

### General

The main task of injection fittings in metering pumps for liquid chemicals is to mix in the corresponding chemical into the main flow (in most cases water). At the same time most injection fittings avoid a backflow to the metering pump due to their backpressure function.

The **tubing injection fitting S** meets this demand in an extremely compact design. The preloaded tubing provides for ultra-fine spraying of the chemical during the metering stroke.

When lyes with a high carbonate hardness are metered into water flows calcium carbonate is inevitably precipitated at the mixing fitting. Quite often the crystals adhere to the injection fitting and clog it up resulting automatically in a metering failure. Therefore the **extractable tubing injection fitting SAH** allows a dismounting of the injection tube under system pressure. Checking and cleaning of the injection fitting is possible during daily operation. The injection nozzle is applicable to a wide variety of uses, due to its field-adjustable length. The special hose connection eliminates kinked tubing. While removing the injection nozzle from the injection point the red end of the injection nozzle and a noticeable resistance indicates when to close the ball valve.



cause it to widen and the crystals will be eliminated.

A special type of injection fitting is the **self-cleaning injection fitting SKD**. The injection tubing leading the main flow moves permanently thus making it difficult for crystals to accumulate. Nevertheless, should the tubing clog up, the metering pump pressure will

Mixing of the chemical and the main water flow occurs at the open end of the tubing. The backpressure function - being at quite a distance - consequently will not be affected by possible carbonate precipitation.

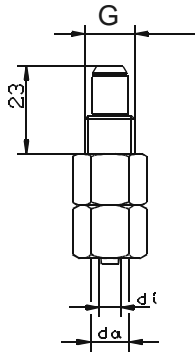
### Technical data

	Type S		Type SAH extractable	Type SKD
Opening pressure [bar]	1.1		1.1	0.2
Nominal width	DN4		DN4	DN4
Max. flow rate for uniform flow*	70 l/h		70 l/h	70 l/h
suitable for main tubes	from DN32 up		DN100-400	from DN32 up
Process connection	G 1/4	G 1/2	R 1/2	G 1/2
Metering connection	4/6, 6/8, 6/12	see MB 1 23 01/4	4/6, 6/8, 6/12	see MB 1 23 01/4
Materials	PVC/FPM Ms/FPM 1.4571	PVC/FPM 1.4571/FPM	PVC/FPM	PVC/FPM PVC/EPDM

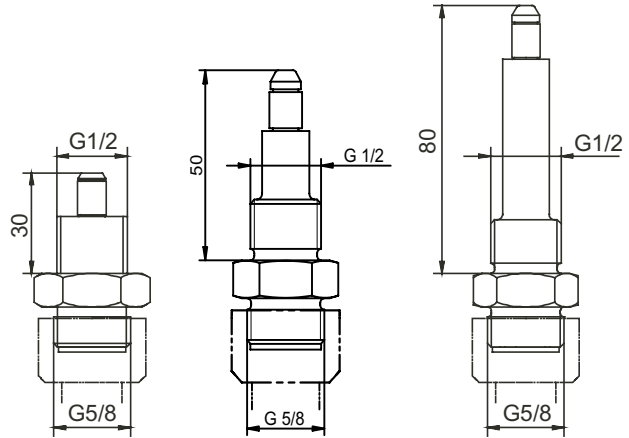
Other connections and materials upon request.  
(The injection tubing is also available in EPDM.)

\* Flow values for uniform flow. Without pulsation dampers the max. flow rate for motor pumps amounts to 1/3 and for solenoid pumps to 1/10 of the indicated value.

**Type S**  
(with integrated connection)



**Type S**  
(with separate connection)



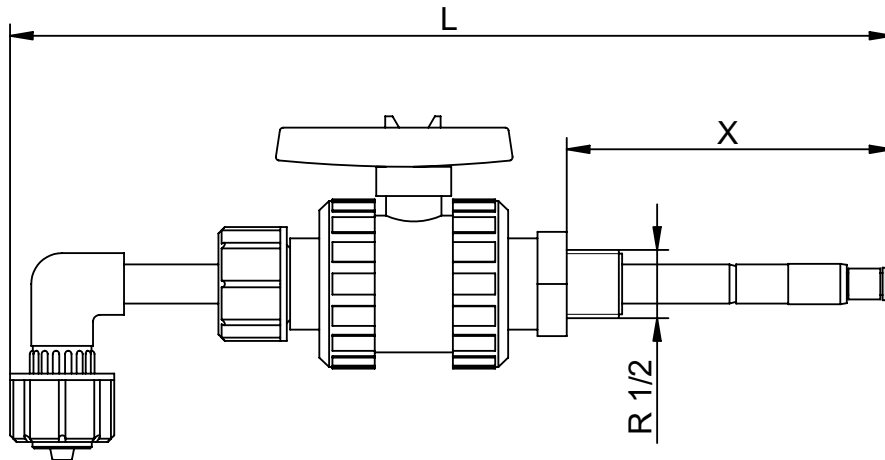
Housing/ tubing material	Tubing connection di/da	Article number	
		G 1/4	G 1/2
Ms/FPM	4/6	12326321	-
	6/8	12326322	-
	6/12	12321985	-
PVC/FPM	4/6	12327059	12332557
	6/8	12327060	-
	6/12	12327061	12328494
1.4571/FPM	4/6	12327062	-
	6/8	12327063	-
	6/12	12327064	-

Housing/ tubing material	Article no.		
	G 1/2		
	L=30mm	L=50 mm	L=80mm
PVC/FPM	12328489	12338119	12334373
1.4571/FPM	12328490	-	-

For connections, cf. connection table MB 1 23 01 / 4

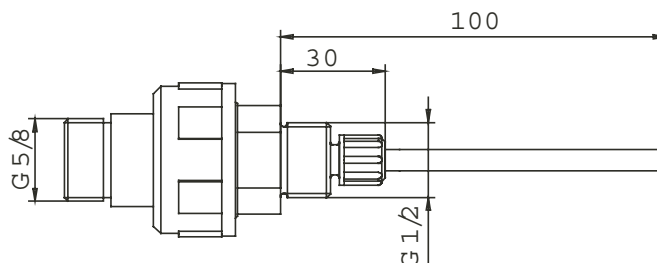
Opening pressure 1.1bar corresponding to German test regulation DVGW-W504.

## Type SAH extractable



Housing / tubing / material	Tubing connection di/da	Length of injection tube X [mm]	for tube	Total length L [mm]	Articel No.
<b>R 1/2</b>					
<b>PVC/FPM</b>	-	0 - 100	DN100 - DN150	267	12302001
	-	100 - 200	DN150 - DN400	367	12302002
	6/12	0 - 100	DN100 - DN150	271	12302005
	6/9	0 - 100	DN100 - DN150	271	12302006
	4/6	0 - 100	DN100 - DN150	271	12302007
	6/12	100 - 200	DN150 - DN400	371	12302011
	6/9	100 - 200	DN150 - DN400	371	12302012
	4/6	100 - 200	DN150 - DN400	371	12302013
<b>PVC/EPDM</b>	-	0 - 100	DN100 - DN150	267	12302003
	-	100 - 200	DN150 - DN400	367	12302004
	6/12	0 - 100	DN100 - DN150	271	12302008
	6/9	0 - 100	DN100 - DN150	271	12302009
	4/6	0 - 100	DN100 - DN150	271	12302010
	6/12	100 - 200	DN150 - DN400	371	12302014
	6/9	100 - 200	DN150 - DN400	371	12302015
	4/6	100 - 200	DN150 - DN400	371	12302016

## Type SKD self-cleaning



Housing / tubing material	Thread connection	Length of injection tubing	Article No.
<b>G1/2</b>			
PVC/FPM	G5/8	100	12335495
PVC/EPDM	G5/8	100	12335496

For connections, cf. connection table MB 1 23 01 / 4

**General**

Injection fittings are used to inject the chemical delivered by the metering pump into the system to be treated.

**Injection Pipe**

The injection pipe (I) allows the metering chemical to be injected into the centre of the piping system, to ensure uniform mixing.

**Non-Return Valve**

The non-return valve (R) prevents liquid from flowing backward from the system under pressure into the metering plant or metering tank. All sizes are available in the form of a single-ball non-return valve with an opening pressure of approx. 0.1 bar. Special types with an opening pressure of approx. 1.2 bar are also available.

**Shutoff Valve**

A shut-off valve (A) allows to separate the metering installation, including the non-return valve, from the plant under pressure. Due to the shut-off valve the non-return valve can be maintained after being separated from the system. Prior to longer periods of standstill it should be closed since the sealing of the non-return valve may be affected by dirt particles or wear.

**Cooling Pipe**

In mixed assemblies, where the metering plant fittings and pipes are of plastic and the plant itself is of steel or other metals, because the liquid temperatures are higher, a cooling pipe (K) can be used to radiate the heat. This allows plastic fittings and pipes to be connected to the plant.

**Connections**

The transition from the injection fitting to the metering pipe can be made in various ways, using the connections listed on MB 1 23 01 / 4. The individual elements described before are available in functional combinations and have appropriate type codes for identification.

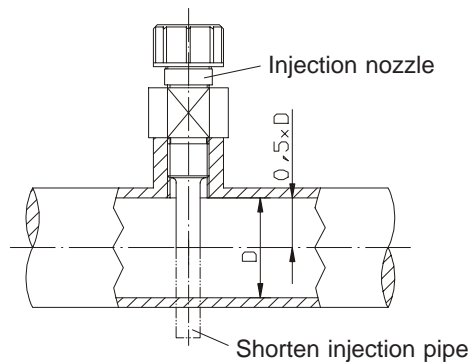
**Selection Criteria**

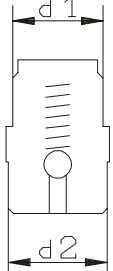
The determining factors for selecting the appropriate injection fitting are the chemical flow, the chemical resistance and the heat resistance. PVC injection fittings may be used for temperatures of up to 40°C; other types up to 80°C; and with a cooling pipe up to 120°C.

PVC-version:  $p_{\max} = 10$  bar

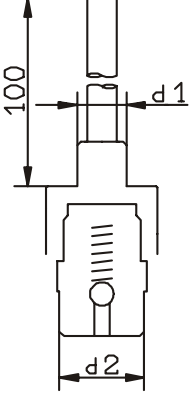
Stainless steel version:

Normal version:  $p_{\max} = 40$  bar

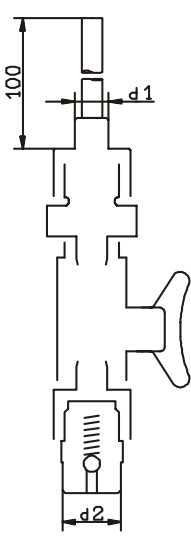

**Type R (Non-Return Valve)**

	DN	l/h*	d1	d2	PVC		1.4571		
					Viton	Hypalon	PTFE	AF/ Viton	Hypalon
					4	70	G 1/2	G 5/8	12325087
6	150	G 3/4	G 1	12325694	12326859	-	12326860	-	
10	400	G 1 1/4	G 1 1/4	12325707	12326845	-	12329696	-	
15	900	G 1	G 1 1/4	12325719	12326861	-	-	12326862	
25	2600	G 1 1/2	G 1 1/2	12325732	12326863	-	-	12626864	

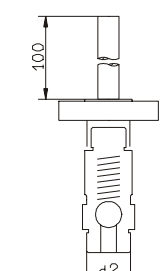
**Type IR (Injection Fitting with Non-Return Valve)**

	DN	l/h*	d1	d2	PVC		1.4571		
					Viton	Hypalon	PTFE	AF/ Viton	Hypalon
					4	70	G 1/4	G 5/8	12325744
G 1/2	12325692	12334942	12326925	-			-		
G 3/4	12325747	12335300	12326926	-			-		
6	150	G 1/2	G 1	12325779	12326865	-	12326868	-	
		G 3/4		12325703	12326866	-	12326869	-	
		G 1		12325780	12326867	-	12326870	-	
10	400	G 1	G 1 1/4	12325792	12326877	-	12326880	-	
		G 1 1/4		12325711	12326878	-	12326881	-	
		G 1 1/2		12325793	12326879	-	12326882	-	
15	900	G 1	G 1 1/4	12325883	12326891	-	-	12326894	
		G 1 1/2		12325814	12326892	-	-	12326895	
		G 2		12325723	12326893	-	-	12326896	
25	2600	G 1 1/2	G 1 1/2	12325880	12326907	-	-	12326909	
		G 2		12325737	12326908	-	-	12326910	

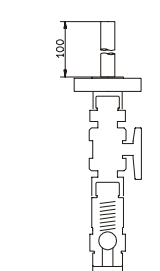
\* Flow values only valid with uniform flow. Without pulsation dampener the max. flow rate for motor pumps amounts to 1/3 and for solenoid pumps to 1/5 of the indicated value.

**Type IRA (Injection Fitting with Non-Return Valve and Shutoff Valve)**


DN	l/h*	d1	d2	PVC		1.4571		
				Viton	Hypalon	PTFE	AF/ Viton	Hypalon
4	70	G 1/4	G 5/8	12325748	12335301	12326930	-	-
		G 1/2		12325691	12335302	12326931	-	-
		G 3/4		12325749	12335303	12326932	-	-
6	150	G 1/2	G 1	12325781	12326871	-	12326874	-
		G 3/4		12325704	12326872	-	12326875	-
		G 1		12325782	12326873	-	12326876	-
10	400	G 1	G 1 1/4	12325794	12326883	-	12326886	-
		G 1 1/4		12325714	12326884	-	12326887	-
		G 1 1/2		12325795	12326885	-	12326888	-
15	900	G 1	G 1 1/4	12325882	12326897	-	-	12326900
		G 1 1/2		12325815	12326898	-	-	12326901
		G 2		12325726	12326899	-	-	12326902
25	2600	G 1 1/2	G 1 1/2	12325876	12326911	-	-	12326913
		G 2		12325741	12326912	-	-	12326914

**Type IRF (Injection Fitting with Non-Return Valve and Flange Connection)**


DN	l/h*	d2	PVC		1.4571
			Viton	Hypalon	Hypalon
10	400	G 1 1/4	-	12327742	-
15	900	G 1 1/4	12325966	12326903	12326904
25	2600	G 1 1/2	12325969	12326915	12326916

**Type IRAF (Injection Fitting with Non-Return Valve, Shutoff Valve and Flange Connection)**


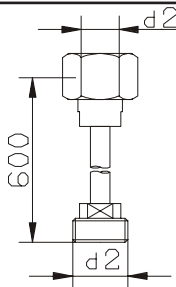
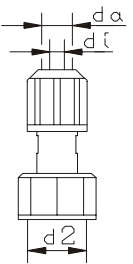
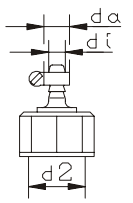
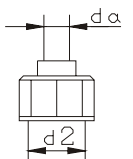
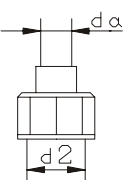
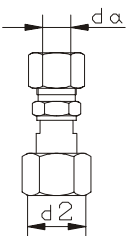
DN	l/h	d2	PVC		1.4571	
			Viton	Hypalon	AF/ Viton	Hypalon
10	400	G 1 1/4	12326313	12326889	12326890	-
15	900	G 1 1/4	12325967	12326905	-	12326906
25	2600	G 1 1/2	12325971	12326917	-	12326918

\* Flow values only valid with uniform flow. Without pulsation dampener the max. flow rate for motor pumps amounts to 1/3 and for solenoid pumps to 1/5 of the indicated value.

**Order Example:**

An injection fitting with shutoff valve is required to be used with a MINIDOS A 24, for phosphate metering into a potable water pipe (max. 10 bar). A connection sleeve with G 1/2 is available. Supply line: tubing id=4; od=6. From the IRA table on this page, size DN 4 up to 50 l/h, with d<sub>1</sub>=G 1/2 is chosen. PVC version, type IRA, consisting of injection pipe, shutoff valve and non-return valve. Part Number 12325691. From table Cooling Pipe (K) and Connections on MB 1 23 01 / 4, for a 4/6 tubing, the connection, Part Number 20975 is selected.

**Cooling Pipe (K) and Connections**

	DN	d2	di/da	da	PVC	1.4571
Cooling pipe 	4	G 5/8	-	-	-	25849
	6	G 1	-	-	-	25853
	10	G 1 1/4	-	-	-	25892
	15		-	-	-	25893
	25	G 1 1/2	-	-	-	25903
Tubing connection 	4	G 5/8	4/6	-	20975	-
			6/8	-	25176	-
			6/12	-	19180	-
	6	G 1	6/12	-	25902	-
Hose liner 	4	G 5/8	6/12	-	23092	23093
	6	G 1	6/12	-	25908	25909
			9/15	-	32470	-
	10	G 1 1/4	9/15	-	25921	25925
	15		16/26	-	25936	25935
	25	G 1 1/2	25/34	-	25947	25949
PVC cemented connection 	4	G 5/8	-	10	23087	-
			-	12	23089	-
	6	G 1	-	10	25911	-
			-	12	22137	-
	10	G 1 1/4	-	12	25923	-
15	-		20	25937	-	
25	G 1 1/2	-	32	25950	-	
Threaded connection 	4	G 5/8	-	G 1/4	23088	22999
			-	G 1/4	27259	25914
	6	G 1	-	G 3/8	25915	31096
			-	G 3/8	25930	27037
	10	G 1 1/4	-	G 1/2	25943	25944
	15		-	G 3/4	-	25953
25	G 1 1/2	-	G 1	-	27036	
Stainless steel piping connection 	4	G 5/8	-	6	-	24959
			-	10	-	23090
	6	G 1	-	8	-	25913
			-	12	-	27039
	10	G 1 1/4	-	18	-	25939
	15		-	22	-	25952
25	G 1 1/2	-	28	-	27035	