Flood Protection Barriers

Water Rails ®

DATA SHEETS

WATER RAILS®

DESCRIPTION

Water Rails® is versatile and flexible flood protection barrier for use on water levels between 30 cm and 2 meters (from 0.98 feet to 2.19 yards) over an unlimited distance.

It is used :

- for preventive action in case of a flood warning
- for remedial action through immersion and pumping of the area to be protected.

Equipped with standardized junctions, Water Rails® is quick to set-up and ensures a high level of protection and safety for traffic routes, industrial, historic or strategic sites.

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TECHNICAL CARACTERISTICS OF FABRICS:

The flood barrier Water Rails is made of a PVC fabric as follow in the data sheet:

Caracteristics	RCY 900 Fabric	Précontraint RCY 1 100 Fabric	Standards
Base fabric	Polyester 1100 dtex	Polyester 2x1100 dtex	--
Surfacic Mass of coating fabric	900 g/m²	1100 g/m²	DIN EN ISO 2286.2
Breaking Strengh (Chain/ Weft)	400/400 daN/5cm	420/400 daN/5cm	EN ISO 1421
Tear Strengh (Chain/ Weft)	55/50 daN	55/50 daN	DIN 53 363
Adhesion	10 daN/5cm	12 daN/5cm	EN ISO 2411
Extreme temperatures of use	-30°C / +70°C (*)	-30°C / +70°C (*)	DIN EN ISO 1876.2

(*) -22°F/-94°F

INSTALLATION

UNFOLDING ON THE SITE

First step consists on unfold and unroll flood barrier(s) to protect the site

Once flood barrier(s) is/are unfolded, you have to close valves and waterproof zips to start inflating.

INFLATING

Inflation of tubes is possible thanks to a blower.

Flood barriers are filled with air to make easier their installation in a view to have a best adhesion on the ground. Protection will be reinforced.

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POSITION OF THE BI-TUBES

Both tubes are linked together. The lacing up of tubes has to be made from the middle to the extremities of both tubes.

They have to be firmly tight before the reception of the monotube.

INSATALLATION OF CUFFS (CONNECTION)

The cuffs are used to link two lengths of flood barriers, while keeping both the sealing and the protection at this junction.

WATER FILLING

Water filling is possible thanks to junctions Storz or Guillemin (1/2 symmetrical junction).

During the filling, air is ejected by an air overflow. Flood barriers keep their form throughout the process.

When flood barriers are filled of water, the excess is expelled through the overflow.

EMPTYING AND STORAGE

The emptying process is quick and is possible thanks to waterproof zips.

Emptying has to be coupled with a complete drying of tubes before storage in a view to extend their duration.

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VOLUMS OF FOLDED BARRIERS, WEIGHT OF VACUUM LINE AND WATER FILLINGS (weight given for the RCY 900 fabric)

MONOTUBE Ø400 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by tube(m3)
lg 5 m	0.03	8	0.63
lg 10 m	0.05	14	1.26
lg 15 m	0.07	20	1.88
lg 20 m	0.10	26	2.51
lg 30 m	0.15	39	3.77

BI-TUBE Ø400 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by
lg 5 m	0.06	19	1.26
lg 10 m	0.12	33	2.51
lg 15 m	0.19	49	3.77
lg 20 m	0.25	64	5.03
lg 30 m	0.37	94	7.54

MONOTUBE Ø600 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by tube(m3)
lg 5 m	0.04	11	1.41
lg 10 m	0.08	20	2.83
lg 15 m	0.11	29	4.24
lg 20 m	0.15	38	5.65
lg 30 m	0.22	56	8.48

BI-TUBE Ø600 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by
lg 5 m	0.09	26	2.83
lg 10 m	0.17	47	5.65
lg 15 m	0.26	69	8.48
lg 20 m	0.34	90	11.31
lg 30 m	0.51	133	16.96

MONOTUBE Ø800 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by tube(m3)
lg 5 m	0.05	14	2.51
lg 10 m	0.10	26	5.03
lg 15 m	0.15	38	7.54
lg 20 m	0.20	49	10.05
lg 30 m	0.29	73	15.08

BI-TUBE Ø800 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by
lg 5 m	0.12	33	5.03
lg 10 m	0.22	60	10.05
lg 15 m	0.33	89	15.08
lg 20 m	0.44	116	20.11
lg 30 m	0.66	172	30.16

BI-TUBE Ø1000 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by
lg 10 m	0.33	67	15.71
lg 15 m	0.49	98	23.56
lg 20 m	0.65	128	31.42

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VOLUMES OF FOLDED BARRIERS, WEIGHT OF VACUUM LINE AND WATER FILLINGS (weight given for the RCY 900 fabric)

UNIVERSEL Ø400 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by tube(m3)
lg 5 m	0,04	10	0,63
lg 10 m	0,07	19	1,26
lg 15 m	0,11	28	1,88
lg 20 m	0,14	37	2,51
lg 30 m	0,21	54	3,77

UNIVERSEL Ø600 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by tube(m3)
lg 5 m	0,05	14	1,41
lg 10 m	0,10	25	2,83
lg 15 m	0,14	37	4,24
lg 20 m	0,19	48	5,65
lg 30 m	0,29	72	8,48

UNIVERSEL Ø800 mm

Lenght	Volume (m3)	Weight (kg)	Water volume by tube(m3)
lg 5 m	0,06	17	2,51
lg 10 m	0,12	31	5,03
lg 15 m	0,18	46	7,54
lg 20 m	0,24	60	10,05
lg 30 m	0,36	89	15,08

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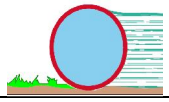
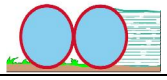
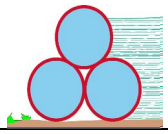
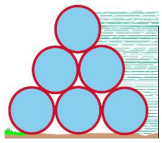
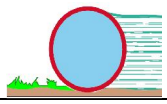
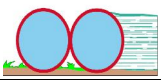
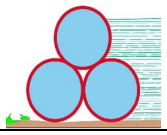
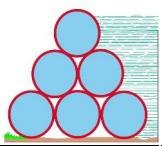
TABLES OF DIGITUSES

FLOOD BARRIER Ø400 mm

Position	Diameter of tubes Ø(mm)	Resistance height H (mm)	Mass of the water-filled tubes (kg/ml)	Push with a flow velocity V = 0 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units	Push with a flow velocity V = 1 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units
 1 monotube or 1 universal	400	300	125	45	2,7	70	1,78
 1 bi-tube or 2 universals	400	300	250	45	5,4	70	3,57
 1 bi-tube and 1 monotube or 3 universals	400	600	375	215	1,75	265	1,41
 2 bi-tubes and 3 monotubes or 6 universals	400	900	750	405	1,85	478	1,57

FLOOD BARRIERS Ø600 mm

Position	Diameter of tubes Ø(mm)	Resistance height H (mm)	Mass of the water-filled tubes (kg/ml)	Push with a flow velocity V = 0 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units	Push with a flow velocity V = 1 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units
 1 monotube or 1 universal	600	450	265	100	2,65	140	1,9
 1 bi-tube or 2 universals	600	450	530	100	5,3	140	3,8
 1 bi-tube and 1 monotube or 3 universals	600	900	795	410	1,94	495	1,6
 2 bi-tubes and 3 monotubes or 6 universals	600	1350	1600	910	1,76	1020	1,57

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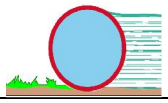
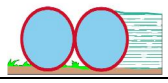
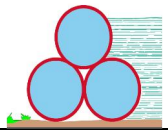
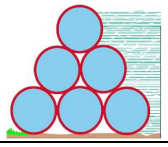
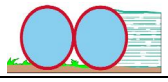
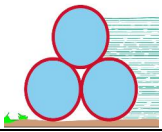
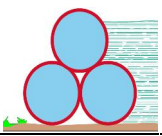
FLOOD BARRIERS Ø800 mm

Position	Diameter of tubes Ø(mm)	Resistance height H (mm)	Mass of the water-filled tubes (kg/ml)	Push with a flow velocity V = 0 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units	Push with a flow velocity V = 1 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units
 1 monotube or 1 universal	800	620	460	200	2,3	260	1,77
 1 bi-tube or 2 universals	800	620	920	200	4,6	260	3,85
 1 bi-tube and 1 monotube or 3 universals	800	1200	1380	720	1,92	820	1,68
 2 bi-tubes and 3 monotubes or 6 universals	800	1800	2760	1620	1,7	1770	1,56

FLOOD BARRIERS Ø1000 mm

Position	Diameter of tubes Ø(mm)	Resistance height H (mm)	Mass of the water-filled tubes (kg/ml)	Push with a flow velocity V = 0 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units	Push with a flow velocity V = 1 m/s (kg/ml)	Security coefficient (tubes' masses / push) without units
 2 bi-tubes	1000	800	1390	320	4,3	390	3,5
 1 bi-tube Ø1000 with 1 mono Ø600	1000 +600	1250	1600	800	2	920	1,74
 1 bi-tube Ø1000 with 1 mono Ø800	1000 +800	1400	1900	1000	1,9	1120	1,7

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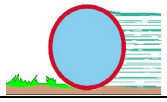
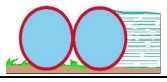
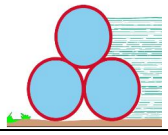
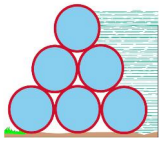
FLOOD BARRIERS' INSTALLATION DURATION

Installation duration of 100 meters (109.36 yards) of linear flood barriers using elements of 20 meters (21.87 yards) **

Position	Ø400 mm with 2 operators	Ø600 mm with 2 operators	Ø800 mm with 2 operators	Ø1000 mm with 3 operators
 1 monotube	30 min	50 min	1 h 20	--
 1 bi-tube or 2 universals	1 h	1 h 30	2 h 30	3 h 30
 1 bi-tube and 1 monotube or 3 universals	1 h 30	2 h 30	4 h	5 h 30
 2 bi-tubes and 3 monotubes or 6 universals	3 h	5 h	8 h 30	--

* * Installation duration are indicative datas, it is calculated for a simultaneous filling of two tubes with a pump of 45m3/hour.

With two pumps and 4 to 6 people (depending of the diameter of tubes) this duration is therefore given for 200 meter (218.72 yards) of linear flood barriers.

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