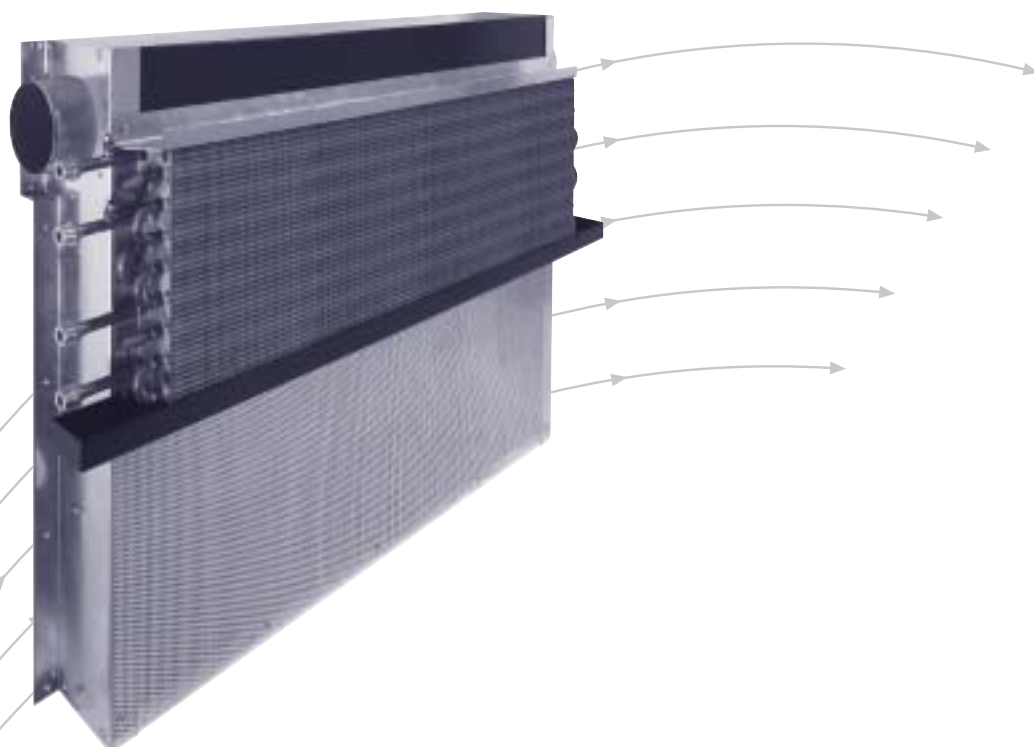


Induction Type Displacement Flow Diffuser

- Type QLI
- With Water Coil



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Air flow pattern: Cooling operation



Air flow pattern: Heating operation without primary air



Air flow pattern: Heating operation with primary air

Description

QLI induction type displacement flow diffusers with water coil are used in air/water air-conditioning systems. They combine the advantages of low-turbulence displacement flow diffusers with the energy benefits of using water as the main cooling medium.

The primary fresh air volume flow rate required is supplied through a circular duct containing nozzles. The secondary air induced into the unit from the room passes through a water coil where it is either cooled or heated.

In the mixing zone of the QLI the secondary air is mixed with the primary air and discharged to the room through a perforated plate and then a grille located in the covering case.

Caution!

For units without condensate tray the chilled water flow temperature must be selected such that it never falls below room dewpoint.

Because of its compact design the induction type displacement flow diffuser QLI is particularly suitable for mounting on perimeter walls under windows with a suitable covering case. The diffusers can be used in new buildings and are also a preferred option in refurbishment projects.

The covering case can be designed to meet the requirements of the interior decor, but the minimum distances as shown in the sketches on page 4, must be complied with.

As any additional pressure drop can reduce the induction, the grille installed in the covering case must have minimum dimensions such that the free area is $\geq 50\%$.

Induction grille top:	W = 150 mm
Induction grille side-mounted:	H = 250 mm
Discharge grille:	H = 350 mm

Constuction · Dimensions · Materials

Construction

The induction type displacement flow diffuser QLI with water coil consists of the housing incorporating a discharge perforated plate with circular holes and a primary air duct with integral discharge nozzles (different nozzle sizes are available) and the primary air spigot.

The integral water coil can be a 2-pipe variant for connection to the chilled or hot water supply or a 4-pipe variant for connection to the chilled and hot water supply. On request, the units can be delivered with condensate tray, wall mounting bracket and/or floor fixing bracket.

Materials

Housing and discharge perforated plate are made of galvanised steel sheet, the primary air duct with integral discharge nozzles is made of steel sheet.

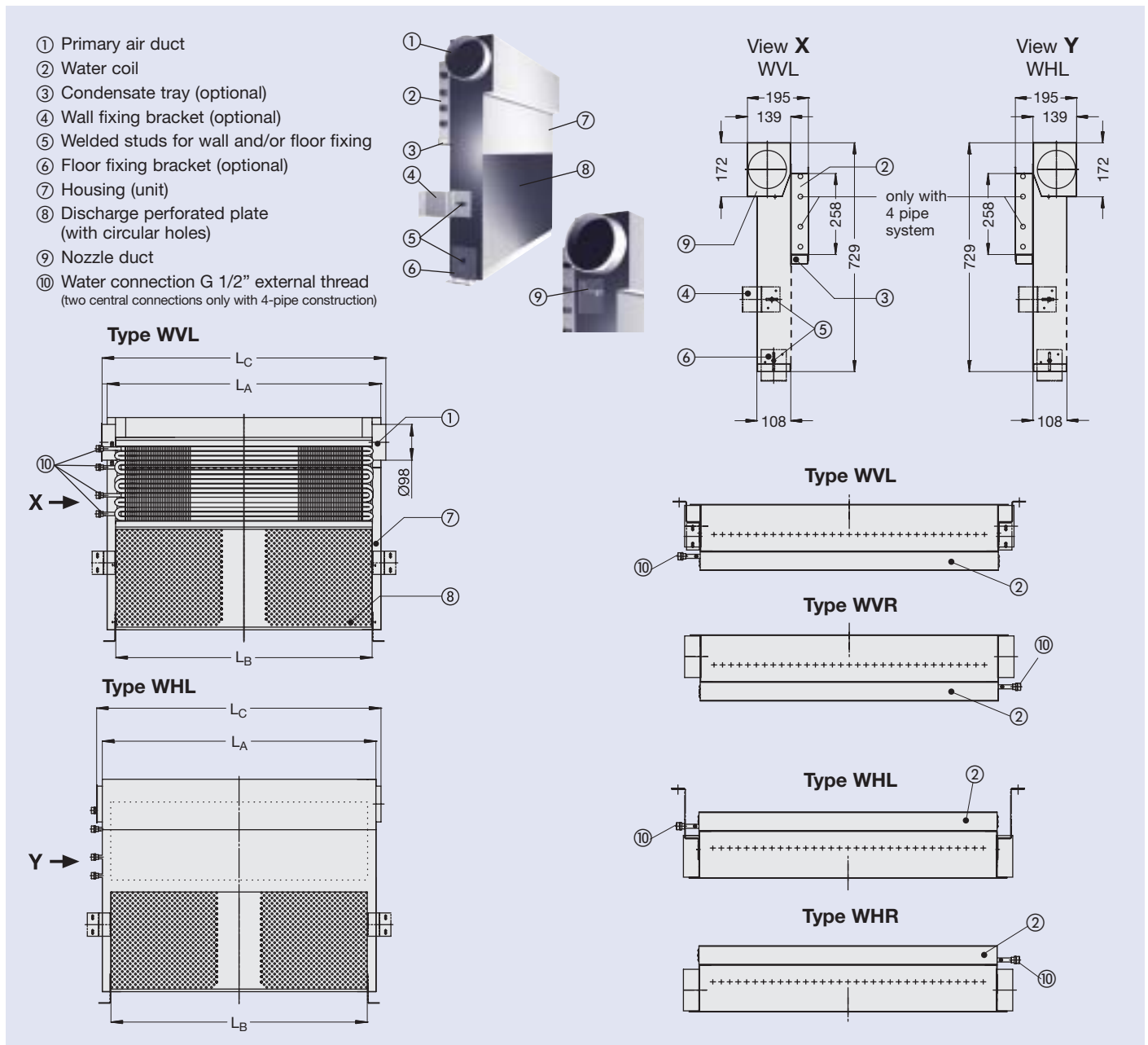
The standard finish of the housing is galvanised, on request it can be powder-coated to RAL 9005 (gloss level 70 %).

The primary air duct is generally painted black RAL 9005.

The coil consists of copper pipes with formed aluminium fins.

Dimensions in mm			
$L_N^{1)}$	L_A	L_B	L_C
900	940	883	975
1200	1240	1183	1275
1500	1540	1483	1575

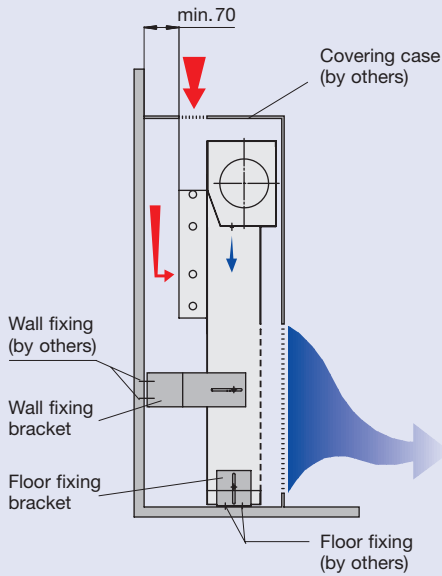
1) L_N = Nominal length water coil



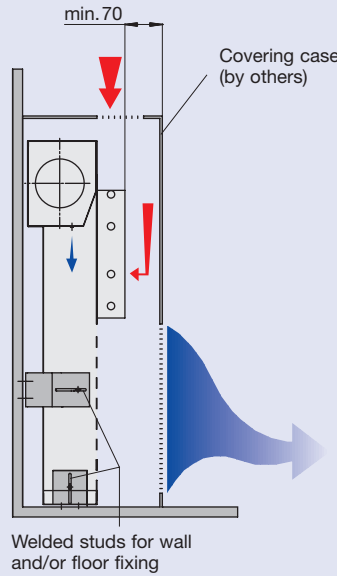
Installation

Installation options

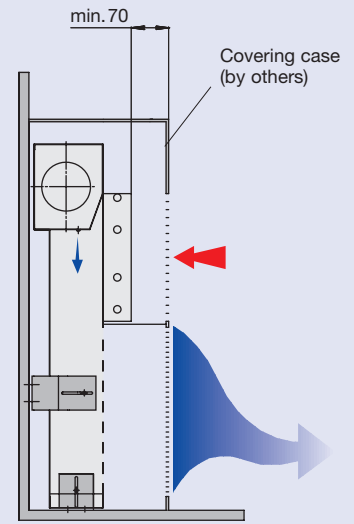
Type WHR/L
(Water connection right or left)



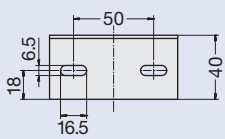
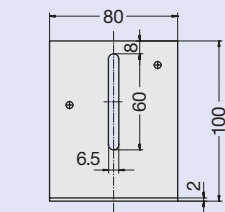
Type WVR/L
(Water connection right or left)



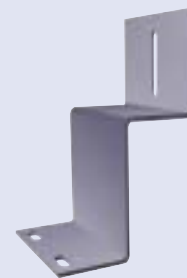
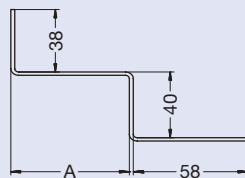
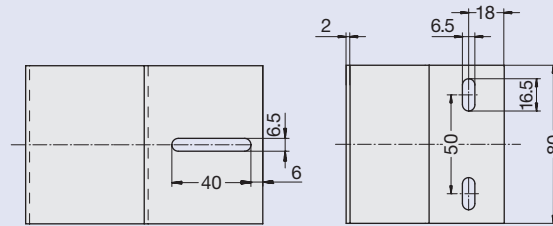
Type WVR/L
(Water connection right or left)



Floor fixing



Wall fixing

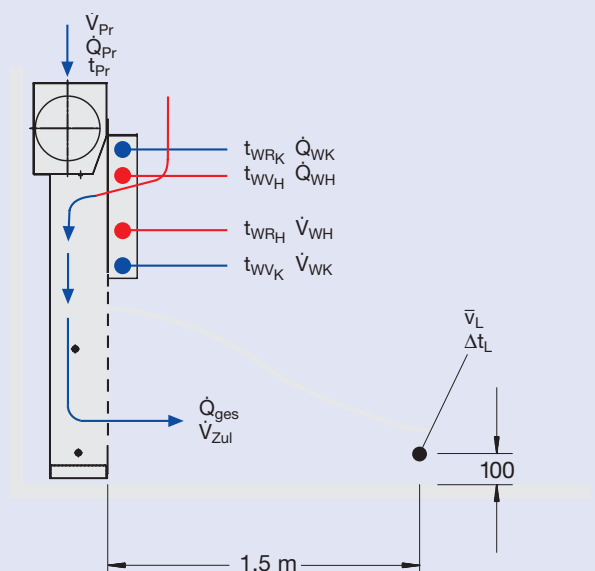


Type	A
WVR/L	60
WHR/L	146.5

On request, 2 wall and/or floor fixing brackets and screws can be supplied.

Nomenclature

Δt_L	in K:	Temp. diff. between room air t_R and core t_L
Δt_{Pr}	in K:	Temp. diff. between room air and primary air
Δt_W	in K:	Temp. diff. between flow and return water
Δt_{RWV}	in K:	Temp. diff. between room air and water flow temperature
Δp_t	in Pa:	Primary air pressure drop
Δp_W	in kPa:	Water pressure drop
t_R	in °C:	Room temperature
t_{WVK}	in °C:	Water flow temperature – cooling
t_{WRK}	in °C:	Water return temperature – cooling
t_{WVH}	in °C:	Water flow temperature – heating
t_{WRH}	in °C:	Water return temperature – heating
t_{Pr}	in °C:	Primary air temperature
F_W	:	Correction factor water volume flow rate
\dot{Q}_{WH}	in Watt:	Water heating capacity
\dot{Q}_{WK}	in Watt:	Water cooling capacity
\dot{Q}_{ges}	in Watt:	Total cooling/heating capacity $\dot{Q}_{Pr} + \dot{Q}_S$
\dot{Q}_{Pr}	in Watt:	Primary air cooling/heating capacity
\dot{Q}_S	in Watt:	Water side thermal capacity (for cooling $\dot{Q}_S = \dot{Q}_{WK}$, for heating $\dot{Q}_S = \dot{Q}_{WH}$)
\dot{V}_{WK}	in l/h:	Water volume flow rate – cooling
\dot{V}_{WH}	in l/h:	Water volume flow rate – heating
\dot{V}_{Zul}	in l/s:	Supply air volume flow rate to space
\dot{V}_{Zul}	in m³/h:	Supply air volume flow rate to space
\dot{V}_{Pr}	in l/s:	Primary air volume flow rate
\bar{v}_L	in m/s:	Max. time average air velocity
L_{WA}	in dB(A):	A-weighted sound power level
L_N	in mm:	Nominal length



Performance Overview · Technical Data

with 2-pipe / 4-pipe system

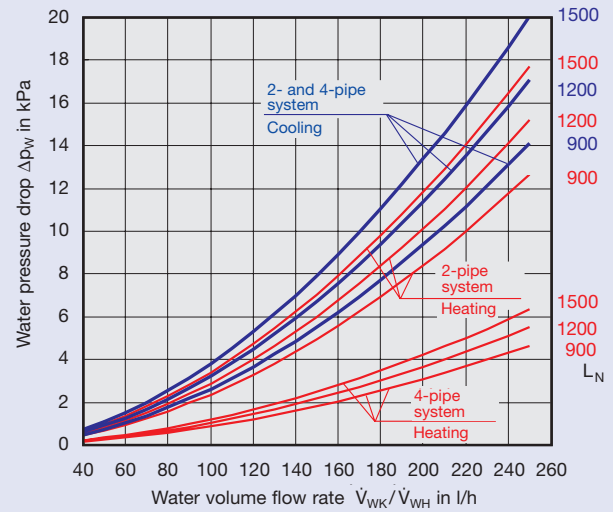
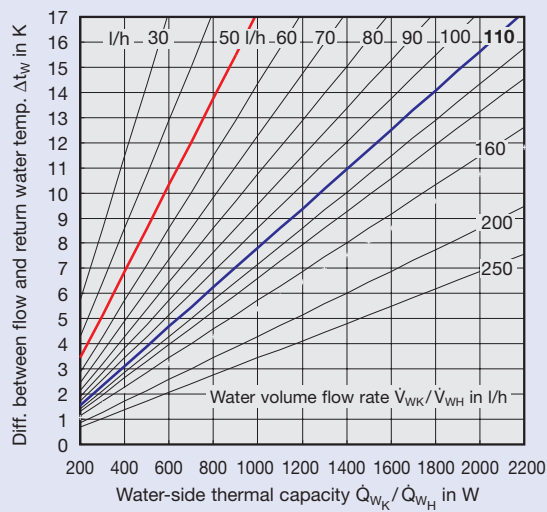
Reference values cooling

$t_R = 26^\circ\text{C}$
 $t_{WVK} = t_{Pr} = 16^\circ\text{C}$
 $\dot{V}_{WK} = 110 \text{ l/h}$
 $\Delta t_{Pr} = t_{Pr} - t_R = -10 \text{ K}$
 $\Delta t_{RWV} = t_{WVK} - t_R = -10 \text{ K}$

Reference values heating

$t_R = 22^\circ\text{C}, t_{Pr} = 22^\circ\text{C}$
 $t_{WVH} = 50^\circ\text{C}$
 $\dot{V}_{WH} = 50 \text{ l/h}$
 $\Delta t_{RWV} = t_{WVH} - t_R = 28 \text{ K}$

L _N	Nozzle type	Cooling 2- and 4-pipe system										Heating 2-pipe system			Heating 4-pipe system			
		\dot{V}_{Pr} l/s	\dot{V}_{Pr} m³/h	L _{WA} dB(A)	ΔP_t Pa	\tilde{v}_L m/s	Δt_L K	\dot{Q}_{Pr} (Air) Watt	\dot{Q}_S (Water) Watt	\dot{Q}_{ges} Watt	Δt_w K	ΔP_w (Water) kPa	$\dot{Q}_S = \dot{Q}_{ges}$ (Water) Watt	Δt_w K	ΔP_w (Water) kPa	$\dot{Q}_S = \dot{Q}_{ges}$ (Water) Watt	Δt_w K	ΔP_w (Water) kPa
900	M	4	14	<20	51	0.07	2.9	48	176	225	1.4		368	6.3		213	3.7	
		7	25	25	156	0.12	2.7	84	273	357	2.1	3.1	554	9.5	0.3	330	5.7	0.2
		10	36	35	319	0.17	2.4	121	345	465	2.7		688	11.8		418	7.2	
	G	10	36	<20	83	0.14	3.2	121	272	393	2.1		554	9.5		330	5.7	
		15	54	30	187	0.20	2.9	181	352	533	2.8	3.1	701	12.1	0.3	427	7.3	0.2
		20	72	38	331	0.27	2.6	241	404	645	3.2		794	13.7		491	8.4	
	U	12	43	<20	41	0.14	3.3	145	209	354	1.6		432	7.4		253	4.3	
		24	86	30	159	0.28	2.8	289	308	598	2.4	3.1	621	10.7	0.3	373	6.4	0.2
		32	115	37	281	0.37	2.5	386	326	712	2.6		654	11.2		395	6.8	
1200	M	5	18	<20	43	0.07	3.1	60	218	278	1.7		449	7.7		264	4.5	
		9	32	23	140	0.13	2.8	109	342	451	2.7	3.8	683	11.8	0.3	415	7.1	0.3
		12	43	31	248	0.17	2.6	145	413	558	3.2		810	13.9		502	8.6	
	G	12	43	<20	65	0.14	3.4	145	326	471	2.5		653	11.2		395	6.8	
		18	65	26	146	0.20	3.1	217	424	641	3.3	3.8	828	14.2	0.3	515	8.9	0.3
		25	90	35	280	0.28	2.8	301	499	801	3.9		958	16.5		607	10.4	
	U	15	54	<20	35	0.15	3.6	181	260	440	2.0		529	9.1		314	5.4	
		30	108	28	137	0.29	3.0	362	386	748	3.0	3.8	762	13.1	0.3	468	8.1	0.3
		40	144	35	240	0.39	2.7	482	416	898	3.3		815	14.0		505	8.7	
1500	M	6	22	<20	39	0.08	3.3	72	258	330	2.0		527	9.1		312	5.4	
		11	40	22	131	0.14	2.9	133	408	540	3.2	4.5	800	13.8	0.3	495	8.5	0.3
		15	54	30	243	0.19	2.7	181	497	678	3.9		954	16.4		604	10.4	
	G	15	54	<20	65	0.15	3.5	181	395	576	3.1		778	13.4		479	8.2	
		22	79	25	137	0.21	3.2	265	502	768	3.9	4.5	963	16.6	0.3	611	10.5	0.3
		30	108	33	253	0.29	2.9	362	585	947	4.6		1100	18.9		713	12.3	
	U	20	72	<20	40	0.17	3.7	241	331	572	2.6		662	11.4		401	6.9	
		40	144	29	153	0.33	3.1	482	476	958	3.7	4.5	918	15.8	0.3	578	9.9	0.3
		50	180	35	237	0.42	2.8	603	500	1103	3.9		959	16.5		608	10.5	



Correction factors (F_w) water volume flow rate											
Cooling											
\dot{V}_{WK} in l/h											
50	60	70	80	90	100	110	120	140	160	200	250
0.86	0.89	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.08	1.09
Heating											
\dot{V}_{WH} in l/h											
30	40	50	60	70	80	90	100	110	120	140	160
0.92	0.97	1.00	1.03	1.07	1.09	1.12	1.14	1.16	1.19	1.21	1.23

See also our selection programme for air-water systems on the internet at www.trox.de

Order Details

Specification Text

QLI induction type displacement flow diffuser with water coil for wall or floor mounting, giving low-turbulence air discharge, comprising the housing with primary air duct and a non flammable circular duct with punched nozzles, which are available in three different sizes. On request, the units can be supplied with condensate tray.

The water coil can be used for cooling or heating operation (2-pipe system) and for cooling and heating operation (4-pipe system).

In the mixing zone of the QLI secondary air is mixed with primary air and the total is discharged to the room through a perforated plate and then finally a grille which is fitted to the covering case.

Wall, floor or wall and floor fixing brackets are available on request. 2 fixing brackets and screws are supplied with each unit.

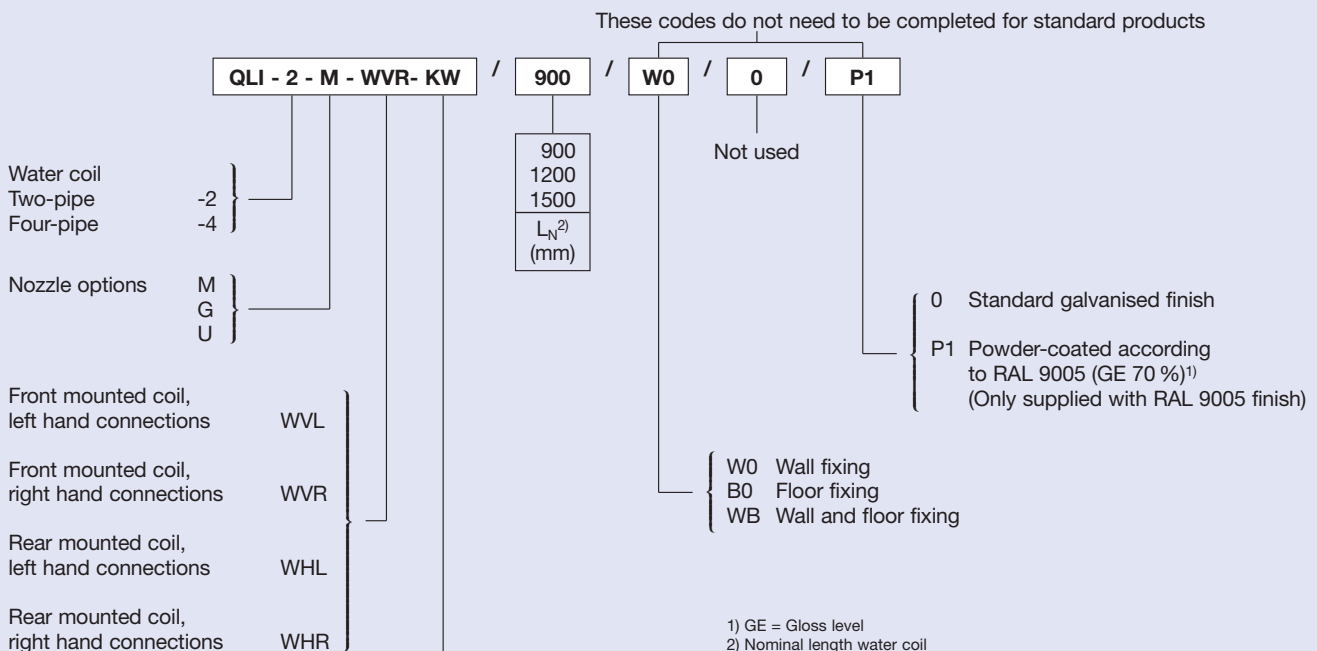
Materials

Housing and discharge perforated plate are made of galvanised steel sheet, the primary air duct with integral discharge nozzles is made of steel sheet.

The standard finish of the housing is galvanised, on request it can be powder-coated to RAL 9005 (gloss level 70 %). The primary air duct is generally painted black RAL 9005.

The coil consists of copper pipes with formed aluminium fins.

Order Code



Order example

Manufacture: TROX
Type: QLI-2-M-WVR-KW / 900 / W0 / P1