



CTG FF10 BR

FIRE PROTECTION SYSTEMS COMPONENTS



COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
== ISO 9001 ==



INTRODUCTION

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DOCUMENTATION

PNR manufactures the full range of equipment for fire suppression foam systems and hi-tech water spray systems. Full information about our products can be found on the following publications.

PRODUCT RANGE	CTG TV 10 BR
SPRAYNOZZLES FOR INDUSTRIAL APPLICATIONS	CTG UG 16 BR
AIR ASSISTED ATOMIZERS	CTG AZ 15 BR
COMPLEMENTARY PRODUCTS & ASSEMBLY FITTINGS	CTG AC 15 BR
TANK WASHING SYSTEMS	CTG LS 15 BR
PAPERMILL NOZZLES	CTG PM 09 BR
EVAPORATIVE COOLING NOZZLES	CTG LN 16 BR
STEELWORK NOZZLES	CTG SW 11 BR
SPRAYDRY NOZZLES	CTG SD 10 BR
FIRE FIGHTING PRODUCTS	CTG FF 10 BR

Since our products are continuously updated to keep up with the latest technology, our technical documentation is regularly reprinted and sent to the addresses listed in our files.

We add your address to the list upon reception of page 49 duly compiled.

NOTICE

Our products and their performances are continuously checked and up-dated as per the latest technology.

We are sorry we cannot promptly inform all Customers about these modifications, we ask you to take note that data & specifications contained in this Catalogue are to be considered as design information only and do not constitute obligation to our Company.

Should you need one or more characteristics of any product in this Catalogue to be strictly maintained, we kindly ask you to require a written confirmation from us before you send your order.

All the information contained in this Catalogue like product data, product codes, drawings, pictures are the exclusive property of Flowtech Srl. Any use or reproduction without written permission is strictly forbidden.

All dimensions are indicated in millimetres (mm).

All threads are intended to be made following the ISO 228 Standards (Equivalent Standards BS 2779 - DIN 259 - UNI 338).

Abbreviations used in texts and tables are listed at page 49.

All mentioned trade marks are recognized as their owners' property.

Our Warranty Conditions are listed on page 49.

PNR started its activity on 1968 by manufacturing components for the fire protection industry, and added a line of industrial spray nozzles at a later date.

Both product lines have been developed along thirty years of continuous improvements, and PNR is today widely accepted among the leaders in its business sector in Europe.

The present Catalogue shows our classical production range in the Fire Protection/Suppression Foam Systems sector that made us famous and reputable in the field. This Catalogue is going to be shortly completed with new and innovative items. Our Company Quality System was qualified as per ISO 9001 requirements since 1998.

PNR'S MATERIALS CODES

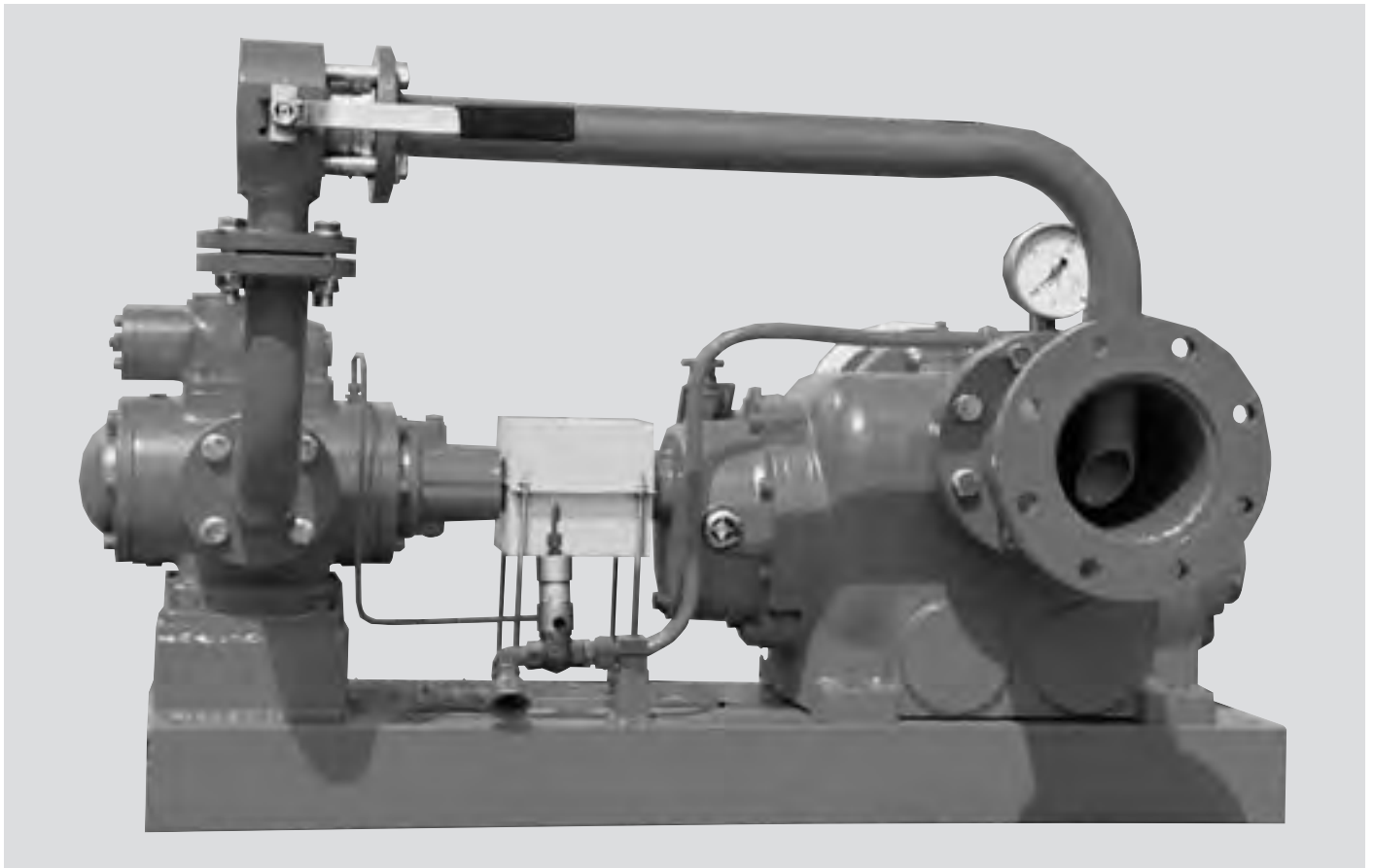
Many items in this Catalogue are available in different materials and therefore they are indexed with "XX" on their material code position. The double X then, is to be replaced as indicated in the page.

The following list shows the most common materials. Full Material List is available on request under the Data Sheet Code 3BZ A01.

A1	Mild steel	E2	PTFE, fiberglass 25%
A2	High speed steel	E7	Viton
A8	Zinc coated steel	E8	Synthetic, NBR
A9	Nickel coated steel	E83	Hypalon
B1	AISI 303 stainless steel	G1	Cast iron
B2	AISI 304 stainless steel	H1	Titanium
B21	AISI 304 L stainless steel	L1	Monel 400
B3	AISI 316 stainless steel	L2	Incolloy 825
B31	AISI 316 L stainless steel	L8	Hastelloy
B51	AISI 431 Stainless steel	P6	Acr. but. styrene (ABS)
B8	AISI 309 stainless steel	P8	EPDM 40 Shore
C2	Aisi 416 stainless st. hardened	T1	Brass
D1	Polyvinylchloride, PVC	T2	Brass, Chrome plated
D2	Polypropylene, PP	T3	Copper
D3	Poliammyde, PA	T5	Bronze
D5	Polypropylene, talcum	T52	Brass, Delta
D6	Polypropylene, fiberglass	T55	Bronze, marine
D7	HD Polyethylene, HDPE	T8	Brass, Nickel plated
D8	Polyvinylidene Fluoride, PVDF	T81	Brass ENP *
E0	EPDM	V1	Aluminum
E1	Polytetrafluorethylene, PTFE	V7	Aluminum, ENP *

* ENP Electroless nickel plated

POSITIVE DISPLACEMENT



URW

The URW Positive displacement Foam Proportioning System offers the most flexible and reliable technique to protect large hazards where a huge foam concentrate stock and variable discharge performance are necessary.

This system was specifically designed to eliminate the known disadvantages of bladder tanks, which typically are:

- Limited autonomy: once the concentrate is finished during a fire, you need to refill the tank under very difficult conditions.
- Limited mixing accuracy, which is possible only within a too narrow range, 1:5 typically.
- Unreliable accuracy when the water pressure lowers below 65% of its nominal value.
- Expensiveness as well as complicated maintenance, particularly when large size bladder-tanks are located indoors and bladder substitution is needed.

The URW System simply consists of two positive displacement pumps mechanically interconnected by one single shaft, one larger working as a motor and powering the smaller one, which sucks and injects the concentrate.

The difference in displacement between the two pumps, which cannot vary, assures the correct foam proportioning ratio at any given required discharge flow.

This unique feature assures distinct advantages, one system serving say 10 monitors has the same exacting performance when you open one, two, or any number of them at the same time.

No other system on the market offers over such an extended capacity range all the many advantages listed in the following:

- Refilling of the foam concentrate tank is possible with no limitations at any given time from any sources available, like vehicles or even drums.
- In case tank refilling is needed in front of a fire, the personnel in charge will be much less exposed to risks.
- The URW system provides precisely mixed foam solution even in extremely partial demand of supply from the foam discharge devices downstream.
- The URW system is more efficient and more economical for large applications, where it allows centralized storage of foam concentrate, with a lower quantity required in stock which is much more useful than several smaller quantities dispersed into local bladder tanks.
- URW systems work satisfactorily with any water pressure value without performance decay in the event of water pressure drop.

Adjustable Proportioning

The URW positive displacement mixers are normally supplied with a fix ratio, but can also be delivered with a mechanical adjustable ratio reducer which allows both 6% and 3% ratios. (not available immediately). Refilling the tank with a different type of concentrate, as far as concentration is concerned, is then possible.

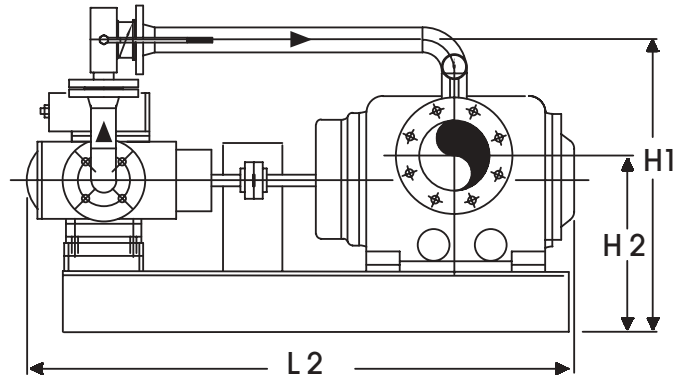
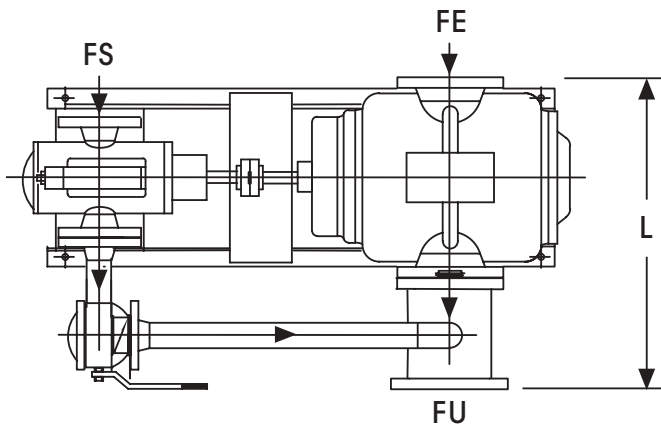
This adds to the system flexibility, since any type of foam concentrate can be used under any circumstances. See the instruction at the end of the page for composing the ordering code.

Patent rights

Minosse Twin-Coupled Hydraulic-Motor/pumps Foam Proportioning System is patented on all the major world's markets.

Materials

Mixer body	G4	Malleable iron
Inside parts	T55	Bronze marine
Rotors	B51	AISI 431 stainless steel



Code	Type	Q m ³ /hr	M %	Dimensions (mm)				P Kg	FE inch	FU inch	FS inch
				L 2	L	H 2	H 1				
URW 0122 G4B3	H 122/3	12 - 120	3	1142	708	250	400	260	4"	4"	1+1/4"
URW 0122 G4B6	H 122/6		6	1142	708	250	400	260	4"	4"	1+1/4"
URW 0301 G4B3	H 301/3	30 - 300	3	1264	1154	423	700	480	6"	6"	2+1/2"
URW 0301 G4B6	H 301/6		6	1338	1154	423	700	480	6"	6"	2+1/2"
URW 0450 G4B3	H 450/3	45 - 450	3	1495	848	470	800	685	8"	8"	2+1/2"
URW 0450 G4B6	H 450/6		6	1572	850	470	800	745	8"	8"	3"
URW 0601 G4B3	H 601/3	60 - 600	3	1642	900	515	850	890	10"	10"	2+1/2"
URW 0601 G4B6	H 601/6		6	1745	900	515	900	985	10"	10"	4"
URW 0901 G4B3	H 901/3	90 - 900	3	1831	940	540	900	1130	12"	12"	4"
URW 0901 G4B6	H 901/6		6	1959	940	540	1000	1230	12"	12"	4"

Items codification

The codification allows specifying all the required characteristics thus avoiding mistakes.

URW 0901 G4 B X

B	B = Flanges, DIN ND 16	X	3 = 3% ratio
	N = Flanges, ANSI 150		6 = 6% ratio

CLASSIC FOAM MIXERS



BLADDER-TANK GROUPS

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BALANCED-PRESSURE PROPORTIONERS

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METERED PRESSURE PROPORTIONERS

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IN LINE EDUCTOR PROPORTIONERS

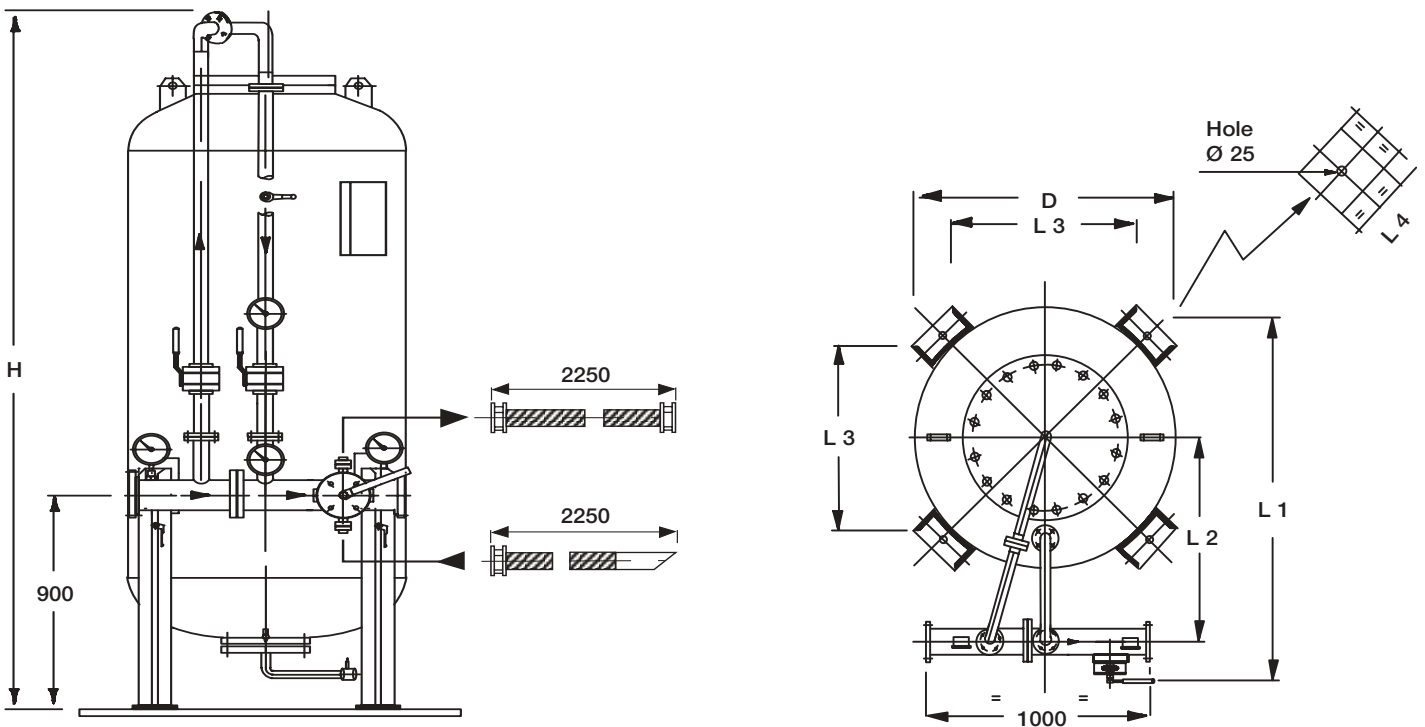
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SINGLE BLADDER TANK GROUPS

The Bladder-Tank System works without requirement for any external energy supply. The foam concentrate is stored in a rubber bag (bladder), which is contained inside the tank, is displaced from it by means of water under pressure picked from the main water line, and injected into the main water line through the pressure drop generated by a venturi orifice. The body is protected from corrosion through a quality painting cycle, with an epoxy primer followed by a double layer of polyurethane paint. On request weldings on the body shall be run according to the ASME standards.

Materials

Tank and pipes **A2** Carbon steel
 Bladder membrane **E83** Hypalon - Neoprene
 Operation valves **T1** Brass



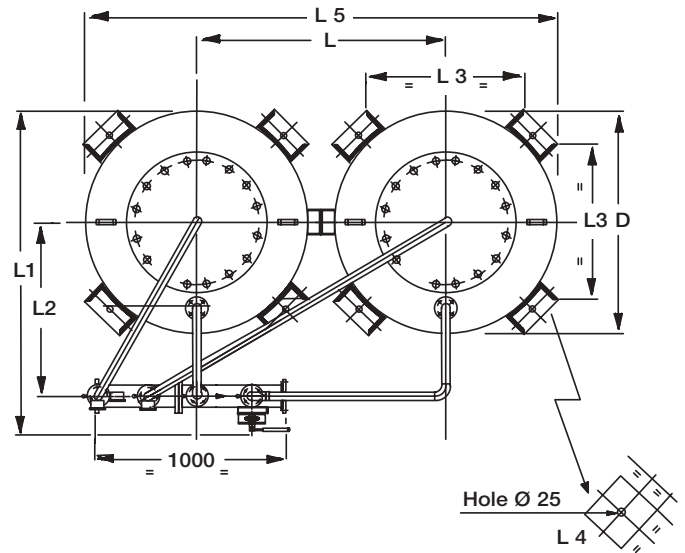
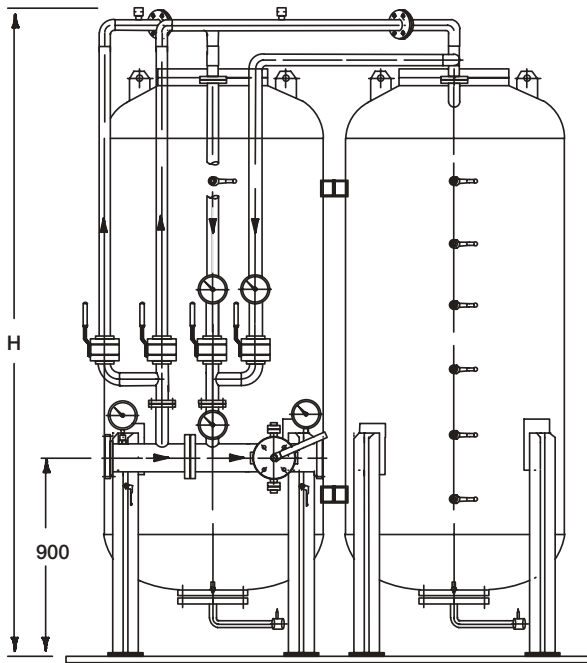
Code	Mod.	D mm	L 4 mm	L 3 mm	H mm	MIX 3 %			MIX 4 %			MIX 6 %			MIX 8 %		
						Ø d	L 2	L 1	Ø d	L 2	L 1	Ø d	L 2	L 1	Ø d	L 2	L 1
URT A010 A2	1000	1000	150	765	2200	3"	735	1510	4"	745	1535	6"	775	1590	8"	795	1635
URT A012 A2	1250	1000	150	765	2500	3"	735	1510	4"	745	1535	6"	775	1590	8"	795	1635
URT A015 A2	1500	1000	150	765	2850	3"	735	1510	4"	745	1535	6"	775	1590	8"	795	1635
URT A017 A2	1750	1100	150	835	2760	3"	785	1610	4"	795	1635	6"	825	1690	8"	845	1735
URT A020 A2	2000	1100	150	835	3060	3"	785	1610	4"	795	1635	6"	825	1690	8"	845	1735
URT A025 A2	2500	1100	200	920	3200	3"	835	1710	4"	845	1735	6"	875	1790	8"	895	1835
URT A030 A2	3000	1200	200	995	3375	3"	885	1810	4"	895	1835	6"	925	1890	8"	945	1935
URT A035 A2	3500	1300	200	1065	3440	3"	935	1910	4"	945	1935	6"	975	1990	8"	995	2035
URT A040 A2	4000	1400	200	1100	3470	3"	960	1960	4"	970	1985	6"	1000	2040	8"	1025	2090
URT A045 A2	4500	1450	200	1135	3580	3"	985	2010	4"	995	2035	6"	1025	2090	8"	1050	2140
URT A050 A2	5000	1600	200	1210	3530	3"	1035	2110	4"	1045	2135	6"	1075	2190	8"	1105	2245
URT A055 A2	5500	1600	200	1210	3800	3"	1035	2110	4"	1045	2135	6"	1075	2190	8"	1105	2245
URT A060 A2	6000	1750	200	1315	3630	3"	1110	2260	4"	1120	2285	6"	1150	2340	8"	1180	2395
URT A065 A2	6500	1800	200	1350	3660	3"	1135	2310	4"	1145	2335	6"	1180	2395	8"	1205	2445
URT A070 A2	7000	2000	300	1500	3370	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A075 A2	7500	2000	300	1500	3520	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A080 A2	8000	2000	300	1500	3720	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A085 A2	8500	2000	300	1500	3870	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A090 A2	9000	2000	300	1500	4020	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A100 A2	10000	2000	300	1500	4370	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A110 A2	11000	2000	300	1500	4670	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT A120 A2	12000	2000	300	1500	5020	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645

DOUBLE BLADDER TANK GROUPS

The Bladder-Tank System works without requirement for any external energy supply. The foam concentrate is stored in a rubber bag (bladder), which is contained inside the tank, is displaced from it by means of water under pressure picked from the main water line, and injected into the main water line through the pressure drop generated by a venturi orifice. The body is protected from corrosion through a quality painting cycle, with an epoxy primer followed by a double layer of polyurethane paint. On request weldings on the body shall be run according to the ASME standards.

Materials

- Tank and pipes **A2** Carbon steel
- Bladder membrane **E83** Hypalon - Neoprene
- Operation valves **T1** Brass



Code	Mod.	D mm	L mm	L5 mm	L3 mm	L4 mm	H mm	MIX 3 %			MIX 4 %			MIX 6 %			MIX 8 %		
								Ø d	L2	L1	Ø d	L2	L1	Ø d	L2	L1	Ø d	L2	L1
URT B010 A2	1000	1000	1100	2100	770	150	2200	3"	735	1545	4"	745	1470	6"	775	1630	8"	795	1685
URT B012 A2	1250	1000	1100	2100	770	150	2500	3"	735	1545	4"	745	1470	6"	775	1630	8"	795	1685
URT B015 A2	1500	1000	1100	2100	770	150	2900	3"	735	1545	4"	745	1470	6"	775	1630	8"	795	1685
URT B017 A2	1750	1100	1200	2300	840	150	2750	3"	785	1645	4"	795	1570	6"	825	1730	8"	845	1785
URT B020 A2	2000	1100	1200	2300	840	150	3100	3"	785	1645	4"	795	1570	6"	825	1730	8"	845	1785
URT B025 A2	2500	1100	1300	2500	910	200	3400	3"	835	1745	4"	845	1670	6"	875	1830	8"	895	1885
URT B030 A2	3000	1200	1400	2700	990	200	3500	3"	885	1845	4"	895	1770	6"	925	1930	8"	945	1885
URT B035 A2	3500	1300	1500	2900	1060	200	3700	3"	935	1945	4"	945	1870	6"	975	2030	8"	995	1985
URT B040 A2	4000	1400	1550	3000	1100	200	3700	3"	960	1995	4"	970	1920	6"	1000	2080	8"	1025	2085
URT B045 A2	4500	1450	1600	3100	1140	200	3800	3"	985	2045	4"	995	2970	6"	1025	2130	8"	1050	2140
URT B050 A2	5000	1600	1700	3300	1210	200	3800	3"	1035	2145	4"	1045	2070	6"	1075	2230	8"	1105	2190
URT B055 A2	5500	1600	1700	3300	1210	200	4000	3"	1035	2145	4"	1045	2070	6"	1075	2380	8"	1105	2295
URT B060 A2	6000	1750	1850	3600	1315	200	3700	3"	1100	2285	4"	1110	2220	6"	1150	2430	8"	1160	2295
URT B065 A2	6500	1800	1900	3700	1350	200	3800	3"	1125	2325	4"	1135	2270	6"	1180	2635	8"	1205	2445
URT B070 A2	7000	2000	2100	4100	1500	300	3400	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2495
URT B075 A2	7500	2000	2100	4100	1500	300	3800	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2695
URT B080 A2	8000	2000	2100	4100	1500	300	3800	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2695
URT B085 A2	8500	2000	2150	4100	1500	300	4000	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2695
URT B090 A2	9000	2000	2100	4100	1500	300	4100	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2695
URT B100 A2	10000	2000	2100	4100	1500	300	4300	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2695
URT B110 A2	11000	2000	2100	4100	1500	300	4600	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1305	2695
URT B120 A2	12000	2000	2100	4100	1500	300	5000	3"	1205	2450	4"	1215	2470	6"	1280	2635	8"	1303	2695

HORIZONTAL TANK GROUPS

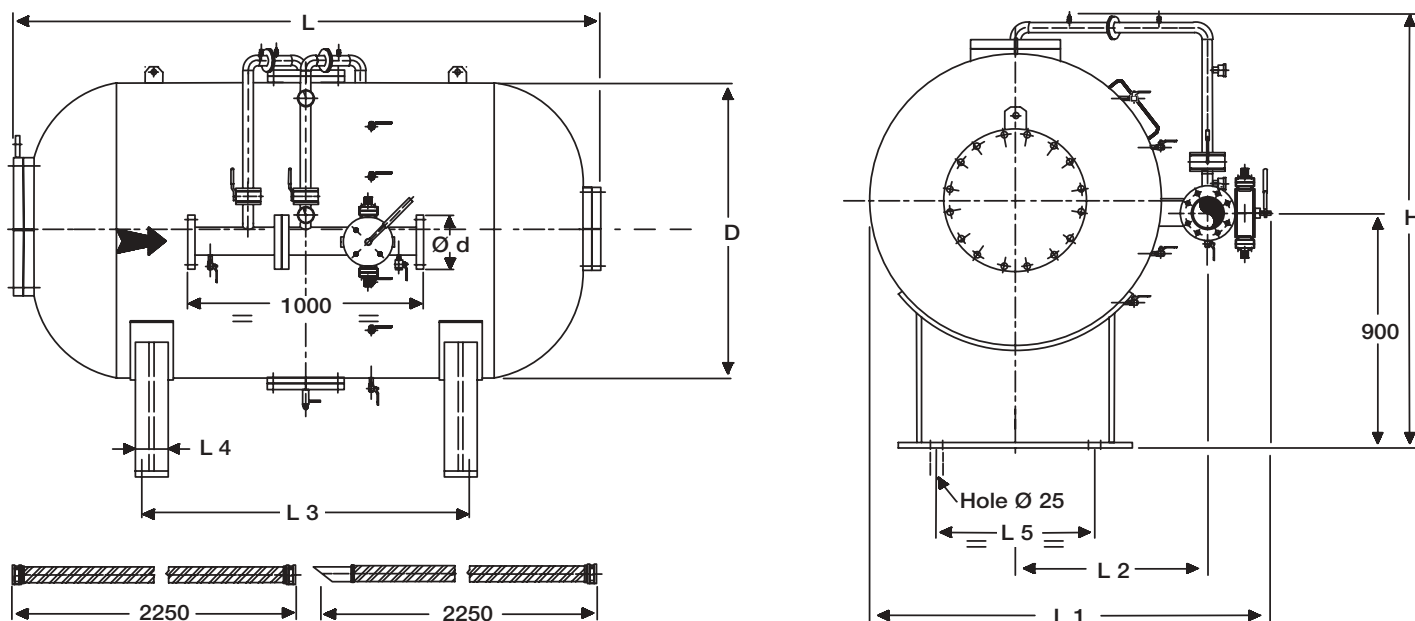
The Bladder-Tank System works without requirement for any external energy supply. The foam concentrate is stored in a rubber bag (bladder), which is contained inside the tank, is displaced from it by means of water under pressure picked from the main water line, and injected into the main water line through the pressure drop generated by a venturi orifice.

The body is protected from corrosion through a quality painting cycle, with an epoxy primer followed by a double layer of polyurethane paint.

On request weldings on the body shall be run according to the ASME standards.

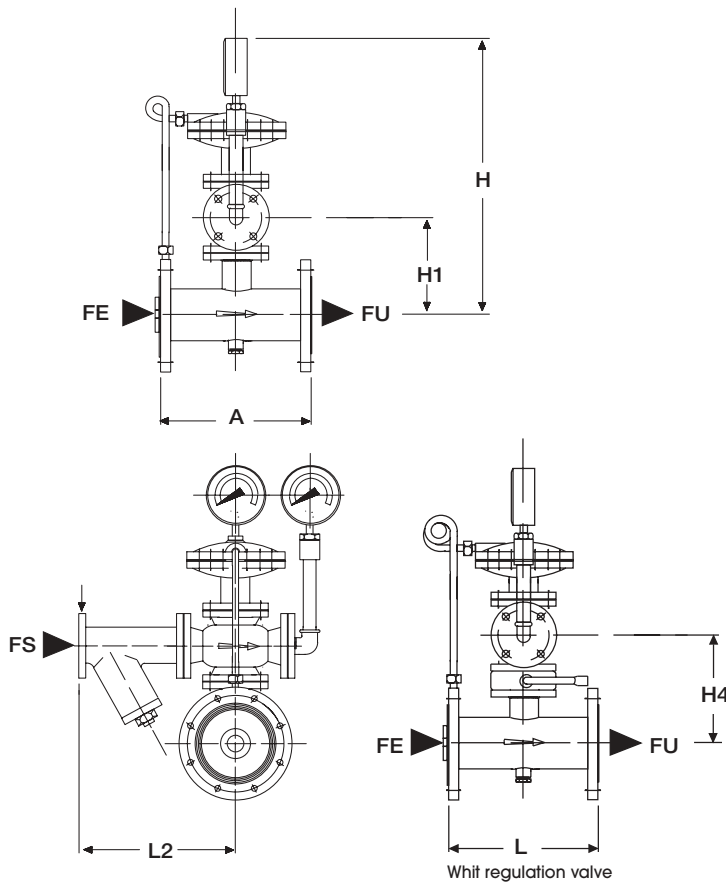
Materials

- Tank and pipes **A2** Carbon steel
- Bladder membrane **E83** Hypalon - Neoprene
- Operation valves **T1** Brass



Code	Mod.	D mm	L3 mm	L5 mm	L4 mm	H mm	L mm	MIX 3 %			MIX 4 %			MIX 6 %			MIX 8 %		
								Ø d	L2	L1	Ø d	L2	L1	Ø d	L2	L1	Ø d	L2	L1
URT C010 A2	1000	1000	820	600	120	1670	1680	3"	735	1510	4"	745	1535	6"	775	1590	8"	795	1635
URT C012 A2	1250	1000	1070	600	120	1670	1980	3"	735	1510	4"	745	1535	6"	775	1590	8"	795	1635
URT C015 A2	1500	1000	1360	600	120	1670	2330	3"	735	1510	4"	745	1535	6"	775	1590	8"	795	1635
URT C017 A2	1750	1100	1220	700	120	1770	2240	3"	785	1610	4"	795	1635	6"	825	1690	8"	845	1735
URT C020 A2	2000	1100	1220	700	120	1770	2540	3"	785	1610	4"	795	1635	6"	825	1690	8"	845	1735
URT C025 A2	2500	1100	1560	800	150	1870	2680	3"	835	1710	4"	845	1735	6"	875	1790	8"	895	1835
URT C030 A2	3000	1200	1680	800	150	1970	2860	3"	885	1810	4"	895	1835	6"	925	1890	8"	945	1935
URT C035 A2	3500	1300	1680	850	150	2070	2910	3"	935	1910	4"	945	1935	6"	975	1990	8"	995	2035
URT C040 A2	4000	1400	1680	850	150	2120	2940	3"	960	1960	4"	970	1985	6"	1000	2040	8"	1025	2090
URT C045 A2	4500	1450	1780	850	150	2170	3060	3"	985	2010	4"	995	2035	6"	1025	2090	8"	1050	2140
URT C050 A2	5000	1600	1680	950	150	2270	3020	3"	1035	2110	4"	1045	2135	6"	1075	2190	8"	1105	2245
URT C055 A2	5500	1600	1910	950	200	2270	3270	3"	1035	2110	4"	1045	2285	6"	1075	2190	8"	1105	2245
URT C060 A2	6000	1750	1680	1050	200	2420	3100	3"	1110	2260	4"	1120	2335	6"	1150	2340	8"	1180	2395
URT C065 A2	6500	1800	1680	1050	200	2470	3140	3"	1135	2310	4"	1145	2310	6"	1180	2395	8"	1205	2445
URT C070 A2	7000	2000	1250	1350	200	2670	2850	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C075 A2	7500	2000	1400	1350	200	2670	3000	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C080 A2	8000	2000	1600	1350	200	2670	3200	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C085 A2	8500	2000	1750	1350	200	2670	3350	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C090 A2	9000	2000	1900	1350	200	2670	3500	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C100 A2	10000	2000	2500	1350	200	2670	3850	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C110 A2	11000	2000	2500	1350	200	2670	4150	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645
URT C120 A2	12000	2000	2900	1350	200	2670	4500	3"	1235	2510	4"	1245	2535	6"	1280	2595	8"	1305	2645

BALANCED PRESSURE PROPORTIONERS



URD

A separate foam concentrate pump is required to inject foam concentrate into the water stream.

The URD balanced pressure proportioners automatically adjust the right quantity of foam concentrate required to produce the right foam solution composition by the internal regulating membrane valve, which instantaneously works according to the foam concentrate and the water pressure values.

For a correct operation the pressure of the foam concentrate must be at least 1 bar higher than the water pressure.

These proportioners can be supplied either with DIN and ANSI Flangess as required.

See the instruction at the bottom of the page for composing the ordering code.

Materials

Lower body	A1	Mild steel
	B31	AISI 316 L stainless steel
Venturi nozzle	B31	AISI 316 L stainless steel
	T5	Bronze
Regulation valve	B31	AISI 316 L stainless steel

ADJUSTABLE PROPORTIONING PERCENTAGE

The proportioning ratio is changed by means of a ball valve with a specially designed slit, installed between the two bodies of the proportioner. The valve allows for a linear variation of the concentrate flow, depending upon its opening angle.

That allows the proportioner to work with foam concentrates requiring different mixing ratios.



RINA

RINA Type Approval Certificate FPE-78-702-CS-1 supplied on request.

Code	Mod.	DN inch	Portata l/min	L mm	H mm	H 1 mm	L 2 mm	FS inch	FE inch	W kg	H 4 mm	W kg
URD 0100 G1 XY	MV 100	4"	216 ÷ 2160	205	504	208	296	1 1/2"	4"	57	275	65
URD 0125 G1 XY	MV 125	5"	325 ÷ 3250	250	516	220	296	1 1/2"	5"	60	290	62
URD 0150 G1 XY	MV 150	6"	475 ÷ 4750	300	572	265	345	2"	6"	83	355	95
URD 0200 G1 XY	MV 200	8"	850 ÷ 8500	400	592	286	345	2"	8"	93	375	105
URD 0250 G1 XY	MV 250	10"	1366 ÷ 13660	500	656	313	431	2 1/2"	10"	155	420	173
URD 0300 G1 XY	MV 300	12"	1916 ÷ 19160	602	684	342	431	2 1/2"	12"	198	450	215
URD 0350 G1 XY	MV 350	14"	2533 ÷ 25330	692	702	358	431	2 1/2"	14"	215	465	230

With adjustment valve

Orderig Codes

For a precise product identification, the ordering code must be completed with the following data.

URD 0125 G1 X Y Z

X Flanges style	A = DIN Flanges	B = ANSI Flanges
Y Mixing ratio	3 = 3%	6 = 6%
Z Options	R = With adjustable ratio	- = Fixed ratio

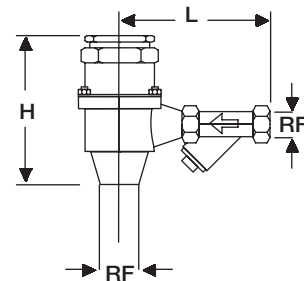
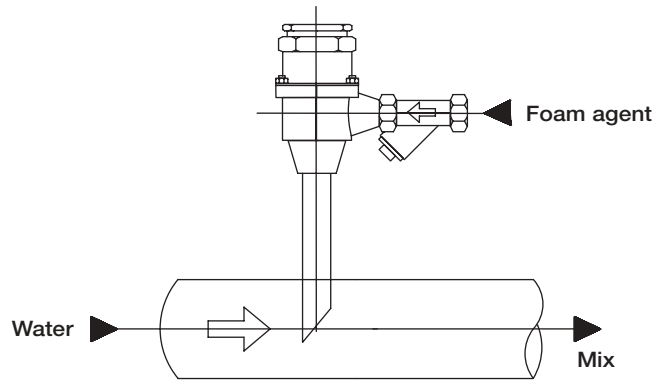
PRESSURE PROPORTIONERS

URM

A separate foam concentrate pump is used to inject foam concentrate into the water stream. The URM pressure proportioners compensate water line pressure variations by an internal pressure bellow. The foam concentrate line nominal pressure must be at least 1 bar higher than the water pressure. A (disposable cartridge stainless steel) filter protects the concentrate inlet line. The proportioners come with mixing percentages set at 3% or 6%.

Materials

Body	T1	Brass
Injection pipe	A8	Zinc coated steel
Bellow	B3	316 stainless steel



Code	Q l/min	RF inch	Dimensions	
			H	L
URM 3203 T51	200	1"	180	185
URM 3403 T51	400			
URM 3803 T51	800			
URM 4123 T51	1200			
URM 4163 T51	1600			
URM 4203 T51	2000			
URM 4243 T51	2400			
URM 4283 T51	2800			
URM 4323 T51	3200			
URM 4443 T51	4400			
URM 4483 T51	4800			

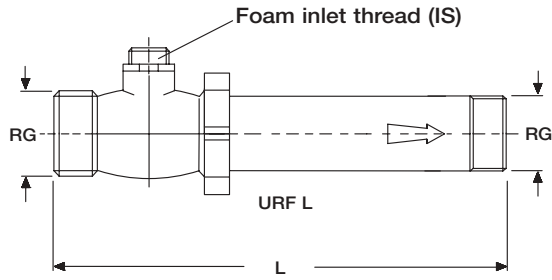
Product identification

The above codes identify proportioners set with a mixing percentage at 3%. To write a code suitable for 6% setting, change in 6 the last number digit of the code.

Example:

- URM 4203 T51** Discharge rate 2000 l/min with mixing percentage set at 3%
- URM 4206 T51** Discharge rate 2000 l/min with mixing percentage set at 6%

IN LINE EDUCTORS (VENTURI)



URF

In line eductors are inserted into the water supply line to the foam maker, and operate aspirating foam concentrate from a tank at ambient pressure using the vacuum generated from the inside Venturi profile.

Their typical application is for mobile foam lances or small fixed systems. To obtain a correct performance, it is imperative that the nominal capacity of the venturi mixer is equal to the total requirement of the system outlets (lances, nozzles or monitors) at the nominal inlet pressure of 7 bar.

If the above condition is not met, severe malfunctioning must be expected.

The URF are delivered complete with a reinforced PVC pick-up tube for concentrate inlet.

Materials

- Body **T5** Bronze
- Tubo esterno **A8** Zinc coated steel
- Venturi interno **V2** Aluminum

Code	Q l/min	PF bar	RG inch	IS inch	L mm
URF F323 T51	200	7	2"	1"	203
URF F343 T51	400		2"		203
URF F363 T51	600		2+1/2"		439
URF F383 T51	800		2+1/2"		439
URF L403 T51	1000		4"		410
URF L413 T51	1600		4"		410
URF L423 T51	2000		4"		460
URF L443 T51	2400		4"		460

Product identification

The above codes identify proportioners set with a mixing percentage at 3%.

To write a code suitable for 6% setting, change in 6 the last numeric digit of the code.

Example:

URF L403 T51 Discharge rate 1000 l/min at 7 bar with mixing percentage set at 3%

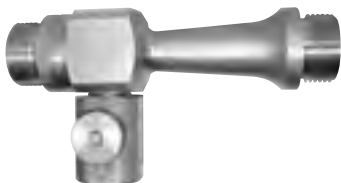
URF L406 T51 Discharge rate 1000 l/min at 7 bar with mixing percentage set at 6%

URF R406 T51 Discharge rate 1000 l/min at 7 bar with adjustable mix percentage

Adjustable proportioning percentage

The URF in-line-eductor proportioner can be equipped with an adjustable proportioning device.

In such a case the unit will come set to a maximum percentage of 6%.



LOW EXPANSION BRANCHPIPES

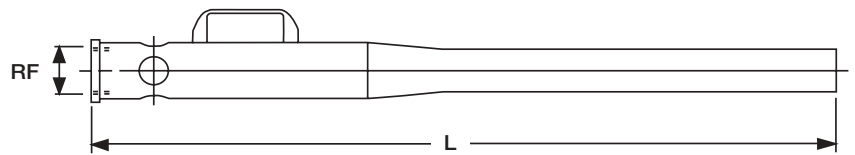
URB

The URB branchpipes produce foam by mixing foam solution with air, aspirated from side vents. They come in different sizes with capacity up to 800 l/min of foam solution, and an expansion ratio of about 1:6.

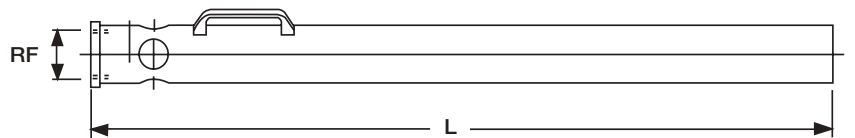
Their inlet is normally supplied with a female inlet pipe straight thread (BSP), which can be fitted with all the standardized fire couplings (UNI, STORZ, BSS, NH).

Materials

Body **B2** Aisi 304, stainless steel
 Nozzle **T1** Brass



Models L2 & L4



Model L8

Code	Mod.	Q l/min	RS l/min	PF bar	RF inch	T m	L mm	W kg
URB PA32 B2	L - 2	200	1200	3 ÷ 10	2"	20	850	3.7
URB PA34 B2	L - 4	450	2700		2"	25	850	3.7
URB PA38 B2	L - 8	800	4800		2+1/2"	28	1000	6.0

MEDIUM EXPANSION BRANCH PIPES

URG

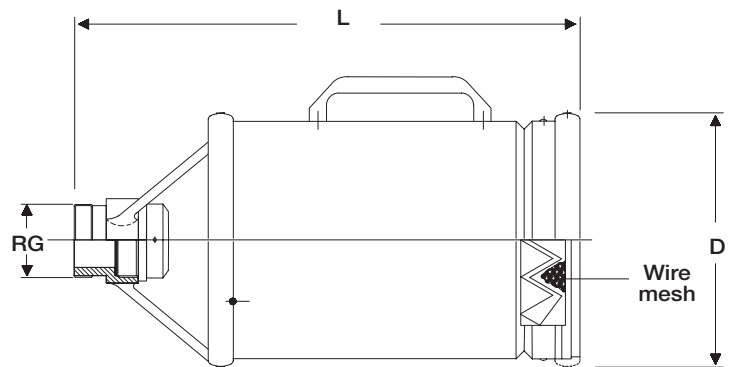
The URG branchpipes produce foam by mixing foam solution with air, aspirated from side vents. They come in different sizes with capacity up to 800 l/min of foam solution, with an expansion ratio of about 1:75.

These lances must be used with 3% synthetic foam concentrate.

Their inlet is normally supplied with a female inlet pipe straight thread (BSP), which can be fitted with all the standardized fire couplings (UNI, STORZ, BSS, NH).

Materials

Body **B2** Aisi 304, stainless steel
 Nozzle **T1** Brass
 Inner mesh **B3** Aisi 316, stainless steel



Code	Mod.	Q l/min	RS m³/min	PF bar	RG inch	T m	D mm	L mm	W kg
URG 3200 B2	ME 200 - 75	200	13	2.5	1 1/2"	8	200	380	4
URG 3400 B2	ME 400 - 75	400	26	2.5	1 1/2"	10	260	460	5
URG 3800 B2	ME 800 - 50	800	32	2.5	2"	12	280	470	7

AIR-ASPIRATING FOAM-DISCHARGE

MEDIUM-EXPANSION -FOAM BRANCHPIPE

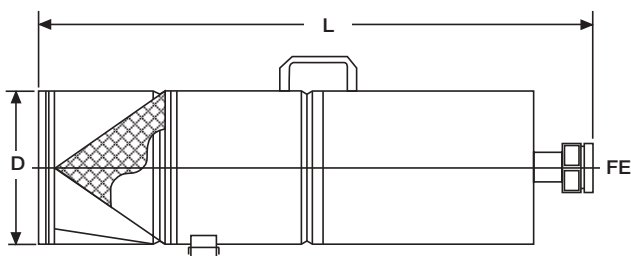


URG-F

URG-F branchpipes have a similar design as the URG models, and can be used both as portable equipment and within fixed systems. They are normally supplied with a DIN Flanges inlet, and upon request with different standard Flanges or any standardized fired couplings.

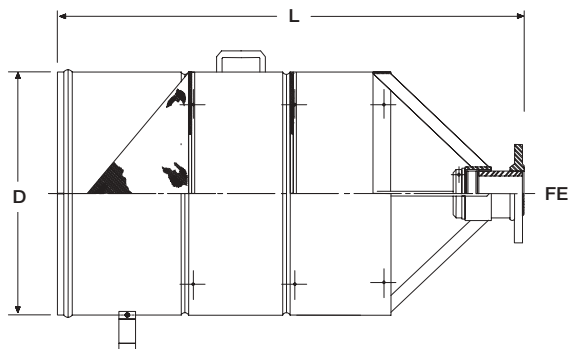
Materials

Body **B2** Aisi 304, stainless steel
 Nozzle **T1** Brass
 Inner mesh **B3** Aisi 316, stainless steel



URG F320 - F340 - F350

Code	Mod.	Q l/min	RS m³/min	PF bar	D mm	L mm
URG F320 B2	FM 200	200	16	5.0	235	725
URG F340 B2	FM 400	400	32	5.0	300	830
URG F350 B2	FM 500	500	40	5.0	300	830
URG F380 B2	FM 800	800	64	5.0	500	900



URG F380

Connection sizes

FM type branchpipes can be delivered with different connection types as shown per the table below.

Code	Mod.	BSP male thread				UNI couplings	
		1 1/2"	2"	2 1/2"	3"	Uni 45	Uni 70
URG F320 B2	FM 200	•	•			•	
URG F340 B2	FM 400		•	•	•	•	•
URG F350 B2	FM 500		•	•	•	•	•
URG F380 B2	FM 800			•	•	•	•

URH

URH high expansion foam generators have been designed for the fixed protection of large warehouses or confined volumes, where large foam volumes must be produced in short times.

Inside their cylindrical body the foam solution is sprayed at high speed through high efficiency nozzles, and impact onto an outlet cone made out of perforated sheet.

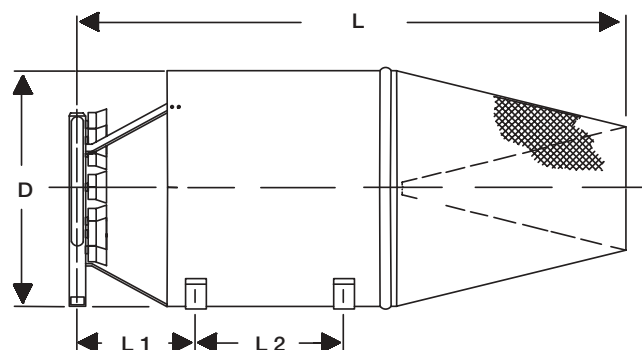
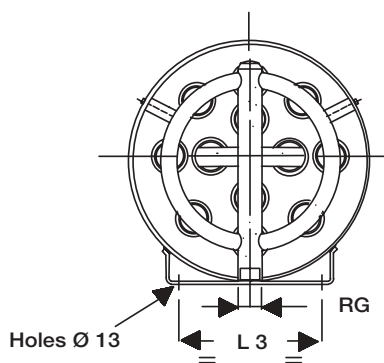
The combined action of air aspiration through the Venturi effect and the impact onto the perforated outlet cone allows producing quality foam with up to 1:700 expansion ratio.

Normally supplied with a male inlet thread, or with a Flanges connection on request.



Materials

- Body shell **B2** Aisi 304, stainless steel
- Feed manifold **B3** Aisi 316, stainless steel
- Nozzles **T1** Brass



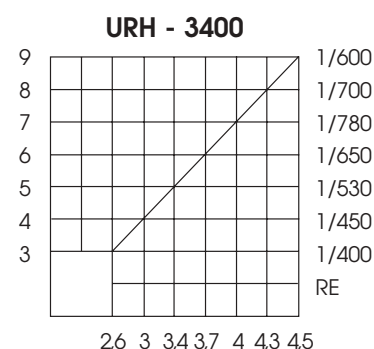
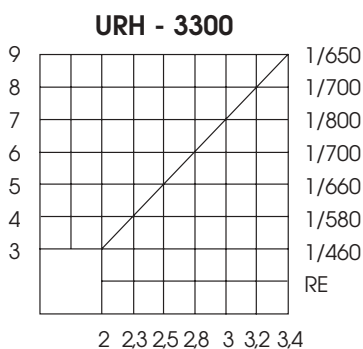
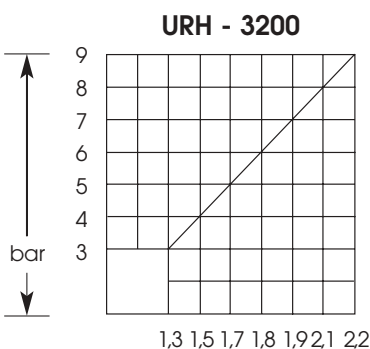
Model URH 3400 B2 has been tested with positive results by CNPP according to the norm APSAD R12, Annexe 3.

Expansion ratio

Diagrams below show the expansion ratio as a function of pressure and foam solution discharge rate.

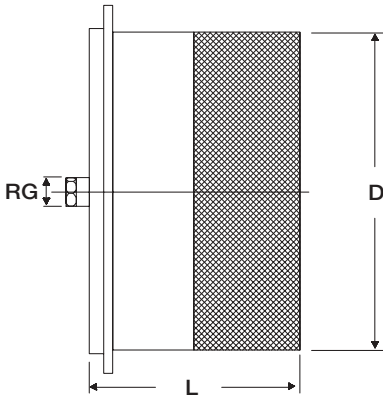
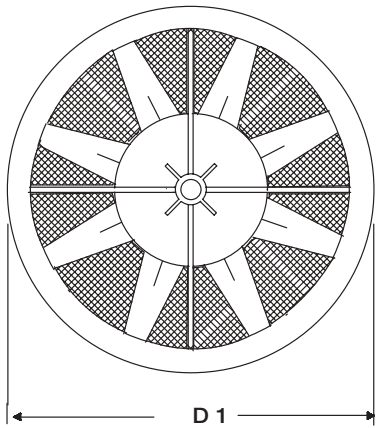
The foaming agent used for tests was Sabo-Plurex-N (3%), ambient temperature 20° C, no wind.

Code	Mod.	Q l/min	K l/min	PF bar	RG inch	NU	D mm	L mm	L1 mm	L2 mm	L3 mm
URH 3200 B2	ITS 200	200	76	7.0	1 1/2"	6	800	1750	400	402	475
URH 3300 B2	ITS 300	300	113	7.0	2"	9	950	1850	450	402	475
URH 3400 B2	ITS 400	400	151	7.0	2 1/2"	12	950	1850	450	402	475



FOAM GENERATORS

FAN BOOSTED GENERATORS



URJ

The URJ high expansion foam generators have been designed for the fixed protection of large warehouses or confined volumes, where large foam volumes must be produced in short times.

A fan, driven by the nozzles spraying foam solution, supplies an extra quantity of air to produce the finished foam, which maintains a certain residual velocity out of the perforated stainless steel sheet outlet.

That facilitates saturation of large volumes, especially when hallways or galleries are present.

Expansion ratio 1:700 is easily reached.

Materials

Body	B2	Aisi 304, stainless steel
Feed pipe	B3	Aisi 316, stainless steel
Nozzles	T1	Brass
Fan bushing	T5	Bronze
Fan shaft	V1	Aluminum
Fan blades	D6	Polypropylene

Product manual

Our generators URJ are supplied complete with installation, service and spare parts manual.

Code	Mod.	Q l/min	K l/min	PF bar	RG inch	D mm	D 1 mm	L mm
URJ 3200 B2	FG 2	200	76	7.0	1 1/2"	950	1050	500
URJ 3400 B2	FG 4	400	151	7.0	2"	1110	1200	760
URJ 4100 B2	FG 10	1000	378	7.0	2 1/2"	1260	1420	1010

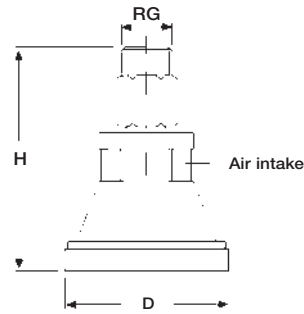
MEDIUM-EXPANSION FOAM-NOZZLES

RH

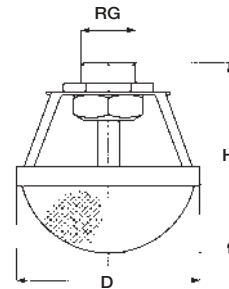
The RH foam nozzles were designed to work on the Venturi principle. A stream of foam solution is sprayed at high speed against an outlet net, drawing into the body the air required and producing foam with an expansion ratio of about 1:20. Their high reliability makes them very dependable on critical applications such as truck loading areas of the oil industry.

Materials

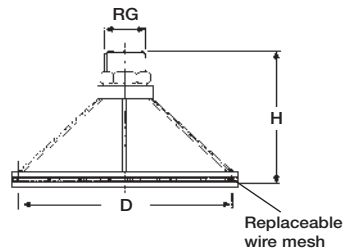
- Body **T1** Brass casting (3/4")
- B2** Aisi 304, stainless steel (1")
- Wire net **B2** Aisi 304, stainless steel



RHU 0075 T1



RHU A075 B2



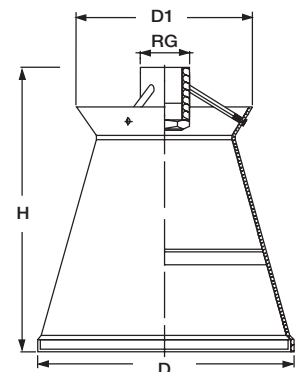
RHU 0100 B2

Code	Mod.	Capacity lpm at bar			RG NPT	RE mm	D mm	H mm	
		2.0	3.0	5.0					
90°	RHU 0075 T1	AI 007	30	37	50	3/4"	17:1	93	125
	RHU A075 B2	SC 007	54	66	85		12:1	82	90
	RHU 0100 B2	AI 07	90	110	142	1"	17:1	320	170

RL

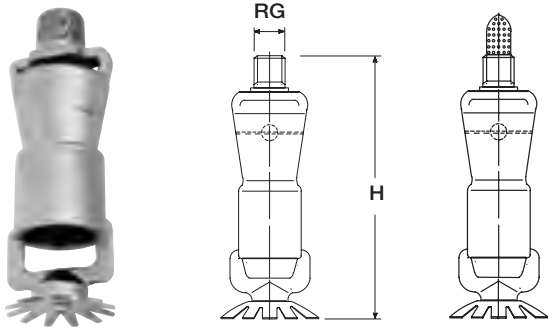
The RL medium expansion foam nozzles feature by a double net at the outlet side, and that allows reaching an higher expansion ratio up to 1:70, which makes them particularly suitable for fixed applications such as the oil industry pumping stations. Their robust stainless steel construction, out of quality stainless steel, make them suitable for outdoors without risks of corrosion damages.

Code	Mod.	PF bar	Q(5) l/min	RG inch	RS l/min	D mm	D1 mm	H mm	
60°	RLQ 0100 B2	EM	5.0	80	1"	5.600	240	140	240



FOAM NOZZLES

LOW EXPANSION FOAM NOZZLES



Copper filter
available
on request

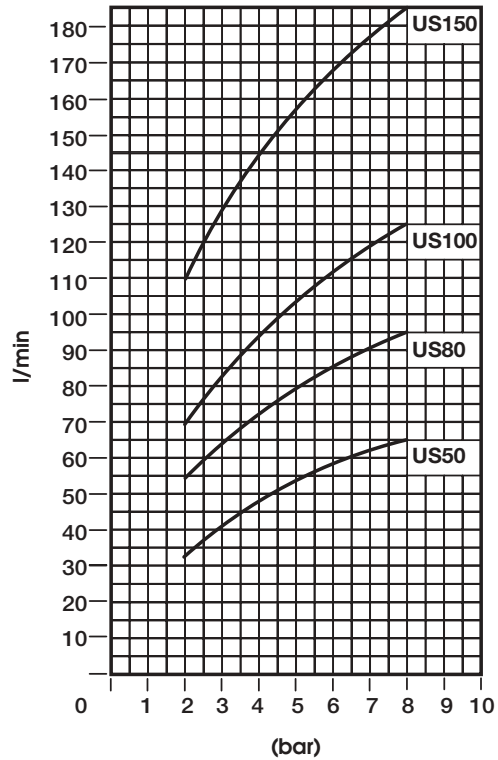
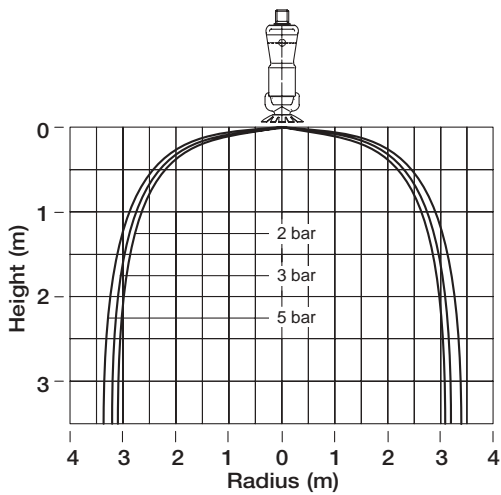
RFV

The RFV Low Expansion Foam Nozzles consist of a body and a deflector especially designed for an optimized foam distribution. The foam solution stream is fractioned and air is sucked in inside the brass body, and then distributed by the deflector with covering angles up to 95°.

Foam expansion rate typically 1:7.

Materials

Body **T52** Brass Delta
Impact disc **B2** AISI 304 stainless steel



Upright model code

The RFV low expansion foam nozzles are also available as "up-right".

Add a final "U" do the nozzle code to specify the upright design.

Example:

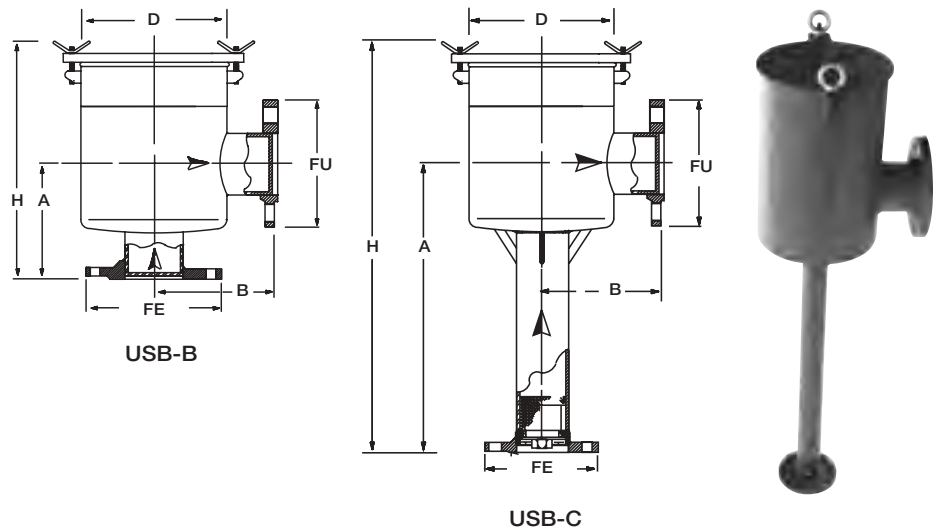
A model US 80 up-right nozzle has ordering code: RFV 2620 T52U.

Code	Mod.	RG inch	D mm	Capacity (lpm) at pressure (bar)					RE	H mm	W kg
				3	5	6	7	8			
RFV 2232 T52	US 30	1/2"	5.0	23	30	33	35	38	1:7	150	0,65
RFV 2387 T52	US 50		6.2	39	50	55	59	63			
RFV 2620 T52	US 80		8.5	62	80	88	95	101			
RFV 2388 T52	US 50	3/4"	6.2	39	50	55	59	63			
RFV 2621 T52	US 80		8.5	62	80	88	95	101			
RFV 2775 T52	US 100		9.0	77	100	110	118	126			
RFV 3116 T52	US 150		10.5	116	150	164	177	190			

FOAM CHAMBERS

USB-B/C

The USB-B/C foam chambers were designed for tank roofs fire protection fixed systems. They are non-air-aspirating fixed foam discharge devices. An inside calibrated glass diaphragm assures that no vapours from the tank have way to flow out through the foam piping system. These foam chambers come alone or with fixed low-expansion-foam-maker.



Materials

- Body **A1** Carbon steel
- Flanges **A11** Steel, ASTM 105
- Diaphragm **F21** Glass

Code	Mod.	D	H	A	B	PF	Q	RS	FE	FU
		mm	mm	mm	mm	bar	l/min	m ² /min	inch	inch
USB B020 A1B	FC 2	294	660	250	240	5.0	200	1.5	3	4
USB B040 A1B	FC 4	294	660	250	240		400	3.0	3	5
USB B080 A1B	FC 8	346	750	320	270		800	6.0	4	6
USB B120 A1B	FC 12	498	970	420	360		1200	9.0	6	10
USB B160 A1B	FC 16	498	970	420	360		1600	12	6	10
USB B240 A1B	FC 24	549	990	440	420		2400	18	8	12
USB B320 A1B	FC 32	549	990	440	420		3200	24	8	12
USB C020 A1B	FC/LF 2	294	1260	850	240	5.0	200	1.5	2	4
USB C040 A1B	FC/LF 4	294	1260	850	240		400	3.0	2	5
USB C080 A1B	FC/LF 8	346	1350	920	270		800	6.0	3	6
USB C120 A1B	FC/LF 12	498	1870	1320	360		1200	9.0	4	10
USB C160 A1B	FC/LF 16	498	1870	1320	360		1600	12	4	10
USB C240 A1B	FC/LF 24	549	1890	1340	420		2400	18	5	12
USB C320 A1B	FC/LF 32	549	1890	1340	420		3200	24	5	12

Flange type coding

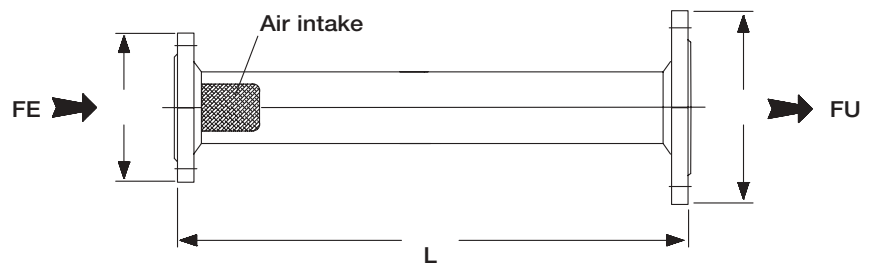
Foam chambers and foam makers are normally supplied fitted with Ansi Flanges, other standards on request. Listed codes show Ansi Flanges, for DIN / UNI Flanges please replace the final B B with an A.

Example:
USB B020 A1B flanges ANSI
USB B020 A1A flanges DIN

USB-A

The USB-A fixed low-expansion foam makers are designed to be coupled with the USB-B Foam Chambers. Part of the energy of the liquid is used to aspirate air into the stream, and turbulence downstream of this point creates stable foam capable of being directed to the hazard being protected.

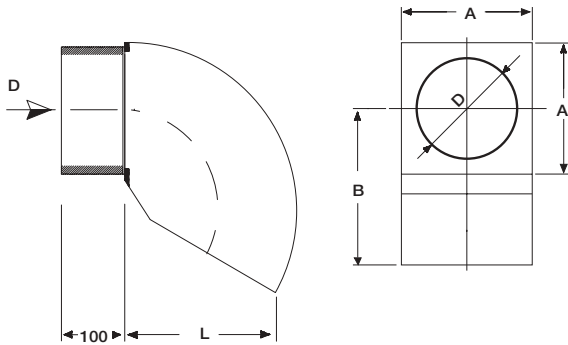
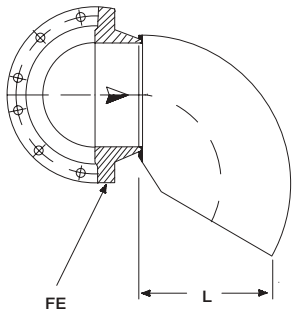
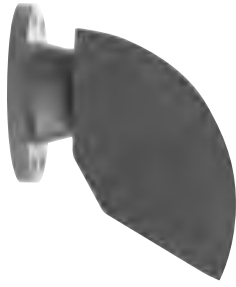
LOW-EXPANSION FOAM MAKERS



Code	Mod.	L	PF	Q	RS	FE	FU	W
		mm	bar	l/min	m ² /min	inch	inch	kg
USB A020 A1B	LF 2	700	5.0	200	1.5	2	3	10
USB A040 A1B	LF 4	700		400	3.0	2	3	10
USB A080 A1B	LF 8	700		800	6.0	3	4	19
USB A120 A1B	LF 12	1000		1200	9.0	4	6	35
USB A160 A1B	LF 16	1000		1600	12	4	6	38
USB A240 A1B	LF 24	1000		2400	18	5	8	42
USB A320 A1B	LF 32	1000		3200	24	5	8	46

Example:
USB A020 A1B flanges ANSI
USB A020 A1A flanges DIN

FOAM POURERS



USB-D

The USB-D foam pourers are non air aspirating fixed foam discharge devices and have been properly designed with square section outlet for best foam distribution onto the tank roof. Flanged or welded models available.

Materials **A1** Carbon steel

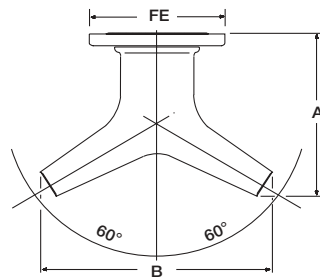
Flange connection

Code	Mod.	FE inch	L mm	A mm	B mm
USB D020 A1B	GVT 80	3	210	155	231
USB D040 A1B	GVT 100	4	210	155	231
USB D080 A1B	GVT 125	5	210	155	231
USB D120 A1B	GVT 150	6	300	240	316
USB D160 A1B	GVT 200	8	300	240	316
USB D240 A1B	GVT 250	10	410	350	426
USB D320 A1B	GVT 300	12	410	350	426

Weld connection

Code	Mod.	D mm	L mm	A mm	B mm
USB D020 A1T	GVT 80	80	210	155	231
USB D040 A1T	GVT 100	100	210	155	231
USB D080 A1T	GVT 125	125	210	155	231
USB D120 A1T	GVT 150	150	300	240	316
USB D160 A1T	GVT 200	200	300	240	316
USB D240 A1T	GVT 250	250	410	350	426
USB D320 A1T	GVT 300	300	410	350	426

DUAL STREAM FOAM POURERS



USB-E

The USB-E Dual stream foam pourers are non air aspirating fixed foam discharge devices. Their proven design, offering double outlet for optimum foam distribution, has been developed to allow the foam to better reach the rim seal. Normally manufactured with ANSI Flanges, other standards on request.

Materials
 Body **T52** Brass Delta
 Flanges **A1** Carbon steel

Code	Mod.	FE inch	A mm	B mm
USB E400 T4B	SH 4	4"	300	460
USB E600 T4B	SH 6	6"	300	480

SYSTEM TEST VALVES

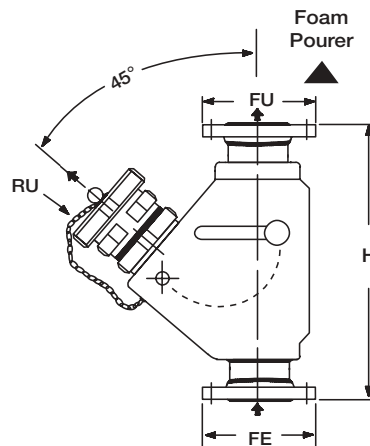
USB-F

The USB-F test valves have been designed designed to be assembled in the foam line ascending to the tank roof, just before the foam maker, and to allow for easy testing procedures.

The valve can be set to divert the foam from the line while testing the system, and prevents foam from being poured onto or inside the tank.

Materials

Body **T1** Brass
 Flanges **A1** Carbon steel



Code	Mod.	FE inch	FU inch	RU	H mm
USB F080 A1X	VDS 080	3"	3"	70	380
USB F100 A1X	VDS 100	4"	4"	70	380
USB F150 A1X	VDS 150	6"	6"	70	380

Flange type coding

Foam chambers and foam makers are normally supplied fitted with Ansi Flangess, other standards on request.

Listed codes show Ansi Flangess, for DIN / UNI Flangess please replace the final B B with an A.

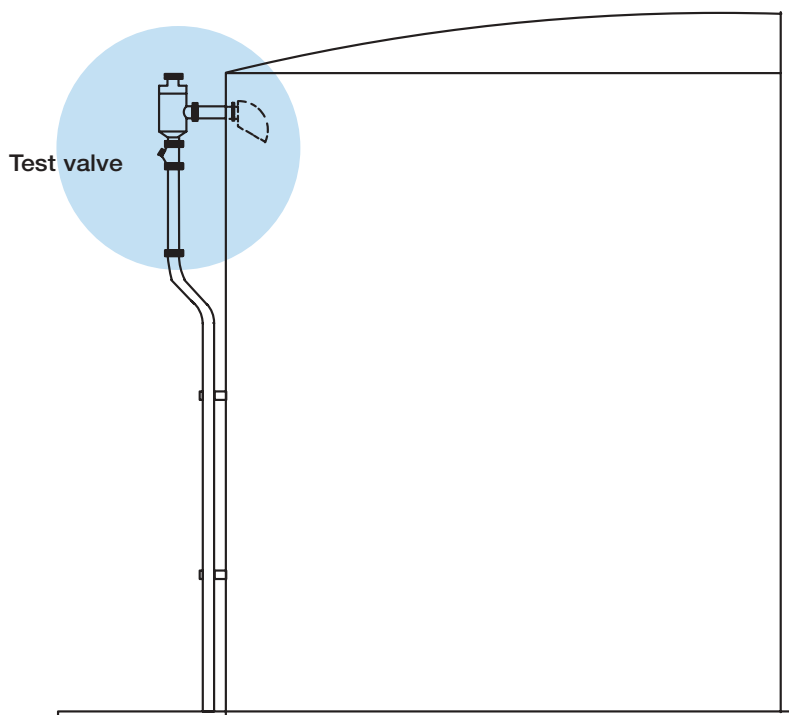
Example:

USB F080 A1A flanges Ansi
USB F080 A1B flanges DIN

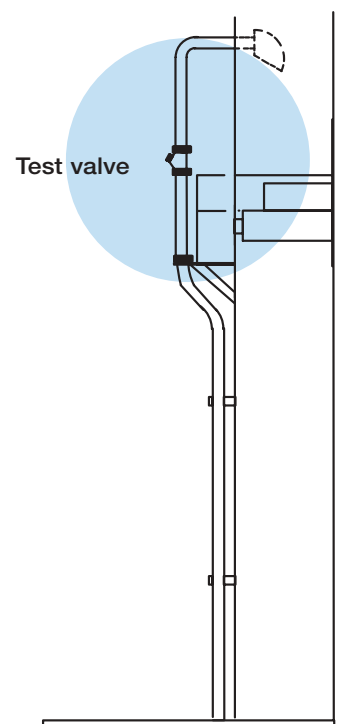
LAYOUT SCHEME

The diagrams in the page show the appropriate location of the test valve for tanks with fixed roof (foam pourer inside) and for tanks with floating roof (foam pourer outside).

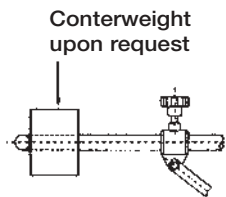
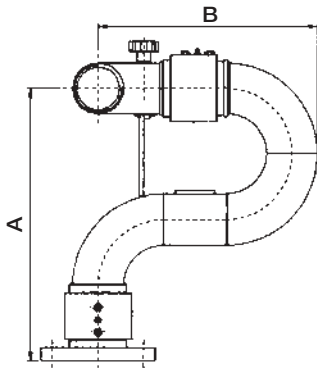
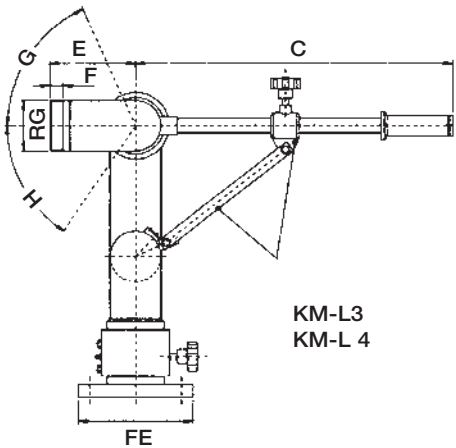
FIXED ROOF TANK



FLOATING ROOF TANK



HAND-LEVER CONTROLLED



URA-A

URA-A hand lever controlled monitors offer a strong and accurate construction with greased ball bearing on swivel joints. Their smooth internal surface finish minimizes friction and turbulence losses allowing thus better throw performances. They can be fitted with our full range of nozzles/cannons devices for water and/or foam. Carbon steel parts are finished with an accurate epoxy paint cycle, with a RAL 3000 red colour.

Materials

Body	A1	Carbon steel
	B3	AISI 316, stainless steel
Swivel joints	A1	Carbon steel
	B3	AISI 316, stainless steel
Flange	A1	Carbon steel

Specification

Design pressure	16 bar
Operation pressure	12 bar
Rotation angle	360° free

Capacity diagrams see page 25

Stainless steel construction

We supply on demand monitors completely Built out of high quality stainless steel. Please ask for information and Data Sheets.



Code	Mod.	DC inch	LQ l/min	FE inch	RG inch	A mm	B mm	C mm	E mm	G gr	H gr	W kg
URA A300 A1x	KM-L3	2 1/2"	3000	2 1/2"	3"	400	330	360	145	85°	65°	16
URA A400 A1x	KM-L4	3"	4000	3"	3"	475	385	640	150	70°	55°	20
URA A700 A1x	KM-L7	4"	7000	4"	4"	590	473	775	200	70°	45°	30

Product identification code

The final "x" in the above given codes identifies the flange standard, and should be replaced with.

- A** for DIN Flanges
- B** for ANSI Flanges

HAND-WHEEL CONTROLLED

URA-B/C

URA-B/C single hand wheel controlled monitors and double hand-wheel controlled monitors offer a strong and accurate construction with greased ball bearing on swivel joints. Their smooth internal surface finish minimizes friction and turbulence losses allowing thus better throw performances.

"B" type has one single hand-wheel working on the elevation movement, while "C" type has two wheels working on the elevation and on the horizontal rotation.

They can be fitted with the full range of nozzles/cannons devices for water and/or foam, and are suitable for fixed, semi fixed installations or can be mounted on vehicles.

Carbon steel parts are finished with an accurate epoxy paint cycle, with a RAL 3000 red colour.



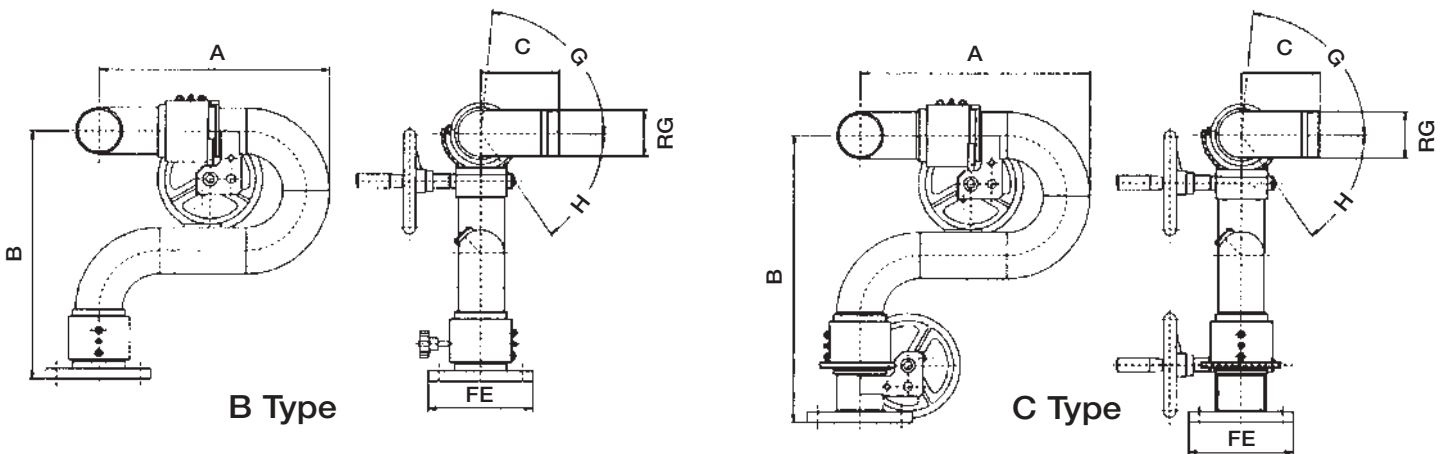
Materials

Body	A1	Carbon steel
	B3	AISI 316, stainless steel
Swivel joints	A1	Carbon steel
	B3	AISI 316, stainless steel
Flange	A1	Carbon steel

Specification

Design pressure	16 bar
Operation pressure	12 bar
Rotation angle	360° free

Capacity diagrams see page 25



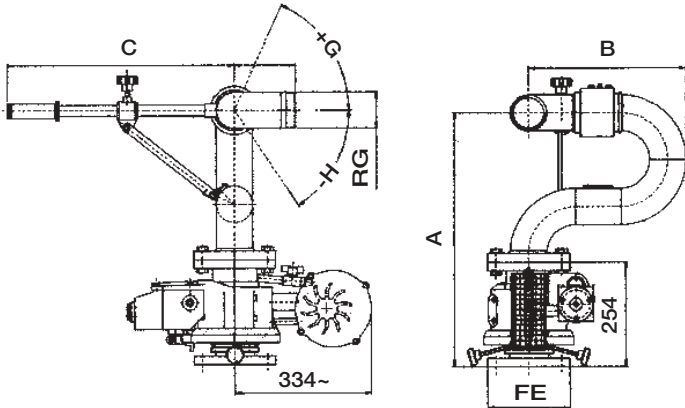
Code	Mod.	DC inch	LQ l/min	FE inch	RG inch	A mm	B mm	C mm	G gr	H gr	W kg
URA B400 A1x	KM-3	3"	4000	3"	3"	440	475	150	85°	70°	24
URA C400 A1x	KM-3/2V	3"	4000	3"	3"	440	550	150	85°	70°	26

Product identification code

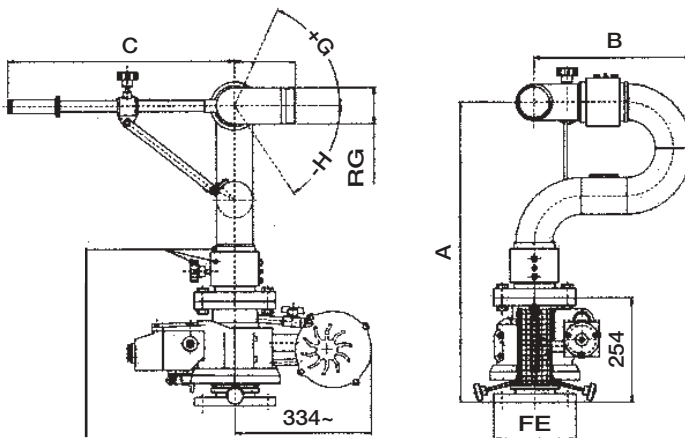
The final 'x' in the above given codes identifies the flange standard, and should be replaced with.

- A** for DIN Flanges
- B** for ANSI Flanges

HAND LEVER / SELF OSCILLATING



D Type



Additional rotation joint to allow manual emergency operation

E Type

URA-D/E

URA-D/E self-oscillating monitors offer a strong and accurate construction with greased ball bearing on swivel joints. Their smooth internal surface finish minimizes friction and turbulence losses allowing thus better throw performances.

Monitor elevation is adjusted by means of a hand lever, with position lock.

Both models can have an oscillating movement in the horizontal plane, which is driven by an hydraulic turbine, within an angle which is adjustable at will.

"E" type has an additional swivel joint, which allows the manually operate the monitor in the horizontal plane in case of turbine malfunction.

They can be completed with the full range of nozzles/cannons devices for water and/or foam, and are suitable for fixed, semi fixed installations or can be mounted on vehicles.

Carbon steel parts are finished with an accurate epoxy paint cycle, with a RAL 3000 red colour.

Materials

Body	A1	Carbon steel
	B3	AISI 316, stainless steel
Swivel joints	A1	Carbon steel
	B3	AISI 316, stainless steel
Flanges	A1	Carbon steel

Specification

Design pressure	16 bar
Operation pressure	12 bar
Horizontale rotation	360°
Automatic rotation	from 15° to 360°
Rotation speed	4° per second (water pressure 7 bar)
Turbine capacity	40 l/min (water pressure 7 bar)

Capacity diagrams see page 25

Code	Mod.	DC inch	LQ l/min	FE inch	RG inch	A mm	B mm	C mm	G gr	H gr	W kg
URA D200 A1x	AKM-L	2 1/2"	2000	3"	2 1/2"	560	330	360	85°	45°	34
URA D400 A1x	AKM-L	3"	4000	3"	3"	620	385	640	70°	45°	37
URA E200 A1x	AKM-L/S	2 1/2"	2000	3"	2 1/2"	654	330	360	85°	45°	35
URA E400 A1x	AKM-L/S	3"	4000	3"	3"	730	385	640	70°	45°	39

Product identification code

The final 'x' in the above given codes identifies the flange standard, and should be replaced with.

- A for DIN Flanges
- B for ANSI Flanges

HAND-WHEEL / SELF-OSCILLATING

URA- F/G

URA-F/G self-oscillating monitors offer a strong and accurate construction with greased ball bearing on swivel joints. Their smooth internal surface finish minimizes friction and turbulence losses allowing thus better throw performances.

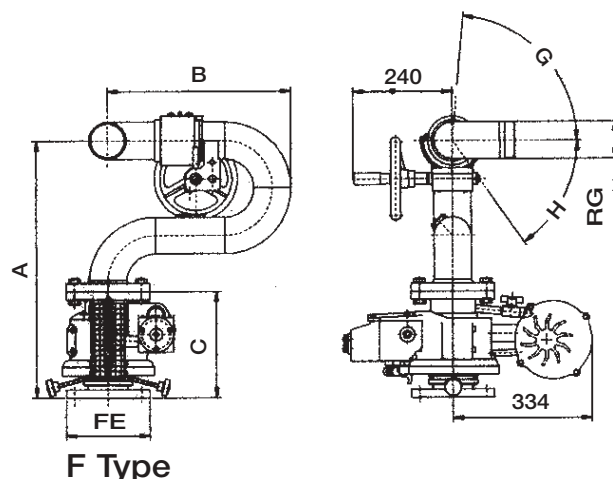
Monitor elevation is adjusted by means of a hand wheel working through gears.

Both models can have an oscillating movement in the horizontal plane, which is driven by an hydraulic turbine, within an angle which is adjustable at will.

"G" type has an additional swivel joint, which allows the manually operate the monitor in the horizontal plane in case of turbine malfunction.

They can be completed with the full range of nozzles/cannons devices for water and/or foam, and are suitable for fixed, semi fixed installations or can be mounted on vehicles.

Carbon steel parts are finished with an accurate epoxy paint cycle, with a RAL 3000 red colour.



F Type

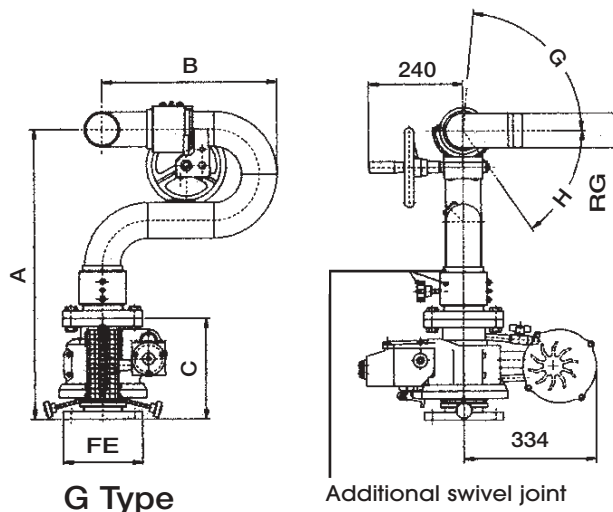
Materials

Body	A1	Carbon steel
	B3	AISI 316, stainless steel
Swivel joints	A1	Carbon steel
	B3	AISI 316, stainless steel
Flanges	A1	Carbon steel

Specification

Design pressure	16 bar
Operation pressure	12 bar
Horizontale rotation	360°
Automatic rotation	from 15° to 360°
Rotation speed	4° per second (water pressure 7 bar)
Turbine capacity	40 l/min (water pressure 7 bar)

Capacity diagrams see page 25



G Type

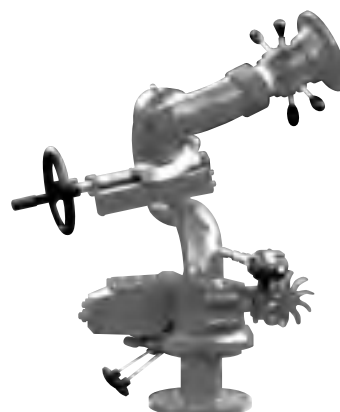
Additional swivel joint

Code	Mod.	DC inch	LQ l/min	FE inch	RG inch	A mm	B mm	C mm	G gr	H gr	W kg
URA F400 A1x	AKM-V	3"	4000	3"	3"	620	440	254	85°	45°	34
URA F700 A1x		4"	7000	4"	4"	750	530	266	85°	45°	37
URA G400 A1x	AKM-V/S	3"	4000	3"	3"	730	440	254	85°	45°	35
URA G700 A1x		4"	7000	4"	4"	860	530	266	85°	45°	39

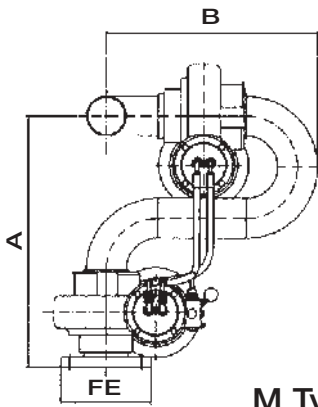
Product identification code

The final 'x' in the above given codes identifies the flange standard, and should be replaced with:

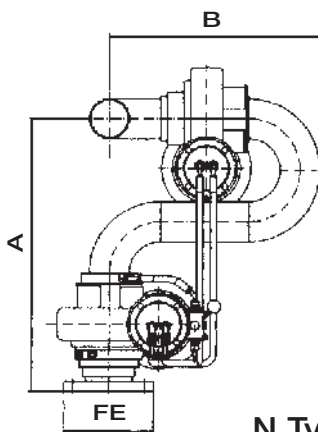
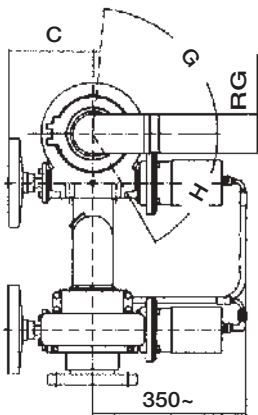
- A** for DIN Flanges
- B** for ANSI Flanges



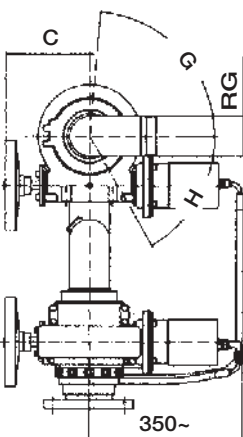
REMOTE CONTROLLED



M Type



N Type



URA- M/N

URA-M/N hydraulic motor remote controlled monitors offer a strong and accurate construction with greased ball bearing on swivel joints. Their smooth internal surface finish minimizes friction and turbulence losses allowing thus better throw performances.

Both models have elevation and horizontal rotation driven by hydraulic motors.

"N" type has supplementary un-lockable hand-wheels, which allow the operator to manual control the monitor in case of maintenance or malfunction of the the hydraulic system.

They can be fitted with our full range of nozzles/cannons devices for water and/or foam, and are suitable for fixed, semi fixed installations or can be mounted on vehicles. Carbon steel parts are finished with an accurate epoxy paint cycle, with a RAL 3000 red colour.

Materials

Body	A1	Carbon steel
	B3	AISI 316, stainless steel
Swivel joints	A1	Carbon steel
	B3	AISI 316, stainless steel
Flanges	A1	Carbon steel

Specification

Design pressure	16 bar
Operation pressure	12 bar
Horizontal rotation	340° max
Rotation speed	24° per second
Hydraulic pressure	30 to 150 bar

Capacity diagrams see page 25

Code	Mod.	DC inch	LQ l/min	FE inch	RG inch	A mm	B mm	C mm	G gr	H gr	W kg
URA M400 A1x	OKM	3"	4000	3"	3"	600	455	210	85°	60°	60
URA M700 A1x	OKM	4"	7000	4"	4"	710	545	210	85°	60°	65
URA N400 A1x	OKM 360	3"	4000	3"	3"	610	455	210	85°	60°	70
URA N700 A1x	OKM 360	4"	7000	4"	4"	760	545	210	85°	60°	75

Product identification code

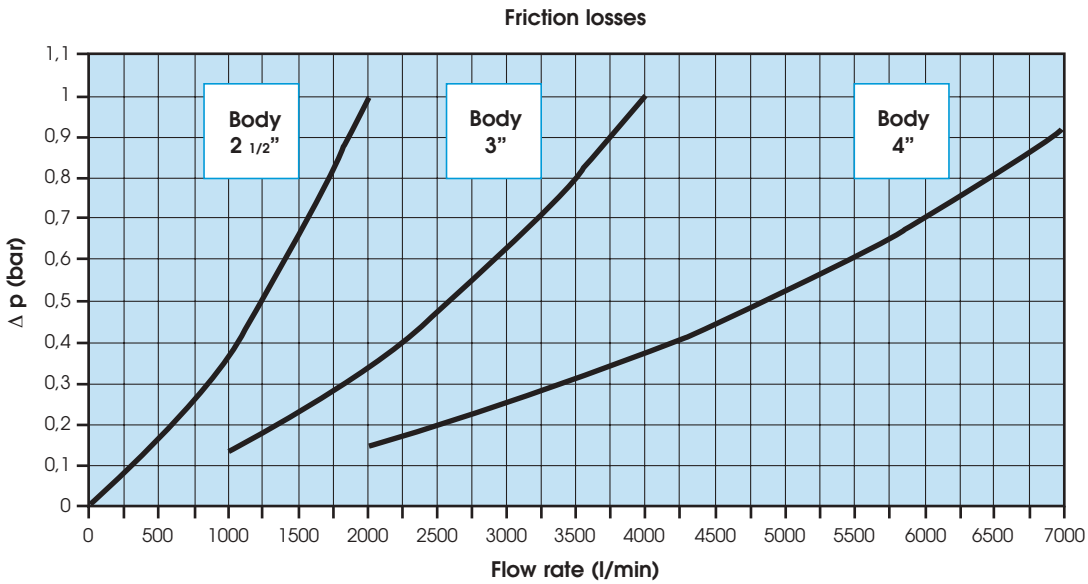
The final 'x' in the above given codes identifies the flange standard, and should be replaced with.

A	for	DIN	Flanges
B		ANSI	Flanges

FRICITION LOSSES

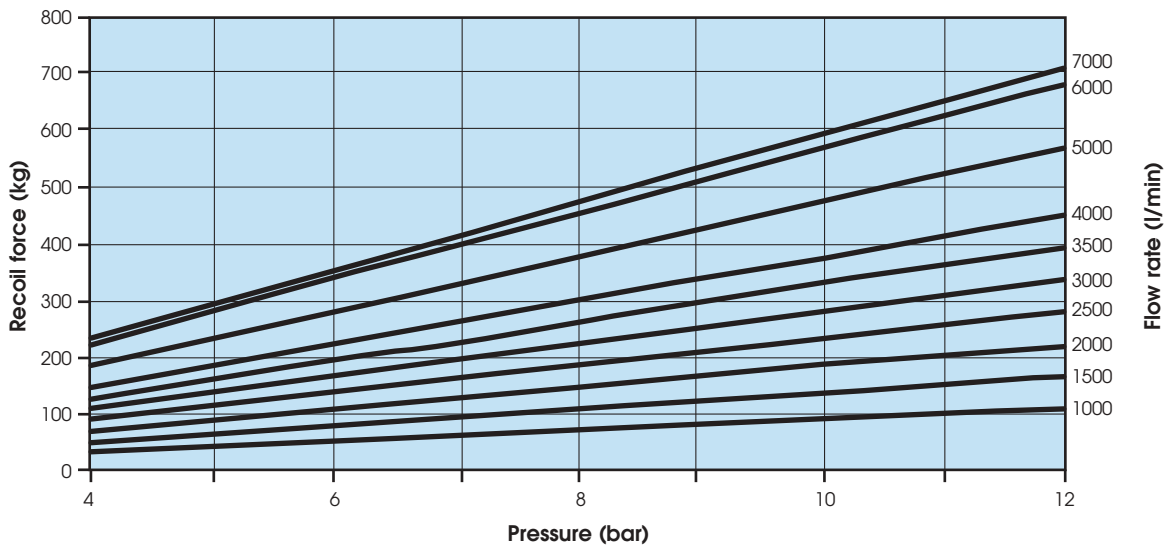
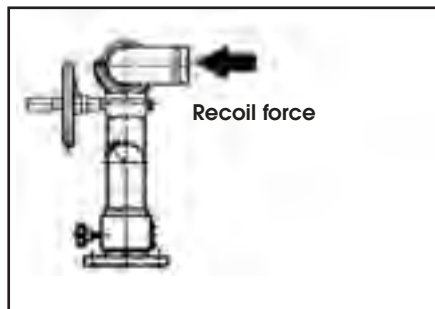
The diagram gives friction losses in bar versus discharge rate values in l/min for each monitor body sizes, and for usual capacity values.

Friction loss values give the actual pressure drop between the inlet flange and the outlet section of the monitor.



RECOIL FORCE

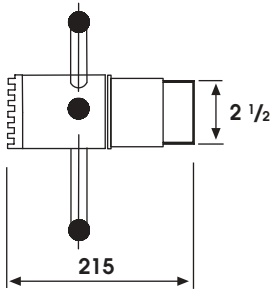
The diagram gives the actual recoil force in kg at the monitor outlet, versus the flow rate value.



WATER SPRAY NOZZLES



URQ A 3200 B3



●	Straight jet
✱	Full cone 60°
■	Full cone 90°

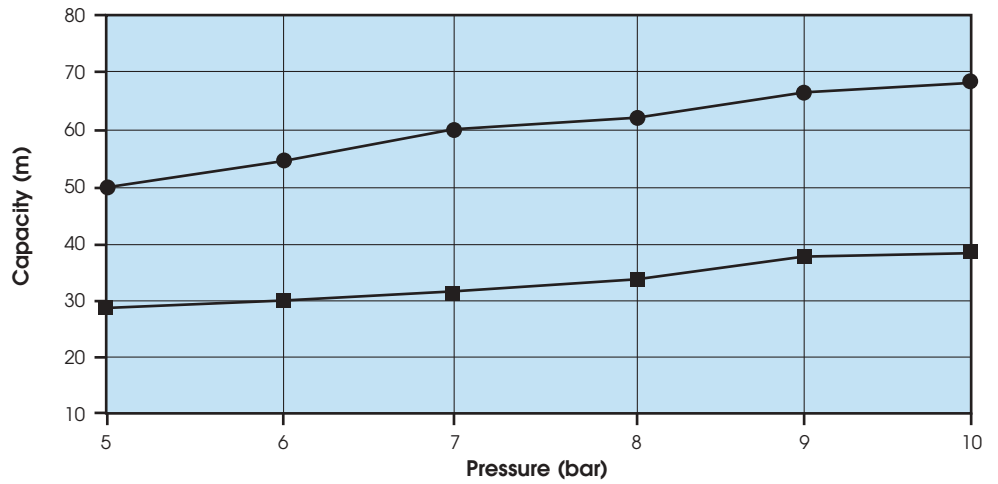
URQ-A

URQ-A Adjustable Water Spray Nozzles discharge large quantity of water in manually adjustable straight-to-cone patterns. The cone pattern can be adjusted up to an angle of 80°. See the chart for performance characteristics as per throw, discharge and pressure.

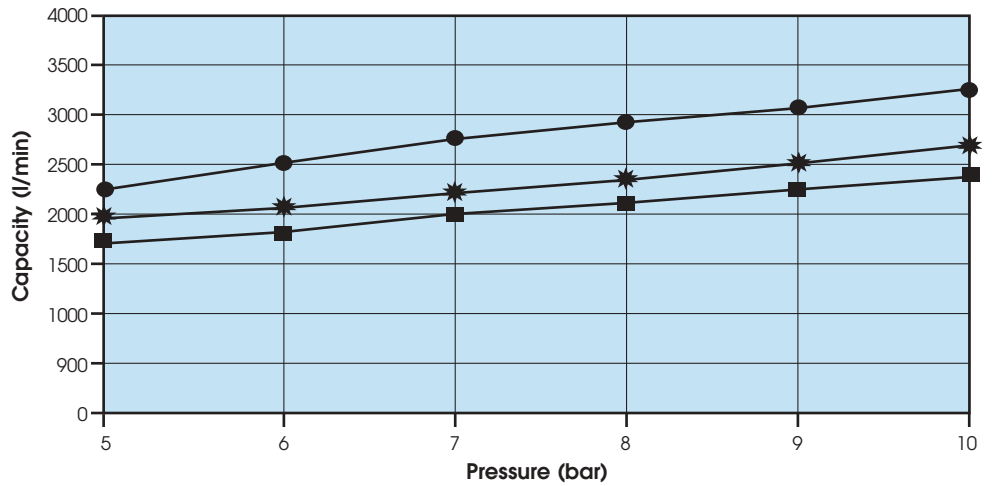
Material

Body **B3** AISI 316, stainless steel

Throw diagram



Capacity diagram



●	Straight jet
✱	Full cone 60°
■	Full cone 90°

WATER/FOAM SPRAY NOZZLES

URQ-B

URQ-B Adjustable Water/Foam Solution Spray Nozzles discharge large quantity of foam solution or water in adjustable straight-to-cone patterns.

They self induce foam concentrate at an adjustable percentage up to 6% into the water stream by a Venturi device connected to spiralled PVC dip tube.

The cone pattern can be adjusted up to an angle of 80°

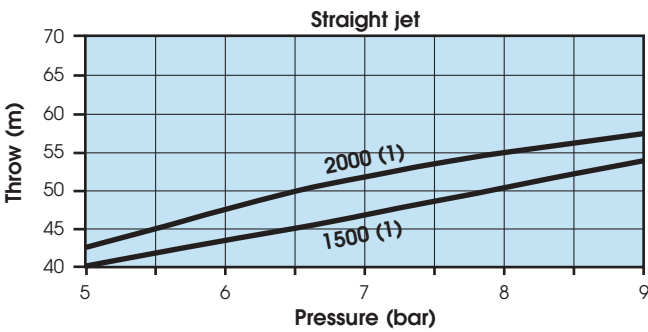
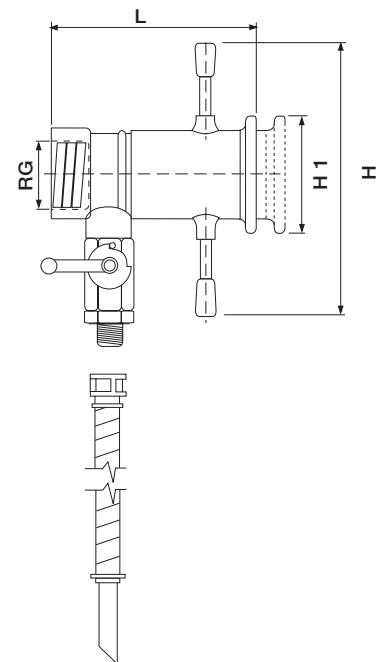
See the chart for performance characteristics as per throw, discharge and pressure.

Please note nominal capacity as given by the tables refers to straight jet operation.

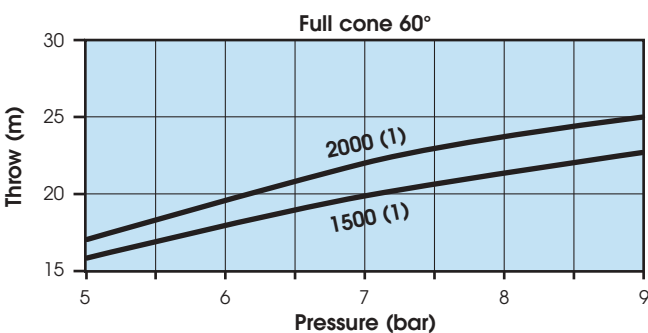
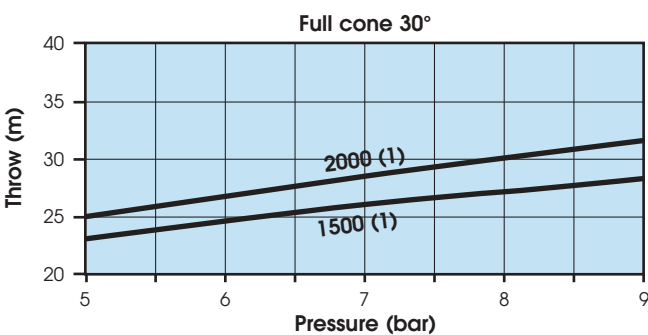
Material T1 Brass



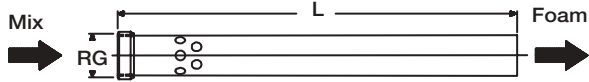
Code	Mod.	Capacity (lpm) at pressure (bar)				RG inch	H mm	H1 mm	L mm	W kg
		3.0	5.0	7.0	9.0					
URQ B150 T1	FX A15	980	1270	1500	1700	3"	284	125	167	8.0
URQ B200 T1	FX A20	1310	1690	2000	2270	3"	284	125	167	8.0



(1) Nominal capacity (l/min. - 7 bar)



FOAM CANNONS



URN-A

URN-A Foam monitor cannons specifically serve monitors. They are fed by foam solution and can work up to 12-bar pressure.

The chart below refers to a pressure of 7 bars.

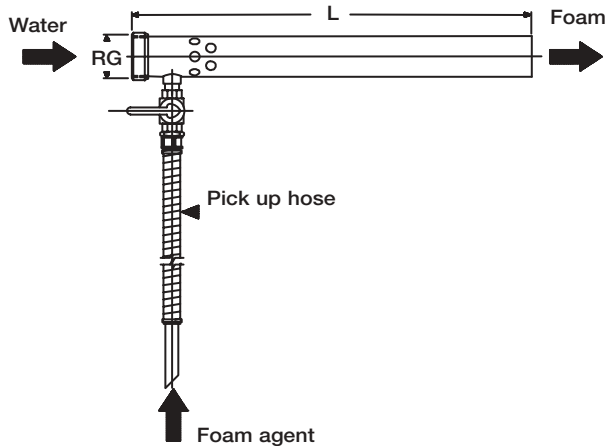
Normal construction has a BSP male threaded inlet.

Materials

Body **B2** AISI 304 stainless steel
 Nozzle **V1** Aluminum

Code	Mod.	Q l/min	RG inch	RS m ³ /min	L mm	W kg
URN A100 B2x	LS 10	1000	3"	6.0	1200	9
URN A150 B2x	LS 15	1500	3"	9.0	1200	9
URN A200 B2x	LS 20	2000	3"	12	1200	9
URN A250 B2x	LS 25	2500	3"	15	1200	9
URN A300 B2x	LS 30	3000	4"	18	1500	9
URN A350 B2x	LS 35	3500	4"	21	1500	9
URN A400 B2x	LS 40	4000	4"	24	1500	9
URN A500 B2x	LS 50	5000	4"	30	1500	9
URN A600 B2x	LS 60	6000	4"	36	1500	9
URN A700 B2x	LS 70	7000	4"	42	1500	9

MONITORS CANNONS
 SELF-INDUCING FOAM CANNONS



URN-B

URN-B Foam monitor cannons specifically serve monitors. They are fed by water and can work up to 12-bar pressure. They self induce foam concentrate at an adjustable percentage up to 6% into the water stream by a Venturi device connected to spiralled PVC dip tube.

The chart below refers to a pressure of 7 bars.

Normal construction has a BSP male threaded inlet.

Materials

Body **B2** AISI 304 stainless steel
 Nozzle **T1** Brass

Code	Mod.	Q l/min	RG inch	RS m ³ /min	L mm	W kg
URN B100 B2x	LS A10	1000	3"	6.0	1200	10
URN B150 B2x	LS A15	1500	4"	9.0	1200	10
URN B200 B2x	LS A20	2000	3"	12	1200	10
URN B250 B2x	LS A25	2500	3"	15	1200	10
URN B300 B2x	LS A30	3000	4"	18	1500	13
URN B350 B2x	LS A35	3500	4"	21	1500	13

WITH CONCENTRATE DRUM

Special construction of monitors on trailers is available upon request.

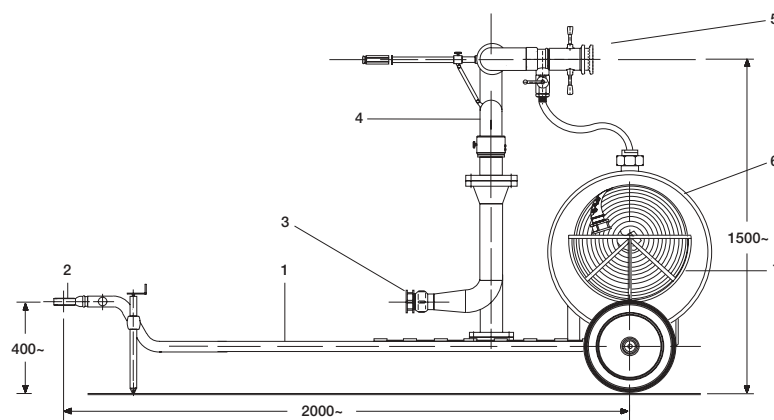
These constructions are made upon client's specifications and may be characterized by a number of optional.

Due to our large experience, each construction is particularly robust and stable during towing as well as operations.

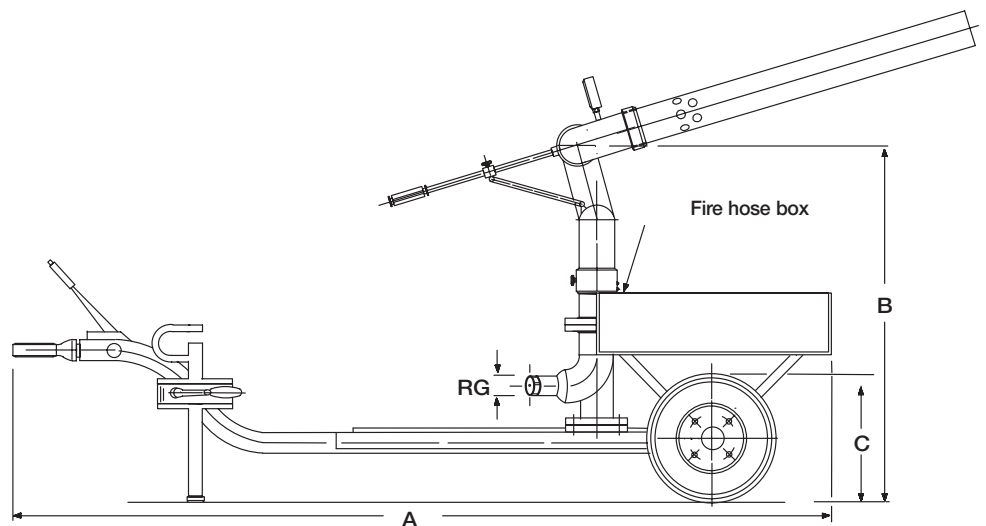
Painting cycle according to the specifications required.



Item	Description
1	Trailer
2	Towing hook
3	Monitor water inlet
4	Monitor
5	Water/foam nozzle
6	Concentrate drum
7	Hose carrier



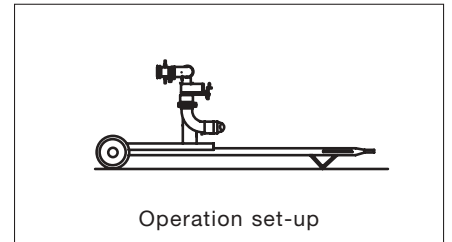
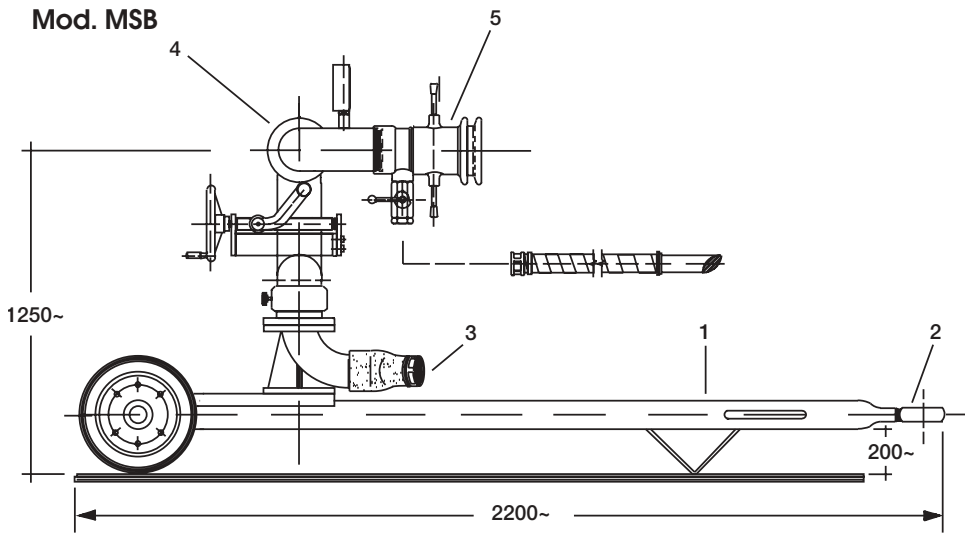
WITH FIRE HOSE BOX



Code	A	B	C	RG	Width	Capacity	Weight Kg
KC-3	2200~	1150	Ø400	2x2" 1/2	1500	2000	100
KC-4	2200~	1150	Ø400	3x2" 1/2	1500	3500	120
KC-5	2200~	1400	Ø400	4x2" 1/2	1700	6000	190

PORTABLE MONITORS

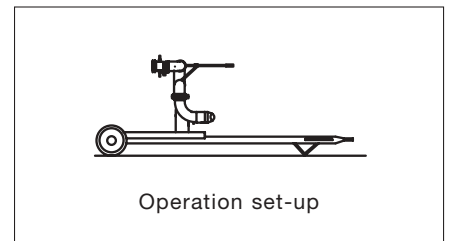
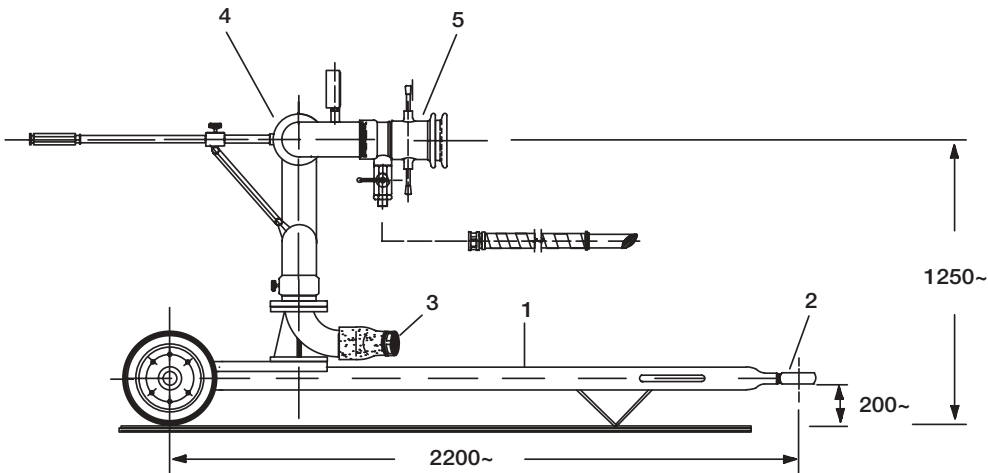
Mod. MSB



Operation set-up

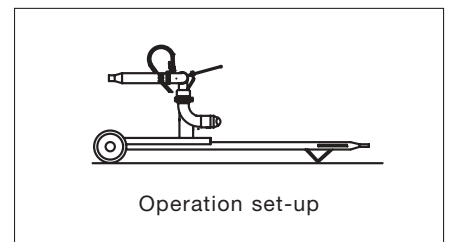
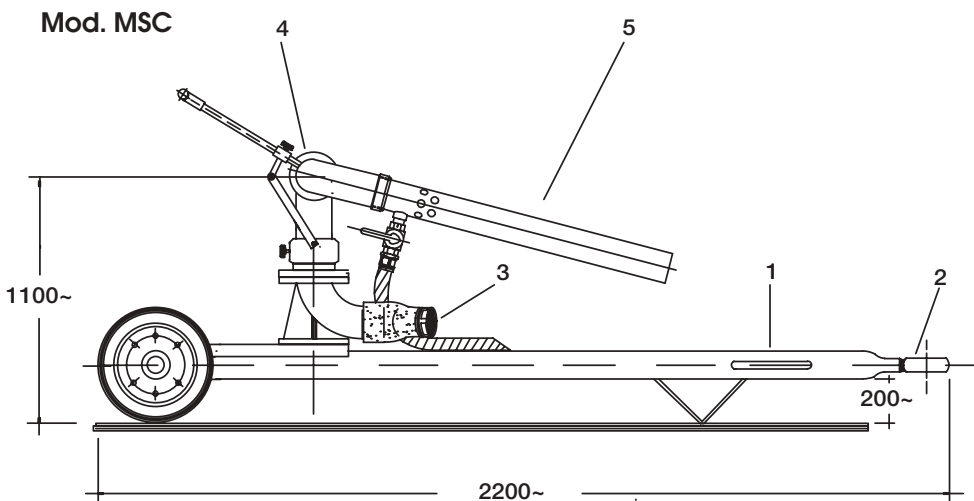
Item	Description
1	Trailer
2	Towing hook
3	Monitor water inlet
4	Monitor
5	Water/foam nozzle

Mod. MSB-L

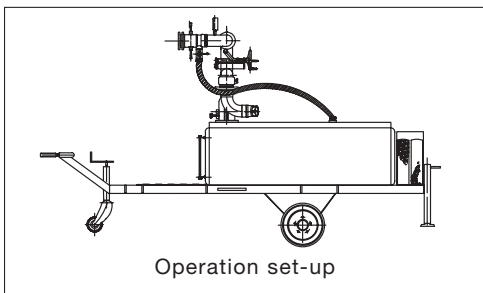
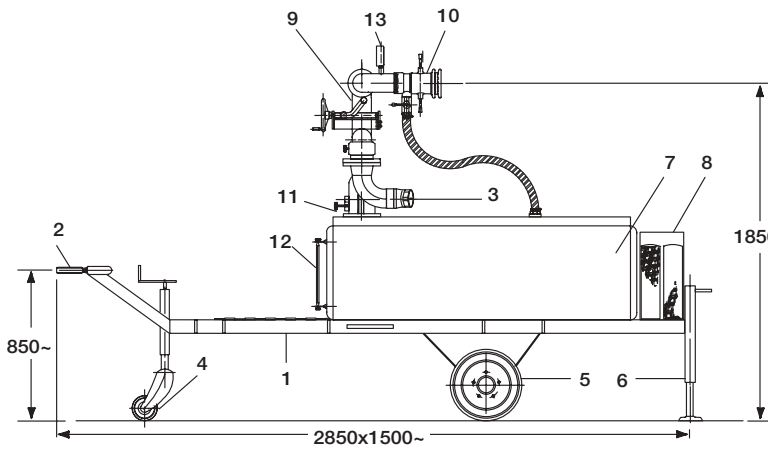


Operation set-up

Mod. MSC



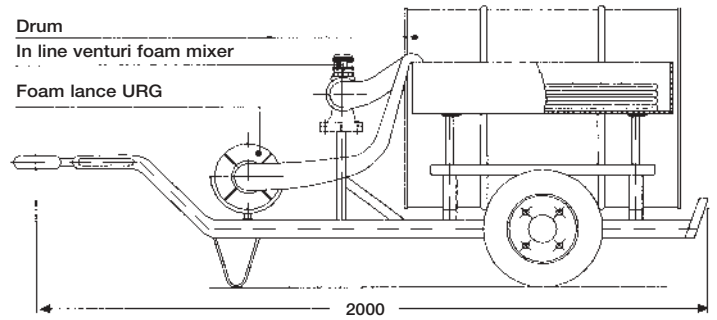
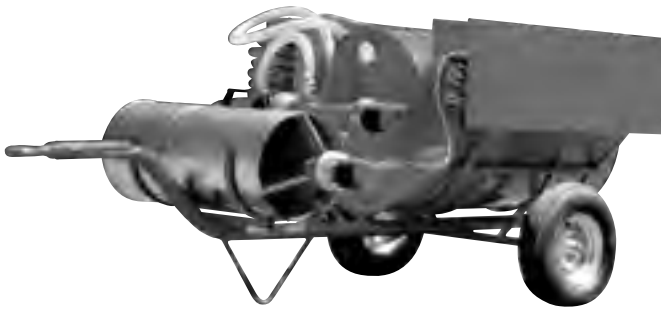
Operation set-up



Item	Description
1	Trailer
2	Towing hook
3	Monitor water inlet
4	Front wheel
5	Rear wheels
6	Stabilizer
7	Concentrate tank
8	Hose box
9	Monitor
10	Monitor nozzle
11	Concentrate filling port
12	Level gauge
13	Pressure gauge

FOAM AGENT DRUM TRAILERS

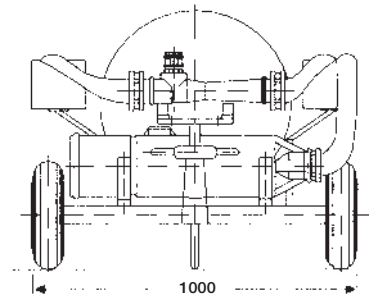
MEDIUM EXPANSION LANCE



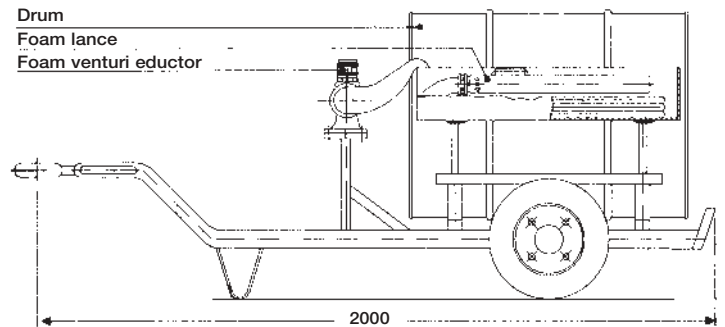
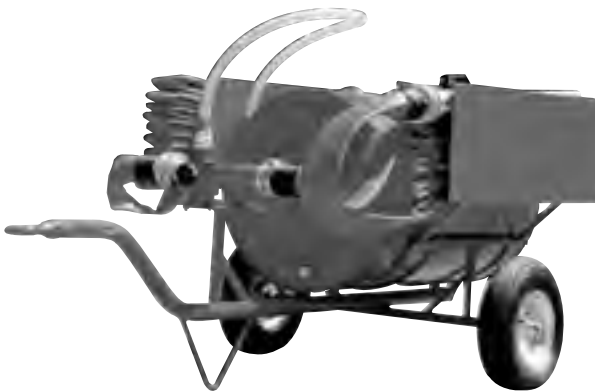
Code	Mixer	Foam lance	Weight kg
CPF-M-2	ES-2	FM 200	48
CPF-M-4	ES-4	FM 400	52

NOTE:

The weight shown does not include foam agent drum.



LOW EXPANSION LANCE



Code	Mixer	Foam lance	Weight kg
CPF-B-2	ES-2	L-2	45
CPF-B-4	ES-4	L-4	45
CPF-B-8	ES-4	L-8	45

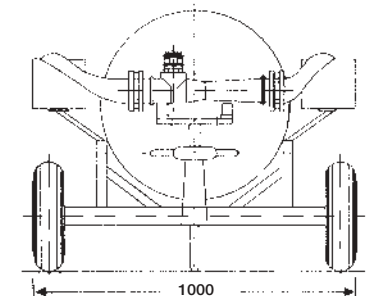
NOTE:

The weight shown does not include foam agent drum.

Materials

One axle trailer
 Wheel axle
 Towing hook, boxes and handles
 Water connections
 Painting

Carbon steel
 Stainless steel
 Carbon steel
 Brass
 Epoxy primer
 2 layers polyurethane
 Puncture proof on request
 10 km per hour



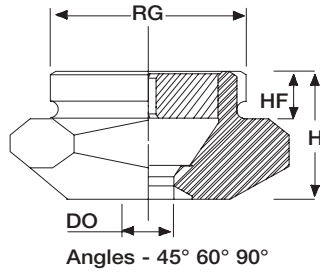
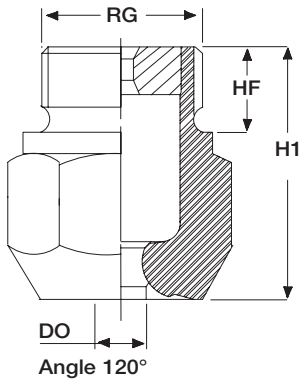


A world class nozzle range

The water spray nozzles shown in this catalog include the most commonly used types for fire fighting applications. Our complete production range, one of the most complete in the world, can provide a professional solution to any problem requiring a precisely specified water spray and the most exotic materials. Please feel free to contact our Offices for any problem involving spraying or atomizing water. See also our watermist nozzles at page 46.

HYDRAULIC NOZZLES

FULL CONE NOZZLES



AO

AO type nozzles have been designed to produce a full cone water spray pattern, and assure a very even distribution thanks to their special slotted vane. The available range of spray angles (45°, 60°, 90° and 120°) can cover all possible requirements.

Materials

B3 Aisi 316, stainless steel
T1 Brass

AOM 45°	AOQ 60°	AOU 90°	AOW 120°	Code	Mod.	RG inch	Capacity l/min at bar				CH mm	HF mm	H mm	H1 mm	DO mm
							1	3	5	7					
•	•	•	•	2155 xx	HC 24.4	1/2"	9.0	15.5	20.0	24.0	24	14	27	27	4.4
•	•	•	•	2200 xx	25.3		11.5	20.0	25.0	30.0					5.3
	•	•	•	2250 xx	26.3		14.0	25.0	32.0	37.0					6.3
	•	•	•	2310 xx	HC 36.3	3/4"	18.0	31.0	40.0	47.0	32	15	28	38	6.3
		•	•	2390 xx	36.9		22.5	39.0	50.0	59					6.9
		•	•	2490 xx	38.0		28.0	49.0	63.0	75.0					8.0
		•	•	2610 xx	HC 49.0	1"	35.0	61.0	80.0	95.0	40	17	28	50	9.0
		•	•	2780 xx	410.5		45.0	78.0	100	120					10.5
		•	•	5123 xx	HC 512.5	1-1/4"	70.0	123	160	190	50	19	30	62	12.5
		•	•	3194 xx	616	1-1/2"	112	194	250	295	60	19	35	76	16.0
		•	•	3240 xx	618		142	240	316	370					18.0
		•	•	3310 xx	820	2"	180	310	400	474	75	24	44	98	20.0
		•	•	3490 xx	1025	2 1/2"	280	490	630	750	90	27	52	123	25.0

FLAT FAN SPRAY

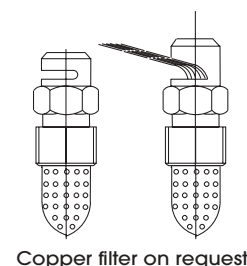
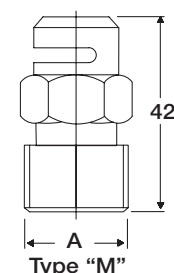
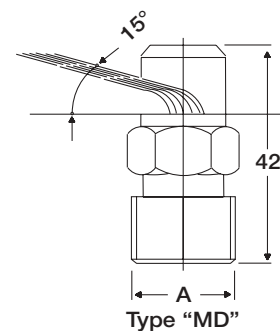
KOW-A/B

KO type nozzles produce a flat fan spray with a very wide spray angle, and offer therefore the possibility for very wide coverage systems.

Their round outlet orifice, with no internal vanes, mean optimum clogging resistance and hence high reliability.

KOW-A type have a 15° deflection angle for tank shell cooling, while KOW- B type has no deflection, and serve the purpose of realizing water curtains for smoke containment.

Materials **B3** AISI 316 stainless steel
 T1 Brass



Spray deflection angle 15°

130°	Code		Mod.	DO mm	Capacity (l/min) at pressure of (bar)						CH mm	H mm
	Thread size 1/2"	Thread size 3/4"			1	3	5	6	7	10		
	KOW A008 T1	KOW A009 T1			MD x3.0	3.0	4.8	8.1	10.3	11.3		
KOW A011 T1	KOW A012 T1	MD x3.5	3.5	6.7	11.5	14.9	16.4	17.6	20.5			
KOW A015 T1	KOW A016 T1	MD x4.0	4.0	9.0	15.6	20.0	22.0	24.0	29.0			
KOW A019 T1	KOW A020 T1	MD x4.5	4.5	11.5	19.8	25.0	28.0	30.0	36.0			
KOW A027 T1	KOW A028 T1	MD x5.0	5.0	15.8	27.0	35.0	39.0	42.0	50.0			
KOW A030 T1	KOW A031 T1	MD x5.5	5.5	18.0	30.0	40.0	44.0	48.0	57.0			
KOW A039 T1	KOW A040 T1	MD x6.0	6.0	23.0	39.0	50.0	55.0	60.0	71.0			
KOW A047 T1	KOW A048 T1	MD x6.5	6.5	27.0	47.0	61.0	66.0	72.0	86.0			
KOW A055 T1	KOW A056 T1	MD x7.0	7.0	31.0	55.0	72.0	77.0	84.0	91.0			
KOW A070 T1	KOW A071 T1	MD x8.0	8.0	41.0	70.0	92.0	103	112	130			
KOW A090 T1	KOW A091 T1	MD x9.0	9.0	52.0	91.0	117	129	140	165			
KOW A110 T1	KOW A111 T1	MD x10	10.0	64.0	110	139	152	165	200			
KOW A164 T1	KOW A165 T1	MD x12	12.0	95.0	164	214	236	255	290			

Spray deflection angle 0°

140°	Code		Mod.	DO mm	Capacity (l/min) at pressure of (bar)						CH mm	H mm
	Thread size 1/2"	Thread size 3/4"			1	3	5	6	7	10		
	KOW B008 T1	KOW B009 T1			M x3.0	3.0	4.8	8.1	10.3	11.3		
KOW B011 T1	KOW B012 T1	M x3.5	3.5	6.7	11.5	14.9	16.4	17.6	20.5			
KOW B015 T1	KOW B016 T1	M x4.0	4.0	9.0	15.6	20.0	22.0	24.0	29.0			
KOW B019 T1	KOW B020 T1	M x4.5	4.5	11.5	19.8	25.0	28.0	30.0	36.0			
KOW B027 T1	KOW B028 T1	M x5.0	5.0	15.8	27.0	35.0	39.0	42.0	50.0			
KOW B030 T1	KOW B031 T1	M x5.5	5.5	18.0	30.0	40.0	44.0	48.0	57.0			
KOW B039 T1	KOW B040 T1	M x6.0	6.0	23.0	39.0	50.0	55.0	60.0	71.0			
KOW B047 T1	KOW B048 T1	M x6.5	6.5	27.0	47.0	61.0	66.0	72.0	86.0			
KOW B055 T1	KOW B056 T1	M x7.0	7.0	31.0	55.0	72.0	77.0	84.0	91.0			
KOW B070 T1	KOW B071 T1	M x8.0	8.0	41.0	70.0	92.0	103	112	130			
KOW B090 T1	KOW B091 T1	M x9.0	9.0	52.0	91.0	117	129	140	165			
KOW B110 T1	KOW B111 T1	M x10	10.0	64.0	110	139	152	165	200			
KOW B164 T1	KOW B165 T1	M x 12	12.0	95.0	164	214	236	255	290			

Product identification code

All full cone nozzles supplied with BSP straight thread , BSPT tapered when flat spray, no inlet filter.

Add to the table codes the following suffixes to specify the different options

- SN** NPT thread, no filter
- FB** BSP/BSPT thread, copper filter
- FN** NPT thread, copper filter
- GB** BSP/BSPT thread, stainless filter
- GN** NPT thread, stainless filter

HYDRAULIC NOZZLES

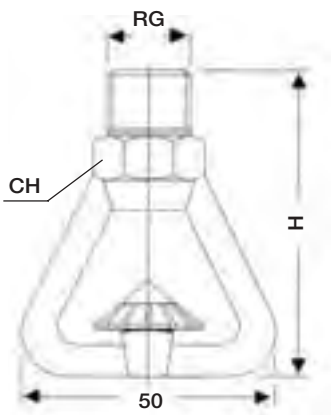
OPEN SPRINKLER NOZZLES



ROY

RO type nozzles produce a full cone spray pattern with very wide spray angle, and provide the proper means for covering wide surfaces for cooling and/or fire extinguishment purposes. They are normally delivered with a 130° spray angle value, while different values can be supplied on request.

Materials	B3	AISI 316, stainless steel
	T1	Brass
	T8	Brass, Nickel plated
	T81	Brass Electroless Nickel plated



1 / 2" Thread

Code	Mod.	RG inch	DO mm	Capacity (l/min) at pressure of (bar)						CH mm	H mm
				1	3	5	6	7	10		
ROY 1810 xx	SP 23	1/2"	3.0	4.8	8.1	10.3	11.3	12.2	14.5	25	65
ROY 2115 xx	23.5		3.5	6.7	11.5	14.9	16.4	17.6	20.5		
ROY 2156 xx	24		4.0	9.0	15.6	20.0	22.0	24.0	29.0		
ROY 2198 xx	24.5		4.5	11.5	19.8	25.0	28.0	30.0	36.0		
ROY 2270 xx	25		5.0	15.8	27.0	35.0	39.0	42.0	50.0		
ROY 2300 xx	25.5		5.5	18.0	30.0	40.0	44.0	48.0	57.0		
ROY 2390 xx	26		6.0	23.0	39.0	50.0	55.0	60.0	71.0		
ROY 2470 xx	26.5		6.5	27.0	47.0	61.0	66.0	72.0	86.0		
ROY 2550 xx	27		7.0	31.0	55.0	72.0	77.0	84.0	91.0		
ROY 2700 xx	28		8.0	41.0	70.0	92.0	103	112	130		
ROY 2910 xx	29		9.0	52.0	91.0	117	129	140	165		
ROY 3110 xx	210		10.0	64.0	110	139	152	165	200		
ROY 3164 xx	212		12.0	95.0	164	214	236	255	290		

3 / 4" Thread

Code	Mod.	RG inch	DO mm	Capacity (l/min) at pressure of (bar)						CH mm	H mm
				1	3	5	6	7	10		
ROY 1811 xx	SP 33	3/4"	3.0	4.8	8.1	10.3	11.3	12.2	14.5	27	65
ROY 2116 xx	33.5		3.5	6.7	11.5	14.9	16.4	17.6	20.5		
ROY 2157 xx	34		4.0	9.0	15.6	20.0	22.0	24.0	29.0		
ROY 2199 xx	34.5		4.5	11.5	19.8	25.0	28.0	30.0	36.0		
ROY 2271 xx	35		5.0	15.8	27.0	35.0	39.0	42.0	50.0		
ROY 2301 xx	35.5		5.5	18.0	30.0	40.0	44.0	48.0	57.0		
ROY 2391 xx	36		6.0	23.0	39.0	50.0	55.0	60.0	71.0		
ROY 2471 xx	36.5		6.5	27.0	47.0	61.0	66.0	72.0	86.0		
ROY 2551 xx	37		7.0	31.0	55.0	72.0	77.0	84.0	91.0		
ROY 2701 xx	38		8.0	41.0	70.0	92.0	103	112	130		
ROY 2911 xx	39		9.0	52.0	91.0	117	129	140	165		
ROY 3111 xx	310		10.0	64.0	110	139	152	165	200		
ROY 3165 xx	312		12.0	95.0	164	214	236	255	290		

Product identification code

All full cone nozzles supplied with BSP straight thread , BSPT tapered when flat spray, no inlet filter.

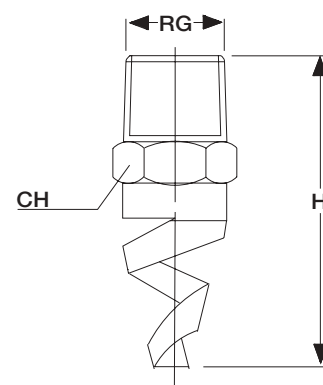
Add to the table codes the following suffixes to specify the different options.

SN	NPT thread, no filter
FB	BSP/BSPT thread, copper filter
FN	NPT thread, copper filter
GB	BSP/BSPT thread, stainless filter
GN	NPT thread, stainless filter

SPIRAL NOZZLES

E
 This design has quickly become popular since spiral nozzles can provide a fullcone-like spray pattern while offering the advantage of having no internal vane, hence lower clogging danger and higher reliability. In addition spiral nozzles keep practically unchanged their spray angle for even very low pressure, and require smaller pipe size when compared to a classic full cone nozzle.

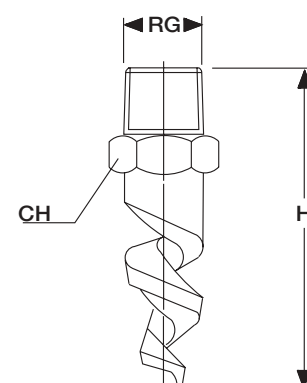
Materials
B31 AISI 316 L, stainless steel
T1 Brass



Code	RG	DO	DM	Capacity (l/min) at the pressure of (bar)				CH	H	
				1	3	5	7			
	inch	mm	mm					mm	mm	
90°	ECU 2230 T1	3/8"	4.8	3.2	13.6	23.5	30.3	42.8	19	48
	ECU 2317 T1		5.6	18.3	31.7	40.9	57.8			
	ECU 2410 T1		6.4	24.0	41.5	53.6	75.8			
	ECU 2640 T1		7.9	37.7	64.6	83.0	117			50
	EDU 2940 T1	1/2"	9.5	4.7	54.5	94.4	122	172	22	64
	EDU 3128 T1		11.1	74.5	129	166	235			
	EEU 3165 T1	3/4"	12.7	4.7	92.0	165	213	301	27	70
	EFU 3260 T1	1"	15.9	6.3	152	263	339	479	34	92
	EFU 3372 T1		19.0	215	372	480	679			
120°	ECW 2156 T1	3/8"	4.0	3.2	9.0	15.6	20.1	28.4	19	48
	ECW 2230 T1		4.8	13.6	23.5	30.3	42.8			
	ECW 2317 T1		5.6	18.3	31.7	40.9	57.8			
	ECW 2410 T1		6.4	24.0	41.5	53.6	75.8			
	ECW 2640 T1		7.9	37.7	64.6	83	117			
	EDW 2940 T1	1/2"	9.5	4.7	54.5	94.4	122	172	22	64
	EDW 3104 T1		10.5	60.0	104	134	190			
	EDW 3128 T1		11.1	74.5	129	166	235			
	EEW 3165 T1	3/4"	12.7	4.7	92.0	165	213	301	27	70
	EFW 3260 T1	1"	15.9	6.3	152	263	339	479	34	92
	EFW 3372 T1		19.0		215	372	480	379		

EXTRA-WIDE PASSAGE TYPES

To further enhance clogging resistance, extra wide passage nozzles offer a spiral pitch with the same dimension as the nozzle inlet diameter, which is then the minimum allowable nozzle free passage. This type is available in brass for all standard types shown, check with our offices for available types in stainless steel.



Code	RG	DO	DM	Capacity (L/min) at pressure of (bar)				CH	H	
				1	3	5	7			
	inch	mm	mm					mm	mm	
120°	ECW 2230 T1	3/8"	4.8	3.2	13.6	23.5	30.3	42.8	19	70
	ECW 2317 T1		5.6	18.3	31.7	40.9	57.8			
	ECW 2410 T1		6.4	24.0	41.5	53.6	75.8			
	ECW 2640 T1		7.9	37.7	64.6	83.0	117			
	EDW 2940 T1	1/2"	9.5	4.7	54.5	94.4	122	172	22	86
	EDW 3128 T1			11.1	74.5	129	166	235		

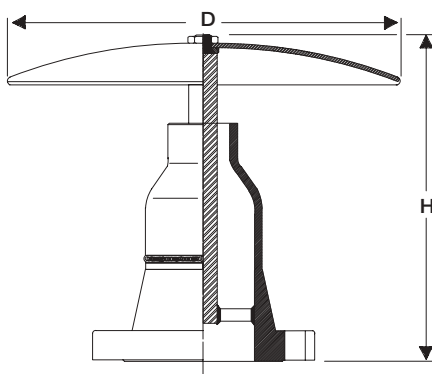
HYDRAULIC NOZZLES

MUSHROOM NOZZLES



URC

We supply upon request nozzles to customer design and for special application.



URC

The URC type nozzles have been designed for protection by cooling on large size tank roofs where hydrocarbon products are stocked.

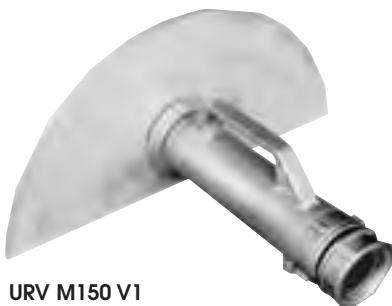
Their very strong construction includes a flange connection (ANSI) with a range to cover for all requirements. (Additional sizes quoted on request).

Materials

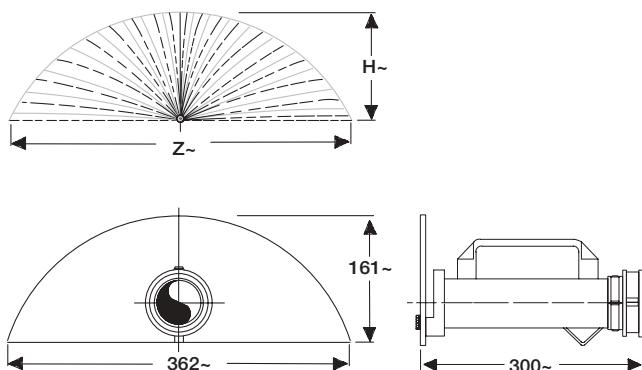
Body **A1** Carbon steel
Upper bell **B3** AISI 316, stainless steel

Code	FE inch	Capacity (l/min) at pressure of (bar)				D mm	H mm	Gpm 100 psi
		1	3	5	7			
150°	1+1/2"	72	125	160	190	150	180	50
URCM005 A1B		110	190	245	290			75
URCM007 A1B		175	300	390	460			120
URCM012 A1B	2"	218	376	485	575	150	210	150
URCM015 A1B		290	495	640	760			200
URCM020 A1B	3"	378	654	845	1000	230	240	250
URCM025 A1B		460	800	1030	1220			300
URCM030 A1B	4"	585	1015	1310	1550	290	260	400
URCM040 A1B		718	1250	1600	1900			500
URCM050 A1B		842	1460	1885	2230			750
URCM075 A1B		1440	2495	3220	3810			1000
URCM100 A1B	6"	1235	2140	2765	3270	430	320	850
URCM085 A1B		1730	3000	3860	4570			1200
URCM120 A1B		2200	3810	4920	5820			1500
URCM150 A1B								

HEAT SHIELD



URV M150 V1



URV M150 V1

URV water shield is used to produce a water curtain allowing fire fighters to work in the proximity of fires without being directly exposed to the radiant heat from flames.

Normally supplied with a male 1+1/2" BSP thread, can be completed on request with flanges or quick couplings according to the usual fire fighting standards.

The table shows the capacity values in liters per minute as well as the dimensions of the water curtain in meters, for different values of feed water pressure.

Material V1 Aluminum

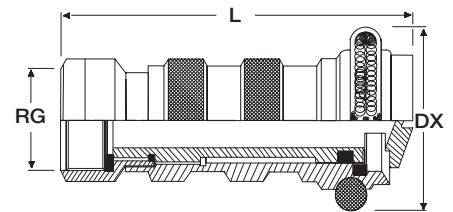
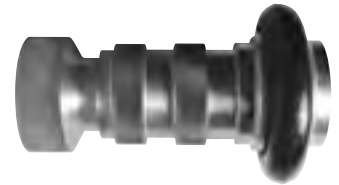
Code	Pressure (bar)	Q (l/min)	Z m	H mm
URV M150 V1	3.0	500	18	5500
	4.0	550	20	6000
	5.0	650	21	6500
	6.0	700	22	7000
	7.0	750	23	7500
	8.0	800	24	8000

WATER NOZZLE

URR

The URR water nozzle produces a pressurized water spray which can be continuously adjusted from a powerful straight jet, to a 160° round water curtain with a 11 meter (36 feet) diameter. Please note the capacity changes in these two extreme operating conditions.

A strong rubber ring circles the diameter immediately behind the orifice, to avoid damages due to shocks.



Material T1 Brass

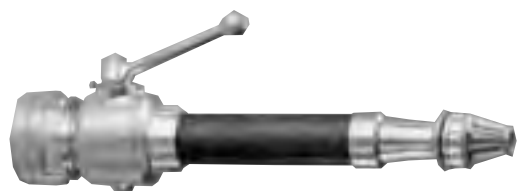
Code	RG inch	Capacity (l/min) at pressure of (bar)				DX mm	L mm
		1	5	7	10		
0° URR 2490 T1SB	1"	18.5	42.0	49.5	58.6	72	120
160°		128	285	337	403		

MULTIPLE SPRAYS LANCE

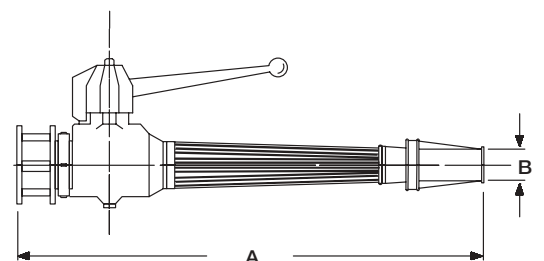
URS

These lances make it possible to instantly switch among three different conditions, that is closed - straight jet - adjustable full cone spray.

The two larger size models can be supplied complete with an optional water curtain, to avoid the fire fighter being exposed to radiant heat from the open flame.



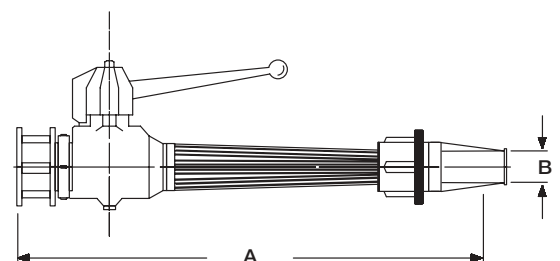
Materials Body V1 Aluminum
Outside cover P6 ABS



Model "F"

The RU column in the table shows the size of the UNI quick coupling connection supplied with the different sizes. The lances can be quoted for different connections.

Code	Mod.	RG inch	DO mm	Capacity (l/min) at pressure of (bar)			L mm	W kg	RU
				1.0	5.0	6.0			
URS A100 V1	F 125	1"	4.0	27	60	66	310	0.8	25
URS A150 V1	F 145	2"	9.0	78	175	192	445	1.5	45
URS A200 V1	F 170	2 1/2"	16	224	500	548	495	2.2	70
URS B250 V1	F 145 S	2"	9.0	78	175	192	445	1.9	45
URS B100 V1	F 170 S	2 1/2"	16	224	600	548	495	2.6	70



Model "FS"



SPECIFICATIONS

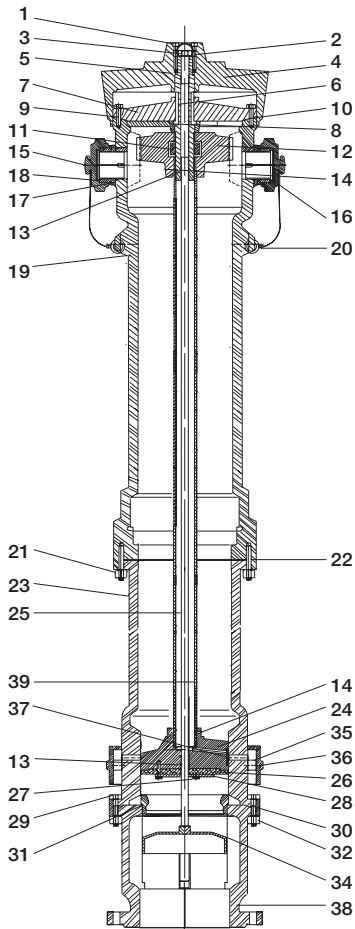
Outlets	UNI 810 – 75
Flange	UNI PN 16
Painting	Electrostatic epoxy powder, (thermosetting fluorocarbon resins) RAL 3000 red colour or option as specified All single parts separately painted before assembly
Weight	KM – 3 24 kg KM – 3/2V 26 kg

Test pressures

Test pressure, open	25 bar
Test pressure, closed	25 bar
Operation pressure	16 bar

NOTE:

Please ask for detailed component list and additional technical literature.
The information given relates to products delivered in the Italian market, we can quote as per your individual specification and with connections following any required standard.



SPECIFICATIONS

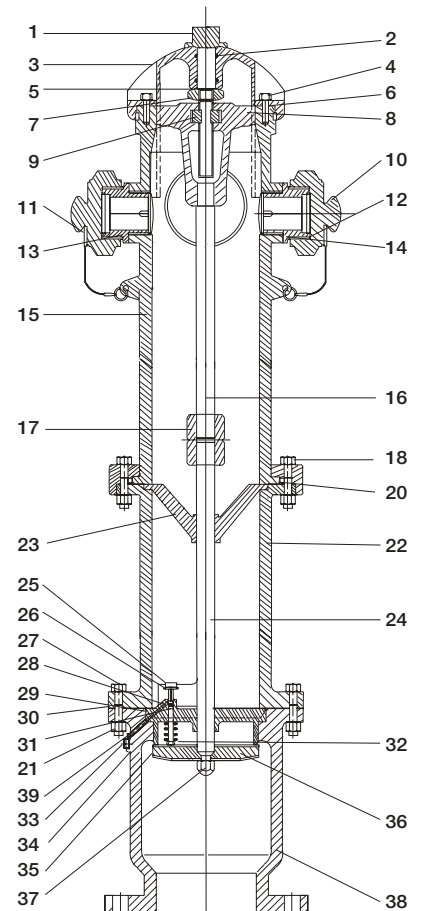
Outlets	UNI 810 - 75
Flange	UNI PN 16
Painting	Electrostatic epoxy powder, (thermosetting fluorocarbon resins) RAL 3000 red colour or option as specified All single parts separately painted before assembly
Weight	KM - 3 24 kg KM - 3/2V 26 kg

Test pressures

Test pressure, open	25 bar
Test pressure, closed	25 bar
Operation pressure	16 bar

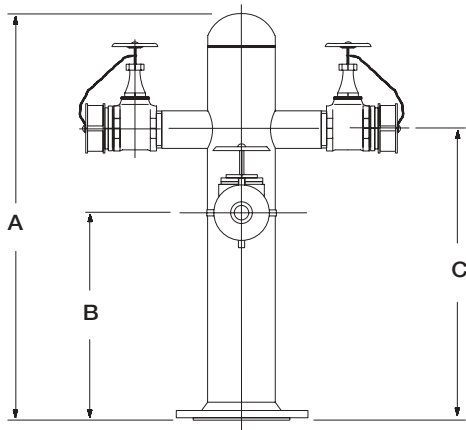
NOTE:

Please ask for detailed component list and additional technical literature.
The information given relates to products delivered in the Italian market, we can quote as per your individual specification and with connections following any required standard.



FIRE HYDRANTS

WELDED BODY



USX

USX hydrants feature a welded steel construction, protected from weather corrosion by means of an high quality painting cycle.

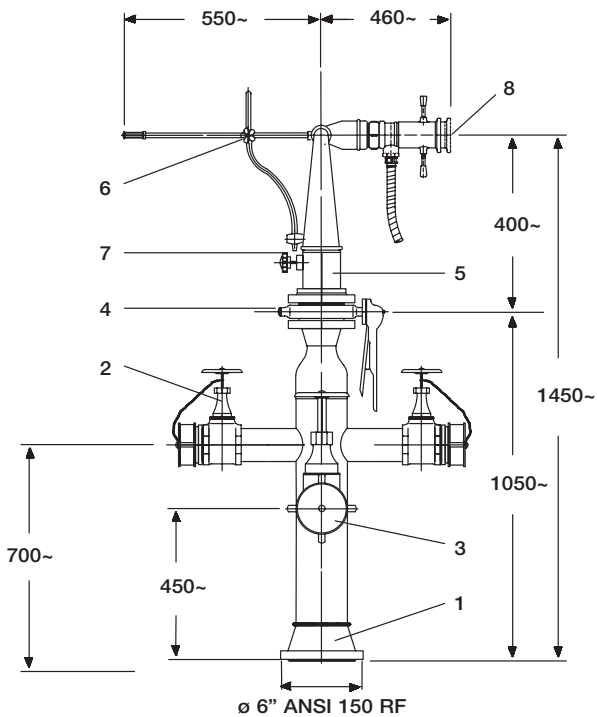
Side outlets standards and base flange type are quoted on a single basis, for each customer.

They can be completed, on option, with an upper monitor with horizontal position lock.

Tables below must be then considered as general information only, and make reference to the design normally supplied on the Italian market.

Code	Outlet size	Base flange	Test pressure (bar)	Dimensions (mm)		
				A	B	C
3"	2 x 2 1/2"	ASA 150-UNI 2278	18	1000	750	860
4"	2 x 2 1/2" - 1 x 4"	ASA 150-UNI 2278	18	1000	750	860
6"	2 x 2 1/2" - 1 x 4" - 1 x 1 1/2"	ASA 150-UNI 2278	18	1000	750	860

COMPLETE WITH MONITOR



Item	Description
1	Inlet flange, 6" ANSI 150 RF
2	Outlet gate valve 2+1/2" with UNI coupling and blind cover
3	Outlet gate valve 5" with UNI coupling and blind cover
4	Butterfly valve 3" ANSI 150
5	Monitor Model P80
6	Monitor elevation lock
7	Monitor horizontal lock
8	Monitor foam nozzle

STEEL MODEL

USY

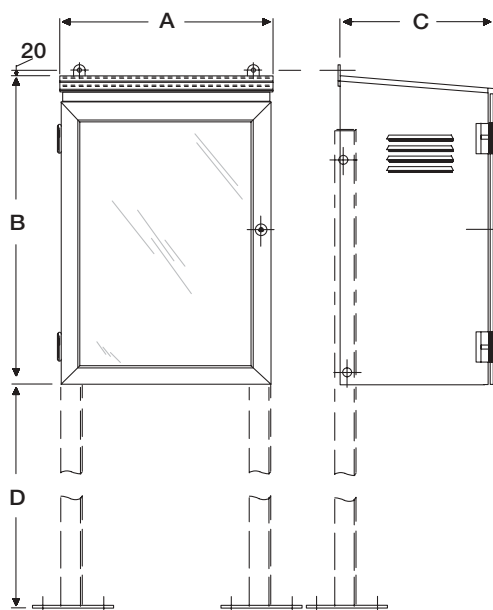
The steel hose boxes are designed to hold different sizes of flexible hose as shown in the table below, complete with a water nozzle.

The door is provided with a glass window and a safety logk.

Their strong construction is based on a 12/10 mm steel sheet, with a polyurethane paint coat RAL 3000 red.

All cabinets are supplied with legs a flat steel plates four ground bolting.

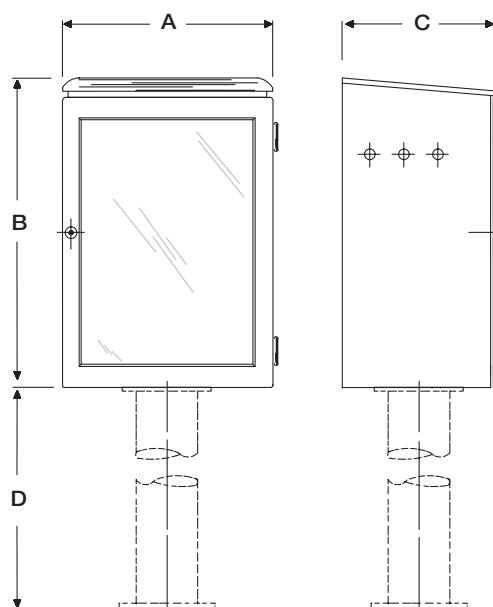
Code	Mod.	Dimensions (mm)			
		A	B	C	D
USY 0045 A1	UNI 45	370	580	180	900
USY 0070 A1	UNI 70	500	720	240	900
USY 0071 A1	UNI 70M	500	720	300	900



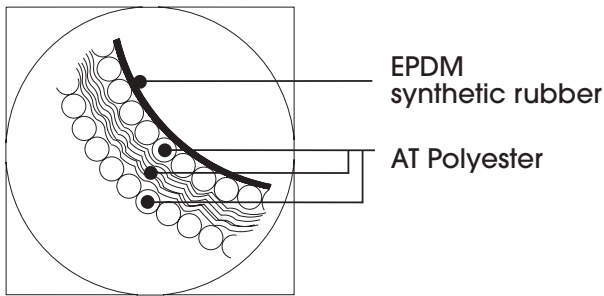
FIBERGLASS MODEL

These boxes offer the same specifications as the above steel models, but are manufactured out of fiberglass for applications where severe wheater conditions can be expected.

Code	Mod.	Dimensions (mm)			
		A	B	C	D
USY 0070 DC1	UNI 70	495	685	255	800
USY 0071 DC1	UNI 70M	495	685	315	800



SINGLE LINER



Synthetic fire hose, type A, is made of a round section of high tensile strength polyester woven on modern textile machines designed for the purpose, with a unique technology.

The round polyester section is coupled internally by to a watertight liner of synthetic EPDM rubber, whose smooth surface keeps to minimum the water pressure drop.

A good quality hose, with high resistance to wear and aging.

Specifications (Syntetic A)

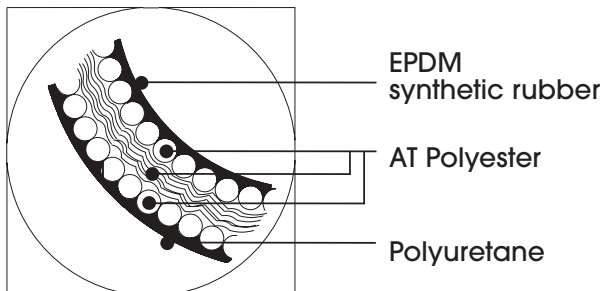
Textile composition	High tensile polyester
Inside liner	EPDM synthetic rubber
Tensile yield (DIN 53530)	25 daN / 2.5 cm
Wear resistance (DIN 14811)	> 200
Temperature range (RINA)	- 30 / + 200° C
Length up to	200 m

Testing

Rated pressure (NORME)	25 bar
------------------------	--------

Nominal diameter	mm	25	38	45	63	70	100	110	125
Mass per unit length	g/m	180	205	235	380	440	750	820	1150
Burst pressure	bar	55	50	50	45	45	35	35	30
Operation pressure	bar	20	18	18	15	15	12	12	10
Elongation at 20 bar	%	4	4	4	7	7	8	8	10
Expansion at 20 bar	%	6	6	6	7	7	8	8	10
Bending radius at 20 bar	mm	250	450	500	700	800	1500	1600	2000

DOUBLE LINER



Synthetic fire hose, type B, is made of a round section of high tensile strength polyester woven on modern textile machines designed for the purpose, with a unique technology.

The round polyester section is coupled internally by to a watertight liner of synthetic EPDM rubber, whose smooth surface keeps to minimum the water pressure drop.

In addition, an external red polyurethane liner provides for added resistance to hydrocarbons, several chemical products and increases the mechanical wear resistance.

Specially suited for oil refineries and petrochemical plants

Specifications (Syntetic B)

Textile composition	High tensile polyester
Inside liner	EPDM synthetic rubber
Outside liner	NR/SBR ozone resistant
Tensile yield (DIN 53530)	25 daN / 2.5 cm
Wear resistance (DIN 14811)	> 200
Temperature range (RINA)	- 30 / + 200 °C
Length up to	60 m (higher lengths upon request)

Testing

Rated pressure (NORME)	25 bar
------------------------	--------

Nominal diameter	mm	25	38	45	63	70	100	110	125
Mass per unit length	g/m	190	240	280	390	460	780	860	1180
Burst pressure	bar	55	50	50	45	45	35	35	30
Operation pressure	bar	20	18	18	15	15	12	12	10
Elongation at 20 bar	%	4	4	4	7	7	8	8	10
Expansion at 20 bar	%	6	6	6	7	7	8	8	10
Bending radius at 20 bar	mm	250	450	500	700	800	1500	1600	2000

EXTERNAL RIBS

Synthetic fire hose, type C, is made using two different rubber qualities. Internal black rubber resists chemical products, including hydrocarbons, the outside red rubber offers a strong resistance to acids, alkalis, hydrocarbons and seawater in addition to having very good aging properties.

The ribs on the outside liner protect the hose from being punctured or worn while pulled on the ground.

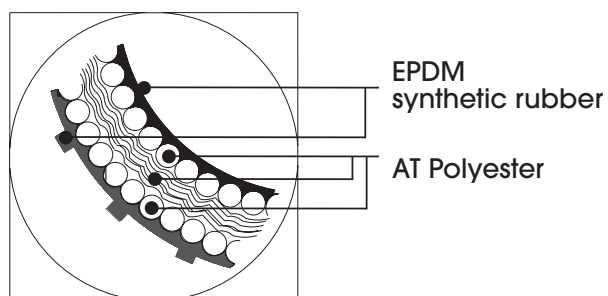
This hose offers high flexibility as well as very good weight and operation life qualities.

Specifications (Syntetic C)

Textile composition	High tensile polyester
Inside liner	EPDM synthetic rubber
Tensile yeld (DIN 53530)	25 daN / 2.5 cm
Wear resistance (DIN 14811)	> 200
Temperature range (RINA)	- 30 / + 200 °C
Length up to	200 m

Testing

Rated pressure (NORME)	25 bar
------------------------	--------



Nominal diameter	mm	25	38	45	63	70	100	110	125
Mass per unit length	g/m	190	240	280	390	460	780	860	1180
Burst pressure	bar	55	50	50	45	45	35	35	30
Operation pressure	bar	20	18	18	15	15	12	12	10
Elongation at 20 bar	%	4	4	4	7	7	8	8	10
Expansion at 20 bar	%	6	6	6	7	7	8	8	10
Bending radius at 20 bar	mm	250	450	500	700	800	1500	1600	2000

Synthetic fire hose, type K, is made of a round section of high tensile strength polyester woven on modern textile machines designed for the purpose, with a unique technology.

The round polyester section is coupled internally by to a watertight liner of synthetic NR / SBR rubber, whose smooth surfaces keeps to minimum the water pressure drop.

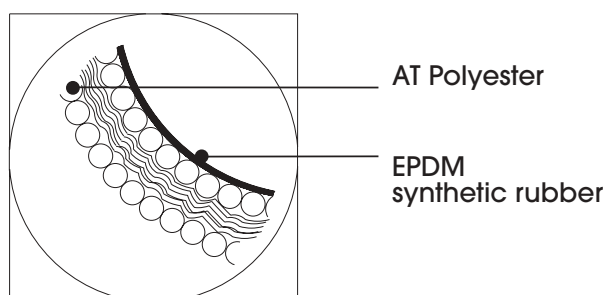
High ozone and aging resistance make for a price-convenient hose, easily rolled up.

Specifications (Syntetic K)

Textile composition	High tensile polyester
Inside liner	EPDM synthetic rubber
Tensile yeld (DIN 53530)	25 daN / 2.5 cm
Wear resistance (DIN 14811)	> 200
Temperature range (RINA)	- 30 / + 200 °C
Length up to	60 m (higher lengths upon request)

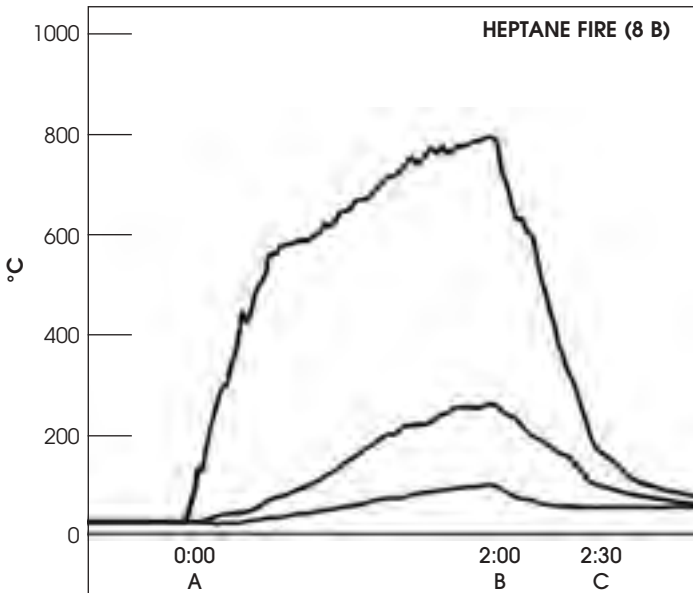
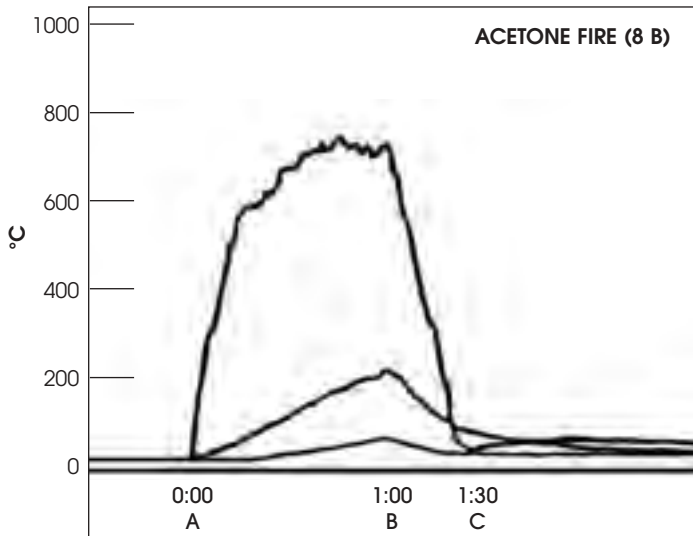
Testing

Rated pressure (NORME)	25 bar
------------------------	--------



Nominal diameter	mm	25	38	45	63	70	100	125	150
Mass per unit length	g/m	160	180	200	320	350	550	790	1000
Burst pressure	bar	55	50	50	45	45	35	30	25
Operation pressure	bar	20	18	18	15	15	12	10	8
Elongation at 20 bar	%	4	4	4	7	7	8	10	10
Expansion at 20 bar	%	6	6	6	7	7	8	10	10
Bending radius at 20 bar	mm	250	450	500	700	800	1500	2000	2200

WATERMIST TECHNOLOGY



- A** Fire start
- B** Spray start
- C** Fire extinguished

A New Technology

Because of stricter environmental laws and the decision to replace some of the widely used gases in extinguishing systems, the use of very fine water sprays in fire suppression systems, for class A and class B fires, has known always growing acceptance in the last years.

How Watermist Works

By evaporating very small water droplets in front of a fire, three main objectives can be reached:

1
The atmosphere composition is changed, insofar the steam produced by evaporation reduces the partial pressure of the pre-existing gases and therefore the partial pressure of oxygen. Oxygen being the one gas required to feed the combustion (fire), at the very moment when the oxygen partial pressure is reduced below a given limit, the fire cannot continue. The limit for oxygen partial pressure varies with the type of fire, being around 13% for hydrocarbon vapours, and much lower for solid fuels like char and wood cribs.

2
The evaporation process requires a noticeable energy (539 Kcal/Kg), hence the process of evaporating droplets produces a strong local cooling effect, which is also against the combustion reaction.

Theoretically a combustion reaction cannot sustain a flame if the temperature drops below 1327° C.

3
The great number of droplets around the fire is a protection against radiating heat from the fire to increase the temperature in the surroundings of the fire.

While this effect may have a minor importance for the process of fire suppression, it can prove very useful in certain special cases for example since a reduced radiation will lowe the evaporation rate from a surface of liquid fuel.

The diagram besides shows the result of a test performed with PNR nozzles on an heptane fire in a closed room with a volume of 75 cubic meters, ambient temperature is reduced and the fire is suppressed in 30 seconds.

Watermist Limits

The same characteristics which make it advantageous to use a watermist fire suppression systems, easily indicate their limits. Watermist systems can be regarded as poorly effective in such caese where

1
The ambient temperature is not raised consistently by the fire, for example a small fire in a wide room.

Since water droplets evaporation is required, if the fire is small enough not to be able to raise the ambient temperature significantly, not enough water vapour will be created to be active on the fire.

2
The fire is located in the open or inside a ventilated room, where fresh oxygen is readily available and reducing its partial pressure in the atmosphere is difficult or impossible.

NOZZLE TYPES

Watermist Definition

The term itself suggest a very fine water spray, whose drops remain suspended floating in the air and are easily moved around from the slightest air current.

In terms of size, such drops should have a diameter of about 20-30 micron, and produce an enormous exchange surface, allowing ultra fast evaporation.

Using drops with such dimensional range, however, proved not to be practical for several reasons.

In addition, an increasing number of recent investigations shows the tendency to use watermist systems at a very wide range of pressures (15 to 120 bar) and dropsizes larger than 100 micron for different applications.

It seems then reasonable to define a watermist system like a fire suppression system relying onto the water vapour effect for fire suppression, rather than a system that produces very fine droplets.

Watermist Nozzles

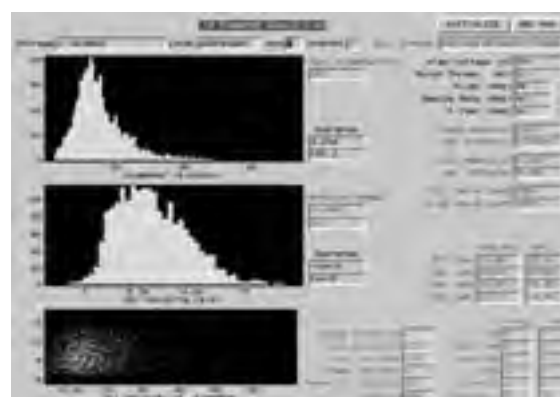
In producing fine and very fine water droplets several different types of nozzles can be used, both purely hydraulic and air assisted two-phase nozzles.

As one of the leading world manufacturers PNR masters the technology required to manufacture all of these nozzles, and to guarantee their performance for capacity, spray pattern, spray angle and droptime.

The picture besides shows a diagram obtained in our laboratories by means of a laser interferometer, providing such results as droplet size distribution, droplet velocity and cumulative size curve, these being the nozzle parameters required to design a watermist fire suppression system.

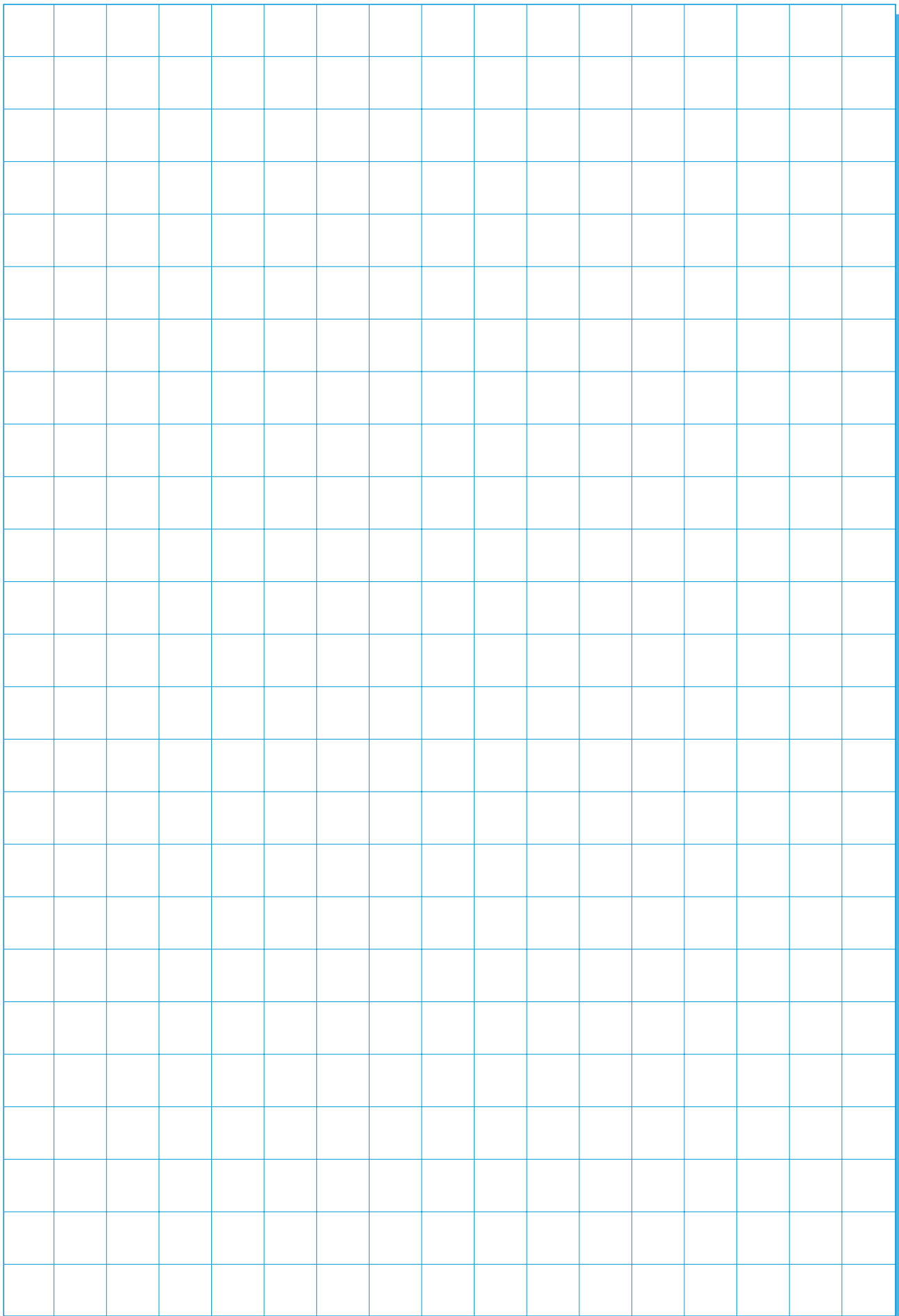
In view of the recent developments for system acceptance, where complete systems will be accepted after actual test according to existing norms has been successfully performed under control of an accepted laboratory, PNR has decided to work with selected customers developing nozzles under customer specifications.

PNR shall therefore deliver nozzles developed for single customers, with their own marking.



Watermist nozzles are checked for droplet size with a laser interphonometer

NOTE



LIST OF ABBREVIATIONS

AS	Foam agent suction inlet	--	H	Height	mm	PF	Nominal pressure	bar
CH	Wrench size	mm	H1, H2	Height	mm	Q	Capacity	l/min
DI	Inlet diameter	mm	HF	Thread length	mm	RE	Foam expansion ratio	--
D, D1	Diameter	mm	K	K factor	l/min	RF	Female thread	inch
DC	Body diameter	inch	IS	Foam inlet thread	inch	RG	Male thread	inch
DM	Minimum free diameter	mm	L	Length	mm	RS	Foam production	l/min
DO	Orifice diameter	mm	L1, L2	Length	mm	RU	UNI coupling size	--
DU	Outlet diameter	inch	LP	Max. allowable pressure	bar	S	Thickness	mm
DX	Largest outer diameter	mm	LQ	Maximum capacity	l/min	T	Throw	m
E	Inlet thread	inch	LT	Max. allowable temperature	°C	U	Outlet thread	inch
FE	Inlet flange	--	MF	Hose size	inch	W	Weight	kg
FS	Foam inlet flange	inch	NU	Number of nozzles	--	Z	Spray width	--
FU	Outlet flange	--	P	Depth	mm			

PRODUCT WARRANTY

PNR products will be replaced or repaired at the option of PNR, free of charges if defective in manufacture, labeling or packaging. The above warranty conditions will apply if notice of defect is received by PNR within 30 days from date of product installation or one year from date of shipment. The cost of above said replacement or repair shall be the exclusive remedy for any breach of any warranty, and PNR shall not be held liable for any damages due to personal injuries or commercial losses coming from product malfunction.

PRODUCT RETURN POLICY

Should you need to return PNR products, please note the following.

- 1 - Obtain from PNR a return authorization number.
- 2 - Products delivered in error by Pnr can be returned against credit for product and shipping cost.
- 3 - Products ordered to PNR incorrectly can be returned for credit at the following conditions:
 - 3.1 - Products must be in original conditions.
 - 3.2 - Customer is responsible for return of product.
 - 3.3 - A re-stocking charge of 15% applies to catalog products.

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Return of non standard products can only happen subject to a quotation being issued from PNR.

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磐亞噴霧系統(常州)有限公司

江蘇省常州市太湖東路9-4號 常州創意產業園D棟921室 郵編213022

Tel : 0519-89661671 Fax : 0519-89661673

Website : www.pnr-china.com

E-mail : sales@pnr-china.com

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