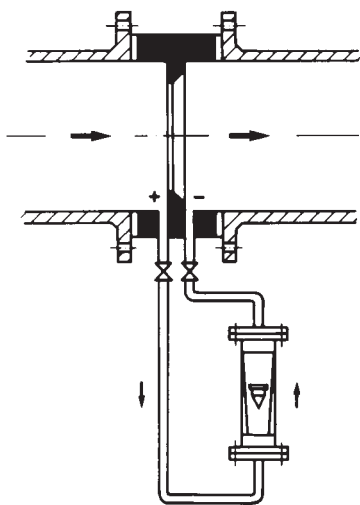


## Measurement of Flow from an Orifice Plate

- Measurement of full flow, indirectly with an orifice plate and VA flowmeter.
- Construction in all PVC, AISI-316 or Steel.
- Mounting in horizontal or vertical pipes.
- For Liquids, Gases & Vapours.
- Sizes DN-50 to DN-1000.
- Scales calibrated in flow units of l/h, m<sup>3</sup>/h, Kg/h. %, etc.
- Straight pipe requirement is 7 to 10 pipe diameters upstream of the orifice and 5 to 7 diameters downstream.
- Adjustable alarms as well as scaled flow tubes.
  - Magnetic or inductive for Series PR-25.
  - Optical for Series PR-61, PR-62 & PR-69.



### Measurement Principle

Measurement of the differential pressure, created by an orifice of fixed cross sectional area, which is a function of flow rate.

### Operation

An orifice plate in a pipe creates a differential pressure under the flow of a fluid. The differential pressure is a function of the flow rate, with a quadratic relationship. A connection between the high and low pressure sides of the orifice will create a smaller flow which is proportional to the main flow, with a quadratic relationship.

The measurement of the smaller, created flow with a series 6001, 6002, 6009 or SC-250 variable area flow meter provides a measurement of the total flow through the pipe. These VA flow meters are calibrated according to the orifice size to provide a direct reading of the main flow. The flow meters can be fitted with a transmitter to provide a 4-20 mA signal.

## Technical Data

- Orifice Plate & Flow meter connections in  $\frac{3}{4}$ " BSP thread.  
Other connections available on request.
- Accuracy:  $\pm 4\%$  of full scale.
- Rangeability: 7:1
- Temperature:
  - PR-61 & PR-62                    -20°C to +100°C
  - PR-69                                -10°C to +50°C
  - PR-25                                 -180°C to +400°C
- Pressure:
  - PR-61, PR-62 & PR-69        PN-16
  - PR-25                                PN-16,  
(Up to PN-200, on special request).
- Orifice Plate Materials:
  - Orifice: AISI-316
  - Body: Polyamide 11 Coated Steel, AISI-316 or PVC.

### VA Flow Meter Materials:

- PR-61 & PR-62                    Steel, AISI-316, PVC.
- PR-69                                PVC, AISI-316.
- PR-25                                 AISI-316, PVC.

### Adjustable Alarms:

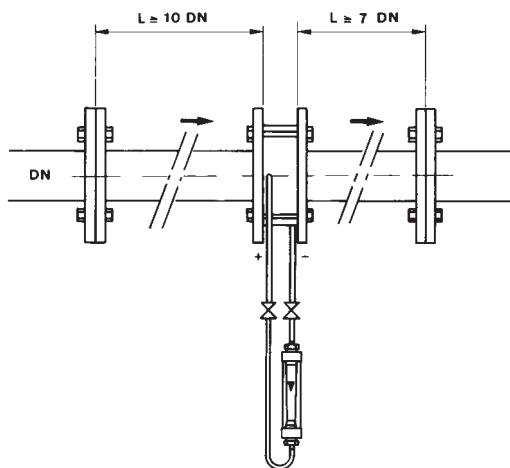
- SC-AMM (microswitch)            PR-25.
- SC-AMD (inductive prox.)        PR-25.
- 60-AMO (Optical)                    PR-61, PR-62, PR-69.

### Transmitters:

- TEH                                    0...4-20 mA            PR-25.
- TK-EX                                0...4-20 mA            PR-25,  
2, 3 & 4 Wire.
- TP-1200                              3-15psi/0.2-1bar        PR-25.

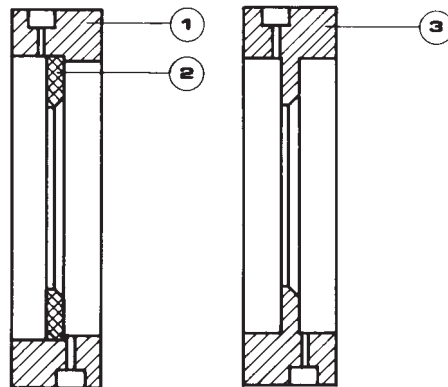
### Totaliser: TOTH (8 Digits)        PR-25.

- Power Supply:                            220 Vac, 50 Hz.  
24 Vac, 50 Hz.  
24 Vdc.



## Materials

- 1 Polyamide 11 coated steel
- 2 AISI-316
- 3 AISI-316/PVC



## “Scaled Flow” Meters

PR-61



PR-62



PR-69



PR-25





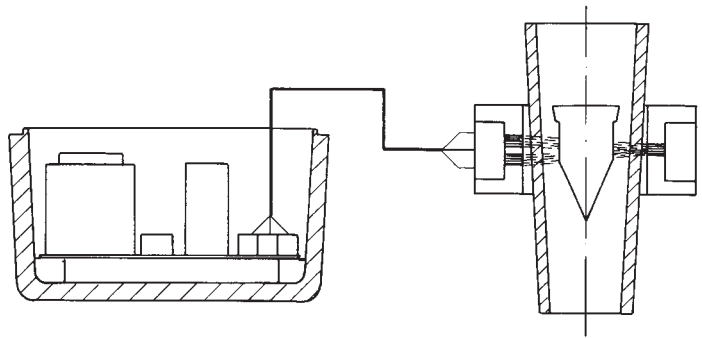
## Alarms

### Optical Alarm, Series 60-AMO

(For models PR-61, PR-62, PR-69)

Optical contact, in infra-red light, actuated by interruption of the beam with the float. Mounted in a PVC support, with the relay in a separate aluminium enclosure.

- 60-AMO 1...2: 1 or 2 adjustable alarm contacts.
- Power Supply: 220Vac/50Hz or 24Vdc.
- Load: 1 Amp @ 220Vac/50Hz.
- Temperature: -10°C to +50°C.
- Hysteresis: ±5% of full scale.

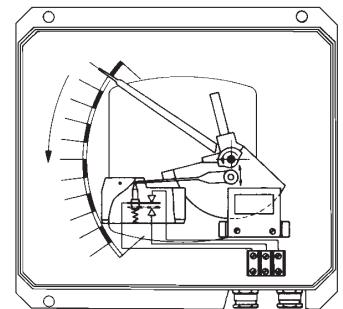


### Adjustable Micro Alarm, Series SC-AMM

(For model PR-25)

Micro-switch contact mounted in the indicator enclosure of the flow meter.

- SC-AMM1: 1 adjustable alarm contact.
- SC-AMM2: 2 adjustable alarm contacts.
- Load: 3 Amp @ 220Vac/50Hz.
- Temperature: -25°C to +80°C.
- Hysteresis: ±10% of full scale.
- Mechanical life: 20 x 10<sup>6</sup> Operations.
- Contact speed: 0.01 to 1 mSec.

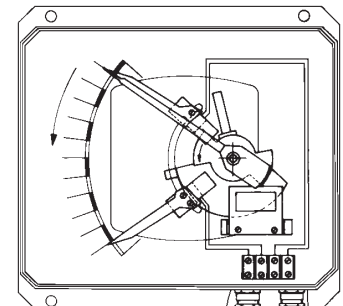


### Adjustable Inductive Alarm, Series SC-AMD

(For model PR-25)

Inductive proximity sensor, 3.5 mm, according to standard NAMUR DIN 19234, mounted in the indicator enclosure of the flow meter.

- SC-AMD1...2: 1 ... 2 adjustable alarm contacts.  
(+ amplifier WE77/Ex1 or ExEx2).
- Power Supply: 8 Vdc.
- Temperature: -25°C to +70°C.



### Transmitter TEH (PR-25), 0...4-20 mA 4 wire.

- Power Supply: 220V, 125V, 24V/50Hz. (24 Vdc, on request).

### Transmitter TK-Ex (PR-25), 0...4-20 mA 2 or 4 wire.

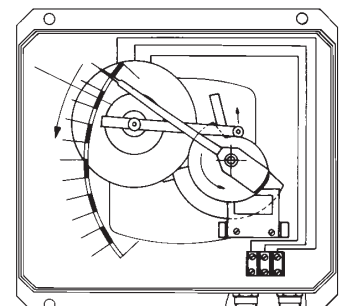
- Power Supply: 24 Vdc.

### Transmitter TP-1200 (PR-25), 3-15 psi (0.2-1 Bar).

- Supply: Air at 1.4 Bar.

### Totaliser TOTH (PR-25), 8 Digit.

- Power Supply: 220V, 125V, 24V/50Hz. (24 Vdc, on request).



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The technical data in this pamphlet is subject to modification without notification, if the technical innovations in the product or manufacturing processes so require.

Standard Scales, for Water at 20°C

DN	Orifice O.D.		Orifice Width	$\Delta P$ mm Water						
	PN-10	PN-16		2,000	2,600*(1)	4,000	5,000*(2)	6,000	8,000	10,000
				Flow in m <sup>3</sup> /h		Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
50	107	50	2-15	3-20	5-30					
65	127	50	4-25	6-40	8-50	10-60	10-70	12-80	14-90	
80	142	50	5-30	8-50	10-70	12-90	14-100	14-110	16-120	
100	162	50	6-40	10-60	12-80	14-100	14-110	16-120	20-140	
125	192	50	12-80	20-130	25-150	30-200	40-250	50-300	60-400	
150	218	50	18-130	25-200	40-250	50-300	50-350	60-400	80-500	
200	273	50	25-180	50-350	80-460	80-560	80-600	100-700	120-800	
250	329	50	30-250	70-500	90-650	120-800	150-900	160-1,100	180-1,200	
300	378	50	60-400	90-650	150-900	180-1,100	200-1,250	250-1,500	300-1,700	
350	428	50	90-600	150-1,000	180-1,200	200-1,500	250-1,800	300-2,000	400-2,400	
400	489	50	100-700	250-1,500	350-2,000	360-2,200	400-2,400	450-2,600	500-3,000	
450	539	50	200-1,200	300-2,000	400-2,500	500-3,000	550-3,200	600-3,600	650-4,000	
500	594	50	250-1,800	400-2,500	500-3,000	600-3,600	650-4,000	700-4,500	800-5,000	
600	695	50	400-2,600	600-6,300	700-4,200	800-5,000	900-5,400	1,000-6,000	1,100-7,000	
700	810	50	500-3,200	700-4,500	1,000-6,000	1,100-6,600	1,200-7,500	1,400-8,200	1,500-9,000	
800	917	50	750-4,500	1,100-6,500	1,200-7,500	1,400-8,200	1,500-9,000	1,800-10,000	2,000-12,000	
900	1017	50	1,000-6,000	1,200-8,000	1,600-10,000	1,800-11,000	2,000-12,500	2,200-14,000	3,000-16,000	
1000	1125	50	1,400-8,000	1,600-10,000	2,000-12,000	2,200-14,000	2,500-15,000	3,000-18,000	3,500-20,000	
Maximum pipe velocity, m/s			2	3.3	4	5	5.5	6	7	

\*Standard flow rates with  $\Delta P$  in mm Water.

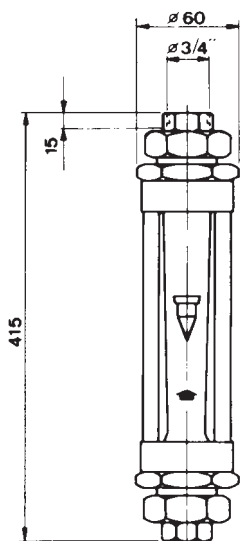
(1)  $\Delta P$  & Standard flow rates for PR-61, PR-62 & PR-69, with Borosilicate glass tubes.

(2)  $\Delta P$  & Standard flow rates for PR-25 metal tube flow meter, magnetic coupled indicator.

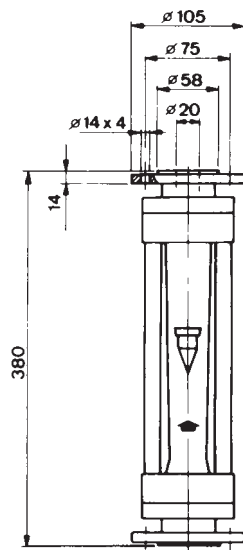
The out side diameter of the orifice is in accordance with the standard DIN 2502-C, for mounting between flanges. (Others on special request).

For an accurate calculation of the orifice diameter, the exact inside diameter of the pipe must be provided.

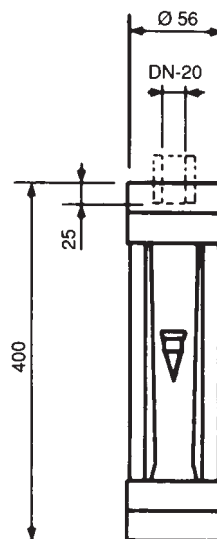
PR-61



PR-62



PR-69



PR-25

