

# W-Series Differential

BETA products are manufactured in The Netherlands

## Enclosures:

### Cast Aluminum:

Oven baked powder coating  
hammertone grey

## Also available in SS 316

Wheatherproof IP 66 -  
EN 60529 - Ex d / Ex tb

(Nema 4X)

### Repeatability:

typical 0.2% of Full Scale

### Range & Scale

Standard unit: Barg

Optional: PSI / Kg / Pa

### Standard process conetion:

1/4" NPT (F) or BSP (F)

### Standard Diaphragm/O-ring:

D..L/ M: Buna N / Buna N

D..H: TCP/ Buna N

### For wetted parts:

more possibilities available,  
see full catalogue

**BETA SWITCHES ARE,  
BUILD TO LAST!**

## Do you want to know more:

Please contact your local dealer  
and ask for the General Bulletin.  
Or contact us directly!



## Ranges for Differential switches

| RANGE CODE     | ADJUSTABLE<br>DIFF. RANGE <sup>1)</sup> |            | TYPICAL<br>DEADBAND <sup>1)</sup> |            | MAX. STATIC<br>PRESSURE |            | MAX. OVERRANGE<br>PRESSURE |            | PROOF<br>PRESSURE |            |
|----------------|---|------------|-----------------------------------|------------|-------------------------|------------|----------------------------|------------|-------------------|------------|
|                | mBar / <b>Bar</b>                       |            | mBar / <b>Bar</b>                 |            | <b>Bar</b>              |            | <b>Bar</b>                 |            | <b>Bar</b>        |            |
| <b>D 302 L</b> | 12 - 75 <sup>2)</sup>                   | mBar       | 7                                 | mBar       | 30                      | <b>Bar</b> | 30 <sup>3)</sup>           | <b>Bar</b> | 35                | <b>Bar</b> |
| <b>D 304 L</b> | 22 - 180                                | mBar       | 8                                 | mBar       |                         |            |                            |            |                   |            |
| <b>D 306 L</b> | 25 - 450                                | mBar       | 11                                | mBar       |                         |            |                            |            |                   |            |
| <b>D 309 L</b> | 35 - 1250                               | mBar       | 15                                | mBar       |                         |            |                            |            |                   |            |
| <b>D 402 M</b> | 0.3 - 1.0                               | <b>Bar</b> | 0.15                              | <b>Bar</b> | 10                      | <b>Bar</b> | 140 <sup>4)</sup>          | <b>Bar</b> | 140               | <b>Bar</b> |
| <b>D 404 M</b> | 0.5 - 2.5                               | <b>Bar</b> | 0.2                               | <b>Bar</b> | 50                      | <b>Bar</b> |                            |            |                   |            |
| <b>D 406 M</b> | 1.0 - 6.0                               | <b>Bar</b> |                                   |            |                         |            |                            |            |                   |            |
| <b>D 408 M</b> | 1.0 - 14.5                              | <b>Bar</b> | 0.8                               | <b>Bar</b> | 100                     | <b>Bar</b> |                            |            |                   |            |
| <b>D 506 M</b> | 5 - 20                                  | <b>Bar</b> |                                   |            |                         |            |                            |            |                   |            |
| <b>D 508 M</b> | 10 - 50                                 | <b>Bar</b> |                                   |            |                         |            |                            |            |                   |            |
| <b>D 608 M</b> | 10 - 70                                 | <b>Bar</b> | 1.5                               | <b>Bar</b> | 140                     | <b>Bar</b> | 200 <sup>4)</sup>          | <b>Bar</b> | 200               | <b>Bar</b> |
| <b>D 352 H</b> | 80 - 160                                | mBar       | 25                                | mBar       | 200                     | <b>Bar</b> |                            |            |                   |            |
| <b>D 354 H</b> | 100 - 500                               | mBar       | 35                                | mBar       |                         |            |                            |            |                   |            |
| <b>D 356 H</b> | 120 - 1450                              | mBar       | 50                                | mBar       |                         |            |                            |            |                   |            |
| <b>D 359 H</b> | 150 - 3450                              | mBar       | 75                                | mBar       |                         |            |                            |            |                   |            |

### NOTES:

- <sup>1)</sup> Ranges and deadbands are given at 50% of Max. Static pressure.  
All differential pressure sensors are sensitive to static pressure, both for setpoint and deadband.
- <sup>2)</sup> Range only with L1 micro switch.
- <sup>3)</sup> D...L can withstand a differential pressure P-low max. 1 bar above P-High.
- <sup>4)</sup> D...M, D...H can sustain full High and Low-side reversal.

IN THE FOLLOWING TABLE THE ESTIMATED INFLUENCE FOR INCREASING STATIC PRESSURE IS GIVEN.

| SENSOR       | SETPOINT       | DEADBAND         |
|--------------|----------------|------------------|
| <b>D...L</b> | - 0.7 mBar/Bar | = - 0.1 mBar/Bar |
| <b>D...M</b> | = + 3 mBar/Bar | + 10 mBar/Bar    |
| <b>D...H</b> | - 2 mBar/Bar   | = - 0.4 mBar/Bar |

Example: D...H-type Diff. setpoint: 1 bar (1000 mbar).

If static pressure increases 10 bar Diff.setpoint will be (10 x - 2 mbar ) = - 20 mbar less = 980 mbar.

**NOTE:** For differential application outside above ranges consult your BETA Switch Representative.

### Disclaimer:

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BETA B.V. does not accept any liability or claim whatsoever for potential errors, incorrect interpretation  
or possible lack of information in this document.  
It is clearly and only intended as course and general information of our products.

More Short Form Data Sheets on Pressure, Vacuum and Temperature Switches are available.

Making the modelcode: Follow steps 1 to 5

### 1 Selection of enclosure type.

| Conduit:   | Material: | Code: |
|------------|-----------|-------|
| 3/4" NPT F | Aluminium | W3    |
| M20 x 1.5  | SS 316    | W8    |
| 3/4" NPT F | SS 316    | W9    |

### 2 Selection of range code, see front page.

### 3 Selection of process connection.

| Size:      | Material:    | Code: |
|------------|--------------|-------|
| 1/4" NPT F | SS 316 *     | S1N   |
| 1/4" BSP F | SS 316 *     | S1B   |
| 1/4" NPT F | Aluminium ** | A1N   |
| 1/4" BSP F | Aluminium ** | A1B   |
| 1/2" NPT M | SS 316       | S7N   |

\* Only for D..H, D..D and D..M available

\*\* D.. L: A1N or A1B For low side only.  
High side: Only "L"-sensor connection

Proces connection according to NACE standard are available.  
Consult your local BETA Switch Representative.

### 4 Selection of wetted parts \*

| Diaphragm: | O-ring: | Code: |
|------------|---------|-------|
| Buna N     | Buna N  | B1 ** |
| Viton      | Viton   | V2 ** |
| SS 316     | Buna N  | S1    |
| SS 316     | Viton   | S2    |
| SS 316     | Teflon  | S4 ** |
| SS 316     | EPDM    | S6    |
| SS 316     | Welded  | S0 ** |

\*\* Not possible for D..H. (P1 = Standard for D..H)

#### \* WETTED PARTS ARE NOT GUARANTEED.

against corrosion or permeation since processes vary from plant to plant and concentration of harmful fluids, gasses or solids vary from time to time in a given process. Empirical experience by users should be the final guide and alter nate materials based on this are generally available.  
The diaphragm / O-Ring combinations are for process temperatures of -5°C to +90°C, unless otherwise indicated.  
For process temperatures beyond these limits. Please contact your BETA Switch Representative

#### Accessoires:

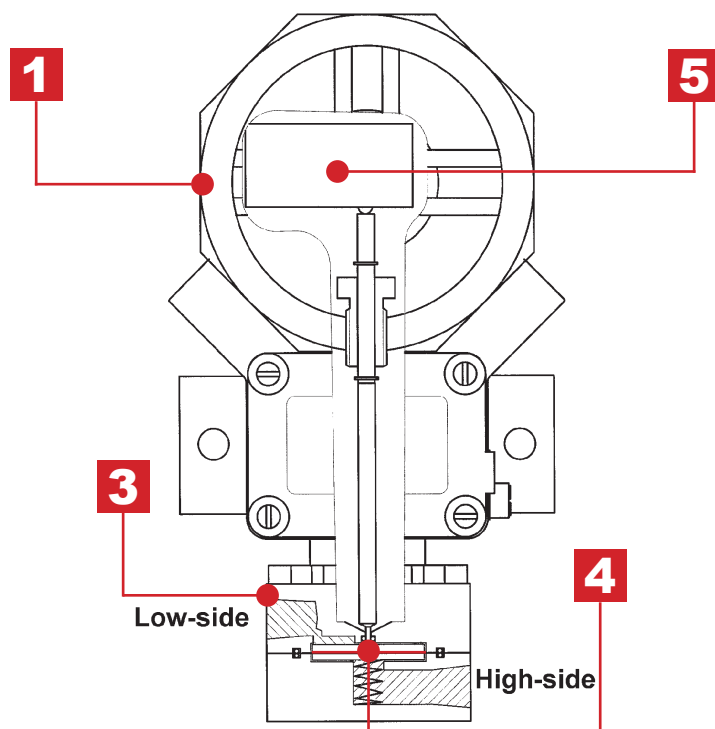
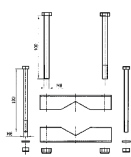
2" Pipe mount bracket set available.

#### Contents :

2 x Bracket +  
2 x Bolts M8 x 100 mm + nut

#### Disclaimer :

This pipe mount bracket is solely intended for use in combination with BETA Pressure & Temperature Switches.  
Foundation vibrations, as well as process vibrations, can disturb the proper functioning of the mounted instrument, the use of this bracket does not prevent or diminishes such occurrence.



### 5 Selection of microswitches.

| Rating:   |                    | Use:   | Code:            |
|-----------|--------------------|--|------------------|
| VAC.      | VDC. <sup>3)</sup> |  |                  |
| 480/ 15A  | 28/ 0.5A           | Standard   | K1 <sup>2)</sup> |
| 480/ 10A  | 28/ 0.5A           | Standaard for L-serie  | L1 <sup>2)</sup> |
| 480/ 15A  | 125/ 0.5A          | Normal DC-service  | U1 <sup>2)</sup> |
| 125/ 1A   | 28/ 0.5A           | For use in H <sub>2</sub> S environment <sup>3)</sup><br>and/ or for<br>Ex d & Ex tb applications. | G1 **            |
| 250/ 0.1A | 30/ 0.1A           |  | Y1 <sup>1)</sup> |
| 250/ 0.1A | 30/ 0.1A           | Environmental proof<br>(IP 67)   | O1 <sup>1)</sup> |
| 250/ 2A   | 30/ 2A             |  | N1 <sup>1)</sup> |

1) For D.P.D.T action, second code figure should be specifeid as "2"

For example: Y1 = S.P.D.T./ Y2 = D.P.D.T

2) VDE certified acc. to DIN EN 61 058-1:1992+A1:1993.

3) Indicated ratings are for resistive DC load only.

\*\* DC Rating not U.L. listed, although experience and third party testing confirm the D.C Voltage ratings. Consult your local BETA switch Representative.

### 6 Selection of options.

| Description:  | Code: |
|---|-------|
| Cable gland   | C     |
| Vacuum Protection Plate   | M     |
| Stainless steel tag key<br>ringed to enclosure<br>(Tag has 2 lines - 16 charaters per line) | S     |

\* Not possible for D..H. (Standard for D..L)

For extended selection and/ or specified technical information, please ask for the "BETA User Friendly" Catalogue.