

Technical specifications

SITRANS P300 for gauge pressure with PMC connection for the paper industry

Input																					
Measured variable	Gauge pressure (front-flush)																				
Span (fully adjustable) or measuring range, max. operating pressure and max. test pressure	<table border="1"> <thead> <tr> <th>HART</th> <th>PROFIBUS PA/ FOUNDATION Fieldbus</th> <th>Max. operating pressure MAWP (PS)</th> <th>Max. perm. test pressure</th> </tr> </thead> <tbody> <tr> <td>Span</td> <td>Nominal measuring range</td> <td></td> <td></td> </tr> <tr> <td>0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi</td> <td>1 bar 100 kPa 14.5 psi</td> <td>4 bar 400 kPa 58 psi</td> <td>6 bar 600 kPa 87 psi</td> </tr> <tr> <td>0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi</td> <td>4 bar 400 kPa 58 psi</td> <td>7 bar 0.7 MPa 102 psi</td> <td>10 bar 1 MPa 145 psi</td> </tr> <tr> <td>0.16 ... 16 bar 16 ... 1600 kPa 2.3 ... 232 psi</td> <td>16 bar 1600 kPa 232 psi</td> <td>21 bar 2.1 MPa 305 psi</td> <td>32 bar 3.2 MPa 464 psi</td> </tr> </tbody> </table>	HART	PROFIBUS PA/ FOUNDATION Fieldbus	Max. operating pressure MAWP (PS)	Max. perm. test pressure	Span	Nominal measuring range			0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi	0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi	0.16 ... 16 bar 16 ... 1600 kPa 2.3 ... 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
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Lower measuring limit (For PMC-Style Minibolt no span < 500 mbar adjustable)	100 mbar a/10 kPa a/1.45 psi a																				
Upper measuring limit	100 % of max. span																				
Output																					
Output signal	<table border="1"> <thead> <tr> <th>HART</th> <th>PROFIBUS PA/ FOUNDATION Fieldbus</th> </tr> </thead> <tbody> <tr> <td>4 ... 20 mA</td> <td>Digital PROFIBUS PA and FOUNDATION Fieldbus signal</td> </tr> <tr> <td>• Lower limit (infinitely adjustable)</td> <td>-</td> </tr> <tr> <td>• Upper limit (infinitely adjustable)</td> <td>-</td> </tr> <tr> <td>Load</td> <td></td> </tr> <tr> <td>• Without HART communication</td> <td>-</td> </tr> <tr> <td>• With HART communication</td> <td>-</td> </tr> <tr> <td>Physical bus</td> <td>IEC 61158-2</td> </tr> <tr> <td>Protection against polarity reversal</td> <td>Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.</td> </tr> <tr> <td>Electrical damping (step width 0.1 s)</td> <td>Set to 2 s (0 ... 100 s)</td> </tr> </tbody> </table>	HART	PROFIBUS PA/ FOUNDATION Fieldbus	4 ... 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal	• Lower limit (infinitely adjustable)	-	• Upper limit (infinitely adjustable)	-	Load		• Without HART communication	-	• With HART communication	-	Physical bus	IEC 61158-2	Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)
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4 ... 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal																				
• Lower limit (infinitely adjustable)	-																				
• Upper limit (infinitely adjustable)	-																				
Load																					
• Without HART communication	-																				
• With HART communication	-																				
Physical bus	IEC 61158-2																				
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.																				
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)																				
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA																				
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA																				
Load																					
• Without HART communication	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω U_H : Power supply in V																				
• With HART communication	$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)																				
Physical bus	-																				
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.																				
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)																				
Measuring accuracy																					
Reference conditions	Acc. to IEC 60770-1																				
Measuring span ratio r (spread, Turn-Down)	<ul style="list-style-type: none"> Increasing characteristic Start-of-scale value 0 bar/kPa/psi Stainless steel seal diaphragm Measuring cell with silicone oil Room temperature 25 °C (77 °F) 																				
Error in measurement at limit setting incl. hysteresis and reproducibility	$r = \text{max. measuring span/set measuring span or nom. pressure range}$																				
Linear characteristic																					
- $r \leq 5$	$\leq 0.075 \%$																				
- $5 < r \leq 100$	$\leq (0.005 \cdot r + 0.05) \%$																				
Influence of ambient temperature (in percent per 28 °C (50 °F))	$\leq (0.08 \cdot r + 0.16) \%$																				
Long-term stability (temperature change $\pm 30 \text{ °C}$ ($\pm 54 \text{ °F}$))	$\leq (0.25 \cdot r) \%$ in 5 years																				
Effect of mounting position	$\leq 0.1 \text{ mbar}/0.01 \text{ kPa}/0.00145 \text{ psi}$ per 10° inclination (zero point correction is possible with position error compensation)																				
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V																				
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range																				

Pressure Measurement

Pressure transmitters
for gauge pressure for the paper industry

SITRANS P300 with PMC connection

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Rated conditions

Installation conditions

Ambient temperature

- Measuring cell with silicone oil
- Display readable
- Storage temperature

Climatic class

Condensation

Degree of protection

- according to EN 60529
- according to NEMA 250

Electromagnetic Compatibility

- Emitted interference and interference immunity

Medium conditions

Temperature of medium

- Measuring cell with silicone oil

Observe the temperature class in areas subject to explosion hazard.

-40 ... +85 °C (-40 ... +185 °F)

-30 ... +85 °C (-22 ... +185 °F)

-50 ... +85 °C (-58 ... +185 °F)

Relative humidity 0 ... 100 %

Condensation permissible, suitable for use in the tropics

IP65, IP68

Type 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)

Acc. to IEC 61326 and NAMUR NE 21

-40 ... +100 °C (-40 ... +212 °F)

Design

Weight (without options)

Approx. 1 kg (2.2 lb)

Enclosure material

Stainless steel, mat. no. 1.4301/304

Material of parts in contact with the medium

- Seal diaphragm
- Measuring cell filling

Hastelloy C276, mat. no. 2.4819

Silicone oil

Surface quality touched-by-media

Ra-values $\leq 0.8 \mu\text{m}$ (32 μ inch)/welds $Ra \leq 1.6 \mu\text{m}$ (64 μ inch)

Power supply U_H

Terminal voltage on transmitter

HART

10.5 ... 42 V DC
for intrinsically safe operation:
10.5 ... 30 V DC

PROFIBUS PA/ FOUNDATION Fieldbus

Power supply

Supplied through bus

Separate power supply

-

Not necessary

Bus voltage

- Without Ex
- With intrinsically-safe operation

-

9 ... 32 V

-

9 ... 24 V

Current consumption

- Max. basic current
- Start-up current \leq basic current
- Max. fault current in the event of a fault

-

12.5 mA

-

Yes

-

15.5 mA

Fault disconnection electronics (FDE) available

-

Yes

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Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 4, paragraph 3 (sound engineering practice)	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Marking	II 1/2 G Ex ia IIC/IIB T4/T5/T6 Ga/Gb	
Permissible ambient temperature		
• Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)	
• Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)	
• Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)	
Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$, $R_i = 300 \Omega$	To certified intrinsically-safe circuits with peak values: FISCO supply unit: $U_i = 17.5 \text{ V}$, $I_i = 380 \text{ mA}$, $P_i = 5.32 \text{ W}$ Linear barrier: $U_i = 24 \text{ V}$, $I_i = 250 \text{ mA}$, $P_i = 1.2 \text{ W}$
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 1.1 \text{ nF}$
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i \leq 7 \mu\text{H}$
Explosion protection to FM for USA <u>and</u> Canada (cFM _{US})		
• Identification (DIP) or (IS): (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
• Identification (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	

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SITRANS P300 with PMC connection

HART communication		FOUNDATION Fieldbus communication	
HART	230 ... 1100 Ω	Function blocks	3 function blocks analog input, 1 function block PID
Protocol	HART Version 5.x	• Analog input	Yes, linearly rising or falling characteristic
Software for computer	SIMATIC PDM	- Adaptation to customer-specific process variables	0 ... 100 s
PROFIBUS PA communication		- Electrical damping, adjustable	Output/input (can be locked within the device with a bridge)
Simultaneous communication with master class 2 (max.)	4	- Simulation function	parameterizable (last good value, substitute value, incorrect value)
The address can be set using	Configuration tool Local operation (standard setting Address 126)	- Failure mode	Yes, one upper and lower warning limit and one alarm limit respectively
Cyclic data usage		- Limit monitoring	Yes
• Output byte	One measured value: 5 bytes Two measured values: 10 bytes	- Square-rooted characteristic for flow measurement	Standard FOUNDATION Fieldbus function block
• Input byte	Register operating mode: 1 bytes Reset function due to metering: 1 bytes	• PID	1 resource block
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, class B	• Physical block	1 transducer block Pressure with calibration, 1 transducer block LCD
Function blocks	2	Transducer blocks	
• Analog input		• Pressure transducer block	
- Adaptation to customer-specific process variables	Linearly rising or falling characteristic	- Can be calibrated by applying two pressures	Yes
- Electrical damping	0 ... 100 s adjustable	- Monitoring of sensor limits	Yes
- Simulation function	Input /Output	- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
• Register (totalizer)	Can be reset and preset Optional direction of counting Simulation function of the register output		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
• Physical block	1		
Transducer blocks	2		
• Pressure transducer block			
- Monitoring of sensor limits	Yes		
- Specification of a container characteristic with	Max. 31 nodes		
- Characteristic curve	Linear		
- Simulation function	Available		
• Transducer block "Electronic temperature"			
Simulation function	Available		

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Selection and Ordering data		Article No.
SITRANS P300 pressure transmitters with PMC connection , single-chamber measuring housing, rating plate inscription in English		
with 4 ... 20 mA / HART	↗	7 MF 8 1 2 3 -
with PROFIBUS PA	↗	7 MF 8 1 2 4 -
with FOUNDATION Fieldbus (FF)	↗	7 MF 8 1 2 5 -
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
Measuring span		
1 bar ¹⁾	(14.5 psi)	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
Wetted parts materials		
Seal diaphragm	Measuring cell	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (minimum span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B))		3
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard versions		1
Explosion protection		
• None		A
• With ATEX, Type of protection: - "Intrinsic safety (Ex ia)"		B
• Zone 20/21/22 ²⁾		C
• Ex nA/nL (Zone 2) ³⁾		E
• With FM + CSA, Type of protection: - "Intrinsic Safe (is)" (planned) ⁴⁾		M
Electrical connection/cable entry		
• Screwed gland M20 x .5 (polyamide) ⁵⁾		A
• Screwed gland M20 x 1.5 (metal)		B
• Screwed gland M20 x 1.5 (stainless steel)		C
• Device plug M12 (stainless steel), without cable socket		G
• ½-14 NPT metal thread ⁶⁾		H
• ½-14 NPT stainless steel thread ⁶⁾		J

Selection and Ordering data		Article No.
SITRANS P300 pressure transmitters with PMC connection , single-chamber measuring housing, rating plate inscription in English		
with 4 ... 20 mA / HART		7 MF 8 1 2 3 -
with PROFIBUS PA		7 MF 8 1 2 4 -
with FOUNDATION Fieldbus (FF)		7 MF 8 1 2 5 -
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Display		
• Without display, with keys, closed lid		1
• With display and keys, closed lid ⁷⁾		2
• With display and keys, lid with polycarbonate disc (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units) ⁷⁾		4
• With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with polycarbonate disc ⁷⁾		5
• With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure unit) ⁷⁾		6
• With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass panel ⁷⁾		7
Power supply units see Chap. 7 "Supplementary Components".		
Included in delivery of the device:		
• Quick-start guide		
• Sealing ring		
1) Only with "Standard" process connection"		
2) Not in conjunction with electrical connection option A.		
3) Only available together with electrical connection options B, C or G.		
4) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.		
5) Only together with HART electronics.		
6) Without cable gland.		
7) Display cannot be turned.		

Pressure Measurement

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Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Cable socket for device plugs M12				
• Stainless steel	A51	✓	✓	✓
Rating plate inscription (instead of English)				
• German	B10	✓	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH ₂ O and/or psi				
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓	✓	✓
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Mounting				
• Weldable sockets for standard 1½" threaded connection	P01	✓	✓	✓
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	✓	✓	✓

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set	Y01	✓	✓ ¹⁾	
Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indication in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or %) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units²⁾	Y22 + Y01	✓		
Specify in plain text: Y22: up to l, m ³ , m, USg, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)				
Preset bus address	Y25		✓	✓
possible between 1 and 126 Specify in plain text: Y25:				

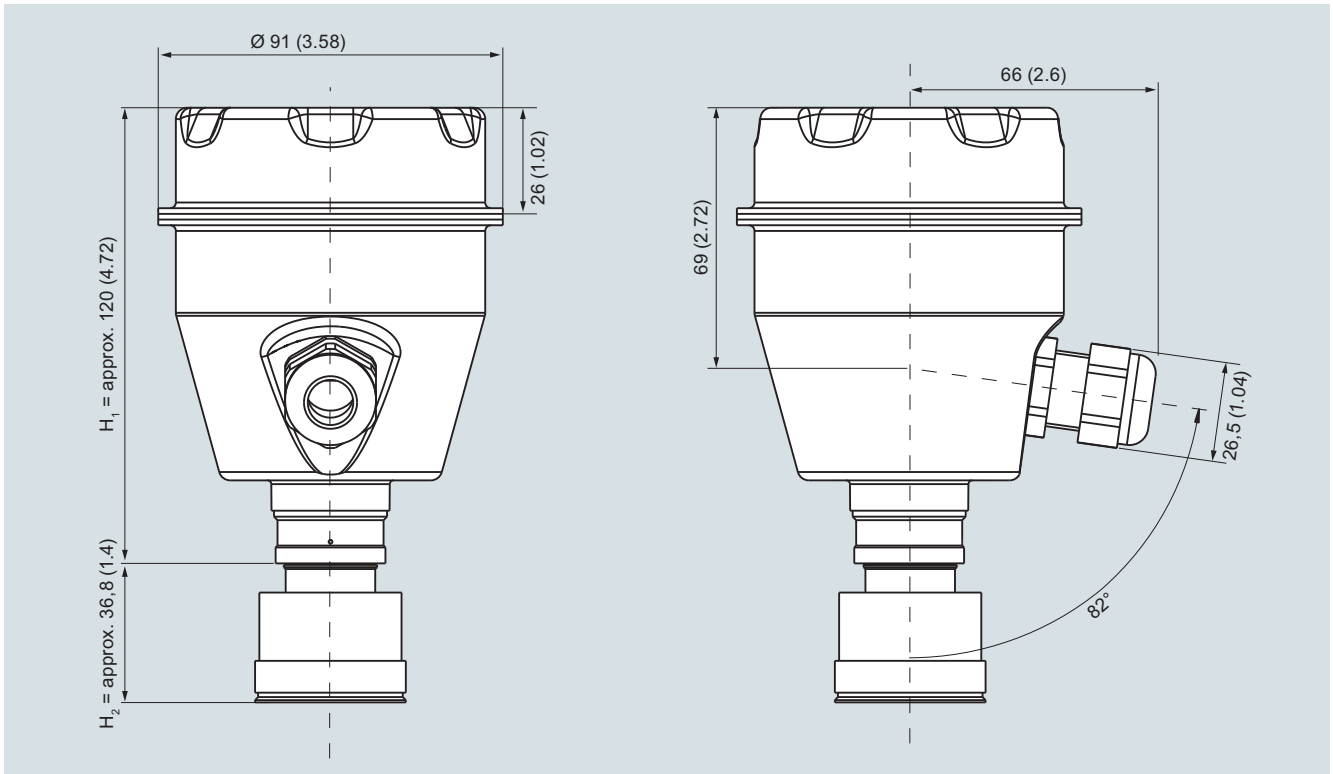
Only "Y01" and "Y21" can be factory preset

✓ = available

¹⁾ Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

²⁾ Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



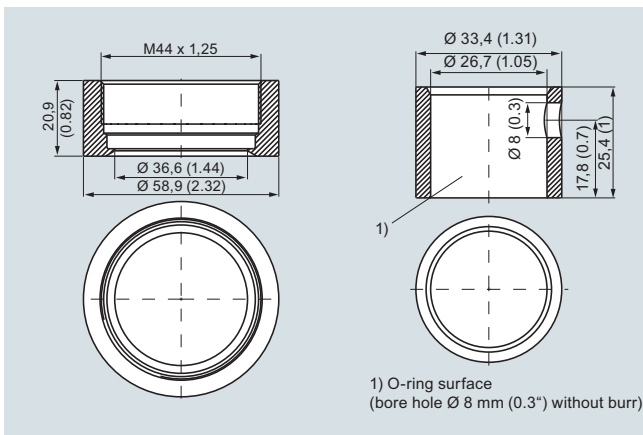
SITRANS P300 pressure transmitters for gauge pressure, with PMC connection, dimensions in mm (inch)

The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into H₁ and H₂.

H₁ = Height of the SITRANS P300 up to a defined cross-section

H₂ = Height of the flange up to this defined cross-section

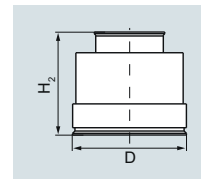
Only the height H₂ is indicated in the dimensions of the flanges.



PMC Style Standard (left) and PMC Style Minibolt (right) weldable sockets, dimensions in mm (inch)

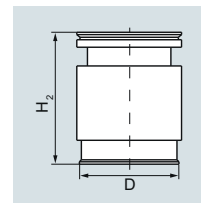
Material: Stainless steel, mat. No. 1.4404 / 316L

PMC Style Standard



DN	PN	ØD	H ₂
		40.4 mm (1.6")	Approx. 36.8 mm (1.4")

PMC Style Mini bolt



DN	PN	ØD	H ₂
		26.3 mm (1.0")	Approx. 33.1 mm (1.3")