

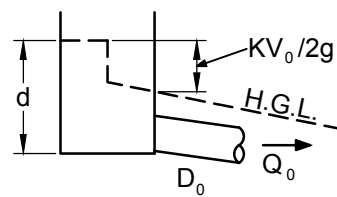
**NOTATION:**

**SYMBOLS**

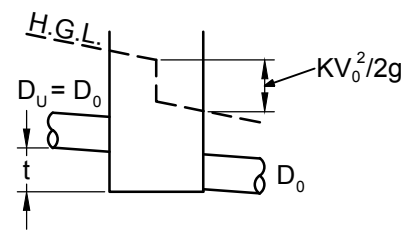
- Q FLOW RATE
- D DIAMETER
- d DEPTH
- V VELOCITY
- K HEADLOSS COEFFICIENT
- H STATIC HEADLOSS =  $KV_0^2/2g$
- t PIPE DROP
- G ACCELERATION DUE TO GRAVITY (9.8m/s<sup>2</sup>)

**SUBSCRIPTS**

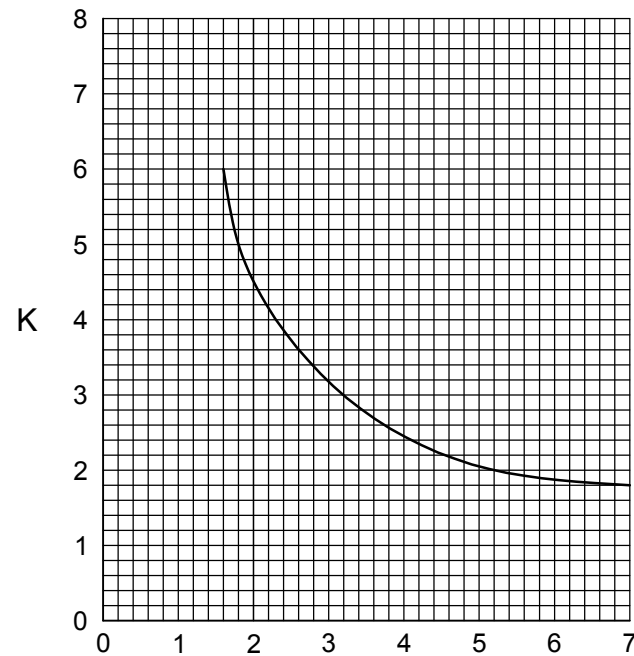
- O OUTLET
- U UPSTREAM
- L LATERAL
- G GRATING OR KERB INLET
- hv HIGHER VELOCITY
- lv LOWER VELOCITY
- f FAR
- sj STRAIGHT JUNCTION



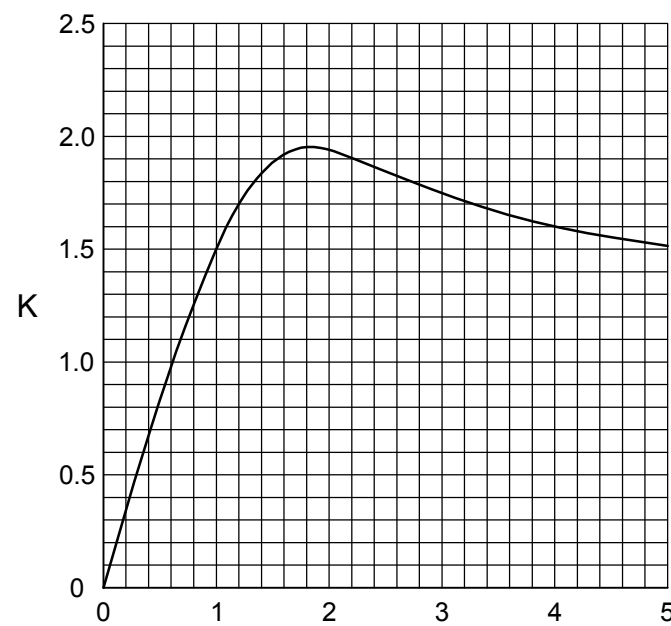
**GRATE OR KERB INLET**



**STRAIGHT JUNCTION WITH DROP**



RELATIVE DEPTH OF WATER IN INLET  $d/D_0$



$t / D_0$

**NOTES**

1. INFORMATION FROM DEPARTMENT OF HOUSING MANUAL 1987.
2. REFER TO ARMIDALE REGIONAL COUNCIL'S ENGINEERING CODE STORMWATER DRAINAGE DESIGN HANDBOOK FOR ADDITIONAL HEADLOSS DATA.

**TWO PIPE JUNCTIONS WITHOUT DROP**

$D_U/D_0$	BRANCH POINT NOT ON DOWNSTREAM FACE			BRANCH POINT ON DOWNSTREAM FACE			WITH USE OF VERTICAL DEFLECTORS	
	$\theta$	45°	67.5°	90°	45°	22.5°	0°	90°
0.7	1.5	1.7	2.05	-0.9	-1.6	-2.0	0.6	0.4
0.8	1.65	1.8	2.1	0	-0.6	-1.0	0.7	0.5
0.9	1.75	1.9	2.15	0.45	0	-0.25	0.9	0.7
1.0	1.85	2.0	2.2	0.6	0.3	0.2	1.1	0.9

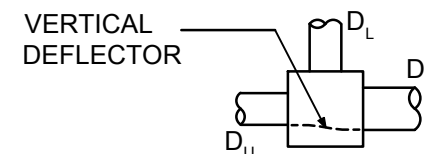
FOR GRATES  $\theta=22.5^\circ$  TO  $90^\circ$  ADD  $Q_g/Q_0$  IF  $d/D_0 > 2$   
 ADD  $2Q_g/Q_0$  IF  $d/D_0 < 2$   
 $\theta=0^\circ$  ADD  $6Q_g/Q_0$

**MITRE BENDS (NO PITS)**

ANGLE	0°	22.5°	45°	60°	90°
K	0	0.1	0.29	0.49	1.1

**THREE PIPE JUNCTIONS**

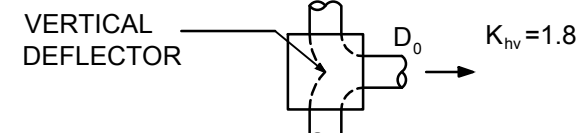
**STRAIGHT JUNCTION WITH 90° LATERAL**



$Q_U/Q_0$	0.3	0.6	0.9	1.0
$D_0 = D_U$ NO DEFLECTOR: $K_U = K_L = 1.8$	1.3	0.5	0.2	
WITH DEFLECTOR: $K_U = K_L = 1.4$	1.0	0.4	0.2	

IF  $D_0 > D_U$ : ADD  $\frac{1}{2}(Q_U/Q_0)(K_{U,S})$  (ACTUALLY REDUCES K)  
 WITH GRATE: ADD  $Q_g/Q_0$  IF  $d/D_0 > 2$   
 ADD  $2Q_g/Q_0$  IF  $d/D_0 < 2$

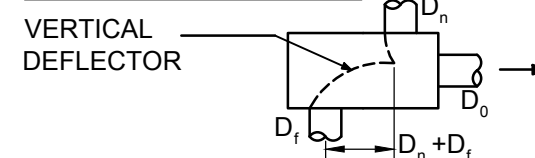
**OPPOSED INLETS**



$Q_{hv}/Q_0$	0.3	0.6	0.9
$D_0 = D_{hv}$ : $K_{lv} =$	1.5	2.0	3.0

WITH GRATE: NO CHANGE  
 WITH DEFLECTOR: SUBTRACT 0.3, AND  $K \neq 2$

**OPPOSED OFFSET INLETS**



$Q_n$  IS  $Q_{hv}$  :  $K_n = 1.6$ ,  $K_f = 1.9$   
 $Q_n$  IS  $Q_{lv}$  :  $K_n = 1.6$ ,  $K_f = 2.4$   
 WITH GRATE: ADD 0.2  
 WITH DEFLECTOR SUBTRACT 0.3

<b>Armidale</b> Dept of Public Regional Council <b>Infrastructure</b>	SCALES NTS	APPROVED D. MAUNDER MANAGER ENGINEERING AND STANDARDS SUPPORT 31/08/2016 DATE	SHEET 1 OF 1
	<b>PIT STATIC HEADLOSS COEFFICIENTS</b>	SURV	AS SHEET SIZE <b>A3</b>
DRWN ST			AMDT No
DES			
	CHKD MW	CADFILE 080-046.dwg	DATE 31/08/2016