

# Contrans P HART<sup>®</sup> Transmitter

## ASD 800 / 810 with Remote Seal for Gauge / Absolute Pressure and Level

Span: 60 mbar to 600 bar (16 bar abs)  
(6 kPa to 60,000 kPa)  
(6 kPa to 1,600 kPa abs)

10/15-6.24 EN



- Isolation between Process and Transmitter with Measuring Media having: • High Temperatures and Viscosities • Corrosive Ingredients, a Tendency to Polymerization
- Prevention of Deposits in the Process Connection Flanges by Extended Remote Seals
- Mounting to various DIN or ANSI Flanges
- Microprocessor technology
- HighTurn down ratio 30 : 1
- Digital communication using the "HART"-Protocol without disturbing the output signal 4...20 mA
- Lower range value, span and damping are externally adjustable
- Transfer response configurable:
  - linear • freely programmable • PID-controller
- "Intrinsic Safety" or "Flameproof Enclosure" explosion protection or mounting on "Zone 0"
- E.M.C. according to IEC 801

The transmitter ASD 800 / 810 combines proven, mature techno-

logy with a trend-setting microprocessor controlled electronic. It is based on a proven, highly-stable measuring sensor, on which a remote seal is fitted. The pressure present is transferred via the diaphragm and the filling liquid to the internal sensing diaphragm in the measuring sensor and converted into an electrical signal by the electronics. The remote seals, which depending on type, are either connected directly to the transmitter or via a flexible capillary tube. The length of the capillary tube is determined by the location and mounting position. Apart from the high accuracy, with an almost complete compensation of ambient influences, both measuring sensor and electronic provide a substantial increase in functionality. The digital indicator can be so configured that the measured value is shown as a physical unit, percentage value or current. In addition the measuring sensor temperature can be indicated. The process wetted parts of the remote seal can be selected from various materials, i.e. Stainless Steel, Hastelloy C or Tantalum, depending upon the required resistance to corrosion. Various filling liquids, for example for the food and beverage industry, complete the spectrum of applications. The Transmitter ASD 800 / 810 with remote seal is thus an efficient, intelligent element, a must for every type of automation.

# ABB

## Technical Data

### Measuring Mechanism

#### Measuring limits

**ASD 800:** -100% ( $\geq -1$  bar) and +100% of the max. span

**ASD 810:** 0% and +100% of the max. span

#### Lower range value

Continuously adjustable between the measuring limits

#### Span

The min. and max. span is depending of the Remote Seal Type and the Nominal Pressure. Span values see Table 1 on side 4. The span is continuously adjustable.

#### Characteristic

- Linear, rising or falling
- Freely programmable

#### Over-ranging limit

**Order No. V15956AE or V15957AE:**

ranges  $\leq 400$  mbar: 10 bar

range 2.5 bar: 25 bar

range 16 bar: 32 bar

**Order No. V15936AE:**

ranges 2.5 bar...250 bar: 2 times the range end value

range 600 bar: 900 bar

#### Materials of Process Wetted Parts

see Ordering Data

#### Materials of non Process Wetted Parts

- Capillary tube: Stainless Steel
- Protective tube: Stainless Steel or with PVC covering
- Flange: Stainless Steel

### Power Supply

#### Transmitter operating voltage

$U_{B,max} = DC 45 V$   $U_{B,min} = DC 11.5 V$

#### Output signal

4...20 mA

#### Output signal limits

$I_{min}$  3.5 mA,  $I_{max}$  22.5 mA

Standard adjustment:  $I_{min}$  3.8 mA and  $I_{max}$  20.5 mA

#### Load R

$$R \leq \frac{U_s - 11.5V}{I_{max}} \text{ k}\Omega \quad U_s = \text{Supply voltage}$$

$$I_{max} = 20...22.5\text{mA (adjustable)}$$

### Digital Communication

Standardized communication protocol "HART" 5.1

Minimum load for communication: 250  $\Omega$

Recommended lead-length for communication:

- screened multi-wire: max. 1.5 km
- screened two-wire: max. 3 km

Max. permissible voltage ripple of the power supply during communication:

- 7  $V_{pp}$  at 50 Hz  $\leq f \leq 100$  Hz
- 1  $V_{pp}$  at 100 Hz  $< f \leq 200$  Hz
- 0.2  $V_{pp}$  at 200 Hz  $< f \leq 300$  Hz

The following can, for example, be configured:

- Digital indication of process pressure, temperature, percentage value, current, arbitrary process variables
- Damping
- Transfer function
- Alarm signalling  $I_{min} / I_{max}$
- PID Controller; adjustment with five parameters
  - Setpoint w
  - Proportional gain  $K_p$
  - Reset time  $T_n$
  - Derivative gain  $K_D$
  - Derivative action time  $T_D$

Write-over of parameters can be prevented by interlocking write-over protection. All stored data is secured even in the event of power supply failure.

A detailed description of all functions can be found in the Instructions 42/15-910 EN.

### General and Safety Data

#### Ambient Conditions

Storage and transport temperature range

-50°C...+80°C

#### Transmitter

Ambient temperature

minimal: dependent of the filling liquid, maximal: +80°C

Medium temperature at remote seal

Directly connected:

Ambient temperature  $\leq 40^\circ\text{C}$ : max. +180°C

Ambient temperature +60°C: max. +140°C

minimal medium temperature dependent on the filling liquid (see Table 2, page 4)

Remote seal with Running Union and Buna O-ring maximal +120°C

with Capillary tube:

dependent on the filling liquid (see Table 2, page 4) with the following restrictions:

- Flush diaphragm DN25 / DN 1": maximal +250°C
- Flush diaphragm, Mat'l: tantalum: maximal +220°C
- In-line remote seal DN 25 / DN 1": maximal +250°C

#### Humidity

$\leq 95\%$ , annual mean, condensation permissible

### Amplifier Enclosure, Weight

#### Material

Die cast copperfree aluminium (GD-AISI) / polycarbonate

#### Protective varnish

Epoxy resin, gravel-grey, RAL 7032

#### Degree of Protection

IP 65 (jet waterproof) according to EN 60 529

(= NEMA standard type 4)

#### Weight

- Flange Remote Seals with Flush diaphragm / Extended diaphragm DN 50 / 2", DN 80 / 3":
  - DN 50, PN 16/40 with Flush diaphragm: approx. 3.3kg
  - DN 2", Class 300 with Flush diaphragm: approx. 3.7kg
  - DN 50, PN 16/40 with Extended diaphragm 100mm: approx. 4.0kg
  - DN 2", Class 300 with Extended diaphragm 100mm: approx. 5.4kg
  - DN 80, PN 16/40 with Flush diaphragm: approx. 5.8kg
  - DN 3", Class 150 with Flush diaphragm: approx. 5.3kg
  - DN 80, PN 16/40 with Extended diaphragm 100mm: approx. 7.5kg
  - DN 3", Class 150 with Extended diaphragm 100mm: approx. 7.0kg
- Flush Diaphragm Remote Seals DN 25 / DN 1", Miniature Remote Seals, In-line Remote Seals and Fast Coupled Remote Seals: see Dimensional Diagrams.

In addition to the quoted weights, the weight of the transmitter, approx. 1.4 kg and the weight of the capillary tube, if fitted at approx. 0.15 kg / m, must be added.

### Mounting

#### Mounting Instructions

- Remote Seal with Capillary Tube:

The maximum difference in height between the remote seal and the transmitter when mounting the remote seal **below** the transmitter is:

with silicone oil (IC) 5 m

with carbon fluoride (L) 2.5 m

with high temperature oil (IH) 5 m

with vegetable oil (PF) 2.5 m

With an operating pressure  $< 1000$  mbar abs, the transmitter must be mounted below the remote seal.

**The minimum bending radius of the capillary tube is 75 mm; do not kink!**

## Technical Data

### Mounting

- Flange Remote Seal with Flush / Extended diaphragm  
The remote seal is mounted at the connecting flange on site. Only gaskets of soft materials to be used with remote seals having diaphragms and sealing surfaces made of tantalum (Gasket not supplied).
- In-line Remote Seal  
The remote seal is mounted direct in the process piping between two flanges.
- Remote Seal with Fast Coupling  
The remote seal is mounted directly onto the process via either a Running union or a clamp connection.
- Miniature Remote Seal  
The threaded remote seal is screwed with the available threaded process connector.
- Transmitter  
The transmitter is wall or pipe mounted or by an instrument support fitting according to DIN 16 281, when the transmitter is connected to the remote seal with a flexible capillary tube. When the transmitter is directly connected to the remote seal then no supplementary mountings or supports are necessary.

### Dimensions

see Dimensional Diagrams.

### Transient Response (at reference conditions)

(see Instruction 42/15-936 EN for further data)

All values are limit values and refers to the output span. The effects identified with a ★ are with reference to the measuring range and are to be multiplied by the turn-down factor. The ratio range/calibrated span should be as small as possible.

However the limit values and response times are dependent upon the remote seal and the measuring point.

**Data for the instrument combination are first possible after knowledge of all the data submitted in the questionnaire 80/15-105 EN (see pages 13 and 14).**

Data for transmitter (without effect from the remote seal):

Conformity<sup>1)</sup>

including hysteresis and dead band, terminal-based	0.1 %
Hysteresis <sup>1)</sup>	0.05 %
Power supply	
Voltage effect per Volt	0.005 %

The following specifications are valid for a linear transfer function. The effect appearing at the output with non linear transfer functions is dependent on the function and is to be calculated accordingly.

Ambient temperature effect according to DIN 16 086

Thermal change (-20°C...+60°C)	
★ on zero	0.1 %
on span	0.1 %
Temperature coefficient (-40°C...+80°C) <sup>2)</sup>	
★ on zero	0.05 %/10K
on span	0.05 %/10K
★ Long-term drift within 6 months	0.05 %
Rise time according to DIN 16 086	
dependent on range and	
turn-down factor	0.15...1.3 s
additional adjustable time constant	0...60 s

<sup>1)</sup> Additionally with turn-down factor >1:10  
± (0.005 ×  $\frac{\text{Measuring range}}{\text{adjusted span}}$  - 0.05) %

<sup>2)</sup> With carbon fluoride filling liquid (only Order No. V15936AE...) -20°C...+80°C

### Explosion Protection

- for "Zone 0"  
Type Approval (Germany only)  
according to VbF (German Regulations for Flammable Liquids)  
"Zone 0"

Instrument Construction (Germany only)

The instrument combination consists of 1 remote seal and the associated transmitter. The remote seal is installed on the "Zone 0" measuring point.

**The transmitter must be designed in the "Intrinsic Safety EEx i" or "Flameproof Enclosure EEx d" Type of Protection.**

- for "Zone 1"

When the transmitter is installed in "Zone 1", the type of protection "Intrinsic Safety EEx i" is sufficient.

PTB-No. Ex-93.C.4004 (ASD 800/810)

### Explosion protection Intrinsic Safety "i"

Identification Code (DIN EN 50 014): EEx ia IIC T6

Type Approval Certificate: PTB No. Ex-93.C.4004, copy can be obtained under No. 49/15-34 EX.

Connected to an intrinsically safe current circuit with the following max. values:

Temperature class	U <sub>max</sub>	I <sub>max</sub>	P <sub>max</sub>	Max. ambient temperature
T6	45 V	130 mA	0.5 W	40 °C
T5	45 V	130 mA	0.8 W	40 °C
T4	45 V	130 mA	1.0 W	80 °C
T4	45 V	130 mA	1.2 W	60 °C

internal capacitance C<sub>eq</sub> ≤ 0.010 µF  
internal inductance is negligably small

### Explosion protection Flameproof Enclosure "d"

(Only with Order No. V15936AE...)

Identification Code (DIN EN 50 014): EEx d IIC T6

Type Approval Certificate: PTB No. Ex-91.C.1077

Operating conditions: max. ambient temperature 75°C

Test Certificat can be obtained under No. 49/15-33 EX.

- for "Zone 2"

### BASEEFA Type N Approval (BS 6941)

Ex N IIC T5 (T<sub>amb</sub>: -40 °C up to +80 °C)

## Technical Data

**Table 1: Type of Construction, Spans and Lengths of Capillary tube**

Remote Seal Type		Nominal Diameter	Spans min / max	max. Length of Capillary Tube
Flush Diaphragm		DN 25 / DN 1"	1.6 bar / 250 bar	6 m
		DN 50 / DN 2"	100 mbar / 100 bar	16 m
		DN 80 / DN 3"	60 mbar <sup>1)</sup> / 100 bar	16 m
Extended Diaphragm		DN 50 / DN 2"	160 mbar / 100 bar	16 m
		DN 80 / DN 3"	60 mbar <sup>1)</sup> / 100 bar	16 m
In-Line Remote Seal		DN 25 / DN 1"	4 bar / 250 bar	4 m
		DN 40 / DN 1 1/2"	2.5 bar / 250 bar	6 m
		DN 50 / DN 2"	2.5 bar / 250 bar	8 m
		DN 80 / DN 3"	2.5 bar / 250 bar	16 m
with Fast Coupling	Running Union acc. to DIN 11 851	DN 50	1.3 bar / 25 bar	--
	Clamp-connection	DN 2"	6 bar / 40 bar	--
Miniature Remote Seal		G 1 A	6 bar / 600 bar	--
		G 1 1/2 A	1.2 bar / 600 bar	--

<sup>1)</sup> With ASD 810 use 400 mbar abs. range.

**When selecting transmitter range please take nominal pressure (PN) of Remote seal into consideration!**

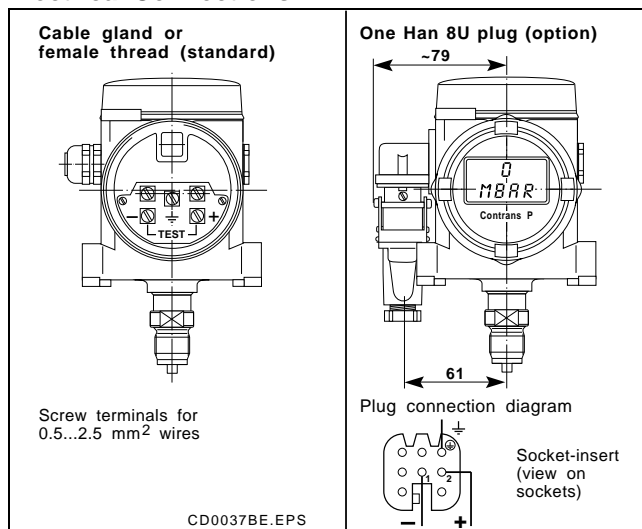
**Table 2: Application Limits: permissible Temperature / Minimum Operating Pressure**

Attention: ● The pressure has to be linearly interpolated between the stated temperatures.

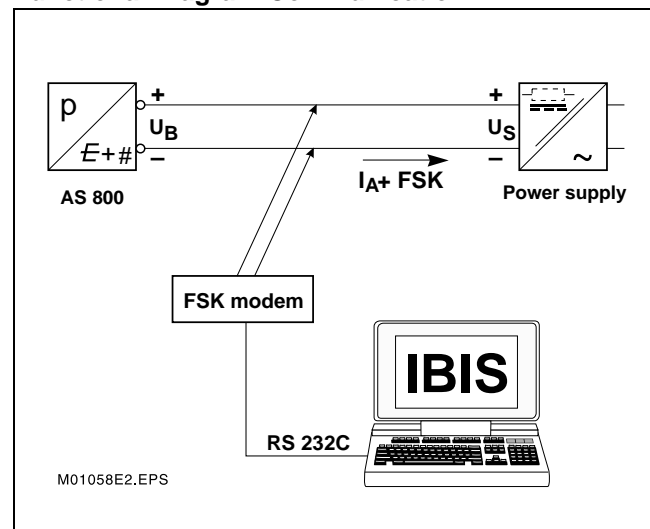
- Flush diaphragm remote seals with **tantalum diaphragm** (Code-No. P02, P05, P08, P11, P14, P17, P20, P23 ) should not be used with operating temperature > 220°C.

Filling liquid	Silicone Oil	Carbon Fluoride	High-temperature Oil	Vegetable Oil	Vacuumproof Design
Identification	IC	L	IH	PF	IC
Density at 20°C in kg/m <sup>3</sup>	1055	1880	1070	920	1055
Operating Temperature in °C	-30...+250	-30...+150	-10...+400	-10...+250	-30...+200
Pressure rating in mbar abs. at 20°C	> 500	> 1000	> 500	> 500	> 5
100°C	> 500	> 1000	> 500	> 1000	> 25
150°C	> 500	> 1000	> 500	> 1000	> 38
200°C	> 750	---	> 750	> 1000	> 50
250°C	> 1000	---	> 1000	> 1000	---
400°C	---	---	> 1000	---	---

## Electrical Connections



## Functional Diagram-Communication



# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

Data Sheet  
15-6.24 EN

Ordering Data							
		Order No.					
<b>Transmitter ASD 800 / ASD 810</b>		<b>V159</b>	<b>AE-</b>				
<b>Measuring range</b> (ASD 800 for Gauge Pressure / Level)							
0 ... 60 mbar (6 kPa)		56		10X	X10		
0 ... 400 mbar (40 kPa)		56		10X	X14		
0 ... 2.5 bar (250 kPa)		56		20X	X18		
0 ... 16 bar (1600 kPa)		56		20X	X22		
0 ... 40 bar (4000 kPa)		36		20X	X24		
0 ... 100 bar (10000 kPa)		36		20X	X26		
0 ... 250 bar (25000 kPa)		36		20X	X28		
0 ... 600 bar (60000 kPa)		36		10X	X30		
adjusted from ... to ... mbar/bar/kPa <sup>1)</sup> or in acc. with questionnaire <sup>2)</sup> (data is necessary)						Y04	
<b>Measuring range</b> (ASD 810 for Absolute Pressure)							
0 ... 400 mbar abs. (40 kPa abs.)		57		10X	X70		
0 ... 2.5 bar abs. (250 kPa abs.)		57		20X	X74		
0 ... 16 bar abs. (1600 kPa abs.)		57		20X	X78		
adjusted from ... to ... mbar/bar/kPa abs. <sup>1)</sup> or in acc. with questionnaire <sup>2)</sup> (data is necessary)						Y04	
<b>Vacuum measurement</b>							
Vacuumproof design (is always necessary with ASD 810 )						739	
<b>Filling liquid</b> (in measuring mechanism, only with ASD 800 with Order No. V15936AE...)							
Silivone oil						070	
Carbon fluoride (min. ambient temperature -20°C)						133	
<b>Output signal</b>							
4 ... 20 mA, linear						023	
4 ... 20 mA, Characteristic acc. to table of values, max. 22 pairs: <b>Input (%)</b> ; <b>Output (%)</b>						221	
<b>Electrical connection</b>							
One Pg 13.5 cable gland						044	
Two Pg 13.5 cable gland						268	
Two 1/2"-14 NPT female threads						270	
One plug connector (Han 8U)						272	

The three-digit code numbers are added to the order number, separated by diagonal strokes.  
Further instrument variations on the next page.

<sup>1)</sup> Possible units: mbar, bar, Pa, kPa, mmH<sub>2</sub>O, mmHg, psi, g/cm<sup>2</sup>, kg/cm<sup>2</sup>, inches H<sub>2</sub>O, inches Hg, feet H<sub>2</sub>O.

<sup>2)</sup> Completed questionnaire (pages 12/13) necessary, when connection via capillary tube takes place and remote seal and transmitter are not at the same height.

# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

Data Sheet  
15-6.24 EN

Additional Ordering Data for ASD 800 / ASD 810				
Instrument Options	Code-No.			
<b>Explosion Protection</b> Ex-design: EEx ia IIC T6 Eex d IIC T6 FM Explosion Proof CSA Intrinsically Safe BASEEFA Type N , Ex N II C T5	557 558 552 561 274			
only with Order No. V15936AE... and in conjunction with Code-No. 270				
<b>Indicating instrument</b> Analogue indicating instrument (Scale: 0...100% linear): Normal or Ex "i" design Digital indicating instrument (indicates %. However with Code-No. 415: process pressure): Normal- or Ex-design EEx ia Digital indicating instrument (indicates %. However with Code-No. 415: process pressure): Ex-design EEx d Scale indication... (please define value: e.g. 0...15 m <sup>3</sup> ; 4...20 mA proportional; only combinable with Code-No. 244/245, not with Code-No. 415)	206 244 245 416			
<b>Programmable Parameter</b> PID-Controller, Parameter: nominal value in %; K <sub>p</sub> (0...40); T <sub>n</sub> in sec. (0,1...3600); K <sub>D</sub> (0...40); T <sub>D</sub> in sec. (1...3600) <sup>2)</sup> Alarm signalling with 3.6 mA (standard: 21 mA) Maximal output current ... (please state value 20...22.5 mA; Standard: 20.5 mA) Minimal output current ... please state value 3.5...4 mA; Standard: 3.8 mA) Electrical Damping TG=... (state value to be adjusted, 0...60 s)	415 417 418 420 259			
<b>Tagging</b> on Type plate (maximal 32 characters) on Tie-on plate, Mat'l stainless steel (maximal 32 characters)	205 202			
<b>Mounting bracket</b> Bracket for wall mounting (carbon steel) Bracket and U-bolts for 2" pipe mounting (carbon steel) Bracket for wall mounting (stainless steel) Bracket and U-bolts for 2" pipe mounting (stainless steel)	141 142 143 144			
<b>Instructions</b> <sup>3)</sup> german english french	Z2D Z2E Z2F			

The three-digit code numbers are added to the order number, separated by diagonal strokes.

- 1) Possible units: pressure units, as listed under "adjusted from ... to ... "; m, cm, mm, inches, feet, m<sup>3</sup>, l, barrels, gallons, yard<sup>3</sup>, inches<sup>3</sup>, feet<sup>3</sup>, g, kg, t, pounds, short tons, long tons (further units see Technical Information: B 92 M 508 V)
- 2) To optimise the process it is necessary to have the additional facilities available with IBIS and a modem.  
When no values stipulated-standard values will be programmed i.e. setpoint = 50% and K<sub>p</sub> = 1. T<sub>n</sub>, K<sub>D</sub> and T<sub>D</sub> are switched off (0).
- 3) One "german" copy included in the scope of supply - no specification required.  
Further operating instructions have to be charged (please indicate number of copies).

### Scope of Supply:

- 1 Instructions
- 1 Instrument socket with plug connector

Supplied against special order:

- Power supply e.g. TZN 128 (Data Sheet 18-8.39 EN),
- Mounting Accessories (Data Sheet 15-8.98 EN),
- Communication software "IBIS" (Data Sheet 15-6.96 EN),
- FSK-Modem for the digital Communication (Data Sheet 15-6.97 EN),
- Spare Parts Transmitter ASD.

# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

Data Sheet  
15-6.24 EN

Flush Diaphragm Remote Seal DN 25 / DN 1" (with internal diaphragm)				
Varianten	Code-Nr.			
<b>Remote Seal Mounting</b> <sup>1)</sup>				
Direct mounting ( <b>without</b> capillary tube)	699			
Mounting to pressure-measuring mechanism <b>with</b> capillary tube	754			
<b>Materials</b>				
Diaphragm and sealing surface, Material: stainless steel 316 Ti st.st. (1.4571)				
Sealing ring (only with nominal pressure up to PN 63 or 600 psi) PTFE				
<b>Flange</b>				
acc. to DIN 2501, Mat'l 316 Ti st.st. (1.4571)				
Nominal Diameter	Pressure rating	Sealing Surface		
DN 25	PN 10/40	Form D (DIN 2526)	P70	
DN 25	PN 10/40	Form N (DIN 2512)	P71	
DN 25	PN 63/100	Form D (DIN 2526)	701	
DN 25	PN 160	Form D (DIN 2526)	702	
DN 25	PN 250	Form D (DIN 2526)	703	
acc. to ANSI B 16.5, Mat'l 316 Ti st.st. (1.4571)				
Nominal Diameter	Pressure rating	Sealing Surface		
DN 1"	Class 150 psi	Form RF	P72	
DN 1"	Class 300 psi	Form RF	P73	
DN 1"	Class 600 psi	Form RF	706	
DN 1"	Class 1500 psi	Form RF	707	
<b>Filling liquid</b> <sup>1)</sup>				
Silicon oil	074			
Vakuumproof design	739			
<b>Lengths of capillary tube</b> (standard lengths)				
1 m	755			
2 m	757			
4 m	759			
6 m	760			
Special lengths between 1m and 6m: Basic price of the next longer standard length plus an extra fee	764			
<b>Special Features</b>				
Capillary tube with PVC protective cover	775			
Ex-Design for "Zone 0" (only with Code-Nos. 557 or 558)	689			
<b>Other variations</b> regarding Pressure rating, Materials, Sealing surfaces, Filling liquids <b>on request.</b>				

The three-digit code numbers from the remote seal are added to the order number of the transmitter, separated by diagonal strokes.

<sup>1)</sup> When mounted on an absolute or gauge pressure transmitter for measurement  $\leq 500$  mbar (abs.), the Vacuumproof design must be ordered (Code-No. 739).

# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

Data Sheet

15-6.24 EN

Flush Diaphragm Seal / Extended Diaphragm Seal DN 50 / DN 2" complete with Flange				
Options		Code-No.		
<b>Remote Seal Mounting</b>				
Direct mounting ( <b>without</b> capillary tube)		699		
Mounting to pressure-measuring mechanism <b>with</b> capillary tube		754		
<b>Nominal Diameter</b>	<b>Sealing Surface</b>	<b>Diaphragm / Sealing Surface Material</b>		
DN 50	Form E (DIN 2526)	316 L st.st. (1.4404)	P00	
		Hastelloy C	P01	
		Tantalum	P02	
	Form V13 (DIN 2513)	316 L st.st. (1.4404)	P03	
		Hastelloy C	P04	
		Tantalum	P05	
	Form N (DIN 2512)	316 L st.st. (1.4404)	P06	
		Hastelloy C	P07	
DN 2"	Form RF (ANSI B 16.5)	Tantalum	P08	
		316 L st.st. (1.4404)	P09	
		Hastelloy C	P10	
		Tantalum	P11	
<b>Pressure rating</b>				
DN 50	PN 16 / 40	P30		
	PN 64	P31		
	PN 100	P32		
DN 2"	Class 150 psi } Class 300 psi } Class 600 psi }	only in conjunction with Sealing Surface "Form RF"	P33	
			P34	
			P35	
<b>Flush diaphragm / Extended diaphragm</b>				
Remote seal with Flush diaphragm (without Extension)		P50		
Remote seal with Extension (not combineable with diaphragm material "Tantalum")				
DN 50 / DN 2"	Extension, Mat'l 316 L st.st. (1.4404)	Extension length 50mm	P51	
		Extension length 100mm	P52	
		Extension length 150mm	P53	
	Extension, Mat'l Hastelloy C	Extension length 50mm	P54	
		Extension length 100mm	P55	
		Extension length 150mm	P56	
<b>Filling liquid</b> (data always necessary) <sup>1)</sup>				
Silicone oil		074		
Carbon fluoride		687		
Vegetable oil (suitable for the use in the food and beverage industry)		673		
High-temperature oil (not for directly connection, Code-No. 699)		663		
Vacuumproof Design		739		
<b>Lengths of capillary tube</b> (standard lengths)				
1 m		755		
2 m		757		
4 m		759		
6 m		760		
8 m		761		
11 m		762		
16 m		773		
Special lengths between 1m and 16m: Basic price of the next longer standard length plus an extra fee		764		
<b>Special features</b>				
Diaphragm with FEP-coating (for Mat'l 316 L st.st. (1.4404) and Hastelloy C, medium temperature ≤ 150 °C)		662		
Capillary tube with PVC protective cover		775		
Ex-Design for "Zone 0" (only with Code-Nos. 557 or 558)		689		
<b>Other variations</b> regarding Pressure rating, Materials, Sealing surfaces, Filling liquids <b>on request</b> . For mounting from <b>Remote seals in "Sandwich"-construction</b> (additional blank flange required) <b>see Data Sheet 15-8.14 EN</b> .				

The three-digit code numbers from the remote seal are added to the order number of the transmitter, separated by diagonal strokes.

<sup>1)</sup> When mounted on an absolute or gauge pressure transmitter for measurement ≤ 500 mbar (abs.), the Vacuumproof design must be ordered.



# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

Data Sheet  
15-6.24 EN

Flush Diaphragm Seal / Extended Diaphragm Seal DN 80 / DN 3" complete with Flange					
Options			Code-No.		
<b>Remote Seal Mounting</b>					
Direct mounting (without capillary tube)			699		
Mounting to pressure-measuring mechanism with capillary tube			754		
<b>Nominal Diameter</b>	<b>Sealing Surface</b>	<b>Diaphragm / Sealing Surface Material</b>			
DN 80	Form E (DIN 2526)	316 L st.st. (1.4404)	P12		
		Hastelloy C	P13		
		Tantalum	P14		
	Form V13 (DIN 2513)	316 L st.st. (1.4404)	P15		
		Hastelloy C	P16		
		Tantalum	P17		
	Form N (DIN 2512)	316 L st.st. (1.4404)	P18		
		Hastelloy C	P19		
		Tantalum	P20		
	DN 3"	Form RF (ANSI B 16.5)	316 L st.st. (1.4404)	P21	
Hastelloy C			P22		
Tantalum			P23		
<b>Flange / Pressure rating</b>					
DN 80	PN 16 / 40		P36		
	PN 64		P37		
	PN 100		P38		
DN 3"	Class 150 psi Class 300 psi Class 600 psi	} only in conjunction with Sealing Surface "Form RF"	P39		
			P40		
			P41		
<b>Flush diaphragm / Extended diaphragm</b>					
Remote seal with Flush diaphragm (without Extension)			P50		
Remote seal with Extension (not combineable with diaphragm material "Tantalum")					
DN 80 / DN 3"	Extension, Mat'l 316 L st.st. (1.4404)	Extension length 50mm	P57		
		Extension length 100mm	P58		
	Extension, Mat'l Hastelloy C	Extension length 150mm	P59		
		Extension length 50mm	P60		
		Extension length 100mm	P61		
		Extension length 150mm	P62		
<b>Filling liquid</b> (data always necessary) <sup>1)</sup>					
Silicone oil			074		
Carbon fluoride			687		
Vegetable oil (suitable for the use in the food and beverage industry)			673		
High-temperature oil (not for directly connection, Code-No. 699)			663		
Vacuumproof Design			739		
<b>Lengths of capillary tube</b> (standard lengths)					
1 m			755		
2 m			757		
4 m			759		
6 m			760		
8 m			761		
11 m			762		
16 m			773		
Special lengths between 1m and 16m: Basic price of the next longer standard length plus an extra fee			764		
<b>Special features</b>					
Diaphragm with FEP-coating (for Mat'l 316 L st.st. (1.4404) and Hastelloy C, medium temperature ≤ 150 °C)			662		
Capillary tube with PVC protective cover			775		
Ex-Design for "Zone 0" (only with Code-Nos. 557 or 558)			689		
<b>Other variations</b> regarding Pressure rating, Materials, Sealing surfaces, Filling liquids <b>on request</b> . For mounting from <b>Remote seals in "Sandwich"-construction</b> (additional blank flange required) <b>see Data Sheet 15-8.14 EN</b> .					

The three-digit code numbers from the remote seal are added to the order number of the transmitter, separated by diagonal strokes.

<sup>1)</sup> When mounted on an absolute or gauge pressure transmitter for measurement ≤ 500 mbar (abs.), the Vacuumproof design must be ordered.

# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

In-Line Remote Seal DN 25...DN 80 / DN 1" ... 3"				
Options	Code-Nr.			
<b>Remote Seal Mounting</b> <sup>1)</sup>				
Direct mounting ( <b>without</b> capillary tube)	699			
Mounting to pressure-measuring mechanism <b>with</b> capillary tube	754			
<b>Pressure rating</b>				
PN 6 .... PN 400 or Class 150 psi ...Class 2500 psi				
<b>Connection acc. to DIN 2501 or ANSI B 16.5</b>				
Diaphragm and Sealing surface, Material 316 Ti st.st. (1.4571)				
Nominal diameter	Sealing surface			
DN 25 / DN 1"	Form E (DIN 2526) / Form RF	740		
DN 40 / DN 1 1/2"	Form E (DIN 2512) / Form RF	741		
DN 50 / DN 2"	Form E (DIN 2526) / Form RF	742		
DN 80 / DN 3"	Form E (DIN 2526) / Form RF	743		
Diaphragm and Sealing surface, Material Hastelloy C				
Nominal diameter	Sealing surface			
DN 25 / DN 1"	Form E (DIN 2526) / Form RF	744		
DN 40 / DN 1 1/2"	Form E (DIN 2512) / Form RF	795		
DN 50 / DN 2"	Form E (DIN 2526) / Form RF	749		
DN 80 / DN 3"	Form E (DIN 2526) / Form RF	727		
<b>Filling liquid</b> <sup>1)</sup>				
Silicone oil		074		
Carbon fluoride		687		
High temperature oil		663		
Vegetable oil		673		
Vacuumproof Design		739		
<b>Lengths of capillary tube</b>				
1 m		755		
2 m		757		
4 m (maximal lengths with DN 25 / ANSI 1")		759		
6 m (maximal lengths with DN 40 / ANSI 1 1/2")		760		
8 m (maximal lengths with DN 50 / ANSI 2")		761		
11 m		762		
16 m (maximal lengths with DN 80 / ANSI 3")		763		
Special lengths between 1m and 16m: Basic price of the next longer standard length plus an extra fee		764		
<b>Special Features</b>				
Capillary tube with PVC protective cover		775		
<b>Other variations</b> regarding Pressure rating, Materials, Sealing surfaces, Filling liquids <b>on request.</b>				

The three-digit code numbers from the remote seal are added to the order number of the transmitter, separated by diagonal strokes.

<sup>1)</sup> When mounted on an absolute or gauge pressure transmitter for measurement  $\leq 500$  mbar (abs.), the Vacuumproof design must be ordered.

# Transmitter ASD 800 / ASD 810 with Attached Remote Seal for Gauge Pressure, Absolute Pressure and Level

Data Sheet  
15-6.24 EN

Fast Coupled Remote Seals DN 50 / DN 2"				
Options	Code-No.			
<b>Remote Seal Mounting</b> <sup>1)</sup> Direct mounting ( <b>without</b> capillary tube) Mounting to pressure-measuring mechanism <b>with</b> capillary tube		699		
<b>with Running Union acc. to DIN 11 851</b>				
Nominal diameter	Pressure rating	Process wetted parts		
DN 50	PN 25	316 Ti st.st. (1.4571)	712	
DN 50	PN 25	Hastelloy C	713	
<b>with Clamp-Connection</b>				
Nominal diameter	Pressure rating	Process wetted parts		
DN 2"	PN 40	316 Ti st.st. (1.4571)	716	
DN 2"	PN 40	Hastelloy C	726	
<b>Sealing ring (O-ring)</b> (only in conjunction with running union acc. DIN 11 851)				
Buna (tmax = 120 °C)		714		
PTFE		715		
<b>Filling liquid</b> <sup>1)</sup>				
Silicone oil		074		
Carbon fluoride		687		
Vegetable oil		673		
Vacuumproof Design		739		
<b>Other variations</b> regarding Pressure rating, Materials, Sealing surfaces, Filling liquids <b>on request.</b>				

The three-digit code numbers from the remote seal are added to the order number of the transmitter, separated by diagonal strokes.

<sup>1)</sup> When mounted on an absolute or gauge pressure transmitter for measurement  $\leq 500$  mbar (abs.), the Vacuumproof design must be ordered.

Miniature Remote Seal				
Options	Code-No.			
<b>Remote Seal Mounting</b> <sup>1)</sup> Direct mounting ( <b>without</b> capillary tube)		699		
<b>with Spigot acc. to DIN 16 288</b> <sup>2)</sup>				
Process connection	Pressure rating	Process wetted parts		
G 1 A	PN 600	316 Ti st.st. (1.4571)	708	
G 1 A	PN 600	Hastelloy C	710	
G 1 1/2 A	PN 600	316 Ti st.st. (1.4571)	709	
G 1 1/2 A	PN 600	Hastelloy C	711	
<b>Filling liquid</b> <sup>1)</sup>				
Silicone oil		074		
Carbon fluoride		687		
Vegetable oil		673		
Vacuumproof Design		739		
<b>Other variations</b> regarding Pressure rating, Materials, Sealing surfaces, Filling liquids <b>on request.</b>				

The three-digit code numbers from the remote seal are added to the order number of the transmitter, separated by diagonal strokes.

<sup>1)</sup> When mounted on an absolute or gauge pressure transmitter for measurement  $\leq 500$  mbar (abs.), the Vacuumproof design must be ordered.

### Measuring instruments with remote seals for measuring gauge pressure, differential pressure, flowrate and level

The information given in this questionnaire is binding for the technical design of measuring system. The HARTMANN & BRAUN AG can only guarantee satisfactory measurement results when exact and correct information is provided.

The questions identified by  will be answered by Hartmann & Braun.

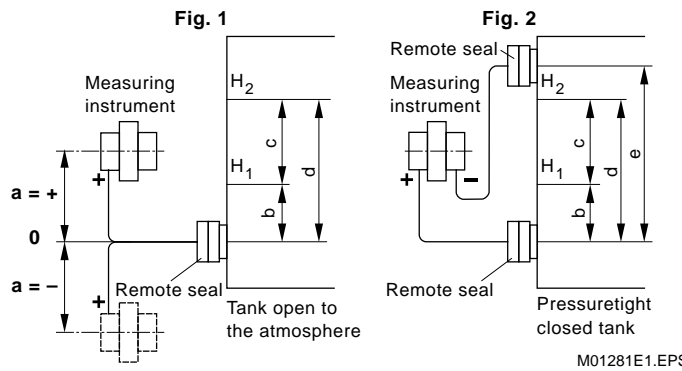
<input type="checkbox"/> Company	
<input type="checkbox"/> Location	
<input type="checkbox"/> Customer number:	<input type="radio"/> H&B offer number:
<input type="checkbox"/> Measuring-point number:	<input type="radio"/> H&B contract number:
	<input type="radio"/> Position number:

**Level Measurement**

1 Medium to be measured	Measuring instrument with one remote seal (see Fig. 1)	Measuring instrument with two remote seals (see Fig. 2)
2 Operating data of the medium to be measured which will be referred to for the calculation and design Temperatures Process pressure Density Density of the gas above the process Process variable (e.g. 0 ... 5m $\hat{=}$ 0 ... 20mA)	$t = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $\rho_M = \underline{\hspace{2cm}} \text{ kg/m}^3$ $\underline{\hspace{2cm}} \hat{=} 0/4...20\text{mA}$	$t = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $p = \underline{\hspace{2cm}} \text{ bar}$ $\rho_M = \underline{\hspace{2cm}} \text{ kg/m}^3$ $\rho_G = \underline{\hspace{2cm}} \text{ kg/m}^3$ $\underline{\hspace{2cm}} \hat{=} 0/4...20\text{mA}$
3 Elevation between remote seal and measuring instr. Instrument above the remote seal Instrument below the remote seal	$a = + \underline{\hspace{2cm}} \text{ m}$ $a = - \underline{\hspace{2cm}} \text{ m}$	
4 Difference in elevation of the two remote seals		$e = \underline{\hspace{2cm}} \text{ m}$
5 Tank dimensions: Difference in height of levels Dimension: from lower remote seal up to lower level from lower remote seal up to upper level	$c = \underline{\hspace{2cm}} \text{ m}$ $b = \underline{\hspace{2cm}} \text{ m}$ $d = \underline{\hspace{2cm}} \text{ m}$	$c = \underline{\hspace{2cm}} \text{ m}$ $b = \underline{\hspace{2cm}} \text{ m}$ $d = \underline{\hspace{2cm}} \text{ m}$
6 Capillary tube length  + (HP) side - (LP) side	$\underline{\hspace{2cm}} \text{ m}$	$\underline{\hspace{2cm}} \text{ m}$ $\underline{\hspace{2cm}} \text{ m}$
7 Additional data Process temperature range Average ambient temperature at the measuring instr. Average ambient temperature at the capillary tube	$t_M = \text{from } \underline{\hspace{1cm}} \text{ to } \underline{\hspace{1cm}} \text{ } ^\circ\text{C}$ $t_{uM} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $t_{uK} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$	$t_M = \text{from } \underline{\hspace{1cm}} \text{ to } \underline{\hspace{1cm}} \text{ } ^\circ\text{C}$ $t_{uM} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $t_{uK} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$
8 Data of limits which for example can occur with cleaning processes or blowing through (not measuring operation)  Temperature  Pressure	$t_{\max} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $t_{\min} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $p_{\max} = \underline{\hspace{2cm}} \text{ bar}$ $p_{\min} = \underline{\hspace{2cm}} \text{ bar}$	$t_{\max} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $t_{\min} = \underline{\hspace{2cm}} \text{ } ^\circ\text{C}$ $p_{\max} = \underline{\hspace{2cm}} \text{ bar}$ $p_{\min} = \underline{\hspace{2cm}} \text{ bar}$

Note: Remote seals with silicone oil (standard) may be mounted up to a maximum of 5m below the measuring instrument.

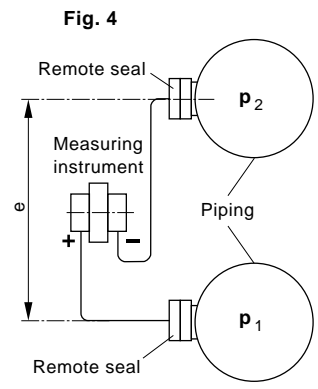
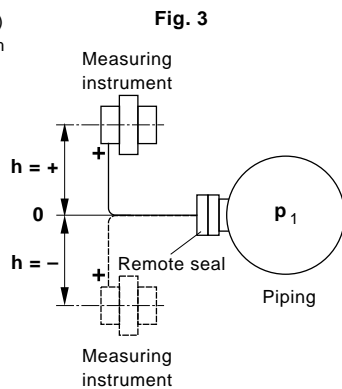
$H_1$  = lower level  
 $H_2$  = upper level



### Gauge pressure, Differential pressure and Flowrate Measurement

<b>1</b> Medium to be measured _____	Measuring instrument with one remote seal (see Fig. 3)	Measuring instrument with two remote seals (see Fig. 4)
<b>2</b> Operating data of the medium to be measured which will be referred to for the calculation and design Temperatures Process pressure  Measuring span Differential pressure Density of the gas above the process Process variable (e.g. 0 ... 500mbar $\hat{=}$ 0 ... 20mA)	$t =$ _____ °C $p =$ _____ bar $\Delta M =$ _____ bar $\rho_M =$ _____ kg/m <sup>3</sup> _____ $\hat{=}$ 0/4...20mA	$t =$ _____ °C $p_1 =$ _____ bar $p_2 =$ _____ bar $\Delta M =$ _____ bar $\Delta p = p_1 - p_2 =$ _____ bar $\rho_M =$ _____ kg/m <sup>3</sup> _____ $\hat{=}$ 0/4...20mA
<b>3</b> Elevation between remote seal and measuring instr. Instrument above the remote seal Instrument below the remote seal	$a = +$ _____ m $a = -$ _____ m	
<b>4</b> Difference in elevation of the two remote seals		$e =$ _____ m
<b>5</b> Capillary tube length  + (HP) side - (LP) side	_____ m	_____ m _____ m
<b>6</b> Additional data Process temperature range Average ambient temperature at the measuring instr. Average ambient temperature at the capillary tube	$t_M =$ from ..... to ..... °C $t_{uM} =$ _____ °C $t_{uK} =$ _____ °C	$t_M =$ from ..... to ..... °C $t_{uM} =$ _____ °C $t_{uK} =$ _____ °C
<b>7</b> Data of limits which for example can occur with cleaning processes or blowing through (not measuring operation)  Temperature  Pressure	$t_{max} =$ _____ °C $t_{min} =$ _____ °C $p_{max} =$ _____ bar $p_{min} =$ _____ bar	$t_{max} =$ _____ °C $t_{min} =$ _____ °C $p_{max} =$ _____ bar $p_{min} =$ _____ bar

Note: Remote seals with silicone oil (standard) may be mounted up to a maximum of 5m below the measuring instrument.



e.g. also with filter measurements;  
in front of and behind the filter

Compiled: \_\_\_\_\_, Date \_\_\_\_\_ 19 \_\_\_\_\_

Company stamp

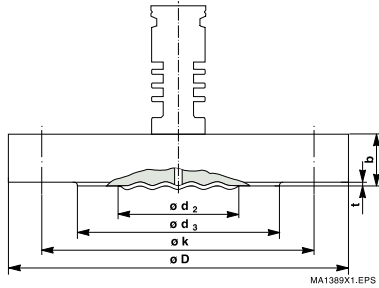
(Signature)

### Dimensional Diaphragm

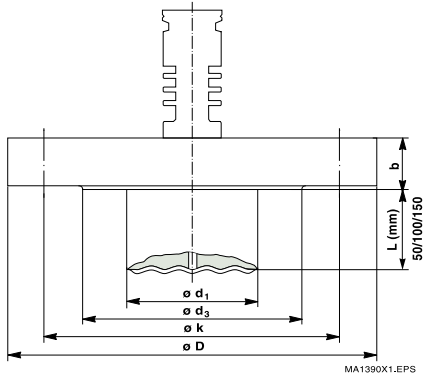
Sealin rings and fixing materials not supplied!

#### Directly Connected

- Flush diaphragm remote seals

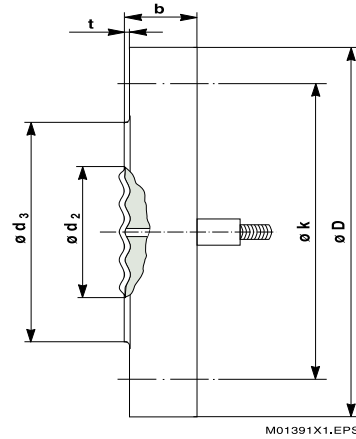


- Extended diaphragm remote seals

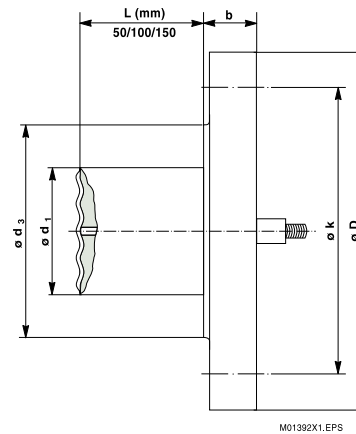


#### Mounting with Capillary Tube

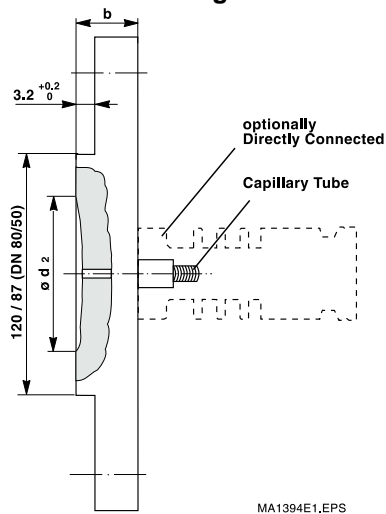
- Flush diaphragm remote seals



- Extended diaphragm remote seals



#### Form V13 Sealing Surface



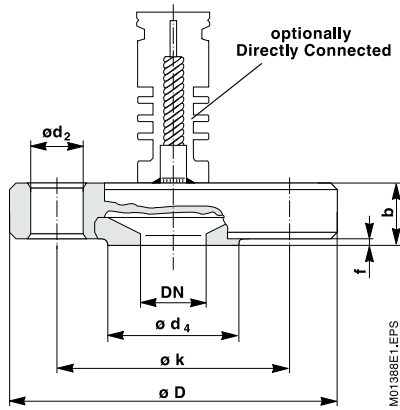
#### Sealing Surfaces: Form E (DIN 2526), Form N (DIN 2512), Form RF (ANSI B16.5)

Nominal diameter DN	Pressure rating PN	$\varnothing D$	$\varnothing k$	Extension- $\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	$t$	$b$	Screws	
									Number	Thread
50	PN 16/40	165	125	51	57	102	$3^{+0.5}$	20	4	M 16
	PN 64	180	135	51	57	102	$3^{+0.5}$	26	4	M 20
	PN 100	195	145	51	57	102	$3^{+0.5}$	28	4	M 20
80	PN 16/40	200	160	76	75	138	$3^{+0.5}$	24	8	M 16
	PN 64	215	170	76	75	138	$3^{+0.5}$	28	8	M 20
	PN 100	230	180	76	75	138	$3^{+0.5}$	32	8	M 24
2'	class 150	152.4	120.6	51	57	92.1	$3^{+0.5}$	17.4	4	M 18
	class 300	165.1	127.0	51	57	92.1	$3^{+0.5}$	20.6	8	M 18
	class 600	165.1	127.0	51	57	92.1	6.35	31.75	8	M 18
3'	class 150	190.5	152.4	76	75	138	$3^{+0.5}$	22.2	4	M 16
	class 300	209.5	168.3	76	75	138	$3^{+0.5}$	27.0	8	M 20
	class 600	209.5	168.3	76	75	138	6.35	38.05	8	M 20

## Dimensional Diagrams

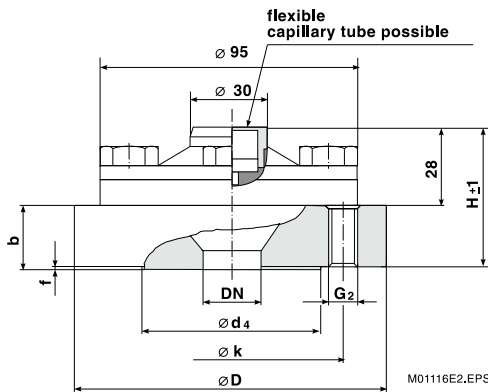
### Flush Diaphragm Remote Seals DN 25 / DN 1" with internal Diaphragm

PN 10/40 or Class 150 / 300



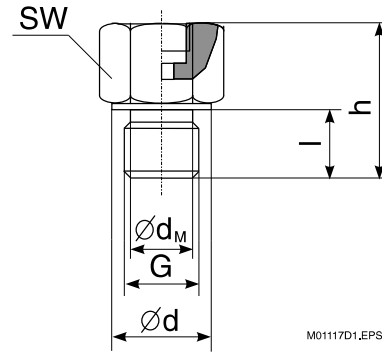
M01388E1.EPS

PN 63 ... 250 or Class 600 / 1500



M01116E2.EPS

### Miniature Remote Seals



M01117D1.EPS

DN (G)	PN	Dimensions in mm					Weight in kg
		$d_M$	SW	d	l	h	
G 1 A	600	25	41	39	28	64	0.3
G 1 1/2 A	600	40	55	60	30	50	0.5

effective diaphragm diameter =  $d_M$   
SW = width across flats

### Connection acc. to DIN 2501

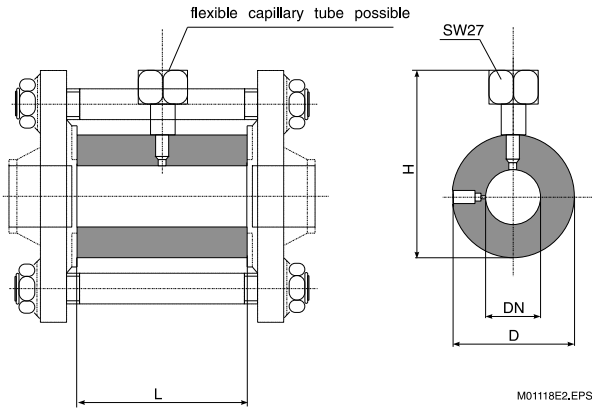
DN	PN	Dimensions in mm									Weight: in kg
		D	k	$d_4$	b	f	H	$d_2$	$G_2$		
25	10 / 40	115	85	68	22	2	--	14	--	1.5	
25	63 / 100	140	100	68	24	2	52	--	4xM16	3.2	
	160	140	100	68	24	2	52	--	4xM16	3.6	
	250	150	105	68	28	2	56	--	4xM20	4.0	

### Connection acc. to ANSI B 16.5

DN	Class	Dimensions in mm								Weight: in kg
		D	k	$d_2$	$d_4$	b	f	H	$G_2$ UNC	
1"	150	110	79.5	16	51	22	2	--	--	1.4
	300	125	89	20	51	22	2	--	--	1.7
1"	600	125	89	--	51	25	7	53	4x5/8"	3.6
	1500	150	101.5	--	51	36	7	64	4x7/8"	4.0

## Dimensional Diagrams

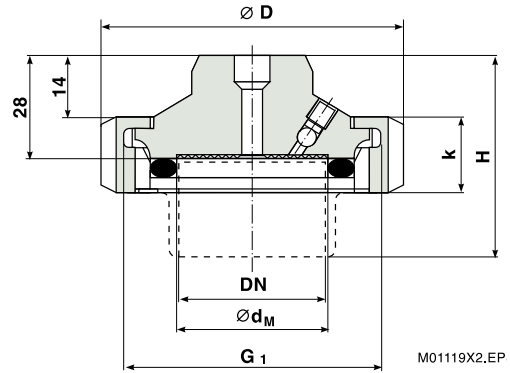
### In-Line Remote Seals (witout flanges)



SW27 = width across flats 27mm

### Fast Coupled Remote Seals

● with Running Union DN 50, PN<sub>max</sub> 25



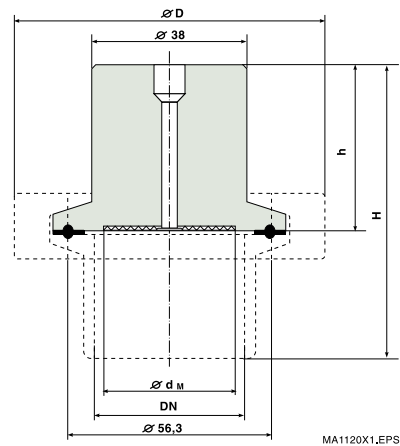
### Connection acc. to DIN 2501 / acc. to ANSI B 16.5

DN in mm / inch	PN in bar / psi	Dimensions in mm			Weight in kg
		D	L	H	
25 / 1"	6...400 / 150...2500	63	60	110	1.4
40 / 1 1/2"	6...400 / 150...2500	85	60	132	2.2
50 / 2"	6...400 / 150...2500	95	60	187	2.5
80 / 3"	6...400 / 150...2500	130	60	222	4.0

### acc. to DIN 11 851

Dimensions in mm					Design	Weight in kg
d <sub>M</sub>	D	H <sub>cc.</sub>	k	G <sub>2</sub>		
52	92	57	22	Rd 78 x1/6	Form D-F	0.8

● with Clamp-connection DN 2", PN<sub>max</sub> 40



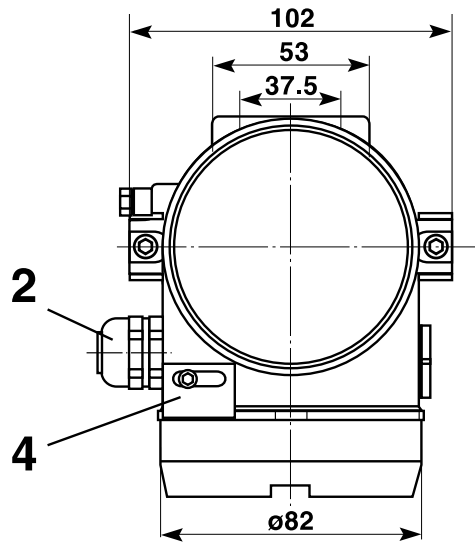
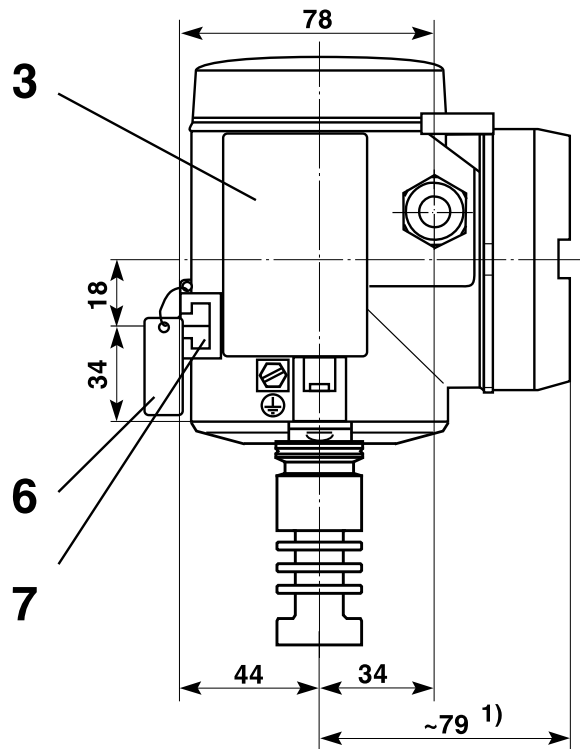
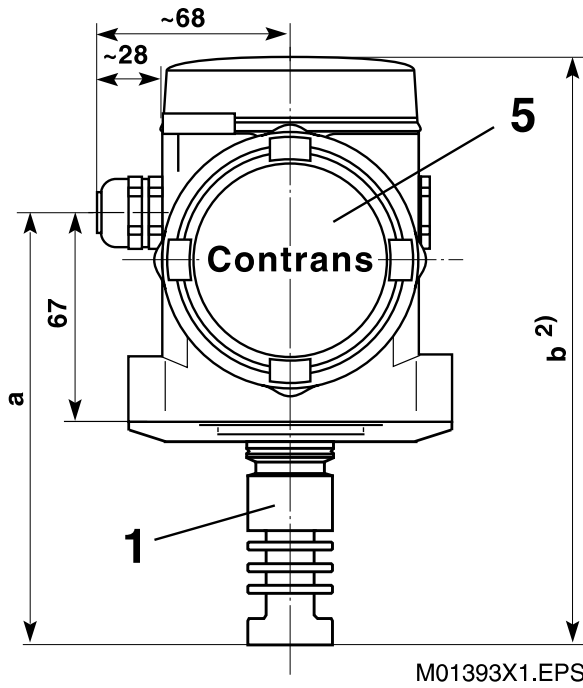
Dimensions in mm				Weight in kg
d <sub>M</sub>	D	H <sub>cc.</sub>	h <sub>cc.</sub>	
40	75	58	35	0.75

effective diaphragm diameter = d<sub>M</sub>



**Dimensional Diagrams**

Errors and omissions excepted. All dimensions in millimeters (mm).



- 1 Remote seal connection
- 2 Electrical connection:  
Pg 13.5 cable gland or  
two cable glands, one each on the right and left or  
1/2-14 NPT female threads on both sides or  
one Han 8U plug.
- 3 Type plate
- 4 Locking excenter (only with EEx "d" - design)
- 5 Enclosure cover (electrical connection, connection for digital- /  
analogue indicating instrument)
- 6 Tie-on plate e.g. for tag number (option)
- 7 T-slot for screws when wall or pipe mounting

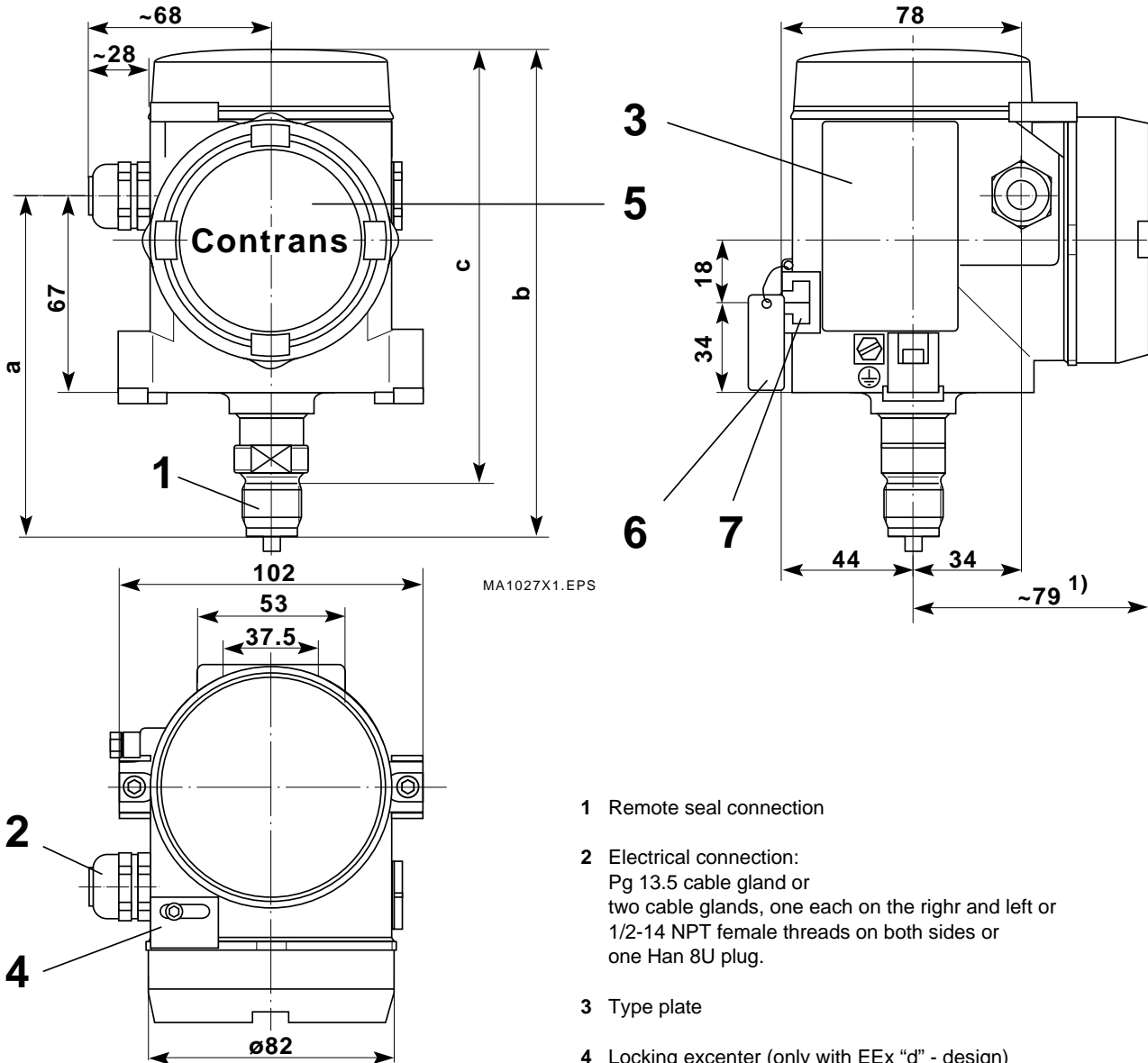
	Order No. V15956AE-... V15957AE-...	Order No. V15936AE-...
Dim. "a"	141 mm	148 mm
Dim. "b"	187 mm	194 mm

<sup>2)</sup> With directly connected remote seal the length (height) of the remote seal must be added to dimensions "a" and "b" (see corresponding dimensional diagram).

<sup>1)</sup> With digital indicating instrument plus 29 mm.  
With analogue indicating instrument plus 24 mm.

**Dimensional Diagrams**

Errors and omissions excepted. All dimensions in millimeters (mm).



- 1 Remote seal connection
- 2 Electrical connection:  
Pg 13.5 cable gland or  
two cable glands, one each on the right and left or  
1/2-14 NPT female threads on both sides or  
one Han 8U plug.
- 3 Type plate
- 4 Locking excenter (only with EEx "d" - design)
- 5 Enclosure cover (electrical connection, connection for digital- /  
analogue indicating instrument)
- 6 Tie-on plate e.g. for tag number (option)
- 7 T-slot for screws when wall or pipe mounting

	Order No. V15956AE-... V15957AE-...	Order No. V15936AE-...
Dim. "a"	124 mm	120 mm
Dim. "b"	169 mm	165 mm
Dim. "c"	151 mm	147 mm

With directly connected remote seal the length (height) of the remote seal must be added to dimension "c" (see corresponding dimensional diagram).

<sup>1)</sup> With digital indicating instrument plus 29 mm.  
With analogue indicating instrument plus 24 mm.





---

**ABB Automation Products GmbH**

SchillerstraÙ 72  
D-32425 Minden  
Tel. +49(0)571 830-0  
Fax +49(0)571 830-1846  
<http://www.abb.de/automation>

Subject to technical changes.  
Printed in the Fed. Rep. of Germany  
10/15-6.24 EN 08.2000