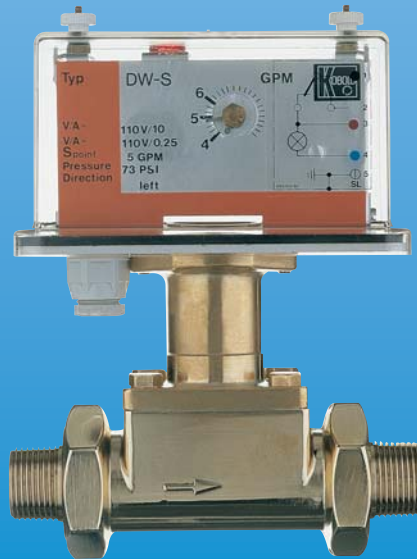
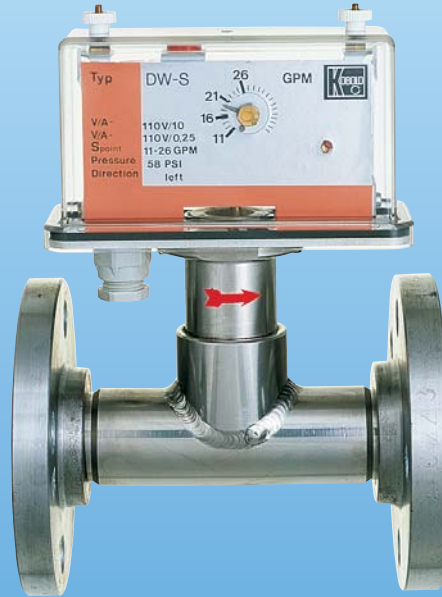


DW
PADDLE-BELLOWS FLOWMETER & SWITCH



Flow
 Pressure
 Level
 Temperature
 measurement
 monitoring
 control



- Accuracy: $\pm 3\%$ Full Scale
- Excellent for Highly Contaminated Media
- Orientation Independent
- Brass or Stainless Steel
- High Current Switching Capability
- Insensitive to Magnetic Fields

S3



USA

Order from: **C A Briggs Company**

622 Mary Street; Suite 101; Warminster, PA 18974

Phone: 267-673-8117 - Fax: 267-673-8118

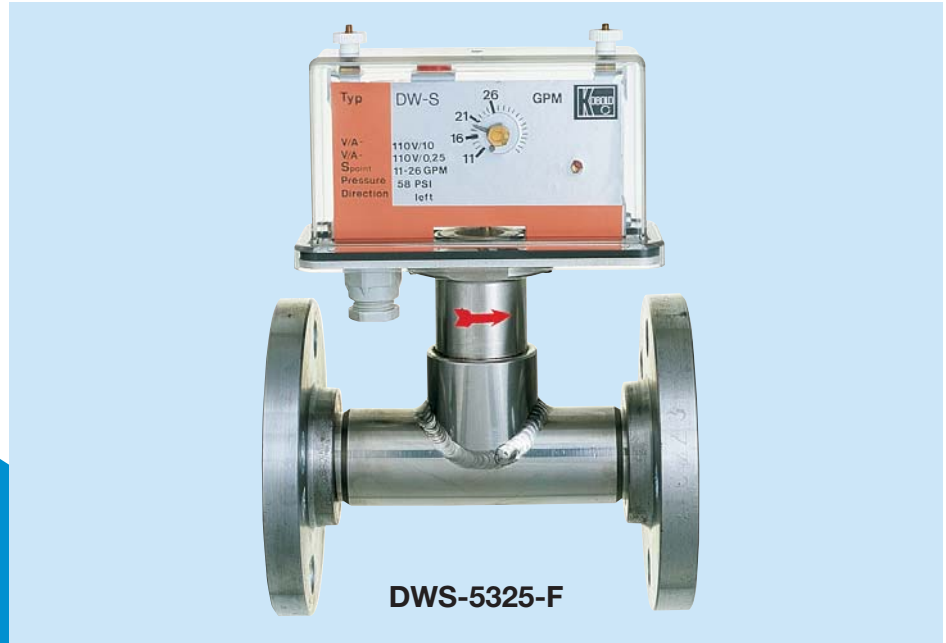
Sales@cabriggs.com - www.cabriggs.com

Model:
 DW

Features

- Accuracy: ± 3 % of full scale
- Excellent for Highly Contaminated Media
- Orientation Independent
- Brass or Stainless Steel
- High Current Switching Capability
- Insensitive to Magnetic Fields

KOBOLD model DWU, DWS and DWP flow meters and switches are based on the paddle, or static plate, principle. This type of arrangement is ideal for use in applications where dirt and solid grain contaminant are of concern. The paddle-bellows arrangement offers large internal clearances and mechanical insensitivity to a wide range of particulate matter.



Specifications

Accuracy

- 0 to 6 GPM:** ± 5 % of full scale
- 6 to 60 GPM:** ± 4 % of full scale
- Over 60 GPM:** ± 3 % of full scale

Flow Media:

Liquids

Flow Range:

0.65 to 18 ft/sec

Max/Min Ratio

- 2" & Smaller:** 5:1
- 2 1/2" Larger:** 4:1

Pressure Loss:

1.5 to 7.5 PSI

Fittings:

Male threads, 150 lb rf flanges, or insertion style

Microswitch:

1 or 2 SPDT

Maximum Load:

10 A @ 250 VAC

Hysteresis:

± 10 %

Lamp:

N/C (on)

Protection:

NEMA 4

Installation:

Vertical or horizontal.

Straight pipe requirements are:

10× inner pipe diameter upstream of meter and 5× inner pipe diameter downstream.

| Material Combination Component | Material | |
|--------------------------------|---------------------|-----------|
| | 0200 | 0300 |
| T-piece | Brass | 316-Ti SS |
| Paddle | Brass | 303 SS |
| Bellows | 316-Ti SS | 316-Ti SS |
| Housing: Measuring Section | Matte Aluminum | |
| Housing: Cover | Clear Polycarbonate | |
| Flanges (on flanged units) | Galvanized Steel | 316 SS |
| Maximum Operating Pressure | 145 PSIG | 145 PSIG |
| Maximum Operating Temperature | 210 °F | |
| Maximum Ambient Temperature | 160 °F | |

The DW series of flowmeters comes in a variety of mounting styles. Units are available for in-line installation into pipes to 2" with either threaded or flanged ends. For larger pipe applications, the DW is available in a "weld-on" design usable on pipes with diameters up to 24 inches.

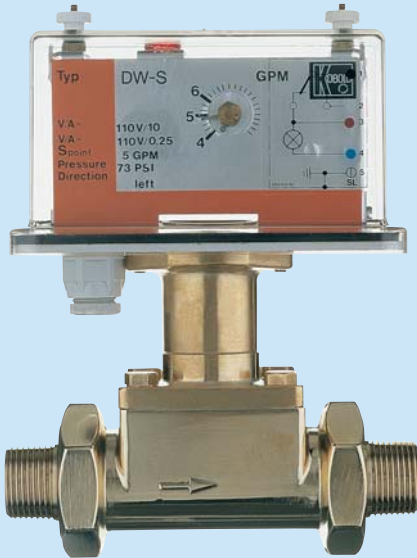
NPT Fittings

All Kobold DW models (DWU, DWS and DWP) are available with NPT threads for in-line installation. NPT threads are standard on all DWx-5000 series flowmeters (see DWS-5120 to the left.) Thread sizes range from 3/8" to 2" NPT.

DWU-7300: Weld-On Flange



DWS-5120: 3/4" NPT



Flanged Fittings

The basic model DWx-5000 meters are also available with 150 lb rf ANSI flanges in place of NPT threads. To order the meter with flanges, simply add »-F« to the part number of the unit which best suits your application. Flanges, such as on the DWS-5325-F shown in the lower left, make post-installation removal of the unit a breeze . . . your maintenance people will be impressed.

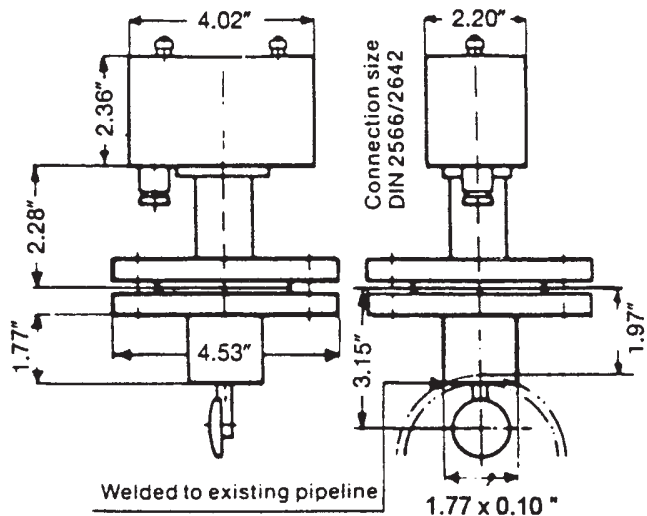
Weld-On Flange Fitting

Kobold's DW series meters may be used with pipes having internal diameters up to 24 inches. This is made possible through use of the DW in an insertion-style configuration. Insertion is achieved through installation of a weld-on, flanged collar (supplied with the meter.) The collar is provided in either galvanized carbon steel for brass units, or 316 SS for stainless steel units.

DWS-5325-F: 1" Flange



Installation Diagram for Weld-On Flanges



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How to Order:

1. Determine required range. The DW series allows you free choice of either the minimum or maximum range value. Once chosen, the range will have a Max./Min. ratio of 5:1 for units 2" and smaller, and 4:1 for units above 2".
2. Select the part number for the style of meter and material combination you require.

3. Add desired options to the part number as suffixes (options are found in the table on the previous page.)

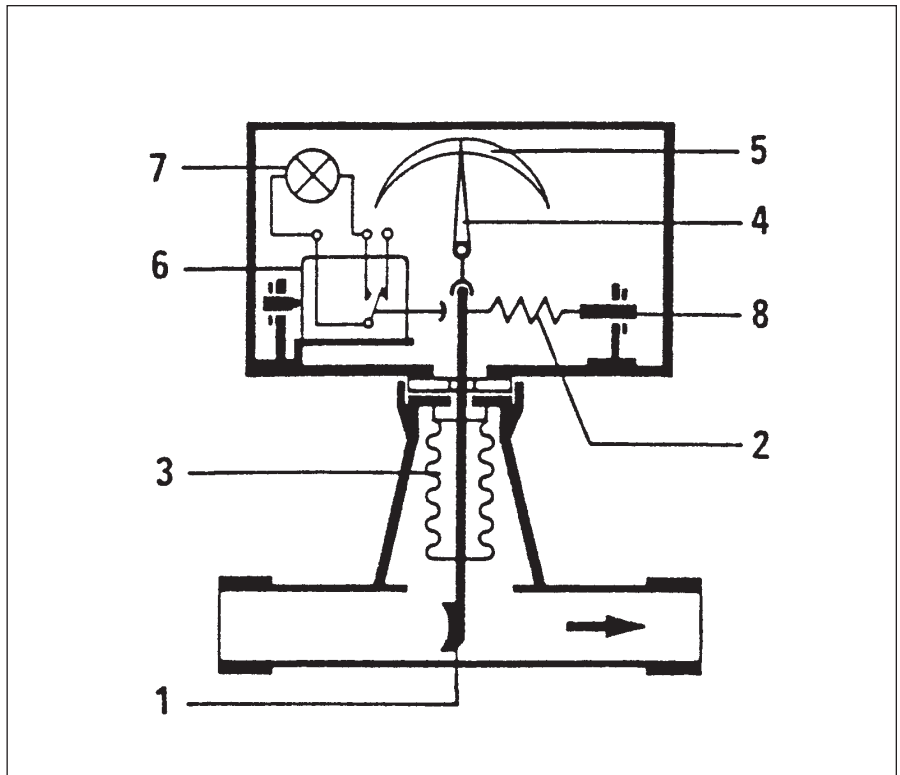
In addition to the part number, there is some application information we need in order to build the DW according to your wishes.

- Type of liquid.
- Pressure, temperature, density and viscosity of liquid during operation.
- Desired range from table.
- Flow direction (←, →, ↑, ↓).
- Power requirements for lamp.
- Pipe diameter.
- For vertical pipes, specify: housing right of pipe (|—○), or housing left of pipe (○—|).

Operation

The simplicity of the DW series design is its major asset. The devices operate as follows:

The flow causes the paddle, or static plate (1) to be deflected in the direction of flow against the force of a spring (2). A bellows (3), made of bronze (or preferably stainless steel), hermetically isolates the medium from the measuring/indicating section. The motion of the paddle (1) is transmitted directly to a pointer (4) or transducer. The pointer (4) indicates the flow in GPM, or transmits the signal to a signal conditioner. A MicroSwitch® (6) and an indicating lamp (7) are actuated when the setpoint is reached. The lamp is active when the flow is below the setpoint. The SPDT microswitch may be used with currents up to 10 A at 250 VAC.



Analog Output Option

For installations requiring remote indication of flow, we offer the DW series of flowmeters with optional analog output (option »-AN«). The meter continues to function in the standard way, except that the mechanical dial movement is replaced by an inductive motion transducer. The transducer is connected to a transmitting device which converts the sensor movement into a 4–20 mA signal.

For units supplied with analog output, the mechanical indicator is replaced with an 8 digit LCD display.

Switching capability is not part of the standard configuration with option -AN analog output meters. If switching capability is desired in addition to the analog output, two setpoint relays can be provided as part of the transmitter electronics (option-K1).



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Option Ordering Information

| Description | Available on... | Ordering Suffix |
|---|-----------------|-----------------|
| 2 Setpoint Relays (for Analog Output Option only) | DWU only | -K1 |
| Second SPDT Microswitch® | All meters | -K2 |
| Gold Plated Contacts | All meters | -G |
| 230 PSIG Service Pressure (only materials 0200 & 0300) | DWU & DWS | -H |
| 4–20 mA, Analog Output & LCD Display | DWU only | -AN1 |
| 24 VDC Power Supply For Status Lamps | DWU only | -P11 |
| 110 VAC Power Supply For Status Lamps | DWU only | -P12 |
| 220 VAC Power Supply For Status Lamps | DWU only | -P13 |

Specifications (Analog Output)

| | |
|----------------------------|---------------------------------------|
| Output: | 4–20 mA, 4-wire |
| Load: | 0–500 ohm |
| Display: | LCD 8 digit, standard with option-AN1 |
| Adjustments | |
| Zero: | ± 4 % |
| Span: | ± 10 % |
| Supply: | 24 VDC ± 10 % |
| Relays (optional) | |
| Type: | 0, 1 or 2 SPDT |
| Max. Load: | 1 A @ 230 VAC |
| Lamp: | None |
| Maximum Temperature | |
| Liquid: | 212 °F |
| Ambient: | 160 °F |
| Protection: | NEMA 4 |



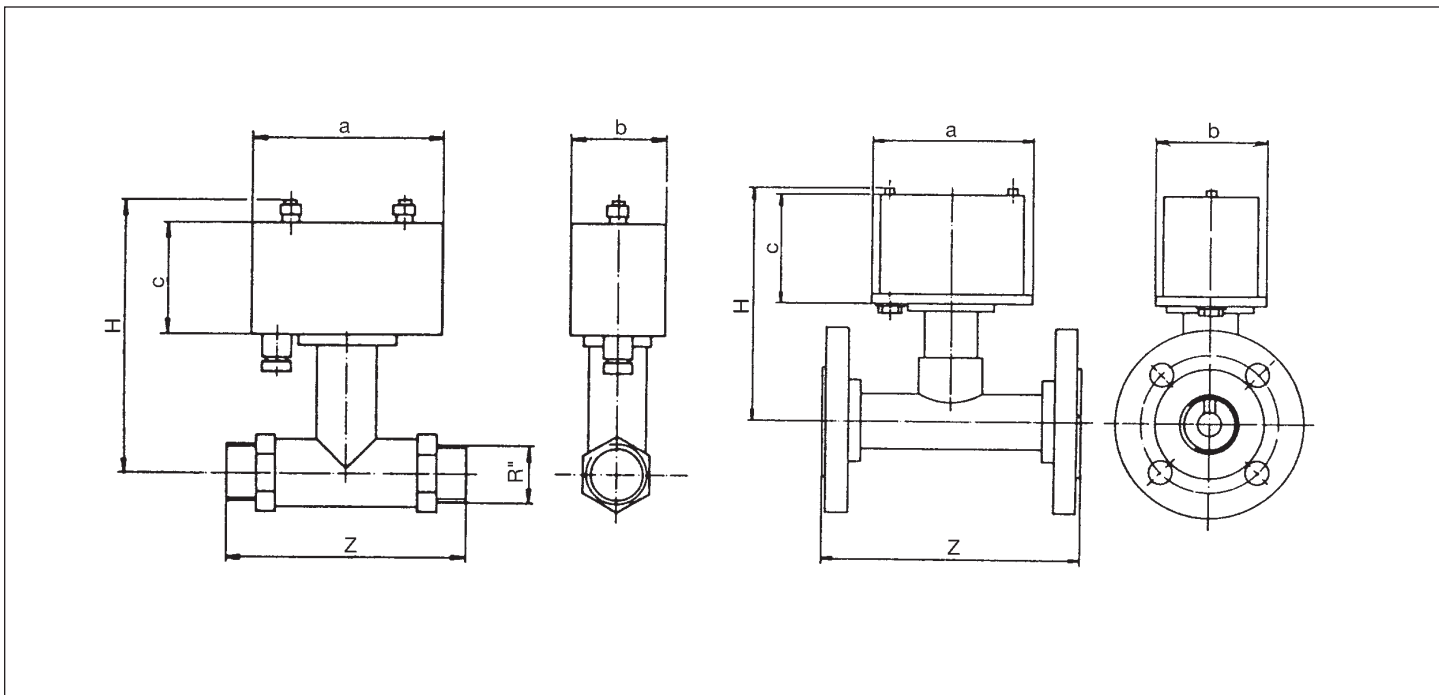
Ordering Information for NPT and Flanged Units

| Fitting (NPT) | Range | | Flowmeter + Switch Material Combination | | Adjustable Flow Switch Material Combination | | Factory Set Flow Switch Material Combination | |
|---------------|------------|------------|---|----------|---|----------|--|------|
| | Min (GPM) | Max (GPM) | 0200 | 0300 | 0200 | 0300 | 0200 | 0300 |
| 3/8" | 0.26– 1.3 | 1.3– 6.6 | DWU-5210 | DWU-5310 | DWS-5210 | DWS-5310 | DWP-5210 | N/A |
| 1/2" | 0.79– 2.9 | 4.0– 14.5 | DWU-5215 | DWU-5315 | DWS-5215 | DWS-5315 | DWP-5215 | N/A |
| 3/4" | 1.3 – 5.3 | 6.5– 26.4 | DWU-5220 | DWU-5320 | DWS-5220 | DWS-5320 | DWP-5220 | N/A |
| 1" | 1.6 – 7.9 | 8.0– 39.6 | DWU-5225 | DWU-5325 | DWS-5225 | DWS-5325 | DWP-5225 | N/A |
| 1 1/4" | 2.6 –13.2 | 13.0– 66.0 | DWU-5232 | DWU-5332 | DWS-5232 | DWS-5332 | DWP-5232 | N/A |
| 1 1/2" | 5.3 –21.2 | 26.5–106 | DWU-5240 | DWU-5340 | DWS-5240 | DWS-5340 | DWP-5240 | N/A |
| 2" | 13.2 –31.6 | 66.0–158 | DWU-5250 | DWU-5350 | DWS-5250 | DWS-5350 | DWP-5250 | N/A |

For 150 lb rf ANSI Flange Fittings, add suffix »-F« to part number. N/A= Not Available

Ordering Information for Weld-On Units

| Pipe Bore | Range | | Flowmeter + Switch | Adjustable Flow Switch | Factory Set Flow Switch |
|-----------|------------|-------------|--|--|--|
| | Min (GPM) | Max (GPM) | | | |
| 1 1/2" | 5.3– 21.2 | 26.5– 106 | Material Combination 0200: DWU-7200 | Material Combination 0200: DWS-7200 | Material Combination 0200: DWP-7200 |
| 2" | 13.2– 31.6 | 66.0– 158 | | | |
| 2 1/2" | 21.1– 66.0 | 84.4– 264 | | | |
| 3" | 31.7– 99 | 127 – 396 | | | |
| 4" | 52.8– 158 | 211 – 633 | | | |
| 5" | 79.2– 265 | 317 – 1060 | Material Combination 0300: DWU-7300 | Material Combination 0300: DWS-7300 | Material Combination 0300: N/A |
| 6" | 105 – 363 | 420 – 1450 | | | |
| 8" | 185 – 660 | 740 – 2640 | | | |
| 10" | 317 – 990 | 1268 – 3960 | | | |
| 12" | 449 –1320 | 1800 – 5280 | | | |
| 14" | 660 –1980 | 2640 – 7920 | | | |
| 16" | 792 –2650 | 3170 –10600 | | | |
| 20" | 1320 –3950 | 5280 –15800 | | | |
| 24" | 1850 –4950 | 7400 –19800 | | | |



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DWP Series Dimensions (mm)

| Pipe Size, R (Nominal) | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" |
|--|-----------|---------|---------|---------|---------|---------|---------|
| Dimension Z (Length) with NPT Fittings | 110 ± 1 | 130 ± 1 | 135 ± 1 | 135 ± 1 | 170 ± 2 | 170 ± 2 | 170 ± 2 |
| Dimension Z (Length) with ANSI Flange | 130 ± 2 | 155 ± 2 | 160 ± 2 | 160 ± 2 | 190 ± 2 | 190 ± 2 | 190 ± 2 |
| Dimension H (Height) | 145 ± 1 | 145 ± 1 | 145 ± 1 | 145 ± 1 | 145 ± 2 | 150 ± 2 | 155 ± 2 |
| Housing: a×b×c | 100×70×70 | | | | | | |

DWS Series Dimensions (mm)

| Pipe Size, R (Nominal) | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" |
|--|-----------|---------|---------|---------|---------|---------|---------|
| Dimension Z (Length) with NPT Fittings | 135 ± 1 | 135 ± 1 | 135 ± 1 | 135 ± 1 | 170 ± 2 | 170 ± 2 | 170 ± 2 |
| Dimension Z (Length) with ANSI Flange | 155 ± 2 | 155 ± 2 | 160 ± 2 | 160 ± 2 | 190 ± 2 | 190 ± 2 | 190 ± 2 |
| Dimension H (Height) | 155 ± 1 | 155 ± 1 | 155 ± 1 | 155 ± 1 | 160 ± 2 | 165 ± 2 | 170 ± 2 |
| Housing: a×b×c | 100×50×80 | | | | | | |

DWU Series Dimensions (mm)

| Pipe Size, R (Nominal) | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" |
|--|-----------|---------|---------|---------|---------|---------|---------|
| Dimension Z (Length) with NPT Fittings | 135 ± 1 | 135 ± 1 | 135 ± 1 | 135 ± 1 | 170 ± 2 | 170 ± 2 | 170 ± 2 |
| Dimension Z (Length) with ANSI Flange | 155 ± 2 | 155 ± 2 | 160 ± 2 | 160 ± 2 | 190 ± 2 | 190 ± 2 | 190 ± 2 |
| Dimension H (Height) | 145 ± 1 | 145 ± 1 | 145 ± 1 | 145 ± 1 | 150 ± 2 | 155 ± 2 | 160 ± 2 |
| Housing: a×b×c | 100×70×70 | | | | | | |