



SATRON®

PREON™ VT Pressure Transmitter

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#LookCloser

SATRON VT pressure transmitter belongs to the series V-transmitters. SATRON VT is used for 0–1.4 kPa...0–100 MPa ranges. It is a 2-wire transmitter with HART® standard communication. In pressure measuring applications SATRON VT-transmitters are used for measuring the pressure of clean gases, steam and non-crystallizing liquids. The transmitter's sensor is piezoresistive. The rangeability is 100:1 for types VT6–VT7.



TECHNICAL SPECIFICATIONS

Measuring range and span

See Selection Chart.

Zero and Span adjustment

Zero elevation: Calibrated span is freely selectable on the specified range depending from the desired option. This can be made by using the local display option, HART® communicator or Si-Tool.

Damping

Time constant is continuously adjustable 0.01 to 60 s.

Temperature limits

Ambient: –30 to +80 °C

Process:

Process connections 1 and 2:

–30 to +125 °C

Process connections 3 and 5:

–30 to +80 °C

Shipping and storage: –40 to +80 °C.

Operating temperature of display:
0 to +50°C (does not affect operation of the transmitter)

Pressure limits

Min. and max. process

pressure: See the appended tables.

Volumetric displacement

< 0.5 mm³ /max. span

Output

2-wire (2W), 4–20 mA,
user selectable for linear, square root,
inverted signal or the transfer function
(16 points) specified by the user

Supply voltage and permissible load

See the load capacity diagram;

4–20 mA output: 12–35 VDC.

Humidity limits

0–100 % RH; freezing of condensed
water not allowed in reference pressure
channels.

PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC 60770:
Reference conditions, specified span,
no range elevation, horizontal mounting;
AISI316L diaphragm, silicone oil fill.

Accuracy

Process connections 1 and 2:

±0.05 % of calibrated span
(span 1:1–5:1 /max.range).

Process connections 3 and 5:

±0.10 % of calibrated span
(span 1:1–5:1 /max.range).
On the measuring ranges 5:1–100:1:

$$\pm [0.025 + 0.01 \times \left(\frac{\text{max. span}}{\text{calibrated span}} \right)] \% \text{ Of calibrated span}$$

Diaphragm material AISI304:

±1.5 % of calibrated span
(span 1:1–100:1 /max.range).

(incl. nonlinearity, hysteresis and re-
peatability)

Long-term stability

±0.1 %/max. span/12 months

Temperature effect on compensated temperature ranges –20...+80 °C

Zero and span shift:

±0.15 % of max. span

Mounting position effect (VT3 – VT7)

Zero error < 0.32 kPa, which can be
calibrated out.

VT8: mounting position has no effect

Vibration effect

(IEC 68–2–6: FC):
±0.1 % of measuring range/
2g/10 to 2000 Hz
4g/10 to 100 Hz

Power supply effect

< ±0.01 of calibrated span per volt

Insulation test voltage

500 V rms 50 Hz

CONSTRUCTION AND CALIBRATION

Materials

Diaphragm¹⁾: AISI316L (EN 1.4435),
AISI304 (EN 1.4301), Duplex (EN
1.4462), Hastelloy® C276 (EN 2.4819),
Tantalum or Titanium Gr2 (EN 3.7035)

Other sensing element materials:
AISI316, SIS 2343.

Filling fluid

Silicone oil or inert fluid
(VT3 – VT7)

Enclosure class IP66

Housing with PLUG connector, housing type code H

Housing: AISI316

Seals: FPM

TEST jacks: MS358Sn/PVDF, protected
with silicone rubber shield.

PLUG connector: PA6–GF30 jacket,
Silicone rubber seal, AISI316 retaining
screw.

Housing with junction box/terminal strip, housing type codes M and N

Housing: AISI303/316

Seals: FPM, EPDM

Nameplates: PE

Connection hose between sensing element and housing

Codes L and K :

PTFE hose with AISI316 braiding

Calibration

For customer-specified range with 1
s. damping. (If range is not specified,
transmitter is calibrated for max. range)

Electrical connections

Housing with PLUG connector, H:
PLUG connector, connector type DIN
43650 model AF; Pg9 gland for cable;
wire cross-section 0.5 to 1.5 mm².

Housing with junction box/terminal strip,
M and N: M20x1.5, 1/2–NPT inlet; screw
terminals for 0.5 to 2.5 mm² wires

Weight

Transmitter

– with housing types H: 0,7 kg

– with housing type M and N: 1,2 kg

¹⁾ Parts in contact with process medium

PRODUCT CERTIFICATIONS

European Directive Information:
Electro Magnetic Compatibility
EMC directive 2014/30/EU

ATEX directive 2014/34/EU

Satron Instruments Inc. complies with the ATEX directive.

European Pressure Equipment Directive (PED)
2014/68/EU

All pressure transmitters

• Sound Engineering Practice

Transmitters with nominal pressure higher than 200 bar fulfill the requirements of the Conformity Assessment procedure Module A of the directive.

Hazardous Locations Certifications:

European Certifications

ATEX Intrinsic Safety

Certification No:

DNV-2007-OSL-ATEX-1346X

Ex II 1 GD T135°C EEx ia II C T4 -20°C ≤ Tamb ≤ 50°C
Ex II 2 GD T135°C EEx ia II C T4 -20°C ≤ Tamb ≤ 50°C

Input Parameters :

Ui = 28 V

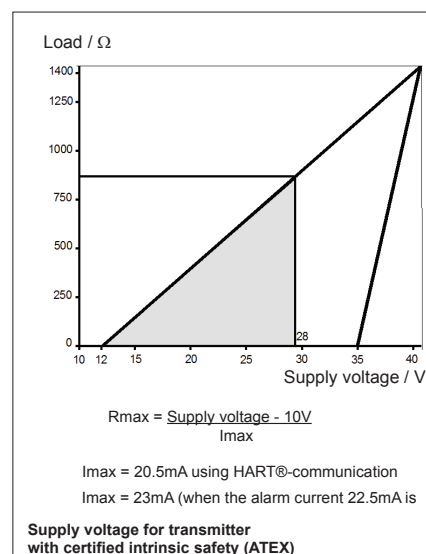
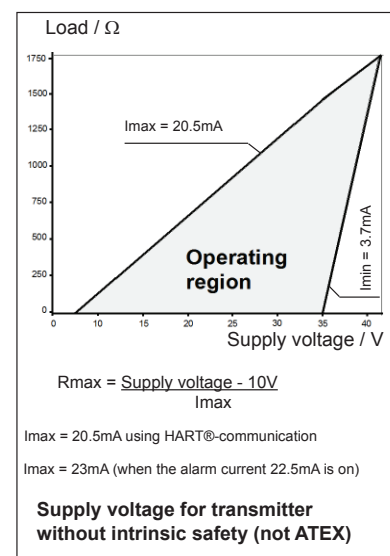
Ii = 93 mA

Pi = 0.651 W

Ci = 5 nF

Li = 0.2 mH

Special Conditions for Safe Use (X): The enclosure with plastic window and the plastic DIN43650 connector must not be installed in potentially explosive atmosphere requiring category 1 apparatus. The non-conducting surface of the sensor element may be charged by the flow of non-conducting media, so there may be electrostatic hazard with IIC-gases. These units should be marked 2 GD. The equipment shall be installed and connected according to the manufacturers instructions



Pressure limits

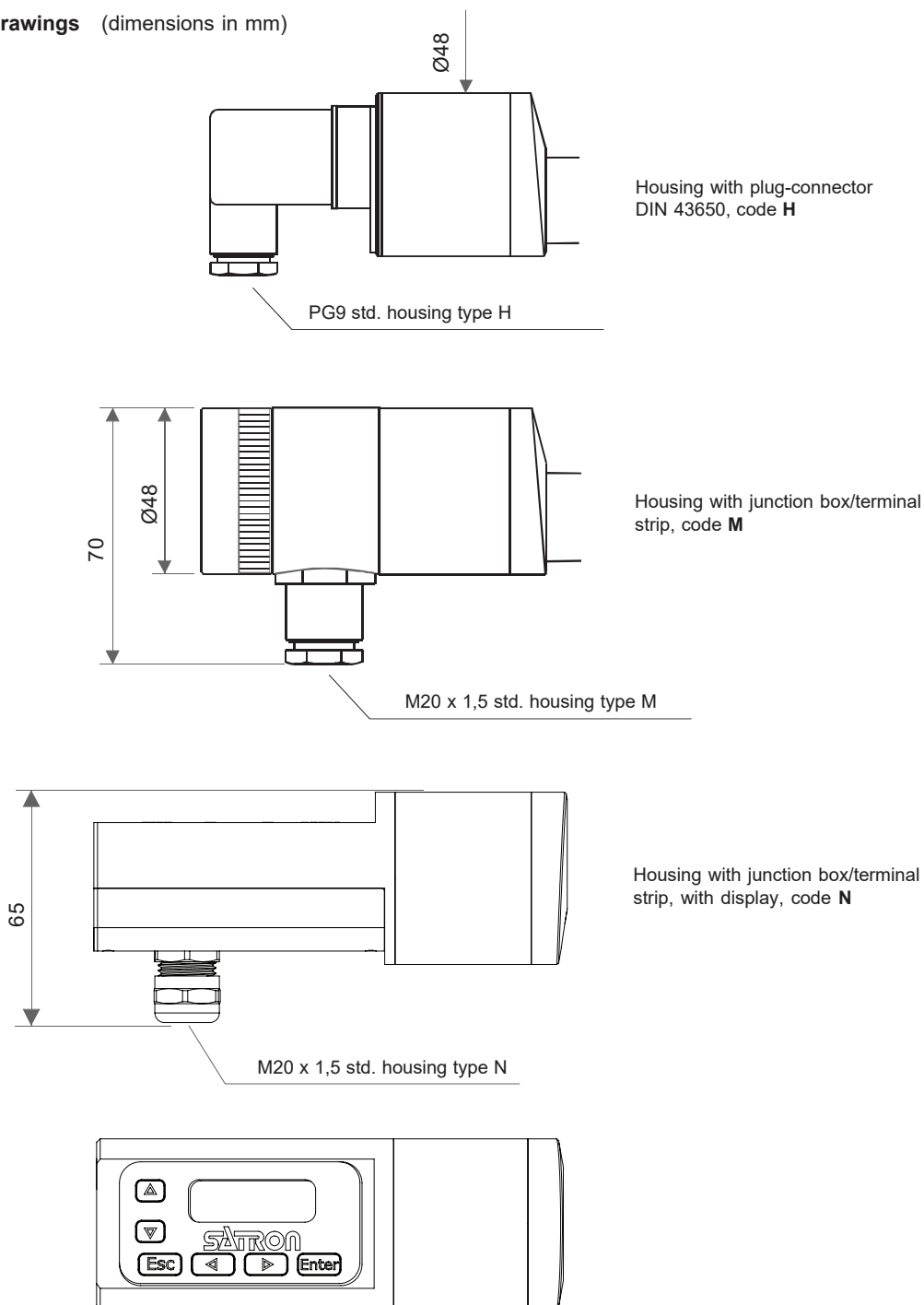
Maximum process pressure, MPa

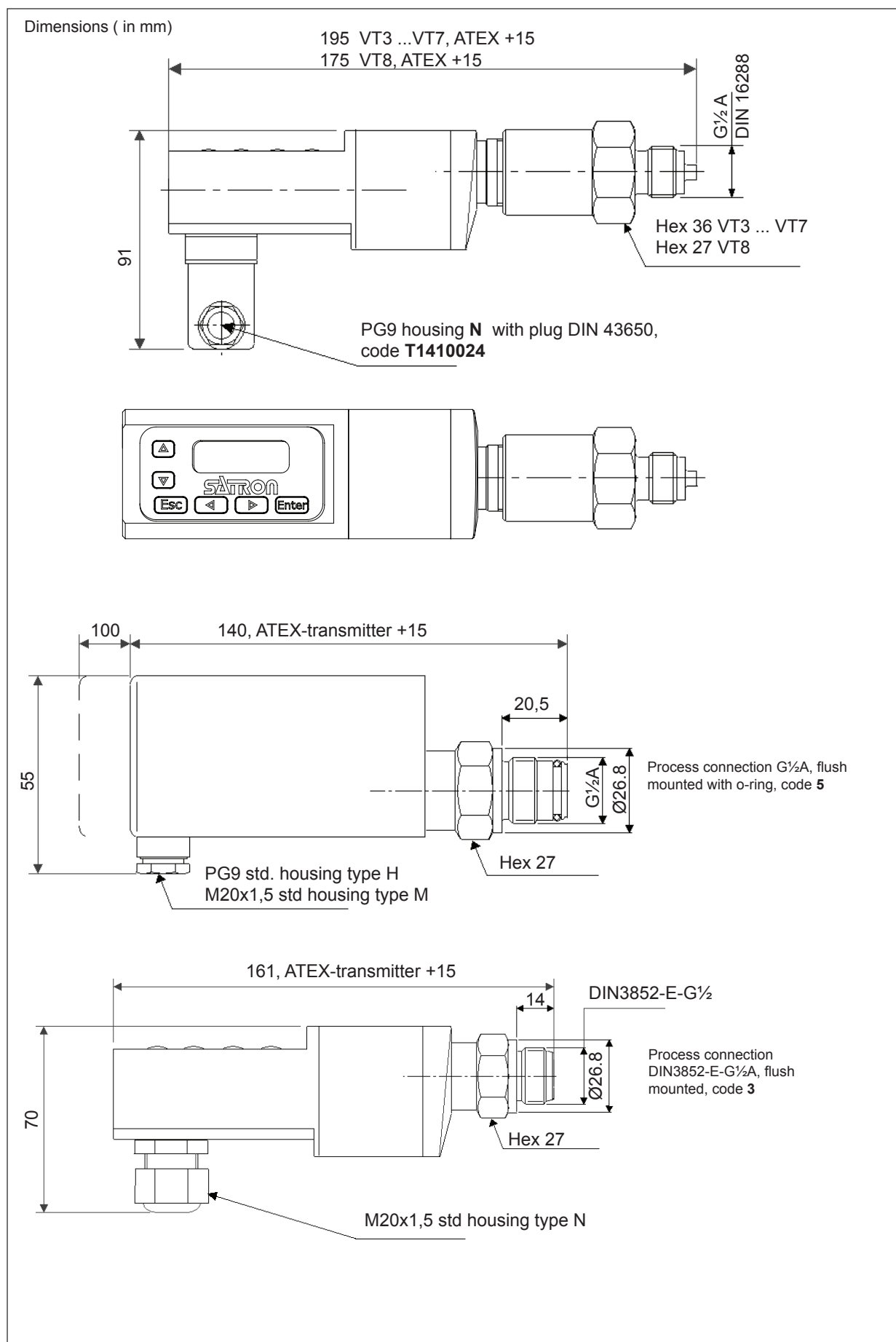
Trans-mitter type	Max. overload pressure	Pressure class
VT3	0.2	PN40
VT4	0.3	PN40
VT5	1.5	PN40
VT6	7.5	PN100
VT7	40.0	PN250

Minimum process pressure
(VT8: no min. pressure limitations)

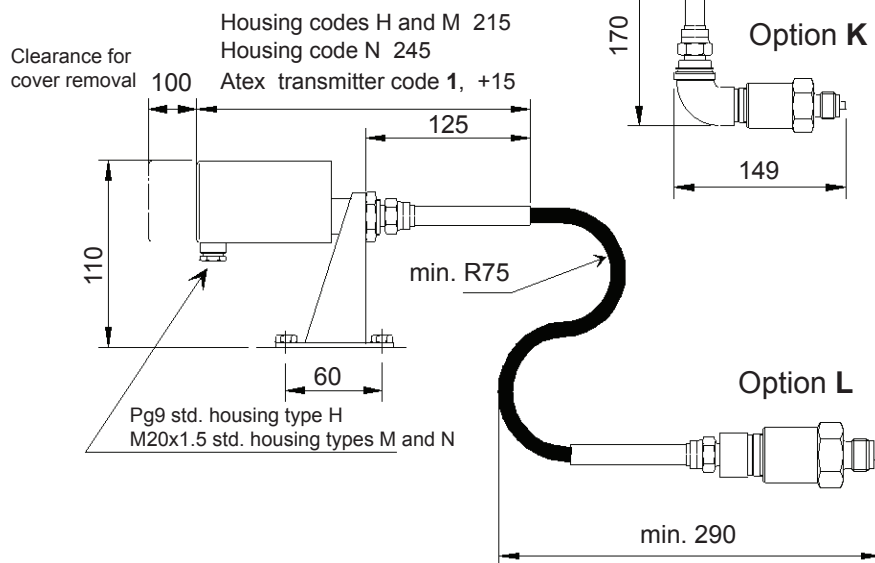
T _{proc.} °C	Minimum pressure for different fill fluids (kPa, abs.)	
	DC200 100 cSt	Inert oil
20	5	8
40	8	10
80	16	28
120	21	53

Dimensional drawings (dimensions in mm)

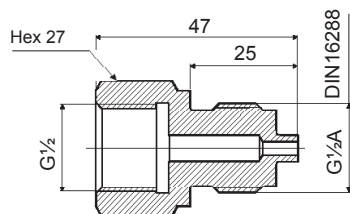




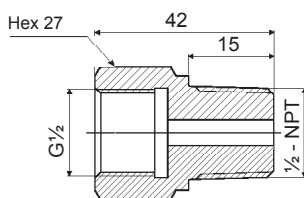
Dimensions (mm)



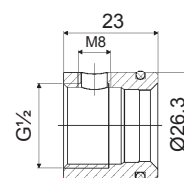
Remote electronics, connecting cable with protection hose, codes **L** and **K**



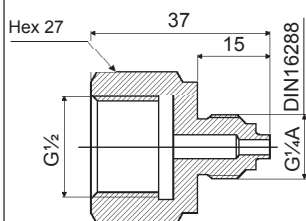
Thread DIN16288 - G $\frac{1}{2}$ A
Ordered code : T1320291



Thread $\frac{1}{2}$ - 14 NPT
Ordered code : T1320293



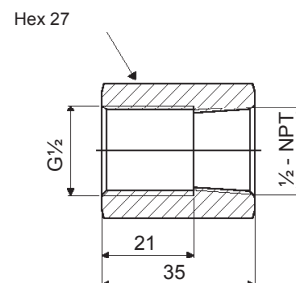
PMC 1" (Ø26,3), for process connection code 5
Ordered code : T1320310



Thread DIN16288 - G $\frac{1}{4}$ A
Ordered code : T1320292

For example the process connection of the flush mounted transmitter (DIN3852-E-G $\frac{1}{2}$) can be changed using modification adapters.

Other adapter sizes, please contact to Satron Instruments Inc.

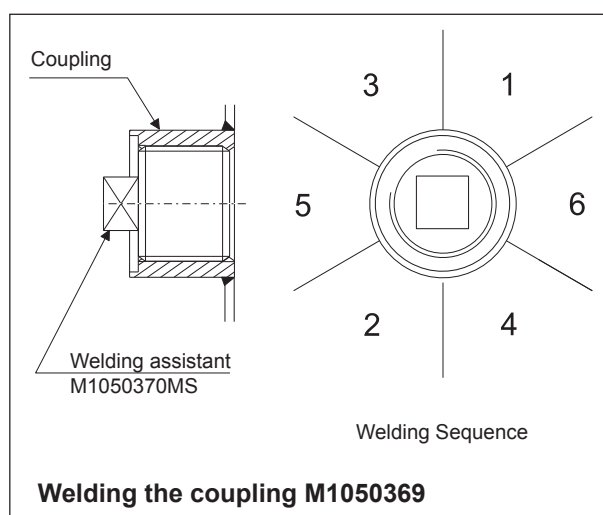
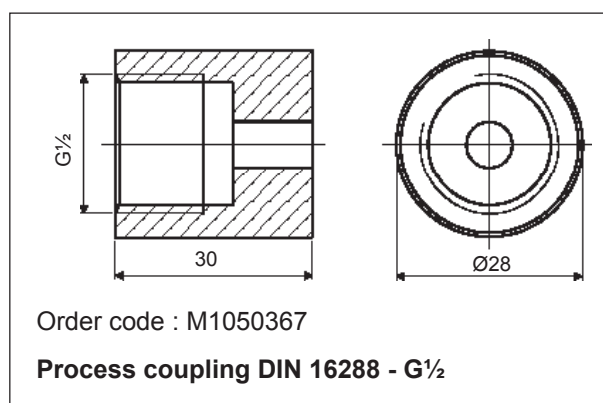
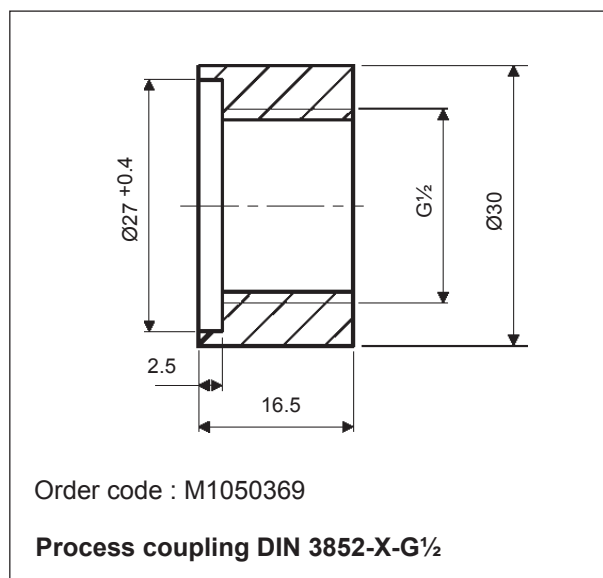
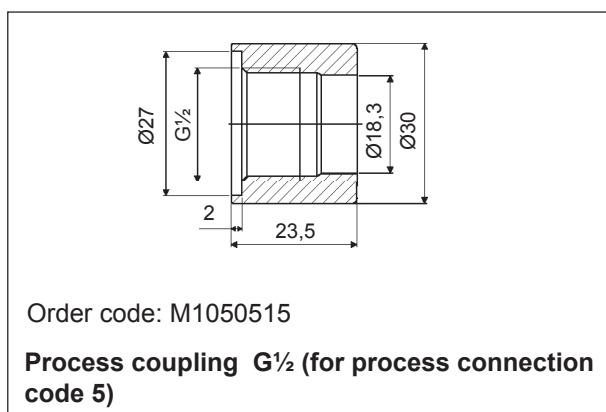
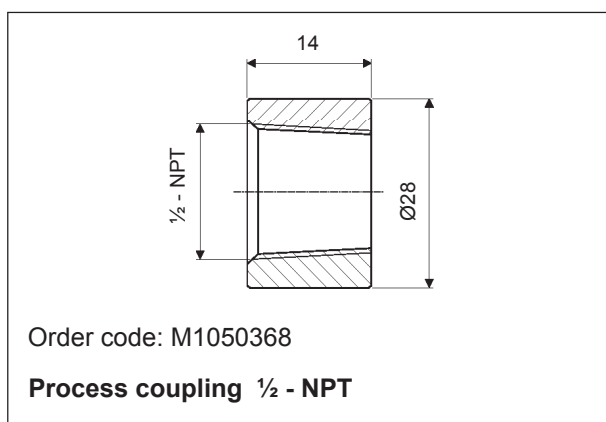
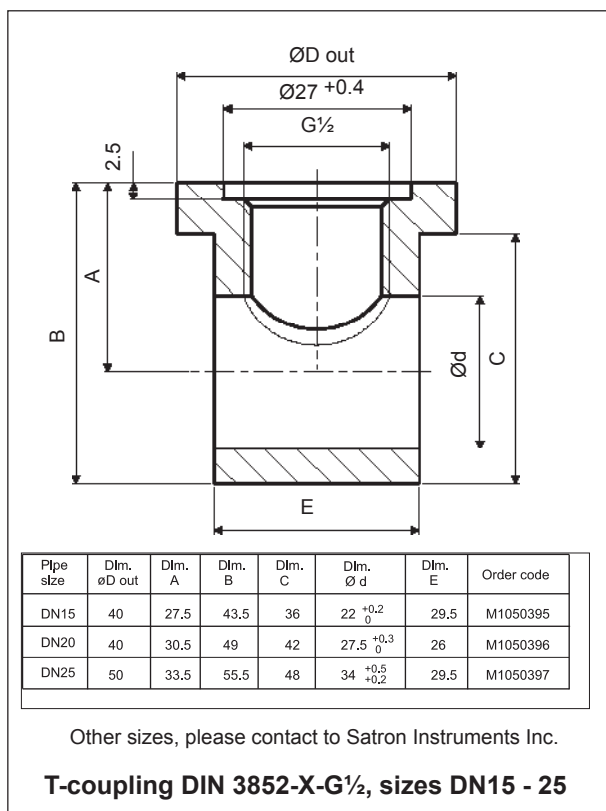


Thread $\frac{1}{2}$ - 14 NPT, female
Ordered code : M1050471

For process connection 3

Modification adapters of the process connection, for types VT3 ... VT8

Process couplings



For more process couplings, see VT Couplings datasheet.

SELECTION CHART

Adjustability	Span, min.	Span, max.	Measuring range
VT3	1.4 kPa (14 mbar)	35 kPa (350 mbar)	-35...+35 kPa (-350...350 mbar)
VT4	4 kPa (40 mbar)	100 kPa (1000 mbar)	-100...+100 kPa (-1000...1000 mbar)
VT5	10 kPa (100 mbar)	500 kPa (5000 mbar)	-100...+500 kPa (-1000...5000 mbar)
VTA5	10 kPa (100 mbar)	500 kPa (5000 mbar)	0...+500 kPa (0...5000 mbar), abs.
VT6	0.03 MPa (0.3 bar)	3 MPa (30 bar)	-0.1...+3 MPa (-1...+30 bar)
VTA6	0.03 MPa (0.3 bar)	3 MPa (30 bar)	0...+3 MPa (0...+30 bar), abs.
VT7	0.15 MPa (1.5 bar)	15 MPa (150 bar)	0...+15 MPa (0...+150 bar), abs.
VTA7	0.40 MPa (4 bar)	40 MPa (400 bar)	0...+40 MPa (0...+400 bar), abs.
VT8	1 MPa (10 bar)	100 MPa (1000 bar)	-0.1...+100 MPa (-1...+1000 bar)

Output S 4-20mA DC/HART® -protocol

Process Connections

1	G ½A DIN 16288 (male)	2	½- NPT (male)	3	DIN 3852-X-G½A (male), flush mounted, not VT3, VT8
5	G½A (male), flush mounted, with o-ring. not VT3, VT7, VTA7, VT8				

Wetted material

Body

Code	Material
2	AISI316L (EN 1.4404)
3	Hastelloy® C276 (EN 2.4819) ¹⁾
6	Titanium Gr2 (EN 3.7035) ¹⁾
8	Duplex (EN 1.4462) ¹⁾

Diaphragm

Code	Material
2	AISI316L (EN 1.4435) (no VT8)
3	Hastelloy®C276 (no VT3, VT8) ¹⁾
5	Tantalum (no VT3, VT8) ¹⁾
6	Titanium Gr2 (EN 3.7035) (no VT3, VT4) ¹⁾
8	Duplex (EN 1.4462) (no VT3, VT8) ¹⁾
A	AISI304 (EN 1.4301) (no VT3, VT8) ¹⁾

Fill fluid (specify for types VT3 - VTA7)

S

Silicone oil

G

Inert fluid for oxygen use

Housing type

H	Housing with PLUG-connector, DIN43650, no display, inlet PG9
M	Housing with junction box/terminal strip, no display, inlet M20x1,5
N	Housing with junction box/terminal strip, with display, inlet M20x1,5

Explosion proof

O

No Explosion proof

1

ATEX Intrinsic safety  II 1 GD 135°C²⁾

Special features

Example code

VT5 S 1 22 S N O

Special features (specify only if necessary)

Remote electronics (specify only if housing connected with cable to sensing element)

- connecting cable with protection hose

L Hose protected with PTFE/AISI316 braiding, straight

K Hose protected with PTFE/AISI316 braiding, 90° angle

Length of connection cable between sensing element and housing

2 2m cable 3 3m cable etc. (max length 10 m)

Optional items - order separately

Special size of electrical inlet, for housing types M or N

T1410026	1/2NPT	T1410024	Plug DIN 43650
T1410027	Pg13.5	T1410025	M12 4-pin

Mounting parts for remote electronics

M1050025 for pipe Ø51 mm (2") M1050025-1 for pipe Ø60 mm (2.25")

Documentation

Material certificates

MC1	Raw material certificate without appendices, in accordance with SFS-EN 10204-2.1 (DIN 50049-2.1) standard
MC2	Raw material certificate for wetted parts, in accordance with SFS-EN 10204-2.2 (DIN 50049-2.2) standard
MC3	Raw material certificate for wetted parts, in accordance with SFS-EN 10204-3.1 B (DIN 50049-3.1 B) standard

¹⁾ Not for process connection code 3 or VTA7.

²⁾ Housing H and N:  II 2 GD T135°C.

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