FLAT JET SPRAY NOZZLE type P

Flat jet spray nozzles are indicated by a P and draw on the covered surface by the jet the approximate shape of a rectangle with the shorter sides rounded.
This jet can be defined as fluid FAN cutting through the air.
Jet dimensions on the surface depend on pressure of delivered liquid, on distance between spray nozzle and surface to be protected and on jet spray angle.

SPRAY ANGLE

Usually spray angles cover a range from 30° - 45° - 60° - 90° to 120°, but special spray nozzles can be supplied with spray angle of 70° and up to 160°.
Spray angle depends on spray nozzle distance, viscosity of the liquid and air turbulence.
Angle values have been measured while spray nozzles were delivering water at 20°C.

SPRAY NOZZLE MATERIAL

Caccialanza spray nozzles are in steel, brass, bronze, cast iron, PVC and any plastic material according to the different applications.

ADVANTAGES

In order to deliver liquid, drilled pipes are often used, but this has several inconvenients such as the higher possibility of pipe clogging with consequent decrease of the sprayed liquid flowrate and an irregular jet.
These spray nozzles offer sure advantages, both for the regular jet distribution on the surface to be protected and for the higher overall economic yield.
Very few spray nozzles properly selected and positioned according to installation instructions, can replace tens of holes on the pipes, with a better hydraulic performance and without liquid waste.
In the drilled pipe system it is very difficult to calculate distance among holes and their diameter to get homogeneous spray.
The problem cannot be solved trying only to get a required flowrate but considering also the action of the jet that in case of drilled pipes cannot be exactly valued.
Therefore it is only possible to act empirically or to make attempts, disregarding a fundamental factor especially for long action systems: service economy.

Installation Instructions:

In order to avoid interference of close jets, we recommend to rotate spray nozzles by at least 5° with respect to the pipe axis. Caccialanza nozzles can be rotated on their axis to reach the best inclinations in order to avoid the above interferences and to carry out special spray patterns. This angle is called deflection angle.
Furthermore, because of operating requirements, to get an ousting jet, the pipe can be rotated on its axis by an angle of 15°. This angle is called incidence angle.

PIPE FLOWRATE

It is known that pressure drops increase with pumped liquid speed.
In order to reduce pressure drops, pipe sizes have to be defined considering a liquid speed between 2 and 3 m/sec.

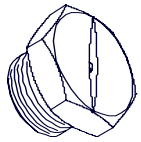
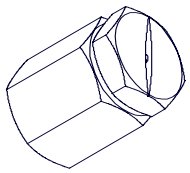
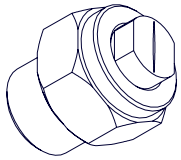
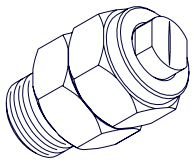
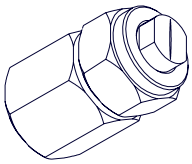
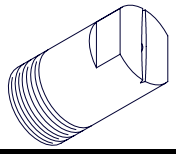
CACCIALANZA SPRAY NOZZLE FLOWRATE

Flowrate of all types of spray nozzles depends exclusively on the diameter of the nozzle pipe independently of the model.
This means that size does not affect flowrate.
Flowrates are calculated with water at 20°C and can change depending on conditions of the jet and of the lines the spray nozzles are mounted on.
Dimensioning a dry powder system pressure upstream the spray nozzle has to be considered.

SIZE OF THE DELIVERED LIQUID DROPS

Size of the drops of the liquid delivered by the nozzles depends on nozzle orifice diameter, delivery pressure and angle configuration.
Caccialanza spray nozzles are designed to get a drop scattering on a rather small surface.
The most uniform distribution of the jet is achieved with a spray angle of 60°.
For spray nozzles with spray angle of 90° and 120°, spray is thicker in the middle of the surface.
Pressure upstream the spray nozzle affects jet distribution.

FEATURES OF FLAT JET SPRAY NOZZLES

Type	Description	
P	Hexagonal body that can be easily installed, equipped with a central hole with a longitudinal slot ensuring a regular, uniform flat jet spray. Spray angle is 30°- 45°-60°- 90° and 120°. Spray nozzle threading: male.	
Pm	Features are similar to the above ones, but with additional, female threaded coupling. Spray nozzle threading: female.	
Pns	Spray nozzle consisting of three components, nozzle with central hole and longitudinal slot, hexagonal threaded ring nut for nozzle fixing and a nipple with an end to be welded to the feeding pipe. Spray nozzle connection: welding.	
Pnr	Features similar to the above ones, but equipped threaded nipple, replacing the end to be welded. Spray nozzle threading: male.	
Pnm	Features similar to the Pnr ones, but equipped with female threaded coupling, replacing the nippled to be welded. Spray nozzle threading: female.	
Pt	Spray nozzle manufactured from a full rod drilled inside, with an end milled for easy mounting and with the slot for flat jet, the other end is male threaded. Spray nozzle threading: male.	

DESIGNATION EXAMPLE

Spray nozzle type: **P xx x x / xx°**

Spray angle	
Orifice diameter	
Spray nozzle size	
Connection / Features	

Size:

1 - 3/8”
2 - ½”
3 - 3/4”
4 - 1”
5 - 1-1/4”
6 - 1-1/2”
8 - 2”

Spray nozzle orifice diameter: defined by manufacturer **(mm)**

Spray angle: **30° - 45° - 60° - 90° and 120°**

Designation examples:

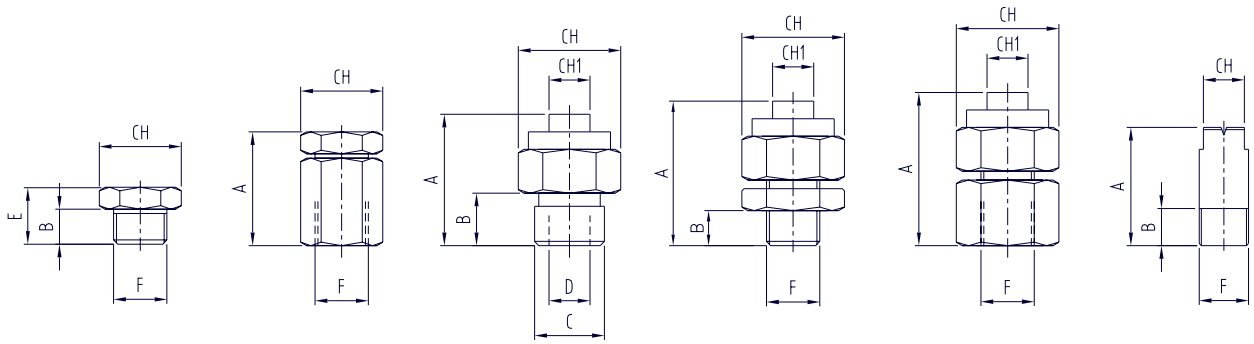
- Flat jet spray nozzle, required flowrate 10.0 *l/min*. at 5 *bar*, threading ¾” male, spray angle 60°

  Model: **P nr 3 3 / 60°**

- Flat jet spray nozzle, required flowrate 90.0 *l/min*. at 4 *bar*, with female threaded coupling 1-1/4”, spray angle 45°

  Model: **P m 5 10 / 45°**

FLAT JET SPRAY NOZZLE type P
Dimensions



Dimensions

Size	Model	F Gas	CH mm	CH1 mm	A mm	B mm	C mm	D mm	E mm
10.8 ÷ 15	P – Pm	¼”	17	-	25	7	-	-	12
33 ÷ 310	P – Pm	¾”	32	-	48	8	-	-	15
58 ÷ 512	P – Pm	1-¼”	50	-	61	12	-	-	22
10.8 ÷ 15	Pns	-	22	10	26	11	17	10	-
33 ÷ 310	Pns	-	32	17	39	17	27	18	-
10.8 ÷ 15	Pnr	3/8”	22	10	33	10	-	-	-
33 ÷ 310	Pnr	¾”	32	17	47	14	-	-	-
10.8 ÷ 15	Pnm	3/8”	22	10	33	-	-	-	-
33 ÷ 310	Pnm	¾”	32	17	47	-	-	-	-
11.5 ÷ 14	Pt	¼”	11	-	26	10	-	-	-
14 ÷ 16	Pt	3/8”	12	-	32	12	-	-	-
11.5 ÷ 14	Pt	¼” NPT	11	-	26	10	-	-	-
14 ÷ 16	Pt	3/8” NPT	12	-	32	12	-	-	-

FLAT JET SPRAY NOZZLE type P
Technical data

Spray nozzle		**Flowrate** *(l/min.)* **at the pressure of** *(bar)*										
Orifice *(mm)*	**Size**	**0.25**	**0.5**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**10**	**20**
0.8	1	-	-	-	0.4	0.5	0.6	0.65	0.7	0.8	0.9	1.5
1	1	-	-	-	0.7	0.8	0.9	1.0	1.1	1.2	1.5	2.0
1.2	1	-	-	0.8	1.0	1.3	1.5	1.6	1.8	2.0	2.3	3.2
1.5	1	-	-	1.0	1.5	2.0	2.2	2.5	2.7	3.0	3.5	5.0
2	1	-	1.3	1.8	2.5	3.1	3.5	4.0	4.5	4.7	5.7	8.0
2.5	1	-	2.0	2.8	4.0	5.0	5.6	6.3	7.0	7.5	9.0	12.5
3	1 - 3	-	3.2	4.5	5.5	8.0	9.0	10.0	11.0	12.0	14.0	20.0
4	1 - 3	-	5.0	7.0	10.0	12.5	14.5	16.0	17.5	19.0	23.0	32.0
5	1 - 3	5.5	8.0	11.0	16.0	20.0	23.0	25.0	28.0	30.0	36.0	50.0
6	3	9.0	13.0	18.0	25.0	31.0	36.0	40.0	44.0	48.0	57.0	80.0
8	3 - 5	14.0	20.0	28.0	40.0	49.0	56.0	63.0	69.0	75.0	90.0	126.0
10	3 - 5	23.0	32.0	45.0	63.0	78.0	90.0	100.0	110.0	118.0	141.0	200.0
12	5	36.0	51.0	72.0	100.0	124.0	143.0	160.0	175.0	189.0	227.0	320.0
15	8	56.0	79.0	112.0	158.0	194.0	224.0	250.0	274.0	296.0	354.0	500.0
16	8	64.0	90.0	128.0	180.0	221.0	255.0	285.0	310.0	335.0	402.0	570.0
19	8	99.0	125.0	178.0	250.0	310.0	358.0	400.0	438.0	474.0	566.0	800.0
21	8	110.0	155.0	220.0	310.0	380.0	440.0	490.0	540.0	580.0	692.0	980.0