Pulse Valves for Dust Collector Systems

ASCO®

Product Index

Description **Page**

DUST COLLECTOR SYSTEMS AND EQUIPMENT FOR AIR CLEANING

APPLICATIONS FOR DUST COLLECTOR SYSTEMS

This is a short introduction of the application area Dust Collector Systems and more specific Fabric Filter systems, together with the relevant technical information on filter systems and pulse valves.

Air Pollution Control techniques

Air Pollution Control techniques, like all environmental protection systems, have become a subject of global concern. There are six (6) major technologies used for air pollution control:

- mechanical collectors
- fabric filters
- electrostatic precipitates
- wet, dry and semi-dry scrubbers
- selective catalytic reduction
- flue gas desulphurisation

An important driving factor for the investments in these systems are the local, and for Europe the European, legislations. But also the public opinion, the concern for their image can be a driving factor, especially for industrial companies, to invest in air pollution control systems.

Fabric filter systems are using pulses of air and therefore form an interesting market niche for us, being one of the leading companies for (solenoid) valves and pneumatic components.

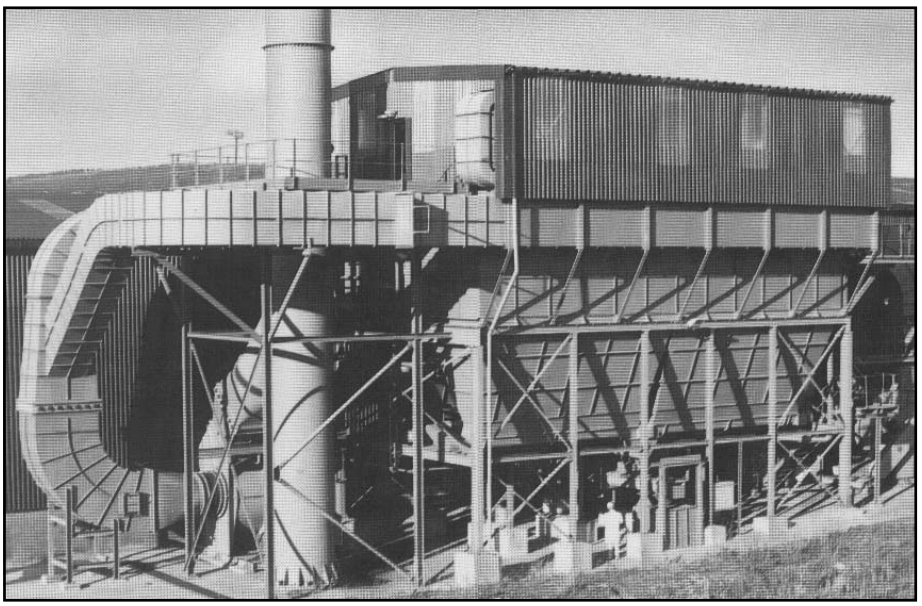
Fabric Filter Systems

The history

The first industrial applications for fabric filter systems were developed for the recovery of valuable products from dusts on fumes in nonferrous smelting and refining operations. Already in 1852 a man called S.T. Jones applied for a patent on a single bag design for the recovery of zinc oxide fume in the U.S.A.

Major improvements came after 1950, although a lot of patents and developments existed from before that time. In that period the Reverse Air Jet system was developed which had many advantages over the systems using a mechanical shaking mechanism to clean the bags.

At the end of the 50's the Pulse Jet Filtration system was introduced. This type of system provides, in a continuous cleaning filter operation, a uniform air flow and a high air-to-cloth ratio. The design is very simple and contains almost no moving mechanical parts.



In the 70's and 80's developments were speed up because legislation more and more forced industries, power stations and waste incinerators to use air pollution control systems. This of course guaranteed an interesting market potential for the filter building companies.

Type of Fabric Filter installations

In general terms a fabric filter system consists of a porous flexible layer of textile material through which a dusty gas is passed to separate particles from the gas stream. Deposits on the textile are removed periodically by powerful moving and thereby cleaning of the cloth to maintain the pressure drop across the filter within practical operating limits.
There are several methods to make the movement of the textile which we will describe later.

Depending on the physical shape of the fabric (textile) we speak about bag or hose and envelope or pocket filter systems. The filter bags consist of round, oval or square bags (hoses) with a diameter from one to several decimeters. In the envelope or pocket filters the fabric is folded in the shape of an envelope.

The dust which is collected on the fabric during the filtration process has to be removed from time to time. Several techniques have been developed to do this.

Fig. 1 gives a schematic overview of the cleaning systems most commonly used. The cleaning system has an influence on the maximum load of the fabric. This figure also shows the type of load used on the fabric. It's also clearly visible which side of the filters is open.

The major types of filtration systems to remove dust from the filter media are:

- shaker systems
- reverse air cleaning
- pulse/jet cleaning

A short description of each technique can be found below.

Shaker filtration systems

The filter bags or envelopes are intermittent shaked by means of an eccentric rod assembly and can only take place if the filtration process through the fabric is stopped. This cleaning technique is mainly used in smaller sized filter systems as the fabric load has to stay low. In general, this system is used in combination with weaved fabric filters. The cleaning function is not optimal, therefore the use of shaker systems is decreasing and is being replaced by the following techniques.

Reverse Air Cleaning

In this type of system the air or gas stream will be forced by a ventilator in the reverse direction to clean the filter bags. During this filtration action the filter system or a relevant section has to be shut off. This type of system can be used for low up till medium fabric loads. Also, the filter medium for this system is normally a woven fabric.

Pulse/Jet Cleaning

Pulse jet dust collector systems periodically inject short, powerful pulses of compressed air, in the direction opposite to the air flow, into a filterbag or a row of filterbags. This air shot creates a sudden bag expansion that breaks the dust cake from the outer surface of the bag's fabric. The dust is efffectively removed by inertial forces as the bag reaches maximum expansion and falls down into a hopper. Depending on the type of installation, typical pulse time is around 100 msec. while the interval between the pulses in each bag or row of bags is around 3 to 6 minutes. More and more the pulse sequence will depend on the differential pressure measurements over the filter bags.

Sequential controllers or PLC's are used to program the interval time setting and commands to the pulse valves. There are systems using medium pressure (2-3 bar) and systems for high pressure (6-8 bar). Venturies are used to increase the air speed. The cleaning normally takes place while the filter system is in operation. The fabric materials used in these systems have to be adapted to:

- the particle size
- degree of filtration
- filter resistance

See also figure 2, showing a typical setup of an air/jet dust collector system. The cleaning degree of this type of systems is very good which made the system very popular. A disadvantage is the high energy consumption and limited length of the bags.

Applications

Fabric filter systems are suitable for a broad application area because:

- small particle sizes down to 0,01 micron can be filtered
- with the enormous variety in fabric materials, most particle types can be filtered
- the temperature range has been increased due to the availability of new filter materials such as Teflon (PTFE) for maximum 250°C and ceramic filter bags for a maximum continuous operating temperature of 1150°C
- investment level is relatively low compared to other air pollution control techniques.

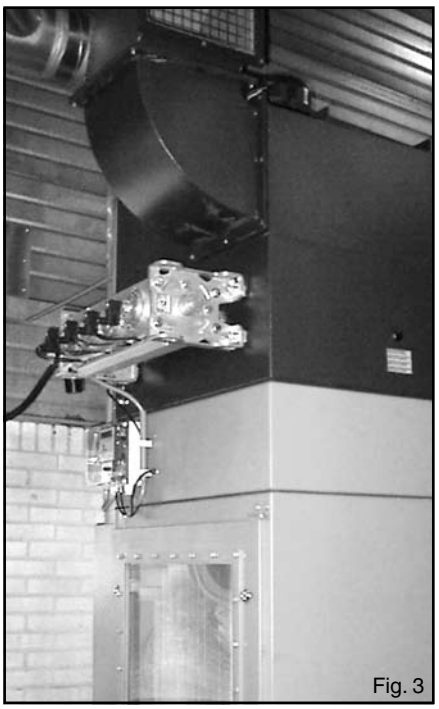


Fig. 3

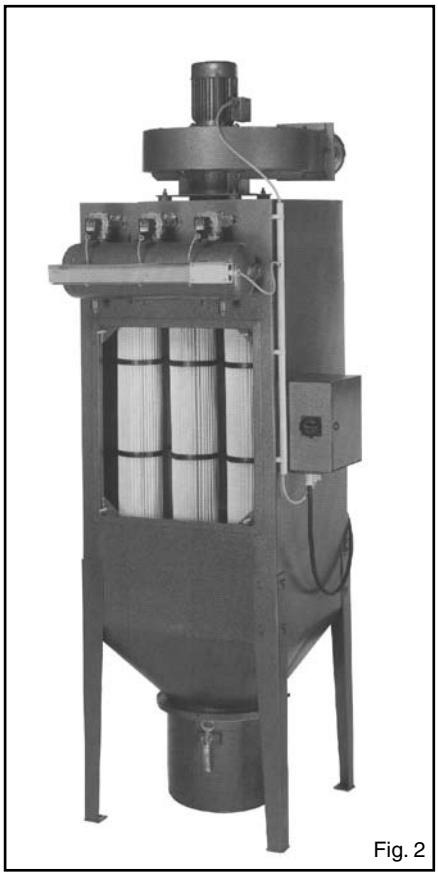


Fig. 2

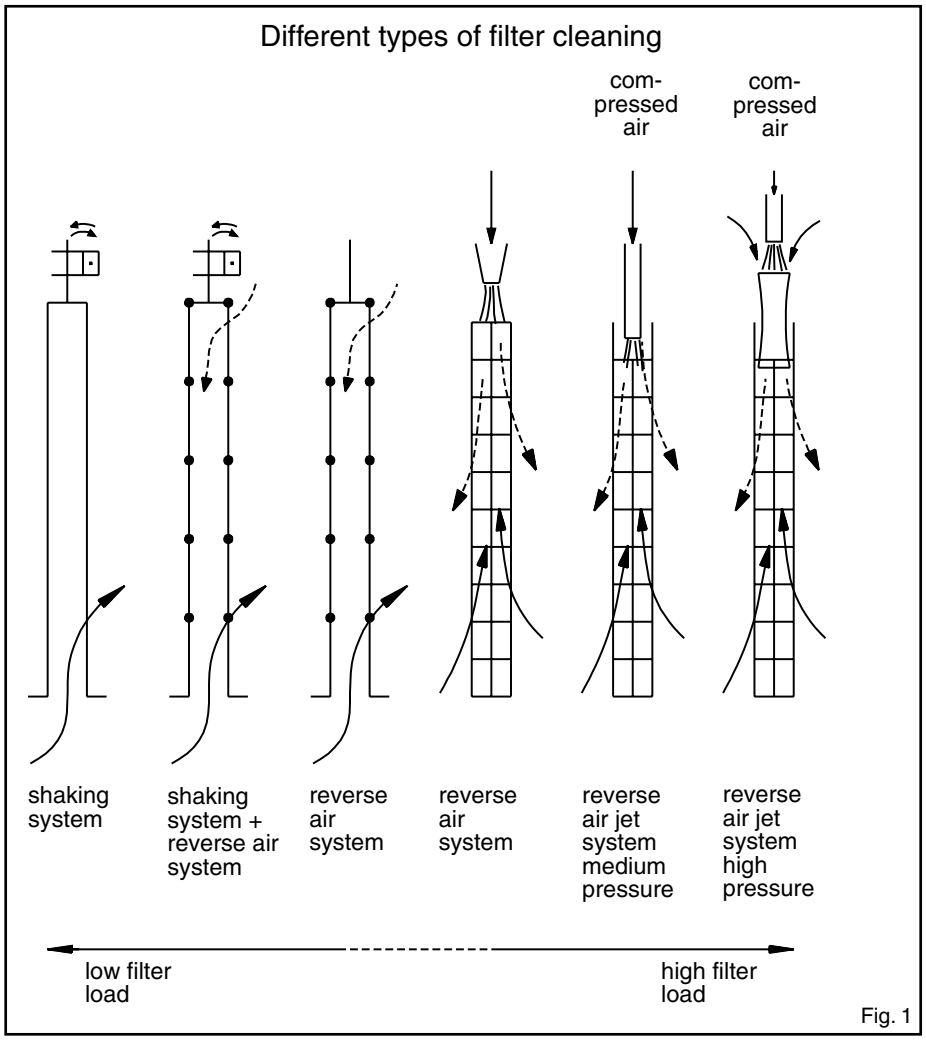


Fig. 1

DUST COMES UNDER THE ATEX DIRECTIVE 94/9/EC

ATEX is not just about potentially explosive gaseous environments, dust is equally dangerous. Therefore we have complemented our existing ATEX approvals for gaseous atmospheres with dust approvals for dust collector products.

The ATEX directive, which came into force on July 1, 2003, has concentrated the minds in all sectors of industry on the dangers of potentially explosive atmospheres.

The IECEx International Certification Scheme is a global certification scheme based on standards of the International Electrotechnical Commission and offers a certification of conformity with the IEC series of standards 60079, 61241 and 61779. This certification facilitates the international trade of electrical equipment intended for use in explosive atmospheres and contributes to avoiding the multiplicity of national certifications while guaranteeing an adapted level of safety. The certification is issued by an organisation recognised by IECEx, and all the certificates are available on the IECEx website.

ATEX and IECEx are more than welcome for the focus that they provide on industrial dust as a potential source of explosion. Almost all types of industrial dust can be considered to be potentially explosive, so it comes as no surprise that the procedure for technical evaluation of safety measures used to avoid the risks of dust explosions is both complex and extensive.

In order to describe the explosion risk posed by dust, a number of factors need to be described. These include particle size, explosion limits, the maximum explosion pressure, the destructive power of the combustion, moisture content and the minimum ignition energy required.

Once the dust has been characterised, an examination then needs to be made of the industrial processes concerned. This takes into account possible ignition sources, explosive volumes, operating temperatures and an assessment of the possibility of a dust explosion under given conditions.

Helpfully for engineers involved in safety evaluations of dust-laden atmospheres, ATEX simplifies explosion protection with a three zone concept.

Zone **20** or category 1D, the most critical of the three, is an area in which an explosive atmosphere in the form of a cloud of combustible dust in the air is present continuously, or for long periods, or frequently. Typically, these conditions would be encountered on the inside of containers or pipelines and enclosed conveying equipment.

Zone **21** or category 2D, is a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is likely to occur in normal operation occasionally for example when discharging and filling equipment.

Zone **22** or category 3D, is a place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is not likely to occur in normal operation but, if it does occur, will be persist for a short period only.

Areas in which dust escapes and forms deposits are included in this category.
Whatever the zone, one of the biggest risks when it comes to preventing dust explosions, is posed by enclosures.

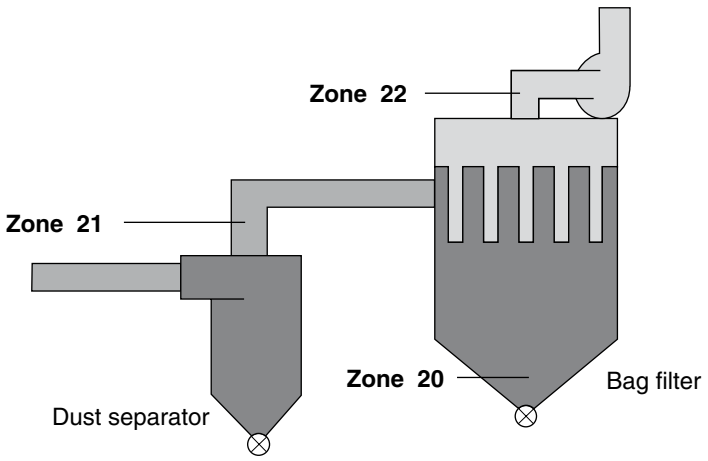
The ATEX directive defines the type of protection provided by enclosures, based on limiting the maximum surface temperature of the enclosure and using dust-tight and dust-protected enclosures to prevent dust entry.

The legislation covers two degrees of protection: dust-tight, for use of equipment in Zone 20, 21 and even 22 in the case of the presence of conductive dust; and dust-protected, for use of equipment in Zone 22 areas in the presence of non-conductive dust.

The scope of the ATEX directive on enclosures is comprehensive, extending down to electrical actuators used on individual valve types. This is important due to the increasing use of solenoid valves in the dust collector systems that reduce industrial pollution.

Our know-how on explosion proof enclosures and dust collector valves has resulted in the widest range of solenoid valves complying with the new directive for use in dust-laden and of course gaseous environments. The enclosures meet the needs of all industry types, being available in metals such as aluminium, cast iron and stainless steel and also the convenient epoxy encapsulations.

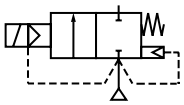
In addition our pilot boxes and Power Pulse Tank Systems are ATEX approved and the latter is also IECEx approved. Even the remote design can be offered as an ATEX approved product, following the Non-Electrical ATEX approval according to EN 13463-1.



EXAMPLES OF A CLASSIFICATION INTO ZONES
Drawing of an explosive atmosphere caused by dust:
Zone **20** Zone **21** Zone **22**

POWER PULSE VALVES

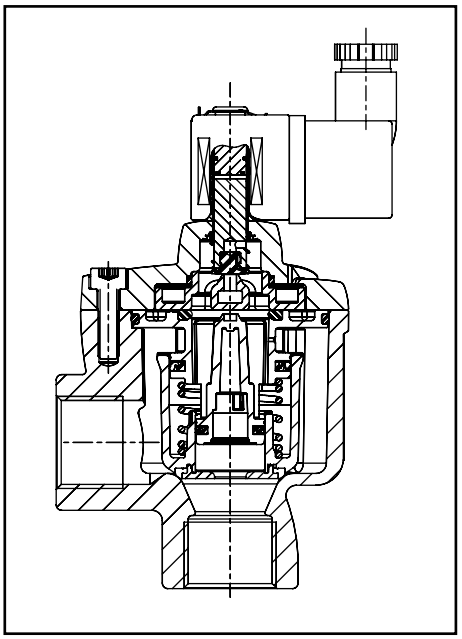
integral pilot (external exhaust)
threaded or Quick Mount connection
3/4 to 1 1/2

NC 

2/2
Series
353

FEATURES

- *The piston cartridge pulse valves are especially designed for dust collector service applications, combining high flow, long life and extremely fast opening and closing to produce reliable and economical operation*
- *The angle bodies and special piston cartridge result in unique operating features required for dust collector service applications*
- *The high quality polyacetal (POM) piston cartridge guarantees a long operating life and a large temperature range*
- *The design with Quick Mount connections eliminates the time consuming thread cutting and sealing resulting in maximum flexibility while the valve will be anchored to the pipes*
- *Built-in silencers reduce noise and prevent foreign particles from entering the valve*
- *The integral operators are provided with epoxy moulded F-class coils. Various optional waterproof and explosionproof solenoids for use in potentially explosive atmospheres (gas & dust) according to Directive ATEX 94/9/EC can be mounted on the same basic valve (see pages 49 to 57)*
- *The components satisfy all relevant EC directives*



GENERAL

Differential pressure (PS) 0,3 - 8,5 bar [1 bar = 100kPa]
Ambient temperature range -20 to +85°C

fluid	temperature range (TS)	piston
air	-20 to +85°C	POM (polyacetal)

CONSTRUCTION

Body	Aluminium
Bonnet	Aluminium
Quick Mount clamps	Steel
Bolts	Steel
Core tube	Stainless steel
Core and plugnut	Stainless steel
Core spring	Stainless steel
Sealings & disc	NBR (nitrile)
Piston/cartridge	POM (polyacetal) / NBR (nitrile)
Shading coil	Copper
Coil insulation class	F
Connector	Spade plug (cable Ø 6 - 8 mm)
Connector specification	3 x DIN 46244
Electrical safety	IEC 335

ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) : 24V
(Other voltages and 60 Hz on request) AC (~) : 24V - 115V - 230V / 50 Hz

coil type	nominal power ratings				ambient temperature range	protection
	inrush ~	holding ~		hot/cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
CM22-FB	14,5	11	6,3	-	-20 to +85	moulded IP65
CM22-FI (1)	-	-	-	15 / 22		

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		coil type		catalogue number		Quick Mount clamps
				min.	max. (PS) air					
	(mm)	(m^3/h)	(l/min)		~/=	~	= (1)	standard	ATEX dust II3D	
(G*) - Threaded pipe connection										
3/4	20	14	233	0,3	8,5	CM22-FB	CM22-FI	**SC E353A811**	**SCDU E353A811**	-
1	25	23	383	0,3	8,5	CM22-FB	CM22-FI	**SC E353A821**	**SCDU E353A821**	-
1 1/2	40	46	768	0,3	8,5	CM22-FB	CM22-FI	**SC E353A831**	**SCDU E353A831**	-
(Ø) - Quick Mount connection on inlet										
3/4	20	14	233	0,3	8,5	CM22-FB	CM22-FI	**SC S353A811**	**SCDU S353A811**	**C117-281**
1	25	23	383	0,3	8,5	CM22-FB	CM22-FI	**SC S353A821**	**SCDU S353A821**	**C117-282**
1 1/2	40	46	768	0,3	8,5	CM22-FB	CM22-FI	**SC S353A831**	**SCDU S353A831**	**C117-290**
(Ø) - Quick Mount connection on inlet & Outlet										
3/4	20	14	233	0,3	8,5	CM22-FB	CM22-FI	**SC S353A711**	**SCDU S353A711**	**C117-281**
1	25	23	383	0,3	8,5	CM22-FB	CM22-FI	**SC S353A721**	**SCDU S353A721**	**C117-282**
1 1/2	40	46	768	0,3	8,5	CM22-FB	CM22-FI	**SC S353A731**	**SCDU S353A731**	**C117-290**

(1) Intermittent duty, Relative Duty Time is 10%. Max. on time 1 min.

OPTIONS

- Waterproof enclosure with embedded screw terminal coil according to protection class IP67, CEE 10.
- Explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards.
- Explosionproof and watertight solenoids according to "**NEMA**" standards.
- Plug with visual indication and/or peak voltage suppression.
- Electronic timer.

INSTALLATION

- The valves can be mounted in any position without affecting operation.
- Pipe connection identifiers are: G*= combination thread according to ISO 228/1 and ISO 7/1 or Ø for Quick Mount.
- For Quick Mount types tightness is achieved by the O-ring sealing on the pipes (3/4"=Ø26,4 to 27,4 and 1"=Ø33,2 to 34,2 and 1 1/2"=Ø47,8 to 48,8) according to ISO 4200.
- Other pipe threads are available on request.
- Installation/maintenance instructions are included with each valve.
- Spare parts kit and replacement coils are available.

DIMENSIONS (mm), WEIGHT (kg)

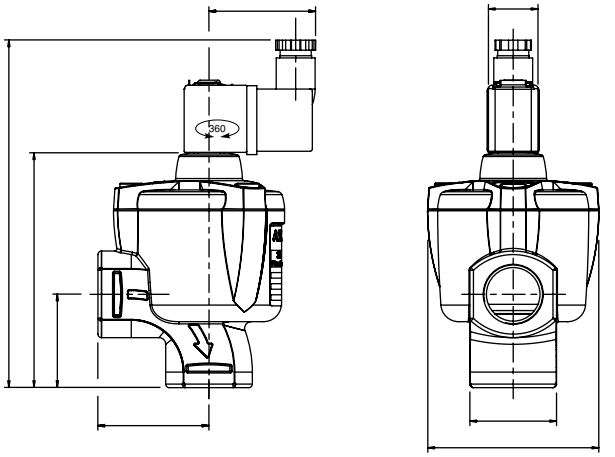


Fig. 1: Threaded type

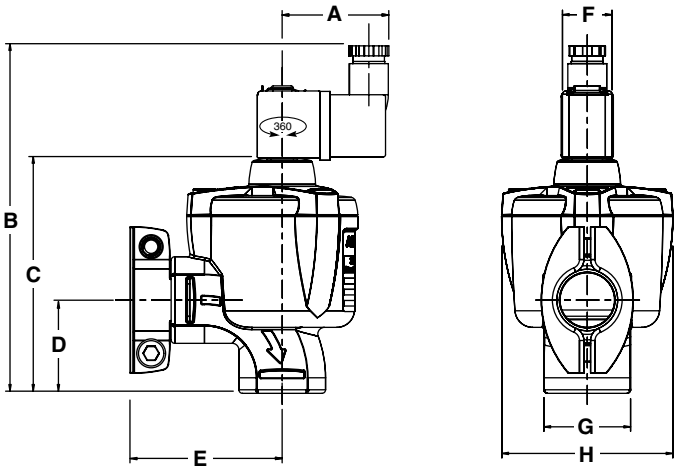


Fig. 2: Quick Mount type (inlet only)

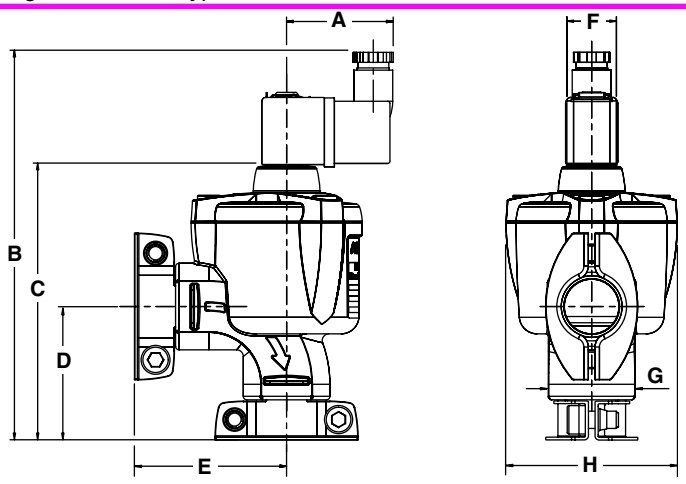


Fig. 3: Quick Mount type (inlet & outlet)

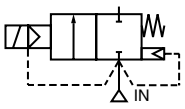
catalogue number	A	B	C	D	E	F	G	H	weight (1)	(C)
SC(DU) E353A811	48	156	106	42	50	22	39	77	0,52	Fig.1
SC(DU) E353A821	48	162	112	51	62	22	46	77	0,63	Fig.1
SC(DU) E353A831	48	191	141	60	71	22	62	112	1,17	Fig.1
SC(DU) S353A811	48	156	106	42	70	22	39	77	0,60	Fig.2
SC(DU) S353A821	48	162	112	51	83	22	46	77	0,69	Fig.2
SC(DU) S353A831	48	191	141	60	97	22	62	112	1,37	Fig.2
SC(DU) S353A711	48	176	126	62	70	22	39	77	0,68	Fig.3
SC(DU) S353A721	48	183	133	71	83	22	46	77	0,80	Fig.3
SC(DU) S353A731	48	217	167	80.	97	22	62	112	1,58	Fig.3

(1) incl. coil and connector (**C**) construction type

PULSE VALVES

single stage, integral pilot
threaded body or compression fitting
3/4 to 1

NC



2/2
Series
353

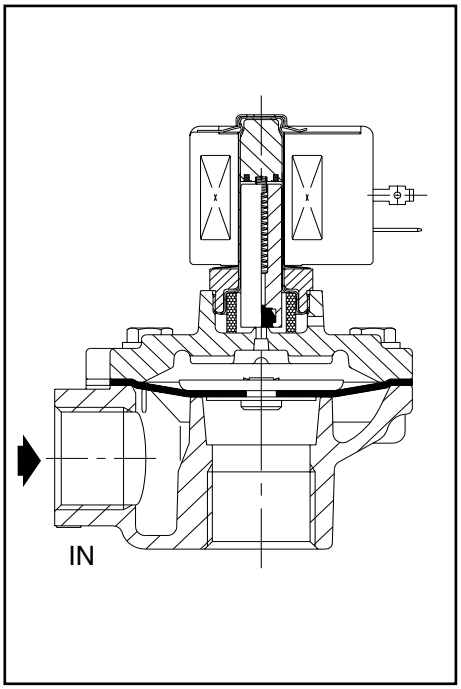
FEATURES

- *The diaphragm pulse valves are especially designed for dust collector service applications, combining high flow, long life and extremely fast opening and closing to produce reliable and economical operation*
- *The high flow, angle type bodies, springless construction, in combination with the special diaphragm assemblies give the unique operating features required for dust collector service applications*
- *Integral compression fittings for fast, easy, secure installation*
- *Built-in silencers guarantee noise free operation and avoid foreign particles entering the valve*
- *The integral operators are provided with epoxy moulded F-class coils. Various optional waterproof and explosionproof solenoids for use in potentially explosive atmospheres (gas & dust) according to Directive ATEX 94/9/EC can be mounted on the same basic valve (see pages 49 to 57)*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0,35 - 8,5 bar [1 bar = 100kPa]
Ambient temperature range -20 to +85°C

fluid	temperature range (TS)	piston/diaphragm
air	-20 to +85 °C	TPE (thermoplastic polyester elastomer)



CONSTRUCTION

Body	Aluminium
Core tube	Stainless steel
Core and plugnut	Stainless steel
Core spring	Stainless steel
Sealings & disc	NBR (nitrile)
Diaphragm	TPE (thermoplastic polyester elastomer)
Shading coil	Copper
Coil insulation class	F
Connector	Spade plug (cable Ø 6 - 10 mm)
Connector specification	ISO 4400
Electrical safety	IEC 335

ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) : 24V
(Other voltages and 60 Hz on request) AC (~) : 24V - 115V - 230V / 50 Hz

coil type	nominal power ratings				ambient temperature range	protection
	inrush ~	holding ~		hot/cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
CM6-FT	34	15,6	6	-	-20 to +85	moulded IP65
CM6-FI (1)	-	-	-	14 / 20,8		

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar) min.	operating pressure differential (bar) max. (PS) air	coil type		catalogue number		option FPM
	(mm)	(m^3/h)	(l/min)		~/=	~	= (1)	standard	ATEX dust II3D	
(G) - Threaded pipe connection										
3/4	24	14	233	0,35	8,5	CM6-FT	CM6-FI	**SC G353A043**	**SCDU G353A043**	**V**
1	27	17	283	0,35	8,5	CM6-FT	CM6-FI	**SC G353A044**	**SCDU G353A044**	**V**
Ø - Compression fitting pipe connection										
3/4	24	14	233	0,35	8,5	CM6-FT	CM6-FI	**SC G353-052**	**SCDU G353-052**	**V**
1	27	17	283	0,35	8,5	CM6-FT	CM6-FI	**SC G353-053**	**SCDU G353-053**	**V**

(1) Intermittent duty, Relative Duty Time is 10%. Max. on time is 1 min.

OPTIONS

- Waterproof enclosure with embedded screw terminal coil according to protection class IP67, CEE 10
- Explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards
- Explosionproof and watertight solenoids according to "**NEMA**" standards
- Compliance with "**UL**" standards
- Plug with visual indication and/or peak voltage suppression
- Electronic timer
- Valves can also be supplied with FPM (fluorelastomer / viton) diaphragm and seal materials. Use the appropriate optional suffix letter for identification

INSTALLATION

- The valves can be mounted in any position without affecting operation
- Pipe connection identifier is: G = G (ISO 228/1) or compression fitting
- For compression fitting types tightness is achieved by the compressed gasket on the blow tube
- The use of the rubber gaskets as sealing members will allow a slight misalignment in piping when using compression fittings
- Other pipe threads are available on request
- Installation/maintenance instructions are included with each valve
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)

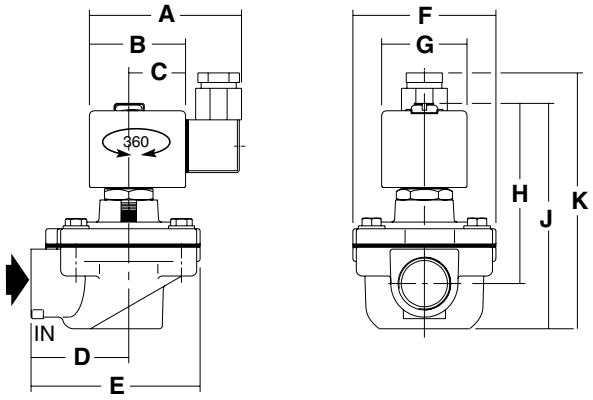


Fig. 1 threaded type

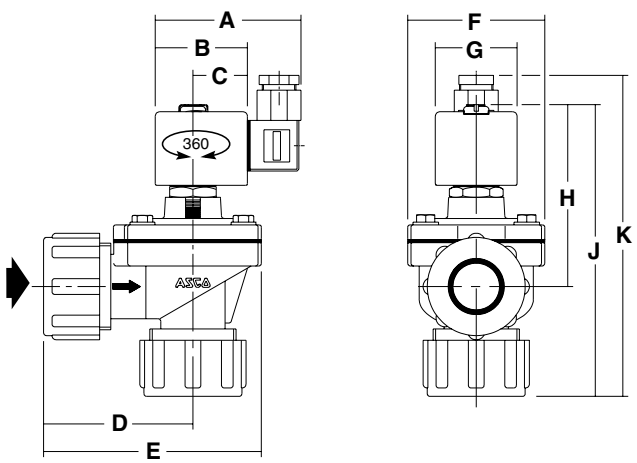


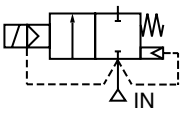
Fig. 2 compression fitting type

catalogue number	A	B	C	D	E	F	G	H	J	K	weight (1)	(C)
SC(DU) G353A043	75	45	27	51	89	75	39	92	113	130	0,70	Fig.1
SC(DU) G353A044	75	45	27	51	89	75	39	92	113	130	0,65	Fig.1
SC(DU) G353-052	75	45	27	88	125	75	39	92	175	195	0,85	Fig.2
SC(DU) G353-053	75	45	27	88	125	75	39	92	175	195	0,90	Fig.2

(1) incl. coil and connector (**C**) construction type

PULSE VALVES

dual stage, integral pilot
threaded body 1 1/2 to 3 or
compression fitting Ø 1 1/2

NC 

2/2
Series
353

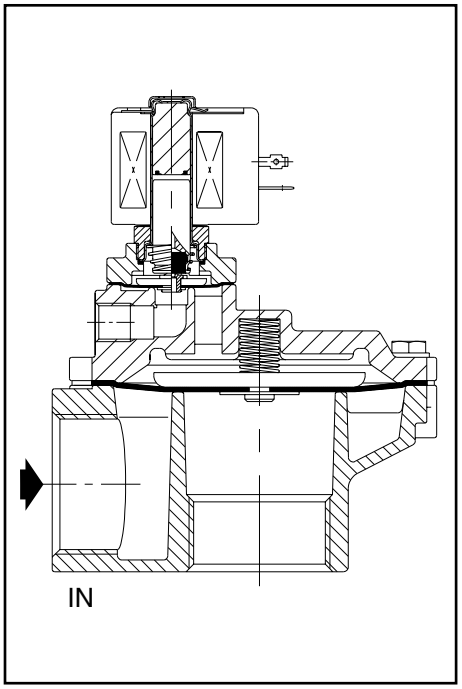
FEATURES

- *The diaphragm pulse valves are especially designed for dust collector service applications, combining high flow, long life and extremely fast opening and closing to produce reliable and economical operation*
- *Integral compression fittings for fast, easy, secure installation*
- *The high quality diaphragms are reinforced and wear resistant to guarantee a long operating life, even under harsh conditions*
- *The integral operators are provided with epoxy moulded F-class coils. Various optional waterproof and explosionproof solenoids for use in potentially explosive atmospheres (gas & dust) according to Directive ATEX 94/9/EC can be mounted on the same basic valve (see pages 49 to 57)*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0,35 - 8,5 bar [1 bar = 100kPa]
Ambient temperature range -20 to +85°C

fluid	temperature range (TS)	piston/diaphragm
air	-20 to +85 °C	CR (chloroprene)



CONSTRUCTION

Body	Aluminium
Core tube	Stainless steel
Core and plugnut	Stainless steel
Springs	Stainless steel
Sealings & disc	NBR (nitrile)
Diaphragms	CR (chloroprene)
Shading coil	Copper
Coil insulation class	F
Connector	Spade plug (cable Ø 6 - 10 mm)
Connector specification	ISO 4400
Electrical safety	IEC 335

ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) : 24V
(Other voltages and 60 Hz on request) AC (~) : 24V - 115V - 230V / 50 Hz

coil type	nominal power ratings				ambient temperature range	protection
	inrush ~	holding ~		hot/cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
CMXX-FT	55	23	10,5	-	-20 to +85	moulded IP65
CMXX-FF	-	-	-	14 / 19,7		

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		coil type		catalogue number		option FPM
				min.	max. (PS) air					
	(mm)	(m^3/h)	(l/min)		~/=	~	=	standard	ATEX dust II3D	
(G) - Threaded pipe connection										
1 1/2	52	44	733	0,35	8,5	CMXX-FT	CMXX-FF	**SC G353A047** (1)	**SCDU G353A047** (1)	**V**
2	66	77	1290	0,35	8,5	CMXX-FT	CMXX-FF	**SC G353A050**	**SCDU G353A050**	**V**
2 1/2	66	92	1540	0,35	8,5	CMXX-FT	CMXX-FF	**SC G353A051**	**SCDU G353A051**	**V**
3	76	170	2833	1,0	6	CMXX-FT	CMXX-FF	**SC G353 - 060** (2)	**SCDU G353 - 060** (2)	**V**
Ø - Compression fitting pipe connection										
1 1/2	52	44	733	0,35	8,5	CMXX-FT	CMXX-FF	**SC G353A065** (1)	**SCDU G353A065** (1)	**V**

(1) Contains spring above the main diaphragm. (2) Threaded pipe connection is external (male thread).

OPTIONS

- Waterproof enclosure with embedded screw terminal coil according to protection class IP67, CEE 10
- Explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards
- Explosionproof and watertight solenoids according to "**NEMA**" standards
- Hose connection executions (3" only)
- Compliance with "**UL**" standards
- Plug with visual indication and/or peak voltage suppression
- Electronic timer
- Valves can also be supplied with FPM (fluorelastomer) diaphragms and seal materials. Use the appropriate suffix letter for identification

INSTALLATION

- The valves can be mounted in any position without affecting operation
- Threaded pipe connection is: G (ISO 228/1) or compression fitting
- For compression fitting types tightness is achieved by the compressed gasket on the blow tube
- The use of the rubber gaskets as sealing members will allow a slight misalignment in piping
- Other pipe threads are available on request
- Installation/maintenance instructions are included with each valve
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)

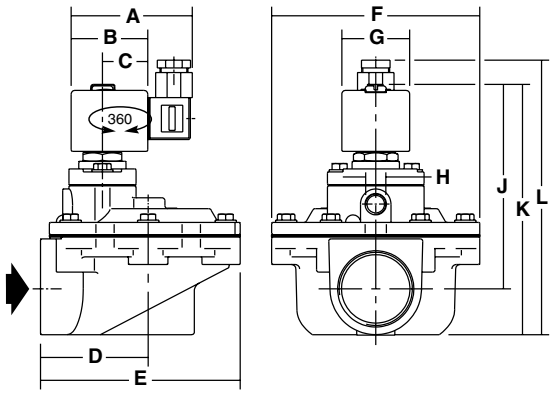


Fig.1 Threaded type

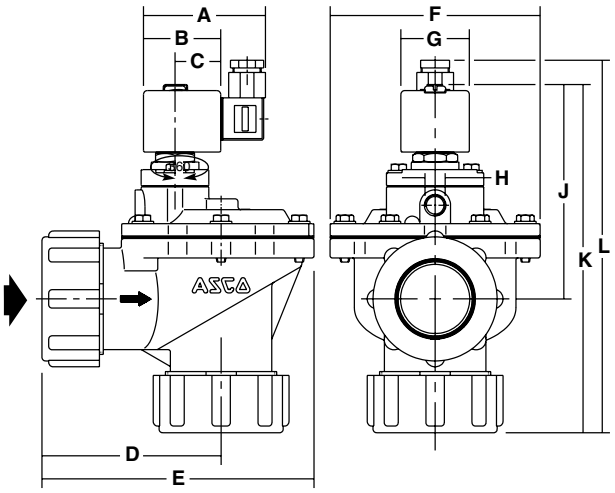


Fig.2 Compression fitting type

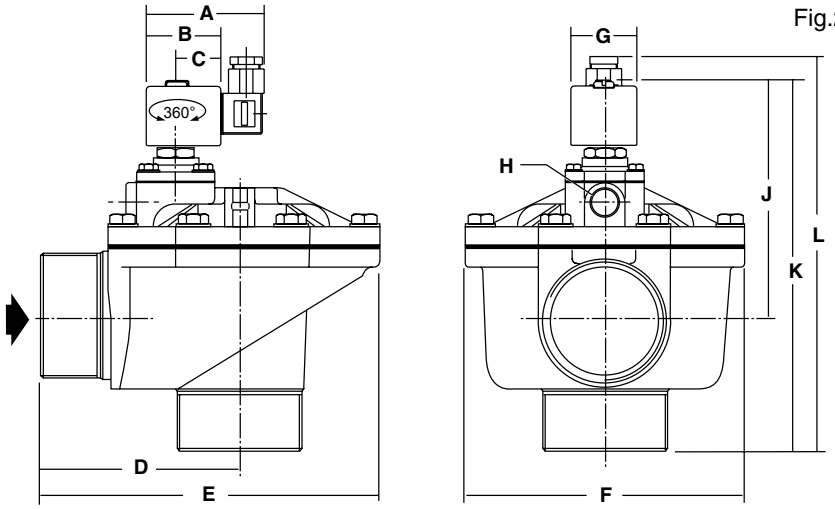


Fig. 3 External threaded type

catalogue number	A	B	C	D	E	F	G	H	J	K	L	weight (1)	(C)
SC(DU) G353A047	80	50	30	71	130	136	45	G 3/8	131	161	178	1,40	Fig.1
SC(DU) G353A050	80	50	30	95	168	165	45	G 3/4	165	210	227	2,90	Fig.1
SC(DU) G353A051	80	50	30	95	168	165	45	G 3/4	165	210	227	2,60	Fig.1
SC(DU) G353-060	80	50	30	143	240	192	45	G 1/2	165	258	275	4,10	Fig.3
SC(DU) G353A065	80	50	30	117	177	136	45	G 3/8	131	225	242	1,75	Fig.2

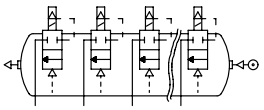
(1) incl. coil and connector (**C**) construction type

All leaflets are available on: **www.asconumatics.eu**

POWER PULSE TANK SYSTEM (Ø160)

integral pilot

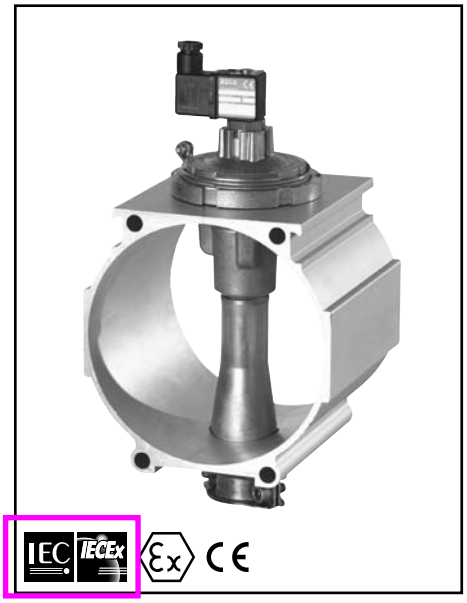
1

NC 

2/2 Series 355

FEATURES

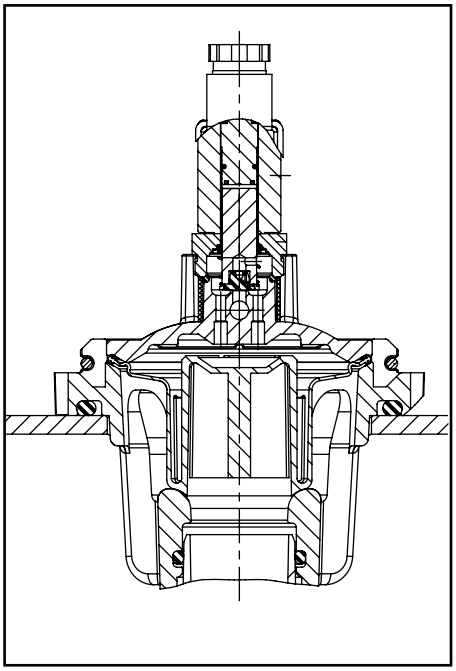
- *Power Pulse Tank System using aluminium profile and end covers with CE approval according to Directive 97/23/EC for Pressure Equipment*
- *Full immersed valve system with special springless piston/diaphragm design offers highest peak pressure and best flow performance operating features required for dust collector applications*
- *The high quality TPE piston/diaphragm guarantees a long operating life and a large temperature range*
- *Possibility to apply different combinations of pitch distances and upto 24 valves*
- *Easy to connect to other tank systems. Service connections for different accessories such as: filter regulator, pressure gauge, safety valve and automatic/manual drain valve*
- *Several blow pipe connections available, such as: Quick Mount, push-in, hose or threaded*
- *Built-in silencers reduce the noise and prevent foreign particles from entering the valve*
- *The integral operators are provided with epoxy moulded F-class coils. Various optional waterproof and explosionproof solenoids for use in potentially explosive atmospheres (gas & dust) according to Directive ATEX 94/9/EC can be mounted on the same basic valve (see pages 49 to 57)*



GENERAL

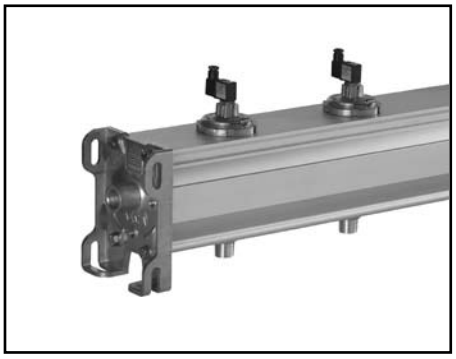
Differential pressure (PS)	0,3 to 8,5 bar [1 bar = 100 kPa]
Ambient temperature range	-20°C to +85°C
Tank System	
volume	0,20 dm³ per cm tank
recommended min. tank volume	10 dm³ (equals to 500 mm tank length)
min. pitch distance	120 mm
maximum length	3000 mm
min. pulse time	50 ms

fluid	temperature range (TS)	piston/diaphragm
air	-20 to +100 °C	TPE (thermoplastic polyester elastomer)



CONSTRUCTION

Tank	Anodized aluminium
Adapter/body	Aluminium
Clipring	Stainless steel
Clamps	Stainless steel
Bolts (clamps)	Stainless steel
Core tube	Stainless steel
Core and plugnut	Stainless steel
Core spring	Stainless steel
Sealings & disc	NBR (nitrile)
Piston/diaphragm	TPE (thermoplastic polyester elastomer)
Shading coil	Copper
Coil insulation class	F
Connector	Spade plug (cable Ø 6 - 8 mm)
Connector specification	3 x DIN 46244
Electrical safety	IEC 335



ELECTRICAL CHARACTERISTICS

Standard voltages	DC (=) 24V
(Other voltages and 60 Hz on request)	AC (~) 24V - 115V - 230V/50Hz

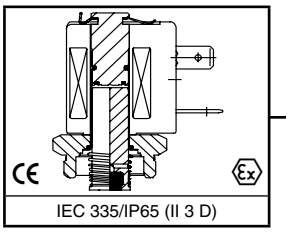
coil type	nominal power ratings				ambient temperature range	protection
	inrush ~	holding ~		hot/cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
CM22-FT	14,5	11	6,3	-	-20 to +85	moulded IP65
CM22-FI (1)	-	-	-	15/22	-20 to +85	moulded IP65

(1) Intermittent duty, Relative Duty Time is 10%. Max. on time 1 min.

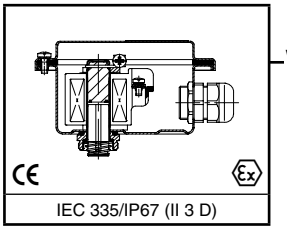
SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)			coil type		catalogue number
				min.	maximum (PS)				
					air				
	(mm)	(m^3/h)	(l/min)		~	=	~	=	
1"	25	23	384	0,30	8,5	8,5	CM22-FT	CM22-FI	. . E355A . . .

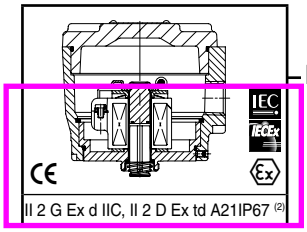
ORDERING INFORMATION - for example: SC E355A J 06 (Specify Voltage/Hz) + **Dimension code (specified on next page)**



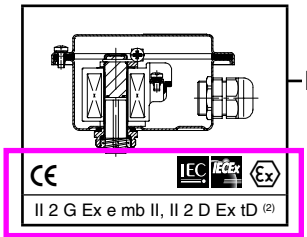
SC (DU) E 3 5 5 A — J — 0 6 (1)



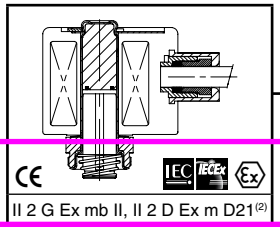
WP (WPDU)



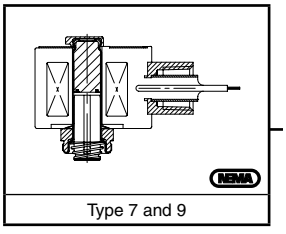
NF



EM

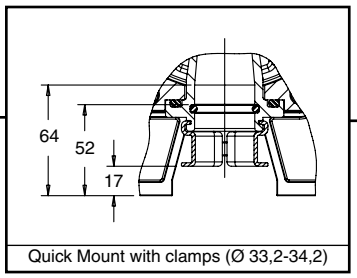


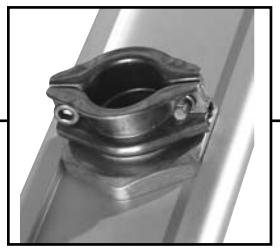
PV



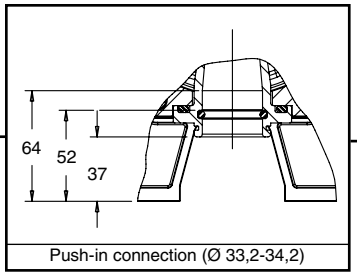
EF

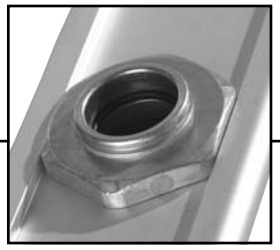
J



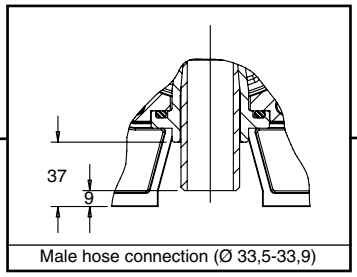


K

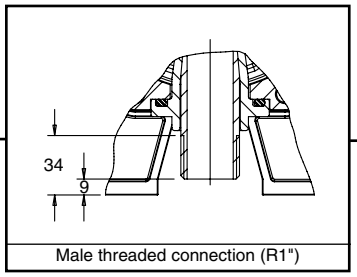




L



M



(1) Specify required number of valves between 01 and 24
(2) Exact temperature class depends on wattage and max. ambient temperature (see also page 48 to 56)

ORDERING INFORMATION DIMENSION CODE

Start distance	A	(min. 110 mm)
Standard pitch	B/C/D	(min. 120 mm)
Deviating pitch	B/C/D	(min. 120 mm)
End distance	A	(min. 110 mm)

Example I: Dimension code for a 4 valves tank system:

Operator	SC, 24V/DC
Connection	Quick Mount
Number of valves	4 pcs
Start and End distance	110 mm
Standard pitch	120 mm
Deviating pitch	Between valve 2 and 3 is position C (see fig. 2); 150 mm
Catalogue number	SC E355AJ04 24V/DC
Dimension code	110120C150
Complete order number	**SC E355AJ04 24V/DC + 110120C150**

Example II: Dimension code for a 8 valves tank system:

Operator	SC, 230/50
Connection	Thread
Number of valves	8 pcs
Start and End distance	150 mm
Standard pitch	160 mm
Deviating pitch	Between valve 2 and 3, 4 and 5, 6 and 7 is position C, E and G; 200 mm
Catalogue number	SC E355AM08 230/50
Dimension code	150160CEG200
Complete order number	**SC E355AM08 230/50 + 150160CEG200**

For assistance please consult our website: www.asconumatics.eu

DIMENSIONS (mm), **WEIGHT** (kg)

Fig. 1 (front view)

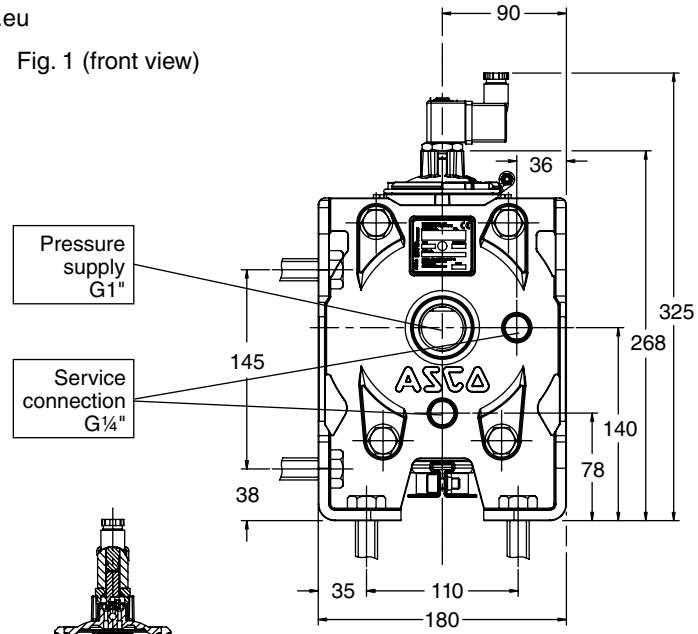
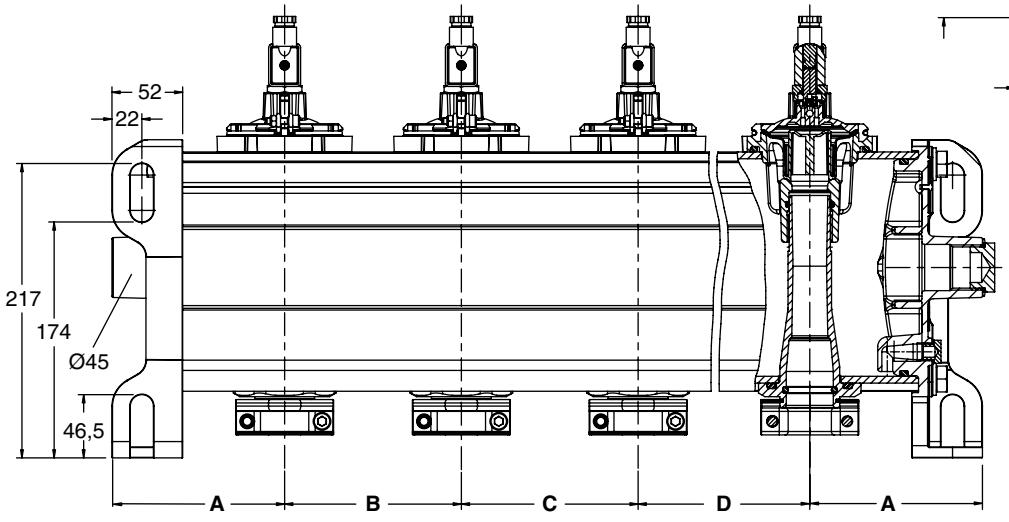


Fig. 2 (side view)



OPTIONS

- Special customized executions
- Waterproof enclosures with embedded screw terminal coil according to protection class IP67, CEE 10
- Explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards
- Explosionproof and watertight solenoids according to "**NEMA**" standards
- Separate Quick Mount clamps for outlet connection; kit number: **C132-679**

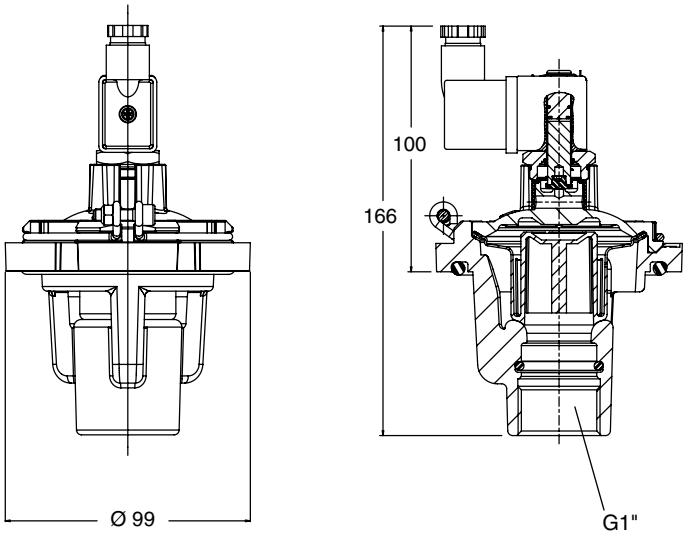
INSTALLATION

- Tank system can be mounted in any position using the standard brackets integrated in the end cap (M12 bolts recommended) without affecting operation
- Pipe connection identifier is: R = according to ISO 7/1, G = according to ISO 228/1 or Ø for other outlet connections
- For Quick Mount types tightness is achieved by the O-ring sealing on the pipe (1" = Ø33,2 to 34,2) according to ISO 4200
- Installation/maintenance instructions and declaration of conformity are included with each tank system
- Spare valves, spare parts kits and coils are available

SEPARATE / SPARE POWER PULSE VALVES

FEATURES - *(same as for the tank system)*

DIMENSIONS (mm), **WEIGHT** (kg)

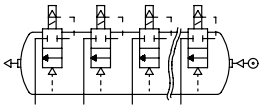


SPECIFICATIONS

pipe size	standard catalogue catalogue number	ATEX dust II3D catalogue number	weight (1)
(G) Female threaded connection (ISO 228/1)			
1"	**SC E353A237**	**SCDU E353A237**	**0,558**

(1) = incl. coil and connector

TANK SYSTEM
(Ø 6" - 8" - 10")
integral pilot
1 - 1 1/2 - 2

NC 

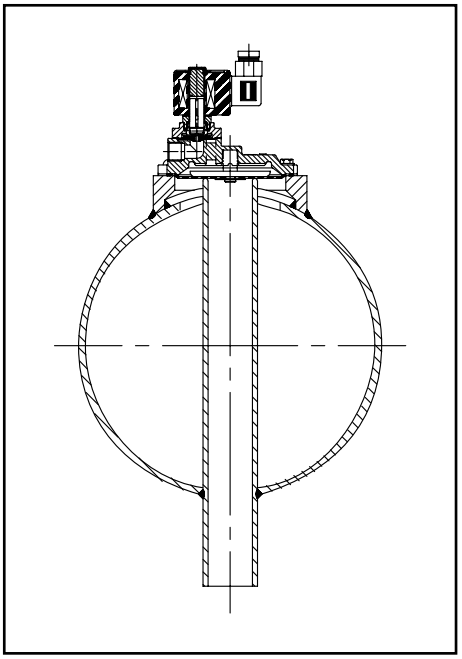
2/2
Series
357

FEATURES
- *Immersion tank system using steel profile and welded end covers with CE approval according to Directive 87/404/EC*
- *Immersed valve system with special diaphragm design offers highest peak pressure and best flow performance operating features required for dust collector applications*
- *The high quality diaphragms are reinforced and wear resistant to guarantee a long operating life, even under harsh conditions*
- *Possibility to apply different combinations of pitch distances*
- *Service connections for different accessories such as: filter regulator, pressure gauge, safety valve and automatic/manual drain valve*
- *Available with hose and threaded blow pipe connections*
- *The integral operators are provided with epoxy moulded F-class coils*

GENERAL
Differential pressure (PS) 0,35 to 8 bar [1 bar = 100kPa]
Ambient temperature range -10 to +80°C

fluid	temperature range (TS)	seal materials
air	-10 to +80°C	CR (chloroprene)

CONSTRUCTION
Tank	Steel, grey
Bonnet	Aluminium
Bolts	Stainless steel
Core tube	Stainless steel
Core and plugnut	Stainless steel
Spring	Stainless steel
Sealing & discs	NBR (nitrile)
Diaphragm	CR (chloroprene)
Shading coil	Copper
Coil insulation class	F
Connector	Spade plug (cable Ø 6-10mm)
Connector specification	ISO 4400
Electrical safety	IEC 335



ELECTRICAL CHARACTERISTICS
Standard voltages: DC (=) : 24V - 48V;
(Other voltages and 60 Hz on request) AC (~) : 24V - 48V - 115V - 230V / 50Hz

coil type	nominal power ratings				protection
	inrush ~	holding ~		hot/cold =	
	(VA)	(VA)	(W)	(W)	
CMXX-FT	55	23	10,5	-	moulded IP65
CMXX-FT	-	-	-	14 / 19,7	

SPECIFICATIONS
pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number	
				min	max. (PS) air		
	(mm)	(m^3/h)	(l/min)		~ / =	hose	threaded
6" Tank System							
1"	25	17	283	0,35	8	**SCG357AExx** (1) (2)	**SCG357AFxx** (1) (2)
8" Tank System							
1 1/2"	40	46	768	0,35	8	**SCG357ANxx** (1) (2)	**SCG357AOxx** (1) (2)
10" Tank System							
2"	66	77	1290	0,35	8	**SCG357AVxx** (1) (2)	**SCG357AWxx** (1) (2)

(1) *Standard tank has round ends. For flat ends use suffix FE*
(2) *xx indicates the number of valves*

ORDERING

Example: Dimension code for a 4 valves tank system:

Tank diameter	6"
Operator	SC, 24V/DC
Pipe size	1"
Connection	Hose (see fig. 1: Connection Type)
Number of valves	4 pcs
Start and End distance	140 mm
Standard pitch	180 mm
Deviating pitch	Between valve no. 3 and no. 4 is position D (see fig. 1) 200 mm
Catalogue number	SCG357AE04 24V/DC
Dimension code	140180D200

ORDERING EXAMPLE TANK SYSTEM:

SCG357AE 04 (*) 24 V/DC + 140 180 D200

- D200 — deviating pitch
- 180 — standard pitch
- 140 — start & end dist.
- 24 V/DC — voltage
- (*) — tank end type
- 04 — no. of valves
- SCG357AE — catalogue no.

DIMENSIONS (mm)

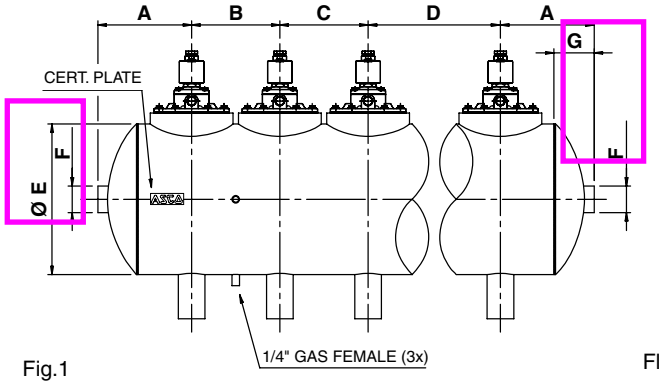
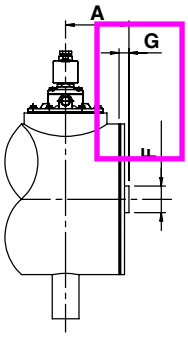
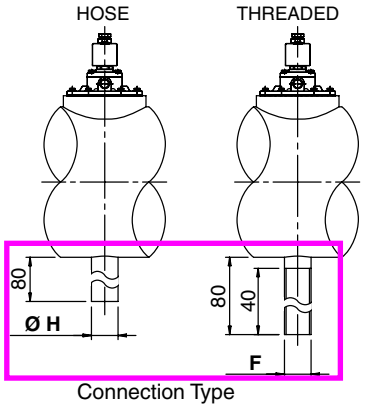


Fig.1



Flat ends (Suffix "**FE**")



Connection Type

tank diameter	fig.	A min. start distance (round)	A min. start distance (flat)	B / C / D minimum pitch (round)	B / C / D minimum pitch (flat)	A min. end distance (round)	A min. end distance (flat)	Ø E	F	G		Ø H
6"		140	105	120	120	140	105	168,3	G 1"	50	15	33,4
8"	1	170	118	160	160	170	118	218,1	G 1 1/2"	70	18	48,3
10"		205	133	185	185	205	133	273,0	G 2"	90	18	48,3

(✶) *For standard tank (round ends) use no suffix, for flat ends use suffix FE*

MOUNTING BRACKETS

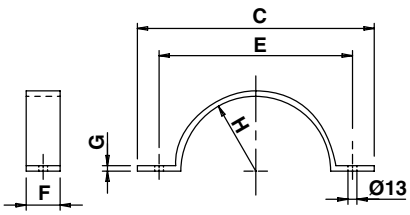


Fig.2 - Contra bracket

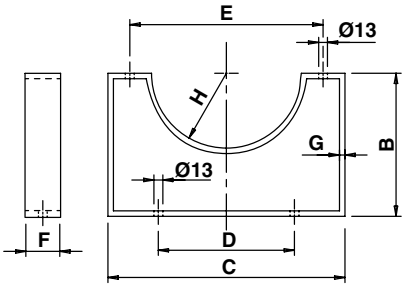


Fig.3 - Bracket

tank diameter	fig.	C	Ø E	F	G	H
6"		292	230	50	8	84
8"	2	348	284	50	8	110
10"		424	350	50	8	136

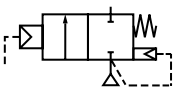
tank diameter	fig.	B	C	D	Ø E	F	G	H
6"		170	292	150	230	50	8	84
8"	3	210	348	200	284	50	8	110
10"		161	424	250	350	50	8	136

INSTALLATION

- Tank System can be mounted in any position. We can supply standard mounting brackets with each tank by specifying suffix MB behind the catalogue number (see figure 2 and 3)
- Installation / maintenance instructions and declaration of conformity are included with each tank system
- Spare part kits and coils are available

POWER PULSE VALVES

remote pilot
threaded or Quick Mount connection
3/4 to 1 1/2

NC 

2/2
Series
353

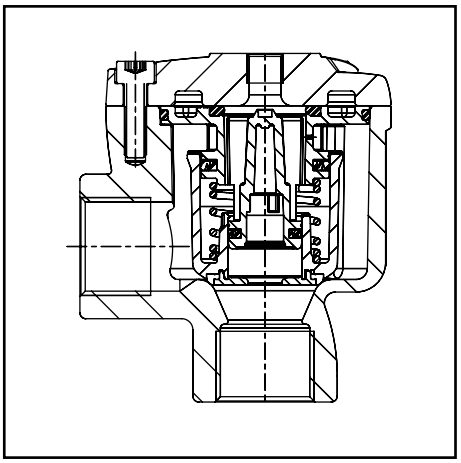
FEATURES

- *The piston cartridge pulse valves are especially designed for dust collector service applications, combining high flow, long life and extremely fast opening and closing to produce reliable and economical operation*
- *The angle bodies and special piston cartridge result in unique operating features required for dust collector service applications*
- *The high quality polyacetal (POM) piston cartridge guarantees a long operating life and a large temperature range*
- *The design with Quick Mount connections eliminates the time consuming thread cutting and sealing resulting in maximum flexibility while the valve will be anchored to the pipes*
- *Valves can be supplied according to ATEX Directive 94/9/EC for non-electrical equipment by using suffix GD*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0,3 - 8,5 bar [1 bar = 100kPa]
Ambient temperature range -20 to +85°C

fluid	temperature range (TS)	piston
air	-20 to +85°C	POM (polyacetal)



CONSTRUCTION

Body Aluminium
Bonnet Aluminium
Quick Mount clamps Steel
Bolts Steel
Sealings NBR (nitrile)
Piston/cartridge POM (polyacetal) / NBR (nitrile)

PILOT SOLENOID VALVES (2/2 NC function)

main pulse valve catalogue number	remote pilot connection	recommended executions		
		orifice size (mm)	manifold pilot valves in a box (IP65)	single pilot valves (IP20)
E353A810 **E353A820** **S353A710** **S353A720** **S353A810** **S353A820**	G 1/8	3,6	pilot box series 110 2 to 12 pilots 1/8	series 257

SPECIFICATIONS

pipe size	remote pilot connection	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number		Quick Mount clamps
					min.	max. (PS) air			
		(mm)	(m^3/h)	(l/min)		~/=	standard	ATEX dust II2G/D	
(G*) - Threaded pipe connection									
3/4	1/8	20	14	233	0,3	8,5	**E353A810**	**E353A810 GD**	**-**
1	1/8	25	23	383	0,3	8,5	**E353A820**	**E353A820 GD**	**-**
11/2	1/8	40	46	768	0,3	8,5	**E353A830**	**E353A830 GD**	**-**
(Ø) - Quick Mount connection on inlet									
3/4	1/8	20	14	233	0,3	8,5	**S353A810**	**S353A810 GD**	**C117-281**
1	1/8	25	23	383	0,3	8,5	**S353A820**	**S353A820 GD**	**C117-282**
11/2	1/8	40	46	768	0,3	8,5	**S353A830**	**S353A830 GD**	**C117-290**
(Ø) - Quick Mount connection on inlet & outlet									
3/4	1/8	20	14	233	0,3	8,5	**S353A710**	**S353A710 GD**	**C117-281**
1	1/8	25	23	383	0,3	8,5	**S353A720**	**S353A720 GD**	**C117-282**
11/2	1/8	40	46	768	0,3	8,5	**S353A730**	**S353A730 GD**	**C117-290**

OPTIONS

- Pilot boxes containing 2 to 12 pilot valves.
- Pilot valves can be equipped with explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards.
- Additional Quick Mount clamps for outlet connection, see "Specifications" table.

INSTALLATION

- The valves can be mounted in any position without affecting operation.
- Pipe connection identifier is: G*= combination thread according to ISO 228/1 and ISO 7/1 or Ø for Quick Mount.
- For Quick Mount types tightness is achieved by the O-ring sealing on the pipes (3/4"=Ø26,4 to 27,4 and 1"=Ø33,2 to 34,2 and 1 1/2"=Ø47,8 to 48,8) according to ISO 4200.
- When connecting piping or tubing to the G1/8 connection in the valve bonnet, the remote ASCO pilot valve should be mounted as close as possible to the main pulse valve. Connection tubing lengths of 3 meter or less have little effect on the pulse response. Installations with over 3 meter of tubing must be tested under actual operating conditions. Tubing with Ø 6 mm O.D. is recommended for all installations.
- Other pipe threads are available on request.
- Installation/maintenance instructions are included with each valve.
- Spare parts kit and replacement coils are available.

DIMENSIONS (mm), WEIGHT (kg)

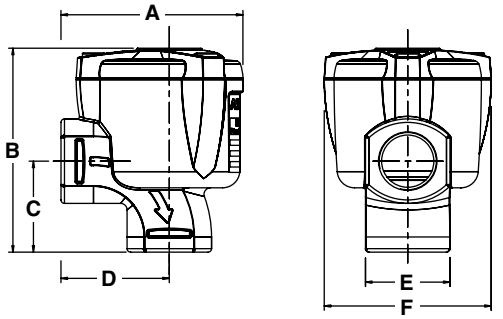


Fig. 1: Threaded type

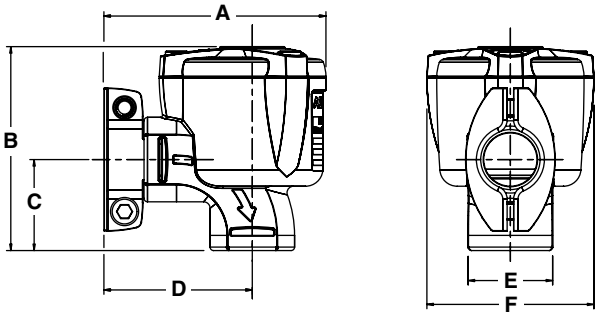


Fig. 2: Quick Mount type (inlet only)

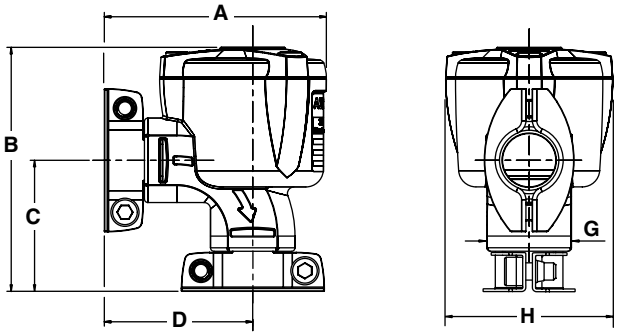


Fig. 3: Quick Mount type (inlet & outlet)

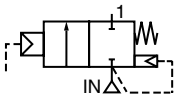
catalogue number	A	B	C	D	E	F	weight	(C)
E353A810 (GD)	84	94	42	50	39	77	0,42	Fig.1
E353A820 (GD)	96	100	51	62	46	77	0,53	Fig.1
E353A830 (GD)	121	127	60	71	62	112	1,07	Fig.1
S353A810 (GD)	103	94	42	69	39	77	0,50	Fig.2
S353A820 (GD)	115	100	51	81	46	77	0,59	Fig.2
S353A830 (GD)	146	127	60	97	62	112	1,27	Fig.2
S353A710 (GD)	103	113	61	69	39	77	0,58	Fig.3
S353A720 (GD)	115	119	70	81	46	77	0,65	Fig.3
S353A730 (GD)	146	153	86	97	62	112	1,27	Fig.3

(C) construction type

PULSE VALVES

single stage, remote pilot
threaded body or compression fitting
3/4 to 1 1/2

NC



2/2
Series
353

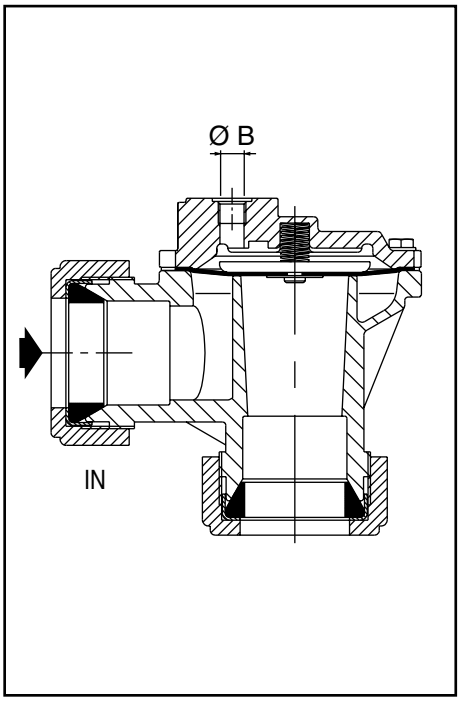
FEATURES

- *The diaphragm pulse valves are especially designed for dust collector service applications, combining high flow, long life and extremely fast opening and closing to provide reliable and economical operation*
- *The high flow, angle type bodies in combination with the special main diaphragm assemblies give the unique operating features required for dust collector service applications*
- *Integral compression fittings for fast, easy, secure installation*
- *Valves can be supplied according to ATEX Directive 94/9/EC for non-electrical equipment by using suffix GD*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0,35 - 8,5 bar [1 bar = 100kPa]
Ambient temperature range -40/-20 to +85°C (TPE/CR)

fluids	temperature range (TS)	diaphragms
air	-40 to +85°C -20 to +85°C	TPE (3/4 and 1) (thermoplastic polyester elastomer) CR (1 1/2) (chloroprene)



CONSTRUCTION

Body Aluminium
Spring Stainless steel
Diaphragm TPE (thermoplastic polyester elastomer) or CR (chloroprene)

PILOT SOLENOID VALVES (2/2 NC function)

main pulse valve catalogue number	remote pilot connection	recommended executions		
		orifice size (mm)	manifold pilot valves in a box (IP65)	single pilot valves (IP20)
G353A041 G353-055 G353A042 G353-056	G 1/8	3,6	pilot box series 110 2 to 12 pilots 1/8	series 257
G353A045 G353-066	G1/4	5,6	pilot box series **C20** 4 to 6 valves 1/4	series 262 / 272

SPECIFICATIONS

pipe size	remote pilot connection	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number		option FPM
					min.	max. (PS) air			
G	Ø B	(mm)				~ /=	standard	ATEX II2G/D	
G - Threaded pipe connection									
3/4	1/8	24	14	233	0,35	8,5	**G353A041**	**G353A041 GD**	**V**
1	1/8	27	17	283	0,35	8,5	**G353A042**	**G353A042 GD**	**V**
1 1/2	1/4	52	46	768	0,35	8,5	**G353A045**	**G353A045 GD**	**V**
Ø - Compression fitting pipe connection									
3/4	1/8	24	14	233	0,35	8,5	**G353-055**	**G353-055 GD**	**V**
1	1/8	27	17	283	0,35	8,5	**G353-056**	**G353-056 GD**	**V**
1 1/2	1/4	52	43	717	0,35	8,5	**G353-066**	**G353-066 GD**	**V**

OPTIONS

- Valves can also be supplied with FPM (fluorelastomer) diaphragms and seal materials. Use the appropriate optional suffix 'V' for identification
- Sequential controller for pilot solenoid valves
- Pilot boxes containing 2 to 12 pilot solenoid valves
- Pilot solenoid valves can be equipped with explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards

INSTALLATION

- The valves can be mounted in any position without affecting operation
- Threaded pipe connection is: G = G (ISO 228/1) or compression fittings
- When connecting piping or tubing to the G1/8 connection in the valve bonnet, the remote ASCO pilot valve should be mounted as close as possible to the main pulse valve. Connection tubing lengths of 3 meter or less have little effect on the pulse response. Installations with over 3 meter of tubing must be tested under actual operating conditions. Tubing with Ø 6 mm O.D. is recommended for all installations
- For compression fitting types tightness is achieved by the compressed gasket on the blow tube
- Other pipe threads are available on request
- Installation/maintenance instructions are included with each valve
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)

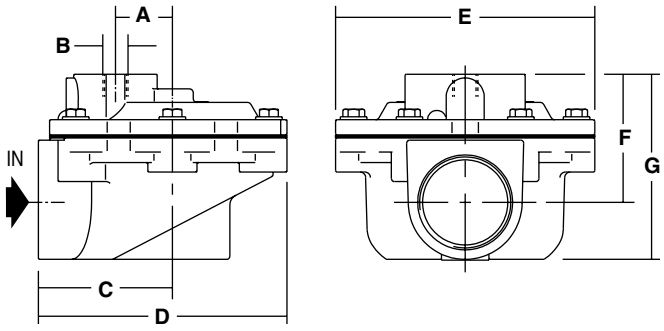


Fig.1: Threaded type

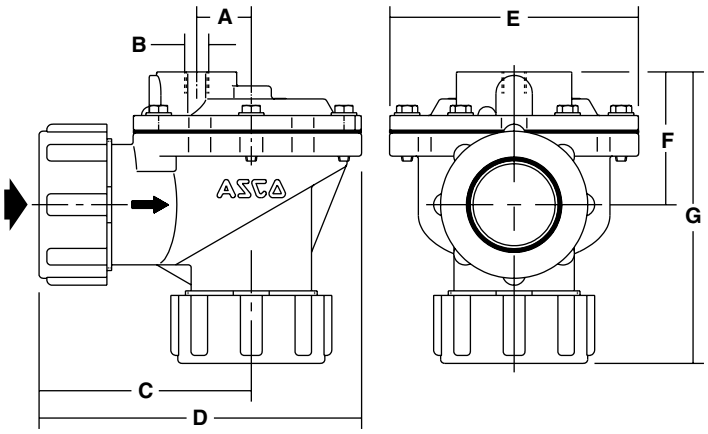


Fig.2: Compression fitting type

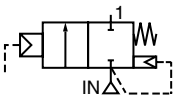
catalogue number	A	B	C	D	E	F	G	weight	(C)
G353A041 (GD)	-	G 1/8"	51	89	75	41	64	0,45	Fig.1
G353A042 (GD)	-	G 1/8"	51	89	75	41	64	0,40	Fig.1
G353A045 (GD)	30	G 1/4"	71	130	136	71	98	1,00	Fig.1
G353-055 (GD)	-	G 1/8"	88	125	75	47	109	0,58	Fig.2
G353-056 (GD)	-	G 1/8"	88	125	75	47	129	0,61	Fig.2
G353-066 (GD)	30	G 1/4"	117	177	136	73	161	1,33	Fig.2

(**C**) construction type

PULSE VALVES

dual stage, remote pilot
threaded body 1 1/2 to 3 or
compression fitting Ø 1 1/2

NC



2/2
Series
353

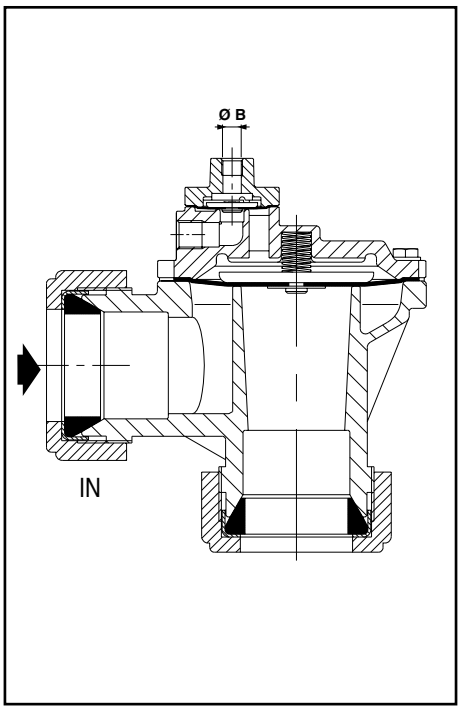
FEATURES

- *The pulse valves are especially designed for dust collector service applications, combining high flow, long life and extremely fast opening and closing to produce reliable and economical operation*
- *The high flow, angle type bodies in combination with the special main diaphragm assemblies give the unique operating features required for dust collector service applications*
- *Integral compression fittings for fast, easy, secure installation*
- *Valves can be supplied according to ATEX Directive 94/9/EC for non-electrical equipment by using suffix GD*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0,35 - 8,5 bar [1 bar = 100kPa]
Ambient temperature range -20 to +85°C

fluids	temperature range (TS)	diaphragm
air	-20 to +85°C	CR (chloroprene)



CONSTRUCTION

Body Aluminium
Springs Stainless steel
Diaphragms CR (chloroprene)

PILOT SOLENOID VALVES (2/2 NC function)

main pulse valves	remote pilot connection	recommended executions		
		orifice size (mm)	manifold pilot valves in a box (IP65)	single pilot valves (IP20)
G353A046 G353A063	G1/8	3,6	pilot box series **110** 2 to 12 valves 1/8	series 257
G353A048 G353A049 G353-058	G1/4	5,6	pilot box series **C20** 4 to 6 valves 1/4	–

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number		OPTION FPM
				min.	max. (PS) air			
	(mm)	(m^3/h)	(l/min)		~ /=	standard	ATEX II2G/D	
G - Threaded pipe connection								
1 1/2	52	46	768	0,35	8,5	**G353A046**	**G353A046 GD**	**V**
2	66	77	1290	0,35	8,5	**G353A048**	**G353A048 GD**	**V**
2 1/2	66	92	1540	0,35	8,5	**G353A049**	**G353A049 GD**	**V**
3	76	170	2833	1,0	6,0	**G353-058**(1)	**G353-058 GD**(1)	**V**
Ø - Compression fitting pipe connection								
1 1/2	52	43	717	0,35	8,5	**G353A063**	**G353A063 GD**	**V**

(1) Threaded pipe connections are external (male thread).

OPTIONS

- Valves can also be supplied with FPM (fluorelastomer) diaphragms and seal materials. Use the appropriate optional suffix letter for identification
- Sequential controller for pilot solenoid valves
- Pilot boxes containing 2 to 12 pilot solenoid valves
- Pilot solenoid valves can be equipped with explosionproof solenoids for hazardous locations according to "**ATEX**" and national standards

INSTALLATION

- The valves can be mounted in any position without affecting operation
- Threaded pipe connection is: G = G (ISO 228/1) or compression fittings
- When connecting piping or tubing to the G1/8 or G1/4 connection in the valve bonnet, the remote ASCO pilot valve should be mounted as close as possible to the main pulse valve. Connection tubing lengths of 3 meter or less have little effect on the pulse response. Installations with over 3 meter of tubing must be tested under actual operating conditions. Tubing with Ø 6 or Ø 8 mm O.D. is recommended for all installations
- For compression fitting types tightness is achieved by the co mpressed gasket on the blow tube
- Other pipe threads are available on request
- Installation/maintenance instructions are included with each valve
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)

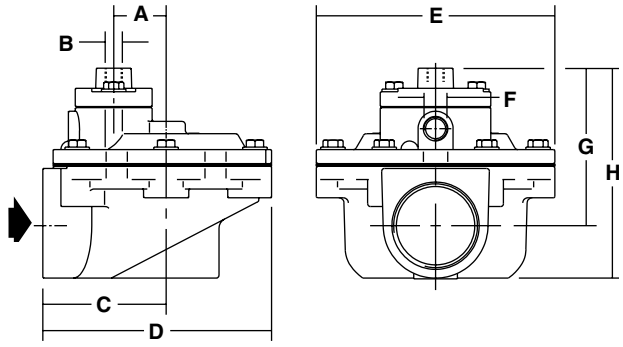


Fig.1 Threaded type

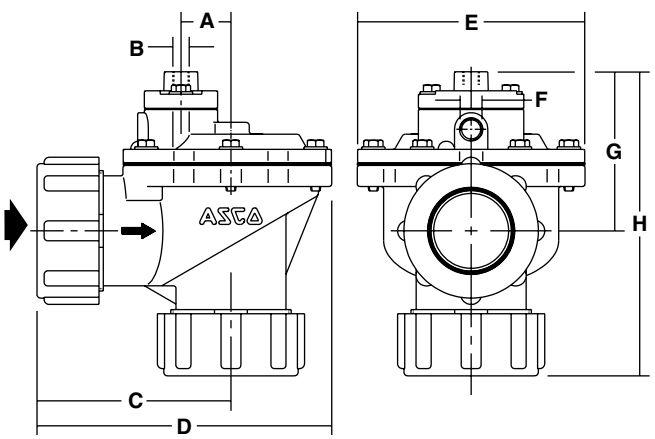


Fig.2 Compression fitting type

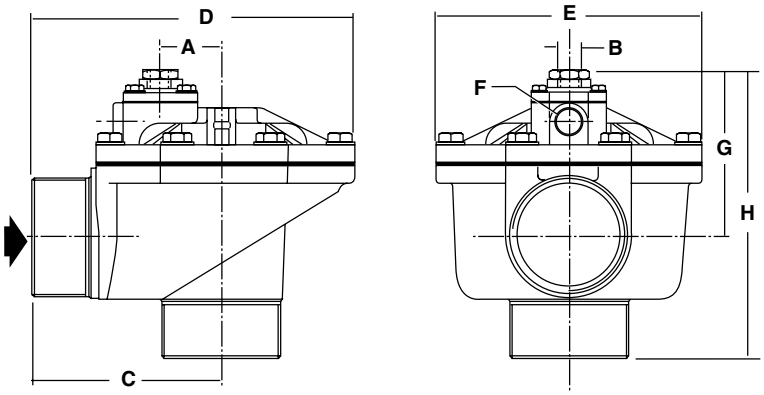


Fig. 3 External threaded type

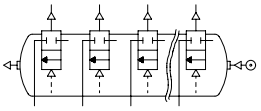
catalogue number	A	B	C	D	E	F	G	H	weight	(C)
G353A046 (GD)	30	G 1/8"	71	130	136	G 3/8"	90	120	1,10	Fig.1
G353A048 (GD)	30	G 1/4"	95	168	165	G 3/4"	121	166	2,60	Fig.1
G353A049 (GD)	30	G 1/4"	95	168	165	G 3/4"	121	166	2,30	Fig.1
G353-058 (GD)	48	G 1/4"	143	240	192	G 1/2"	121	214	3,70	Fig.3
G353A063 (GD)	30	G 1/8"	87	177	136	G 3/8"	96	183	1,43	Fig.2

(**C**) construction type

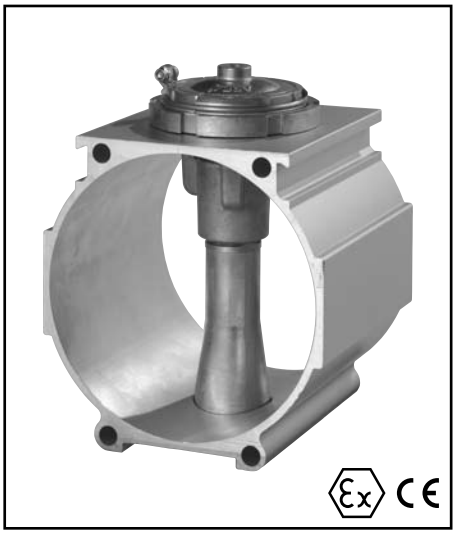
POWER PULSE TANK SYSTEM (Ø160)

remote pilot

1

NC 

2/2 Series **355**



FEATURES

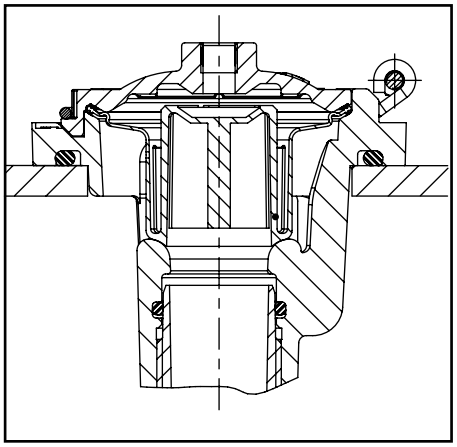
- *Power Pulse Tank System using aluminium profile and end covers with CE approval according to Directive 97/23/EC for Pressure Equipment*
- *Full immersed valve system with special springless piston/diaphragm design offers highest peak pressure and best flow performance operating features required for dust collector applications*
- *The high quality TPE piston/diaphragm guarantees a long operating life and a large temperature range*
- *Possibility to apply different combinations of pitch distances and upto 24 valves*
- *Easy to connect to other tank systems. Service connections for different accessories such as: filter regulator, pressure gauge, safety valve and automatic / manual drain valve*
- *Several blow pipe connections available, such as: Quick Mount, push-in, hose or threaded*

GENERAL

Differential pressure (PS)	0,3 to 8,5 bar [1 bar = 100 kPa]
Ambient temperature range	-20°C to +85°C

Tank System

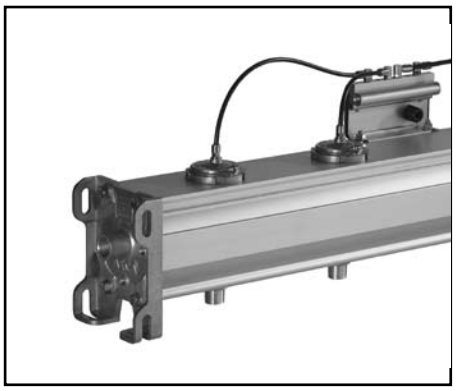
volume	0,20 dm³ per cm tank
recommended min. tank volume	10 dm³ (equals 500 mm tank length)
min. pitch distance	120 mm
maximum length	3000 mm
min. pulse time	50 ms



fluid	temperature range (TS)	piston/diaphragm
air	-20 to +100 °C	TPE (thermoplastic polyester elastomer)

CONSTRUCTION

Tank	Anodized aluminium
Adapter/body	Aluminium
Clipring	Stainless steel
Clamps	Stainless steel
Bolts (clamps)	Stainless steel
Sealings & disc	NBR (nitrile)
Piston/diaphragm	TPE (thermoplastic polyester elastomer)



RECOMMENDED PILOT VALVES AND BOXES (2/2 NC function)

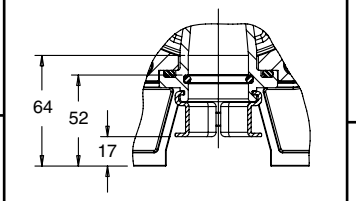
main pulse valve catalogue number	remote pilot valve connection	orifice size (mm)	pilot valve box (IP65)	single pilot valve (IP20)
E355AN . . **E355AO . .** **E355AP . .** **E355AQ . .**	G1/8	3,6	pilot box series **110** 2 to12 pilots 1/8	US E257A001 US E257A002 US E257A003

SPECIFICATIONS

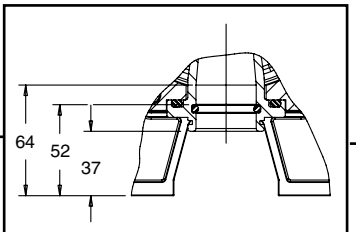
pipe size	remote pilot connection	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number
					min.	maximum (PS)	
	G	(mm)	(m^3/h)	(l/min)		air	
1"	1/8	25	23	384	0,30	8,5	**. E355A . . .**

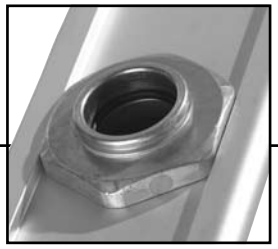
ORDERING INFORMATION - for example: F E355A N 06 + Dimension code (specified on next page)

F(1) — **E 3 5 5 A** — **N** — Quick mount with clamps (Ø 33,2-34,2)

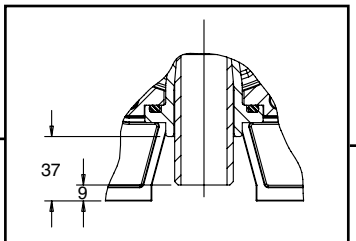


O — Push-in connection (Ø 33,2-34,2)

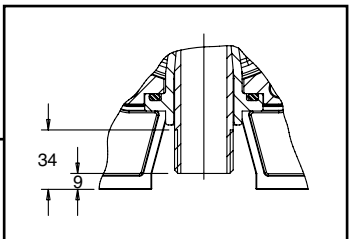


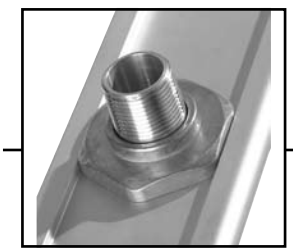


P — Male hose connection (Ø 33,5-33,9)

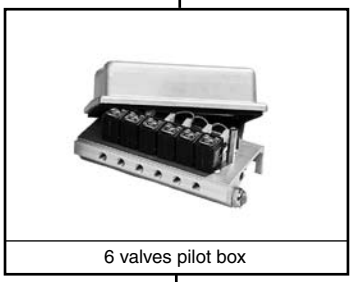


Q — Male threaded connection (R1")

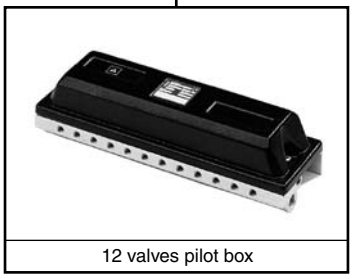




06(2)



6 valves pilot box



12 valves pilot box

(1) for a selection of pilot boxes see pages X003-29 to X003-38
(2) specify required number of valves between 01 and 24

ORDERING INFORMATION DIMENSION CODE

Start distance	A	(min. 110 mm)
Standard pitch	B/C/D	(min. 120 mm)
Deviating pitch	B/C/D	(min. 120 mm)
End distance	A	(min. 110 mm)

Example I: Dimension code for a 4 valves tank system:

Operator	Remote, pilotbox controlled 24V/DC without heating
Connection	Quick Mount
Number of valves	4 pcs
Start and End distance	110 mm
Standard pitch	170 mm
Deviating pitch	None
Catalogue number	F E355AN04
Dimension code	110170
Pilotbox	S G110A040 24V/DC
Complete order number	**F E355AN04 + 110170**

Example II: Dimension code for a 12 valves tank system:

Operator	Remote, controlled with external pilotbox
Connection	Thread
Number of valves	12 pcs
Start and End distance	130 mm
Standard pitch	140 mm
Deviating pitch	Between valve 3 and 4 is position D; 180 mm and between valve 7 and 8 is position H; 200 mm
Catalogue number	E355AQ12
Dimension code	130140D180H200
Complete order number	**E355AQ12 + 130140D180H200**

For assistance please consult our website: www.asconumatics.eu

DIMENSIONS (mm)

Fig. 1 (front view)

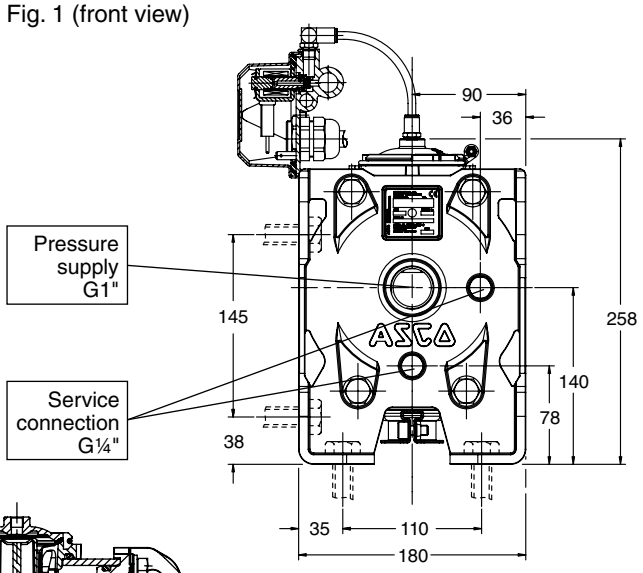
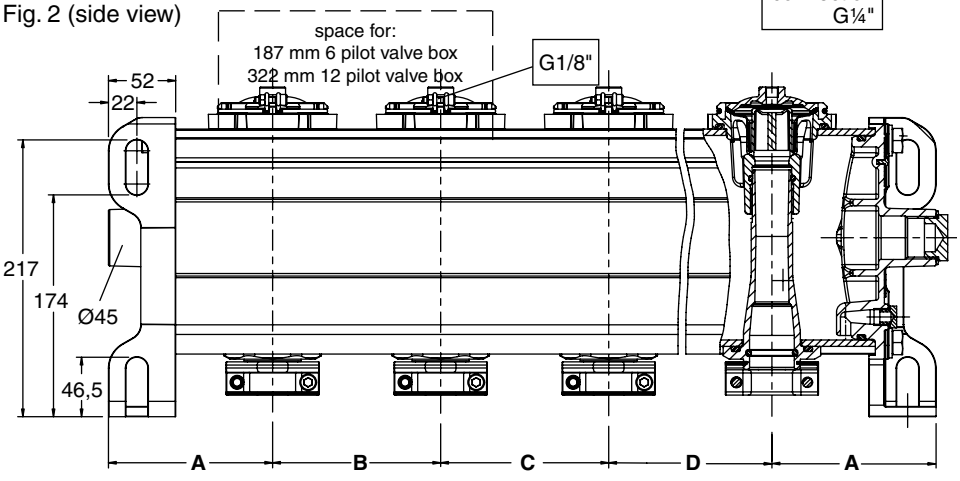


Fig. 2 (side view)



OPTIONS

- Special customized executions
- Pilot boxes containing 2 to 12 pilot valves
- Separate pilot valves can be equipped with explosionproof solenoids for hazardous locations according to "**ATEX**" (CENELEC) and national standards
- Separate Quick Mount clamps for outlet connection; kit number: **C132-679**

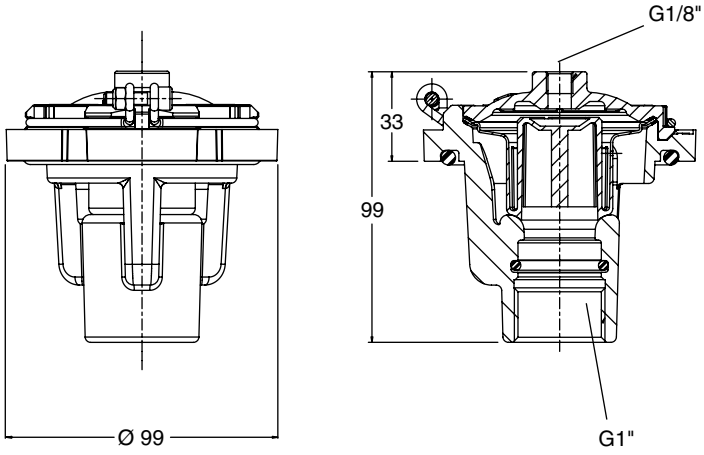
INSTALLATION

- Tank system can be mounted in any position using the standard brackets integrated in the end cap (M12 bolts recommended) without affecting operation
- Pipe connection identifier is: R = according to ISO 7/1, G = according to ISO 228/1 or Ø for other outlet connections
- For Quick Mount types tightness is achieved by the O-ring sealing on the pipe (1" = Ø33,2 to 34,2) according to ISO 4200
- When connecting piping or tubing to the G1/8 connection in the valve bonnet, the remote ASCO pilot valve should be mounted as close as possible to the main pulse valve. Connection tubing lengths of 3 meter or less have little effect on the pulse response. Installations with over 3 meter of tubing must be tested under actual operating conditions. Tubing with Ø 6 mm is recommended for all installations
- Installation/maintenance instructions are included with each tank system
- Spare valves, spare parts kits and coils are available

SEPARATE / SPARE POWER PULSE VALVES

FEATURES - *(same as for the tank system)*

DIMENSIONS (mm), **WEIGHT** (kg)



SPECIFICATIONS

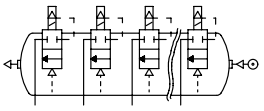
pipe size	catalogue number	weight
(G) Female threaded connection (ISO 228/1)		
1	**E353A231**	**0,428**

TANK SYSTEM

(Ø 6" - 8" - 10")

remote pilot

1 - 1 1/2 - 2

NC 

2/2
Series
357

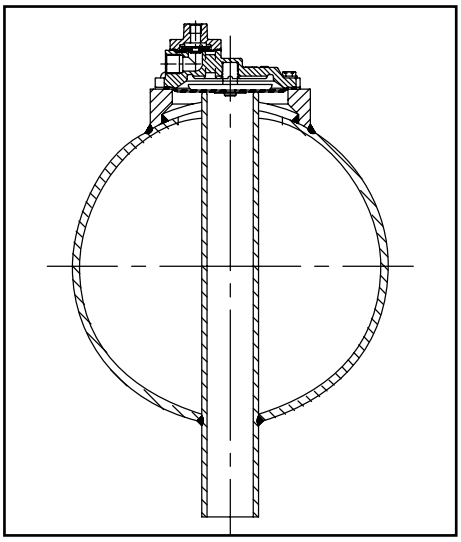
FEATURES

- *Immersion tank system using steel profile and welded end covers with CE approval according to Directive 87/404/EC*
- *Immersed valve system with special diaphragm design offers highest peak pressure and best flow performance operating features required for dust collector applications*
- *The high quality diaphragms are reinforced and wear resistant to guarantee a long operating life, even under harsh conditions*
- *Possibility to apply different combinations of pitch distances*
- *Service connections for different accessories such as: filter regulator, pressure gauge, safety valve and automatic/manual drain valve*
- *Available with hose and threaded blow pipe connections*

GENERAL

Differential pressure (PS) 0,35 to 8 bar [1 bar = 100kPa]
Ambient temperature range -10 to +80°C

fluid	temperature range (TS)	seal materials
air	-10 to +80°C	CR (chloroprene)



CONSTRUCTION

Tank Steel, grey
Bonnet Aluminium
Bolts Stainless stee
Sealing & Diaphragm NBR (nitrile) CR (chloroprene)

PILOT SOLENOID VALVES (2/2 NC function)

pipe size	main pulse valves	remote pilot connection	recommended executions		
			orifice size (mm)	manifold pilot valves in a box (IP 65)	single pilot valves (IP20)
1"	**G357AGxx** **G357AHxx**	G1/8	3,6	pilot box series **110** 2 to 12 valves 1/8	series 257
1 1/2"	**G357APxx** **G357AQxx**				
2"	**G357AYxx** **G357AZxx**	G1/4	5,6	pilot box series **C20** 4 to 6 valves 1/4	-

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number	
				min	max. (PS) air		
	(mm)	(m^3/h)	(l/min)		~ / =	hose	threaded
6" Tank System							
1"	25	17	283	0,35	8	**G357AGxx** (1) (2)	**G357AHxx** (1) (2)
8" Tank System							
1 1/2"	40	46	768	0,35	8	**G357APxx** (1) (2)	**G357AQxx** (1) (2)
10" Tank System							
2"	66	77	1290	0,35	8	**G357AYxx** (1) (2)	**G357AZxx** (1) (2)

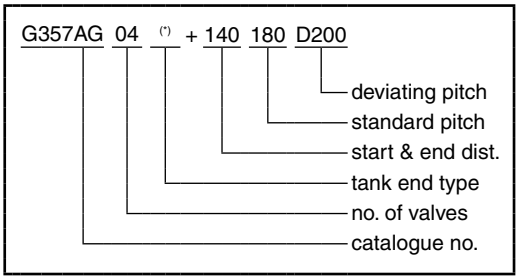
(1) *Standard tank has round ends. For flat ends use suffix FE*
(2) *xx indicates the number of valves*

ORDERING

Example: Dimension code for a 4 valves tank system:

Tank diameter	6"
Operator	Remote
Pipe size	1"
Connection	Hose (see fig. 1: Connection Type)
Number of valves	4 pcs
Start and End distance	140 mm
Standard pitch	180 mm
Deviating pitch	Between valve no. 3 and no. 4 is position D (see fig. 1) 200 mm
Catalogue number	G357AG04 24V/DC
Dimension code	140180D200

ORDERING EXAMPLE TANK SYSTEM:



DIMENSIONS (mm)

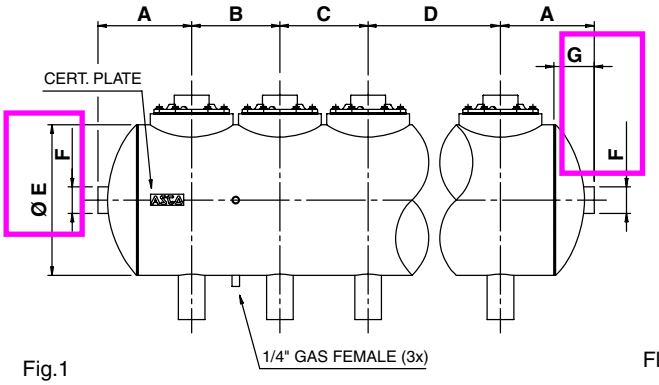
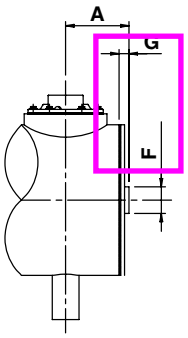
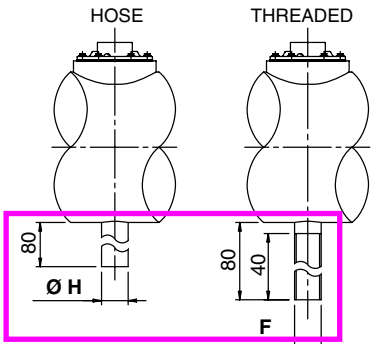


Fig.1



Flat ends (Suffix "**FE**")



Connection Type

tank diameter	fig.	A min. start distance		B / C / D minimum pitch		A min. end distance		Ø E	F	G		Ø H
		(round)	(flat)	(round)	(flat)	(round)	(flat)					
6"		140	105	120	120	140	105	168,3	G 1"	50	15	33,4
8"	1	170	118	160	160	170	118	218,1	G 1 1/2"	70	18	48,3
10"		205	133	185	185	205	133	273,0	G 2"	90	18	48,3

(✶) *For standard tank (round ends) use no suffix, for flat ends use suffix FE*

MOUNTING BRACKETS

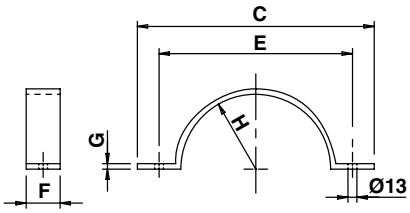


Fig.2 - Contra bracket

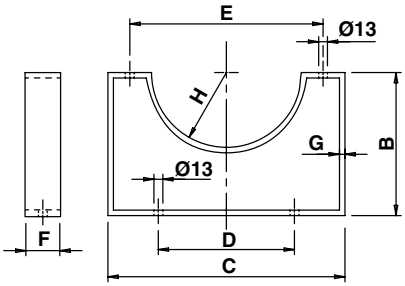


Fig.3 - Bracket

tank diameter	fig.	C	Ø E	F	G	H
6"		292	230	50	8	84
8"	2	348	284	50	8	110
10"		424	350	50	8	136

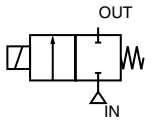
tank diameter	fig.	B	C	D	Ø E	F	G	H
6"		170	292	150	230	50	8	84
8"	3	210	348	200	284	50	8	110
10"		161	424	250	350	50	8	136

INSTALLATION

- Tank System can be mounted in any position. We can supply standard mounting brackets with each tank by specifying suffix MB behind the catalogue number (see figure 2 and 3)
- Installation / maintenance instructions and declaration of conformity are included with each tank system
- Spare part kits and coils are available

PILOT VALVE BOXES

containing 2 to 12 valves
2/2 normally closed, direct operated
1/8

NC 

2/2
Series
110

CE

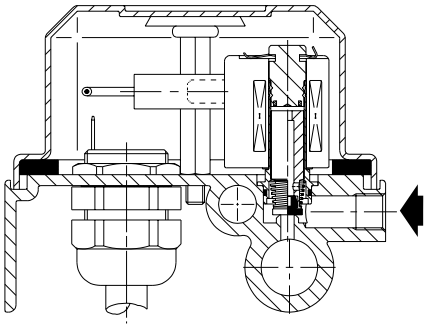
FEATURES

- *Compact pilot boxes with direct operated, integrated pilot valves*
- *Especially designed for the remote control of pulse valves (series 353)*
- *Valve seats are integrated in base plate*
- *Common exhaust connection for just 1 or 2 (G 3/8") silencers*
- *Built-in heating elements for trouble free operation at low ambient temperatures*
- *Degree of protection: IP 65*
- *Facilities for integrated quick fittings*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0 to 8,5 bar [1 bar = 100kPa]
Response times 5 - 25 ms

fluid	temperature range (TS)	seal material
air	-20 to +80°C	NBR (nitrile)



CONSTRUCTION

Base-plate Anodised aluminium
Cover ABS (polysterene) UV stabilized
Core tube Brass
Core and plugnut Stainless steel
Spring Stainless steel
Disc NBR (nitrile)
Shading coil Copper
Coil insulation class F
Electrical connection Spades according to DIN 46244

ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) 24V
AC (~) 24V - 115V - 230V/50Hz

coil type	nominal power ratings				ambient temperature range (2)	protection
	inrush ~	holding ~		cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
UCM22-FI (1)	20,4	14	10	22	-40 to +85	moulded

SPECIFICATIONS

number of pilot valves	pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number for the boxes (2)		
					min.	maximum (PS) air	without heating	1 heating element (3)	2 heating elements (3)
	G	(mm)	(m^3/h)	(l/min)		~/=			
2	1/8	3,6	0,35	5,8	0	8,5	**S G110A020**	**S G110A021**	**-**
3							**S G110A030**	**S G110A031**	**-**
4							**S G110A040**	**S G110A041**	**-**
5							**S G110A050**	**S G110A051**	**-**
6							**S G110A060**	**S G110A061**	**-**
7	1/8	3,6	0,35	5,8	0	8,5	**S G110A070**	**S G110A071**	**S G110A072**
8							**S G110A080**	**S G110A081**	**S G110A082**
9							**S G110A090**	**S G110A091**	**S G110A092**
10							**S G110A100**	**S G110A101**	**S G110A102**
11							**S G110A110**	**S G110A111**	**S G110A112**
12							**S G110A120**	**S G110A121**	**S G110A122**

(1) Intermittent duty, Relative Duty Time is 10%. Max on time is 1 min.
(2) Minimum ambient temperature without heating elements : 0°C
Minimum ambient temperature with 1 heating element : -40°C (2 to 6 pilots)
: -15°C (7 to 12 pilots)
Minimum ambient temperature with 2 heating elements : -40°C (7 to 12 pilots)
(3) Heating element(s) 220-240 VDC / VAC 50-60 Hz standard, for other voltages see ordering information.
Heating element(s) rating 80 watt each.

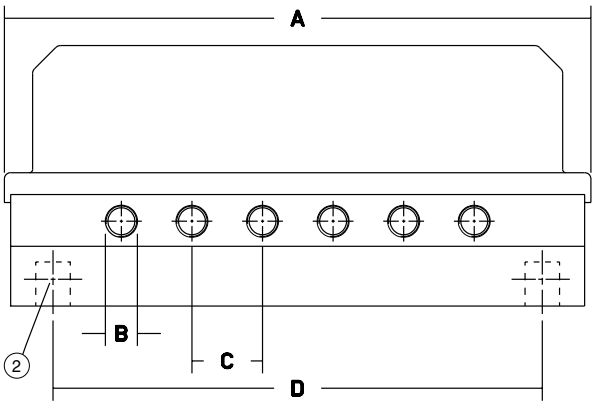
OPTIONS

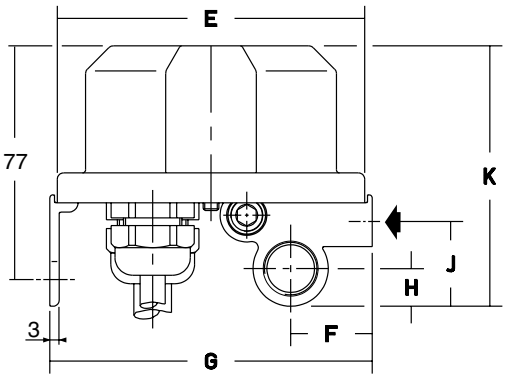
- Pilot boxes with metal cover for harsh conditions and dust approved to ATEX heavy duty applications (prefix: **WP**)
- Integrated quick fittings for 6 or 8 mm tubes
- Special customer adapted executions

INSTALLATION

- The pilot boxes can be mounted in any position without affecting operation
- Pipe connections are: G 1/8 according to ISO 228 for pilot connection
  G 3/8 according to ISO 228 for common exhaust
- Cable entries: control cable on box with 2 - 6 pilot valves : cable Ø 10 - 14 mm
  control cable on box with 7 - 12 pilot valves : cable Ø 13 - 18 mm
  connection cable heating element : cable Ø 5 - 10 mm
- Installation/maintenance instructions are included with each pilot box
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)





ORDERING INFORMATION

(WP) S G110 A 12 0 230/50

Volts/ Hz

Optional execution
0 = no heating element
1 = 1 heating element 230V/50Hz
2 = 2 heating elements 230V/50Hz
3 = 1 heating element 24V DC
4 = 2 heating elements 24V DC
5 = 1 heating element 115V/50Hz
6 = 2 heating elements 115V/50Hz

Number of pilots
02 = 2 pilot valves
03 = 3 pilot valves etc. (max. 12)

Change letter

Basic number
G110 = threaded ports
G120 = 6 mm quick fitting + TPL 22467
G130 = 8 mm quick fitting + TPL 22386

Electrical connection
spade terminals 6,3 x 0,8

Prefix (optional)
WP: Waterproof IP 65
metal enclosure and cover

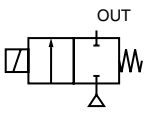
number of pilot valves	A	B	C	D	E	F	G	H	J	K	weight (1)
2 to 6	187	G 1/8	22,5	156	98	26	103	12	27	83	1
7 to 12	322	G 1/8	22,5	266	98	26	103	12	27	83	2,2

(1) incl. coil and connector
(2) mounting: 2 holes Ø10 with pitch D

PILOT VALVE BOXES

for explosive atmospheres, zone 22
II 3 D IP65 T85°C to T200°C
2 to 12 valves

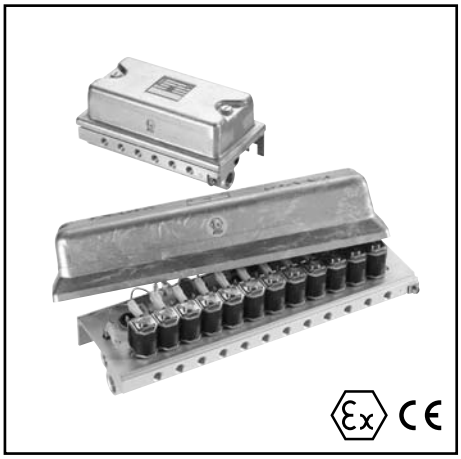
NC



2/2
Series
110

FEATURES

- *Pilot box intended for use in potentially explosive dusty atmospheres, according to Directive ATEX 94/9/EC*
- *Compliance with the Essential Health and Safety Requirements has been assured by European Standards EN 50014, EN 50281-1-1 and EN 13463-1*
- *Containing 2 to 12 valves, 2/2 normally closed, direct operated*
- *Common exhaust connection for 1 or 2 (G 3/8") silencers*
- *Degree of protection: IP65*
- *Facilities for integrated quick fittings*
- *The components satisfy all relevant EC directives*



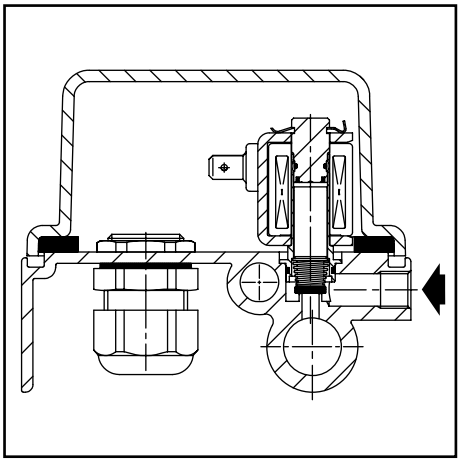
GENERAL

Differential pressure (PS) 0 to 8,5 bar [1 bar = 100kPa]
Response times 5 - 25 ms

fluid	temperature range (TS)	seal material
air	-20 to +80°C	NBR (nitrile)

CONSTRUCTION

Base-plate Anodised aluminium
Cover Aluminium
Core tube Brass
Core and plugnut Stainless steel
Spring Stainless steel
Disc NBR (nitrile)
Shading coil Copper
Coil insulation class F
Electrical connection Spades according to DIN 46244



ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) 24V; AC (~) 24V - 115V - 230V/50Hz

coil type	nominal power ratings				ambient temperature range (2)	protection
	inrush ~	holding ~		cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
UCM22-FI (1)	20,4	14	10	22	-40 to +75	moulded

TEMPERATURE CLASSIFICATION TABLES

AC (~) Solenoids

power level (watt)	isolation class	maximum ambient °C surface temperature		
		85°C	100°C	135°C
10,0	F	40°C	60°C	75°C

DC (=) Solenoids

power level (watt)	isolation class	maximum ambient °C surface temperature		
		85°C	100°C	135°C
22,0	F	40°C	60°C	75°C

SPECIFICATIONS

number of pilot valves	pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)		catalogue number for ATEX approved boxes (2)		
					min.	maximum (PS) air	without heating	1 heating element (3)	2 heating elements (3)
	G	(mm)	(m^3/h)	(l/min)		~/=			
2	1/8	3,6	0,35	5,8	0	8,5	WPSDU G110A020	WPSDU G110A021	-
3							WPSDU G110A030	WPSDU G110A031	-
4							WPSDU G110A040	WPSDU G110A041	-
5							WPSDU G110A050	WPSDU G110A051	-
6							WPSDU G110A060	WPSDU G110A061	-
7	1/8	3,6	0,35	5,8	0	8,5	WPSDU G110A070	WPSDU G110A071	WPSDU G110A072
8							WPSDU G110A080	WPSDU G110A081	WPSDU G110A082
9							WPSDU G110A090	WPSDU G110A091	WPSDU G110A092
10							WPSDU G110A100	WPSDU G110A101	WPSDU G110A102
11							WPSDU G110A110	WPSDU G110A111	WPSDU G110A112
12							WPSDU G110A120	WPSDU G110A121	WPSDU G110A122

(1) Intermittent duty, Relative Duty Time is 10%. Max on time is 1 min.
(3) Heating element(s) 220-240 VDC / VAC 50-60 Hz standard, for other voltages see ordering information. Heating element(s) rating 80 watt each.

(2) Minimum ambient temperature without heating elements: 0°C
Minimum ambient temperature with 1 heating element : -40°C (2 to 6 pilots)
: -15°C (7 to 12 pilots)
Minimum ambient temperature with 2 heating elements : -40°C (7 to 12 pilots)

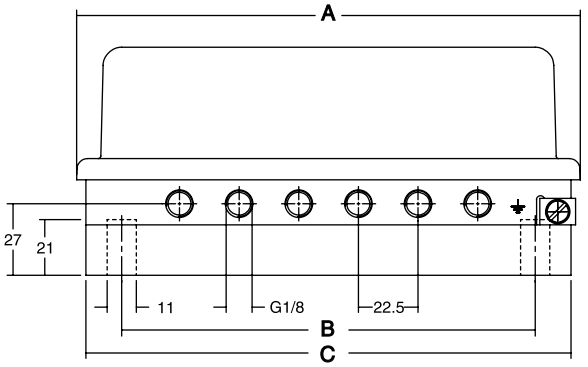
OPTIONS

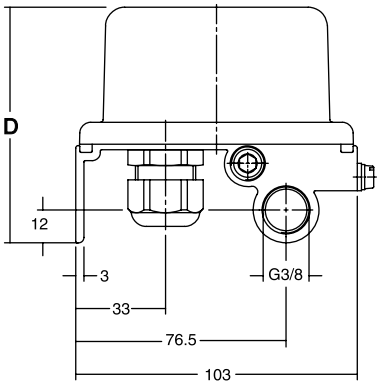
- Integrated quick fittings for 6 or 8 mm tubes
- Special customer adapted executions

INSTALLATION

- The pilot boxes can be mounted in any position without affecting operation
- Pipe connections are: G 1/8 according to ISO 228 for pilot connection
  G 3/8 according to ISO 228 for common exhaust
- Cable entries: control cable on box with 2 - 6 pilot valves : cable Ø 7 - 12 mm
  control cable on box with 7 - 12 pilot valves : cable Ø 9 - 16 mm
  connection cable heating element : cable Ø 5 - 10 mm
- Installation/maintenance instructions are included with each pilot box
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)





number of pilot valves	A	B	C	D
2 to 6	190	156	183	86
7 to 12	328	266	318	95

ORDERING INFORMATION

WP S DU G110 A 12 0 230/50

Volts/ Hz

Optional execution
0 = no heating element
1 = 1 heating element 230V/50Hz
2 = 2 heating elements 230V/50Hz
3 = 1 heating element 24V DC
4 = 2 heating elements 24V DC
5 = 1 heating element 115V/50Hz
6 = 2 heating elements 115V/50Hz

Number of pilots
02 = 2 pilot valves
03 = 3 pilot valves etc. (max. 12)

Change letter

Basic number
G110 = threaded ports
G120 = 6 mm quick fitting + TPL 22467
G130 = 8 mm quick fitting + TPL 22386

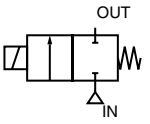
Approval according to
Directive ATEX 94/9/EC

Electrical connection
spade terminals 6,3 x 0,8

Prefix (optional)
WP: Waterproof IP 65
metal enclosure and cover

PILOT VALVE BOXES

containing 4 to 6 valves
2/2 normally closed, direct operated
1/4

NC 

2/2
Series
C20

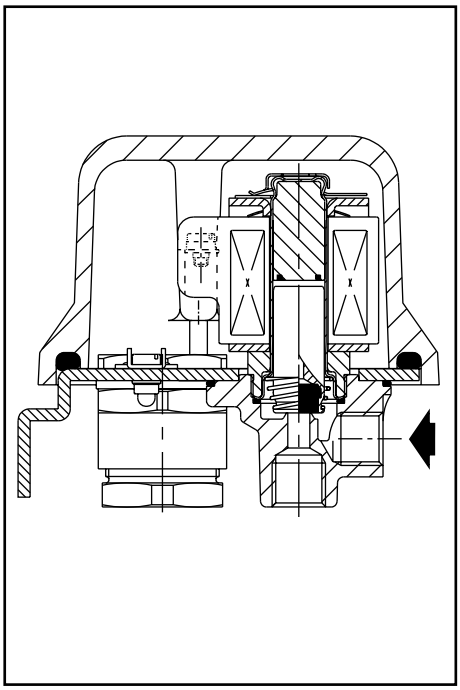
FEATURES

- *Compact pilot boxes with direct operated, integrated pilot valves*
- *Especially designed for the remote control of pulse valves (series 353)*
- *Pilot valves are assembled in base plate*
- *Heating element for trouble free operation at low ambient temperatures*
- *Class of protection: IP 65*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0 - 7 bar [1 bar = 100kPa]
Response times 5 - 25 ms

fluid	temperature range (TS)	diaphragms
air	-20 to +80°C	NBR (nitrile)



CONSTRUCTION

Base-plate Steel (zinc plated)
Cover Cast-aluminium
Core tube Stainless steel
Core and plugnut Stainless steel
Spring Stainless steel
Disc NBR (nitrile)
Pilot body Brass
Shading coil Copper
Coil insulation class F
Electrical connection Coil with screw terminal

ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) 24V
AC (~) 24V - 115V - 230V/50Hz

coil type	nominal power ratings				ambient temperature range (2)	protection
	inrush ~	holding ~		cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
SMXX-FB	56	35	16,7	-	-15 to +85	moulded
SMXX-FI (1)	-	-	-	30	-15 to +85	moulded

SPECIFICATIONS

number of pilot valves	pipe size	orifice size	flow coefficient kv		operating pressure differential (bar)		catalogue number for boxes (2)	
					min.	maximum (PS)		
						air	without heating	with 1 heating element (3)
	Rp	(mm)	(m^3/h)	(l/min)		~/=		
4 5 6	1/4	5,6	0,71	11,8	0	7	**C204-220** **C205-220** **C206-220**	**C204-221** **C205-221** **C206-221**

(1) Intermittent duty, Relative Duty Time is 10%. Max on time 1 min.
(2) Without heating elements: minimum ambient temperature 0°C: with one heating element: -15°C
(3) Heating element: refer to "Ordering Information". Heating element rating: 80 watt.

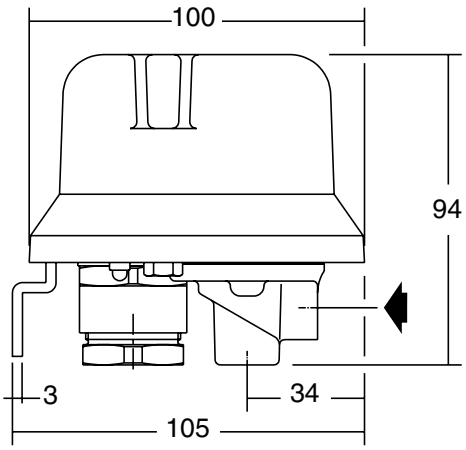
OPTIONS

- Heating element for low ambient temperatures
- Special customer adapted executions on request

INSTALLATION

- The pilot boxes can be mounted in any position without affecting operation
- Pipe connections are: Rp 1/4 according to ISO 7/1 for pilot connection
- Cable entries: control cable on box : cable Ø 13 - 18 mm
  connection cable heating element : cable Ø 6 - 12 mm
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)



ORDERING INFORMATION

C20 6 - 2 2 0 230/50

Volts / Hz

Optional execution
0 = no heating element
1 = element with same voltage as coils. If coil voltage deviates from heating element voltage, please consult us for exact codification

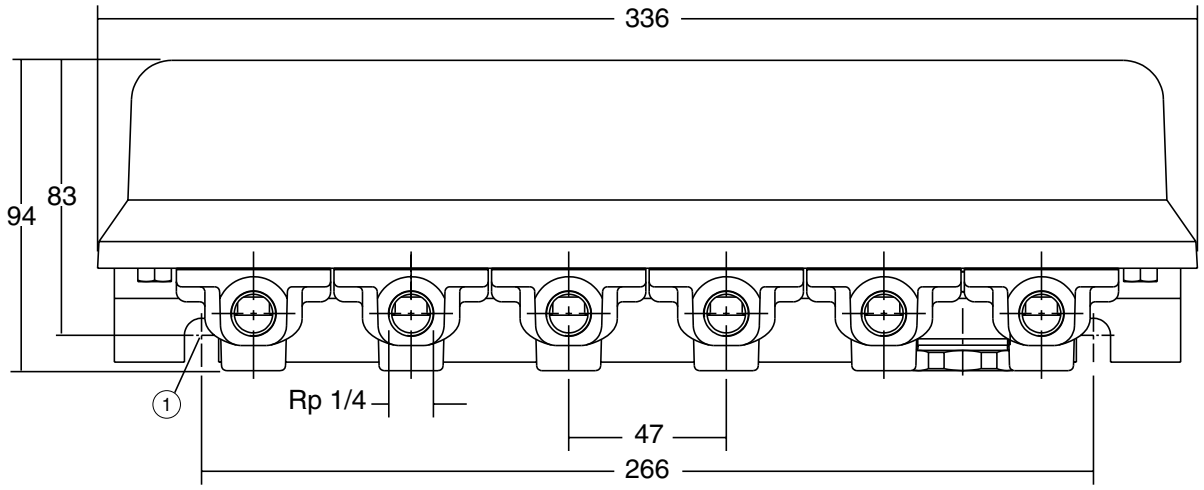
Pipe size Rp 1/4

Coil type only SMXX

Change letter

Number of pilots
4 = 4 pilot valves
5 = 5 pilot valves
6 = 6 pilot valves

Basic number C20

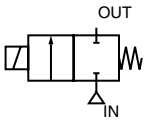


(1) Mounting : 2 holes Ø 10 with pitch D

pipe connections		weight
C204		3,7
C205	Rp 1/4	4,1
C206		4,6

PILOT VALVE BOXES

for explosive atmospheres, zone 22
II 3 D IP65 T85°C to T200°C
4 to 6 valves

NC 

2/2 Series **C20**

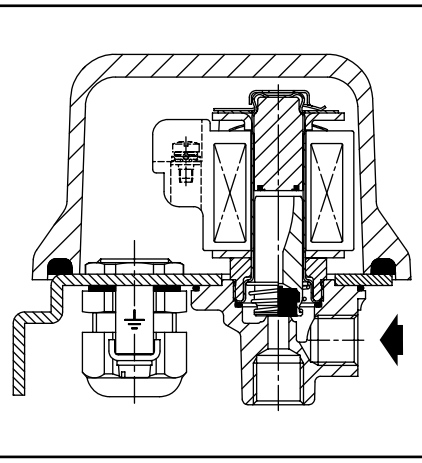
FEATURES

- *Pilot box intended for use in potentially explosive dusty atmospheres, according to Directive ATEX 94/9/EC*
- *Compliance with the Essential Health and Safety Requirements has been assured by European Standards EN 50014, EN 50281-1-1 and EN 13463-1*
- *Containing 4 to 6 valves, 2/2 normally closed, direct operated*
- *Pilot valves are assembled in base plate*
- *Heating element for trouble free operation at low ambient temperatures*
- *Class of protection: IP65*
- *The components satisfy all relevant EC directives*

GENERAL

Differential pressure (PS) 0 - 7 bar [1 bar = 100kPa]
Response times 5 - 25 ms

fluid	temperature range (TS)	seal material
air	-20 to +80°C	NBR (nitrile)



CONSTRUCTION

Base-plate	Steel (zinc plated)
Cover	Aluminium
Core tube	Stainless steel
Core and plugnut	Stainless steel
Spring	Stainless steel
Disc	NBR (nitrile)
Pilot body	Brass
Shading coil	Copper
Coil insulation class	F
Electrical connection	Coil with screw terminal

ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) 24V
AC (~) 24V - 115V - 230V/50Hz

coil type	nominal power ratings				ambient temperature range (2)	protection
	inrush ~	holding ~		cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
SMXX-FB	56	35	16,7	-	-15 to +75	moulded
SMXX-FI (1)	-	-	-	30	-15 to +75	moulded

TEMPERATURE CLASSIFICATION TABLES

AC (~) Solenoids

power level (watt)	isolation class	maximum ambient °C surface temperature		
		85°C	100°C	135°C
16,7	F	40°C	60°C	75°C

DC (=) Solenoids

power level (watt)	isolation class	maximum ambient °C surface temperature		
		85°C	100°C	135°C
30,0	F	40°C	60°C	75°C

SPECIFICATIONS

number of pilot valves	pipe size	orifice size	flow coefficient kv		operating pressure differential (bar)		catalogue number for ATEX approved boxes (2)	
					min.	maximum (PS) air	without heating	with 1 heating element (3)
	Rp	(mm)	(m^3/h)	(l/min)		~/=		
4 5 6	1/4	5,6	0,71	11,8	0	7	**DU C204-220** **DU C205-220** **DU C206-220**	**DU C204-221** **DU C205-221** **DU C206-221**

(1) Intermittent duty, Relative Duty Time is 10%. Max on time 1 min.
(2) Without heating elements: minimum ambient temperature 0°C: with one heating element: -15°C
(3) Heating element: refer to "Ordering Information". Heating element rating: 80 watt.

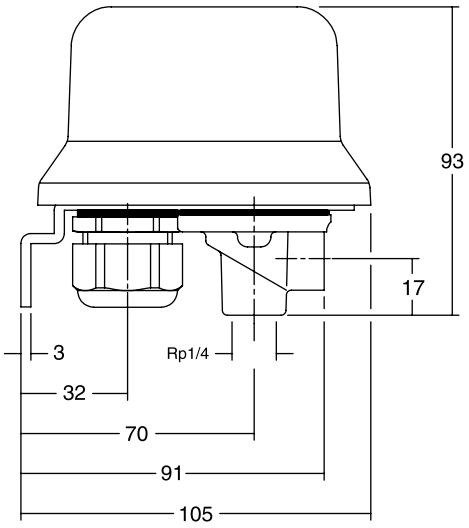
OPTIONS

- Heating element for low ambient temperatures -40°C
- Special customer adapted executions on request

INSTALLATION

- The pilot boxes can be mounted in any position without affecting operation
- Pipe connections are: Rp 1/4 according to ISO 7/1 for pilot connection
- Cable entries: control cable on box : cable Ø 9 - 16 mm
  connection cable heating element : cable Ø 7 - 12 mm
- Spare parts kit and replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)



ORDERING INFORMATION

DU C20 6 - 2 2 0 230/50

Volts / Hz

Optional execution
0 = no heating element
1 = element with same voltage as coils. If coil voltage deviates from heating element voltage, please consult us for exact codification

Pipe size Rp 1/4

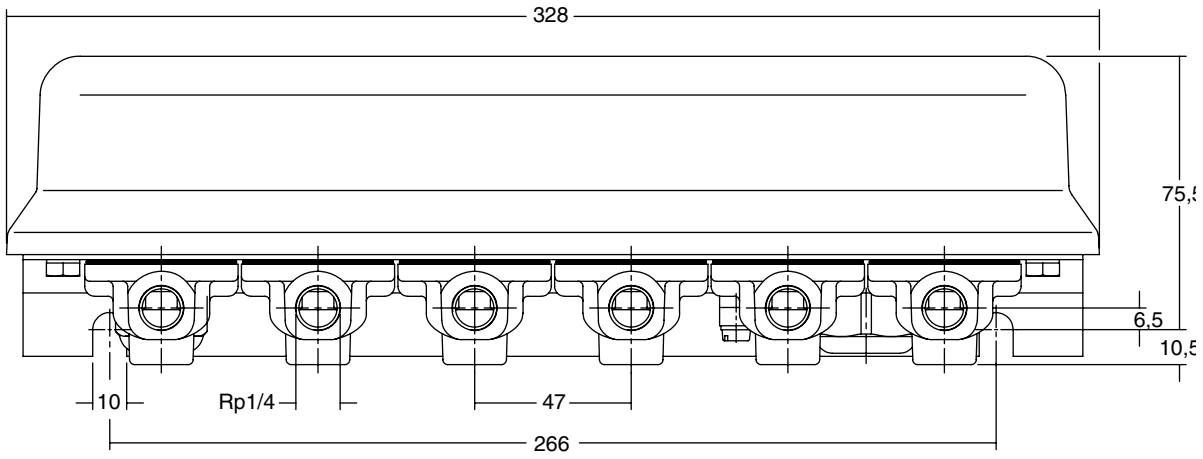
Coil type only SMXX

Change letter

Number of pilots
4 = 4 pilot valves
5 = 5 pilot valves
6 = 6 pilot valves

Basic number C20

Approval according to Directive ATEX 94/9/EC



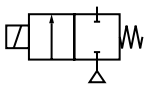
pipe connections		weight
C204		3,7
C205	Rp 1/4	4,1
C206		4,6

All leaflets are available on: **www.asconumatics.eu**

PILOT VALVES

normally closed, direct operated
threaded body, 1/8 and M10
Ø6 mm push-in fitting

NC



2/2
Series
257

FEATURES

- *Two way NC pilot valves for dust collector service*
- *Normally closed direct acting*
- *Rugged forged brass body construction*
- *Designed for panel mounting*
- *Compact, low weight construction*
- *The components satisfy all relevant EC directives*

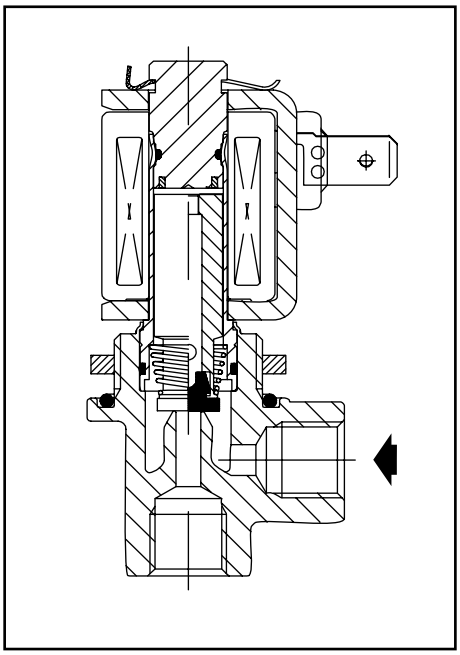
GENERAL

Differential pressure (PS) 0 - 8,5 bar [1 bar = 100kPa]
Response times 8 ms

fluids	temperature range (TS)	seal material
air	0 to +75°C	NBR (nitrile)

CONSTRUCTION

Body Brass
Core tube Stainless steel
Core and plugnut Stainless steel
Springs Stainless steel
Shading coil Copper
Connection Spades 2x DIN-46244 (A 6.3x0.8) or leaded coil 460 mm



ELECTRICAL CHARACTERISTICS

Standard voltages DC (=) : 24V
(Other voltages and 60 Hz on request) AC (~) : 24V - 115V - 230V / 50 Hz

coil type	nominal power ratings				ambient temperature range	protection
	inrush ~	holding ~		hot/cold =		
	(VA)	(VA)	(W)	(W)	(°C)	
UCM22-FI (1)	20,4	13,6	10	15/22	0 to +75	IP00

SPECIFICATIONS

pipe connection		orifice size	flow coefficient Kv		operating pressure differential (bar)			coil type		catalogue number coil connection	
					min	maximum (PS)					
inlet	outlet	(mm)	(m^3/h)	(l/min)		~	=	~	=	spades	leaded
Threaded pipe connection											
Rp 1/8	Rp 1/8	3,6	0,35	5,8	0	8,5	8,5	UCM22-FI	UCM22-FI	**US E257A001**	**UL E257A001**
Integrated push-in fitting											
Ø 6mm	Rp 1/8	3,6	0,35	5,8	0	8,5	8,5	UCM22-FI	UCM22-FI	**US E257A002**	**UL E257A002**
Threaded inlet for compression fitting for 6 mm nut + olive (Legris)											
M10 x 1,0	Rp 1/8	3,6	0,35	5,8	0	8,5	8,5	UCM22-FI	UCM22-FI	**US E257A003**	**UL E257A003**

(1) Intermittent duty, Relative Duty Time is 10%. Max. on time 1 min.

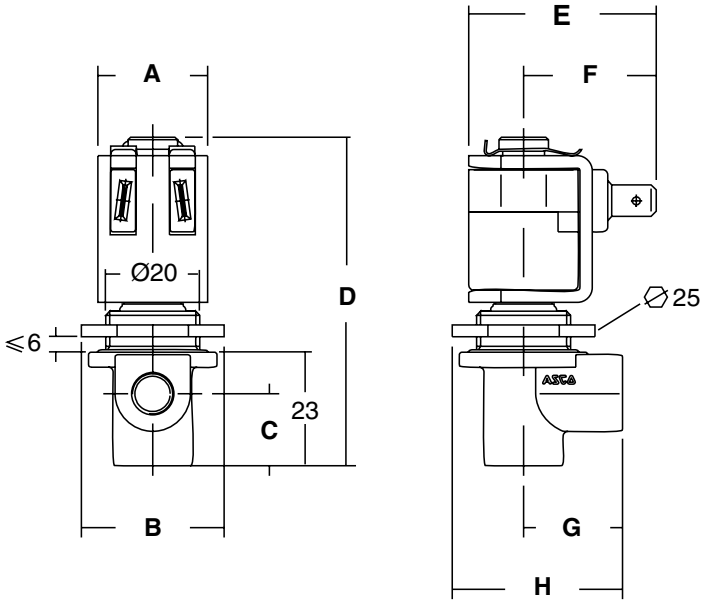
OPTIONS

- Epoxy moulded leaded coils or coils with spade plug connector (3 x DIN-46244)
- Pipe connection E = Rp (ISO 7/1) or compression type fitting inlet
- Pilot valves can be equipped with explosion proof solenoids for hazardous locations according to "**ATEX**" and national standards

INSTALLATION

- The solenoid valves are open frame constructions, designed for panel mount or stand alone and can be installed in any position without affecting operation
- Recommended maximum panel thickness is 6,0 mm and panel passage Ø 20 mm
- Installation/maintenance instructions are included with each valve
- Replacement coils are available

DIMENSIONS (mm), WEIGHT (kg)



catalogue number E257	A	B	C	D	E	F	G	H	weight
All types	22	29	15	67	38	27	20	34	0,18

SEQUENTIAL CONTROLLERS
for dust collector systems

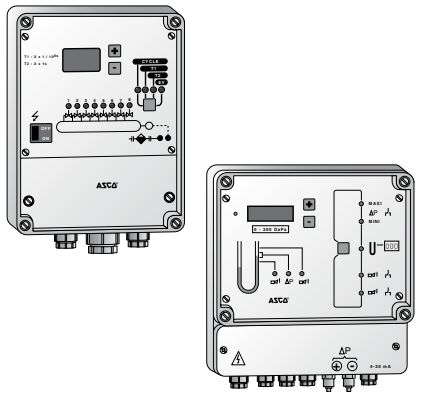
Series
E909

FEATURES
- *Sequential controllers especially developed to control dust collector pulse valves*
- *Accurate setting of pulse time and interval time*

GENERAL
Sequencer for dedusting plant cleaning cycle. Device with microprocessor management and zero-crossing detection for the output activation to give high immunity from external interference and low field emission.

CONSTRUCTION
Housing Standard IP65 ABS or IP55/65 metallic
ATEX explosion proof protection

ELECTRICAL CHARACTERISTICS
Standard supply voltages AC (~): 115V - 230V (24V DC/AC on request)
Output voltages AC (~): 24V - 115V - 230V
DC (=): 24V
Operating temperature -10°C to +50°C



SEQUENTIAL CONTROLLERS (BASIC)
- *Different number of outputs upto 192*
- *Input activation from keyboard*
- *On/Off cycle by external pressure volt free switch*
- *Additional post-washing cycles after the fan stop*
- *Line switch with light*
- *Multi language display*

SEQUENTIAL CONTROLLERS WITH DIGITAL CONTROL OF ΔP
- *Different number of outputs upto 192*
- *Standard digital control of ΔP*
- *Output signal ΔP 4-20 mA optional*
- *Minimum / Maximum ΔP alarm*
- *Differential pressure control*
- *Zero ΔP reading adjustment*
- *ΔP reading full range 10 kPa*
- *Operation hour-counter*
- *Additional post-washing cycles after the fan stop by ΔP readout (stop)*
- *Cycle start consent by compressed air pressure switch with volt-free contact*

SEQUENTIAL CONTROLLERS WITH E257 PILOT VALVES
- *Different number of outputs upto 12*

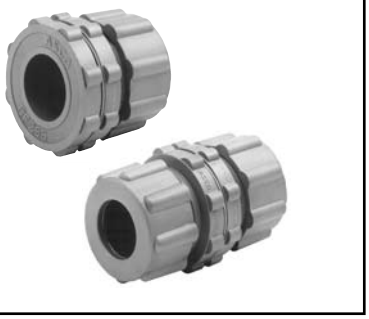
For additional information, consult us or authorised representatives

All leaflets are available on: **www.asconumatics.eu**

BULKHEAD FITTINGS

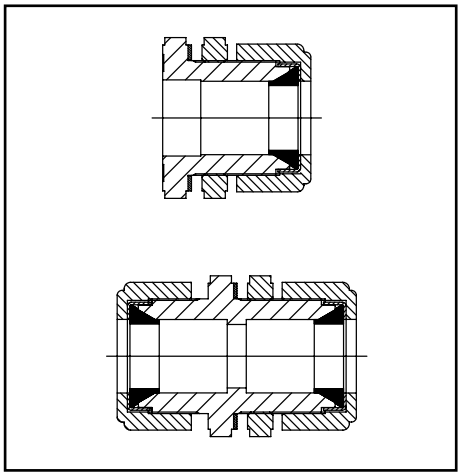
straight-through type
with double or single compression fitting
3/4 to 1 1/2

Series
BF



FEATURES

- *Top loading (double) types are designed for the connection (coupling) of different blow tubes*
- *The bottom loading (single) type is suitable for one-piece blow tube for dust collector service*
- *Quick and economical installation because there is no need for welding or threaded pipe connections*
- *Less sensitive to blow tube misalignments in the system*
- *Enables a modular filter system design*



GENERAL

Differential pressure 0 - 8,5 bar [1 bar = 100 kPa]
Safe static pressure (PS) 8,5 bar
Ambient temperature range -20 to +85°C

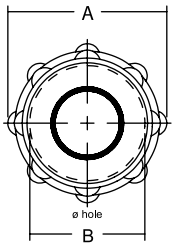
fluids	temperature range (TS)	sealings
air	-20 to +85°C	NBR (nitrile)

CONSTRUCTION

Body Aluminium
Gasket Klingerit
Nut retainer Aluminium
Nut compression Aluminium
Retainer seal Steel (zinc plated)
Seal NBR (nitrile)

SPECIFICATIONS

pipe size	for blow tube Ø external (mm)	for blow tube Ø internal (mm)	catalogue number
Bottom loading (single) bulkhead connector			
3/4	26,4	19	**BF20S**
1	33,2	25	**BF25S**
1 1/2	47,8	38	**BF40S**
Top loading (double) bulkhead connector			
3/4	26,4	19	**BF20D**
1	33,2	25	**BF25D**
1 1/2	47,8	38	**BF40D**



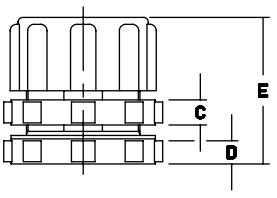


Fig. 1

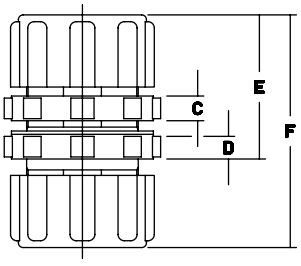


Fig. 2

INSTALLATION

- The compression fitting tightness is achieved by the compressed gasket on the blow tube
- Installation/maintenance instructions are included with each bulkhead connector

DIMENSIONS (mm), WEIGHT (kg)

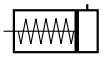
catalogue number	A	B	C	D	E	F	weight	(C)
BF20S	63	48	12	12	73	-	0,30	Fig. 1
BF25S	76	55	12	12	72	-	0,43	
BF40S	98	73	15	15	92	-	0,78	
BF20D	63	48	12	12	61	116	0,48	Fig. 2
BF25D	76	55	12	12	60	118	0,69	
BF40D	98	73	15	15	77	144	1,20	

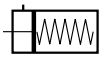
(**C**) construction type

ISOCLAIR ROUND CYLINDERS

Ø 8 to 25 mm - single acting
ISO 6432-CETOP-AFNOR

JOUCOMATIC

SER 

SES 

Series **435**
Type
C-AS
C-AS/DM

FEATURES

- *Good resistance to corrosive elements (barrel and stainless steel rod)*

GENERAL

Detection	Equipped or not for magnetic position detectors
Fluid	Air or neutral gas, filtered, lubricated or not
Operating pressure	2 to 10 bar
Ambient temperature	0°C to +70°C (Ø8-10) / -10°C to +70°C (Ø12 to 25)
Standards	ISO 6432 - 8140 - 8139 CETOP RP 52 P - RP 102 P - RP 103 P AFNOR NF E 49-030

Minimum pressure to compress the spring: 2 bar
The return of the piston rod must be without load

CONSTRUCTION

	Cylinder non-equipped for detectors	Cylinder equipped for detectors
Barrel	Stainless steel	Non-magnetic stainless steel
Rod	Stainless steel	Stainless steel
Front and rear covers	Anodized light alloy	Anodized light alloy
Piston	POM (polyacetal) and light alloy	POM (polyacetal) and light alloy equipped with permanent magnet
Piston seals	PUR (polyurethane)	PUR (polyurethane)
Neck nut	Galvanized steel	Galvanized steel
Rod nut	Galvanized steel	Galvanized steel
Dismounting	Cannot be dismounted	Cannot be dismounted
Cushioning	Without cushioning	Without cushioning

SPECIFICATIONS

Ø (mm)	stroke (mm)	rod returned at rest (SER)		rod out at rest (SES)		connection Ø
		catalogue number	reference	catalogue number	reference	
Cylinder non-equipped for detectors						
8	25 50	**43500254** **43500255**	C 8 AS 25 - SER C 8 AS 50 - SER	–	–	M5
10	25 50	**43500256** **43500257**	C 10 AS 25 - SER C 10 AS 50 - SER	–	–	M5
12	25 50	**43500083** **43500084**	C 12 AS 25 - SER C 12 AS 50 - SER	**43500218** **43500219**	C 12 AS 25 - SES C 12 AS 50 - SES	M5
16	25 50	**43500085** **43500086**	C 16 AS 25 - SER C 16 AS 50 - SER	**43500220** **43500221**	C 16 AS 25 - SES C 16 AS 50 - SES	M5
20	25 50	**43500087** **43500088**	C 20 AS 25 - SER C 20 AS 50 - SER	**43500222** **43500223**	C 20 AS 25 - SES C 20 AS 50 - SES	G 1/8
25	25 50	**43500089** **43500090**	C 25 AS 25 - SER C 25 AS 50 - SER	**43500224** **43500225**	C 25 AS 25 - SES C 25 AS 50 - SES	G 1/8
Cylinder equipped for detectors ✻						
8	25 50	**43500258** **43500259**	C 8 AS 25 - SER/DM C 8 AS 50 - SER/DM	–	–	M5
10	25 50	**43500260** **43500261**	C 10 AS 25 - SER/DM C 10 AS 50 - SER/DM	–	–	M5
12	25 50	**43500262** **43500263**	C 12 AS 25 - SER/DM C 12 AS 50 - SER/DM	–	–	M5
16	25 50	**43500264** **43500265**	C 16 AS 25 - SER/DM C 16 AS 50 - SER/DM	–	–	M5
20	25 50	**43500266** **43500267**	C 20 AS 25 - SER/DM C 20 AS 50 - SER/DM	–	–	G 1/8
25	25 50	**43500268** **43500269**	C 25 AS 25 - SER/DM C 25 AS 50 - SER/DM	–	–	G 1/8

MOUNTINGS (see page 44)

JOUCOMATIC

ISOCLAIR ROUND CYLINDERS

Ø 8 to 25 mm - double acting
ISO 6432-CETOP-AFNOR

Series **435**
Type
C-AS
C-AS/DM

FEATURES

- *Good resistance to corrosive elements (barrel and stainless steel rod)*

GENERAL

Detection	Equipped or not for magnetic position detectors
Fluid	Air or neutral gas, filtered, lubricated or not
Operating pressure	10 bar max.
Ambient temperature	0°C to +70°C (Ø8-10) / -10°C to +70°C (Ø12 to 25)
Standards	**ISO 6432 - 8140 - 8139** **CETOP RP 52 P - RP 102 P - RP 103 P** **AFNOR NF E 49-030**

CONSTRUCTION

	Cylinder non-equipped for detectors	Cylinder equipped for detectors
Barrel	Stainless steel	Non-magnetic stainless steel
Rod	Stainless steel	Stainless steel
Front and rear covers	Anodized light alloy	Anodized light alloy
Piston	POM (polyacetal) and light alloy	POM (polyacetal) and light alloy equipped with permanent magnet
Piston seals	PUR (polyurethane)	PUR (polyurethane)
Neck nut	Galvanized steel	Galvanized steel
Rod nut	Galvanized steel	Galvanized steel
Dismounting	Cannot be dismounted	Cannot be dismounted
Cushioning	Without cushioning	Without cushioning

SPECIFICATIONS

Ø (mm)	stroke (mm)	Cylinder non-equipped for detectors		Cylinder equipped for detectors *		connection Ø
		catalogue number	reference	catalogue number	reference	
8	25	**43500271**	C 8 AS 25	**43500291**	C 8 AS 25-DM	M5
	50	**43500272**	C 8 AS 50	**43500292**	C 8 AS 50-DM	
	80	**43500273**	C 8 AS 80	**43500293**	C 8 AS 80-DM	
	100	**43500274**	C 8 AS 100	**43500294**	C 8 AS 100-DM	
10	25	**43500277**	C 10 AS 25	**43500296**	C 10 AS 25-DM	M5
	50	**43500278**	C 10 AS 50	**43500297**	C 10 AS 50-DM	
	80	**43500279**	C 10 AS 80	**43500298**	C 10 AS 80-DM	
	100	**43500280**	C 10 AS 100	**43500299**	C 10 AS 100-DM	
12	25	**43500066**	C 12 AS 25	**43500301**	C 12 AS 25-DM	M5
	50	**43500067**	C 12 AS 50	**43500302**	C 12 AS 50-DM	
	80	**43500283**	C 12 AS 80	**43500303**	C 12 AS 80-DM	
	100	**43500069**	C 12 AS 100	**43500304**	C 12 AS 100-DM	
16	25	**43500070**	C 16 AS 25	**43500305**	C 16 AS 25-DM	M5
	50	**43500071**	C 16 AS 50	**43500306**	C 16 AS 50-DM	
	80	**43500285**	C 16 AS 80	**43500307**	C 16 AS 80-DM	
	100	**43500073**	C 16 AS 100	**43500308**	C 16 AS 100-DM	
20	25	**43500074**	C 20 AS 25	**43500309**	C 20 AS 25-DM	G 1/8
	50	**43500075**	C 20 AS 50	**43500310**	C 20 AS 50-DM	
	80	**43500287**	C 20 AS 80	**43500311**	C 20 AS 80-DM	
	100	**43500077**	C 20 AS 100	**43500312**	C 20 AS 100-DM	
25	25	**43500078**	C 25 AS 25	**43500313**	C 25 AS 25-DM	G 1/8
	50	**43500079**	C 25 AS 50	**43500314**	C 25 AS 50-DM	
	80	**43500289**	C 25 AS 80	**43500315**	C 25 AS 80-DM	
	100	**43500081**	C 25 AS 100	**43500316**	C 25 AS 100-DM	
	160	**43500290**	C 25 AS 160	**43500317**	C 25 AS 160-DM	

MOUNTINGS (see page 44)

OPTIONS

- Other strokes on request
- Double crossbar for Ø 16-20-25 mm (max. stroke 300 mm)
- Barrel in stainless steel for Ø 16-20-25 mm : specify the codes of cylinders equipped for magnetic detectors.
- Anti-corrosive version, stainless steel type CIX

CYLINDERS WITH PROFILED BARREL

Ø 32 to 100 mm - double acting
ISO 15552-AFNOR-DIN
with pneumatic cushioning

JOUCOMATIC

Series **453**
Type
PES P-DM

GENERAL

Detection	Equipped for magnetic position detectors
Fluid	Air or neutral gas, filtered, lubricated or not
Operating pressure	10 bar max.
Ambient temperature	-20°C to +70°C (for higher temperatures, contact us)
Optimal max. speed	≤ 1 m/s (for optimal service life)
Max. speed rate	2 m/s
Standards	ISO 15552-AFNOR NF ISO 15552-DIN ISO 15552 (replace ISO 6431-AFNOR NFE 49003-VDMA 24562)

CONSTRUCTION

Barrel	Hard anodized aluminium alloy
Front and rear ends	Aluminium alloy
Barrel/end connection	With stainless steel tie-rods
Bearing	self-lubricating metal
Cushioning seals	PUR (polyurethane)
Cushioning	Pneumatic, adjustable from both sides with captive screw
Rod	Hard chrome plated steel
Rod nut	Galvanized steel
Piston	Ø 32 to 80 mm: POM (polyacetal) Ø 100-125 mm: light alloy, fitted with an annular permanent magnet
Piston seals	PUR (polyurethane)

SPECIFICATIONS
DEFINING THE CYLINDER CATALOGUE NUMBER

Standard version: profiled barrel with adjustable pneumatic cushioning, equipped for magnetic position detectors (T-slot grooves in 12 o'clock position). Other versions available (see tables below).

To order, please specify:

■ CYLINDER
- The cylinder type (profiled, with or without cushioning, equipped or not for magnetic position detectors).
- The position of the T-slot groove or dovetail groove on the cylinder.
- The cylinder diameter and its stroke.

■ DETECTORS: The magnetic position detectors must be ordered separately:
- Model for T-slot groove, Reed switch or magneto-resistive type (contact us for details)
- COMPACT model, Reed switch or magneto-resistive type (contact us for details)

453 5 .. . .

cylinder type			type
barrel	**cushioning**	**position detection**	
Profiled barrel	Cushioned	Equipped	**00**
		Non-Equipped	**01** (1)
	Non-cushioned	Equipped	**02**
		Non-Equipped	**03** (1)

groove position		type
Position of the T-slot grooves on the profiled PES cylinder	12 o'clock	**0**
	3 o'clock	**3**
	6 o'clock	**6**
	9 o'clock	**9**
Position of the dovetail grooves on the profiled PES cylinder	12 o'clock	**9**
	3 o'clock	**0**
	6 o'clock	**3**
	9 o'clock	**6**

Ø (mm)	standard stroke (mm) (2) (recommended standard strokes) (3)																max. strokes (mm)
	25	50	80	100	125	160	200	250	320	400	500	630	700	800	900	1000	
32	●	●	●	●	●	●	●	●									1000
40	●	●	●	●	●	●	●	●	●	●							1500
50-63	●	●	●	●	●	●	●	●	●	●	●	●					1800
80	●	●	●	●	●	●	●	●	●	●	●	●					2000
100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2000

cylinder Ø	
type	**Ø** (mm)
3	32
4	40
5	50
6	63
8	80
1	100

(1) Available versions (contact us)
(2) Other strokes on request.
(3) Minimum stroke to mount 2 detectors on Ø 32 mm: 40 mm

Ordering example:
- profiled cylinder with pneumatic cushioning equipped for detectors = **00**
- T-slot grooves at 3 o'clock position = **3**
- Cylinder Ø 80 mm = **8**
- Stroke 100 mm = **0100**

Ordering catalogue number: **453 5 00 3 8 0100**

MOUNTINGS (see page 44)

ATEX OPTION: Type PES cylinders with profiled barrel are available in versions for use in potentially explosive dust or gas atmospheres according to Directive 94/9/EC
Classification : Ⓔx II**3**GD **c** - Ta 40°C T85°C (T6) - Ta 70°C T100°C (T5) (ZONE 2-22) - cat no.: **612014**
Ⓔx II**2**GD **c** - Ta 40°C T85°C (T6) - Ta 70°C T100°C (T5) (ZONE 1-21) - cat no.: **612017**

MOUNTINGS

Cylinder (Ø mm)											
	Low foot MS1 (set of 2 items)	**High foot MS1** (set of 2 items)	**High foot MS3**	**High foot MS3**	**Spherical bearing rod end** (ISO 8139 - RP 103 P) **AP6**	**Female rod clevis** (ISO 8140 - RP 102 P) **AP2**	**Cap clevis for spherical eye or clevis bracket AB6** (forged steel)	**Angular clevis bracket spherical eye AB5** (forged steel)	**Cap eye with spherical bearing MP6** (forged steel)	**Angular clevis bracket AB7** (light alloy)	**Complete trunnion MP2**
	Catalogue number										
8	-	-	43900191	-	43900194	43900193	-	-	-	-	-
10	-	-	43900191	-	43900194	43900193	-	-	-	-	-
12	-	-	43900183	-	43900186	43900159	-	-	-	-	-
16	-	-	43900183	-	43900186	43900159	-	-	-	-	-
20	43400459	-	43900184	-	43900187	43900161	-	-	-	-	-
25	43400553	-	43900184	-	43400001	43400016	-	-	-	-	-
32	43400163	43900199	-	43400307	43400001	43400016	43400363	43400354	43400372	43400383	43400543
40	43400164	43900200	-	43400308	43400002	43400017	43400364	43400355	43400373	43400384	43400544
50	43400165	43900201	-	43400309	43400003	43400018	43400365	43400356	43400374	43400385	43400545
63	43400166	43900202	-	43400310	43400003	43400018	43400366	43400357	43400375	43400386	43400546
80	43400167	-	-	43400311	43400004	43400019	43400367	43400358	43400376	43400387	-
100	43400168	-	-	-	43400004	43400019	43400368	43400359	43400377	43400388	-
125	43400169	-	-	-	43400005	43400020	43400369	43400360	43400378	-	-
160	43400381	-	-	-	43400006	43400021	-	-	-	-	-
200	43400382	-	-	-	43400006	43400021	-	-	-	-	-

Cylinder (Ø mm)						
	Rear trunnion	**Centre trunnion MT4** (cylinders with profiled barrel PES 453)		**Centre trunnion MT4** (cylinders with tie rods PES 450) cast iron supplied fully assembled	**Cap, detachable clevis MP2**			**Cap, detachable eye MP4**			**MR3 Neck nut**
		cast iron supplied fully assembled	cast iron supplied loose		light alloy	cast iron + steel without bush	cast iron + steel + bush	light alloy	cast iron + steel without bush	cast iron + steel + bush	
	Catalogue number										
8	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-
16	43900181	-	-	-	-	-	-	-	-	-	43900150
20	43900182	-	-	-	-	-	-	-	-	-	43900151
25	43900182	-	-	-	-	-	-	-	-	-	43900151
32	-	410564	410570	410548	43400130	43400257	43400185	43400125	43400266	43400171	43900203
40	-	410565	410571	410549	43400131	43400258	43400186	43400126	43400267	43400172	43900204
50	-	410566	410572	410550	43400132	43400259	43400187	43400127	43400268	43400173	43900205
63	-	410567	410573	410551	43400133	43400260	43400188	43400128	43400269	43400174	43900205
80	-	410568	410574	410552	43400134	43400261	43400189	43400129	43400270	43400175	-
100	-	410569	410575	410553	43400135	43400262	43400190	43400161	43400271	43400176	-
125	-	-	-	410554	-	43400263	43400191	-	43400272	43400177	-
160	-	-	-	410555	-	43400264	43400335	-	43400273	43400337	-
200	-	-	-	410556\-	-	43400265	43400336	-	43400274	43400338	-

COMBINED FILTER / REGULATORS

Modulair 105-107-112 ranges
G 1/8 to G 1/2

numatics

Series **342**
Type Modulair

PRESENTATION

- *Quick installation and connection to systems: filter, regulator and lubricator functions in a "single unit"*
- *Light weight and robust design for direct installation on rigid piping*
- *Assembly of additional components without pipes or fittings: with «standard» kits*

SPECIFICATIONS

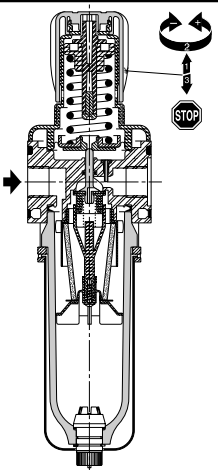
FLUID: Compressed air and neutral gas

RANGE	MODULAIR			
	105	107	112	112
PORTS:	G1/8 - G1/4	G1/8 - G1/4	G1/4...G1/2	G3/4
MAX. INLET PRESSURE (5) (BAR)				
AT 23°C	12	16	16	16
AT 50°C	10	10	10	12
CONTROLLED PRESSURE (BAR)	0,5 - 8	0,5 - 10	0,5 - 10	0,5 - 12
	See options for other values			
HYSTERESIS (BAR)	0,35	0,3	0,2	0,2
AMBIENT TEMPERATURE (°C)	0°C to +50°C			
MAX. FLOW (QV AT 6,3 BAR)	See table below and charts			
REGULATOR	Self-relieving			

INDIVIDUAL SPECIFICATIONS AND CONSTRUCTION

■ MODULAIR 105
Filtering capacity: 25 µm (5 µm on request)
Semi-automatic drain (operating pressure: min. 1.2 bar)
Regulating device with a **rolling** diaphragm (very low hysteresis)

■ MODULAIR 107 and 112 ranges
Filtering capacity: 25 µm or 5 µm (10 and 50 µm on request)
Semi-automatic drain (operating pressure: min. 1.2 bar)
or automatic (operating pressure: 2 to **10 bar** max.) or manual
Metal bowl for Modulair 112 range (see page 26)
Regulating device with a **rolling** diaphragm (very low hysteresis)



Modulair 107-112

INSTALLATION - MAINTENANCE

Systems must be installed with the bowls in vertical position (at the bottom). Air flow direction indicated by arrow **and «IN» - «OUT» marking on the body (Modulair 105). Use an alkaline solution (soapy water) and not a solvent** for cleaning the polycarbonate bowls and sight glasses

CHOICE OF EQUIPMENT

port size	MODULAIR range	bowl capacity	controlled pressure	flow (ANR)			code				
				at upstream pressure	at 6.3 bar pressure setpoint and ΔP of 1 bar / setpoint		Ø mano	filter regulator			
								semi-automatic drain		automatic drain	
								with 0-12 bar gauge (1)	without gauge	with 0-12 bar gauge (1)	without gauge
		(cm³)	(bar)	(bar)	l/min (ANR)	dm³/s (ANR)					
25 µm filtration - 0.5 - 8/10 bar adjustment - Polycarbonate bowl WITH protector (2)											
G1/8	**105**	28	0,5-8	8	550	9	40	**34225203**	**34225201**	-	-
G1/4	**105**	28	0,5-8	8	650	11	40	**34225204**	**34225202**	-	-
G1/8	**107**	50	0,5-10	8	700	11,7	40	**34204049**	**34204045**	-	-
G1/4	**107**	50	0,5-10	8	1500	26	40	**34204050**	**34204046**	-	-
G1/4	**112**	114	0,5-10	10	3200	53,3	50	**34203086**	**34203080**	**34203135**	**34203129**
G3/8	**112**	114	0,5-10	10	5200	86,6	50	**34203087**	**34203081**	**34203136**	**34203130**
G1/2	**112**	114	0,5-10	10	5600	93,3	50	**34203088**	**34203082**	**34203137**	**34203131**
25 µm filtration - 0,5 - 12 bar adjustment - Metal bowl WITH visualization											
G3/4 (3)	**112**	114	0,5-12	10	5600	93,3	50	**34203A54**	**34203A53**	**34203A46**	**34203A45**
G3/4 (4)	**112**	114	0,5-12	10	5600	93,3	50	**34203B03**	**34203B02**	**34203A94**	**34203A93**
5 µm filtration - 0.5 - 10 bar adjustment - Polycarbonate bowl WITH protector (2)											
G1/8	**107**	50	0,5-10	8	600	10	40	**34204055**	**34204051**	-	-
G1/4	**107**	50	0,5-10	8	1100	18	40	**34204056**	**34204052**	-	-
G1/4	**112**	114	0,5-10	10	3200	53,3	50	**34203098**	**34203092**	**34203147**	**34203141**
G3/8	**112**	114	0,5-10	10	5200	86,6	50	**34203099**	**34203093**	**34203148**	**34203142**
G1/2	**112**	114	0,5-10	10	5600	93,3	50	**34203100**	**34203094**	**34203149**	**34203143**
5 µm filtration - 0,5 - 12 bar adjustment - Metal bowl WITH visualization											
G3/4 (3)	**112**	114	0,5-12	10	5600	93,3	50	**34203A74**	**34203A73**	**34203A66**	**34203A65**
G3/4 (4)	**112**	114	0,5-12	10	5600	93,3	50	**34203B23**	**34203B22**	**34203B15**	**34203B14**

(1) 0-10 bar pressure gauge in Modulair 105 range
(2) Adjustment range 0.2 - 3 bar and other values on request
(3) Non intented for the combination
(4) Version intended for the combination of various functions (FRL - isolation valve etc ...), select the desired functions and obtain the necessary assembly kits and mounting brackets.
(5) P max= 10 bar for version with automatic drain

25 µm filtration - 0,5 - 8/10 bar adjustment - Polycarbonate bowl WITHOUT protector (see following page)

CHOICE OF EQUIPMENT

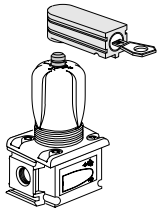
port size	MODULAIR range	bowl capacity	controlled pressure	flow (ANR)			code				
				at upstream pressure	at 6.3 bar pressure setpoint and ΔP of 1 bar / setpoint		filter regulator				
							Ø mano	semi-automatic drain		automatic drain	
								with 0-12 bar gauge (1)	without gauge	with 0-12 bar gauge (1)	without gauge
		(cm³)	(bar)	(bar)	l/min (ANR)	dm³/s (ANR)					
25 µm filtration - 0,5 - 8/10 bar adjustment - Polycarbonate bowl WITHOUT protector											
G1/8	**105**	28	0,5-8	8	550	9	40	**34225123**	**34225121**	-	-
G1/4	**105**	28	0,5-8	8	650	11	40	**34225124**	**34225122**	-	-
G1/8	**107**	50	0,5-10	8	700	11,7	40	**34204073**	**34204069**	-	-
G1/4	**107**	50	0,5-10	8	1500	26	40	**34204074**	**34204070**	-	-
G1/4	**112**	114	0,5-10	10	3200	53	50	**34203372**	**34203340**	**34203378**	**34203375**
G3/8	**112**	114	0,5-10	10	5200	86	50	**34203373**	**34203341**	**34203379**	**34203376**
G1/2	**112**	114	0,5-10	10	5600	93,3	50	**34203374**	**34203342**	**34203380**	**34203377**

(1) 0-10 bar pressure gauge in Modulair 105 range

OPTIONS

FOR FILTER/REGULATOR

- Metal bowl equipped with semi-automatic, automatic or manual drain for Modulair 112 range
- Polyamide bowl with protector for use in solvent-charged environments (Modulair 107 and 112 ranges)
- Manual drain for Modulair 105, 107 and112 ranges - code **662563** (Modulair 112 - fits on semi-automatic drain only)
- G3/4 version for Modulair 112, individual unit not for combination, polycarbonate bowl **with** bowl protector, controlled pressure range 0,5 - 10 bar, use code for G1/2 version + option code **662600**, example: 34203088 + 662600
- Filtering capacity:
  - 5 µm : (consult us for Modulair 105 range)
  - 10 µm: code **662555** (Modulair 107 range) - code **662535** (Modulair 112 range)
  - 50 µm: code **662556** (Modulair 107 range) - code **662536** (Modulair 112 range)
- Key locking device for adjustment knob, attached to knob, supplied installed on regulator, code: **662561** for Modulair 107 range, **662554** for Modulair 112 range. Others options or accessories, consult us.
- Adjustment range: 0.2 to 3 bar, for Modulair 105, 107 and 112 ranges (provide 40/50 mm dia. 0 - 4 bar pressure gauge)
  0.5 to 12 bar, for Modulair 107 and 112 ranges (provide 50 mm dia. 0 - 16 bar pressure gauge)
- Equipment for use in potentially **explosive atmospheres** caused by dusts or gases (ATEX Directive 94/9/EC)

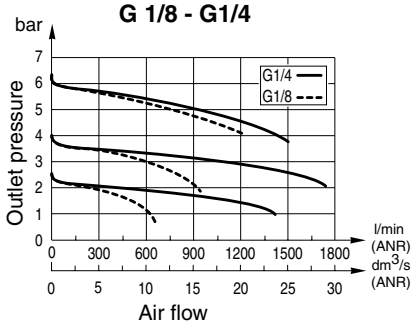


zones	⟨Ex⟩ classification	gas group	ATEX option code				
			Modulair 105	Modulair 107		Modulair 112	
				with bowl protector	without bowl protector	with bowl protector	without bowl protector
2-22	II3GD **c** T 85°C (T6)	IIA-IIB-IIC	**612077**	**612073**		**612021**	
1-21	II2GD **c** IIB T85°C (T6)	IIB	**612076**	**612072**		**612023**	
1-21	II2GD **c** IIC T85°C (T6)	IIC	-	**612064**	-	**612062**	-

PRESSURE LOSS VERSUS AIR FLOW CURVES

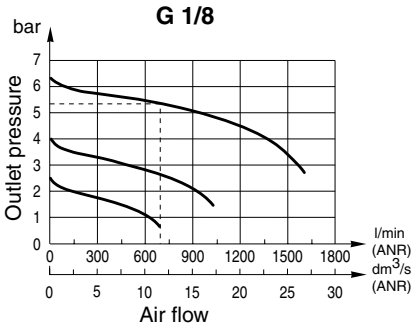
MODULAIR 105

G 1/8 - G1/4

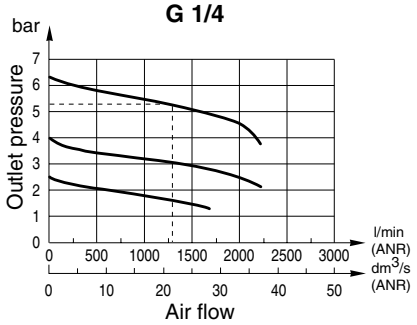


MODULAIR 107

G 1/8

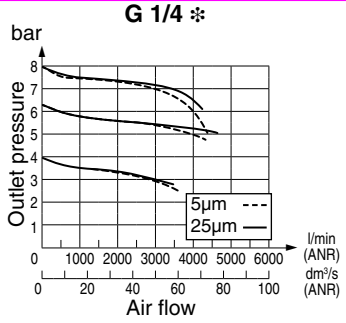


G 1/4

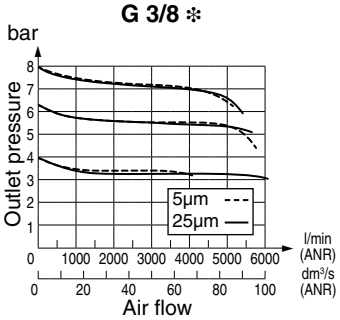


MODULAIR 112

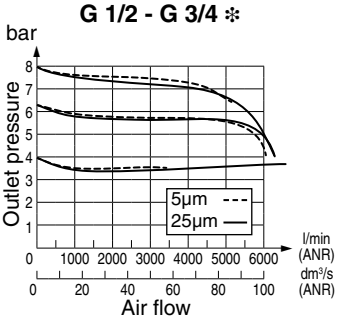
G 1/4 ❊



G 3/8 ❊



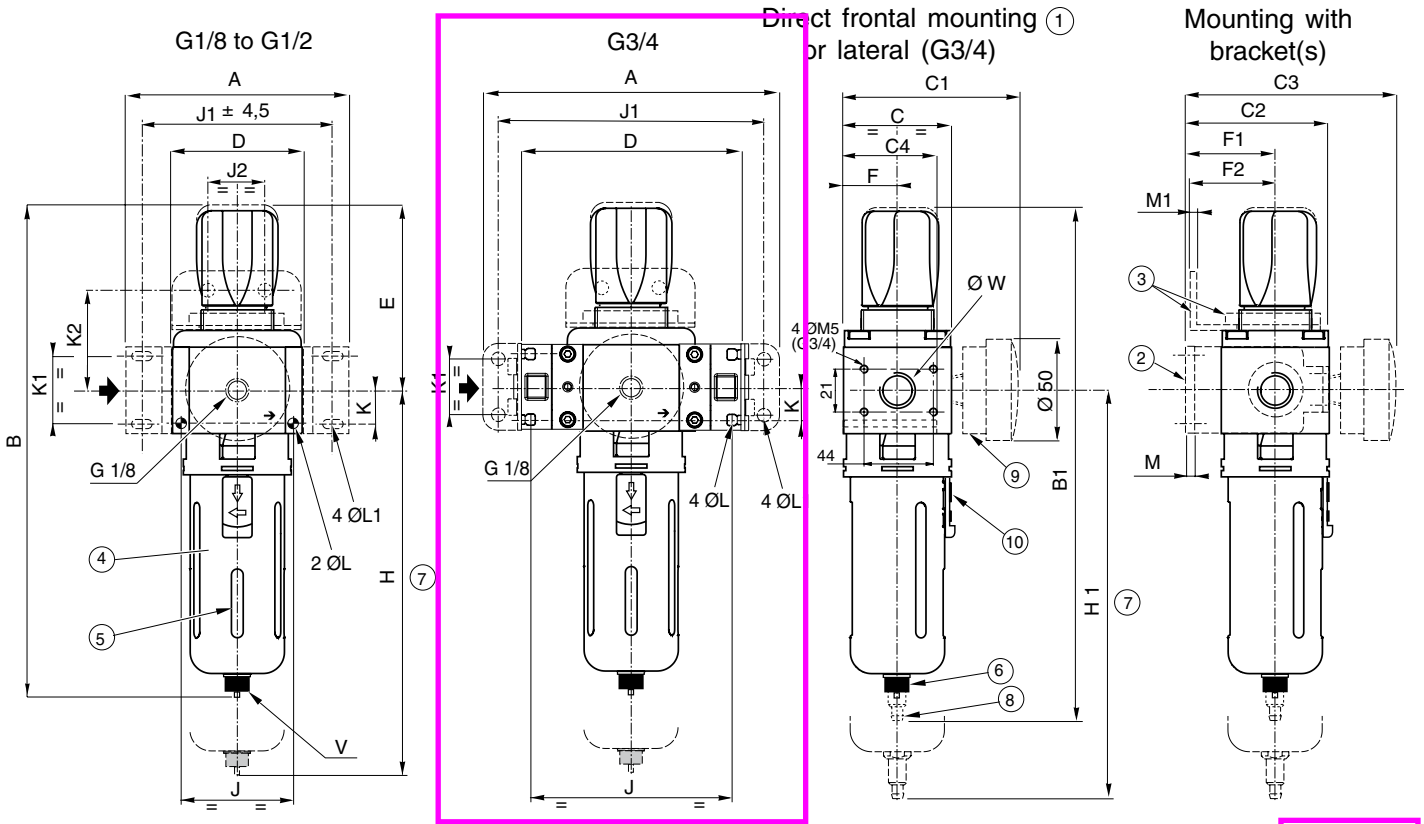
G 1/2 - G 3/4 ❊



❊ according to ISO 6953 standards

DIMENSIONS AND WEIGHTS

MODULAIR 107 - 112



(1) Direct frontal mounting (G1/8 - G1/2) : 2 holes ØL and depth C4
(2) Mounting with 2 side brackets (accessory)
(3) Mounting with top bracket and mounting ring (accessory)
(4) Metal bowl protector with transparent polycarbonate bowl
(5) Condensate level window
(6) G 1/8 connectable semi-automatic drain
(7) Clearance necessary for bowl removal
(8) Automatic drain with fitting for connection of 6 mm ID hose (Modulair 112 range)
(9) 40 mm dia. pressure gauge (Modulair 107 range)
or 50 mm dia. pressure gauge (Modulair 112 range)
(10) Protector unlocking button

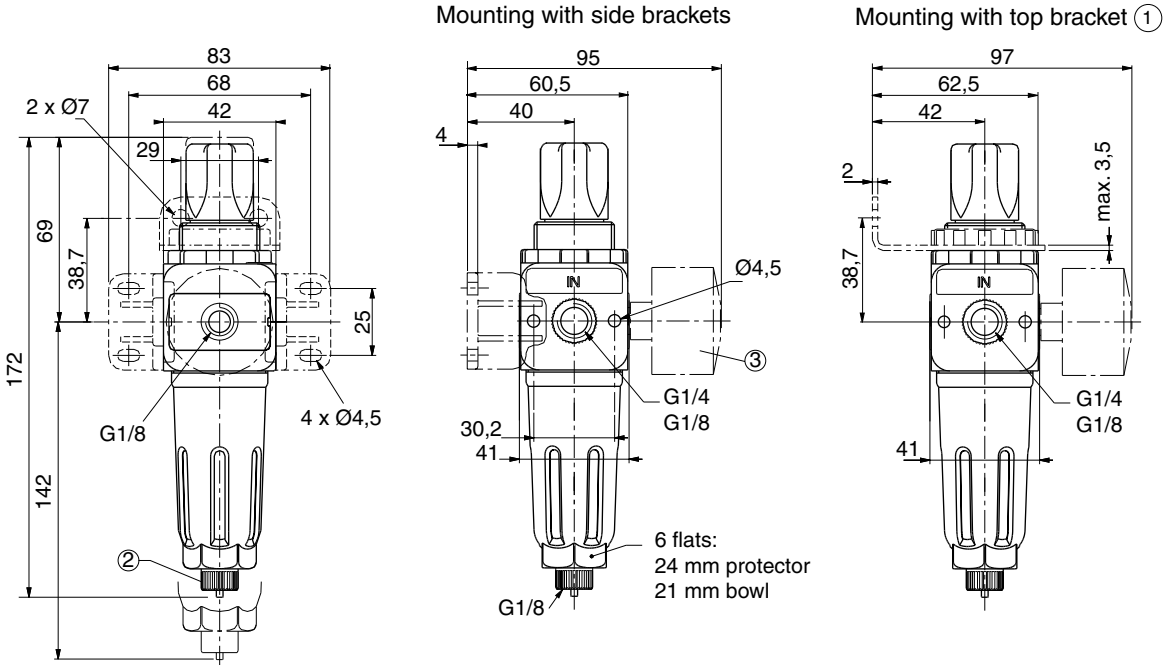
range	Modulair 107	Modulair 112	Modulair 112
Ø W	G1/8 G1/4	G1/4 G3/8 G1/2	G3/4
Bowl (cl)	7	12	12
A	83	112	154
B	213	251	251
B1	-	262	262
C	42	55	55
C1	76	87	87
C2	61	73,5	69,5
C3	95	105	101,5
C4	38	47,5	47,5
D	42	66	114
E	79	94,5	94,5
F	21	27,5	27,5
F1	40	46	42
F2	42	42	42
H	190	221,5	221,5
H1	-	232,5	232,5
J	32	57	105
J1	68,5	96	138
J2	29	29	29
K	10	17	17
K1	28	33,5	29
K2	37,5	42,5	42,5
ØL	4,1	5,5	5,5
ØL1	4,5	5,5	4
M	3	4	2
M1	2	2	2
V	G1/8	G1/8	G1/8
Weight (kg)	0,380(1)	0,830(1) 0,910(2)	1,160(1) 1,240(2)

(1) Weight without pressure gauge
(2) Weight with automatic drain

DIMENSIONS AND WEIGHTS

Weight : 0,190 kg

MODULAIR 105



① Mounting with top bracket (accessory) and mounting ring

② Semi-automatic drain, connectable to G1/8 port

③ 40 mm dia. pressure gauge

OPERATORS

for potentially explosive atmospheres
II 3 D IP65 T 85°C to T200°C
moulded coil types with connectors

Series
ATEX **SCDU**

FEATURES

- *Operators intended for use in potentially explosive dust atmospheres in compliance with ATEX-Directive 94/9/EC*
- *Compliance with the Essential Health and Safety Requirements has been assured by compliance with European Standards EN 50014 and EN 50281-1-1*
- *The assembly consisting of the coil and connector has IP65 protection*
- *Easy electrical installation by means of a spade plug connector*
- *A wide range of valves can be supplied with the operator*

CONSTRUCTION

Coil	All	Moulded epoxy resin
Connector enclosure	All	Glass-filled polyamide
Connector specification	XM5	DIN 43650, 11 mm, industry standard B
	M6-MXX-M12	ISO 4400 / EN 175301-803, form A
Cable diameter	XM5	6 to 8 mm
	M6-MXX-M12	6 to 10 mm
Wire cross-section	All	1,5 mm²
Electrical enclosure protection	All	IP65 (EN 60529)
Safety code	All	Ex II 3 D IP65 T 85°C to T 200°C

ELECTRICAL CHARACTERISTICS

Standard voltages	DC (=) : 24V - 48V
(Other voltages and 60 Hz on request)	AC (~) : 24V - 48V - 115V - 230V / 50 Hz

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

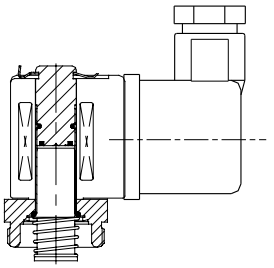
AC (~) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		85°C	100°C	135°C	200°C
Basic power (BP)					
6,0	F	-	-	75°C	-
6,0	H	-	-	75°C	100°C
6,0	F*	60°C	75°C	-	-
6,3	F	-	-	40°C	75°C
9,0	F	-	-	40°C	50°C
9,0	H	-	-	40°C	75°C
10,0 (2)	F	-	40°C	75°C	-
10,0 (2)	F	-	50°C	100°C	-
10,0	F*	60°C	75°C	-	-
10,5	F	-	-	40°C	75°C
10,5	H	-	-	40°C	100°C
10,5	F*	60°C	75°C	-	-
13,4 (2)	F	-	-	75°C	-
14,1 (2)	F	-	-	75°C	90°C
15,4	F	-	-	-	75°C
15,4	H	-	-	-	100°C
16,5 (2)	F	-	-	75°C	-
16,7	F	-	-	-	50°C
16,7	H	-	-	-	75°C
16,7	F*	60°C	75°C	-	-
20,0	F	-	-	-	50°C

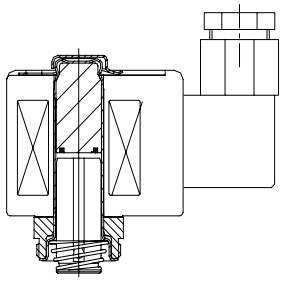
* Only to be used if E.D. is 10% or less (Energized Duty)

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		85°C	100°C	135°C	200°C
Basic power (BP)					
6,9	F	-	40°C	75°C	-
8,6	F	-	-	-	40°C
9,7	F	-	40°C	75°C	-
9,7	H	-	40°C	75°C	100°C
10,0	F	-	50°C	100°C	-
10,7	F	-	50°C	100°C	-
11,0	F	-	-	40°C	75°C
11,2	F	-	40°C	75°C	-
11,2	H	-	40°C	75°C	100°C
11,2	F*	60°C	75°C	-	-
13,3	H	-	-	60°C	-
14,0	F	-	-	75°C	90°C
15,3	F	-	-	50°C	
15,3	H	-	-	60°C	75°C
16,8	F	-	-	75°C	
16,8	H	-	-	75°C	100°C
17,4	H	-	-	50°C	60°C
19,7	F	-	-	40°C	-
19,7	H	-	-	50°C	-
19,7	F*	60°C	75°C	-	-
20,8	H	-	-	40°C	-
20,8	F*	60°C	75°C	-	-
22,0	F*	40°C	60°C	75°C	-
23,0	F	-	-	40°C	-
23,0	H	-	-	40°C	75°C
26,6	H	-	-	40°C	60°C
29,5	H	-	-	-	40°C
30,0	F*	40°C	60°C	75°C	-
36,2	H	-	-	-	40°C



XM5



M6-MXX-M12

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

OPERATORS

for potentially explosive atmospheres
II 3 D IP67 T 85°C to T 200°C
steel or stainless steel enclosure

Series
ATEX **WPDU**
WSDU

FEATURES

- *Enclosures intended for use in potentially explosive dusty atmospheres in compliance with ATEX-Directive 94/9/EC*
- *Compliance with the Essential Health and Safety Requirements has been assured by European Standards EN 50014 and EN 50281-1-1*
- *Easy electrical installation by means of a screw terminal coil*
- *The solenoid enclosure has a cable gland with integral strain relief for cables with a diameter from 7 to 12 mm*
- *Ingress protection degree IP67*
- *The operator is available as both a push or pull type solenoid and can be supplied on a wide range of valves with ASCO interface*

CONSTRUCTION

Solenoid enclosure	WPDU	Zinc plated steel (epoxy coated)
	WSDU	Stainless steel, AISI 316
Cable gland	all	PA
Core, core tube & plugnut	all	Stainless steel
Shading coil	all	Copper or silver
Nameplate	all	Polyester

ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

Ex II 3 D IP67 85°C to 200°C

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification 85°C	100°C	135°C	200°C
Basic power (BP)					
6,0	F	-	-	40°C	75°C
6,0	H	-	-	40°C	100°C
6,0	F*	40°C	60°C	75°C	-
9,0	F	-	-	-	50°C
9,0	H	-	-	-	75°C
10,0	F	-	-	75°C	-
10,5	F	-	-	-	75°C
10,5	H	-	-	-	100°C
10,5	F*	40°C	60°C	75°C	-
13,4	F	-	-	40°C	75°C
14,1	F	-	-	50°C	90°C
15,4	F	-	-	-	40°C
15,4	H	-	-	-	40°C
16,5	F	-	-	40°C	75°C
16,7	H	-	-	-	40°C
16,7	F*	40°C	60°C	75°C	-

* Only to be used if E.D. is 10% or less (Energized Duty)

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification 85°C	100°C	135°C	200°C
Basic power (BP)					
9,7	F	-	-	60°C	75°C
9,7	H	-	-	60°C	100°C
10,0	F	-	-	75°C	-
11,0	F	-	-	-	75°C
11,2	F	-	-	60°C	75°C
11,2	H	-	-	60°C	100°C
11,2	F*	60°C	75°C	-	-
13,3	H	-	-	40°C	60°C
14,0	F	-	-	50°C	90°C
15,3	F	-	-	-	50°C
15,3	H	-	-	-	75°C
16,8	F	-	-	40°C	75°C
16,8	H	-	-	40°C	75°C
17,4	H	-	-	-	60°C
19,7	F	-	-	-	40°C
19,7	H	-	-	-	50°C
19,7	F*	40°C	60°C	75°C	-
20,8	H	-	-	-	40°C
20,8	F*	40°C	60°C	75°C	-
23,0	F	-	-	-	50°C
23,0	H	-	-	-	75°C
26,6	H	-	-	-	60°C
30,0	F*	40°C	60°C	75°C	-

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

OPERATORS

for potentially explosive atmospheres
flameproof enclosure,
II 2 G Ex **d** IIC T6..T4 / II 2 D Ex td A21 IP 67
aluminium, stainless steel

Series

ATEX
IECEx

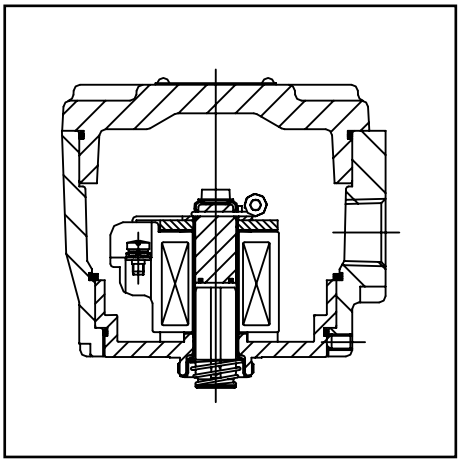
NF
WSNF

FEATURES

- *Explosion proof operator, intended for use in potentially explosive atmospheres, according to Directive ATEX 94/9/EC*
- *EC type examination certificate (LCIE 00 ATEX 6008 X) and IECEx certificate (IECEx LCI 107.0015X) are in compliance with the European Standards EN-IEC 60079-0, EN-IEC 60079-1, EN-IEC 61241-0 and EN-IEC 61241-1*
- *Easy electrical installation by means of a screw terminal coil*
- *Enclosure provided with a 1/2 NPT or M20 x 1,5 threaded entry hole for a broad range of cable glands*
- *Ingress protection degree IP67*
- *The operator is available as both a push or pull type solenoid and can be supplied on a wide range of valves with ASCO interface*

CONSTRUCTION

Solenoid enclosure	NF	Chromated aluminium, epoxy coated
	WSNF	Stainless Steel (AISI 316 L SS)
Bonnet	NF	Steel (zinc plated)
	WSNF	Stainless Steel (nickel plated)
Core, tube, springs & plugnut	all	Stainless steel
Shading coil	all	Copper or silver
Nameplate	NF	Aluminium
	WSNF	Stainless steel
Coil connection	all	Embedded screws terminals
Fasteners & screws	all	Stainless steel



ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

Ⓔx II 2 G Ex d IIC T6..T4 (gas)
Ⓔx II 2 D Ex td A21 IP67 85°C to 135°C (dust)

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -60°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification		
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)
Basic power (BP)				
10,0 (2)	F	40°C	60°C	75°C
10,0 (2)	F	40°C	60°C	100°C
10,5	F	25°C	40°C	60°C
10,5	H	25°C	40°C	75°C
13,4 (2)	F	40°C	60°C	75°C
14,1 (2)	F	40°C	60°C	90°C
15,4	F	25°C	40°C	60°C
15,4	H	25°C	40°C	75°C
16,5	F	40°C	60°C	75°C
16,7	F	-	25°C	40°C
16,7	H	-	25°C	60°C
20,0	F	-	25°C	40°C
20,0	H	-	25°C	60°C
20,5	H	-	-	25°C
28,0	H	-	-	25°C

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification		
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)
Basic power (BP)				
10,0	F	40°C	60°C	100°C
11,2	F	40°C	60°C	75°C
11,2	H	40°C	60°C	100°C
14,0	F	40°C	60°C	90°C
16,8	F	40°C	60°C	75°C
16,8	H	40°C	60°C	100°C
17,4	H	25°C	40°C	60°C
19,7	F	25°C	40°C	60°C
19,7	H	40°C	60°C	75°C
23,0	F	25°C	40°C	60°C
23,0	H	25°C	40°C	75°C
26,6	H	25°C	40°C	60°C
29,5	H	-	25°C	40°C
36,2	H	-	25°C	40°C

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

(2) AC (~) rectified coil construction

OPERATORS

for potentially explosive atmospheres encapsulated, moulded enclosure with integrated cable II 2 G/D Ex **mb** II T6.. T3 / Ex **m** D21

Series

ATEX IECEx

PV (EM5)

FEATURES

- *Explosionproof operator, intended for use in potentially explosive atmospheres according to Directive ATEX 94/9 EC*
- *EC type examination certificate (BAS 98 ATEX 2168 X) and IECEx certificate (IECEx SIR 06.109X) are in compliance with the International and European Standards EN-IEC 60079-0, EN-IEC 60079-18, EN-IEC 61241-0 and EN-IEC 61241-18*
- *Easy electrical installation by means of the moulded-in supply cable, standard length 2 meters*
- *A thermal fuse is fitted in the coil winding and any excessive heating due to prolonged over-voltage or a locked core will cause the thermal fuse to operate*
- *Ingress protection degree (IP67)*
- *A wide range of valves can be supplied with the operator*

CONSTRUCTION

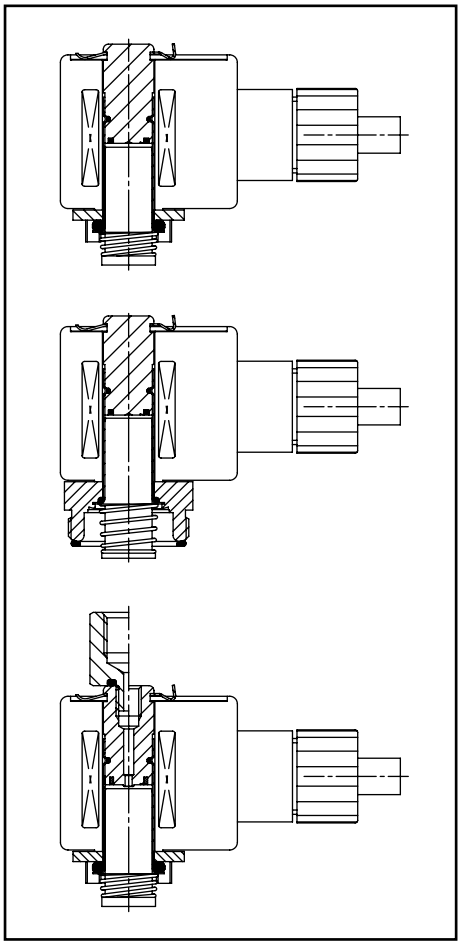
	EM5
Solenoid enclosure	Epoxy encapsulated
Core, tube, springs & plugnut	Stainless Steel
Shading coil	Copper or Silver
Nameplate	Polyester
Connection	Integral 3 core tube

ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

IECEx / Ex II 2 G/D Ex mb II T6 to T3 (gas)
Ex m D21 IP67 to 200°C (dust)



TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
6,3	F	-	-	-	65°C
10,0	F	-	-	-	65°C

* Only to be used if E.D. is 10% or less (Energized Duty)

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
6,9	F	-	-	-	40°C
15,0*	F	-	-	-	40°C
22,0*	F	-	-	-	40°C

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

OPERATORS

for potentially explosive atmospheres
encapsulated, moulded encl. with integrated cable
II 2 G/D Ex **mb** II T6.. T3 / Ex **m** D21

Series

ATEX IECEx

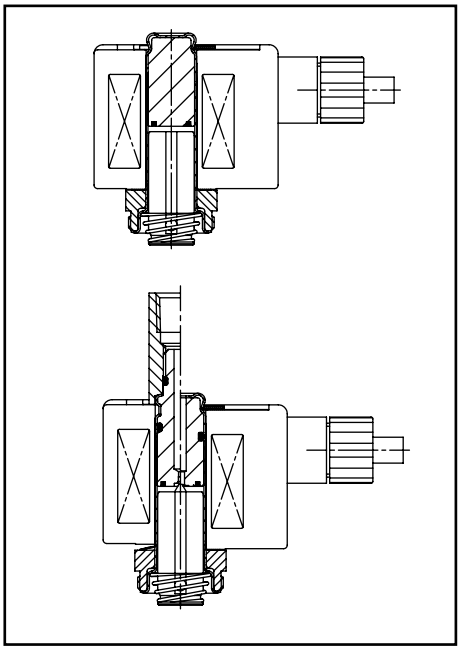
PV (EMXX)

FEATURES

- *Explosionproof operator, intended for use in potentially explosive atmospheres according to Directive ATEX 94/9/EC*
- *EC type examination certificate (BAS 98 ATEX 2168 X) and IECEx certificate (IECEx SIR 06.109X) are in compliance with the International and European Standards EN-IEC 60079-0, EN-IEC 60079-18, EN-IEC 61241-0 and EN-IEC 61241-18*
- *Easy electrical installation by means of the moulded-in supply cable, standard length 2 meters*
- *A thermal fuse is fitted in the coil winding and any excessive heating due to prolonged over-voltage or a locked core will cause the thermal fuse to operate*
- *Ingress protection degree (IP67)*
- *A wide range of valves can be supplied with the operator*

CONSTRUCTION

	EMXX
Solenoid enclosure	Epoxy encapsulated
Core, tube, springs & plugnut	Stainless Steel
Shading coil	Copper or Silver
Nameplate	Polyester
Connection	Integral 3 core tube



ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

IECEx / Ex II 2 G/D Ex mb II T6 to T3 (gas)
Ex m D21 IP 67 to 200°C (dust)

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	**insulation class**	**maximum ambient (1) temp. "T" classification**			
		T6 (G) 85°C (D)	**T5 (G)** 100°C (D)	**T4 (G)** 135°C (D)	**T3 (G)** 200°C (D)
Basic power (BP)					
10,50	F	-	-	-	65°C

DC (=) Solenoids

power level (watt)	**insulation class**	**maximum ambient (1) temp. "T" classification**			
		T6 (G) 85°C (D)	**T5 (G)** 100°C (D)	**T4 (G)** 135°C (D)	**T3 (G)** 200°C (D)
Basic power (BP)					
11,2	F	-	-	65°C	-
19,7	F	-	-	40°C	70°C

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

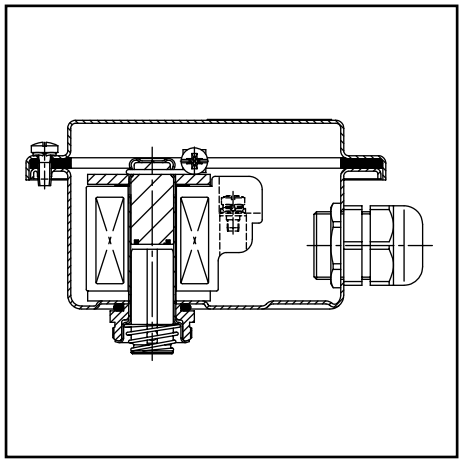
OPERATORS

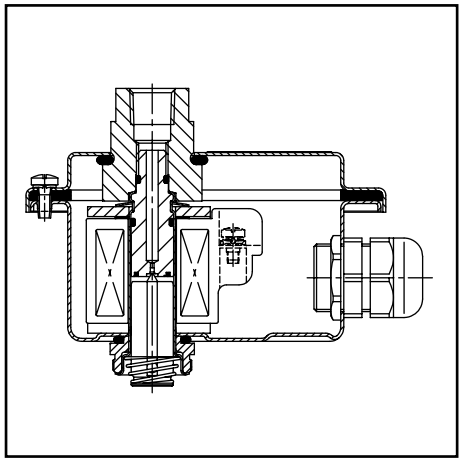
for potentially explosive atmospheres
increased safety/encapsulation,
II 2 G Ex **e mb** II T6..T3, II 2 D Ex **td** A21 IP67
steel or stainless steel enclosure

Series

ATEX
IECEx

EM
WSEM





FEATURES

- *Explosion proof operator, intended for use in potentially explosive atmospheres, according to Directive ATEX 94/9/EC*
- *EC type examination certificate (KEMA 98ATEX2542 X) is in compliance with the European Standards EN-IEC 60079, EN-IEC 60079-7, EN-IEC 60079-18, EN-IEC 61241-0 and EN-IEC 61241-1*
- *Easy electrical installation by means of a screw terminal coil*
- *Peak voltage suppression standard for DC executions*
- *Enclosure provided with integral strain relief for cables with an o.d. from 7 to 12 mm*
- *Ingress protection degree IP67*
- *A wide range of valves can be supplied with the operator*

CONSTRUCTION

Solenoid enclosure	Zinc plated epoxy coated steel (Prefix EM) or AISI 316 SS (Prefix WSEM)
Cable gland	PA (polyamide) , M20x1,5
Cable gland sealing	NBR (nitrile)
Core, core tube and plugnut	Stainless steel
Shading coil	Copper or silver
Nameplate	Polyester
Coil connection	Embedded screw terminals

ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

Ⓔx II 2 G Ex e mb II T6..T3 (gas)
Ⓔx II 2 D Ex td A21 IP67 85°C to 200°C (dust)

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient [1] temp. "T" classification			
		T6 (G) 85°C (D)	**T5 (G)** 100°C (D)	**T4 (G)** 135°C (D)	**T3 (G)** 200°C (D)
Basic power (BP)					
6,0	F	-	-	-	40°C
9,0	F	-	-	-	40°C
10,0 [2]	F	-	-	-	40°C
10,0 [2]	F	-	-	40°C	65°C
10,5	F	-	-	-	40°C
13,0	F	-	-	-	40°C
13,6 [2]	F	-	-	-	40°C
14,1 [2]	F	-	-	-	40°C
16,5	F	-	-	-	40°C

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient [1] temp. "T" classification			
		T6 (G) 85°C (D)	**T5 (G)** 100°C (D)	**T4 (G)** 135°C (D)	**T3 (G)** 200°C (D)
Basic power (BP)					
9,7	F	-	-	-	40°C
10,0	F	-	-	40°C	65°C
11,0	F	-	-	-	40°C
11,2	F	-	-	-	40°C
12,5	F	-	-	-	40°C
14,0	F	-	-	-	40°C
16,8	F	-	-	-	40°C

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

[1] Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets
[2] AC (~) rectified coil construction

OPERATORS

for potentially explosive atmospheres
non sparking protection,
II 3 G/D EEx **nA** II T4/T3 / IP65
moulded enclosure with connector

Series

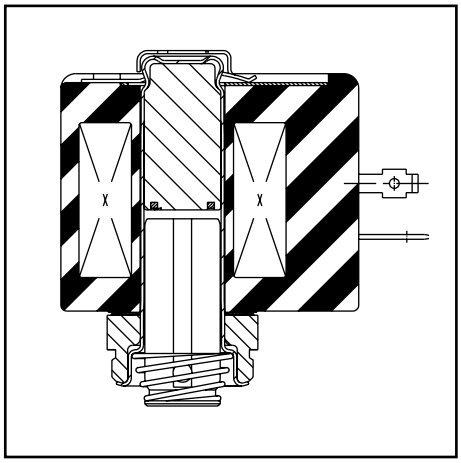
ATEX **ZN**

FEATURES

- *Explosionproof operator, intended for use in potentially explosive atmospheres according to Directive ATEX 94/9/EC*
- *Fully compliant with the European Standard EN 50021 and EN 50281-1-1*
- *Easy electrical installation by means of the size 30 plug in connector with PG 9P cable gland*
- *A thermal fuse is fitted in the coil winding and any excessive heating due to prolonged over-voltage or a locked core will cause the thermal fuse to operate*
- *Ingress protection degree (IP65)*
- *A wide range of valves can be supplied with the operator*

CONSTRUCTION

Solenoid Enclosure	Epoxy encapsulated
Core, tube, springs & plugnut	Stainless Steel
Shading coil	Copper & Silver
Nameplate	Polyester
Spade connector	ISO 4400 (cable Ø 6-8mm)



ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

Ex II 3 G EEx nA II T4 to T3 (gas)
Ex II 3 D IP65 135°C to 200°C (dust)

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -20°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
6,0	F	-	-	-	50°C
9,0	F	-	-	-	50°C
10,5	F	-	-	-	50°C
15,4	F	-	-	-	50°C
16,7	F	-	-	-	50°C
20,0	F	-	-	-	50°C

* Only to be used if E.D. is 10% or less (Energized Duty)

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
9,7	F	-	-	50°C	-
10,0	F	-	-	-	50°C
11,2	F	-	-	-	50°C
14,0	F	-	-	-	50°C
15,3	F	-	-	-	50°C
16,8	F	-	-	-	50°C
19,7	F	-	-	-	50°C
23,0	F	-	-	-	50°C

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

OPERATORS

for potentially explosive atmospheres
non sparking protection,
II 3 G/D EEx **nA** II IP67
steel or stainless steel enclosure

Series

ATEX **WPZN**
WSZN

FEATURES

- *Explosion proof operator intended for use in potentially explosive atmospheres according to Directive ATEX 94/9/EC*
- *Compliance with the Essential Health and Safety Requirements has been assured by European Standards EN 50281-1-1, EN IEC-60079-0 and EN IEC-60079-15*
- *Easy electrical installation by means of a screw terminal coil*
- *The solenoid enclosure has a cable gland with integral strain relief for cables with a diameter from 7 to 12 mm*
- *Ingress protection degree IP67*
- *The operator is available as both a push or pull type solenoid and can be supplied on a wide range of valves with ASCO interface*

CONSTRUCTION

Solenoid enclosure	WPZN	Zinc plated steel (epoxy coated)
	WSZN	Stainless steel, AISI 316
Cable gland	all	PA
Core, core tube & plugnut	all	Stainless steel
Shading coil	all	Copper or silver
Nameplate	all	Polyester)

ELECTRICAL CHARACTERISTICS

Standard voltage:
DC (=): 24V - 48V
AC (~): 24V - 48V - 115V - 230V / 50 Hz
(Other voltages and 60 Hz on request)

SAFETY CODE

Ex II 3 G EEx nA II T6 to T3 (gas)
Ex II 3 D IP67 85°C to 200°C (dust)

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient [1] temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
6,0	F*	-	40°C	60°C	75°C
6,0	F	-	-	40°C	75°C
6,0	H	-	-	40°C	75°C
9,0	F	-	-	-	50°C
9,0	H	-	-	-	75°C
10,0	F	-	-	70°C	-
10,0	F	-	-	75°C	-
10,5	F	-	-	-	75°C
10,5	H	-	-	-	75°C
10,5	F*	-	40°C	60°C	75°C
13,4	F	-	-	40°C	75°C
14,1	F	-	-	50°C	90°C
15,4	F	-	-	-	40°C
15,4	H	-	-	-	50°C
16,5	F	-	-	40°C	75°C
16,7	F	-	-	-	40°C
16,7	F*	-	40°C	60°C	75°C

* Only to be used if E.D. is 10% or less (Energized Duty)

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient [1] temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
9,7	F	-	-	70°C	-
9,7	H	-	-	70°C	75°C
10,0	F	-	-	75°C	-
11,0	F	-	-	60°C	75°C
11,2	F	-	-	60°C	75°C
11,2*	F	60°C	75°C	-	-
11,2	H	-	-	50°C	75°C
13,3	H	-	-	40°C	60°C
14,0	F	-	-	50°C	75°C
15,3	F	-	-	-	50°C
15,3	H	-	-	40°C	75°C
16,8	F	-	-	40°C	75°C
16,8	H	-	-	40°C	75°C
17,4	H	-	-	-	50°C
19,7	F	-	-	-	40°C
19,7	H	-	-	-	50°C
19,7*	F	40°C	60°C	75°C	-
20,8*	F	40°C	60°C	75°C	-
23,0	F	-	-	-	50°C
23,0	H	-	-	-	75°C
26,6	H	-	-	-	60°C
30,0*	F	40°C	60°C	75°C	-

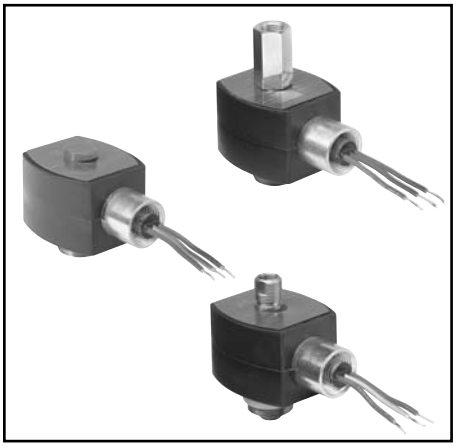
The codes in the grey shaded areas correspond to wattage used for the pulse valve line

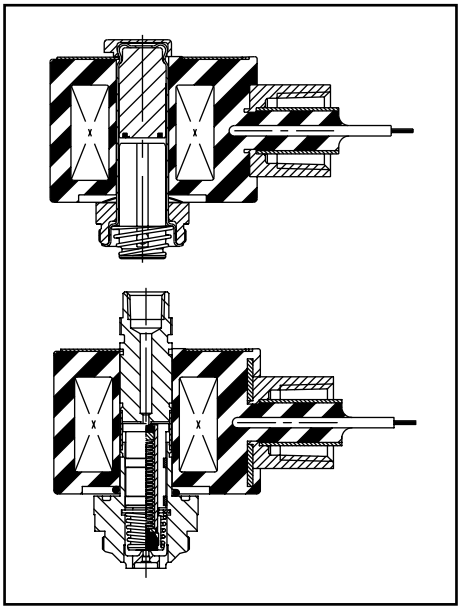
[1] Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

OPERATORS

for explosive atmospheres
2 and 3 way
encapsulated moulded coils with leads

Series
EF
EV





FEATURES

- *The solenoid is conforming to **ICS-6 ANSI / NEMA** standard and **UL** standards **429, 508 and 1002***
- *A one-piece moulded epoxy coated solenoid with an integral 1/2" NPT conduit hub and built-in strain relief for leads*
- *The epoxy encapsulation serves as the enclosure and the magnetic frame is moulded into the coil*
- *The operator is available as both pull or push type solenoid and can be installed on normally open and normally closed valves*
- *The solenoid has 35 cm long leaded wires*
- *The solenoids include an internal non-resetable thermal fuse to limit solenoid temperature in the event that extraordinary conditions occur, which could cause excessive temperatures*

CONSTRUCTION

Encapsulant	Thermosetting epoxy-resin
Core tube	Stainless steel
Core and plugnut	Stainless steel
Core spring	Stainless steel
Sealings & discs	NBR
Top disc (3 way)	PA
Disc holder	CA
Cartridge	Welded, packless AISI 430
Cartridge seat	Brass
Seat insert	CA
Shading coil	Copper
Nameplate	Stainless steel
Conduit hub	1/2" NPT zinc plated carbon steel (EF prefix) or 1/2" NPT stainless steel (EV prefix)

ELECTRICAL CHARACTERISTICS

Standard voltages:
DC (=) : 24V - 48V
AC (~) : 24V - 48V - 120V - 240V / 60 Hz
(Other voltages and 50 Hz on request)

SAFETY CODE

NEMA, types 7 and 9

TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -20°C for the operator.
Select the requested "T" classification from the temperature classification tables (AC or DC), respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

AC (~) Solenoids

power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
6,1	F	-	-	-	52°C
9,1	F	-	-	-	52°C
10,1	F	-	-	-	52°C
15,1	F	-	-	-	52°C
17,1	F	-	-	-	52°C

DC (=) Solenoids

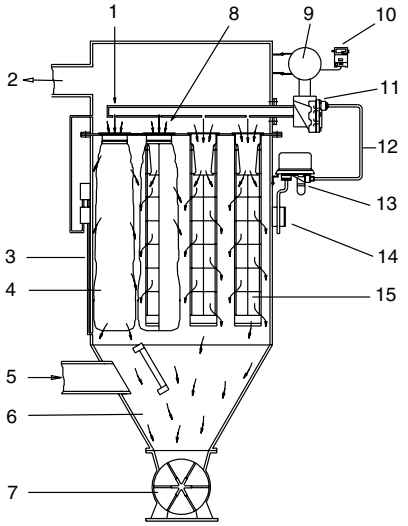
power level (watt)	insulation class	maximum ambient (1) temp. "T" classification			
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)	T3 (G) 200°C (D)
Basic power (BP)					
10,6	F	-	-	-	40°C
11,6	F	-	-	-	40°C
22,6	F	-	-	-	40°C

The codes in the grey shaded areas correspond to wattage used for the pulse valve line

(1) Make sure that the selected ambient temperature does not exceed the allowable valve temperature characteristics as specified on the appropriate valve catalogue sheets

TECHNICAL INFORMATION

pulse valves
for dust collector systems



1) Compressed air jet
2) Clean air exhaust
3) Filter housing
4) Filter bag
5) Dirty air intake
6) Dust collector hopper
7) Dust lock
8) Secondary air
9) Supply air
10) Pressure switch
11) Dust collector valve
12) (Auxiliary) air control pipe
13) Valve block
14) Solid state sequential controller
15) Filter cage (shown without filter bag)

TECHNICAL INFORMATION ON PULSE VALVES

ASCO Numatics has a comprehensive range of pulse valves for the dust control market with accessories to sense the pressure drop across the fabric and to control the pulse sequence.
Since the valve performance has great influence on the cleaning efficiency of the generated air pulse, this aspect in particular is highlighted in this section.

Diaphragm Pulse valves

The construction of the ASCO 2-way diaphragm pulse valves is based on the proven fact that fast opening and closing of the valve is of great importance for effective cleaning of the filter fabric and economical air consumption.
By keeping the weight of the moving parts in the valves as low as possible, the response times are, thanks to the low inertia, very short and result in opening times between 8 and 14 milliseconds. The diaphragm assembly used in the ASCO pulse valves is a low mass construction compared to what is normal practice in this industry. At the same time the strength and endurance of the used nylon reinforced Neoprene or Hytrel sheet-material diaphragms are extremely good.
The main diaphragm is clamped between valve bonnet and body in a special patented way which forces the diaphragm to seal the valve seat without the use of strong closing springs, thus preventing the flutter phenomenon which is very common in other high flow diaphragm pulse valves.
Flluttering of the diaphragm during opening and closing of the valve will affect the valve performance dramatically and increases air consumption.

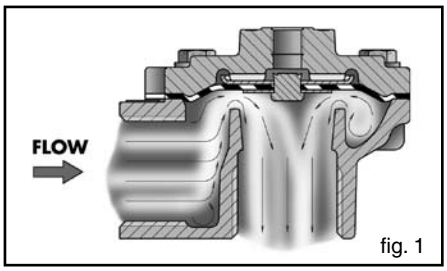


fig. 1

The high flow, angle type aluminium bodied valves in combination with the special main diaphragm assemblies give the unique operating characteristics required for this application.
This higher flow is expressed in a very high Kv factor for each valve (fig. 1).
The maximum flow through the blow pipe(s) in the filter is reached when the air velocity becomes sonic (344 m/s); this situation occurs at the critical pressure drop. For air this condition is reached when the absolute downstream pressure is 52,8% of the absolute upstream pressure.
The standard valve bodies have threaded pipe connections according to ISO 228/1.
The valves are either integral solenoid pilot operated or remote pilot operated.
Solenoid pilot controlled types are standard equipped with epoxy moulded spade plug connection coils. Stainless steel waterproof enclosures (IP 67) and ATEX (CENELEC), IECEx, NEMA explosionproof solenoids are available as an option. Other options available are NPT or ISO 7/1 pipe threads, brass bodies for mining applications (sparkless) and epoxy coating for corrosive environments.

Piston Pulse valves

The main requirements of pulse valves for the dust collection market are low cost, superior operating characteristics, long life and ease of installation & maintenance.
In order to improve the present offer, a new piston concept, the power pulse valve was developed to meet these market requirements.
An integral component in producing this new flow concept is a unique one-piece patented Hytrel piston/diaphragm construction. This combination allows the flow to travel underneath the piston instead of over a wall as in the conventional pulse valve. This creates less of a restriction to the flow (fig. 2). Another advantage is that the venturi shape of the valve outlet increases air speed.
In addition to the flow, the peak pressure is positively influenced. Laboratory tests show a 20% improvement.

Fully immersed piston valves

Due to the Pressure Equipment Directive 97/23/EC, which contains pressure equipment operating above 0.5 bar and manufactured or traded within the European Union, filter builders more and more prefer to buy complete assembled pressure header tanks.
Besides this regulation also other factors enable true “one stop shopping":
- One supplier supplies and guarantees the complete system
- Simplified stocking and purchasing process
- Tank system with full-immersed valve has an increased flow performance

To meet these market demands, a revolutionairy Power Pulse Tank System with fully immersed valves has been introduced, based on the proven Power Pulse valve technology. In the case of the full-immersed valves, the air enters the valve from all directions (see fig. 3).

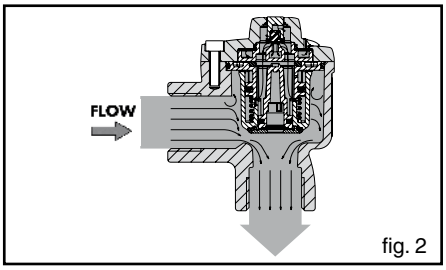


fig. 2

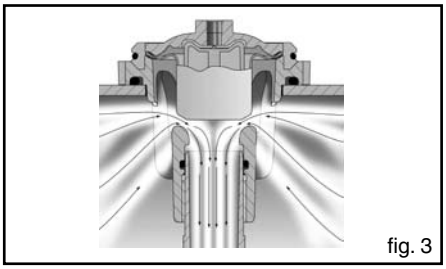


fig. 3

In the adapter the flow is optimal guided by the patented venturi concept, resulting in a higher peak pressure.

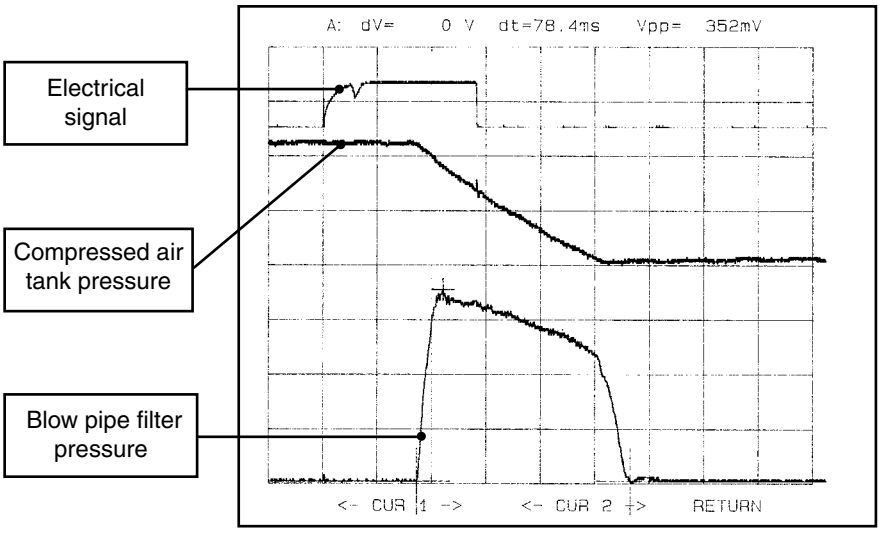
ACCESSORIES FOR PULSE VALVE CONTROL

Pulse valves are vital parts in dust collector systems but only one of the many components necessary to build a complete system.

Additional accessories available from ASCO Numatics are solenoid pilot valves for remote control, both as single valve or grouped in pilot boxes for large filter units, electronic timers to control the solenoid operators and pressure switches to sense the air tank pressure or the pressure differential across the filters. The pilot valve boxes can house 2 up to 12 solenoid valves protected by a dust and waterproof aluminium enclosure (IEC 144, IP 65) and are available with a heating device for low ambient temperature conditions (down to -40°C).
To fulfill the timer function in the filter cleaning process, ASCO has a solid state sequential controller with adjustable impulses and interval signals to control the solenoid operators.

INTERPRETATION OF THE FIGURES

The data sheet of ASCO pulse valves is divided into two parts; the left side shows the graphical presentation of the test data and on the right all the numeric data can be found (fig. 4).
The graph shows the following information:
The x-axis represents the elapsed time and the y-axis represents the electrical and the pressure signals.
The table states the name of the manufacturer, the tank type and the size of the pipe connection. Below the heading of the graph the following data is provided:
The sine wave is the electrical signal and further two pressure signals are shown. The upper signal shows the pressure in the supply tank and the lower signal shows the pressure of the shock wave generated by the pulse valve which is registrated at the end of the blow pipe.



MANUFACTURER	: ASCO CONTROLS
TANK TYPE	: E355AN04
PIPE SIZE	: 1"
Tank volume	: 24 dm³
Tank pressure	: 6 barg
Electrical pulse length	: 60 msec.
Total pulse length	: 81 msec.
Peak pressure	: 4.6 barg
Opening time - 50% pp	: 1.9 msec.
Closing time - 50% pp	: 6.5 msec.
Pressure drop tank	: 1.9 bard.
Performance ratio	: 76.7%
Volume per pulse	: 45.2Ndm³

fig. 4

DEFINITIONS

- **Tank volume [dm³]:**
  This is the amount of air volume stored in the supply tank. (Tank volume depends on valve size).
- **Tank pressure [barg]:**
  This is the air pressure in the supply tank which is given in gauge pressure.
  This is also the pressure to which the valve is subjected.
- **Max. allowable pressure (PS)[barg]:**
  The line or system pressure to which the equipment may be subjected without being damaged.
- **Electrical pulse length [ms]:**
  This is the energized time of the valve. (The wave length of a 50 Hz alternating current is 20ms for a full wave).
- **Total pulse length [ms]:**
  This is the time from the moment the valve opens until the valve is fully closed.
- **Peak pressure [barg]:**
  This is the maximum pressure which is measured at the end of the blow pipe usually scaled at the end of the first slope of the graph (after the valve has opened completely). This creates the shock wave down the filter bags for cleaning.
- **Opening time to 50% Pp [ms]:**
  This is the elapsed time from zero until 50% of the peak pressure has been reached. The quicker the opening time, the higher the acceleration of air for better cleaning.
- **Closing time from 50% Pp [ms]:**
  This is the elapsed time from 50% of the peak pressure measured on the down stream slope until the valve is completely closed.
- **Pressure drop tank [bar]:**
  This is the difference between the tank pressure before and after the shot.
  With this value it is possible to calculate the air consumption of the valve per pulse (volume per pulse).
- **Performance ratio [%]:**
  This is the ratio between tank pressure and peak pressure multiplied by 100%.
- **Volume per pulse [Ndm³]:**
  This is the amount of air at atmospheric pressure passing through the valve for a given pulse time.
  The greater the volume per pulse the better the filter bags are cleaned and more bags could be cleaned per valve.

Using figures for comparison and selection

To compare graphs of different valve makes and/or types of pulse valves the following is essential: it is preferable to have the graphs made by identical electronic measurement equipment since a slight difference in sensitivity and accuracy of the components can make a fair difference in the results.
The other basic test conditions and set up must be equal too. The most important parameters which have to be exactly identical are:

- **Tank volume and pressure**
- **Electrical pulse length/Total pulse length**
- **Fittings from supply tank to valve and from valve to the blow pipe**
- **Size of the blow pipe and the number and location of the blow pipe holes**
- **Location and position of the pressure transducer(s) (distance from the valve and radial or axial mounted on the air stream)**

Since there are so many parameters to take into account, the most reliable method to compare the test results is when they are made under the same test conditions, so with the same equipment.

Besides the performance and price level of the pulse valve, several other important parameters are essential, such as:

- **Installation dimensions**
- **Minimum and maximum operation pressure**
- **Service life time**
- **Internal and external leakage**
- **Installation possibility of silencers in vent port(s)**

Calculation and determination of the parameters

First we have to divide the different parameters into those we can fix or influence and those which are depending on the settings of the equipment.

Note that the calculation examples are based on sonic flow conditions (air flow velocity = 344 m/s) without friction losses and under isothermal conditions.

- **Tank volume:**
  The determination of the tank volume depends on several conditions:
  1. The required volume air per pulse to clean the dust filter(s) (depends on type, size and construction of the filter unit)
  2. The tank pressure and the desired peak pressure
  3. The size of the valve (Kv value)
  4. The size of the blow pipe and the size and number of the blow holes
  5. The number of pulses per time unit
  6. The duration of the electrical pulse and the total pulse time
  7. The number of valves on the tank
  8. The capacity of the compressor

The most common method to determine the tank volume is to experiment at which minimum tank volume at a certain pulse time you achieve a square shock wave and the best cleaning effect.

To make a rough calculation of the capacity of the supply tank, the below mentioned method can be used:

To maintain sonic flow conditions in the blow pipe(s) it is necessary to choose the product of the tank volume and the absolute tank pressure (= gauge pressure +1 bar) at least twice the required volume per pulse, this will also allow a maximum pressure tank pressure.

In a formula: $$V_t \geq \frac{2.V_p}{P_u}$$

V_t = Tank volume [dm^3]
V_p = Volume per pulse [Ndm^3]
P_u = Absolute upstream pressure [bara] (Absolute tank pressure)

- **Tank pressure:**
  The tank pressure is usually set at 0,5 to 8 barg and depends on the type and construction of the filter units.

  The system is often connected to an existing line pressure of 6 or 8 bar and reduced to the required pressure.

  For direct pulse valve systems the tank pressure usually is 0,5 to 3 barg.

  For reverse air-jet systems the pressure mostly is 6 to 8 barg.

  The tank pressure is also proportional responsible for the height of the peak pressure.

- **Electrical pulse length:**
  The electrical pulse length is usually set at 40 to 200 ms and is also mainly responsible for the total pulse length and thus the amount of air passing through the valve.

  A minimum electrical pulse length is required to operate the pulse valve correctly and depends on the type, construction and size of the valve. The tank pressure can also influence the required electrical pulse length.

  For remote controlled pulse valves, the length and size of the tubing is of great influence too because opening and closing response times of the valve increase with the length and size of the tubing of the pilot valve (the opening response time is the time elapsed after the begin of the electrical signal and the moment the valve starts to open, the closing response time is the time elapsed after the end of the electrical signal until the valve is fully closed). The best way to estimate the electrical pulse length is to experiment since there is no other practical method. An electrical pulse time of 60 ms (for direct operated valves) in most cases is sufficient for correct operation that is: achieve maximum opening of the valve and reach the best possible peak pressure

- **Total pulse length:**
  The total pulse length depends on the electrical pulse length as described earlier and the opening and closing times. Together they are responsible for the air consumption or volume per pulse of the valve.

- **Peak pressure:**
  The peak pressure is an important figure to improve cleaning efficiency at minimum air consumption.

  It depends in the first place on the tank pressure but also on the construction of the valve; a short opening time provides high peak pressures. Of course the valve must also have sufficient flow capacity (Kv) to allow pressure build up in the blow pipe.

- **Opening time:**
  The opening time of the pulse valve must be as short as possible to achieve best performance.
  To achieve quick opening times, air must be exhausted very quickly to allow line pressure to act against the bottomside of the diaphragm, opening the main orifice. Keeping the moving parts as light as possible (low inertia) will result in short opening times.

- **Closing time:**
  It is preferable that the closing time of the valve is as short as possible, since a long closing time of the valve increases air consumption.
  The extra flow air has a negligible contribution to the cleaning effect of the total air pulse and is therefore not efficient.

- **Pressure drop tank:**
  The pressure drop in the supply tank is the result of the amount of air which has passed through the valve after one pulse and depends on the following parameters:

a. Kv value of the valve
b. Electrical pulse time and total pulse length
c. Tank volume and tank pressure
d. KV value blowpipe

As stated before, to maintain sonic flow in the blow pipe(s) it is necessary to limit the pressure drop to maximum 50% of the absolute tank pressure.
In a given installation it is the easiest way to reduce the electrical pulse time if the pressure drop is too high.

- **Performance ratio:**
The performance ratio is a figure to compare pulse valves under the same test conditions.
The size of the percentage depends on the Kv value of the valve and the opening time, both are responsible for the peak pressure.

$$P_r = \frac{P_p.100\%}{P_t}$$

P_r = Performance ratio
P_p = Peak pressure
P_t = Tank pressure

- **Volume per pulse:**
The volume per pulse can be determined as follows:
multiply the tank volume by the differential of the tank pressure before and after the shot; this is the (atmospheric) amount of air which has passed through the valve.

In a formula:

$$V_p = P_d.V_t$$

P_d = Differential pressure [bar]

To calculate the volume per pulse at a certain valve and at a certain pulse length, the equation mentioned below can be used. You have to take into account that the calculated value is only the amount of air which is supplied by the tank.
The air that will clean the dust filter depends on several other things e.g. the distance from the blow holes to the filters and the use and shape of venturies which will draw secondary air into the filter increasing the amount of cleaning air.

$$V_p \leq \frac{C.0,528.P_u.T_{pl}}{1000}$$

C = Flow factor [dm³/s.bar]
0,528 = Critical pressure ratio to obtain sonic or choked flow
T_{pl} = Total pulse length [ms]
P_u = absolute upstream pressure [bar]
C = 3,97.Kv
C = 3,39.Cv

- **Kv value:**
With the same equation we can calculate the required Kv value:

$$K_v \geq \frac{1000.V_p}{2,1.P_u.T_{pl}}$$

K_v = Flow factor [m³/h]
2,1 = Dimension factor (3,97.0,528)

Instead of using the volume per pulse you can also use the volume per second value Vs, this is more accurate since opening and closing effects of the valve have been eliminated.

$$K_v \geq \frac{V_s}{2,1.P_u}$$

V_s = Volume per second [dm³/s]

- **Average volume per s:**
The average volume per second at a certain upstream pressure (tank pressure) can be calculated by taking the quotient of the volume per pulse and the total pulse length.

In a formula:

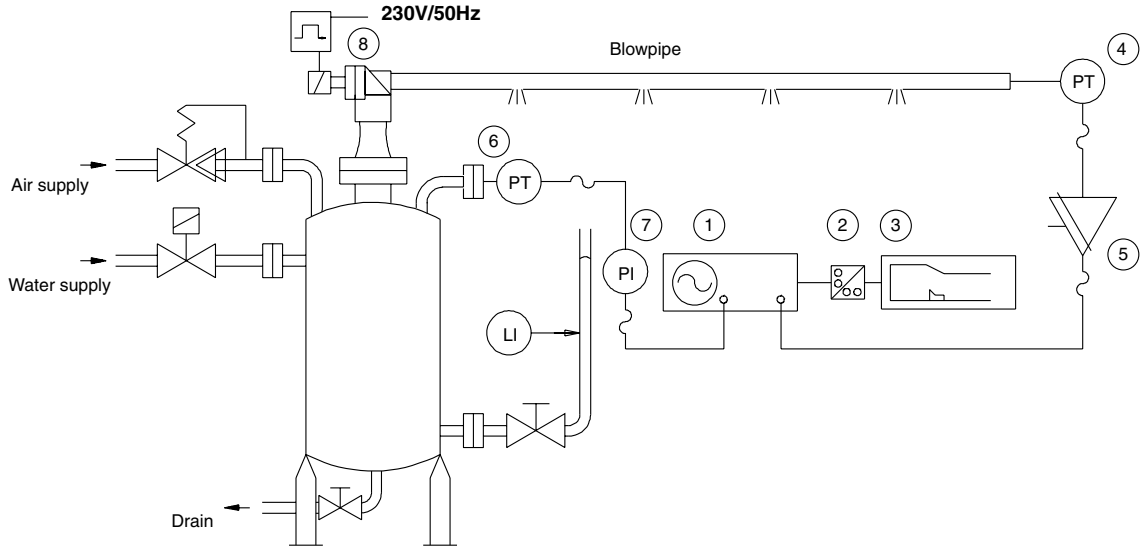
$$A_{vs} = \frac{V_p}{T_{pl}}$$

A_{vs} = Average volume per s [Nm³/s]

This figure indicates the flow capacity in relation with the opening and closing times of the valve. In other words, a valve with a high flow capacity has a relatively high Avs value.

However, long closing and/or opening times will reduce the Avs value, especially at shorter total pulse length.
On the other hand, short opening and closing times can compensate a lower flow capacity.

TEST SET-UP



Equipment used: 1) Digital memo oscilloscope
2) Busconverter parallel
3) Digital plotter
4) Pressure transducer
5) Demodulator/carrier/transmitter/amplifier
6) Pressure transducer
7) Pressure indicator
8) Adjustable time triggering device

NUMERICAL INDEX