Selection Guide

deltaflow

made by systec

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Welcome to systec Controls

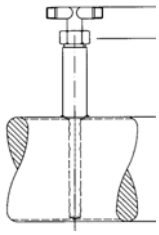
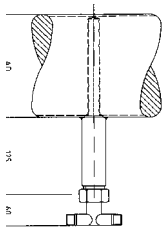
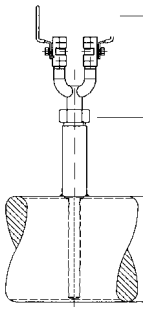
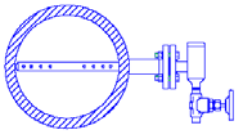
The deltaflow probe is a robust and versatile flow metering system. There are dozens of possible applications for this efficient tool, and as many different ways to use the tool within those applications. This Selection Guide is intended to help you choose the best possible way to use your deltaflow.

Ordering Codes

This chart provides an overview of the most common uses for the deltaflow. The following chapters refer back to this chart.

	Medium	Mount Type	Nominal Diameter	Interior Diameter	Wall Thickness	dp Connection	Installation Parts	Probe Material	Insulation	Pressure Stage	Pipe Orientation	Integrated	Integrated Pressure	Options	Description
DF25	**-**	**-**	**DN ---**	**ID - mm**	**WD - mm**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	deltaflow Dynamic Pressure Probe
	G														Gas
	L														Liquid
	F														Water-laden Gasses per §13 and 17 of the BimSChV (Emission Control Ordinance)
	D														Steam
		R													Weld-in Stud with Compression Ring
		F													Weld-in Stud with DIN flange
		A													Weld-in Stud with ANSI flange
		P													Quicklock withChain
		S													Quicklock with Spindle
			DN65												Nominal Diameter to DN85
			DN...												Conduit Nominal Diameter (max. DN 2500)
				ID_mm											Interior Diameter, exact [mm]
					WD_mm										Wall Thickness, exact [mm]
						R2									dp-Connection R 1/2 " exterior
						N2									dp-Connection 1/2" NPT exterior
						OA									Oval Flanges
						DW									Three-way Manifold on Oval Flanges
						DWD									Three-way Manifold on Oval Flanges, for steam
						KR									Ball Valve R 1/2"
						AC									Carbon Steel Shut-off Valve
						ACD									Carbon Steel Shut-off Valve for steam
						AE									High-grade Steel Shut-off Valve
						KO									Oval Flanges on Ball Valve
						XX									Other
							MC								Mounting Parts C-Steel
							ME								Mounting Parts 1.4571
							MV								Mounting Parts 1.4539
							MW								Mounting Parts Hastelloy C4
							MF								Mounting Parts 15 Mo 3
								SE							Flow Profile 1.4571
								SV							Flow Profile 1.4539
								SW							Flow Profile Hastelloy C4
								SX							Flow Profile 1.4828
								SY							Haynes Alloy
									X100						Insulation to 100mm
									X...						Insulation to 125mm
										P16					PN 16
										P...					>PN250
										A150					ANSI 150lbs
										A...					> 1500lbs
											VH				Vertical conduit, horizontal mounting position
											HO				Horizontal conduit, top-mounted
											HH				Horizontal conduit, horizontal mounting
											HU				Horizontal conduit, bottom-mounted
												T3			PT100 in Thermowell, max 250°C
												T4			PT100 in Thermowell, 4..20mA=0..100°C (AK required)
												T5			PT100 in Thermowell, 4..20mA=0..250°C (AK required)
												T6			Type K in Thermowell, 4..20mA=0..300°C (AK required)
												T7			Type K in Thermowell, 4..20mA=0..500°C (AK required)
													P1		Gauge pressure transmitter, two-wire, no shut-off
													P2		Absolute pressure transmitter, two-wire, no shut-off
													P3		Gauge press. transmitter, two-wire, Manometer shut-off valve
													P4		Abs. press. transmitter, two-wire, Manometer shut-off valve
													P5		Gauge press. transmitter, two-wire, Manometer shut-off valve, siphon
														AK	Electrical terminal box for easy wiring
														3.1b	3.1 b Certificate
														2.2z	2.2 Factory certification
														GE	Counter bearing

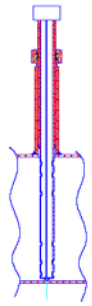
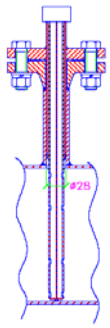
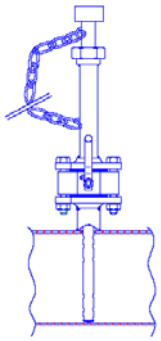
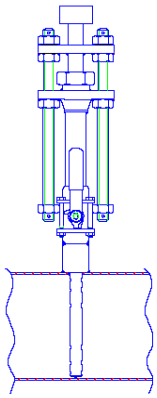
Medium

Ordering Codes	Illustration	Comment
DF25**G**XXXXX		Please select option G (gas) if your medium is a dry gas and neither the conduit nor the ambient pressure contains any condensation to consider. Specifically, dry air and other dried process gasses fall into this category.
DF25**L**XXXXX		Option L (liquid) is the correct choice if your medium is a liquid and if boiling (flashing) is not a consideration in either the conduit or the ambient temperature. This category includes the most common liquids such as water, hydrocarbons, etc. Flashing is not generally an issue except in situations involving high temperatures or liquid gasses.
DF25**F**XXXXX		If you select Option F (water-laden gas), your deltaflow can be configured for gasses which (sometimes) contain condensation. This would include, for example, flue gasses following a wash process or water-laden air which is being drawn into a cooler environment. deltaflow probes of this sort are approved under §13 and 17 of the BlmSchV (Federal Emission Control Ordinance) as quantity measuring devices for polluted, aggressive, and condensating flue gasses.
DF25**D**XXXXX		If your medium is (water-based) steam, then Option D is the correct choice. The deltaflow will then come equipped with condensation containers and primary shut-off.

If your medium happens to be multiphasic (such as cryogenic gas or wet steam), we will be happy to help you find a workable solution. Please contact us.

If your medium is heavily polluted, we would also be happy to advise you concerning whether or not a manual or automatic cleaning (LSP1) of your deltaflow is necessary. There are many applications involving polluted media in which the deltaflow operates satisfactorily without cleaning and without maintenance.

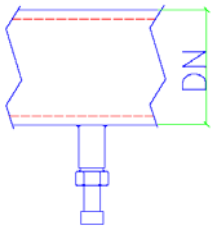
Mount Type

Ordering Codes	Illustration	Comment
DF25X**R**		Option R (weld-in stud with compression ring) is the easiest and most economical way to install your deltaflow into a conduit. Simply drill a hole (28 mm) in the conduit, weld the stud into place and insert the deltaflow until it touches the opposite side of the conduit. Tighten the coupling nut, and you are finished. The compression ring stud can be used up to PN40.
DF25X**F**		Weld-in studs with DIN flanges (option F) are often used in gauge pressure applications. This model is also well suited to high pressure situations, because the flange uses 4 or more mechanically redundant screws to hold the deltaflow in position. The flange is designed to divert pressure in the event of a leak, thereby preventing media from spurting in the direction of the operator. This means that the flange connection method provides an added measure of safety when the deltaflow is used to meter dangerous media under pressure, such as steam.
DF25X**A**		Provides the same advantages as option F, but uses an ANSI flange instead of a DIN flange.
DF25X**P**		The deltaflow Quicklock with chain makes it possible to uninstall and then reinstall the deltaflow under certain operating conditions. This is particularly efficient for applications metering extremely dirty media in which the deltaflow must be uninstalled for examination purposes. The deltaflow is manually drawn back into the elongated stud and the ball valve is then shut. At this point the probe can be completely removed. In certain circumstances, the residual contents within the probe may be released to the environment during this procedure. Because option P allows the probe to be manually removed and reinserted, it may only be used up to 6 barg.
DF25X**S**		The deltaflow Quicklock with spindle can be used for the same applications as the deltaflow Quicklock with chain, but the probe is inserted and removed by means of a threaded spindle. This option easily handles applications of up to 40 barg (up to 100 upon request).

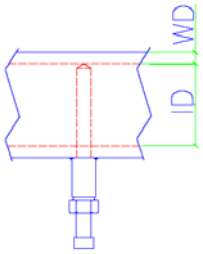
In addition to these standard formats, we can of course adapt the deltaflow to any other installation conditions that might exist. If desired, for example, we could provide you with weld-in studs which could be riveted into a sheet metal channel or cemented into the masonry in a chimney. Previously existing studs can also be used—the nominal diameter must measure at least DN25 (1”), and we would also need a drawing indicating the critical measurements of the existing studs. We are always happy to fulfill special requirements regarding sealing surfaces or materials.

Nominal Diameter

The deltaflow DF25 can be used within the nominal diameter range of DN65 through DN 2500 (3” to 100”). For other diameter measurements, please select a different deltaflow model (DF8 / DF10 / DF 50).

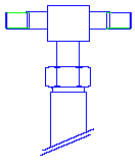
Ordering Codes	Illustration	Comment
DF25XX**DN???**		Please specify the nominal diameter of your conduit (metric or ANSI units).

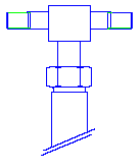
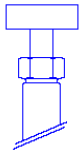
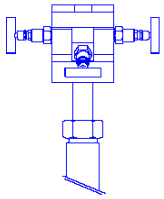
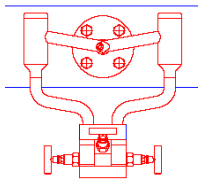
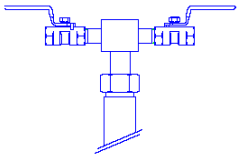
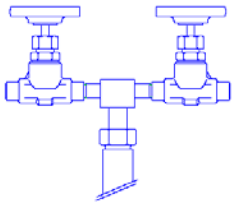
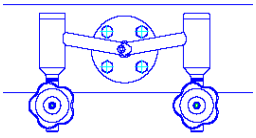
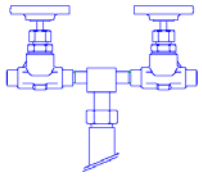
Interior Diameter and Wall Thickness

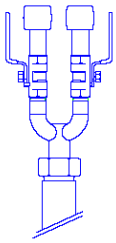
Ordering Codes	Illustration	Comment
DF25XXDNXXX**ID???mm-WD???mm**		Your deltaflow is custom-built. In order to assure that your deltaflow is ideally suited to your application, we need to know the actual interior diameter of your conduit. We recommend that this measurement not be taken from your documentation, but rather measured—at the planned sampling site if possible. This is particularly important for applications involving older conduit systems. It is NOT necessary to have this measurement at the bid proposal stage, but it will be required at the time the order is placed.

dp Connection

The dp connection you select establishes the way in which you would like to transfer the differential pressure metered at the deltaflow to your evaluation tool. In addition to the connection formats identified below, other connections can be provided upon request at any time.

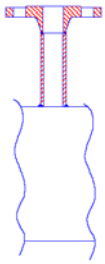
Ordering Codes	Illustration	Comment
DF25XXDNXXXIDXXXmmWDXXXmm-**R2**		If you enter option R2, your deltaflow will come equipped with R ½” external thread connections. You will need to complete assembly of the signal conduit to your transducer on location. Appropriate for use with all media.

DF25XXDNXXXIDXXXmmWDXXXmm-**N2**		If you enter option N2, your deltaflow will come equipped with ½" NPT external thread connections. You will need to complete assembly of the signal conduit to your transducer on location. Appropriate for use with all media.
DF25XXDNXXXIDXXXmmWDXXXmm-**OA**		If you select option OA, your deltaflow will be equipped with a flange connection per DIN 19213. Advantage: this feature will allow you to flange most differential pressure transducers directly to the unit without any additional signal conduit. This can save a great deal of time and money. Appropriate for use with all media.
DF25XXDNXXXIDXXXmmWDXXXmm-**DW**		In addition to the flange connection (option OA), the option DW also comes equipped with a three-way manifold built inside the connection flange unit. The three-way manifold makes it possible to install and uninstall the dp transducer during operation. It also enables you to perform a zero-point alignment without interrupting a process. Appropriate for use with all media except steam.
DF25XXDNXXXIDXXXmmWDXXXmm-**DWD**		This is the same option as DW (above), except it is designed for steam probes. Appropriate for use with steam.
DF25XXDNXXXIDXXXmmWDXXXmm-**KR**		If you select option KR, you will receive the equipment listed under option R2, plus you will also receive a high-grade steel ball valve with R ½" internal threads for attaching shut-off valves. This is generally used with (water-laden) gasses when the dp transducer is supposed to be installed apart from the probe.
DF25XXDNXXXIDXXXmmWDXXXmm-**AC**		If you order option AC, your probe will come equipped with a carbon steel shut-off valve. You can choose to have the slide equipped with R ½" internal threading or, if desired, with 14x2mm welding ends (please specify). This feature is generally used for fluids (i.e. feedwater or condensation) and in applications where higher pressures are involved if the dp transducer is supposed to be installed apart from the probe.
DF25XXDNXXXIDXXXmmWDXXXmm-**ACD**		The carbon steel shut-off valve for steam is included in the deltaflow for steam.
DF25XXDNXXXIDXXXmmWDXXXmm-**AE**		Option AE has the identical construction as option AC, except that in this case the ball valve inserted in the unit is made of high-grade steel. This option is primarily used for metering excessively corrosive media or metering in corrosive environments.

DF25XXDNXXXIDXXXmmWDXXXmm-**KO**		Option KO (oval flanges on ball valves) is used primarily for highly condensating gasses (i.e. flue gas following a wash process). If you order your deltaflow with this option, you will be able to mount your dp transducer directly onto the deltaflow, and you will also have a completely capillary-free probe. In other words, any condensation which forms can flow unobstructed back into the conduit. This is significant for achieving high levels of precision.

Installation Parts

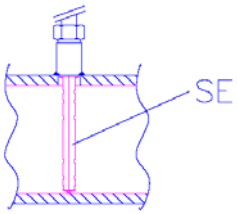
Unless you intend to use an existing connection stud, your deltaflow will be delivered with all studs required for installation. You must select the material for these studs that is appropriate to your application.

Ordering Codes	Illustration	Comment
DF25XXDNXXXIDXXXmmWDXXXmm-XX-**MC**		Material: Carbon steel (St35.8 or similar) A standard delivery includes weldable studs made of carbon steel. St35.8 material can be welded to almost all common carbon steel pipe systems with no problems. Appropriate for use in normal to high temperature ranges (up to 800° C) and under normal to medium pressures (up to PN100). Non-corrosive—or relatively non-corrosive—media (air, steam, water).
DF25XXDNXXXIDXXXmmWDXXXmm-XX-**ME**		Material: High-grade steel (V4A, 1.4571, SS316ti or similar) Weld-in studs can be manufactured of high-grade steel for use under more corrosive conditions. This is usually necessary if the conduits are also constructed of high-grade steel. Appropriate for use in normal to high temperatures (up to 500°C) and under normal to high pressures (up to PN400). Corrosive media (salt water, gasses containing HCl).
DF25XXDNXXXIDXXXmmWDXXXmm-XX-**MV**		Material: High-grade steel (1.4539) Weld-in studs can be manufactured of 1.4539 for use under highly corrosive conditions. Appropriate for use in normal to high temperatures (800° C) and under normal to high pressures (PN400). Highly corrosive media (gasses containing HCl or SO2, flue gasses prior to wash process).
DF25XXDNXXXIDXXXmmWDXXXmm-XX-**MW**		Material: Hastelloy C4 Weld-in studs can be manufactured of Hastelloy C4 for use under the very most corrosive conditions. Appropriate for use in normal to high temperatures (650° C) and under normal to high pressures (PN400). Extremely corrosive media (hot, concentrated acids, highly aggressive and condensating flue gasses prior to wash process).
DF25XXDNXXXIDXXXmmWDXXXmm-XX-**MF**		Material: 15Mo3 This is the material used to manufacture boilers. Used primarily in steam and feedwater applications at extreme temperatures and pressures.

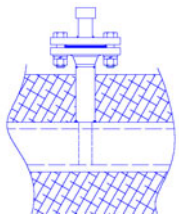
Other materials may also be viable; do not hesitate to ask. Please be prepared to tell us what materials are used in your existing pipe system, and we will then research to determine if the appropriate installation material is available and whether it is suitable for welding.

Probe Material

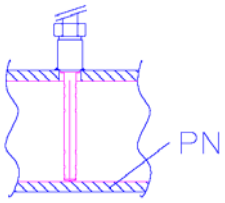
deltaflow's patented profile plays a significant role in the flowmeter's accuracy. Because the probe is surrounded by flowing medium, the mechanical and chemical demands placed on the equipment are especially great. For this reason, the deltaflow is always constructed of premium high-grade steel (1.4571, V4A, 316Ti). It is also possible to use an even higher-quality construction material to meet special needs.

Ordering Codes	Illustration	Comment
DF25XXDNXXXIDXXXmmWDXXX mm-XX-MX-**SE**		Flow profile made of high-grade steel (1.4571, V4A, SS316Ti). Standard material, appropriate to most applications and media (gas, steam, and liquids). Resistant to medium levels of corrosion, and to temperatures up to approximately 500° C. Durable. Not appropriate for use in applications where smoke and exhaust contain sulfur particulates (pitting corrosion).
DF25XXDNXXXIDXXXmmWDXXX mm-XX-MX-**SV**		Flow profile made of high-grade steel 1.4539. High temperature and chemical resistance. Appropriate for use up to approx. 650° C. Durable. Well-suited for smoke and exhaust containing sulfur particulates. Used primarily for metering exhaust quantities per §13 and 17 of the BlmSchV (Federal Emission Control Ordinance).
DF25XXDNXXXIDXXXmmWDXXX mm-XX-MX-**SW**		Flow profile made of Hastelloy C4. Higher resistance to temperatures and maximum resistance to chemicals. Appropriate for use up to approx. 650° C and with concentrated acids. Used primarily in chemical applications.
DF25XXDNXXXIDXXXmmWDXXX mm-XX-mX-**SX**		Flow profile made of high-temperature steel 1.4828. High temperature resistance, average chemical resistance. Appropriate for use up to 1040° C. High mechanical stability at high temperatures. Can be used, for example, in superheated and live steam up to 650° C (i.e., in power plants).
DF25XXDNXXXIDXXXmmWDXXX mm-XX-MX-**SY**		Flow profile made of high-temperature/high-grade steel Haynes Alloy. Maximum temperature and chemical resistance. Appropriate for use up to 1240° C within reducing and oxidizing environments. Maximum durability in HT areas. Typically used in metering gas and exhaust volumes in combustion processes or extreme chemical processes.

Insulation

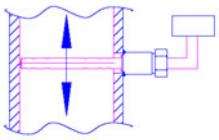
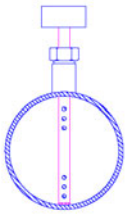
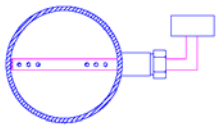
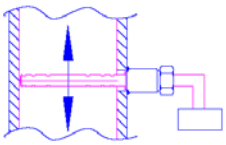
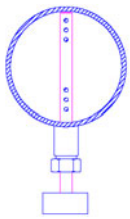
Ordering Codes	Illustration	Comment
DF25XXDNXXXIDXXXmmWDXXX mm-XX-MX-SX-**X???**		The standard height of the DF25 weld-in stud is 125 mm. This length allows the stud to extend up to 100 mm beyond the insulation, sufficient to allow the probe to be installed without removing any of the insulation. If the thickness of your insulation is any greater, systec will customize the height of your stud as required.

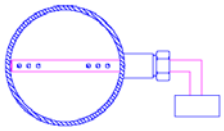
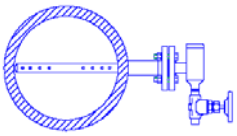
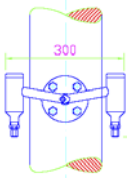
Pressure Level

Ordering Codes	Illustration	Comment
DF25XXDNXXXIDXXXmmWDXXXmm-XX-MX-SX-XXXX-**P???**		In order to insure that pressure-bearing parts of the deltaflow meet your requirements, please specify the pressure level within your pipe conduits (use PN for DIN pipes; use lbs. for ANSI pipes). The standard pressure level of the deltaflow is PN16; the deltaflow can be manufactured for pressure levels up to PN640.

Pipe Orientation

The connections on the deltaflow are designed to accommodate your specific pipe orientation, installation position, and medium. This guarantees adequate ventilation and/or unobstructed condensation drain.

Ordering Codes	Illustration	Comment
DF25**G/F**XXDNXXXIDXXXmmWDXXXmm-XX-MX-SX-XXXX-PXXX-**VH** **Medium: Gas (G) or water-laden gas (F)**		To meter gas in vertical conduits, the deltaflow is always installed in a horizontal position with a slight slant (0..3°) toward the point of the probe (VH). The dp connections are designed at an upward-facing angle. This allows any resulting condensation to easily flow back into the conduit.
DF25**G/F**XXDNXXXIDXXXmmWDXXXmm-XX-MX-SX-XXXX-PXXX-**HO** **Medium: Gas (G) or water-laden gas (F)**		For horizontal conduits, we recommend that you install your deltaflow for gas into the pipe (HO) from above (12 o'clock position). Any condensation which develops can drain freely.
DF25**G/F**XXDNXXXIDXXXmmWDXXXmm-XX-MX-SX-XXXX-PXXX-**HH** **Medium: Gas (G) or water-laden gas (F)**		It is also possible to install the deltaflow for gas in a horizontal position (3 o'clock position) in horizontal conduits (HH). A slight decline toward the point of the probe should also be maintained in this installation to allow condensation to drain. Connections are installed at right angles facing upwards.
DF25**L**XXDNXXXIDXXXmmWDXXXmm-XX-MX-SX-XXXX-PXXX-**VH** **Medium: Liquid (L)**		In vertical conduits, the deltaflow is always installed in a horizontal position with a slight upward slant (0..3°) toward the point of the probe (VH). The dp connections are designed at an angle, facing downwards. This allows gas bubbles to freely escape from the deltaflow, thereby insuring that automatic ventilation takes place.
DF25**L**XXDNXXXIDXXXmmWDXXXmm-XX-MX-SX-XXXX-PXXX-**HU** **Medium: Liquid (L)**		For horizontal conduits, we recommend that you install your deltaflow for liquids into the conduit from below (6 o'clock position) (HU). This ensures that your deltaflow will be properly ventilated.

DF25**L**XXDNXXXIDXXXmmWDXX Xmm-XX-MX-SX-XXXX-PXXX**-HH** **Medium: Liquid (L)**		It is also possible to install the deltaflow for liquid horizontally (3 o'clock position) in horizontal conduits (HH). A slight decline toward the point of the probe should be maintained in order to ensure problem-free ventilation of the probe.
DF25**D**XXDNXXXIDXXXmmWDXX Xmm-XX-MX-SX-XXXX-PXXX**-HH** **Medium: Steam (D)**		The deltaflow for steam is always installed horizontally with a slight upward slant (0..3°) toward the point of the probe (HH). This allows the excess water collected in the condensation containers to flow back into the conduit, where it again turns to steam. The water-filled pulse connections lead downward to the transmitter.
DF25**D**XXDNXXXIDXXXmmWDXX Xmm-XX-MX-SX-XXXX-PXXX**-VH** **Medium: Steam (D)**		The deltaflow for steam is also installed horizontally in vertical conduits, with a slight upward slant (0..3°) toward the point of the probe. The water-filled pulse connections lead downward to the transmitter in this installation as well.

Still have questions? We are happy to help!

If you are not sure which deltaflow is right for your application, feel free to ask! We are happy to assist you.

You can find additional detailed information about the deltaflow in the product pages on our website.

Refer to the information pages on our website for a listing of sales representatives in your area and our partners in other countries:
http://www.systec-controls.com/content_de/information/index_informat_de.htm

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