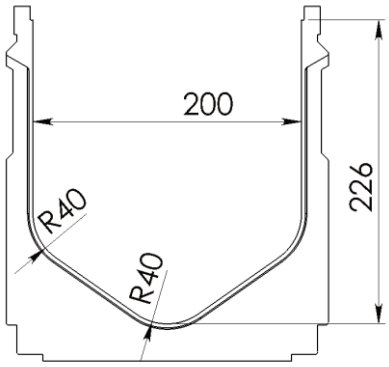
Channel Capacity

$$Q = \frac{1}{n} \times \frac{A^{5/3}}{P^{2/3}} \times S^{0,5}$$



Q= The total discharge (m^3 /s)
A=The Total area (section wise) of the channel
P = Wetted perimeter of the channel
S is the longitudinal slope of the channel
n = The Manning roughness coefficient.
Assumptions: 100% filled, clean, new channels, calculated with a 5‰ slope.

Note that this is channel capacities. If mounted with a grate or a reduced outlet, these can be reducing capacity, depending on their shape and size.

Example:

A20-15.0:

Width = 200 mm, R=40mm, Internal height total = 226 mm, n = 0,007 gives the below results:

$$Q = \frac{1}{0,007} \times \frac{(0.03972505)^{\frac{5}{3}}}{(0.03972505)^{\frac{2}{3}}} \times 0,005^{0,5} \approx 0,4012836 \text{m}^3/\text{s}$$

Max. Outlet is <u>401 l/s</u>