

## Concentrated high impact force

Solid stream nozzles provide a sharp and concentrated high pressure spray jet. These nozzles offer a stronger impact force than other types at the same operating pressures and flow rates.

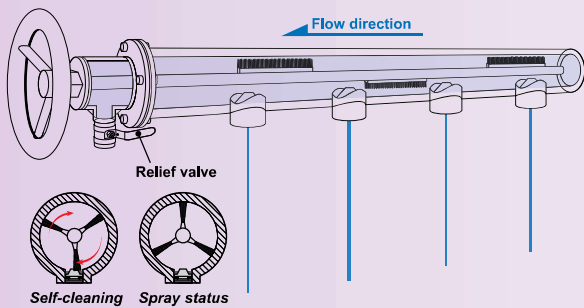
## Highly extended service life

Solid stream nozzles are designed for applications requiring medium or high liquid pressures. High pressures may shorten nozzles service life. After a long research and many application tests, our engineers found out that ruby with a second hardness level is the ideal material to overcome this problem and extend nozzles durability as it resists abrasion or scratching. The nozzle tips are precisely machined and polished to ensure a perfect solid stream and enhance performance.



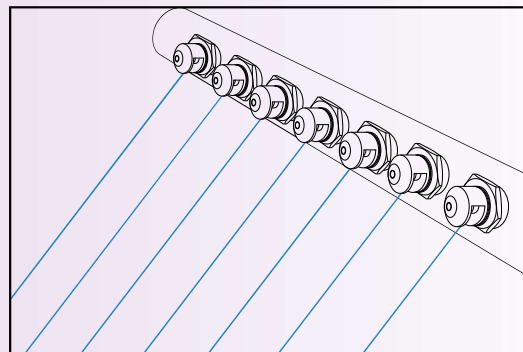
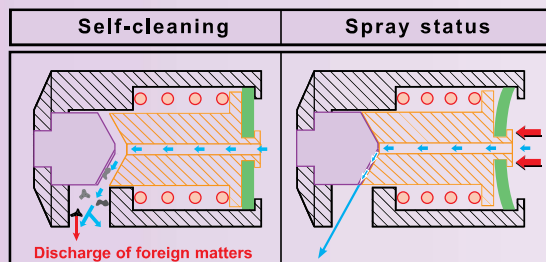
## Self-cleaning shower pipe and nozzles

Paper making requires a great deal of water. Waste water is often reused to clean filters and felts to save costs and reduce water consumption. Reclaimed water contains solids and impurities that cause nozzles clogging and shutdowns for maintenance. Self-cleaning spray pipes and nozzles are the best solution to this. Their revolutionary design helps improving a great deal both production efficiency and industrial competitiveness.



Self-cleaning spray pipes contain a rotating steel brush which can be automatically or manually operated and an escape valve at their outlet. The rotating brush removes all the dirt from the pipe walls using water.

The nozzle body contains a mobile piston and its opening and closing are controlled by the operating water pressure. For example, when nozzles wash mesh fabrics with an operating pressure of 3 bar, this pressure is higher than a spring force of 1 bar. Piston and nozzle body come close producing a flat fan. If the inlet pressure is reduced to 0.5 bar, lower than a spring force of 1 bar, piston and nozzle body separate opening to the maximum distance. Water pressure remains at 0.5 bar and removes any build up when back to normal condition. Self-cleaning nozzles are easy to install, align and clean and ensuring relevant time and costs savings. The spring force is set depending on customer's plant working pressure.



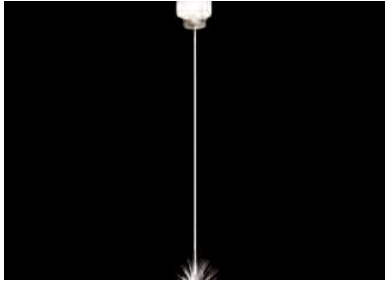
**FAA/FBA HIGH IMPACT SOLID STREAM NOZZLES**

FAA/FBA types nozzles are specially designed for high pressure cleaning and washing operations. They are made in Stainless Steel 416, accurately machined and perfectly polished. They are particularly hard, resistant to wear, have a long service life and offer high precision performances.

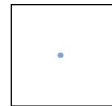
■ **Typical applications**

**Washing:** filter cloth, felts, parts.

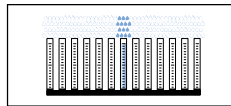
**Other applications:** paint scraping, rust removal, shell removal.



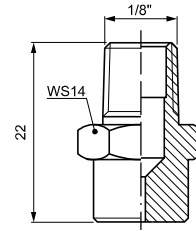
■ **Thread specification:** BSPT, NPT



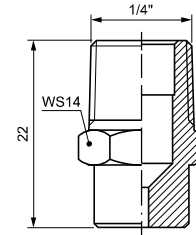
Spray section



Distribution



FAA



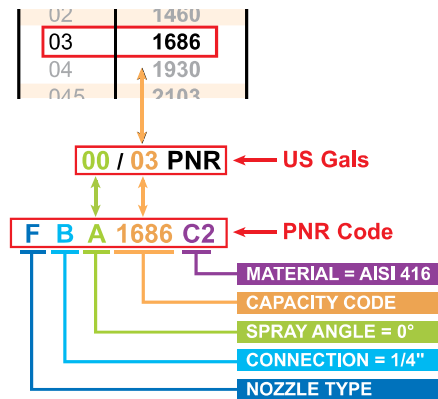
FBA

Nozzle type			US Gals	PNR Code	Capacity at different pressure values (l/min) (bar)						
FAA 1/8"	FBA 1/4"	FXA			20	30	50	70	100	150	200
•	•	•	015	1340	1.52	1.86	2.40	2.84	3.40	4.16	4.81
•	•	•	02	1460	2.00	2.50	3.20	3.80	4.60	5.60	6.40
•	•	•	025	1560	2.50	3.07	3.96	4.69	5.60	6.86	7.92
•	•	•	03	1686	3.10	3.70	4.80	5.70	6.80	8.40	9.70
•	•	•	035	1812	3.63	4.45	5.74	6.79	8.12	9.94	11.5
•	•	•	04	1930	4.16	5.09	6.58	7.78	9.30	11.4	13.2
•	•	•	045	2103	4.60	5.60	7.20	8.60	10.3	12.6	14.5
•	•	•	05	2116	5.10	6.20	8.10	9.50	11.4	14.0	16.1
•	•	•	055	2126	5.60	6.90	8.91	10.5	12.5	15.4	17.7
•	•	•	06	2138	6.10	7.50	9.70	11.4	13.8	16.7	19.3
•	•	•	065	2149	6.60	8.10	10.5	12.4	14.9	18.1	21.0
•	•	•	07	2160	7.16	8.76	11.3	13.4	16.0	19.6	22.6
•	•	•	075	2170	7.60	9.40	12.0	14.2	17.0	21.0	24.0
•	•	•	08	2181	8.20	10.0	12.9	15.3	18.1	22.0	26.0
•	•	•	085	2192	8.70	10.6	13.7	16.2	19.2	24.5	27.0
•	•	•	09	2204	9.20	11.2	14.5	17.2	20.4	25.0	29.0
•	•	•	095	2226	9.70	11.9	15.3	18.1	22.6	27.0	31.0
•	•	•	10	2230	10.2	12.5	16.1	19.1	23.0	28.0	32.0
•	•	•	11	2248	11.2	13.7	17.7	21.0	24.8	31.0	35.0
•	•	•	12	2272	12.2	15.0	19.3	23.0	27.2	33.0	39.0
•	•	•	12.5	2280	12.7	15.6	20.0	24.0	28.0	35.0	40.0
•	•	•	13	2296	13.3	16.2	21.0	25.0	29.6	36.0	42.0
•	•	•	14	2320	14.3	17.5	23.0	27.0	32.0	39.0	45.0
•	•	•	15	2341	15.3	18.7	24.0	29.0	34.1	42.0	48.0
•	•	•	16	2360	16.3	20.0	26.0	31.0	36.0	45.0	52.0
•	•	•	18	2410	18.3	22.0	29.0	34.0	41.0	50.0	58.0
•	•	•	20	2456	20.0	25.0	32.0	38.0	45.6	56.0	64.0
•	•	•	25	2567	25.0	31.0	40.0	48.0	56.7	70.0	81.0
•	•	•	30	2682	31.0	37.0	48.0	57.0	68.2	84.0	97.0
•	•	•	35	2800	36.0	44.0	56.0	67.0	80.0	98.0	113
•	•	•	40	2970	41.0	50.0	64.0	76.0	97.0	112	129
•	•	•	50	3113	51.0	62.0	81.0	95.0	113	140	161
•	•	•	60	3135	61.0	75.0	97.0	114	135	167	193

HOW TO MAKE UP THE NOZZLE CODE PRODUCT IDENTIFICATION CODE

The above table shows the "American Capacity Code", that is, the capacity in Gallons per minute at an operating pressure of 40 psi, and the "PNR Capacity Code" (in Litres/min) at a capacity of 100 bar. For the convenience of worldwide use, all nozzles are expressed with the US coding system.

For Example: nozzle **FBA 1686 C2** (PNR code) will be codified as **"00/03"** (US Gallons) with a spray angle 0° and capacity 0.3 Gals/min at a pressure of 40 psi.



FLOW STABILIZER

Flow stabilizers are used to improve the stability of the liquid flow as they reduce losses caused by internal turbulence and allow to use a higher percentage of the liquid vein energy to generate a high impact solid flat fan. Flow stabilizers can be installed on all nozzles.

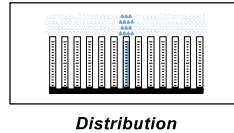
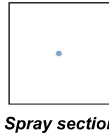




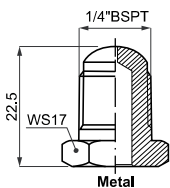
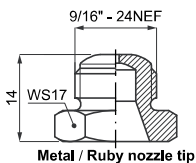
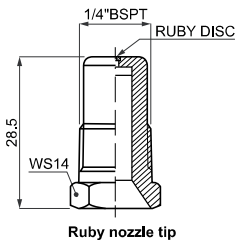
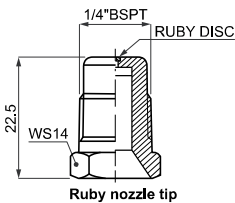
## GDA SERIES NEEDLE JET NOZZLES

GDA models are classic high impact needle jet nozzles, easy to clean and clog-resistant. Their tips spray a solid stream of high pressure water inside pipes usually containing a steel brush that can be manually or automatically rotated. The rotating brush moving inside the pipe takes all the dirt off the inner walls and then flushes out the debris through an escape valve. For their revolutionary design, GDA nozzles are ideal for high pressure cleaning in paper mills and in all industrial processes requiring a high impact needle spray jet. Their resistance to clogging ensures greater productivity and low servicing costs.

- **Thread specification:** BSPT, 9/16-24NEF
- **Typical applications**  
**Washing:** filter cloth washing, woolen blanket washing, parts washing  
**Other applications:** scrape paint, rust removal



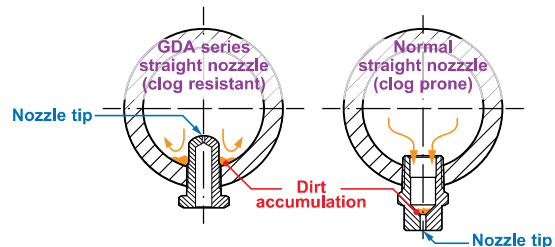
GDA needle jet nozzles are a one-piece construction, suitable to work with operating pressures lower than 20 bar and have a hard ruby spray tip, ideal to work with pressures lower than 200 bar. They are precisely machined and have a hydrodynamic design to produce a solid stream needle jet. Their stainless steel body and ruby tip ensure a long service life and a high resistance to wear.



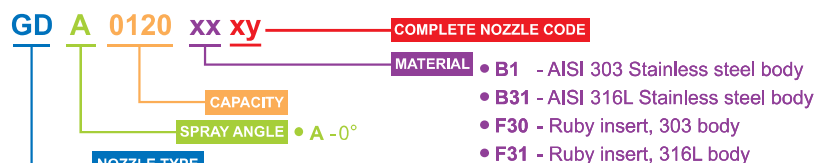
Nozzle type		Code	D mm	Capacity at different pressure values								(l/min) (bar)			
Stainless steel	Ruby insert			3.0	5.0	10	20	30	50	70	100		150		
•	•	GDA 0120 xx xy	0.35	0.12	0.15	0.22	0.31								
•	•	GDA 0170 xx xy	0.40	0.17	0.22	0.31	0.44	0.54	0.69	0.82	0.98	1.20			
•	•	GDA 0290 xx xy	0.50	0.29	0.37	0.53	0.75	0.92	1.18	1.40	1.67	2.05			
•	•	GDA 0320 xx xy	0.60	0.32	0.41	0.58	0.83	1.01	1.31	1.55	1.85	2.26			
•	•	GDA 0420 xx xy	0.70	0.42	0.54	0.77	1.08	1.33	1.71	2.03	2.42	2.97			
•	•	GDA 0500 xx xy	0.80	0.50	0.65	0.91	1.29	1.58	2.04	2.42	2.89	3.54			
•	•	GDA 0620 xx xy	0.85	0.62	0.80	1.13	1.60	1.96	2.53	2.99	3.58	4.38			
•	•	GDA 0780 xx xy	0.90	0.78	1.01	1.42	2.01	2.47	3.18	3.77	4.50	5.52			
•	•	GDA 0890 xx xy	1.00	0.89	1.15	1.62	2.30	2.81	3.63	4.30	5.14	6.29			
•	•	GDA 1120 xx xy	1.10	1.20	1.55	2.19	3.10	3.79	4.90	5.80	6.93	8.49			
•	•	GDA 1153 xx xy	1.20	1.53	1.98	2.79	3.95	4.84	6.25	7.39	8.83	10.8			
•	•	GDA 1160 xx xy	1.40	1.60	2.07	2.92	4.13								
•	•	GDA 1270 xx xy	1.80	2.70	3.49	4.93	6.97								
•	•	GDA 1450 xx xy	2.40	4.50	5.81	8.22	11.6								
•	•	GDA 1730 xx xy	3.20	7.30	9.42	13.3	18.8								

COMPLETE NOZZLE CODE	
x = Body length	y = Thread
A for 14.0 mm	A for 1/4" BSPT
B for 28.5 mm	B for 9/16 - 24 NEF
C for 22.5 mm	

GD nozzles are installed with their spray tips inside the pipe that spray in high pressure fluids producing turbulence to remove all dirt off the inner pipe walls. Used in combination with self-cleaning pipes, these nozzles assure complete cleaning, productivity improvement, minimal maintenance.



HOW TO MAKE UP THE NOZZLE CODE  
 EX.: GDA 0120 B1AA

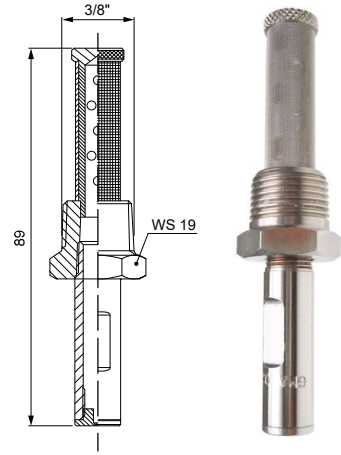
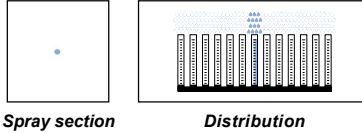



**GMA SERIES PAPER WEB TRIMMERS**

GMA nozzles produce a glass-rod like needle jet, ideal in paper mills to cut and trim the side of your paper web with a sharp edge, precise, clean and with no dust. They are precisely machined. Their smooth high quality ruby tip and special design produce a solid straight jet for precision trimming. A 150 mesh stainless steel filter avoids clogging. Their stainless steel body and ruby spray tip assures a long service life.



- **Thread specification:** 3/8" BSPT, 3/8" NPT
- **Filtering fineness:** 150 Mesh
- **Typical applications**  
Felt and wire cleaning  
Parts washing  
Paper trimming



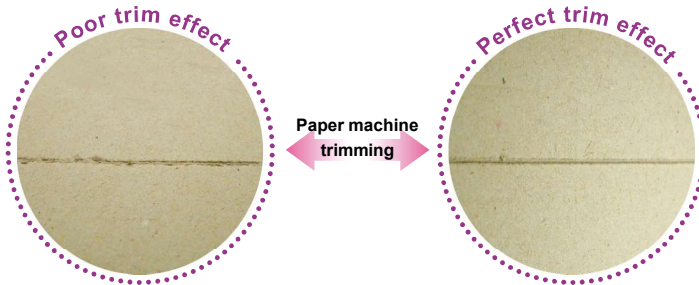
	Code	D mm
0°	<b>GMA 0380</b> <i>xx</i> <b>y</b>	0.381
	<b>GMA 0500</b> <i>xx</i> <b>y</b>	0.508
	<b>GMA 0630</b> <i>xx</i> <b>y</b>	0.635
	<b>GMA 0810</b> <i>xx</i> <b>y</b>	0.810
	<b>GMA 0890</b> <i>xx</i> <b>y</b>	0.889
	<b>GMA 0910</b> <i>xx</i> <b>y</b>	0.914
	<b>GMA 1010</b> <i>xx</i> <b>y</b>	1.016
	<b>GMA 1220</b> <i>xx</i> <b>y</b>	1.219



GMA codes have been modified, based on the orifice diameter, measured for every nozzle. Please contact use if you need the capacity at different pressure.

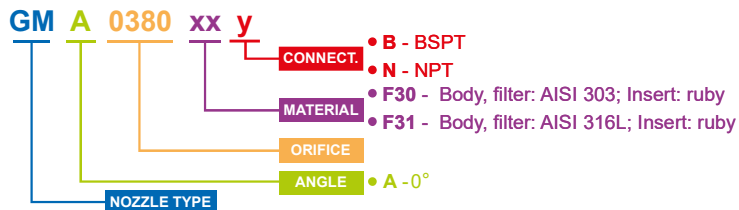
**PERFECT CLEANING**

GMA top quality ruby tips produce a solid needle spray jet to trim paper web with a precise and sharp edge cut.



**HOW TO MAKE UP THE NOZZLE CODE**

EX.: GMA 0380 F30B

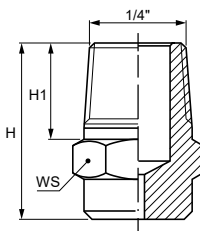
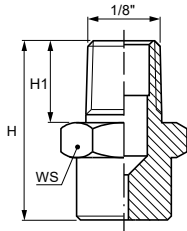




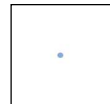
JAA



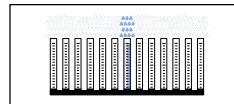
JBA



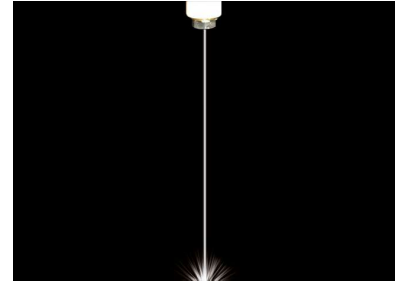
• Thread specification: BSPT



Spray section



Distribution



STRAIGHT NOZZLES

**Typical applications**

**Washing**

Felts, filter cloths and parts washing

**Other applications**

Paint scraping

Rust and shell removal

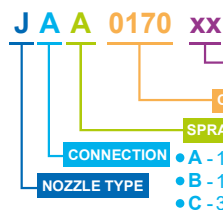
**DIMENSIONS AND WEIGHTS**

Code	Size	H	H1	WS	W
unit	inch	mm	mm	mm	gram
JAA	1/8"	19.5	11	12	9
JBA	1/4"	22.0	12	14	18
JCA	3/8"	25.0	14	17	34

D	Nozzle type (Stainless steel)			Nozzle type (Ruby nozzle tip)		Code	Capacity at different pressure values (l/min) (bar)			
	JAA (1/8")	JBA (1/4")	JCA (3/8")	JAA (1/8")	JBA (1/4")		3.0	5.0	10	20
	0.40	•	•		•		•	0170	0.17	0.22
0.50	•	•		•	•	0290	0.29	0.37	0.53	0.75
0.60	•	•		•	•	0320	0.32	0.41	0.58	0.83
0.70	•	•		•	•	0420	0.42	0.54	0.77	1.08
0.80	•	•		•	•	0500	0.50	0.65	0.91	1.29
0.90	•	•		•	•	0780	0.78	1.01	1.42	2.01
1.00	•	•		•	•	0900	0.90	1.16	1.64	2.32
1.10	•	•		•	•	1120	1.20	1.55	2.19	3.10
1.20	•	•		•	•	1153	1.53	1.98	2.79	3.95
1.25	•	•				1190	1.90	2.45	3.47	4.91
1.30	•	•				1233	2.33	3.01	4.25	6.02
1.35	•	•				1310	3.10	4.00	5.66	8.00
1.40	•	•				1385	3.85	4.97	7.03	9.94
2.00	•	•				1490	4.90	6.33	8.95	12.7
2.50	•	•				1581	5.81	7.50	10.6	15.0
2.75	•	•	•			1780	7.80	10.1	14.2	20.1
4.00	•	•	•			1980	9.80	12.7	17.9	25.3
5.00		•	•			2124	12.4	16.0	22.6	32.0
6.00		•	•			2153	15.3	19.8	27.9	39.5
7.00		•	•			2195	19.5	25.2	35.6	50.3
8.00		•	•			2245	24.5	31.6	44.7	63.3
9.00		•	•			2274	27.4	35.4	50.0	70.7
10.0		•	•			2310	31.0	40.0	56.6	80.0
11.0		•	•			2390	39.0	50.3	71.2	101
12.0		•	•			2470	47.0	60.7	85.8	121

**HOW TO MAKE UP THE NOZZLE CODE**

EX.: JAA 0170 B1

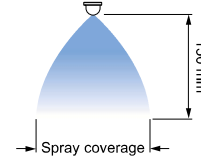
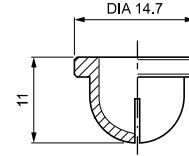


- MATERIAL**
- B1 - AISI 303 Stainless steel body
  - B31 - AISI 316L Stainless steel body
- CAPACITY**
- SPRAY ANGLE** • A - 0°
- CONNECTION**
- A - 1/8"
  - B - 1/4"
  - C - 3/8"
- NOZZLE TYPE**
- F30 - Ruby insert, 303 body
  - F31 - Ruby insert, 316L body
  - F32 - Diamond insert, 303 body
  - F33 - Diamond insert, 316L body

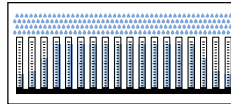
**AIR & STEAM FLAT FAN TIPS**

GZ air & steam flat fan tips are ideal for gas application. They are widely used in drying processes.

- **Typical applications:** water removal from surfaces, flocks and water blow off
- **Connection:** flanged nozzle tip



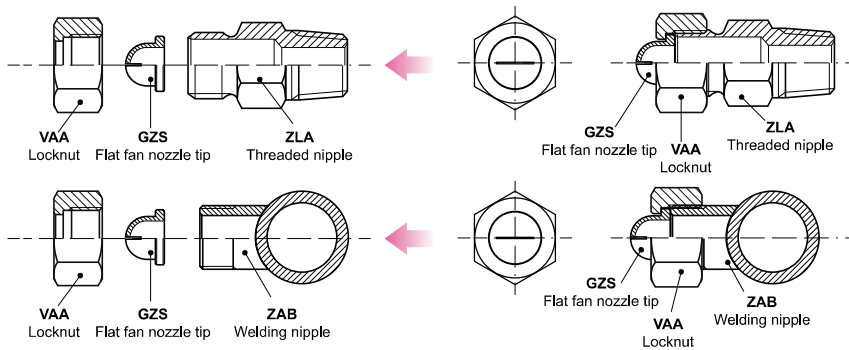
Spray section



Distribution

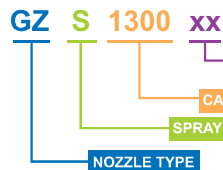
70°	Code	D mm	Air capacity (Nm <sup>3</sup> /hour) at different pressure values (bar)				Steam capacity (kg/hour) at different pressure values (bar)				Spray coverage	
			0.5 bar	2.0 bar	5.0 bar	10 bar	0.5 bar	2.0 bar	5.0 bar	10 bar	2.0 bar	5.0 bar
	<b>GZS 1300 xx</b>	1.3	1.2	3.0	6.0	11.0	0.9	1.9	3.7	6.7	70	85
	<b>GZS 1350 xx</b>	1.5	2.0	3.5	7.1	12.6	1.0	2.1	4.1	7.7	72	87
	<b>GZS 1500 xx</b>	1.8	2.3	5.3	10.7	19.5	1.7	3.3	6.6	11.8	110	125
	<b>GZS 1800 xx</b>	2.1	3.2	8.0	16.0	29.0	2.5	5.0	9.9	18.0	115	140
	<b>GZS 2150 xx</b>	2.8	5.4	13.0	26.0	48.0	4.2	8.2	16.0	29.0	130	170
	<b>GZS 2200 xx</b>	3.6	8.9	21.7	43.3	79.4	6.8	13.6	27.0	48.0	140	180
	<b>GZS 2315 xx</b>	4.3	13.0	31.8	65.6	120.2	10.3	20.6	40.4	73.0	170	215

**ASSEMBLY FITTINGS**



**HOW TO MAKE UP THE NOZZLE CODE**

EX.: GZS 1300 B1



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