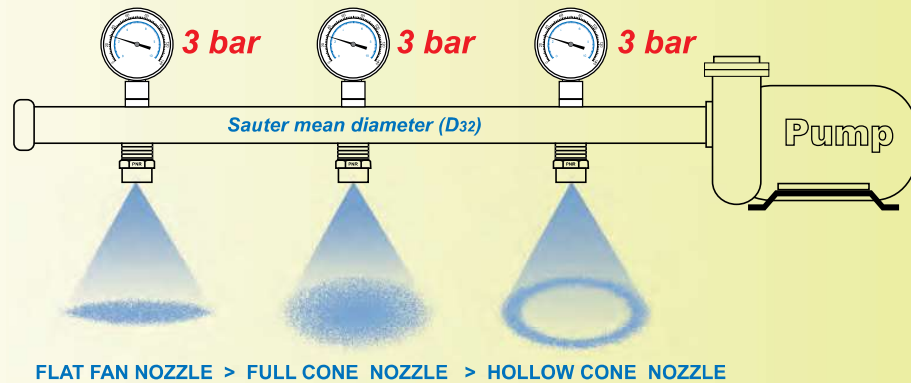


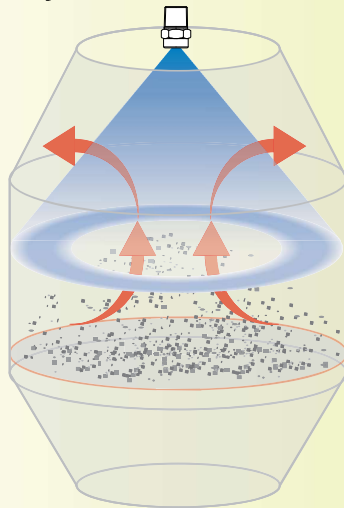


❑ Mist spray

Hollow cone nozzles provide a finely atomized mist and a very uniform hollow cone spray pattern. They are ideal to capture suspended particles and offer higher performances than other nozzles with same operating pressure and capacity. These nozzles are widely used for their efficiency in cooling and cleaning of gases, dust control, absorption processes and air-humidification.



❑ Poor gas scrub efficiency?



Hollow cone nozzles produce a ring-shaped spray pattern where all the liquid jet is concentrated on the outer edge of the ring. Users may fear that offset nozzles do not catch all suspended particles because air flows through directly from the centre. Hollow cone nozzles are the solution to this problem as their fine mist spray provides a better scrubbing effect.

❑ Accurate offset settings

The correct positioning of hollow cone nozzles is of vital importance. There are matrix and offset settings. Please see on page 18 for more information.



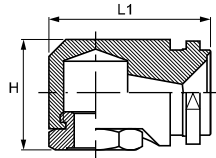
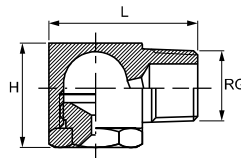
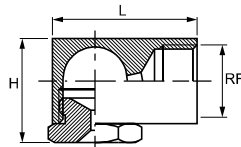
PE (Female)



PF (Male)



PT (QC)

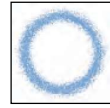


STANDARD ANGLE SPRAY NOZZLES

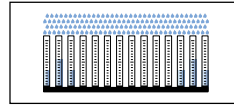
PE/PF hollow cone nozzles generate a ring-shaped spray pattern with finely atomized droplets and work on the tangential flow principle. Inside these nozzles there is an axial groove that injects the liquid tangentially into the vortex chamber where the strong centrifugal force produces a high rotational velocity and generates a finely atomized liquid flow. As these nozzles have a large inside free passage and no swirl insert, they offer the maximum resistance to clogging. PE/PF nozzles are widely used in many production processes and their variety of spray angles and capacities make them suitable for all kinds of working environments.

Thread specification

Female thread (PE series): BSPT, NPT
Male thread (PF series): BSP, NPT



Spray section



Concave distribution



HOLLOW CONE NOZZLES

STANDARD ANGLE SPRAY NOZZLES

50°	RF	PEN	PFN	PTN	Code	DE	DU	Capacity at different pressure values (l/min)								Dimensions mm		
	RG	Female	Male	QC				0.5	0.7	1.0	2.0	3.0	5.0	7.0	10	H	L	L1
	3/8"		•	•	2180	5.9	7.9	7.35	8.69	10.4	14.7	18.0	23.2	27.5	32.9	24	34	35
			•	•	2220	7.5	7.9	8.98	10.6	12.7	18.0	22.0	28.4	33.6	40.2			
			•	•	2390	8.7	9.5	15.9	18.8	22.5	31.8	39.0	50.3	59.6	71.2			

70°	RF/RG	PES	PFS	PTS	Code	DE	DU	0.5	0.7	1.0	2.0	3.0	5.0	7.0	10	H	L	L1	
70°	1/8"		•		0390	0.79	1.2	0.16	0.19	0.23	0.32	0.39	0.50	0.60	0.71	19	24	26	
			•		0780	1.6	1.6	0.32	0.38	0.45	0.64	0.78	1.01	1.19	1.42				
		•	•		1160	2.0	2.0	0.65	0.77	0.92	1.31	1.60	2.07	2.44	2.92				
		•	•		1230	2.4	2.4	0.94	1.11	1.33	1.88	2.30	2.97	3.51	4.20				
		•	•		1390	3.2	3.2	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12				
	1/4"		•	•		1630	4.0	4.0	2.57	3.04	3.64	5.14	6.30	8.13	9.62	11.5			
			•			1780	4.4	4.4	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2			
		•	•	•		0781	1.6	1.6	0.32	0.38	0.45	0.64	0.78	1.01	1.19	1.42	23	32	32
		•	•	•		1161	2.0	2.0	0.65	0.77	0.92	1.31	1.60	2.07	2.44	2.92			
		•	•	•		1231	2.4	2.4	0.94	1.11	1.33	1.88	2.30	2.97	3.51	4.20			
3/8"		•	•	•	1391	3.6	3.6	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12				
		•	•	•	1631	4.0	4.0	2.57	3.04	3.64	5.14	6.30	8.13	9.62	11.5				
		•	•	•	1781	4.8	4.4	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2				
		•	•	•	2117	5.9	5.2	4.78	5.65	6.75	9.55	11.7	15.1	17.9	21.4				
		•	•		1392	3.6	3.2	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12	24	34	35	
1/2"		•	•		1632	4.4	4.0	2.57	3.04	3.64	5.14	6.30	8.13	9.62	11.5				
		•	•		1782	5.2	4.4	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2				
		•	•		2118	5.9	5.6	4.78	5.65	6.75	9.55	11.7	15.1	17.9	21.4				
		•	•		2157	7.1	6.4	6.41	7.58	9.06	12.8	15.7	20.3	24.0	28.7				
		•	•		2196	7.5	7.5	8.00	9.47	11.3	16.0	19.6	25.3	29.9	35.8				
3/4"		•	•		2230	8.3	7.9	9.39	11.1	13.3	18.8	23.0	29.7	35.1	42.0				
		•	•		2197	9.5	6.4	8.00	9.47	11.3	16.0	19.6	25.3	29.9	35.8	31	50	50	
		•	•		2231	9.5	7.5	9.39	11.1	13.3	18.8	23.0	29.7	35.1	42.0				
		•	•	•	2310	9.5	9.1	12.7	15.0	17.9	25.3	31.0	40.0	47.4	56.6				
		•	•	•	2391	9.5	11.1	15.9	18.8	22.5	31.8	39.0	50.3	59.6	71.2				
70°		•	•	•	2470	9.5	13.1	19.2	22.7	27.1	38.4	47.0	60.7	71.8	85.8				
		•	•		2311	12.7	7.9	12.7	15.0	17.9	25.3	31.0	40.0	47.4	56.6	39	55	58	
		•	•		2392	12.7	9.5	15.9	18.8	22.5	31.8	39.0	50.3	59.6	71.2				
		•	•		2471	12.7	11.1	19.2	22.7	27.1	38.4	47.0	60.7	71.8	85.8				
		•	•		2550	12.7	12.7	22.5	26.6	31.8	44.9	55.0	71.0	84.0	100				
		•	•		2630	12.7	14.3	25.7	30.4	36.4	51.4	63.0	81.3	96.2	115				
		•	•		2700	12.7	14.7	28.6	33.8	40.4	57.2	70.0	90.4	107	128				
		•	•		2780	12.7	15.9	31.8	37.7	45.0	63.7	78.0	101	119	142				
	•	•		2860	12.7	17.1	35.1	41.5	49.7	70.2	86.0	111	131	157					
	•	•		2940	12.7	18.3	38.4	45.4	54.3	76.8	94.0	121	144	172					

HOW TO MAKE UP THE NOZZLE CODE

EX.: PES 1160 B1

PE S 1160 xx

NOZZLE TYPE
 • PE - Female
 • PF - Male
 • PT - QC

SPRAY ANGLE
 • N - 50°
 • S - 70°
 • W - 120°

CAPACITY

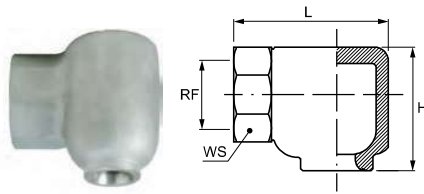
MATERIAL

- B1 - AISI 303 Stainless steel
- B31 - AISI 316L Stainless steel
- T1 - Brass

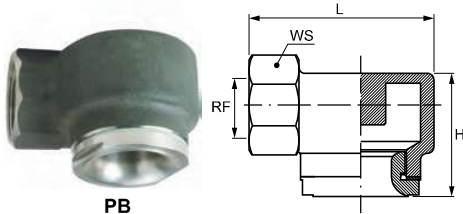
WIDE ANGLE SPRAY NOZZLES

120°	RF RG inch	PEW Female	PFW Male	PTW QC	Code	DE mm	DU mm	Capacity at different pressure values								Dimensions mm			
								(l/min) (bar)								H	L	L1	
								0.5	0.7	1.0	2.0	3.0	5.0	7.0	10				
1/8"	•	•	•	•	0390	0.79	1.2	0.16	0.19	0.23	0.32	0.39	0.50	0.60	0.71	19	24	26	
					0780	1.6	1.6	0.32	0.38	0.45	0.64	0.78	1.01	1.19	1.42				
					1200	2.0	2.8	0.82	0.97	1.15	1.63	2.00	2.58	3.06	3.65				
					1230	2.4	2.8	0.94	1.11	1.33	1.88	2.30	2.97	3.51	4.20				
					1270	2.4	3.2	1.10	1.30	1.56	2.20	2.70	3.49	4.12	4.93				
					1320	2.0	4.4	1.31	1.55	1.85	2.61	3.20	4.13	4.89	5.84				
					1390	3.2	3.2	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12				
					1510	3.2	4.4	2.08	2.46	2.94	4.16	5.10	6.58	7.79	9.31				
					1700	4.0	4.4	2.86	3.38	4.04	5.72	7.00	9.04	10.7	12.8				
	1/4"	•	•	•	•	0781	1.6	1.6	0.32	0.38	0.45	0.64	0.78	1.01	1.19	1.42	23	32	32
						1130	1.6	3.2	0.53	0.63	0.75	1.06	1.30	1.68	1.99	2.37			
						1160	1.6	4.4	0.65	0.77	0.92	1.31	1.60	2.07	2.44	2.92			
						1190	1.6	5.6	0.78	0.92	1.10	1.55	1.90	2.45	2.90	3.47			
						1271	2.0	3.2	1.10	1.30	1.56	2.20	2.70	3.49	4.12	4.93			
						1321	2.0	4.4	1.31	1.55	1.85	2.61	3.20	4.13	4.89	5.84			
						1391	3.6	3.2	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12			
						1511	3.6	4.4	2.08	2.46	2.94	4.16	5.10	6.58	7.79	9.31			
						1600	3.6	5.6	2.45	2.90	3.46	4.90	6.00	7.75	9.17	11.0			
3/8"	•	•	•	•	1701	4.0	4.4	2.86	3.38	4.04	5.72	7.00	9.04	10.7	12.8	24	34	35	
					1780	4.8	4.4	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2				
					1860	4.0	5.6	3.51	4.15	4.97	7.02	8.60	11.1	13.1	15.7				
					1940	4.8	5.6	3.84	4.54	5.43	7.68	9.40	12.1	14.4	17.2				
					1512	3.6	4.4	2.08	2.46	2.94	4.16	5.10	6.58	7.79	9.31				
					1601	3.6	5.6	2.45	2.90	3.46	4.90	6.00	7.75	9.17	11.0				
					1702	4.4	4.4	2.86	3.38	4.04	5.72	7.00	9.04	10.7	12.8				
					1781	5.2	4.4	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2				
					1861	4.4	5.6	3.51	4.15	4.97	7.02	8.60	11.1	13.1	15.7				
1/2"	•	•	•	•	1941	5.2	5.6	3.84	4.54	5.43	7.68	9.40	12.1	14.4	17.2	31	50	50	
					2102	4.4	7.5	4.16	4.93	5.89	8.33	10.2	13.2	15.6	18.6				
					2110	5.2	6.0	4.49	5.31	6.35	8.98	11.0	14.2	16.8	20.1				
					2118	6.0	5.6	4.78	5.65	6.75	9.55	11.7	15.1	17.9	21.4				
					2133	6.0	6.0	5.43	6.42	7.68	10.9	13.3	17.2	20.3	24.3				
					2157	7.1	6.0	6.41	7.58	9.06	12.8	15.7	20.3	24.0	28.7				
					2172	6.0	7.9	7.02	8.31	9.93	14.0	17.2	22.2	26.3	31.4				
					2196	7.5	7.5	8.00	9.47	11.3	16.0	19.6	25.3	29.9	35.8				
					2220	7.5	7.9	8.98	10.6	12.7	18.0	22.0	28.4	33.6	40.2				
					3/4"	•	•	•	•	2391	9.5	11.1	15.9	18.8	22.5				31.8
2630	12.7	14.3	25.7	30.4						36.4	51.4	63.0	81.3	96.2	115				

HOLLOW CONE NOZZLES



PA



PB

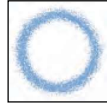
TANGENTIAL NOZZLES

PA/PB tangential nozzles generate a hollow cone spray pattern of finely atomized droplets and work on the tangential flow principle. They are designed with a tangential method of atomization. Inside these nozzles there is an axial groove that injects the liquid tangentially into the vortex chamber where the strong centrifugal force produces a high rotational velocity and generates a finely atomized liquid flow. As these nozzles have a large free passage inside and no swirl insert, they offer the maximum resistance to clogging. PA/PB nozzles are widely used in exhaust scrubbers and are suitable to spray flows with particles.

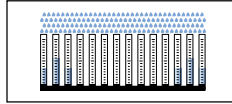
Typical applications

Washing: exhaust scrubbers, desulfuration, denitrification
Cooling: cooling of high temperature gas, product cooling

Thread specification: BSP, NPT (on request)



Spray section



Concave distribution



Code	RF inch	DE mm	DU mm	Capacity at different pressure values									Dimensions mm			
				0.3	0.5	0.7	1.0	2.0	3.0	5.0	7.0	10	H	L	WS	
70°	PAS 1170 xx	3/8"	3.5	2.0	0.54	0.69	0.82	0.98	1.39	1.70	2.19	2.60	3.10	27	37	22
90°	PAU 1390 xx	3/8"	4.0	3.8	1.23	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12			
	PAU 1670 xx	1/2"	5.6	5.2	2.12	2.74	3.24	3.87	5.47	6.70	8.65	10.2	12.2	38	46	27
	PAU 1850 xx		5.7	6.0	2.69	3.47	4.11	4.91	6.94	8.50	11.0	13.0	15.5			
	PAU 2115 xx		6.6	6.9	3.64	4.69	5.56	6.64	9.39	11.5	14.8	17.6	21.0			
	PAU 2220 xx	3/4"	8.5	9.0	6.96	8.98	10.6	12.7	18.0	22.0	28.4	33.6	40.2	48	60	36
	PAU 2320 xx		9.5	11.5	10.1	13.1	15.5	18.5	26.1	32.0	41.3	48.9	58.4			
	PAU 2420 xx		9.6	14.0	13.3	17.1	20.3	24.2	34.3	42.0	54.2	64.2	76.7			
	PAU 2730 xx	1"	20x10	13.7	23.1	29.8	35.3	42.1	59.6	73.0	94.2	112	133	60	75	46
	PAU 2970 xx			16.5	30.7	39.6	46.9	56.0	79.2	97.0	125	148	177			
	PAU 3147 xx	1 1/2"	32x16	19.5	46.5	60.0	71.0	84.9	120	147	190	225	268	90	93	60
	PAU 3194 xx			22.0	61.3	79.2	93.7	112	158	194	250	296	354			
	PAU 3244 xx	2"	35x20	26.5	77.2	99.6	118	141	199	244	315	373	445	127	117	80
	PAU 3294 xx			28.5	93.0	120	142	170	240	294	380	449	537			
	PAU 3364 xx	2 1/2"	25x40	29.5	115	149	176	210	297	364	470	556	665	156	140	100
PAU 3490 xx			36.5	155	200	237	283	400	490	633	748	895				
PAU 3605 xx			45.0	191	247	292	349	494	605	781	924	1105				
130°	PBY 1390 xx	3/8"	3.0	4.5	1.23	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12	27	37	22
	PBY 1850 xx		4.4	7.5	2.69	3.47	4.11	4.91	6.94	8.50	11.0	13.0	15.5			
	PBY 1980 xx	1/2"	4.0	12.0	3.10	4.00	4.73	5.66	8.00	9.80	12.7	15.0	17.9	35	46	27
	PBY 2128 xx		4.7	12.0	4.05	5.23	6.18	7.39	10.5	12.8	16.5	19.6	23.4			
	PBY 2208 xx		6.5	12.0	6.58	8.49	10.0	12.0	17.0	20.8	26.9	31.8	38.0			
	PBY 2220 xx	3/4"	6.1	15.0	6.96	8.98	10.6	12.7	18.0	22.0	28.4	33.6	40.2	50	60	36
	PBY 2320 xx		6.5	19.0	10.1	13.1	15.5	18.5	26.1	32.0	41.3	48.9	58.4			
	PBY 2420 xx		8.0	19.0	13.3	17.1	20.3	24.2	34.3	42.0	54.2	64.2	76.7			
	PBY 2730 xx	1"	13.4	26.0	23.1	29.8	35.3	42.1	59.6	73.0	94.2	112	133	60	93	47
	PBY 2970 xx		14.0	26.0	30.7	39.6	46.9	56.0	79.2	97.0	125	148	177			
	PBY 3147 xx	1 1/2"	15.0	37.0	46.5	60.0	71.0	84.9	120	147	190	225	268	75	111	60
	PBY 3194 xx		19.5	37.0	61.3	79.2	93.7	112	158	194	250	296	354			
	PBY 3244 xx	2"	22.0	45.0	77.2	99.6	118	141	199	244	315	373	445	91	140	75
	PBY 3294 xx		27.1	45.0	93.0	120	142	170	240	294	380	449	537			
PBY 3364 xx	2 1/2"	25.5	64.0	115	149	176	210	297	364	470	556	665	128	193	90	
PBY 3490 xx		33.0	64.0	155	200	237	283	400	490	633	748	895				
PBY 3605 xx		38.0	64.0	191	247	292	349	494	605	781	924	1105				
PBY 3665 xx		43.0	64.0	210	271	321	384	543	665	859	1016	1214				

THREAD SIZE AND MATERIALS

The table on the right side shows thread size and materials

Material	3/8"	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"
B31 - AISI 316L SS				•	•	•	•
T1 - Brass	•	•	•	•			

HOW TO MAKE UP THE NOZZLE CODE

EX.: PAS 1170 B31

PA S 1170 xx

CAPACITY

SPRAY ANGLE

NOZZLE TYPE

MATERIAL • B31 - AISI 316L Stainless steel
 • T1 - Brass

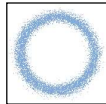
• S - 70°
 • U - 90°
 • Y - 130°

MOULDED PLASTIC NOZZLES

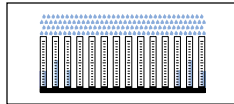
PN/PO series hollow cone nozzles made by plastic moulding, offer a high chemical resistance and low prices. They are tangential nozzles and produce a hollow cone spray of atomized droplets. As they have a large free passage and no swirling vane inside their body, they are highly clog-resistant. PN/PO nozzles are efficient, cost-effective and widely used in many processing lines. Moreover, they can be easily assembled in large quantity onto pipe manifolds.



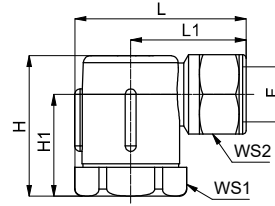
- **Thread specification**
PO: Male BSPT, NPT
PN: Female BSP, NPT
PS: Quick-fit
- **Max operation temperature:**
100 °C
- **Max operation pressure:**
10 bar



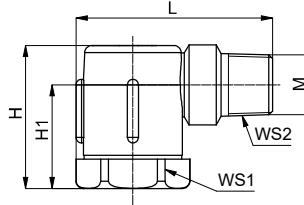
Spray section



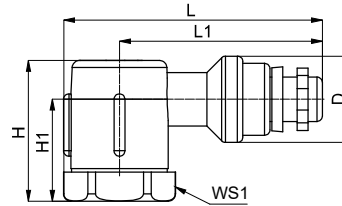
Concave distribution



PN - Female



PO - Male



PS - Quick-fit

Codice	Conn.	L	L1	H	H1	CH1	CH2	D
		mm	mm	mm	mm			
PN	3/8" F	47.5	32.0	39.0	28.0	28	22	---
	1/2" F	51.5	36.0	39.0	28.0	28	24	---
PO	3/8" M	53.5	38.0	39.0	28.0	28	---	---
PS	Att. rapido	71.5	56.0	39.0	28.0	28	---	24.0

PNx Female	POx Male	PSx Quick-fit	Code	Thread	Capacity at different pressure values (l/min) (bar)							
					0.5	0.7	1.0	2.0	3.0	5.0	7.0	10
					•	•	•	1170	3/8" Quick-fit	0.69	0.82	0.98
•	•	•	1390	1.59	1.88	2.25	3.18	3.90		5.03	5.96	7.12
•	•	•	1460	1.88	2.22	2.66	3.76	4.60		5.94	7.03	8.40
•	•	•	1570	2.33	2.75	3.29	4.65	5.70		7.36	8.71	10.4
•	•	•	1670	2.74	3.24	3.87	5.47	6.70		8.65	10.2	12.2
•	•	•	1850	3.47	4.11	4.91	6.94	8.50		11.0	13.0	15.5
•	•	•	1980	4.00	4.73	5.66	8.00	9.80		12.7	15.0	17.9
•	•	•	2115	4.69	5.56	6.64	9.39	11.5		14.8	17.6	21.0
•	•	•	2128	5.23	6.18	7.39	10.5	12.8		16.5	19.6	23.4
•	•	•	2208	8.49	10.0	12.0	17.0	20.8		26.9	31.8	38.0
•	•	•	2220	8.98	10.6	12.7	18.0	22.0	28.4	33.6	40.2	
•			2129	1/2"	5.23	6.18	7.39	10.5	12.8	16.5	19.6	23.4
•			2209		8.49	10.0	12.0	17.0	20.8	26.9	31.8	38.0
•			2221		8.98	10.6	12.7	18.0	22.0	2.19	33.6	40.2
•			2320		13.1	15.5	18.5	26.1	32.0	41.3	48.9	58.4
•			2420		17.1	20.3	24.2	34.3	42.0	54.2	64.2	76.6

PO MALE THREAD NOZZLES

ZPB fastening clamps in plastic usually connect to nozzles with 3/8" female threads. They are flexible, durable and low cost. Please see more on page 86.



PN (Female) + ZPB Plastic pipe clamp

TYPICAL APPLICATIONS

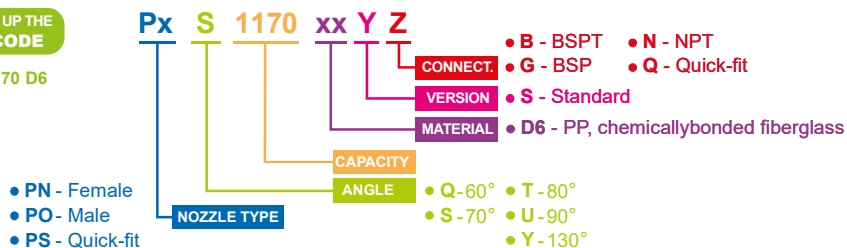
Washing: exhaust scrubbers, parts cleaning, pre-treatment in coating process, dust and foam control, filter spraying

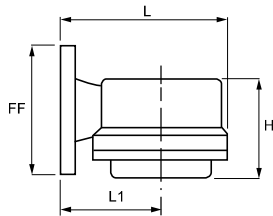
Cooling: wire cooling, plastic pipe cooling

Other applications: humidification systems, etc.

HOW TO MAKE UP THE NOZZLE CODE

EX.: PNS 1170 D6

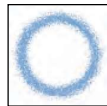




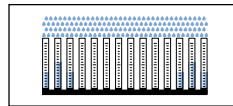
TANGENTIAL NOZZLES / LARGE FLOW RATES

PR nozzles produce a hollow cone spray pattern based on the tangential jet principle generating atomized flows with large flow rates. They have a vaneless and large free inside passage and offer a considerable resistance to clogging and high performances.

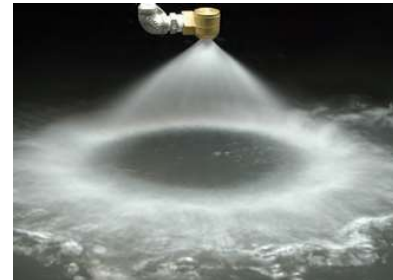
- **Flange**
DIN2633-ND16, JIS
- **Typical applications**
Desulfurization
Denitrification
Exhaust scrubbers
Coke quenching towers



Spray section



Concave distribution

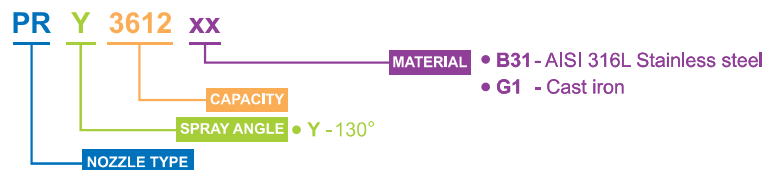


HOLLOW CONE NOZZLES

130°	Code	DN inch	DE mm	DU mm	Capacity at different pressure values (l/min) (bar)					Dimensions mm			
					0.5	1.0	2.0	3.0	5.0	FF	H	L	L1
130°	PRY 3612 xx	3"	31.0	90	250	353	500	612	790	200	157	250	150
	PRY 3685 xx		34.0	90	280	395	559	685	884				
	PRY 3771 xx		36.5	90	315	445	630	771	995				
	PRY 3869 xx		39.5	90	355	502	710	869	1122				
	PRY 3979 xx		40.0	90	400	565	799	979	1264				
	PRY 4110 xx		43.0	90	449	635	898	1100	1420				
	PRY 4122 xx		50.0	90	498	704	996	1220	1575				
	PRY 4153 xx		57.0	90	625	883	1249	1530	1975				
	PRY 4195 xx	4"	60.0	145	796	1126	1592	1950	2517	220	242	355	200
	PRY 4244 xx		70.0	145	996	1409	1992	2440	3150				
PRY 4306 xx		79.0	145	1249	1767	2498	3060	3950					
PRY 4385 xx		87.0	145	1572	2223	3144	3850	4970					

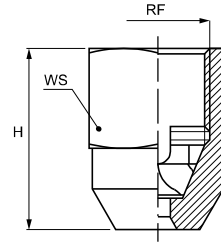
HOW TO MAKE UP THE NOZZLE CODE

EX.: PRY 3612 B31

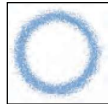


IN LINE SPRAY / INSIDE VANE

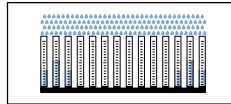
RA nozzles are tangential hollow cone nozzles that produce a finely atomized spray in line with the inlet supply pipe. In their body there is a carefully machined swirl vane with two spiral grooves which produce a wide range of capacities, starting from very low values. The strong centrifugal force inside the vortex chamber creates a high speed rotation of the liquid flow producing an atomized mist. For small capacity RA nozzles we suggest to place a suitable filter before their inlet orifice to avoid clogging.



■ Thread specification: BSP, NPT



Spray section



Concave distribution

HOLLOW CONE NOZZLES

Code	RF inch	D mm	D1 mm	Capacity at different pressure values									Dimensions mm	
				0.5	0.7	1.0	2.0	3.0	5.0	7.0	10	H	WS	
80°	1/8"	1.0	0.5	0.08	0.10	0.12	0.16	0.20	0.26	0.31	0.37	18	17	
		1.7	0.5	0.16	0.19	0.23	0.32	0.39	0.50	0.60	0.71			
60°	3/8"	1.1	0.6	0.20	0.24	0.28	0.40	0.49	0.63	0.75	0.89	29	22	
		1.6	0.6	0.31	0.37	0.44	0.63	0.77	0.99	1.18	1.41			
		2.0	0.6	0.50	0.59	0.70	1.00	1.22	1.58	1.86	2.23			
90°	3/8"	3.0	1.0	0.85	1.00	1.20	1.70	2.08	2.69	3.18	3.80	29	22	
		4.0	1.6	1.25	1.48	1.77	2.50	3.06	3.95	4.67	5.59			
		4.2	1.6	2.00	2.37	2.83	4.00	4.90	6.33	7.48	8.95			
		4.7	1.6	2.50	2.96	3.53	5.00	6.12	7.90	9.35	11.2			
		5.5	1.6	3.15	3.73	4.46	6.30	7.72	9.97	11.8	14.1			
		6.3	1.6	4.25	5.02	6.00	8.49	10.4	13.4	15.9	19.0			
	1/2"	5.0	1.8	2.00	2.37	2.83	4.00	4.90	6.33	7.48	8.95	36	27	
		5.5	1.8	2.25	2.66	3.18	4.50	5.51	7.11	8.42	10.1			
		6.0	1.8	2.80	3.31	3.96	5.60	6.86	8.86	10.5	12.5			
		6.3	2.0	4.00	4.73	5.66	8.00	9.80	12.7	15.0	17.9			
	6.7	2.0	5.59	6.62	7.91	11.2	13.7	17.7	20.9	25.0				
	7.5	2.0	6.25	7.39	8.83	12.5	15.3	19.8	23.4	27.9				
	9.0	2.0	8.00	9.47	11.3	16.0	19.6	25.3	29.9	35.8				

Typical applications

Cooling: gas, products, pipes cooling

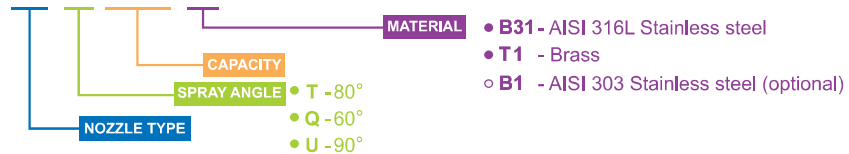
Washing: exhaust scrubbers, parts washing

Other applications: dust control, humidification and air refreshing systems

HOW TO MAKE UP THE NOZZLE CODE

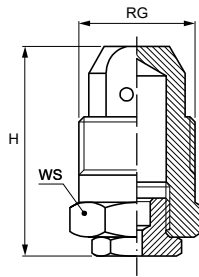
EX.: RAT 0200 B31

RA T 0200 XX

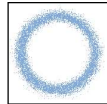


IN LINE SPRAY / VANELESS

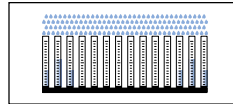
These nozzles, designed with no inside whirling vane and a wide unobstructed passage, produce a hollow cone spray pattern, and are highly resistant to clogging. The liquid flow enters at high speed through the top eccentric orifice into the nozzle swirl chamber where the strong centrifugal force generates finely atomized droplets. These nozzles, the ideal choice for dust control applications, are particularly suitable for coal dust suppression and for this reason they are called "miner's nozzles".



- Thread specification: BSPT, NPT



Spray section



Concave distribution



°	Code	RG inch	D Orifice mm	D1 Inlet mm	Capacity at different pressure values								Dimensions mm	
					0.5	0.7	1.0	2.0	3.0	5.0	7.0	10	H	WS
60°	RBQ 1160 xx	3/8"	2.0	2.0	0.65	0.77	0.92	1.31	1.60	2.07	2.44	2.92	31	17
	RBQ 1230 xx		2.4	2.4	0.94	1.11	1.33	1.88	2.30	2.97	3.51	4.20		
	RBQ 1390 xx		3.2	2.3	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12		
	RBQ 1630 xx		3.9	3.8	2.57	3.04	3.64	5.14	6.30	8.13	9.62	11.5		
	RBQ 2110 xx		4.4	*4.0	4.49	5.31	6.35	8.98	11.0	14.2	16.8	20.1		
70°	RBS 1391 xx	1/2"	3.5	3.0	1.59	1.88	2.25	3.18	3.90	5.03	5.96	7.12	37	22
	RBS 1631 xx		4.0	4.0	2.57	3.04	3.64	5.14	6.30	8.13	9.62	11.5		
	RBS 1781 xx		4.5	2.9	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2		
	RBS 2117 xx		5.1	*3.4	4.82	5.70	6.81	9.63	11.8	15.2	18.0	21.5		
	RBS 2157 xx		7.0	*3.6	6.45	7.63	9.12	12.9	15.8	20.4	24.1	28.8		
	RBS 2196 xx	7.3	*4.8	7.96	9.42	11.3	15.9	19.5	25.2	29.8	35.6			
	RBS 1782 xx	3/4"	4.7	4.5	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2	43	32
	RBS 2118 xx		5.9	4.8	4.82	5.70	6.81	9.63	11.8	15.2	18.0	21.5		
	RBS 2197 xx		7.0	6.5	7.96	9.42	11.3	15.9	19.5	25.2	29.8	35.6		
	RBS 2390 xx		9.3	*6.0	15.9	18.8	22.5	31.8	39.0	50.3	59.6	71.2		
RBT 2310 xx	1 1/2"		10.0	*7.0	12.7	15.0	17.9	25.3	31.0	40.0	47.4	56.6		
RBT 2550 xx		12.9	*8.5	22.5	26.6	31.8	44.9	55.0	71.0	84.0	100			
RBT 2630 xx		15.0	*8.5	25.7	30.4	36.4	51.4	63.0	81.3	96.2	115			
RBT 2700 xx		14.6	*9.0	28.6	33.8	40.4	57.2	70.0	90.4	107	128			
RBT 2940 xx		19.8	*10.0	38.4	45.4	54.3	76.8	94.0	121	144	172			

* Double inlet orifice

Typical applications

Cooling: gas cooling, product cooling, pipe cooling

Washing: exhaust scrubbers, product cleaning

Other applications: dust control, humidification systems, sterilization

HOW TO MAKE UP THE NOZZLE CODE

EX.: RBQ 1160 B1

RB Q 1160 xx

MATERIAL

• B1 - AISI 303 Stainless steel

• T1 - Brass

○ B31- AISI 316L Stainless steel (optional)

CAPACITY

SPRAY ANGLE

• Q - 60°

• S - 70°

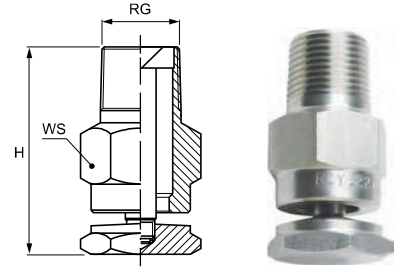
• T - 80°

NOZZLE TYPE

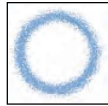


IN LINE SPRAY

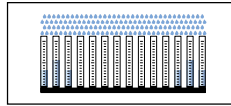
RC type deflected nozzles produce a ring-shaped hollow cone spray pattern, in line with the nozzle inlet supply pipe. The water flow hits the deflection cap fixed onto the nozzle outlet orifice producing small droplets, very wide spray angles and uniform distribution. The deflection cap determines the various deflection angles. This nozzles are highly efficient and clog resistant.



■ Thread specification: BSPT, NPT



Spray section



Concave distribution

HOLLOW CONE NOZZLES

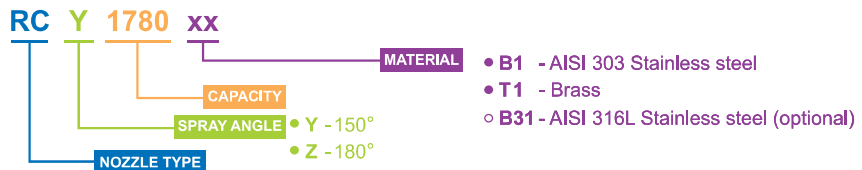
Spray Angle	RG inch		Code	Capacity at different pressure values								Dimensions mm	
	1/4"	3/8"		0.5	0.7	1.0	2.0	3.0	5.0	7.0	10	H	WS
150°	•		RCY 1780 xx	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2	33	17
			RCY 2117 xx	4.82	5.70	6.81	9.63	11.8	15.2	18.0	21.5		
			RCY 2157 xx	6.41	7.58	9.06	12.8	15.7	20.3	24.0	28.7		
			RCY 2196 xx	7.96	9.42	11.3	15.9	19.5	25.2	29.8	35.6		
	•		RCY 2230 xx	9.39	11.1	13.3	18.8	23.0	29.7	35.1	42.0	44	22
			RCY 2270 xx	11.0	13.0	15.6	22.0	27.0	34.9	41.2	49.3		
			RCY 2310 xx	12.7	15.0	17.9	25.3	31.0	40.0	47.4	56.6		
			RCY 2350 xx	14.3	16.9	20.2	28.6	35.0	45.2	53.5	63.9		
180°	•		RCZ 1780 xx	3.18	3.77	4.50	6.37	7.80	10.1	11.9	14.2	33	17
			RCZ 2117 xx	4.82	5.70	6.81	9.63	11.8	15.2	18.0	21.5		
			RCZ 2157 xx	6.41	7.58	9.06	12.8	15.7	20.3	24.0	28.7		
			RCZ 2196 xx	7.96	9.42	11.3	15.9	19.5	25.2	29.8	35.6		
	•		RCZ 2230 xx	9.39	11.1	13.3	18.8	23.0	29.7	35.1	42.0	44	22
			RCZ 2270 xx	11.0	13.0	15.6	22.0	27.0	34.9	41.2	49.3		
			RCZ 2310 xx	12.7	15.0	17.9	25.3	31.0	40.0	47.4	56.6		
			RCZ 2350 xx	14.3	16.9	20.2	28.6	35.0	45.2	53.5	63.9		
•		RCZ 2390 xx	15.9	18.8	22.5	31.8	39.0	50.3	59.6	71.2			

Typical applications

Washing: exhaust scrubbers, small tanks, pipes interiors
Other applications: pipes coating, dust control, fire protection

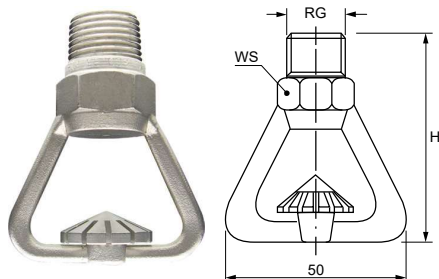
HOW TO MAKE UP THE NOZZLE CODE

EX.: RCY 1780 B1

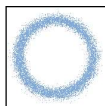


DEFLECTED SPRAY

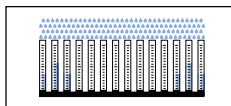
RO hollow cone deflected spray nozzles are specially designed for fire-fighting engineering. They produce an excellent water atomization and their deflected jet assures a wide spray coverage. The spray pattern is formed by the liquid flowing from the nozzle orifice over the surface of the below deflector with a special slotted design. All RO nozzles are certified by the EU fire regulations.



- Thread specification: BSPT, NPT
- Typical applications
 - Fire-fighting: fire extinguishing, cooling
 - Other applications: tank cleaning, exhaust scrubbers



Spray section



Concave distribution



HOLLOW CONE NOZZLES



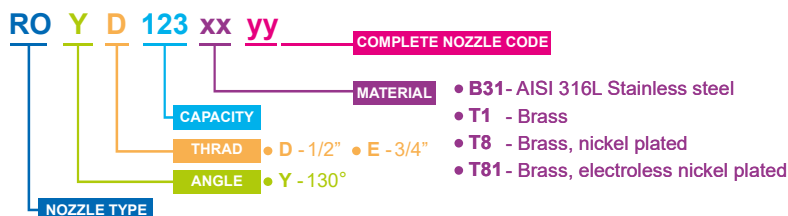
Code	RG inch	D mm	Capacity at different pressure values (l/min) (bar)							WS mm	H mm
			1.0	3.0	5.0	6.0	7.0	10.0			
130°	1/2"	3.0	4.80	8.10	10.3	11.3	12.2	14.5	25	65	
ROY D005 xx yy		3.5	6.70	11.5	14.9	16.4	17.6	20.5			
ROY D006 xx yy		4.0	9.00	15.6	20.0	22.0	24.0	29.0			
ROY D009 xx yy		4.5	11.5	19.8	25.0	28.0	30.0	36.0			
ROY D011 xx yy		5.0	15.8	27.0	35.0	39.0	42.0	50.0			
ROY D016 xx yy		5.5	18.0	30.0	40.0	44.0	48.0	57.0			
ROY D018 xx yy		6.0	23.0	39.0	50.0	55.0	60.0	71.0			
ROY D023 xx yy		6.5	27.0	47.0	61.0	66.0	72.0	86.0			
ROY D027 xx yy		7.0	31.0	55.0	72.0	77.0	84.0	91.0			
ROY D032 xx yy		8.0	41.0	70.0	92.0	103	112	130			
ROY D041 xx yy		9.0	52.0	91.0	117	129	140	165			
ROY D052 xx yy		10.0	64.0	110	139	152	165	200			
ROY D064 xx yy	12.0	95.0	164	214	236	255	290				
ROY D095 xx yy	13.0	103	178	230	252	272	325				
130°	3/4"	3.0	4.80	8.10	10.3	11.3	12.2	14.5	27	65	
ROY E005 xx yy		3.5	6.70	11.5	14.9	16.4	17.6	20.5			
ROY E006 xx yy		4.0	9.00	15.6	20.0	22.0	24.0	29.0			
ROY E009 xx yy		4.5	11.5	19.8	25.0	28.0	30.0	36.0			
ROY E011 xx yy		5.0	15.8	27.0	35.0	39.0	42.0	50.0			
ROY E016 xx yy		5.5	18.0	30.0	40.0	44.0	48.0	57.0			
ROY E018 xx yy		6.0	23.0	39.0	50.0	55.0	60.0	71.0			
ROY E023 xx yy		6.5	27.0	47.0	61.0	66.0	72.0	86.0			
ROY E027 xx yy		7.0	31.0	55.0	72.0	77.0	84.0	91.0			
ROY E032 xx yy		8.0	41.0	70.0	92.0	103	112	130			
ROY E041 xx yy		9.0	52.0	91.0	117	129	140	165			
ROY E052 xx yy		10.0	64.0	110	139	152	165	200			
ROY E064 xx yy	12.0	95.0	164	214	236	255	290				
ROY E095 xx yy	13.0	103	178	230	252	272	325				

COMPLETE NOZZLE CODE

Code	Thread	Filter	
		Copper	None
FB	BSPT	•	
FN	NPT	•	
SB	BSPT		•
SN	NPT		•

HOW TO MAKE UP THE NOZZLE CODE

EX.: ROY 1810 B31FB

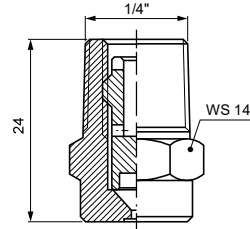
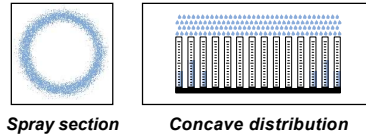


HYDRAULIC ATOMIZERS

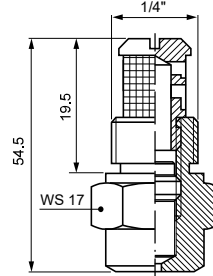
RX/RZ series hydraulic nozzles deliver a very finely atomized hollow cone spray, even at low pressure values. They contain a precisely machined insert with narrow passages that can be easily disassembled for cleaning in case of obstruction. Clogging can be avoided placing a fine mesh strainer on the main manifold or using an individual filter.

RW hydraulic atomizers works in the same way, but the tip is locked with a welded nipple ZAA and a locknut VAA. The capacities of RW tip are the same of RX nozzle. To have the complete product code, just change "RX" with "RW".

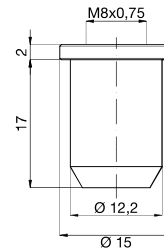
- **Connection:**
BSPT, NPT, tip with nipple and locknut
- **Typical applications**
dust control, humidification, deodorant spray, disinfectant liquid spray, exhaust scrubbers



RX



RZ (+VEF)



RW

HOLLOW CONE NOZZLES

Code	D mm	Capacity (l/hour) at different pressure values (bar)										
		1.5	2.0	3.0	4.0	5.0	6.0	10	15	20	50	
80°	RXT 0060 xx	0.50	2.55	2.94	3.60	4.16	4.65	5.09	6.57	8.05	9.30	14.7
	RXT 0100 xx	0.50	4.24	4.90	6.00	6.93	7.75	8.49	11.0	13.4	15.5	24.5
	RXT 0130 xx	0.70	5.52	6.37	7.80	9.01	10.1	11.0	14.2	17.4	20.1	31.8
	RXT 0190 xx	0.70	8.06	9.31	11.4	13.2	14.7	16.1	20.8	25.5	29.4	46.5
	RXT 0250 xx	1.00	10.6	12.2	15.0	17.3	19.4	21.2	27.4	33.5	38.7	61.2
	RXT 0380 xx	1.00	16.1	18.6	22.8	26.3	29.4	32.2	41.6	51.0	58.9	93.1
	RXT 0510 xx	1.50	21.6	25.0	30.6	35.3	39.5	43.3	55.9	68.4	79.0	125
	RXT 0650 xx	1.60	27.6	31.8	39.0	45.0	50.3	55.2	71.2	87.2	101	159
	RXT 0780 xx	1.90	33.1	38.2	46.8	54.0	60.4	66.2	85.4	105	121	191
	RXT 0910 xx	1.90	38.6	44.6	54.6	63.0	70.5	77.2	99.7	122	141	223
	RXT 1116 xx	1.90	49.2	56.8	69.6	80.4	89.9	98.4	127	156	180	284
	RXT 1143 xx	1.90	60.7	70.1	85.8	99.1	111	121	157	192	222	350
	RXT 1166 xx	2.20	70.4	81.3	99.6	115	129	141	182	223	257	407

Code	D mm	Capacity (l/min) at different pressure values (bar)										
		1.5	2.0	3.0	4.0	5.0	6.0	10	15	20	50	
60°	RZQ 0080 xx	0.45	0.06	0.07	0.08	0.09	0.10	0.11	0.15	0.18	0.21	0.33
	RZQ 0120 xx	0.55	0.08	0.10	0.12	0.14	0.15	0.17	0.22	0.27	0.31	0.49
	RZQ 0250 xx	0.80	0.18	0.20	0.25	0.29	0.32	0.35	0.46	0.56	0.65	1.02
	RZQ 0390 xx	1.00	0.28	0.32	0.39	0.45	0.50	0.55	0.71	0.87	1.01	1.59
	RZQ 0560 xx	1.20	0.40	0.46	0.56	0.65	0.72	0.79	1.02	1.25	1.45	2.29
	RZQ 0780 xx	1.40	0.55	0.64	0.78	0.90	1.01	1.10	1.42	1.74	2.01	3.18
	RZQ 1100 xx	1.60	0.71	0.82	1.00	1.15	1.29	1.41	1.83	2.24	2.58	4.08
	RZQ 1140 xx	1.90	0.99	1.14	1.40	1.62	1.81	1.98	2.56	3.13	3.61	5.72
	RZQ 1170 xx	2.10	1.20	1.39	1.70	1.96	2.19	2.40	3.10	3.80	4.39	6.94
	RZQ 1200 xx	2.30	1.41	1.63	2.00	2.31	2.58	2.83	3.65	4.47	5.16	8.16



VEF THREADED FILTERS
We suggest to use a VEF threaded filter to protect the nozzle against clogging.

ADDITIONAL SPRAY ANGLES

The spray angle of the RZQ nozzles is 60° with orifice dimensions larger than 1.0 mm. Please see additional angles in the table below.

RZF	RZM	RZQ	RZU
30°	45°	60°	90°

HOW TO MAKE UP THE NOZZLE CODE

EX.: RXT 0060 B1

