STRANGLING DEVICES

GENERALITIES

The strangling devices are primary flow elements designed to produce a differential pressure (output value) proportional to the second degree radical of the fluid mass (input value).

The differential pressure is measured with manometers or differential transducers.

The output parameter of the differential pressure transducer is analogically or digitally processed by a loop for fluid automation, adjustment or measurement, or the fluid flow can be directly calculated for a given value of the differential pressure if the nature of the fluid and some of its parameters are known (density, viscosity, adiabatic exponent, humidity for gases) and if the stipulation of STAS 7347/ 2-90 and SR-EN ISO 5167-1; 1997 are followed.

For correct measurement of the flow with these strangling devices, it is necessary to follow the conditions for fluid flow, the technical characteristics of the installation and other conditions stipulated in the regulations above mentioned.

Our company can size and resize any strangling device from SR-EN ISO 5167-1; 1997 and, in addition, can produce quadrant nozzles and segment diaphragms according to VDI/ VDE- 2041.

Currently, we are executing all the strangling devices included in CODING – a).

STRANGLING DEVICE CODING

DS- XX. X. X. X. X. X.

g. Options
f. Disc material
e. Flange material
d. Connection type at the impulse pipe
c. Nominal pressure
b. Nominal diameter
a. Type

a. Type

Diaphragm Type	Code
Diaphragm with ring-type chamber	
Diaphragm with angular coupling	
Diaphragm with coupling to flange	
Diaphragm with port to D and D/ 2	
Quadrant nozzle (not standardized in Romania)	
Diaphragm with angular port in flat flange	
Segment Diaphragm	

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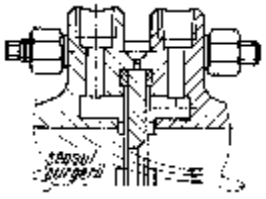


Fig. 1

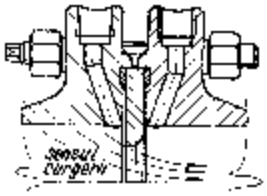


Fig. 2

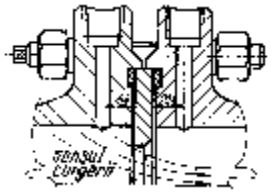


Fig. 3

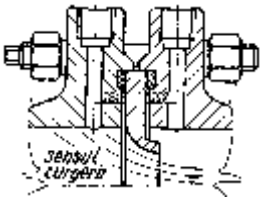
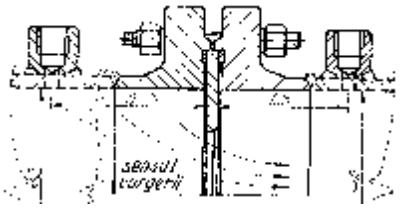


Fig. 4



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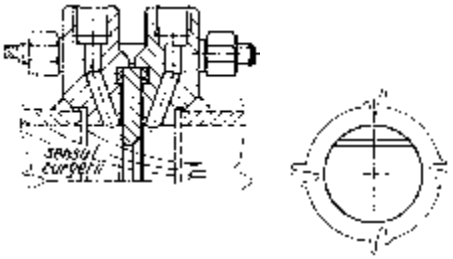

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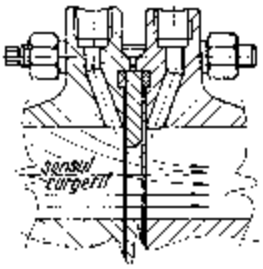

Fig. 7

b. Nominal Diameter

Dn	25	32	40	50	65	80	100	125	150	175	200
Cod	01	02	03	04	05	06	07	08	09	10	11
Dn	250	300	350	400	500	600	700	800	900	1000	1200
Cod	12	13	14	15	16	17	18	19	20	21	22

c. Nominal Pressure

PN	6	10	16	25	40	64	100	160	250	320
Cod	0	1	2	3	4	5	6	7	8	9

d. Connection type at the impulse pipe

Connection Type	Code
Round sealing port with connection hose welded at the end of the impulse pipe	0
Flange and counter-flange pipe DN- 10; PN- 25 according to STAS 8015-84 PN-40; 100; 160; 250 accord. to STAS 6066; 8031; 8032; 8033-84; PN-320 accord to DIN2629	1
Thread cap Br ¼ “	2
Thread cap Br ½ ”	3
Port with connection hose , 10 x 3 (mmxmm) external diameter and wall thickness	4
Port with connection hose , 12 x 3 (mmxmm) external diameter and wall thickness	5
Port with connection hose , 14 x 3,5 (mmxmm) external diameter and wall thickness	6
Port with connection hose , 18 x 4 (mmxmm) external diameter and wall thickness	7
Flange and counter-flange pipe DN- 15; PN- 25 according to STAS 8015-84 PN-40; 100; 160; 250 accord. to STAS 6066; 8031; 8032; 8033-84; PN-320 accord to DIN2629	8

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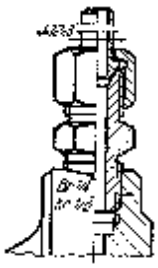
Fig. 8

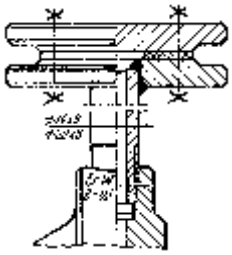
Fig. 9

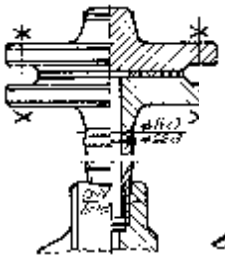
Fig. 10

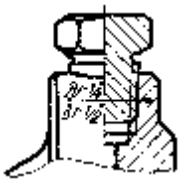
Fig. 11

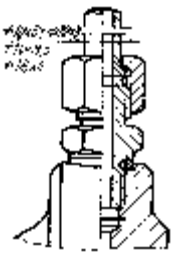
Fig. 12

e. Flange material

Material	Code	Material	Code
16 Mo 3 Steel	0	W 1.4541 Stainless Steel	5
OL 37 Steel for general use	1	W 1.4571 Stainless Steel	6
OL 44 Steel for general use	2	10 Cr Mo 10 Steel	7
OLC 25 Carbon steel	3	Material specified by the customer	8
W 1.4306 Stainless Steel	4		

f. Disc material

Material	Code
W 1.4306 Stainless Steel	0
W 1.4541 Stainless Steel	1
W 1.4571 Stainless Steel	2
Material specified by the customer	3

g. Options

1. Strangling device without spare disk, measured by CAOM Pascani
2. Strangling device with spare disk, measured by CAOM Pascani
3. Strangling device without spare disk, adjusted according to beneficiary ‘s request
4. Strangling device with spare disk, adjusted according to beneficiary ‘s request

On CODING, please take into consideration the tables above to indicate a specific execution. The CODING levels “a” and “b” are specified in the tables according to the device type (level “a”) and to the connection type at the impulse pipe (level “d”).

Diaphragm with ring-type chamber (a = 01)
Diaphragm with angular coupling (a = 02)
Segment Diaphragm (a =07)
Connection type at the impulse pipe d = 0…2; 4…7

Connection type at the impulse pipe

b	07...22	01...22	01...21	01...21	01...16	01...16	01...15	01...13	01...12	01...12
c	0	1	2	3	4	5	6	7	8	9

Diaphragm with ring type chamber (a= 01)
Connection type at the impulse pipe d= 3;4…8

b	18...22	14...21	11...21	09...16	06...16	04...15	03...13	01...12	01...12
c	1	2	3	4	5	6	7	8	9

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Diaphragm with angular port (a= 02)
Segment diaphragm (07)
Connection type at the impulse pipe d= 3;4…8

b	13...22	08...22	08...21	05...21	05...16	01...16	01...15	01...13	01...12	01...12
c	0	1	2	3	4	5	6	7	8	9

Diaphragm with port to flange (a= 03)
Quadrant nozzle (a = 05)
Connection type at the impulse pipe d= 3;4…8

b	22	19…22	13…21	07…21	07…16	01...16	01...15	01...13	01...12	01...12
c	0	1	2	3	4	5	6	7	8	9

Diaphragm with port to D and D/ 2 (a= 04)
Connection type at the impulse pipe d= 0…8

b	08…22	09...22	09...21	11...21	12...16	14...16
c	0	1	2	3	4	5

Diaphragm with angular port in flat flange (a= 06)
Connection type at the impulse pipe d= 0…2;4…7

b	12…22	11...21	09...21	05...16
c	0	1	2	3

Diaphragm with angular port in flat flange (a= 06)
Connection type at the impulse pipe d= 3;4…8

b	16…22	14...21	12...21	09...16
c	0	1	2	3

The materials of the component parts are chosen according to fluid chemical aggressiveness, pressure and temperature, except for the flanges and the disk material that must be specified in order.

There are several standards followed in the execution of these devices, such as:

- STAS 4789; 6063; 6064; 6065; 6066; 6150; 8031; 8032; 8012; 8013; 8014; 8015-84 for strangling devices
- DIN 2629-1975 for the flanges
- STAS 1731-80 for the sealing systems, except for the diaphragms with ring-type chamber
- STAS 3498-87 for sealing packing
- ANSI B 16 for metallic- winding sealing packing used for diaphragms, with port to flange, for diaphragm with port to D and D/ 2 and for quadrant nozzles.

The N digit corresponds to the nominal pressure for the standards above mentioned.

In fig. 13 a diaphragm with angular port is presented and the table contains its components parts, the material and the number of each part per product.

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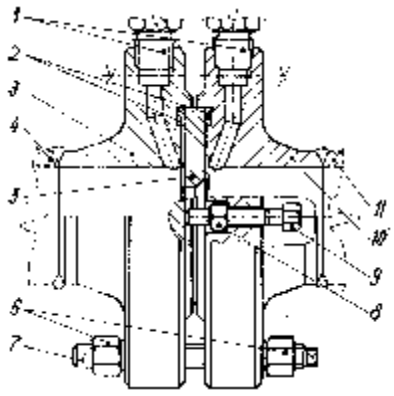
Table 1

No	Name of the component	Material	Nr of pieces
1	Impulse outlet	OL 45 AS-K/R Accord to STAS 3489-87	2
2	Packing	Or metallic winding	2
3	Upstream flange	Accord. to code	1
4	Pipeline section		1
5	Disk	Accord to STAS 11299-89	1
6	Tap bolt nut	Accord to STAS 11299-89	2 X N
7	Tap bolt	Accord to STAS 11299-89	N
8	Separator nut	Accord to STAS 11299-89	2
9	Separator screw	Accord to STAS 11299-89	2
10	Downstream flange	Accord. to code	1
11	Pipeline section		1



On beneficiary's request, our company executes strangling devices according to other technical specifications than the ones hereby introduced. In order to be executed, the beneficiary will send to our company either the calculation method or the technical data from the below model if our company will do also the readjustment.

The adjustment program of CAOM SA is approved by the National Institute of Metrology with the authorization no. 448/ 19.04.1996.

If necessary, we are able to readjust the strangling devices in two distinct manners:

- the calculation of a new superior limit of the flow
- the calculation of a new maximum differential pressure

In both cases, besides the technical data specified, it has to be mentioned also the diameter of the disk orifice in mm and the type of the strangling device, but the value of the parameter to be calculated doesn't have to be specified. On delivery, the product contains the calculation chart if the device is adjusted by our company, the quality and guarantee certificate which includes four diameters of the disk orifice measured in uniformly distributed meridional planes as well as the average of these four diameters that will be considered in flow calculation, the mounting and exploitation instructions referring to the overall dimensions, minimum length of the upstream and downstream pipeline section and the operation chart according to fluid's physical state.

There will be the following marks: on the upstream " +* SC- CAOM-SA PASCANI* series * device symbol ", on the downstream flange "*series* device code", on the upstream side of the disk "AMONTE * d = average of the four measured diameters of the disk orifice" , on the downstream of the disk "AVAL".

CODING EXAMPLE

DS- 02. 08. 5. 4. 3. 2. 2

Meaning that:

- the product is a strangling device
- type: diaphragm with angular port
- Nominal diameter of the device Dn-125
- Nominal pressure of the device Pn – 64
- Connection type at the impulse pie- connection hose with 10 x 3 mmxmm exterior diameter x thickness
- Flanges material is OLC 25 Steel
- Disk material is W 1.4571 Stainless Steel
- The beneficiary requests a spare disk and our readjustment

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1. Supplier: SC CAOM SA Pascani
2. Beneficiary:……..
3. Device symbol:……
4. No of pieces:……
5. Designer (company, name, telephone)……
……
6. Fluid……..(liquid, fumes/ steam, gas)
7. Fluid's physical state….
8. Relative pressure in installation
9. barometric pressure at the mounting spot
10. fluid temperature
11. Maximum Flow
12. Maximum differential pressure of transducer
13. pipe external diameter
14. pipe wall thickness
15. pipe material
16. impulse port pipe (external diameter x pipe thickness)
17. impulse pipe material
18. device code DS

Note: - We also accept other measurement units besides the one in the brackets.
- The positions 16 and 17 are fulfilled only for the 0, 4..7 values of the "d" CODING level.

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