



Type 6642Solenoid valve



Type 8620Cooling Tower or boiler chemistry controller

- Programmable outputs: two transistor and single or dual analog 4-20 mA (Process + Temp)
- Removable backlighted display
- Universal process connection
- Compatible with 120 mm pH/ ORP probes Type 8203
- Diagnostic function



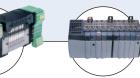
Type 2030

valve

On/Off Diaphragm



Type 8644Valve islands



4 PLC

The Bürkert transmitter Type 8202 is a compact device designed for the measurement of:
- the pH in clean liquids or liquids containing solids, sulphides or proteins.

- or the oxidation-reduction potential in clean liquids or liquids containing solids, sulphides or proteins which may present low conductivity.

The transmitter consists of a replaceable standard pH or ORP probe Type 8203, screwed in a probe holder with integrated Pt1000 temperature sensor. This ensemble is plugged-in and screwed with a nut to an enclosure with cover containing the electronic module and a removable display. Thus the Bürkert Transmitter facilitates short installation and maintenance effort.

The pH/ORP transmitter can operate independent of the display, but it will be required for programming the transmitter (i.e. selection of pH or ORP sensor type, measuring range, engineering units, calibration...) and also for visualizing continuously the measured and processed data.

The device Type 8202 is available:

- with three fully programmable outputs: two transistor and one 2-wire 4-20 mA current outputs
- with four fully programmable outputs: two transistor and two 3-wire 4-20 mA current outputs

The device Type 8202 converts the measured signal, displays different values in different physical units (if display mounted) and computes the output signals, which are provided via one or two M12 fixed connectors.

Technical data (Pipe + transmit	ter)				
Pipe diameter	DN25 to DN110 (DN<25 with reduction)				
pH measurement Measuring range Resolution Accuracy	-216 pH or -580 +580 mV 0.001 pH or 0.1 mV ±0.02 pH or 0.5 mV				
Minimal pH scale	0.5 pH or 30 mV (i.e 6.7 to 7.2 pH or -20 to +10 mV corresponding to 4-20 mA)				
ORP measurement Measuring range Resolution Accuracy	-2000+2000 mV 1 mV ± 3 mV				
Minimal ORP scale	50 mV (i.e 1550 to 1600 mV corresponding to 4-20 mA)				
Temperature measurement Measuring range Resolution Accuracy	-40 to +130°C (-40 to 266°F) 0.1°C (0.18°F) ± 1°C (1.8°F)				
Temperature compensation	automatic (integrated Pt1000) - reference temperature 25°C (77°F)				
Minimal temperature scale	10°C (18°F) (i.e 10 to 20°C (50 to 68°F) corresponding to 4-20 mA)				
Medium temperature* With PVC nut connection With PVDF nut connection	O up to 50°C (32 to 122°F) restricted by the used probe -20 up to 130°C (-4 to 266°F) restricted by the used adaptor or probe restriction with adaptor S022 in: - PVC: O up to 50°C (32 to 122°F) - PP: O up to 80°C (32 to 176°F) - Metal: -20 up to 130°C (-4 to 266°F)				
Fluid pressure max	PN16 (232 PSI) (see pressure / temperature chart - depends on selected probe)				

* If the specific temperature limits for the used probe and the temperature limits given in the above technical data chart are different, please use the more restrictive range.

Environment	
Ambient temperature	-10 to +60°C (14 to 140°F) (operating and storage without probe)
Relative humidity	≤ 85%, without condensation

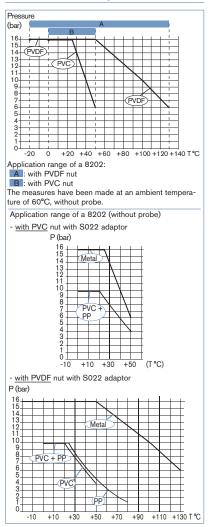
Electrical data	
Power supply	
3 outputs transmitter (2-wire) 4 outputs transmitter (3-wire)	14-36 V DC, filtered and regulated 12-36 V DC, filtered and regulated
Current consumption with sensor 3 outputs transmitter (2-wire) 4 outputs transmitter (3-wire)	≤ 1 A (with transistor loads) ≤ 25 mA (at 14 V DC without transistor loads, with current loop) ≤ 5 mA (at 12 V DC without transistor loads, without current loop)
Reversed polarity of DC	Protected
Voltage peak	Protected
Short circuit	Protected for transistor outputs
Output Transistor Current 3 outputs transmitter (2-wire) 4 outputs transmitter (3-wire)	configurable as sourcing or sinking (respectively both as PNP or NPN), open collector max. 700 mA, 0.5 A max. per transistor if the 2 transistor outputs are wired output NPN: 0.2-36 VDC output PNP: V+ power supply 4-20 mA programmable as sourcing or sinking, max. loop impedance: 1100 Ω at 36 V DC; 610 Ω at 24 V DC; 180 Ω at 14 V DC configurable in the same mode as transistor: sourcing or sinking, max. loop impedance: 1100 Ω at 36 V DC; 610 Ω at 24 V DC; 100 Ω at 36 V DC; 610 Ω at 24 V DC; 100 Ω at 12 V DC
Response time (10% - 90%)	150 ms (standard)
General data	
Compatibility	Any pipe which are fitted out with Bürkert adaptor S022 (see separate data sheet)
Materials Housing / cover / seals Screws / Display / navigation key Fixed connector mounting plate Fixed connector / Nut Wetted part materials Probe holder Probe	See exploded view, opposite Stainless steel 1.4561, PPS / PC / EPDM Stainless steel / PC / PBT Stainless steel 1.4404 (316L) Brass nickel plated / PVC or PVDF PVDF, Stainless steel 1.4571 (316Ti) See probe specific technical data
Probe	120 mm Bürkert pH or ORP probe Type 8203 or any combined 120 mm pH or ORP probe, without tem- perature sensor, with PG13.5 head, S7/S8 connector
Temperature sensor	Pt1000 integrated within the holder
Display (accessories)	Grey dot matrix 128x64 with backlighting
Electrical connections 3 outputs transmitter (2-wire) 4 outputs transmitter (3-wire) Connection cable	1x 5-pin M12 male fixed connector, 1x 5-pin M12 male and 1x 5-pin M12 female fixed connectors Shielded cable
Standards, directives and appro	ovals
Protection class	IP65 and IP67 with M12 cable plug mounted and tight- ened and cover fully screwed down
Standard and directives (EMC Pressure Vibration / Shock Approvals UL-Recognized for US and Canada	EN 61000-6-2, EN 61000-6-3 Complying with article 3 of §3 from 97/23/CE directive.* EN 60068-2-6 / EN 60068-2-27

* For the 97/23/CE pressure directive, the device can only be used under following conditions (depend on max. pressure, pipe diameter, type of probe and fluid).

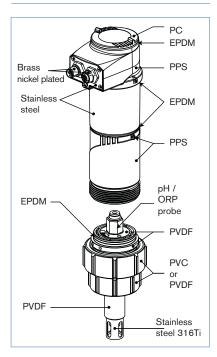
Type of fluid	Conditions
Fluid group 1, §1.3.a	Only DN25
Fluid group 2, §1.3.a	$DN \le 32$, or $DN > 32$ and $PN*DN \le 1000$
Fluid group 1, §1.3.b	$DN \le 25$, or $DN > 25$ and $PN*DN \le 2000$
Fluid group 2, §1.3.b	DN ≤ 125



Pressure / temperature chart



Materials view





Principle of operation

The 8202 device can be used as a pH or a ORP transmitter according to the Type 8203 probe version mounted into the holder. The pH or redox probe Type 8203 is a glass membrane with variable selectivity according to the pH or the redox, which must be calibrated with buffer solution before the installation of the transmitter into the pipe.

- When a pH probe is immersed into the solution a difference in potential is formed due to ions (H+) between the glass membrane and the solution. This difference in potential measured in relation to a reference electrode is directly proportional to the pH value (59.16 mV per pH unit at 25°C). The pH sensor can be calibrated in 1-point (Offset at pH 7) or in 2-points (Offset at pH 7 and Span at pH 4 or pH 10).
- When a redox probe is immersed into the solution an electron exchange occurs between the oxidised and the reduced state of an electrolyte. The generated cell voltage is the oxidation-reduction potential that is directly proportional to the redox value. The ORP sensor can only be calibrated in 1-point (Offset).

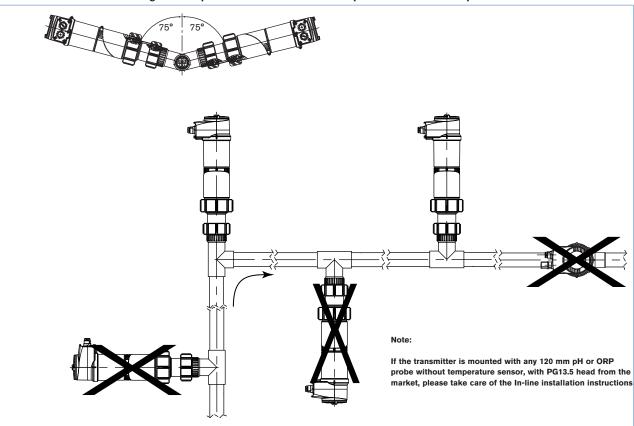
The transmitter is a two wire device (3 outputs transmitter) or a three wire device (4 outputs transmitter) which requires a power supply of 14 V DC (3 outputs transmitter) or 12 V DC (4 outputs transmitter) up to 36 V DC and delivers a 4... 20 mA standard signal proportional to the pH or to the redox potential as output signal.

Installation

The 8202 pH/ORP transmitter can be installed into any adaptor with G1½" external threaded sensor connection by just fixing the main nut. Select the required adaptor according to specific requirements of the sensor and material (temperature and pressure), and install it in a vertical position with an angle of $\pm 75^{\circ}$ max. against the vertical onto an horizontal pipe. For mounting on a tank or direct mounting on a pipe (DN100 and DN110), an adaptor with a G1½" external threaded sensor connection must be used.

After having connected the pH or redox sensor to the Type 8202 transmitter and having calibrated the unit, cautiously install the complete unit on the fitting. In order to get reliable measurement air bubbles must be avoided.

Please ensure that the mounting location provides a continuous and complete immersion of the probe in the flow stream.

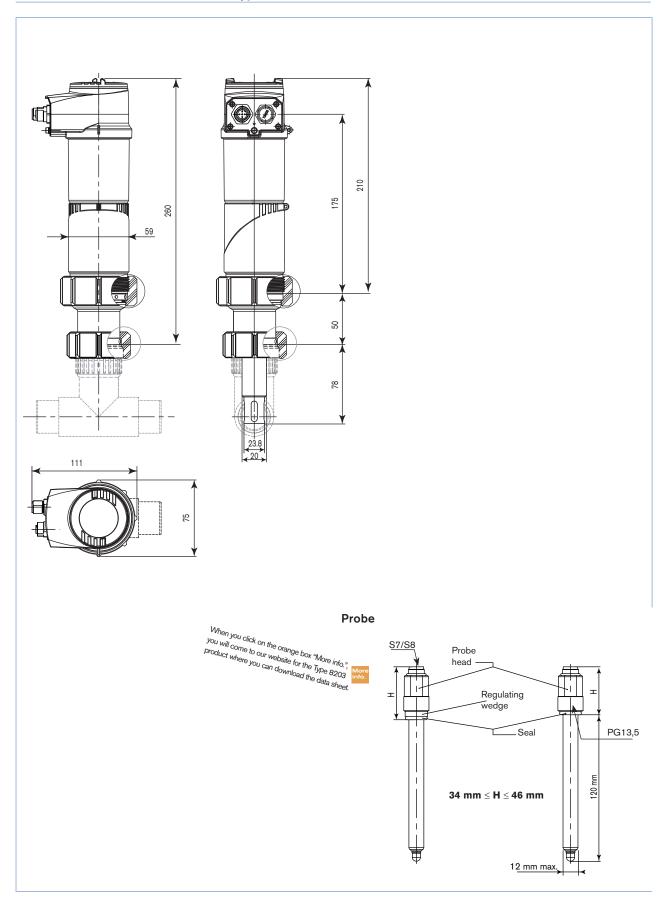


The probe must continuously be immersed into the measuring fluid in order to protect it from drying out.

The transmitter must be protected from constant heat radiation and other environmental influences, such as direct exposure to sunlight.

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Dimensions [mm] of transmitter Type 8202





Ordering information for compact transmitter Type 8202

A complete compact pH/ORP ELEMENT transmitter Type 8202 consists of a compact pH/ORP ELEMENT transmitter Type 8202, a pH/ORP probe Type 8203, a removable display/programmer and a Bürkert INSERTION adaptor Type S022 (with G 1" 1/2 external threaded sensor connection)

The following information is necessary for the selection of a complete device:

- •Item no. of the desired pH/ORP ELEMENT transmitter Type 8202 (see ordering chart on p. 6)
- •Item no. of the selected pH/ORP probe Type 8203 (see separate data sheet)
- •Item no. of the a removable display/programmer (see accessories ordering chart on p. 6)
- •Item no. of the selected INSERTION adaptor Type S022 with G1½" external threaded sensor connection (see separate data sheet)

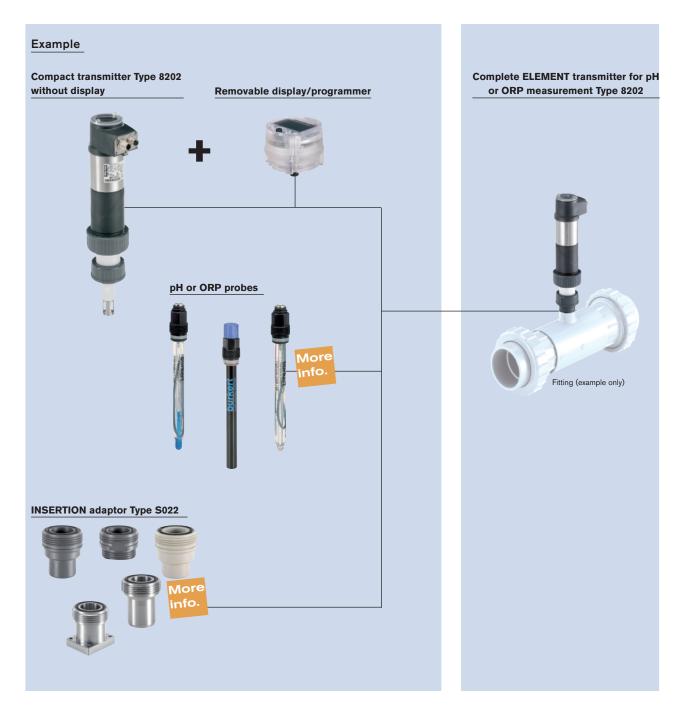




You have to order three or four components.

Attention!

When you order devices without display, please take care that you also order at least one display module for the operation. Order no. of the removable display / programming module (see ordering chart on p. 6)





Ordering chart for compact transmitter Type 8202

pH/ORP transmitter Type 8202

Specifications	Voltage supply	Output	Sensor version	Nut material	Electrical connection	UL Approvals	Item no.
Compact transmitter:	14-36 V DC	2 x transistors +	None	PVC	5-pin M12	No	559 630
probe holder with integrated Pt1000 + electronic module with		1x 4-20 mA	A	male fixed connector	UL-Recognized	559 634	
cover, without display				PVDF	5-pin M12	No	559 632
					male fixed connector	UL-Recognized	559 636
	12-36 V DC	2 x transistors +	None	PVC	5-pin M12 male and	No	559 631
	2x 4-20 mA 5-p	5-pin M12 female fixed connectors	UL-Recognized	559 635			
				PVDF	5-pin M12 male and	No	559 633
					5-pin M12 female fixed connectors	و جال اً UL-Recognized	559 637

Note: Order separately (see accessories)

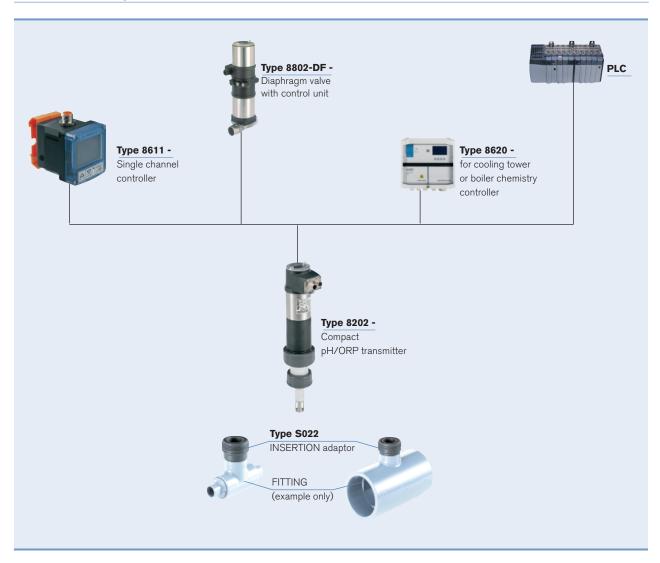
- pH or ORP probe Type 8203
- display/programmer module
- M12 cable plugs (only female for single 4-20 mA, 1 male + 1 female for dual 4-20 mA transmitter)

Ordering chart for accessories

	Specifications	Item no.
Removable display	/programmer module (with instruction sheet)	559 168
Black blank cover	with EPDM seal	560 948
Transparent cover	with EPDM seal	561 843
One ø 46x2 mm EPDM seal for 120 mm probe holder (with instruction sheet)		559 169
Probe holder with PVC nut		560 947
Probe holder with PVDF nut		561 476
	5 pin M12 female straight cable plug with plastic threaded locking ring, to be wired	
	5 pin M12 male straight cable plug with plastic threaded locking ring, to be wired	
	5 pin M12 female straight cable plug moulded on cable (2 m, shielded)	
	5 pin M12 male straight cable plug moulded on cable (2 m, shielded)	559 177

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Interconnection possibilities with other Bürkert devices



To find your nearest Bürkert facility, click on the orange box \rightarrow

www.burkert.com

In case of special application conditions, please consult for advice.

Subject to alteration.
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INSERTION Adapter/Fitting for analytical devices

- Universal adapter/fitting for Type 8202 and 8222 measuring devices in pure, aggressive or polluted liquids
- Adaptation into standard piping systems or conversion of Bürkert S020 fittings to S022 fittings
- Pipe diameters from DN06 (with reduction) to DN110 (plastic) or bigger (stainless steel)



Type 8202 pH or O.R.P. meter



Type 8222
Resistive conductivity meter







Saddle

The adapter/fitting or measuring chamber is used to connect the compact analytical ELEMENT measuring device into piping systems.

Different versions of adapters/fittings are available:

Adapters:

- PVC-U adapter to stick into equal or reduced standard metric or ASTM Tee fitting
- PP adapter to weld into equal d32 standard metric Tee fitting
- Stainless steel adapter to weld
- PVC threaded adapter to screw on tank or pipe
- PVC, PP, stainless steel adapter for conversion of S020 Bürkert fitting into S022 fitting.

Fittings in PVC:

- metric or ASTM Tee fitting

 True union connection
- weld end connection
- saddle

General data	
Pipe diameter	DN06 (with reduction) to DN110 (plastic) or bigger (stainless steel)
Process connection	
Adapter	Solvent, fusion, welding, threaded and to connect with
	screws
Fitting	Metric or ASTM True union or weld ends; saddle
Materials	
Adapter	PVC, PP, stainless steel - delivered with 2 seals, 1 FKM and EPDM
Fitting	
Seal	FKM, EPDM
Body & adapter	PVC&PVC, PP&PVC

Body a adaptor	1 7001 70,110.70					
Medium data						
Medium temperature	See pressure-temperature chart on next page. Temperature limits may depend on inserted measuring device ¹⁾ .					
Medium pressure (max.)	PN10 (plastic) or PN16 (metal). Pressure limits may depend on inserted measuring device ¹⁾ .					
Environment						
Ambient temperature	Temperature limits may depend on inserted measuring device ¹⁾ .					

¹⁾ Please refer to appropriate instruction manual or data sheet for more details.

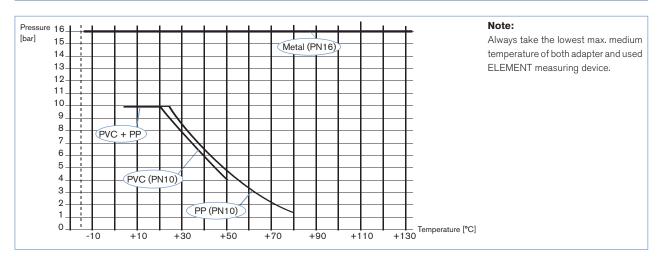
Standards, directives and approvals				
Directive - Pressure	Complying with article 3 of §3 from 97/23/CE directive.*			

^{*} For the 97/23/CE pressure directive, the device can only be used under following conditions (dependent on max. pressure, pipe diameter and fluid).

Type of fluid	Conditions
Fluid group 1, §1.3.a	Only DN ≤ 25
Fluid group 2, §1.3.a	DN ≤ 32, or DN > 32 and PN*DN ≤ 1000
Fluid group 1, §1.3.b	DN ≤ 25, or DN > 25 and PN*DN ≤ 2000
Fluid group 2, §1.3.b	DN ≤ 125



Pressure / temperature chart



Adaptation overview

Adapter/ fitting S022	PVC-U, PP metric or ASTM	Stainless steel	PVC-U, G or NPT 1 ^{1/} ₄ "screw-on	PVC-U, PP, stainless Steel for Bürkert fitting body	
Piping systems					
Final products			B		
DN	32 to 110 (06 to 25 with reduction)	Respect recommendations of installation	Respect recommendations of installation	Respect recommendations of installation	32 to 50

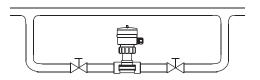


Installation and recommendations

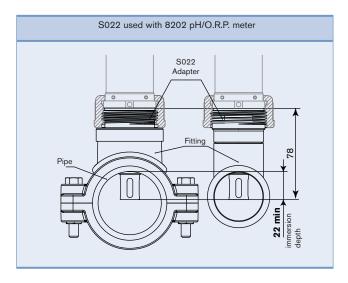
For pH and ORP measurements, we recommend a "U"- form bypass installation to ensure that the electrode is maintained in a wet condition and enable the customer to calibrate the unit without stopping the whole process or to use the special designed measuring chamber.

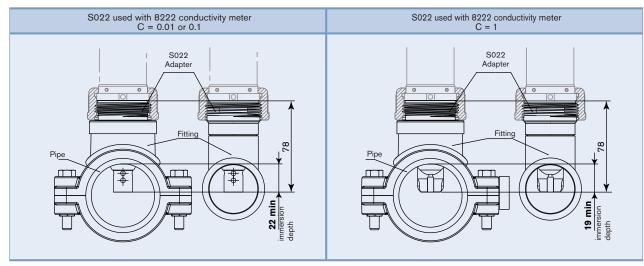
The specially designed measuring chamber enables to install the measuring device in all pipe systems, either directly in the main stream or in a by-pass line. Additionally it enables to keep the electrode always wet and isolates it easily from the main stream for calibration purposes.

Pressure and temperature ratings must be respected according to the selected adapter material. Be sure that the sensor element is completely covered with liquid. Avoid dead legs which interfere the local fluid exchange.



When mounting the adapter into a T-fitting, a tank or directly into a pipe, please ensure that the minimum immersion depth of the electrode is respected (refer to the under drawing).







Dimensions for adapter/fitting S022

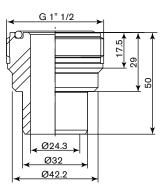
INSERTION adapter for connection into T-fitting or pipe

Note: T-fitting to use for mounting the S022, shown in the opposite drawing



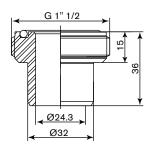
Metric solvent adapter PVC-U / FKM, EPDM

To stick on Tee fitting d32x32 or d40x32 with solvent socket



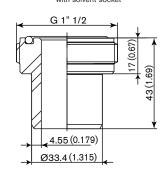
Metric solvent adapter PVC-U / FKM, EPDM

To stick on Tee fitting d50x32 to d50-110x32 with solvent socket



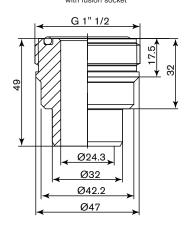
ASTM solvent adapter PVC-U / FKM, EPDM

To stick on Tee fitting 1"x1" to 3"x1" with solvent socket



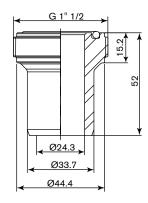
Metric fusion adapter PP / FKM, EPDM

To weld on Tee fitting d32x32 with fusion socket



Metric welding Stainless steel / FKM, EPDM

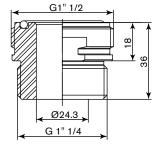
To weld directly on pipe



INSERTION adapter for connection on tank or pipe

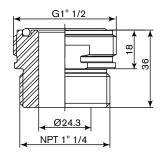
G 1¹/₄" screw-on adapter PVC-U / FKM, EPDM

to screw on tank or pipe



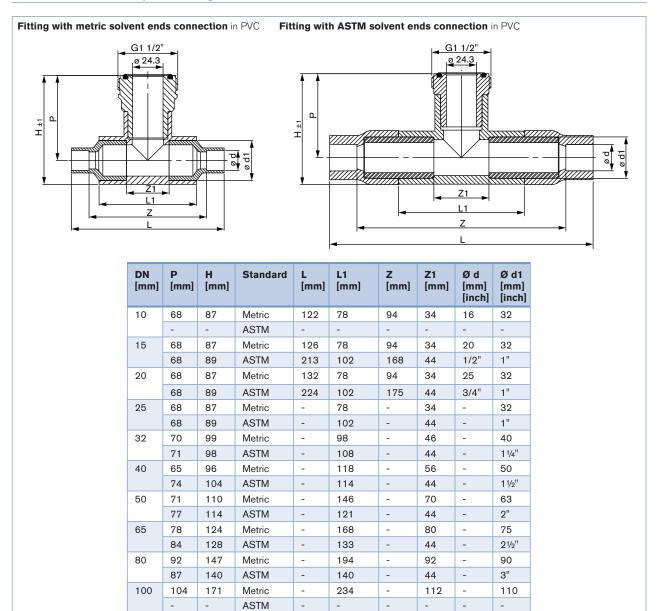
NPT 1¹/₄" screw-on adapter PVC-U / FKM, EPDM

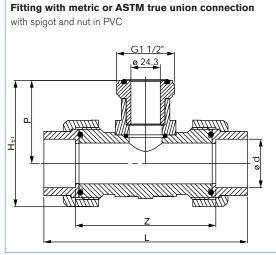
to screw on tank or pipe



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Dimensions for adapter/fitting S022





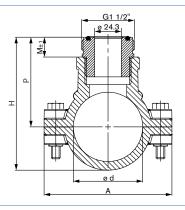
DN [mm]	P [mm]	H [mm]	Stand- ard	L [mm]	Z [mm]	Ø d [mm] [inch]
15	69	104	Metric	148	116	20
			ASTM	162	116	1/2"
20	69	104	Metric	154	116	25
			ASTM	168	116	3/4"
25	69	9 104	Metric	160	116	32
			ASTM	174	116	1"
32	69	104	Metric	168	116	40
			ASTM	170	116	11/4"
40	72	113	Metric	188	126	50
			ASTM	190	126	1 1/2"
50	79	129	Metric	212	136	63
			ASTM	214	136	2"



Dimensions for adapter/fitting S022

Fitting with saddle

PP Body material & PVC adapter EPDM seal material

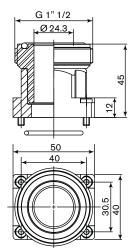


DN [mm]	M [mm]	P [mm]	H [mm]	A [mm]	Ø D [mm]
50	18	82	121	116	63
65	18	89	134	129	75
80	18	96	148	144	90
100	18	107	170	166	110
110	18	113	184	181	125

Adapter to convert S020 T-fitting to S022

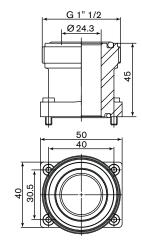
Adapter PVC-U or PP/ FKM, EPDM

For Bürkert fitting body - DN32 or bigger



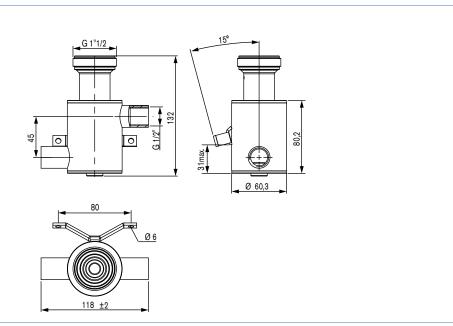
Adapter Stainless steel / FKM, EPDM

For Bürkert fitting body - DN32 or bigger



Measuring chamber

Stainless steel 316L - 1.4404





Ordering chart for adapter/fitting S022

	Description	Materials Body / Seal ¹⁾	Type of installation or DN	Item no.				
Insertion adapter for connection into T-fitting or pipe								
	Metric solvent adapter with G 1½" external threaded for ELEMENT measuring device connection	PVC-U / FKM, EPDM	To stick on Tee fitting d32x32 or d40x32 with solvent socket	560 705				
	Metric solvent adapter with G 1½" external threaded for ELEMENT measuring device connection	PVC-U / FKM, EPDM	To stick on Tee fitting d50x32 to d50-110x32 with solvent socket	560 706				
	ASTM solvent adapter with G 1½" external threaded for ELEMENT measuring device connection	PVC-U / FKM, EPDM	To stick on Tee fitting 1"x1" to 3"x1" with solvent socket	561 227				
	Metric fusion adapter with G 11/2" external threaded for ELEMENT measuring device connection	PP / FKM, EPDM	To weld on Tee fitting d32x32 with fusion socket	561 229				
	Metric welding adapter Ø 33.7 with G 1½" external threaded for ELEMENT measuring device connection	Stainless steel / FKM, EPDM	To weld directly on pipe	561 232				
Insertion ada	pter for connection into T-fitting or pipe							
	G 11/4" screw-on adapter with G 11/2" external threaded for ELEMENT measuring device connection	PVC-U / FKM, EPDM	To screw on tank or pipe	560 707				
	NPT 11/4" screw-on adapter with G 11/2" external threaded for ELEMENT measuring device connection	PVC-U / FKM, EPDM	To screw on tank or pipe	561 228				
Adapter for o	conversion of S020 T-fitting to S022 T-fitting							
	Adapter with G 1½" external threaded for ELEMENT measuring device connection	PVC-U / FKM, EPDM	For Bürkert fitting body \geq DN32 ²⁾	560 854				
	Adapter with G 1½" external threaded for ELEMENT measuring device connection	PP / FKM, EPDM	For Bürkert fitting body \geq DN32 ²⁾	561 230				
	Adapter with G 1½" external threaded for ELEMENT measuring device connection	Stainless steel / FKM, EPDM	For Bürkert fitting body ≥ DN32 ²⁾	561 233				
INSERTION f	INSERTION fitting for connection on pipe							
		DVC / EVM	10	559 640				
	Fitting with metric solvent ends connection with G 1½" external threaded for ELEMENT measuring device connection		15	559 641				
			20	559 642				
			25	559 643				
			32	559 644				
		PVC / FKM	40	559 645				
			50	559 646				
			65	559 647				
			80	559 648				
			100	559 649				
	Fitting with ASTM solvent ends connection with G 1½" external threaded for ELEMENT measuring device connection	PVC / FKM	15	560 815				
			20	560 816				
			25	560 817				
			32	560 818				
			40	560 819				
			50	560 820				
			65	560 821				
			80	560 822				

 $^{^{\}circ}$ 1 FKM and 1 EPDM seals for the measuring device connection are supplied with each adapter. $^{\circ}$ or analytical true union fitting (DN15 - DN25)



Ordering chart for adapter/fitting S022

	Description	Materials Body / Seal ¹⁾	Type of installation or DN	Item no.			
Insertion fitting for connection on pipe							
	Fitting with metric true union connection with spigot and nut for pipe connection and with G 1½" external threaded for ELEMENT measuring device connection	PVC / FKM	15	560 671			
9_			20	560 672			
			25	560 673			
			32	560 674			
			40	560 675			
			50	560 676			
	Fitting with ASTM true union connection with spigot and nut for pipe connection and with G 11/2" external threaded for ELEMENT measuring device connection	PVC / FKM	15	560 691			
			20	560 692			
			25	560 693			
			32	560 694			
			40	560 695			
			50	560 696			
	Fitting with saddle with G 1½" external threaded for ELEMENT measuring device connection	PP Body &	50	560 700			
			65	560 701			
		PVC adapter /	80	560 702			
		EPDM	100	560 703			
			110	560 704			
Measuring chamber							
	Measuring chamber with G 11/2"external threaded for ELEMENT measuring device connection	Stainless steel 316L - 1.4404	Pipe connection: G 1/2"	563 552			

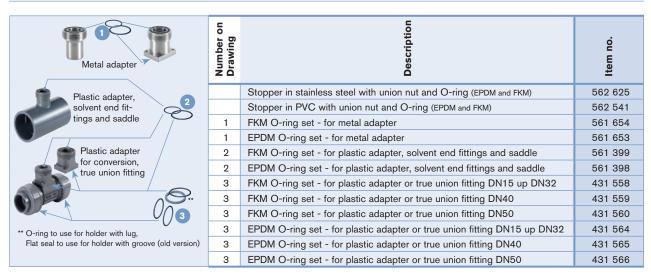
^{1) 1} FKM and 1 EPDM seals for the measuring device connection are supplied with each adapter.

Further versions on request

Materials

PVC-C, PVDF with FKM or EPDM seal

Ordering chart - accessories for adapter/fitting S022 (has to be ordered separately)



*To find your nearest Bürkert office, click on the orange box \rightarrow

www.burkert.com

In case of special application conditions, please consult for advice.

Subject to alteration.
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