMUR standards

Interface Valve

VFN2120N-X23 / VFN2120N-X36

Features:

Hygienic design

Resin body with less concaves
Direct cleaning of valve is possible (IP67).

3 port / 5 port available

Function plate realized 3 / 5 port selectable

Low power consumption

Power consumption: 0.5 W
(Conventional model: 1.8 W) * DC specifications

Conforming to CE standards

Port threads: NPT1/4, G1/4 available



VFN2120N-X23

Electrical entry:
Vertical entry to piping port



VFN2120N-X36

Electrical entry:
Horizontal entry to piping port

Specifications:

Valve Specifications

Fluid	Air
Ambient and fluid temperature	22 to 131 psi (0.15 to 0.9 MPa)
Operating pressure range	14 to 140°F (-10 to + 60°C)
Lubrication	Not required
Manual override	Push type / Locking type (tool required) / Locking type (manual type)
Enclosure	Equivalent to IP67
Thread port size	1/4"
Flow characteristics (Cv / Effective area)	0.8 / 11 mm ²

Electrical Specifications

Rated voltage	24 VDC
Allowable voltage fluctuation	-15 to + 10% of
Type of coil insulation	Class B
Power consumption	0.5 W

For air, gas, steam, water, oil

Pilot Operated 2 Port Solenoid Valve

Series VXP21/22/23

Features:

Wide variations of combination.

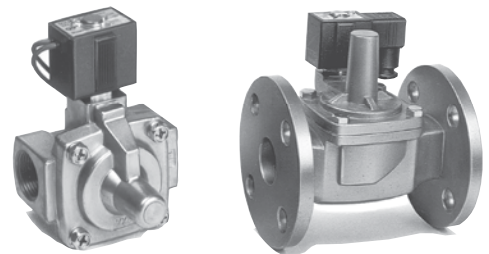
Able to control a wide variety of fluids.

Valve can be matched to particular application through selection of body materials (Brass/BC6 or Stainless steel), seal material (NBR, PTFE, EPDM or FKM) and solenoid coil (Class B or H).

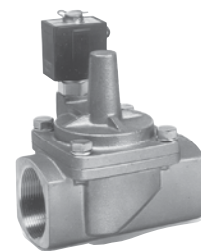
Easy to disassemble and reassemble in a short time.

Flange for threaded ports available.

(32A to 50A)



N.C.



N.O.

Digital Flow Switch for Air

Series PF2A

Features:

- Integrated type and separate monitor type are available.
- Switch output, accumulated pulse output, analog output
- Capable of switching back and forth between cumulative and instantaneous flow
- IP65

Series	Set flow range scfm (L/min)	Port Size
PF2A	0.04 to 0.35 (1 to 10)	1/8, 1/4
	0.18 to 1.77 (5 to 50)	1/8, 1/4
	0.35 to 3.5 (10 to 100)	3/8
	0.71 to 7.1 (20 to 200)	3/8
	1.77 to 17.7 (50 to 500)	1/2
	5.30 to 106 (150 to 3000)	1
	10.6 to 212 (300 to 6000)	1 1/2
	21.2 to 424 (600 to 12000)	2

Integrated type



Separate monitor type



Monitor

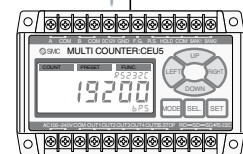
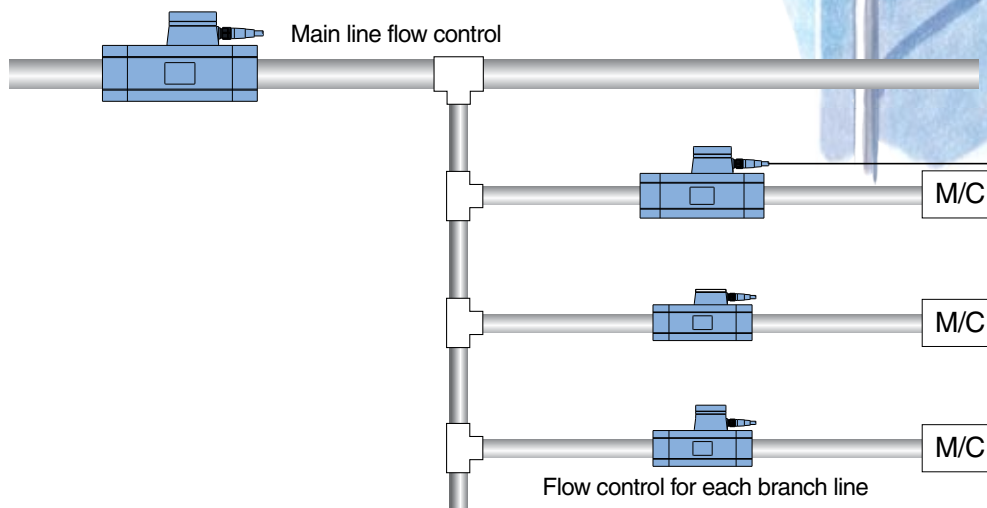
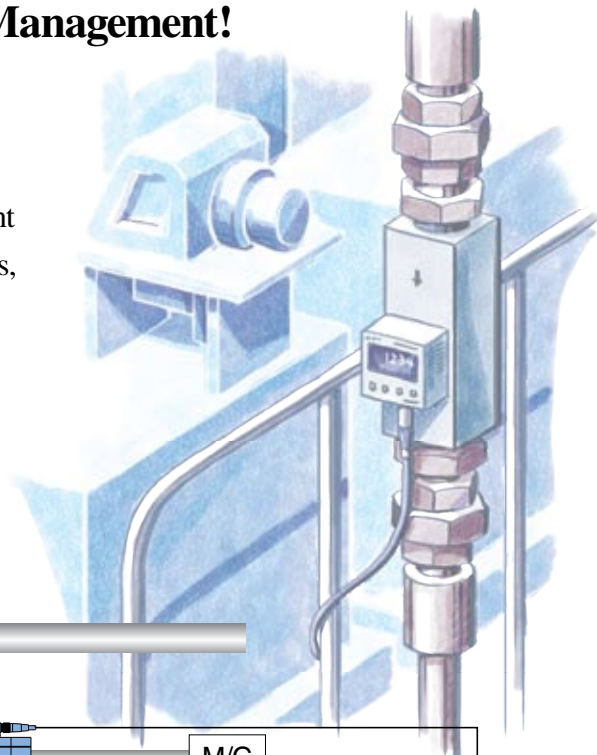


Sensor

Digital Flow Switch for Energy Saving Management!

The air **flow control** in each application is absolutely required to promote the energy saving.

The energy saving activity starts with numerical management of the air flow consumptions of various equipments and lines, and clarification of the improvement targets and effects.



Pulse counter

The accumulated pulse output function enables remote monitoring of accumulated flow.



Improve the competitiveness of your machine

Automatic Leak Detection System

Subject:

Automatic Leak Detection in a Compressed Air System(CAS)

Background:

Recent Energy Saving Audits completed by our Energy Saving Experts have revealed that poor system design and inadequate maintenance is having a significant impact on the cost of production with up to 20% of all compressed air simply just leaking away and wasting over 2.3 billion Euros for European compressed air users each year.

Objective:

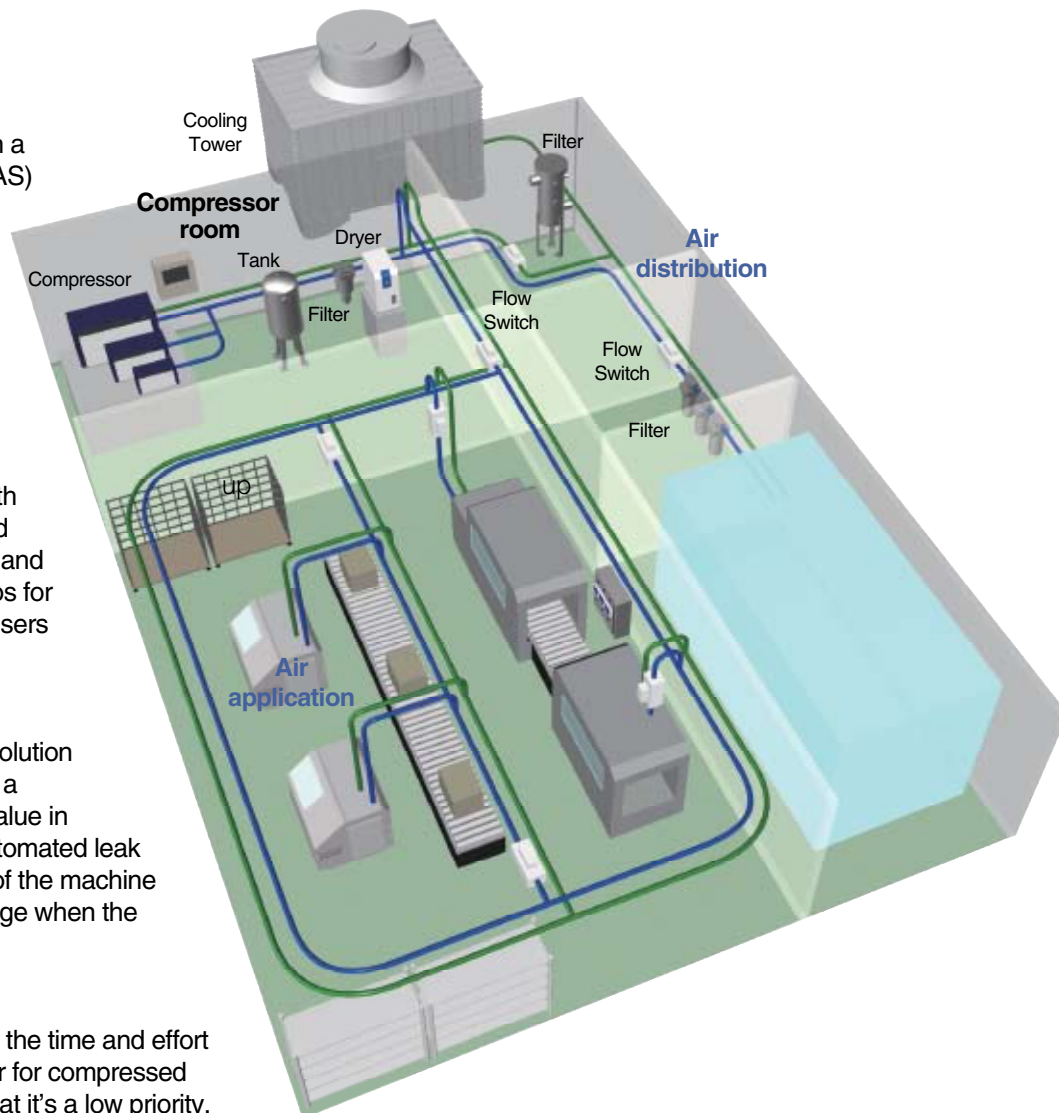
To find a simple, low cost, solution to help detect air leakage in a compressed air circuit, by value in NI/min, by integrating an automated leak detection system as a part of the machine that can even monitor leakage when the machine is in operation.

Considerations:

In today's economic climate the time and effort required to detect or monitor for compressed air leakages often means that it's a low priority. Most machines function 24/5 and in some cases 24/7 so it's just not economically viable to cease operation to check individual valves, tubes, fittings etc. Also the use of a ultra-sonic leak detector is time consuming and relatively expensive to undertake.

Solution:

SMC's A.L.D.S – a low cost, automated leak detection system.



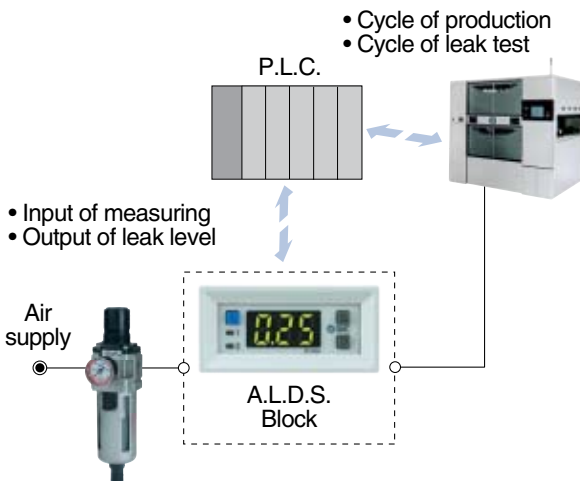
Benefits:

By adding an A.L.D.S. to a machine it can:

- detect air leakages as and when they occur - even on a daily basis
- confirm the exact value of the leak in l/m
- provide maintenance personnel with a detailed report on where the leakages are located without the need to detect individual components
- operate and detect leakages even when the machine is in operation
- be integrated in the machine's software without the need for any external supervision system – scad etc,

Basic Operating Concept:

The A.L.D.S. is based on a manifold block consisting of a standard SMC Series PFM flow meter plus the introduction of a diverting valve which is installed in the machines main air supply. The valve is operated using sequence instruction which are integrated in the machines operating software.



Using a pre programmed “check leakage cycle” each compressed air circuit on the machine can be individually monitored with the results checked against the previously stored records saved in the PLC. These records can then be issued as a report to the maintenance departments accordingly, thereby ensuring maximum efficiency in both air leakage detection and potential energy savings.

Key A.L.D.S Product:

Series PFM – a Digital Flow Switch with a dual colour display

A key component in SMC's portfolio of Energy Saving products, the PFM Digital Flow Switch utilises a micro-electromechanical system (MEMs) in its construction and this latest microchip technology delivers outstanding accuracy and fast response speeds, especially when working with low flow applications.

Suitable for use with Dry air, N₂, Ar, and CO₂, the PFM range is extremely compact and lightweight and it's easy-to-see digital sensor provides excellent visual performance - at-a-glance. And, as the flow adjustment valve is integrated into the switch, piping installation could never be any easier and mounting flexibility is ensured.



Next Steps:

For more information on the innovative A.L.D.S (automated leak detection system), including the high performance Series PFM flow meter range – simply contact your nearest SMC office using the contact details provided.

The logo for SMC Energy Saving Solutions, featuring a stylized green figure holding a globe. To the right, the text reads 'ALDS automatic leak detection system'.



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