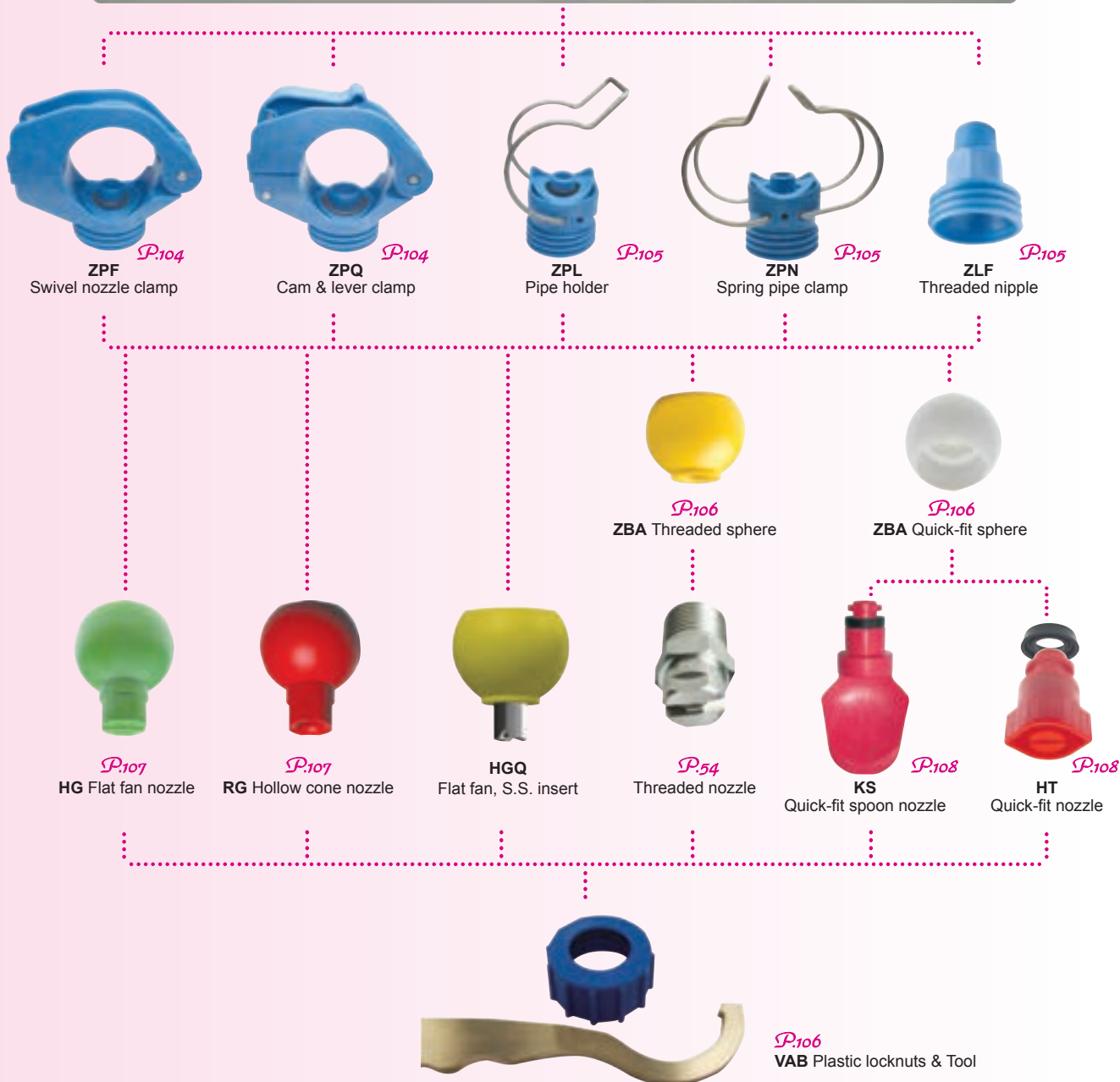


CLIP-ON NOZZLES

Diversified manufacturing is a competitiveness key-factor today. PNR Italy manufactures several diversified products to meet all costumers' needs and help them achieve their production targets. Its complete product range includes clip-on nozzles which now widely used by European and American automobile manufacturers. In the automobile industry the coating lines and 3C lines are representative of diversified production requiring timely adjustments of nozzles spray direction and coverage. Moreover, in such operating environments, nozzles must be regularly cleaned and serviced to ensure high quality coating. To satisfy such requirements PNR has developed cutting-edge quality products to enhance the productivity and competitiveness of the production plant. PNR clip-on adjustable nozzles, made with innovative design and in top quality materials, shorten installation, adjustment and servicing times to the benefit of production efficiency. These nozzles are installed on pipes and can be rapidly released and changed at any time or easily adjusted to different production conditions. PNR clip-on nozzles fully comply with below specifications.



SWIVEL NOZZLE CLAMPS

ZPF swivel clamps are specially designed for HGQ, RGN and ZBA series. To install them on pipes all you need is drill a hole, insert the nozzle clamp inside and fasten it with a simple screwdriver. The nozzle clamp body is in PP chemically bonded fibreglass whereas accessorial bolts and screws are made in stainless steel AISI 316. They are robust, easy to install, adjust and service and their design revolutioned modern surface pre-treatment plants. They provide excellent performance at high temperatures and easy spray jet orientation.

- Typical application Cleaning equipment used in pre-treatment for coating process
- Max working temperature **LT** 80°C
- Max working pressure **LP** 5 bar
- Materials Body **D6** PP, chemically bonded fibreglass
Pin & bolt **B3** AISI 316 Stainless steel
O-ring **E8** NBR

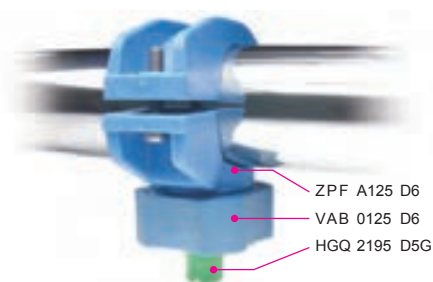
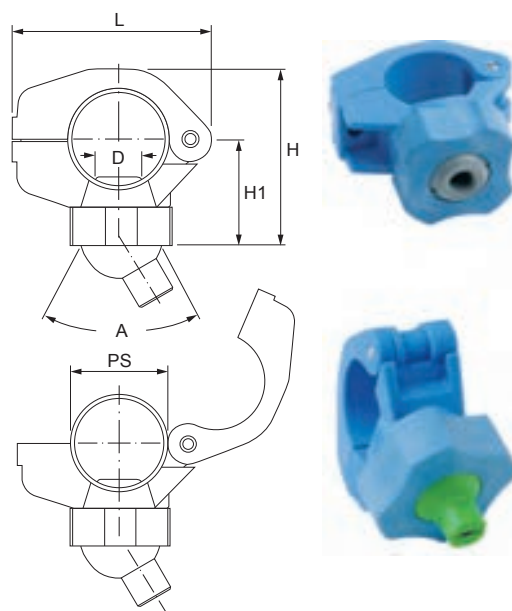
Code	PS inch	PD mm	D mm	H mm	H1 mm	L mm	A deg	W g
ZPF A125 D6	1 1/4"	41/43	20.0	83	54	84	40°	85
ZPF B125 D6			17.0					
ZPF C125 D6			14.0					
ZPF A150 D6	1 1/2"	46/49	20.0	90	57	90	40°	88
ZPF B150 D6			17.0					
ZPF C150 D6			14.0					

HOW TO MAKE UP THE PRODUCT CODE

EX.: ZPF A125 D6

ZPF A125 D6

MATERIAL
CODE
SWIVEL NOZZLE PIPE CLAMPS

• **D6** - PP, chemically bonded fibreglass

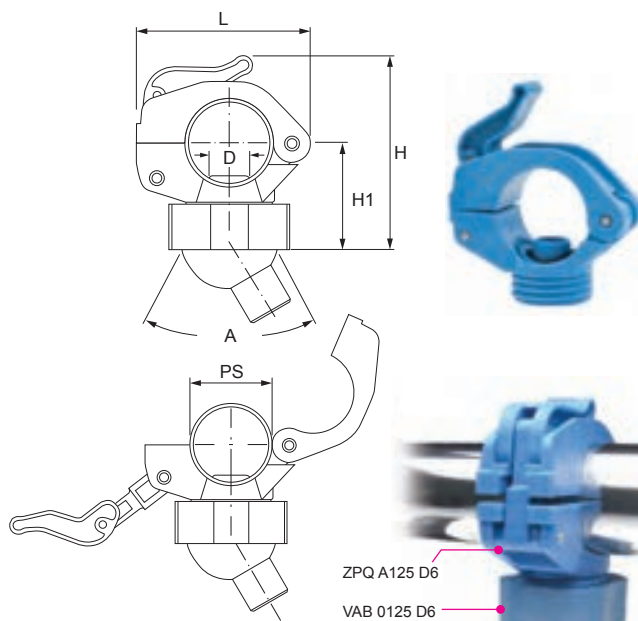
CLIP-ON NOZZLES

(SWIVEL NOZZLE CAM AND LEVER CLAMPS) **ZPQ****SWIVEL NOZZLE CAM AND LEVER CLAMPS**

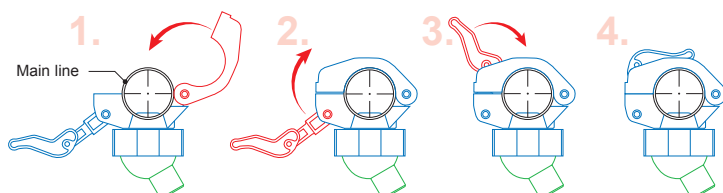
ZPQ cam and lever clamps are specially designed for HGQ, RGN and ZBA ball nozzles. Only three steps to install them on a pipe: drill a hole, wrap the cam around the pipe and pull the lever down to block it. No need of tools. The body is in PP chemically bonded fibreglass whereas accessorial bolts and screws are made in stainless steel AISI 316. ZPQ swivel nozzles with cam and lever clamps provide excellent performance at high temperatures and easy spray jet orientation.

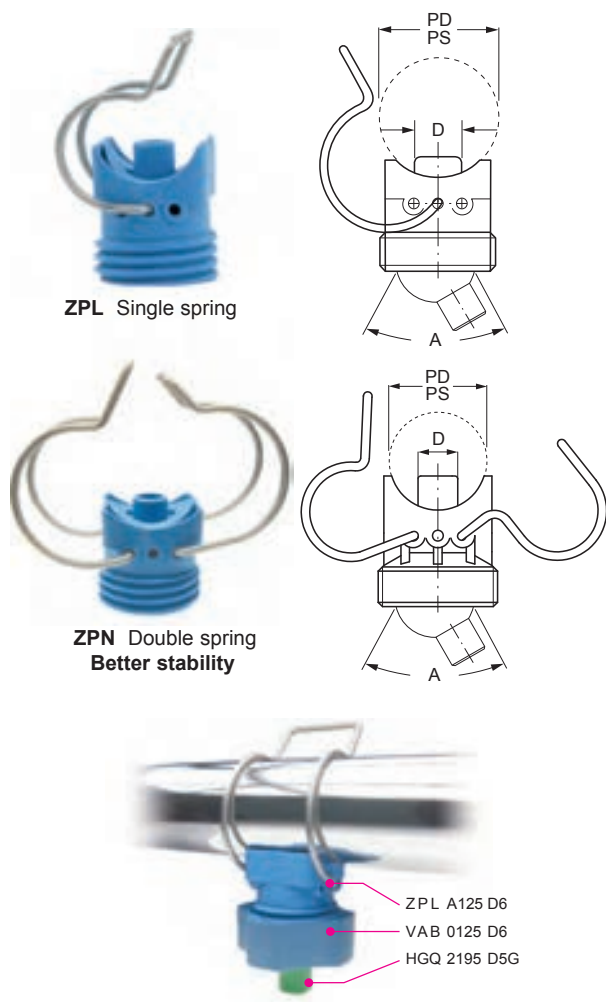
- Common application Surface pre-treatment plants
- Max working temperature **LT** 80°C
- Max working pressure **LP** 5 bar
- Materials Body **D6** PP, chemically bonded fibreglass
Pin & bolt **B3** AISI 316 Stainless steel
O-ring **E8** NBR
Seal **D22** Soft polypropylene

Code	PS inch	PD mm	D mm	H mm	H1 mm	L mm	A deg	W g
ZPQ A125 D6	1 1/4"	42/43	20.0	93	41	84	40°	87
ZPQ B125 D6			17.0					
ZPQ A150 D6	1 1/2"	48/49	20.0	96	44	95	40°	97
ZPQ B150 D6			17.0					



ZPQ A125 D6
VAB 0125 D6
HGQ 2195 D5G

HOW TO INSTALL THE SWIVEL NOZZLE CAM & LEVER CLAMPS



SWIVEL NOZZLE SPRING PIPE CLAMPS

ZPL/ZPN pipe clamps are specially designed for swivel ball nozzles. Drill a hole and fix the clamp with one screw. Body is made of fibreglass reinforced PP, screw and spring SUS316. ZPL/ZPN swivel nozzles work under high temperature and high degree of intensity. ZPL/ZPN swivel nozzle pipe clamps are widely used in surface pre-treatment.

- Typical application: Cleaning equipment used in pre-treatment for coating process
- Max working temperature: LT 80°C
- Max working pressure: ZPL Single spring 2 bar
ZPN Double spring 3 bar
- Materials: Body D6 PP, chemically bonded fibreglass
Spring N1 AISI 302 Stainless steel, heat treated
O-ring E8 NBR

Code		PS	PD	D	A	W
Single spring	Double spring	inch	mm	mm	deg	g
ZPL C100 D6	ZPN C100 D6	1"	32/34	14.0	40°	
ZPL A125 D6	ZPN A125 D6	1 1/4"	41/43	20.0	40°	
ZPL B125 D6	ZPN B125 D6			17.0		
ZPL C125 D6	ZPN C125 D6			14.0		46/65
ZPL A150 D6	ZPN A150 D6	1 1/2"	46/49	20.0	40°	
ZPL B150 D6	ZPN B150 D6			17.0		
ZPL C150 D6	ZPN C150 D6			14.0		

HOW TO MAKE UP THE PRODUCT CODE

EX.: ZPL C100 D6

ZPL C100 D6

MATERIAL • D6 - PP, chemically bonded fibreglass

CODE

CLAMP TYPE • ZPL - Single spring • ZPN - Double spring

ZLF (SWIVEL NOZZLE THREADED NIPPLE)

SWIVEL NOZZLE THREADED NIPPLE

ZLF series threaded nipples offer another convenient type of installation for swivel ball nozzles. They are made of fibreglass reinforced PP. ZLF series work under high temperature and high degree of intensity. ZLF threaded nipples are widely used in surface pre-treatment.

- Typical application: Cleaning equipment used in pre-treatment for coating process
- Max working temperature: LT 80°C
- Max working pressure: LP 4 bar
- Material: D6 PP, chemically bonded fibreglass

Code	RG inch BSPT	RG inch NPT	W g
ZLF A038 D6	3/8"	-	15
ZLF B038 D6	-	3/8"	
ZLF A050 D6	1/2"	-	
ZLF B050 D6	-	1/2"	

HOW TO MAKE UP THE PRODUCT CODE

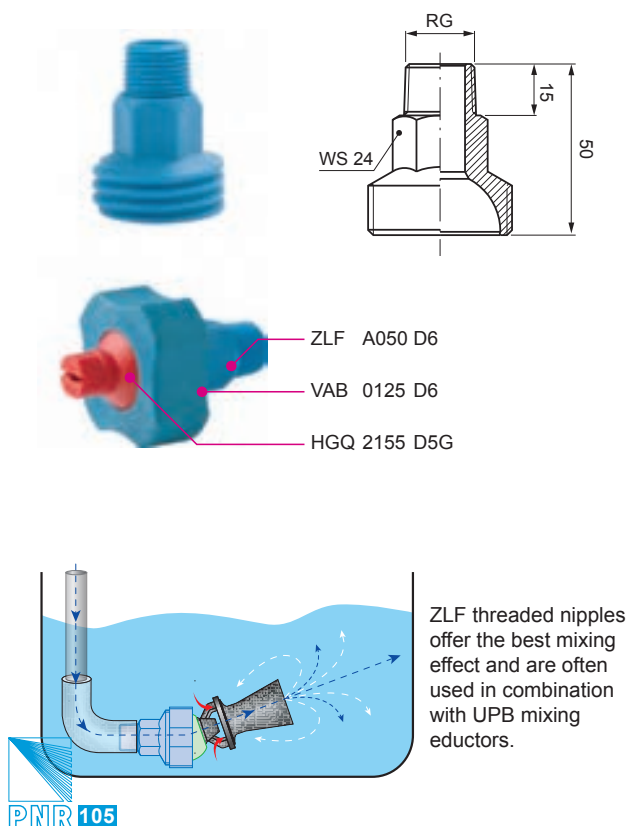
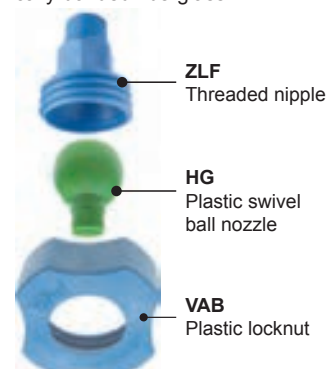
EX.: ZLF A038 D6

ZLF A038 D6

MATERIAL • D6 - PP, chemically bonded fibreglass

CODE

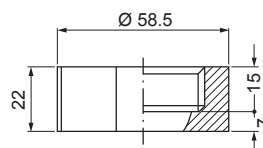
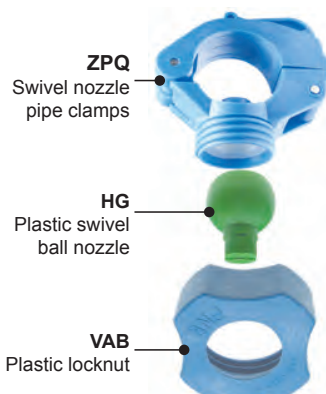
CLAMP TYPE



PLASTIC LOCKNUTS

VAB plastic locknuts are exclusively designed for ball nozzles. Their special thread and shape allow to assemble the cap and by hand, with no need of tools, thus making all servicing operations easier and quicker. They are made of high quality PP or chemically bonded fibreglass to keep stability at high temperatures and offer the best resistance to chemicals.

- Material
D6 PP, chemically bonded fiberglass
- Max working temperature
LT 80°C

**VAB 0125 D6****HOW TO MAKE UP THE PRODUCT CODE**

EX.: VAB 0125 D6

VAB 0125 D6

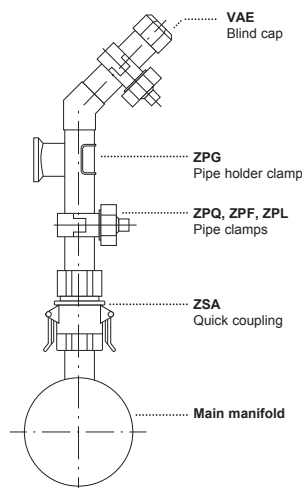
MATERIAL • D6- PP, chemically bonded fiberglass

CODE

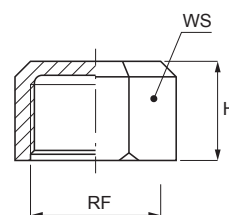
LOCKNUT TYPE

(PLASTIC END CAPS) **VAE****PLASTIC END CAPS**

VAE plastic caps are specially used to close pipes ends. Besides, 1 1/4" VAE 1250 D6 plastic caps can be used to seal pipes ends when, to manufacture different size products, it's necessary to reduce the quantity of swivel nozzles. They are made of high quality PP or chemically bonded fibreglass to keep stability at high temperatures and offer the best resistance to chemicals. They are widely used in surface pre-treatment.



- Material
D6 PP, chemically bonded fiberglass
- Max working temperature
LT 80°C



Code	RF inch	H mm	WS mm
VAE 1000 D6	1"	25	42
VAE 1250 D6	1 1/4"	32	52
VAE 1500 D6	1 1/2"	32	60

HOW TO MAKE UP THE PRODUCT CODE

EX.: VAE 1000 D6

VAE 1000 D6

MATERIAL • D6- PP, chemically bonded fiberglass

CODE

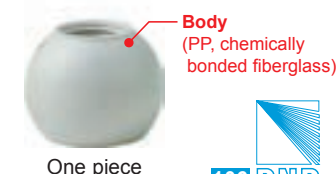
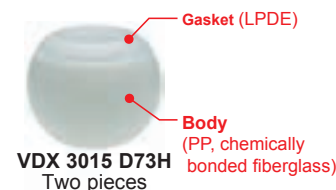
CAP TYPE

(THREADED AND QUICK-FIT SPHERES) **ZBA****THREADED AND QUICK-FIT SPHERES**

ZBA swivel nozzles are produced with three different types of connections: threaded, quick-fit and blind hole.

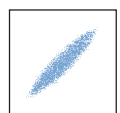
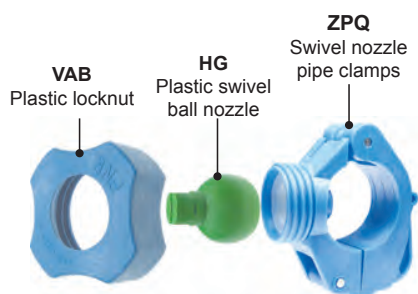
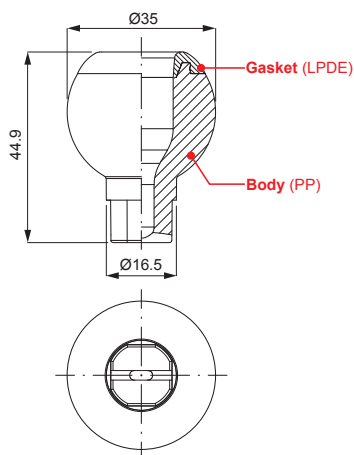
The threaded nozzles are assembled to threaded swivel joints. The quick-fit types are designed for HTQ/KSQ quick-fit flat fan nozzles whereas the blind hole models are specially used in spraying processes requiring changes and pauses.

Code		RF BSPP inch	RF NPT inch
One piece	Two pieces		
ZBA A025 D5	ZBA GBN1 D5G	1/4" F	
ZBA B025 D5	ZBA NBN1 D5G		1/4" F
ZBA A038 D5	ZBA GCN1 D5G	3/8" F	
ZBA B038 D5	ZBA NCN1 D5G		3/8" F
ZBA A050 D5	ZBA GDN1 D5G	1/2" F	
ZBA 0000 D5	ZBA 00N0 D5Y	Blind	
ZBA QQN1 D5	ZBA QQN1 D6G	Quick connection	

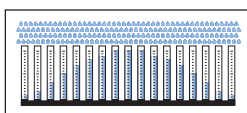




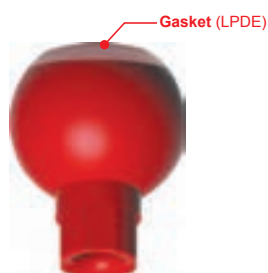
HGQ 2195 D5G
Flat fan nozzle



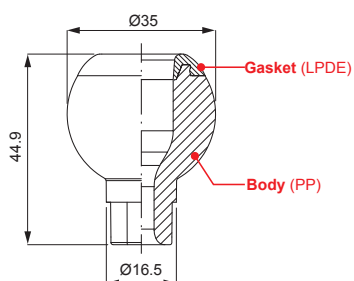
Spray section



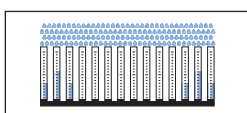
Convex distribution



RGN
Hollow cone nozzle



Spray section



Concave distribution




PLASTIC SWIVEL BALL NOZZLES

HGQ and RGN plastic swivel ball nozzles are designed for diversified applications. They allow an easy adjustment of their spray jet direction and offer a quick-fit connection.

- Nozzle type Flat fan nozzles
Hollow cone nozzles
- Typical application Cleaning equipment used in pre-treatment for coating process
- Material Body **D5** Powder-filled polypropylene


FLAT FAN NOZZLES

HGQ flat fan nozzles feature a 60° spray angle and their wide range of flow rates makes them the best choice in pre-treatment plants. For an easier identification and use, they are made in different colours depending on the flow rate. The material is top quality PP, chemically bonded fibreglass to offer the best stability at high temperatures and resistance to chemicals.

	Code	Capacity (l/min) at different pressure values (bar)					Color	W g	
60°	HGQ 1390 D5G	1.7	2.0	2.4	2.9	3.3	Black	16	
	HGQ 1770 D5G	3.2	3.8	4.5	5.5	6.4	Purple		
	HGQ 1980 D5G	4.0	4.7	5.6	6.9	8.0	Brown		
	HGQ 2117 D5G	4.6	5.5	6.5	8.0	9.3	Yellow		
	HGQ 2135 D5G	5.5	6.5	7.8	9.5	11.0	Gray		
	HGQ 2155 D5G	6.2	7.4	8.8	10.8	12.5	Red		
	HGQ 2195 D5G	7.8	9.2	11.0	13.8	15.6	Green		
	HGQ 2230 D5G	9.5	11.3	13.5	16.3	19.1	Blue		
	HGQ 2270 D5G	10.9	12.8	15.4	18.8	21.7	Sky blue		
	HGQ 2337 D5G	13.8	16.4	19.5	24.0	27.7	White		
HGQ 2410 D5G	16.7	19.8	23.6	29.0	33.5	Pink			
Pressure (bar)		0.5	0.7	1.0	1.5	2.0			

HOLLOW CONE NOZZLES

RGN hollow cone nozzles have a 50° spray angle and offer a wide range of flow rates, all identified by a particular nozzle colour to avoid any possible confusion. The material is top quality PP, chemically bonded fibreglass to offer the best stability at high temperatures and resistance to chemicals. For these features they are widely used in pre-treatment plants.

	Code	Capacity at different pressure values (l/min) (bar)					Color	W g
50°	RGN 2175 D5G	7.1	8.5	10.1	12.4	14.3	Red	25
	RGN 2215 D5G	8.8	10.4	12.4	15.2	17.6	Blue	
	RGN 2390 D5G	15.9	18.8	22.5	27.6	31.8	Black	
Pressure (bar)		0.5	0.7	1.0	1.5	2.0		

HOW TO MAKE UP THE NOZZLE CODE

EX.: HGQ 1390 D5G

HGQ **1390** **D5G**

MATERIAL • D5 - Powder-filled polypropylene

CAPACITY

NOZZLE TYPE • HGQ - Flat fan nozzles (60°)
• RGN - Hollow cone nozzles (50°)

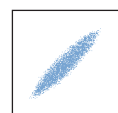
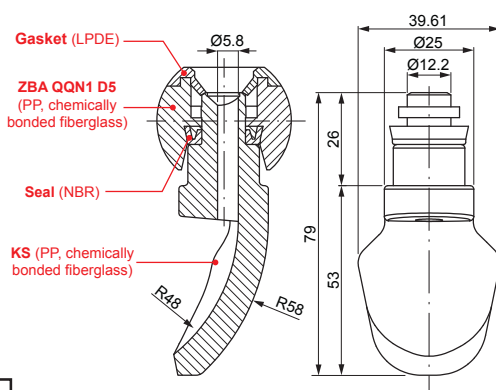
FLAT FAN QUICK-FIT SPOON NOZZLES

KS flat fan quick-fit spoon nozzles produce a flat spray pattern with a 60° deflection spray angle and offer the highest possible impact for a given feed pressure, up to 60° compared to standard turbulence flat fan nozzles. The innovative design ensures the ideal efficiency for deep cleaning and their quick connection makes them easy to assemble and avoids leakage. The different flow rates are identified by their colours available for proper selection. Materials are high quality PP and chemically bonded fiberglass to keep stability at high temperatures and be chemicals-resistant. These nozzles are widely used in surface pre-treatments.

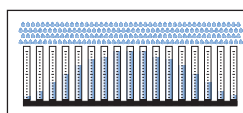
- **Material** PP, chemically bonded fiberglass
- **Typical applications** Cleaning equipment used in pre-treatment for coating process

Code	Capacity at different pressure values (l/min) (bar)						Color	W g
60°	KSQ 2155 D6QQ	6.3	7.5	8.9	11.0	12.7	Red	23
	KSQ 2195 D6QQ	8.0	9.4	11.3	13.8	15.9	Green	
	KSQ 2230 D6QQ	9.4	11.1	13.3	16.3	18.8	Blue	
	KSQ 2270 D6QQ	11.0	13.0	15.6	19.1	22.0	Sky blue	
	KSQ 2337 D6QQ	13.8	16.3	19.5	23.8	27.5	White	
	KSQ 2390 D6QQ	15.9	18.8	22.5	27.6	31.8	Orange	
	KSQ 2410 D6QQ	16.7	19.8	23.7	29.0	33.5	Pink	
	KSQ 2433 D6QQ	17.7	20.9	25.0	30.6	35.4	Brown	

Perssure (bar) 0,5 0,7 1,0 1,5 2,0



Spray section



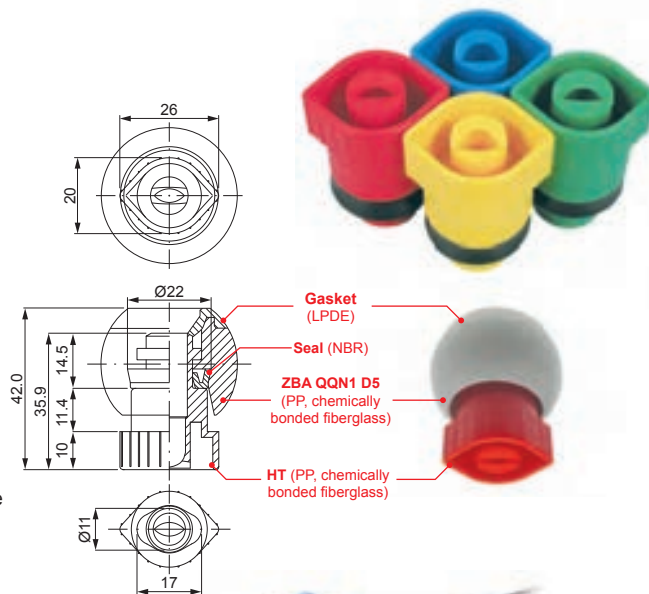
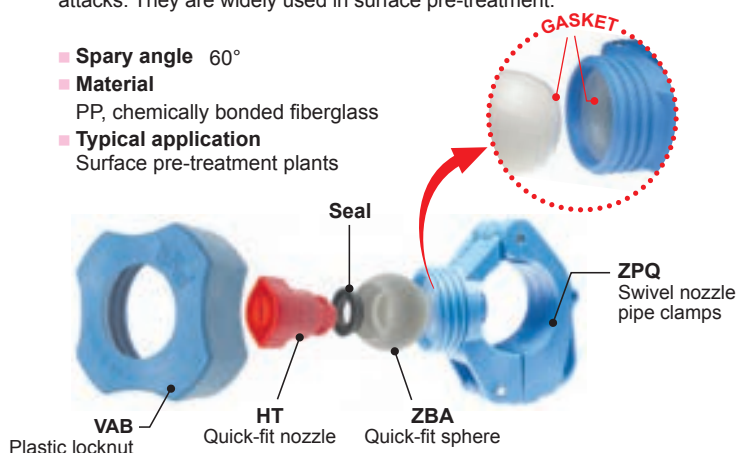
Convex distribution

(FLAT FAN QUICK-FIT NOZZLES) **HT**

FLAT FAN QUICK-FIT NOZZLES

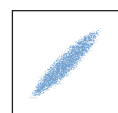
HTQ type flat fan quick-fit nozzles feature 60° spray angle and impact force for a given feed pressure. The new design offers the ideal efficiency for cleaning, quick-fit design for ease of assembly and seal that avoids leakage. Different flow rates are distinguished by color and available for selection. The materials are high quality PP, chemically bonded fiberglass in order to remain stable in high temperature and chemical attacks. They are widely used in surface pre-treatment.

- **Spray angle** 60°
- **Material** PP, chemically bonded fiberglass
- **Typical application** Surface pre-treatment plants

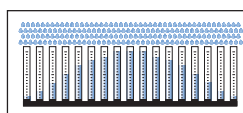


Code	Capacity at different pressure values (l/min) (bar)						Color
60°	HTQ 1390 D6QQ	1.6	1.9	2.3	2.8	3.2	Black
	HTQ 1590 D6QQ	2.4	2.8	3.4	4.2	4.8	Purple
	HTQ 1780 D6QQ	3.2	3.8	4.5	5.5	6.4	Lilac
	HTQ 2117 D6QQ	4.8	5.7	6.8	8.3	9.6	Yellow
	HTQ 2153 D6QQ	6.2	7.4	8.8	10.8	12.5	Red
	HTQ 2195 D6QQ	8.0	9.4	11.3	13.8	15.9	Green
	HTQ 2230 D6QQ	9.4	11.1	13.3	16.3	18.8	Blue
	HTQ 2274 D6QQ	11.2	13.2	15.8	19.4	22.4	Sky blue

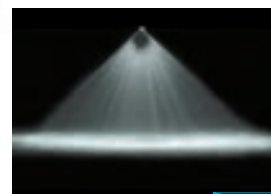
Perssure (bar) 0,5 0,7 1,0 1,5 2,0



Spray section

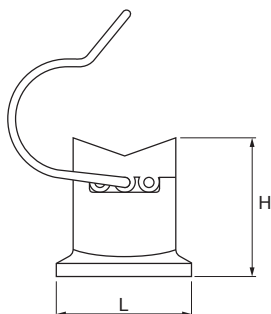


Convex distribution

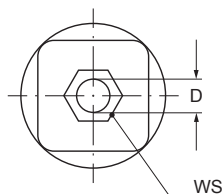
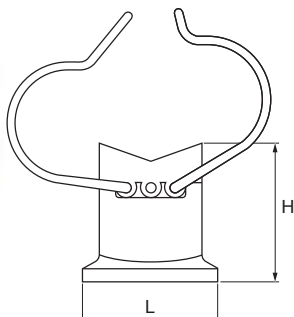




Single spring



Double spring



ZPG body is designed to be fastened to the tunnel wall by means of one M10 bolt with 17 mm hexagonal head.

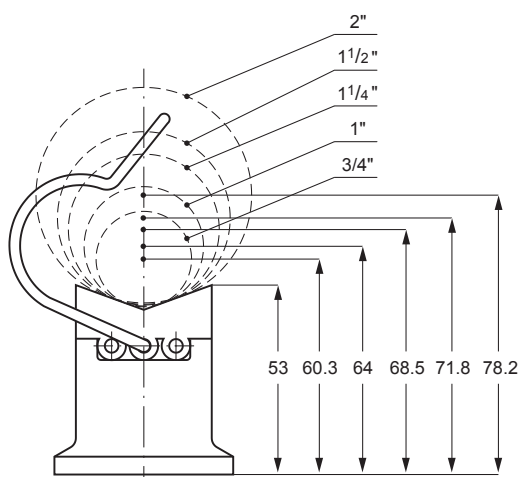
PIPE HOLDERS

ZPG pipe holders are a user-friendly and convenient solution for fixing spray manifolds onto tunnels walls in surface treatment plants. They are easy to assemble, excellent fastening and low cost. The single spring type is suitable for plastic holder whereas the double spring version is meant for metallic pipe holders.

- Typical application: Cleaning equipment used in pre-treatment for coating process
- Pipe size: **PS** 3/4", 1", 1 1/4", 1 1/2", 2"
- Materials: Body **D6** PP, chemically bonded fiberglass
Springs **N1** AISI 302 Stainless steel, heat treated

Code		PS	D	H	L	WS	W
Single spring	Double spring	inch	mm	mm	mm	mm	g
ZPG 1075 D6	ZPG 2075 D6	3/4"	11	53	50	17	72
ZPG 1100 D6	ZPG 2100 D6	1"					72
ZPG 1125 D6	ZPG 2125 D6	1 1/4"					90
-	ZPG 2150 D6	1 1/2"					90
-	ZPG 2200 D6	2"					110

Weight values are based on the double spring version



The drawing shows the distances of the pipe central axis from the wall for different pipe sizes assembled onto the pipe holder.

HOW TO MAKE UP THE PRODUCT CODE

EX.: ZPG 1075 D6

ZPG 1 075 D6

MATERIAL: D6 - PP, chemically bonded fiberglass

PIPE CODE: 075 - 3/4"
100 - 1"
125 - 1 1/4"
150 - 1 1/2"
200 - 2"

CLAMP CODE: 1 - Single spring
2 - Double spring

PIPE HOLDERS



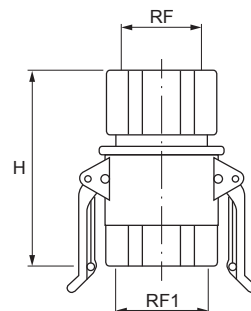
The above photo shows a European top coating plant using our products

QUICK COUPLING JOINTS

ZSA quick coupling joints are a very popular solution for industrial facilities requiring ease of operation.

- Thread size 3/4", 1", 1 1/4", 1 1/2"
- Thread specification BSP, NPT
- Typical applications Cleaning equipment used in pre-treatment for coating process
Addition and release of liquids in chemical tankers
- Materials

Body	D6	PP, chemically bonded fiberglass
	B3	AISI 316 Stainless steel
Lever	B31	AISI 316L Stainless steel, cast
	B35	AISI 316 Stainless steel, sintered
	D8	PVDF, Polyvinylidene fluoride
O-ring	E0	EPDM
	E7	Viton
	E8	NBR



Code	RF1 inch	RF inch	H mm	LP bar	W kg
ZSA 0075 B3x	3/4"	3/4"	85	15	*
ZSA 0100 B3x	1"	1"	73	15	
ZSA 0100 D6x			73	7	
ZSA 0125 B3x	1 1/4"	1 1/4"	110	15	
ZSA 0125 D6x				7	
ZSA 0150 D6x	1 1/2"	1 1/4"	110	6	
ZSA 0151 B3x	1 1/2"	1 1/2"	110	15	
ZSA 0151 D6x				6	

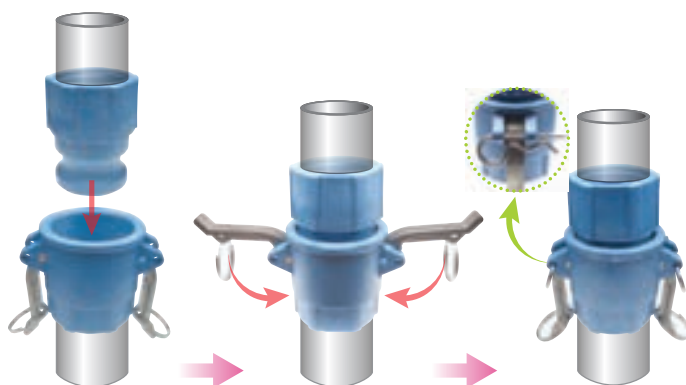
* Weight values for different materials are given on request.

HOW TO MAKE UP THE PRODUCT CODEEX.: **ZSA 0075 B3x****ZSA 0075 B3 x****MATERIAL**

- **B3** - AISI 316 Stainless steel
- **D6** - PP, chemically bonded fiberglass

CODE**QUICK COUPLING JOINTS**

X	Orientation	Lever material	O-ring	Rings
B	Fixed	AISI 316, sint	EPDM	AISI 316
C	Fixed	PVDF	EPDM	AISI 316
D	Fixed	PVDF	VITON	AISI 316
H	Fixed	AISI 316, sint	VITON	AISI 316
S	Free	AISI 316, sint	EPDM	AISI 316
T	Free	PVDF	EPDM	AISI 316
U	Free	PVDF	VITON	AISI 316
Y	Free	AISI 316, sint	VITON	AISI 316

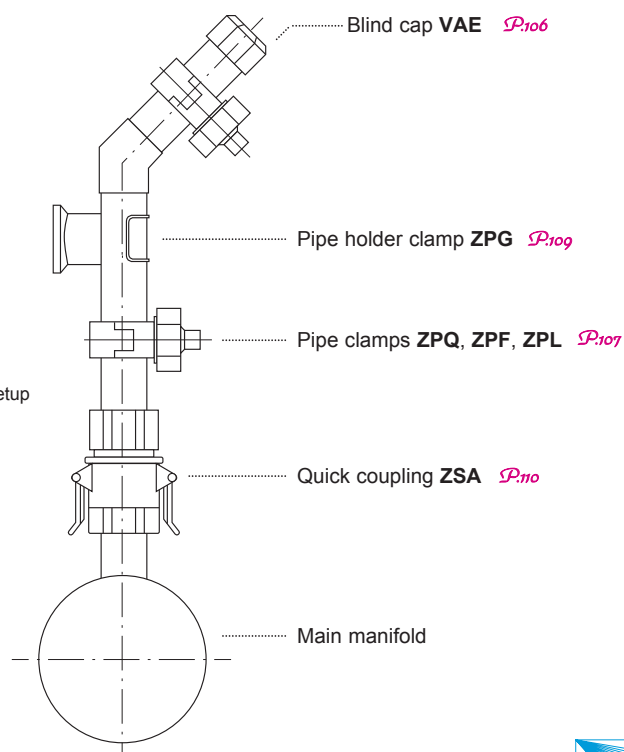
QUICK COUPLING JOINTS - INSTALLMENT

- A.** Join two parts of quick coupling together **B.** Put levers down and fasten **C.** Fix bolt and complete setup

QUICK FITTING RISERS AND HEADER MANIFOLDS

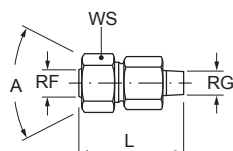
Our range of products for surface pre-treatment plants is the most complete on the market and has been developed in collaboration with the most important system manufacturers on a worldwide basis. PNR has designed most of the assembly accessories commonly adopted today in pre-treatment plants.

Right figure shows the installment steps. Quick couplings and pipe holder clamps can be quickly assembled and disassembled in seconds to minimize maintenance and shut-off time.



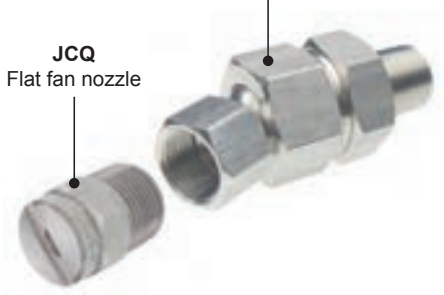


ZRA 1212 B1



ZRA
Standard swivel joints

JCQ
Flat fan nozzle



STANDARD SWIVEL JOINTS

ZRA/ZRB/ZRC are standard swivel joints for manufacturing plants requiring product diversification. The fitting and adjustment of the joints can be done easily by tightening the hexagonal screw cap.

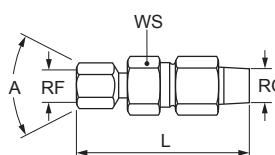
- Typical applications
 - Cleaning equipment used in pre-treatment for coating process.
 - Continuous casting cooling.
- Inlet thread size
 - 1/8", 1/4", 3/8", 1/2", 3/4"
- Outlet thread size
 - 1/8", 1/4", 3/8", 1/2", 3/4"
- Max working pressure
 - LP** 21 bar
- Materials
 - B1** AISI 303 Stainless steel
 - B31** AISI 316L Stainless steel
 - T1** Brass

Code	RG poll	RF poll	L mm	A deg	WS mm	W g
ZRA 1212 xx YY	1/8"	1/8"	38	50°	22	57
ZRA 2525 xx YY	1/4"	1/4"	57			75
ZRA 2626 xx YY	1/4"	1/4"	67	60°	27	147
ZRA 3826 xx YY	3/8"	1/4"	67			150
ZRA 3838 xx YY	3/8"	3/8"	70			155
ZRA 5050 xx YY	1/2"	1/2"	74	40°	27	186
ZRA 7575 xx YY	3/4"	3/4"	92		40	468

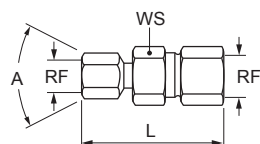
HOW TO MAKE UP THE PRODUCT CODE EX.: ZRA 1212 B1SB

ZRA 1212 xx YY

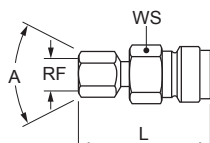
- CONNECTION
 - SB - BSP
 - SN - NPT
- MATERIAL
 - B1 - AISI 303 Stainless steel
 - B31 - AISI 316L Stainless steel
 - T1 - Brass
- OUTLET THREAD SIZE
 - 12 - 1/8"
 - 25 - 1/4"
 - 38 - 3/8"
 - 50 - 1/2"
 - 75 - 3/4"
- INLET THREAD SIZE
 - 12 - 1/8"
 - 25 - 1/4"
 - 38 - 3/8"
 - 50 - 1/2"
 - 75 - 3/4"



ZRA



ZRB



ZRC

Nozzle type	Inlet	Outlet
ZRA	Male	Female
ZRB	Female	Female
ZRC	Welded	Female

TRIANGLE FLANGED SWIVEL JOINTS

ZRP triangular flanged swivel joints have a robust metallic structure, are easy to fit and adjust and are widely used in manufacturing plants requiring product diversification.

- Typical applications Cleaning equipment used in pre-treatment for coating process.
Continuous casting cooling.
- Inlet thread size 1/8", 1/4", 3/8"
- Outlet thread size 1/8", 1/4", 3/8"
- Max working pressure **LP** 15 bar

Code	RG inch	RF inch	L mm	B mm	L1 mm	A deg	W g
ZRP 1212 xx	1/8"	1/8"	30	40	35	50°	65
ZRP 2512 xx	1/4"	1/8"	32				92
ZRP 2525 xx	1/4"	1/4"	40	50	45	60°	140
ZRP 2538 xx	1/4"	3/8"	40				150
ZRP 3825 xx	3/8"	1/4"	40				150
ZRP 3838 xx	3/8"	3/8"	40				150

HOW TO MAKE UP THE
PRODUCT CODE

EX.: ZRP 1212 B1

ZRP 1212 xx

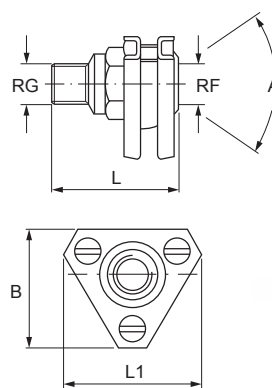
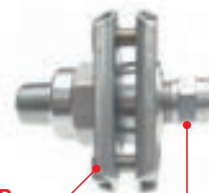
OUTLET THREAD SIZE

LNLET THREAD SIZE

JOINT TYPE

MATERIAL

- B1 - AISI 303 Stainless steel
- T1 - Brass
- B3 - AISI 316 Stainless steel (optional)

ZRP
Triangle flanged
swivel joints

JBC Flat fan nozzle

ZRP Triangle flanged
swivel joints

JBC Flat fan nozzle

(LARGE CAPACITY SWIVEL JOINTS) **ZRQ**

LARGE CAPACITY SWIVEL JOINTS

ZRQ series swivel joints are suitable for operating environments requiring large capacities and product diversification. Once set, they can be easily fitted and adjusted.

- Typical applications Cleaning equipment used in pre-treatment for coating process.
Continuous casting cooling.
- Inlet / Outlet thread size 1", 1 1/4", 1 1/2", 2", 2 1/2"
- Max working pressure **LP** 9 bar
- Materials **B1** AISI 303 Stainless steel
 B3 AISI 316 Stainless steel
 T1 Brass

Code	RG inch	RG1 inch	RF inch	L mm	D mm	A deg	W kg
ZRQ 8080 xx	1"	-	1"	89	92	40°	1.8
ZRQ 8282 xx	1 1/4"	-	1 1/4"	130			2.1
ZRQ 8482 xx	1 1/2"	-	1 1/4"	133			2.4
ZRR 8282 xx	1 1/4"	1 1/4"	-	130	92	40°	2.2
ZRR 8284 xx	1 1/2"	1 1/4"	-	130			2.2
ZRR 8484 xx	1 1/2"	1 1/2"	-	130			2.4
ZRR 8686 xx	2"	2 1/2"	-	203	158	40°	8.0
ZRR 8888 xx	2 1/2"	2 1/2"	-	229			8.8

HOW TO MAKE UP THE
PRODUCT CODE

EX.: ZRQ 8080 B1

ZRQ 8080 xx

OUTLET THREAD SIZE

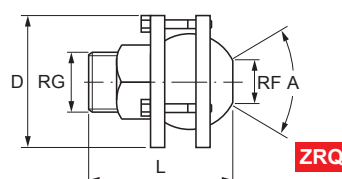
LNLET THREAD SIZE

JOINT TYPE

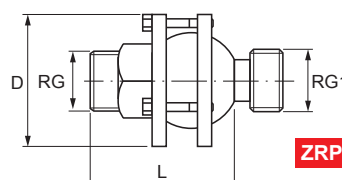
MATERIAL

- B1 - AISI 303 Stainless steel
- B3 - AISI 316 Stainless steel
- T1 - Brass

- ZRQ - Female
- ZRR - Male



ZRQ



ZRP

ZRQ
Large capacity
swivel joints

Flat fan nozzle



Length conversion table

μm	mm	cm	m	inch	ft
1	1×10^{-3}	1×10^{-4}	1×10^{-6}	3.94×10^{-5}	3.28×10^{-6}
1×10^3	1	0.1	1×10^{-3}	3.94×10^{-2}	3.28×10^{-3}
1×10^4	10	1	1×10^{-2}	3.94×10^{-1}	3.28×10^{-2}
1×10^7	1×10^3	100	1	39.4	3.28
2.54×10^4	25.4	2.54	2.54×10^{-2}	1	8.33×10^{-2}
3.05×10^5	3.05×10^2	30.5	3.05×10^{-1}	12	1

Area conversion table

cm^2	m^2	inch^2	ft^2
1	1×10^{-4}	0.155	1.08×10^{-3}
1×10^4	1	1.55×10^3	10.8
6.45	6.45×10^{-4}	1	6.94×10^{-3}
9.30×10^2	9.30×10^{-2}	1.44×10^2	1

Volume conversion table

cm^3	Liter	m^3	ft^3	US gallon
1	1×10^{-3}	1×10^{-6}	3.53×10^{-5}	2.64×10^{-4}
1000	1	1×10^{-3}	3.53×10^{-2}	0.264
1×10^6	1000	1	353	264
2.83×10^4	28.3	2.83×10^{-2}	1	0.749
3.79×10^3	3.79	3.79×10^{-3}	1.34	1

Pressure conversion table

MPa	KPa	Bar	Kg/cm^2	P.S.I	atm	mHg
1	1000	10	10.2	145	9.87	7.5
0.001	1	0.01	0.011	0.145	9.87×10^{-3}	7.5×10^{-1}
0.1	100	1	1.02	14.5	0.987	0.75
0.09807	98.07	0.981	1	14.22	0.968	0.736
0.00689	6.89	0.069	0.07	1	0.068	0.052
0.101	1.01×10^2	1.013	1.033	14.7	1	0.76
0.133	1.33×10^2	1.33	1.36	19.3	1.32	1

Flow rate unit conversion table

l/min	m^3/min	m^3/hour	$\text{Inch}^3/\text{hour}$	ft^3/hour	US gallon/min
1	0.001	0.06	3.66×10^3	2.12	0.264
1000	1	60	3.66×10^6	2.12×10^3	264
16.67	0.017	1	6.1×10^4	35.3	4.40
2.73×10^{-4}	2.7×10^{-7}	1.64×10^{-5}	1	5.79×10^{-4}	7.22×10^{-6}
0.472	4.72×10^{-4}	0.028	1.728	1	0.125
3.79	0.004	0.227	1.39×10^4	8.02	1

Air pipe table

Pipe size	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"
Pressure loss per 10m (bar)	1.25	0.733	0.56	0.44	0.287	0.214	0.138	0.108
Inlet pressure (bar)	Max capacity values (NL/min)							
1.5	163	314	668	1076	1885	3150	4960	6630
2.0	179	344	730	1180	2060	3450	5430	7280
3.0	206	395	840	1360	2375	3900	6300	8400
4.0	230	422	940	1520	2660	4450	7000	9360
5.0	252	485	1030	1660	2920	4875	7700	10250
6.0	272	523	1110	1800	3140	5250	8300	11050
7.0	292	558	1185	1920	3350	5620	8870	11800

Liquid pipe table

Inlet pressure : 3 bar

Diameter Inch	Max capacity values l/min
1/8"	11.20
1/4"	44.70
3/8"	100.80
1/2"	179.30
3/4"	402.00
1"	716.30
1 1/4"	1121.84
1 1/2"	1610.75
2"	2865.24

Flow rate and pipe diameter

Diameter		Steel pipe		Length 10 m
A	B	Inner diameter	Outer diameter	Capacity value at 0.1~0.3 kg/cm ² pressure loss
6A	1/8B	6.5	10.5	1.3 ~ 2.2
8A	1/4B	9.2	13.8	3 ~ 5.2
10A	3/8B	12.7	17.3	7 ~ 12
15A	1/2B	16.1	21.7	12 ~ 21
20A	3/4B	21.6	27.2	22 ~ 38
25A	1B	27.6	34.0	38 ~ 65
32A	1 1/4B	35.7	42.7	70 ~ 120
40A	1 1/2B	41.6	48.6	120 ~ 210
50A	2B	52.9	60.5	215 ~ 370
65A	2 1/2B	67.9	76.3	410 ~ 700
80A	3B	80.7	89.1	680 ~ 1200
100A	4B	105.3	114.3	1200 ~ 2100
125A	5B	130.8	139.8	2100 ~ 3600
150A	6B	155.2	165.2	3300 ~ 5700