

## Product Information CLEANadapt

## FOOD

# Hygienic, Elastomer- and Gap Free Process Connections



## Range of applications

Hygienic, elastomer and gap free process connection for use in the breweries, dairy-, food- and pharmaceutical industries as well as in biotechnology and in peripheral applications (water- and waste water treatment, etc.)

## Function principle

The cone of the sensor is pressed with a defined power against the sealing angle of the fitting by screwing in the sensor (see the drawing below).

Because of that a gap free and perfect hygienic adaption is achieved without using any further elastomer sealing materials.

## Hygienic design

Elastomer- and gap free installation. 3-A conforming process connection only for sensors with PEEK sealing cone.

## Features

- Defined position of the cable entry by marker on the weld-in sleeve resp. build-in system (e.g. M12 plug).
- Only 3 thread sizes for all sensors: M12, G1/2", G1".
- Modular adaption concept for all established process connections: Tri-Clamp, Dairy flange, DRD, Varivent, APV-Inline, BioControl, vibration switch adapter, SMS, RJT, IDF, flanges according to DIN and ISO

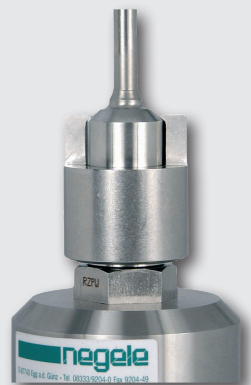
## Authorisations



## Sealing metal to PEEK

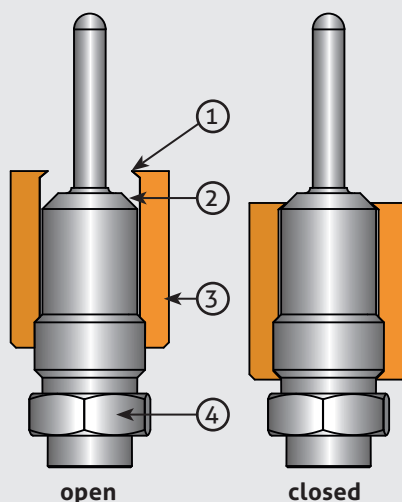


## Sealing metal to metal

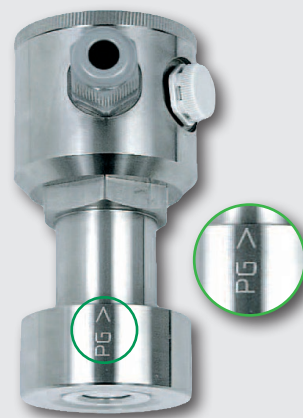


## Schematic diagram of Negele CLEANadapt sealing principle

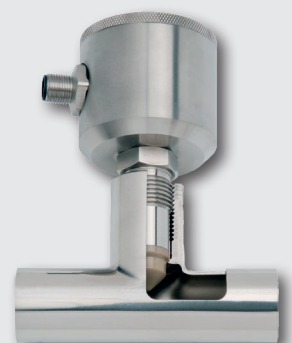
- 1: sealing edge (metal)
- 2: PEEK or metal cone at sensor
- 3: weld-in sleeve
- 4: sensor connection



## Defined position of the cable entry



## Build-in system EHG for orbital welding into pipes



Specifications		
Process connection	thread torque	M12, G1/2", G1" see table below
Material	option on request	1.4404 2.2 factory certificate acc. to DIN EN 10204 made of 1.4435 with 3.1 inspection certificate
Temperature *	sealing metal-metal sealing metal-PEEK	maximum 250 °C depends on sensor type 140 °C resp. 150 °C
Pressure *	sealing metal-metal sealing metal-PEEK	ca. 50 bar (please also regard pipe specification) ca. 10 bar (please also regard pipe specification)

\* Valid for sealing / sealing edge

Thread size	Sealing system	Torque minimum [Nm]	Torque maximum [Nm]
M12 x 1,5	Metall-PEEK	5	10
G1/2"	Metall-PEEK	5	10
G1/2"	Metall-Metall	5	20
G1"	PEEK-Metall	10	20

#### Weld-in and installation details

##### Welding into vessels:

Please use fittings of type EMZ, EMK or KEM.

1. Drill a hole with external diameter of the fitting, maximum tolerance: +0,2 mm.
2. Fix the fitting with 4 points (figure 1).
  - Pay attention to the order of fixing!
  - At G1" fix with 8 points (figure 2).
3. Screw in the welding mandrel.
4. Weld the sections between the points (figure 2)
  - 4 sections if M12 or G1/2" thread
  - 8 sections if G1" thread

##### Welding into pipes:

Therefore we provide the build-in system EHG (see page 3ff) and weld-in fittings of type KEM or EMS (with weld-in collar) if the pipe is pulled-out.

Figure 1

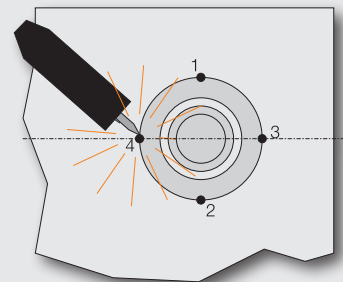
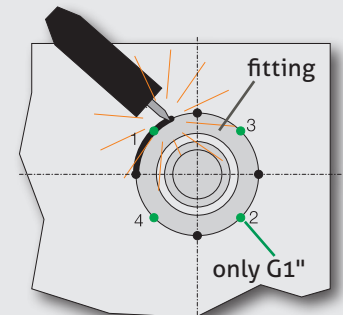


Figure 2



#### Important



To prevent deformation of the fitting, pauses between the sections should be as long as the fitting needs to cool down again.

#### Order Code Welding Mandrel ESD

ESD-030	welding mandrel, brass, thread M12 x 1,5
ESD-130	welding mandrel, brass, thread G1/2"
ESD-350	welding mandrel, brass, thread G1"

#### Welding Mandrels ESD



M12 x 1,5  
ESD-030

G1/2"  
ESD-130

G1"  
ESD-350

EHG-DIN2-... / M12



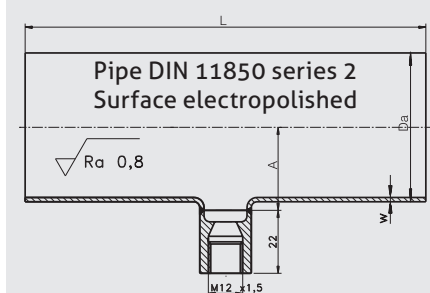
EHG-DIN2-... / 1/2"



EHG-DIN2-... / 1"



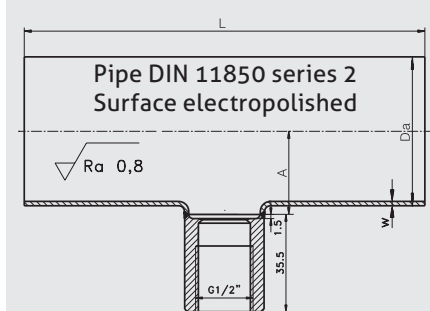
Dimensions EHG-DIN2-... / M12



Dimensions table EHG-DIN2-... / M12

Type	DN	L	A	Da x W
EHG-DIN2-15 / M12	15	70	10	19 x 1,5
EHG-DIN2-20 / M12	20	80	13	23 x 1,5
EHG-DIN2-25 / M12	25	100	15	29 x 1,5
EHG-DIN2-40 / M12	40	120	22	41 x 1,5
EHG-DIN2-50 / M12	50	140	29	53 x 1,5
EHG-DIN2-65 / M12	65	160	38	70 x 2,0
EHG-DIN2-80 / M12	80	180	46	85 x 2,0

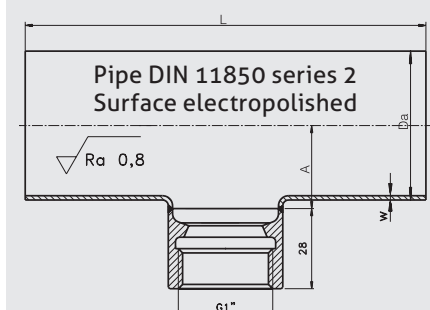
Dimensions EHG-DIN2-... / 1/2"



Dimensions table EHG-DIN2-... / 1/2"

Type	DN	L	A	Da x W
EHG-DIN2-25 / 1/2"	25	100	15	29 x 1,5
EHG-DIN2-40 / 1/2"	40	120	22	41 x 1,5
EHG-DIN2-50 / 1/2"	50	140	29	53 x 1,5
EHG-DIN2-65 / 1/2"	65	160	38	70 x 2,0
EHG-DIN2-80 / 1/2"	80	180	46	85 x 2,0
EHG-DIN2-100 / 1/2"	100	200	55	104 x 2,0

Dimensions EHG-DIN2-... / 1"



Dimensions table EHG-DIN2-... / 1"






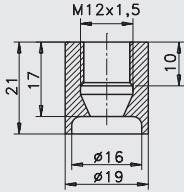
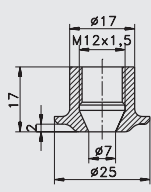
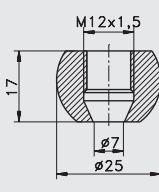
Type	DN	L	A	Da x W
EHG-DIN2-40 / 1"	40	120	22	41 x 1,5
EHG-DIN2-50 / 1"	50	140	29	53 x 1,5
EHG-DIN2-65 / 1"	65	160	38	70 x 2,0
EHG-DIN2-80 / 1"	80	180	46	85 x 2,0
EHG-DIN2-100 / 1"	100	200	55	104 x 2,0

## Note



The EHG build-in system could be delivered as well as custom-made product acc. to DIN 11850 Series 1, DIN 11866 Series C (OD-Tube) or DIN 11866 Series B (ISO 1127).

## Weld-in sleeves and adapter




M12					
					
	<b>Cylindrical sleeve with weld-in ring</b>	<b>Cylindrical sleeve with weld-in ring and leakage hole</b>	<b>Weld-in sleeve with collar</b>	<b>Weld-in ball</b>	<b>DRD (press ring optional)</b>
	EMS-032 * (for installation on pulled-out pipes)	EMS-031 * (for installation on pulled-out pipes)	EMK-032 * (for vessels thick / thin)	KEM-032 * (for sloped installation)	AMK-032/50 (only one size)

\* Deliverable with material 1.4435 and 3.1 inspection certificate on request.


## Adapter to standard process connections

M12					
<b>Diameter</b>	<b>Milk pipe (DIN 11851)</b>	<b>Tri-Clamp</b>	<b>Tri-Clamp with leakage hole</b>	<b>Varivent-Inline</b>	<b>APV-Inline</b>
	1/2"	AMC-032/1/2"	AMC-031/1/2"		
	3/4"	AMC-032/3/4"	AMC-031/3/4"		
DN10	AMK-032/10	AMC-032/DN10	AMC-031/DN10	AMV-032/10	-
DN15	AMK-032/15	AMC-032/DN10	AMC-031/DN10	AMV-032/10	-
DN25	1" AMK-032/25	AMC-032/DN25	AMC-031/DN25	AMV-032/25	-
DN40	1½" AMK-032/40	AMC-032/DN25	AMC-031/DN25	AMV-032/40	AMA-032
DN50	2" AMK-032/50	AMC-032/DN50	AMC-031/DN50	AMV-032/40	AMA-032
	2½" AMK-032/65	AMC-032/2½"	AMC-031/2½"	AMV-032/40	-
DN65	AMK-032/65	AMC-032/DN65	AMC-031/DN65	AMV-032/40	AMA-032
	3" -	AMC-032/DN65	AMC-031/DN65	AMV-032/40	-
DN80	AMK-032/80	-	-	AMV-032/40	AMA-032
DN100	AMK-032/100	-	-	AMV-032/40	AMA-032






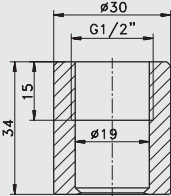
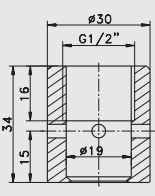
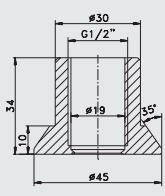
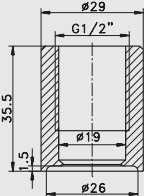
## Adapter M12 to other thread sizes and accessories

M12					
	Adapter	Adapter	Dummy flange		
	AMG-032/G1/2" (G1/2" to M12 hygienic)	AMG-032/G3/4" (G3/4" to M12 hygienic)	BST-030  (to close an existing measurement point)		

## Adapter to standard process connections

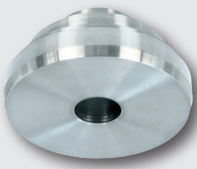


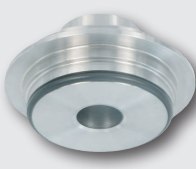
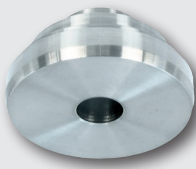
M12					
Diameter	SMS				
	1/2"				
	3/4"				
DN10	-				
DN15	-				
DN25	1"	-			
DN40	1½"	AMK-032/40			
DN50	2"	AMK-032/50			
	2½"	-			
DN65	-				
	3"	-			
DN80	-				
DN100	-				

## Weld-in sleeves

G1/2"					
					
	Cylindrical sleeve	Cylindrical sleeve with leakage hole	Weld-in sleeve with collar	Cylindrical sleeve with weld-in ring	Cylindrical sleeve with weld-in ring and leakage hole
	EMZ-132 * (for vessels)	EMZ-131 * (for vessels with leakage detection)	EMK-132 * (for thick-walled vessels)	EMS-132 * (for installation on pulled-out pipes)	EMS-131 * (for installation on pulled-out pipes)

\* Deliverable with material 1.4435 and 3.1 inspection certificate on request.

## Adapter to standard process connections

G1/2"					
Diameter	Milk pipe (DIN 11851)	Tri-Clamp	Tri-Clamp with leakage hole	Varivent-Inline	DRD (press ring optional)
DN10	-	AMC-132/DN10	-	-	AMK-132/50
DN15	-	AMC-132/DN10	-	-	AMK-132/50
DN20	AMK-132/20	AMC-132/DN10	-	-	AMK-132/50
DN25	1" AMK-132/25	AMC-132/DN25	AMC-131/DN25	AMV-132/25	AMK-132/50
DN32	AMK-132/32	AMC-132/DN25	AMC-131/DN25	AMV-132/25	AMK-132/50
DN40	1½" AMK-132/40	AMC-132/DN25	AMC-131/DN25	AMV-132/40	AMK-132/50
DN50	2" AMK-132/50	AMC-132/DN50	AMC-131/DN50	AMV-132/40	AMK-132/50
	2½" AMK-132/65	AMC-132/2½"	AMC-131/2½"	AMV-132/40	-
DN65	AMK-132/65	AMC-132/DN65	-	AMV-132/40	AMK-132/50
	3" -	AMC-132/DN65	AMC-131/DN65	AMV-132/40	-
DN80	AMK-132/80	AMC-132/DN80	-	AMV-132/40	AMK-132/50
DN100	AMK-132/100	-	-	AMV-132/40	AMK-132/50



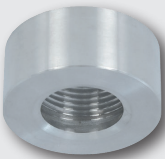



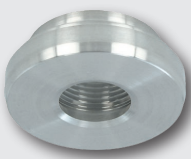
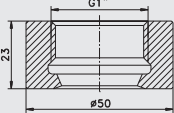
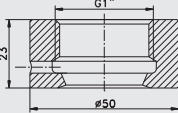
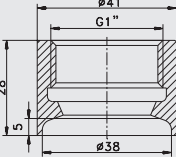
## Adapter to standard process connections

G1/2"						
Diameter		APV-Inline	SMS	BioControl		
DN20		-	AMK-132/20	-		
DN25	1"	-	-	-		
DN40	1½"	AMA-132	AMK-132/40	AMB-50/½" and AMB-65/½" from DN40 up to DN100		
DN50	2"	AMA-132	AMK-132/50			
DN65	2½"	AMA-132	-			
DN80		AMA-132	-			
DN100		AMA-132	-			

## Adapter G1/2" to other thread sizes and accessories

G1/2"						
		Adapter	Adapter	Adapter	Dummy flange	
		AMG-1 (G1" hygienic to G1/2" hygienic)	AMG-132 (G1" to G1/2" hygienic)	AMG-132 / 3/4" (G3/4" to G1/2" hygienic)	BST-130 (to close an existing measurement point)	

## Weld-in sleeves and adapter





G1"					
					
	<b>Cylindrical sleeve</b>	<b>Cylindrical sleeve with leakage hole</b>	<b>Cylindrical sleeve with weld-in ring</b>	<b>Cylindrical sleeve with weld-in ring and leakage hole</b>	<b>DRD (press ring optional)</b>
	EMZ-352 * (for vessels thick / thin)	EMZ-351 * (for vessels with leakage detection)	EMS-352 * (for installation on pulled-out pipes)	EMS-351 * (for installation on pulled-out pipes)	AMK-352/50 (only one size)

\* Deliverable with material 1.4435 and 3.1 inspection certificate on request.

## Adapter to standard process connections

G1"					
<b>Diameter</b>	<b>Milk pipe (DIN 11851)</b>	<b>Tri-Clamp</b>	<b>Tri-Clamp with leakage hole</b>	<b>Varivent-Inline</b>	<b>APV-Inline</b>
DN25 1"	AMK-352/DN25	AMC-352/DN25	AMC-351/DN25	AMV-352/DN25	-
DN32	AMK-352/DN32	AMC-352/DN25	AMC-351/DN25	AMV-352/DN25	AMA-352
DN40 1½"	AMK-352/DN40	AMC-352/DN25	AMC-351/DN25	AMV-352/DN40	AMA-352
DN50 2"	AMK-352/DN50	AMC-352/DN50	AMC-351/DN50	AMV-352/DN40	AMA-352
2½"	AMK-352/DN65	AMC-352/2½"	AMC-351/2½"	AMV-352/DN40	-
DN65	AMK-352/DN65	AMC-352/DN65	AMC-351/DN65	AMV-352/DN40	AMA-352
3"	-	AMC-352/DN65	AMC-351/DN65	AMV-352/DN40	-
DN80	AMK-352/DN80	AMC-352/DN80	AMC-351/DN80	AMV-352/DN40	AMA-352
DN100	AMK-352/DN100	AMC-352/DN100	AMC-351/DN100	AMV-352/DN40	AMA-352

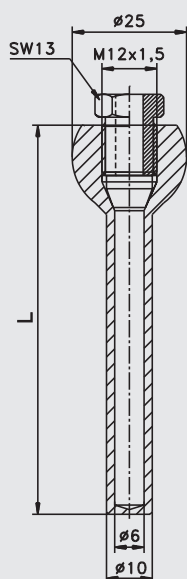
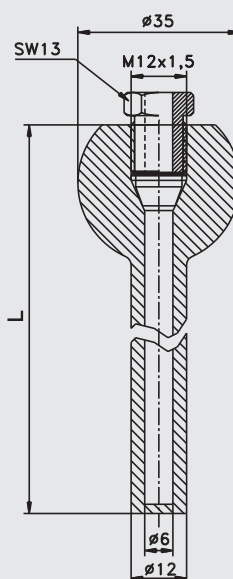
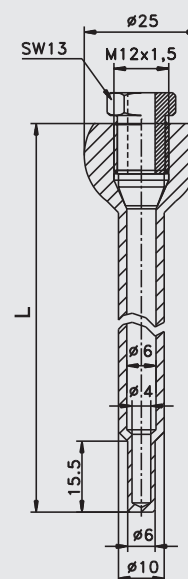


Adapter G1" to other thread sizes and accessories					
G1"					
	Adapter	Adapter	Adapter	Dummy flange	
	AMG-352 G1½" (G1½" to G1" hygienic)	AMG-352 G1¾" (G1¾" to G1" hygienic)	AMG-352 G2" (G2" to G1" hygienic)	BST-350 (to close an existing measurement point)	

#### Conditions for a measuring point according to 3-A Sanitary Standard 74-06



- 3-A conforming pipes, sleeves and adapters:  
EHG, EMS, EMZ, EMK, ESH, AMC and AMV each for M12, G1/2" and G1" process connection are available.
- Cleaning: sensors are designed for CIP-/SIP-cleaning. Maximum temperature see respective product information of the sensor.
- Welding seam: using the weld in sleeve EMZ or EMK the weld must comply to the requirements of the current 3-A Sanitary Standard.
- Mounting position: mounting position, self draining and the position of the leakage hole must be in accordance to current 3-A Sanitary Standard.
- Sensors: suitable 3-A conforming sensors are specified in the respective product informations. Generally only sensors with PEEK sealing cone conforming to 3-A Sanitary Standard.

Thermowell  
ESH-KM12/...Thermowell up to  
L=150, ESH-KM12/...Thermowell from  
L=200, ESH-KM12/...Thermowell up to  
L=150, ESH-KM12/...-06

## Specification ESH-KM12

Process connection		weld-in thermowell
Application		For installation of temperature sensors in pipes and vessels.
		Suitable for sensor types: TFP-06, -49, -169, and -189
Insertion length		85 mm (for sensor length 100 mm) 150 mm (for sensor length 165 mm) 230 mm (for sensor length 245 mm) 400 mm (for sensor length 415 mm)
Materials	thermowell optional	stainless steel 1.4404 1.4435 with 3.1 inspection certificate (acc. to DIN EN 10204)
Mounting system	clamp ring	M12 x 1,5 with PEEK clamp-ring
Torque		maximum 10 Nm
Operating pressure		maximum 50 bar

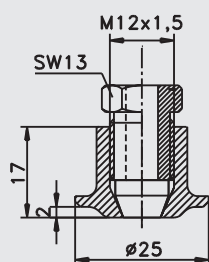
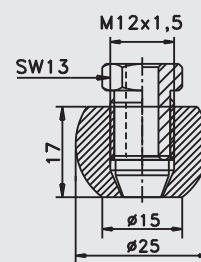
## Order code

**ESH-KM12** (weld-in sleeve with thermowell incl. clamp screw KSM-6 and sealing cone DKR-6)

## Length L in mm

<b>85</b>	(suitable for sensors from length 100 mm, sensor tip Ø 6 mm)
<b>150</b>	(suitable for sensors from length 165 mm, sensor tip Ø 6 mm)
<b>230</b>	(suitable for sensors from length 245 mm, sensor tip Ø 6 mm)
<b>400</b>	(suitable for sensors from length 415 mm, sensor tip Ø 6 mm)
<b>85-6</b>	(suitable for sensors from length 100 mm, sensor tip Ø 4 mm)
<b>150-6</b>	(suitable for sensors from length 165 mm, sensor tip Ø 4 mm)
<b>230-6</b>	(suitable for sensors from length 245 mm, sensor tip Ø 4 mm)
<b>400-6</b>	(suitable for sensors from length 415 mm, sensor tip Ø 4 mm)

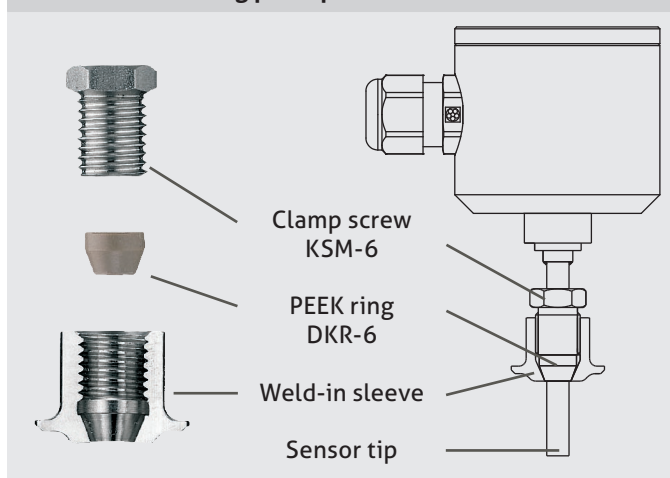
**ESH-KM12 / 150**

Weld-in sleeve  
EMK-25/76Weld-in sleeve  
EMK-25/76Weld-in sleeve  
KEV-25/76Weld-in sleeve  
KEV-25/76

## Specification EMK-25/76 and KEV-25/76

Process connection	cavity free	weld-in thermowell
Application	For installation of temperature sensors in pipes and vessels. Suitable for sensor types: TFP-06, -49, -169, and -189	
Material	optional	stainless steel 1.4404
Mounting system	clamp ring	M12 x 1,5 with PEEK clamp-ring
Torque		maximum 10 Nm
Operating pressure		maximum 10 bar

## Showcase of sealing principle



## Clamp Connection with PEEK ring



The sensor is sealed by means of the conic sealing ring, made of heat-resistance PEEK material.

Tightening the clamp screw the gap between sensor and sleeve will be closed totally and the sealing ring will be pressed against the sensor.





## Order Code

EMK-25/76	(Weld-in sleeve with collar incl. clamp screw KSM-6 and sealing PEEK ring DKR-6)
KEV-25/76	(Weld-in sleeve incl. clamp screw KSM-6 and sealing PEEK ring DKR-6)
KSM-6	(Clamp screws for EMK-25/76 and KEV-25/76, material 1.4305)
DKR-6	(Sealing ring for pipes 6 mm, material PEEK)

## Accessories | Spare Parts

					
Diameter	Clamp ring Varivent	Sealing ring Varivent	Clamp ring Tri-Clamp	Sealing ring Tri-Clamp	
DN10	-	-	SRC-10	DRC-10	
DN15	SRV-15	DRV-15	SRC-10	DRC-15	
DN20	-	-	SRC-10	DRC-20	
DN25	SRV-25	DRV-25	SRC-25	DRC-25	
DN32	-	-	SRC-25	DRC-32	
DN40	SRV-40	DRV-40	SRC-25	DRC-40	
DN50	-	-	SRC-50	DRC-50	
DN65	-	-	SRC-65	DRC-65	
DN80	-	-	SRC-80	DRC-80	

## Accessories | Spare Parts

					
Diameter	Press ring DRD	Sealing ring DRD	Sealing ring APV-Inline	Slotted nut Milk pipe DIN 11851	Sealing ring Milk pipe
DN10	-	-	-	-	-
DN15	-	-	-	-	-
DN20	-	-	-	-	-
DN25	ADD-50 for AMK-352/DN50	FDD-50 for AMK-352/DN50	-	NMM-25	DRM-25
DN32			DRA-61 for AMA-352	-	-
DN40				NMM-40	DRM-40
DN50				NMM-50	DRM-50
DN65				NMM-65	DRM-65
DN80				NMM-80	DRM-80
DN100				NMM-100	DRM-100

## Re-Sharpening tool for CLEANadapt

### Specified Usage

By using the re-sharpening tool you can try to rework a slightly deformed sealing edge in order to still achieve a sealed process.

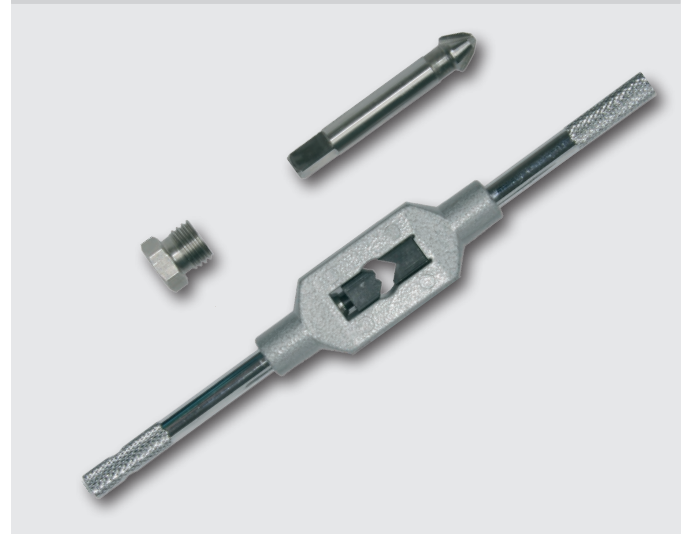
### Important



The mounting of the sensors under the usage of Teflon tape should be avoided because:

- the faultfree sensor function is no longer guaranteed due to the isolating effect of the sealing tape.
- if the sealing edge isn't tight, the medium can infiltrate the weld-in sleeve and as a consequence germs can occur.

### Re-Sharpening Tool NSW-030 for M12 x 1,5



### Order Code Re-Sharpening Tool NSW

<b>NSW-030</b>	re-sharpening tool for thread M12 x 1,5 respectively EMS-032
<b>NSW-130</b>	re-sharpening tool for thread G1/2" respectively EMZ-132
<b>NSW-350</b>	re-sharpening tool for thread G1" respectively EMZ-352

### Transport / Storage



- No outdoor storage
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature -55...+90 °C
- Relative humidity maximum 98 %

### Reshipment



- Sensors and process connection shall be clean and free of media or heat-conductive paste and must not be contaminated with dangerous media!
- Use suitable transport packaging only to avoid damage of the equipment!

### Cleaning / Maintenance



- In case of using pressure washers, don't point nozzle directly to electrical connections of built-in sensors!

### Standards and Guidelines






- You have to comply with applicable regulations and directives

Food applications				
	Type	CLEANadapt M12	CLEANadapt G1/2"	CLEANadapt G1"
	Temperature <b>TFP-</b>	06*, 06.2* 17, 17.2, 18*, 18.2* 42, 42.2, 49*, 52, 52.2 62, 69* 162, 169* 182, 182.2, 189*, 189.2* * with clamp ring	41, 41.2, 44 51, 51.2, 54 61, 61-H 100-BAT 161, 164 181, 181.2, 184	
	Limit <b>NCS-</b>	01, 02	L-11, L-12 11, 12 M	
	Limit <b>NVS-</b>	041, 043, 046 061, 063, 066 081, 083, 086	141, 143, 146 161, 163, 166 181, 183, 186	345
	Limit <b>NSS-</b>		157	
	Limit and Temperature <b>NFP-</b>		41	
	Level <b>NSL-</b>		F...S00 M...S00	F...S01 M...S01
	Level <b>LAR-</b>			361



Food applications				
	Type	CLEANadapt M12	CLEANadapt G1/2"	CLEANadapt G1"
	Flow monitoring		FTS-141 FWS-141 FWA-141	
	Pressure			DAN-HH DAC-341 LAR-361 MPF-series P4-series L3-series D3-series
	Pressure MAN-			63, 63A 90, 90-BAT
	Conductivity ILM-			4
	Turbidity ITM-		3, 3G, 51	

Pharma applications				
	Type	CLEANadapt M12	CLEANadapt G1/2"	CLEANadapt G1"
	Temperature TFP-	42P, 42P.2 52P, 52P.2 62P, 62P-H 162P, 182P 182P.2		
	Limit NCS-	01P, 02P		
	Pressure MAN-			90P, 90P-BAT