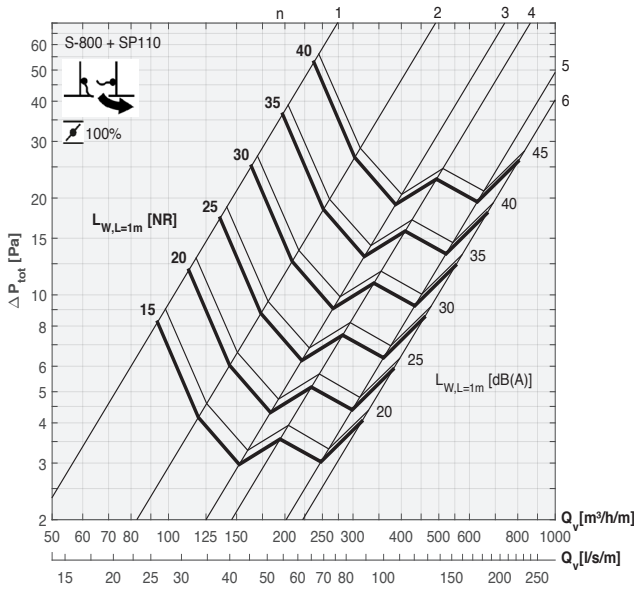
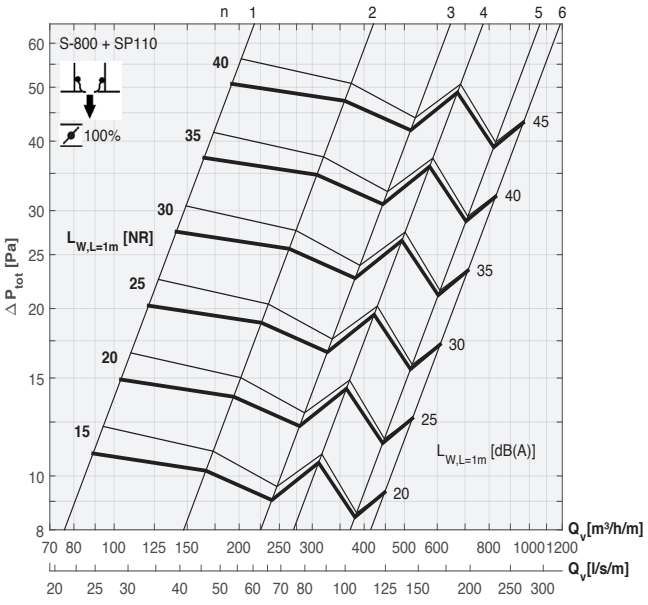
SELECTION

SUPPLY

SOUND POWER, PRESSURE DROP

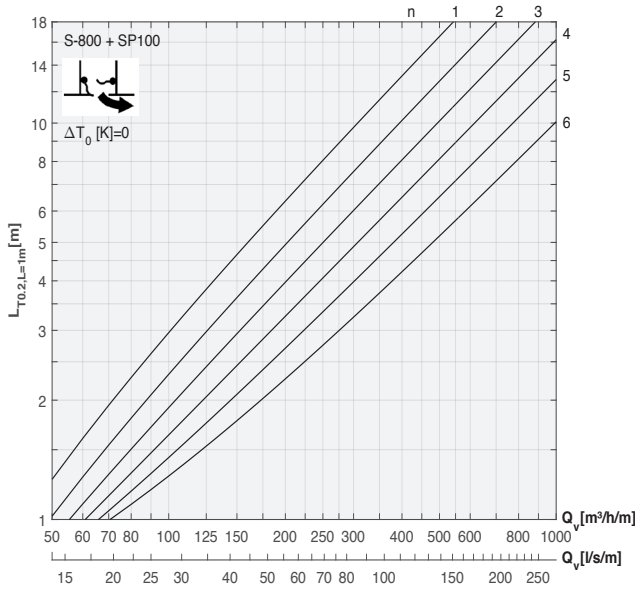
DIFFUSER LENGTH L[m]=1

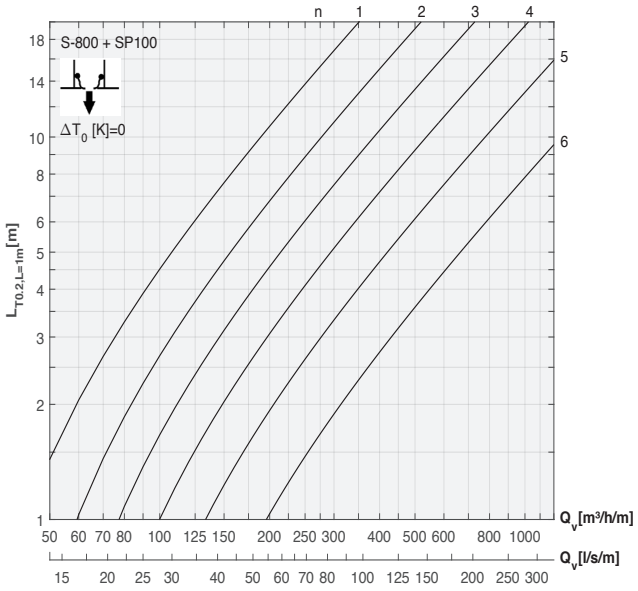




THROW

DIFFUSER LENGTH L[m]=1



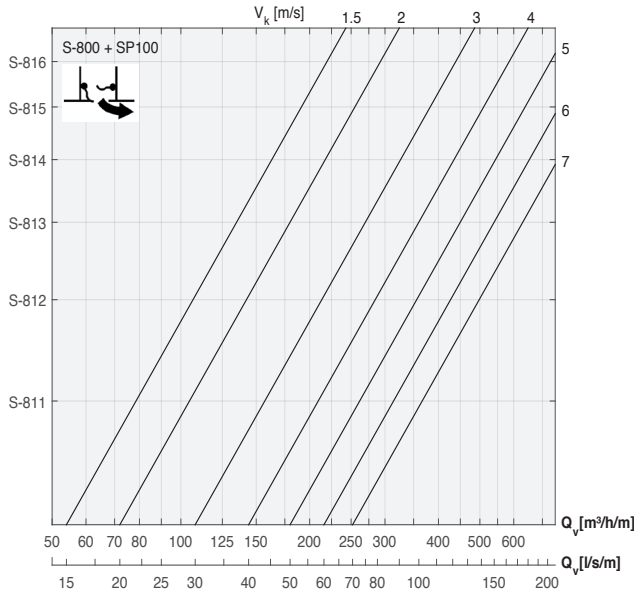


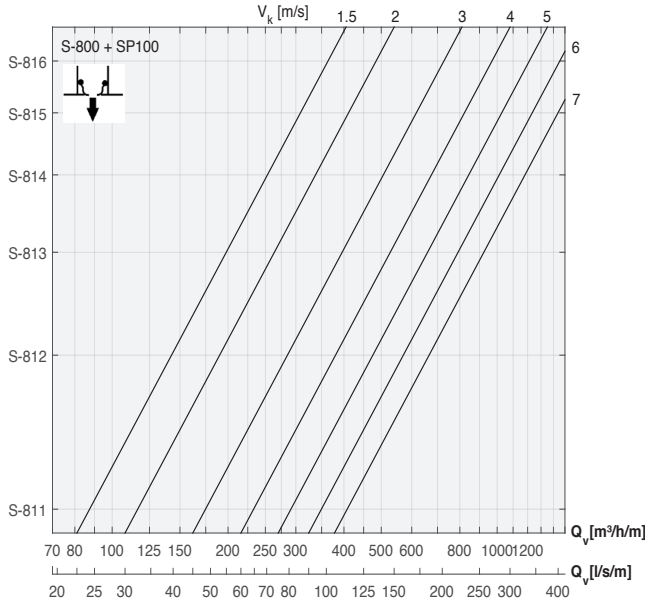
To calculate the airflow behavior in rooms as well as performance data such as sound level and pressure loss, please consult our **FACT selection software.**

SELECTION

AIR DISCHARGE VELOCITY,BASED ON A_K

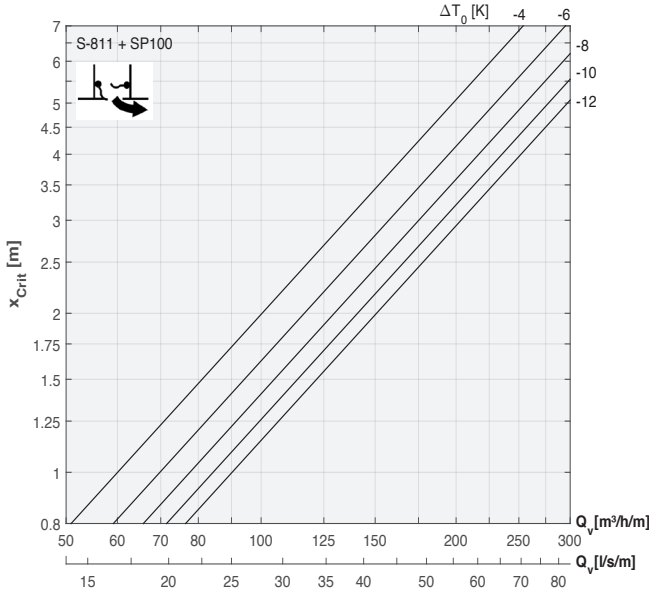
DIFFUSER LENGTH L[m]=1

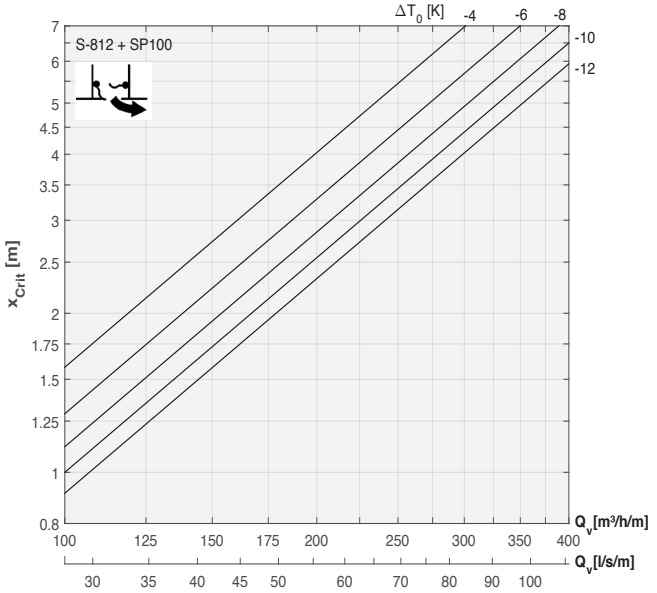




CRITICAL DISTANCE

DIFFUSER LENGTH L[m]=1





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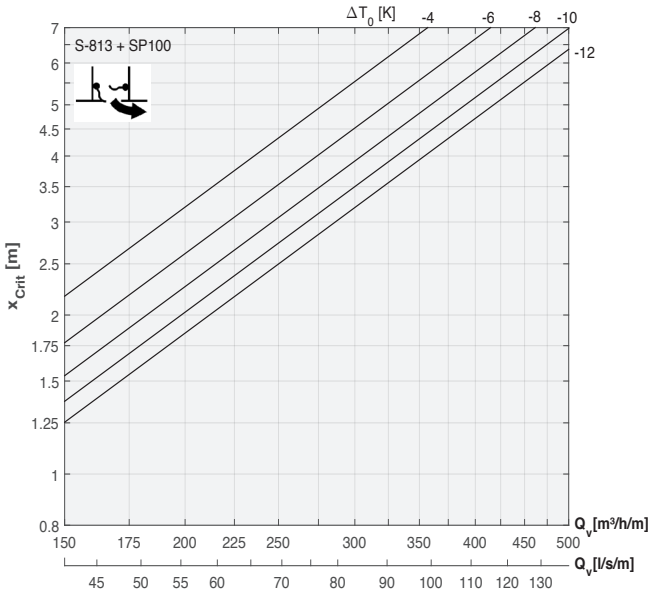
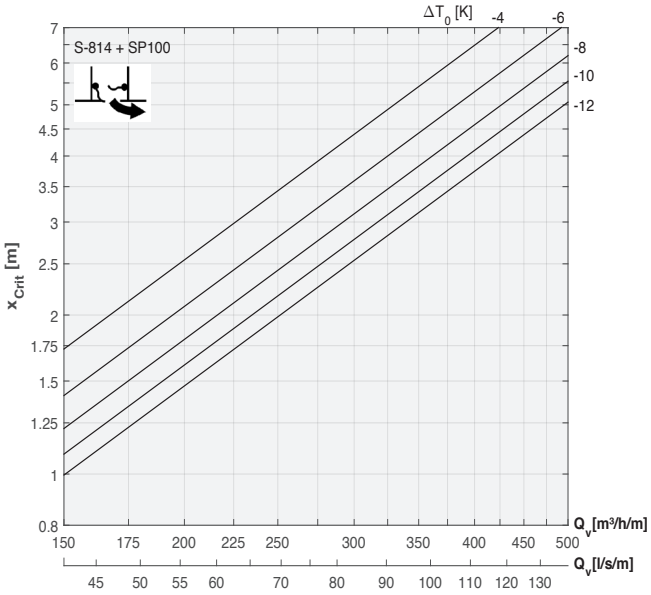
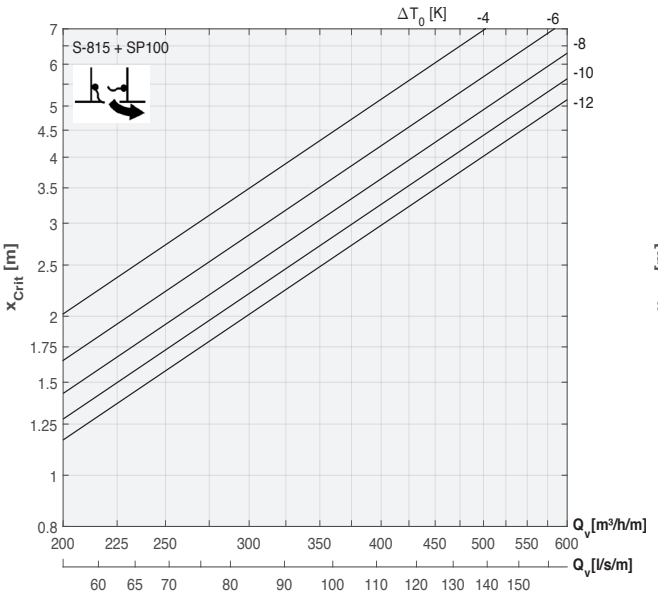
SELECTION

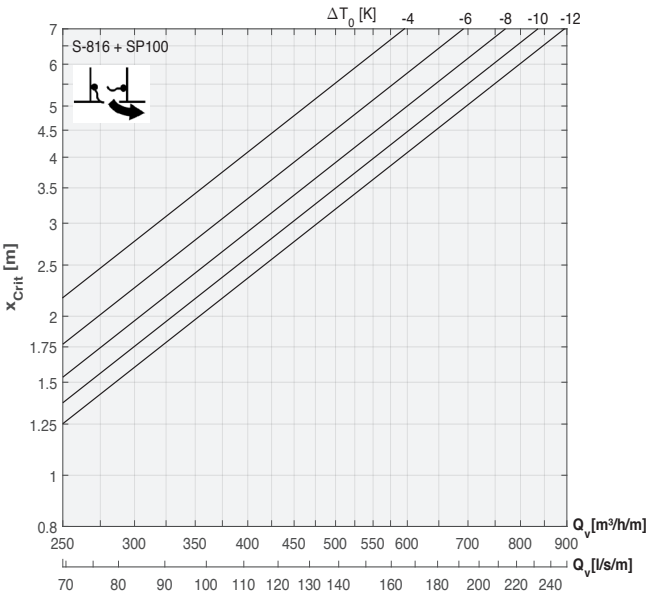
CRITICAL DISTANCE

DIFFUSER LENGTH L [m]=1









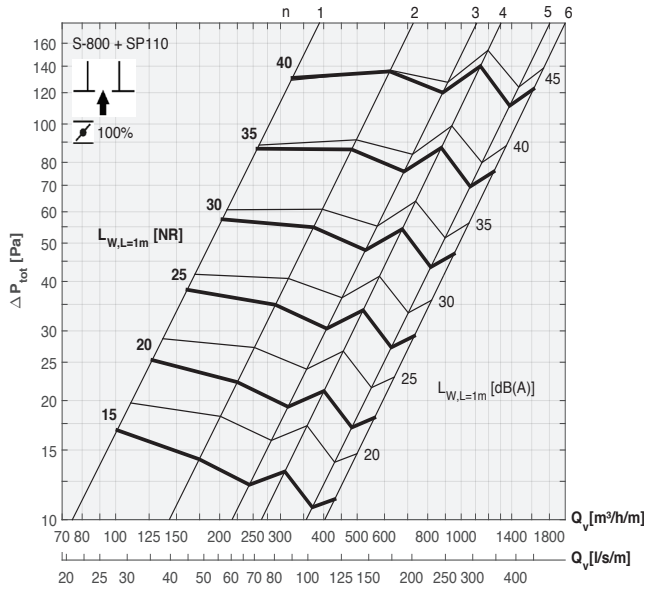
To calculate the airflow behavior in rooms as well as performance data such as sound level and pressure loss, please consult our **FACT selection software.**

SELECTION

EXHAUST

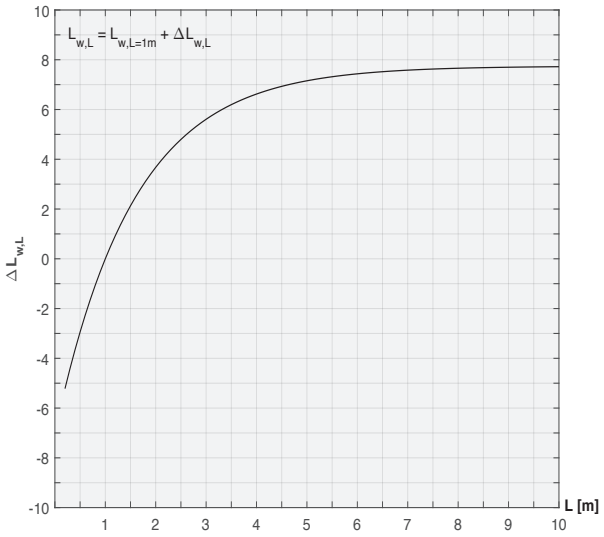
SOUND POWER, PRESSURE DROP

DIFFUSER LENGTH L [m]=1

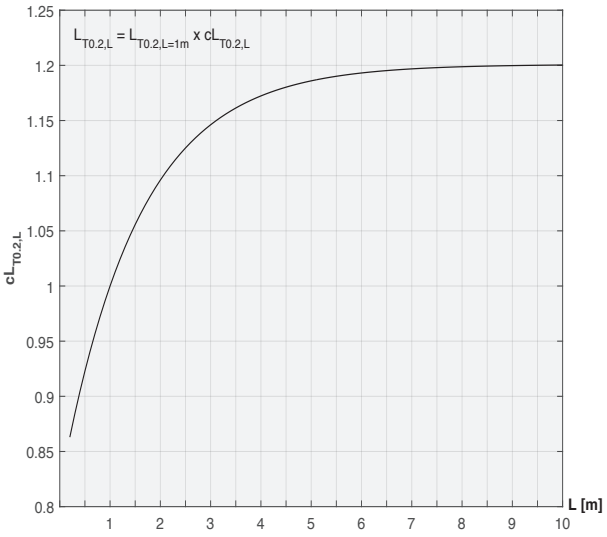


CORRECTION FACTORS SUPPLY/EXHAUST

SOUND CORRECTION FOR ARBITRARY DIFFUSER LENGTH L



THROW CORRECTION FOR ARBITRARY DIFFUSER LENGTH L



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SELECTION

EFFECTIVE AIR DISCHARGE AREA

DIFFUSER LENGTH L [m]=1

A_k [m²/m]	S-811	S-812	S-813	S-814	S-815	S-816
	0,015	0,020	0,025	0,030	0,035	0,041
	0,016	0,026	0,037	0,047	0,057	0,067

EXAMPLE SELECTION

Known data		
supply air flow rate, Q_v	[m³/h]	400
supply air temperature, T_0	[°C]	18
room temperature, T_a	[°C]	26
max. diffuser length, L	[mm]	2000
max. allowable sound pressure, L_p	[dB(A)]	35
room sound attenuation, ΔL_r	[dB(A)]	8
max. allowable velocity in occupied zone	[m/s]	0,2

Selection from graphs		
flow rate for diffuser of L = 1000 mm	[m³/h/m]	200
Sound		
requested max. sound power, $L_{w,L}$ (= L_p + ΔL_r)	[dB(A)]	43
sound power correction for diffuser length L, $\Delta L_{w,L}$	[dB(A)]	3,7
requested max. sound power for L= 1000 mm , $L_{w,L=1m}$	[dB(A)]	39,3
proposal of slot number, n	[-]	2
Pressure drop		
static pressure loss, ΔP_s	[Pa]	7
Velocity		
throw correction factor, $cL_{T0.2,L}$	[-]	1,096
throw for diffuser of L = 1000 mm, $L_{T0.2,L=1m}$	[m]	4,9
throw for diffuser of L = 2000 mm, $L_{T0.2,L}$ (= $L_{T0.2,L=1m}$ x $cL_{T0.2,L}$)	[m]	5,4
air discharge surface area A_k (= $A_{k,L=1m}$ x L/1000)	[m²]	0,00395
discharge velocity V_k, Q_v/A_k (or by graph)	[m/s]	2,8
critical distance @ ΔT_0 = T_a - T_0, x_{crit}	[m]	3,1

LEGEND

Symbol	Unit	
A_k	[m²]	effective air discharge surface area (measured)
$cL_{T0.2,L}$	[m]	correction factor for the distance at which the jet centreline velocity decreases to 0.2 m/s for a diffuser or diffuser with length L
L	[m]	length of diffuser or grille
$L_{W,L}$	[NR] / [dB(A)]	sound power for a diffuser or diffuser with length L
$\Delta L_{W,L}$	[NR] / [dB(A)]	sound power correction for a diffuser or diffuser with length L relative to the length of 1 m
$L_{T0.2,L}$	[m]	distance at which the jet centreline velocity decreases to 0.2 m/s for a diffuser or diffuser with length L
n	[-]	number of slots
ΔP_{tot}	[Pa]	total pressure loss
Q_v	[m³/h] / [l/s]	airflow
ΔT_0	[K]	temperature difference between ambiant air and supply air
V_k	[m/s]	air discharge velocity based on A_k
x	[m]	distance measured from the diffuser/diffuser's centre
	[%]	valve position (100% = open)

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