

## Overview leakage rates

### Tightness standards

#### Waste water standard DIN 19569, part 4

##### Allowable leakage rate

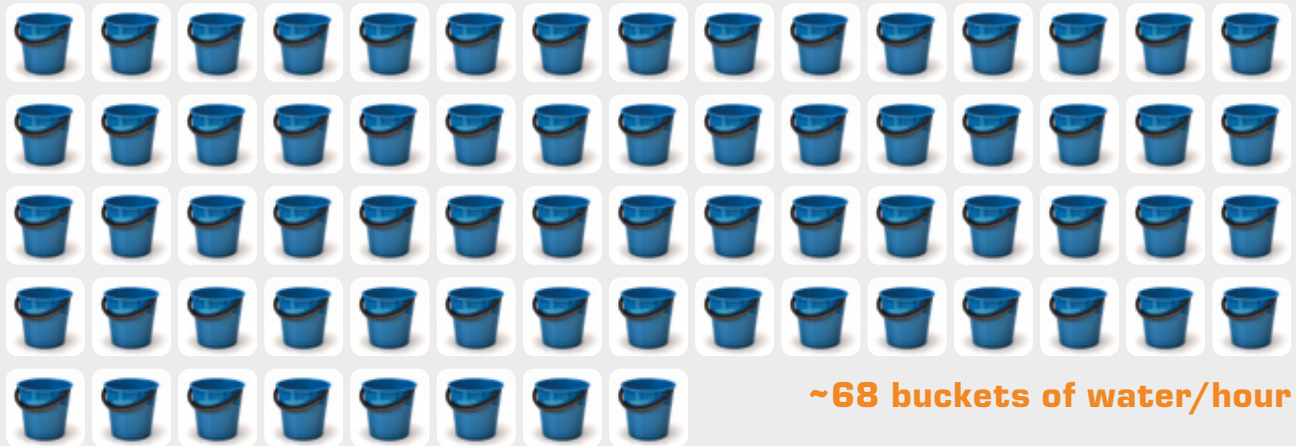
according to table 1, class 4 for penstocks:

Max. allowable leakage rate = 0,02–0,05 l/ms:

Example DN 1200:

72 to 180 litres per hour per meter sealing line

max.  $180 \times 3,770 \text{ m} = 678,6 \text{ l/h}$



**~68 buckets of water/hour**

Off-seating head conditions 1357 l/h allowable!

#### Drinking water standard EN DIN 12266-2, Table A.5, C for type SAFOX® ≥6 m wc leak proof

Leak proof:

$= 0,03 \times \text{DN mm}^3/\text{second} = 0,000108 \times \text{DN l/h}$

Example DN 1200:

max.  $(1200 \times 0,000108) = 0,1296 \text{ l/h}$



**~4 shot glasses/hour**

# Penstock mounting dimensions

SAFOX®							
Nominal size from (DN, mm)	Nominal size to (DN, mm)	Thread (mm)	Drill diameter (mm)	Drill depth (mm)	Length anchor rod (mm)	Min. wall thickness (mm)	Torque (Nm)
150	600	M10	13	95	130	130	20
700	1200	M16	19	130	190	170	80
1400	1600	M20	25	175	260	220	150
1800	2200	M24	30	215	300	270	200
2400	3000	M30	35	280	380	340	300

SAFOX® Q							
Nominal size from (W × H, mm)	Nominal size to (W × H, mm)	Thread (mm)	Drill diameter (mm)	Drill depth (mm)	Length anchor rod (mm)	Min. wall thickness (mm)	Torque (Nm)
150 × 150	600 × 600	M10	13	95	130	130	20
700 × 700	1200 × 1200	M16	19	130	190	170	80
1400 × 1400	1600 × 1600	M20	25	175	260	220	150
1700 × 1700	2000 × 2000	M30	35	280	380	340	300

CP4							
Nominal size from (W × H, mm)	Nominal size to (W × H, mm)	Thread (mm)	Drill diameter (mm)	Drill depth (mm)	Length anchor rod (mm)	Min. wall thickness (mm)	Torque (Nm)
150 × 150	1600 × 1600	M10	13	95	130	130	20

XL4							
Nom. size from 1200 × 1200 mm	Nom. size to 1600 × 1600 mm	Thread (mm)	Drill diameter (mm)	Drill depth (mm)	Length anchor rod (mm)	Min. wall thickness (mm)	Torque (Nm)
Fixing of frame and bottom		M12	15	115	160	150	40
Lateral fixing		M20	26	175	260	220	150
Fixing of upper sealing line		M8	13	85	90	100	10



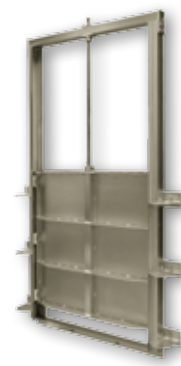
SAFOX®



SAFOX® Q



CP4



XL4



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