

Back Pressure Valve with External Sensor Line Series 510, Ductile Body

Bulletin SSIN057 Issue/Rev. 0.1 (1/19)

The **INVALCO Series 510 Valve** can be used for maintaining back pressure on vent lines from separators, treaters, dehydrators, compressor stations, gas gathering systems, etc.

Features

- **Ductile Iron Body** – Meets most application requirements
- **Soft Plug** – Allows for positive shut-off
- **Double-Port Design** – Allows for decreased flow
- **RNCE Adaptable** – Can be modified for use in sour service

Standard Specifications

Body and Cover

Ductile A-395

End Connections

2", 3", 4" and 6" ANSI 150# RF Flanges

Diaphragm Case

Steel, 26 sq. in. or 65 sq. in.*

Diaphragm

Nylon reinforced Buna N

Temperature Limits

-20°F to 250°F**

Notes:

*6" Only; 26 sq. in. Topworks for 40-60 and 60-125 Spring Range; 65 sq. in. Topworks for 0-25 and 20-40 Spring Range; 2", 3" and 4" Valves; 26 sq. in. Topworks

**Containment pressure is maximum working pressure and is limited by the diaphragm case. However, pressures above the maximum spring setting are uncontrolled and the back pressure valve will be fully open.

***Limited by elastomers

****Consult factory for optional trim



Containment Pressure

125 psi **

Packing

Non-lubricated Buna-N

Stem

303 Stainless Steel****

Cages and Guides

304 Stainless Steel

Seats

2", 3", and 4"...304 Stainless Steel

6"...303 Stainless Steel****

Valve Plugs

2", 3", and 4" Replaceable Buna****

6" Fluoroelastomer O-Ring

Seat-to-Body Seals

O-Ring

Spring Ranges

0-125 psi (see chart on page 2)

Pressure Increase Required From Full Closed to Full Open

| Spring Range | Increase |
|--------------|----------|
| 0-25 psi | 2.7 psi |
| 20-40 psi | 4.0 psi |
| 40-60 psi | 9.0 psi |
| 60-125 psi | 10.5 psi |

Ordering Information

| Size | Model | Flow | | Spring Ranges and Part Numbers | | | | Wt. |
|------|--------------|------|--------|--------------------------------|----------|----------|----------|-----|
| | | Cv | Cg | 0- 25 | 20 - 40 | 40 - 60 | 60 - 100 | |
| 2" | RDFG-201-510 | 44 | 1,450 | 80006241 | 80006242 | 80006243 | 80006244 | 45 |
| 3" | RDFG-301-510 | 72 | 2,300 | 80006245 | 80006246 | 80006247 | 80006248 | 92 |
| 4" | RDFG-401-510 | 72 | 2,300 | 80006249 | 80006250 | 80006251 | 80006252 | 113 |
| 6" | RDFG-601-510 | 430 | 13,360 | 80006254 | 80006255 | 80006256 | 80006257 | 218 |

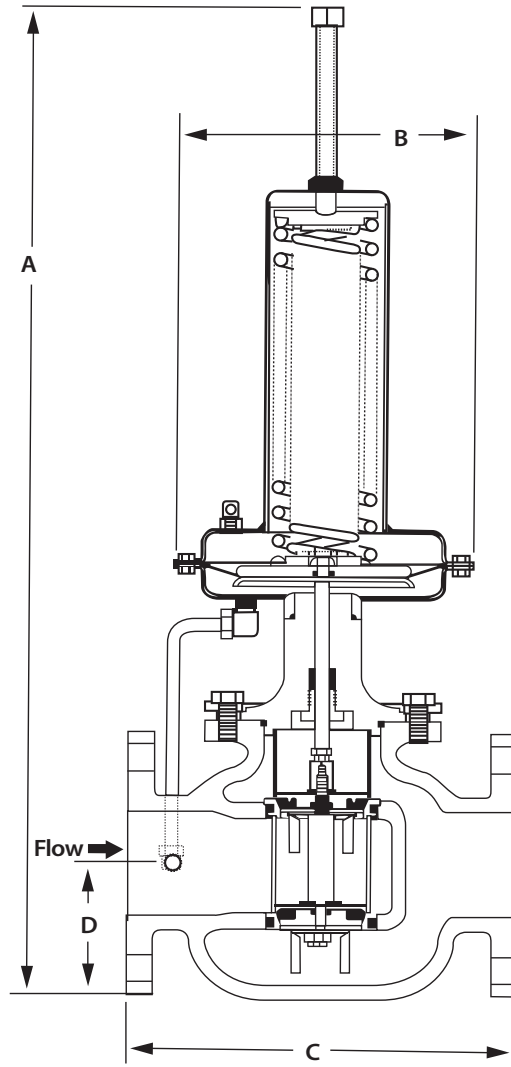
Settings

Any spring combination may be set to open at less than 5 psi working pressure, but because the heavier springs are less sensitive, it is recommended that valves be selected to suit the pressure range required. Valve will be factory set to mid-point of range specified.

Dimensions

| Model | A* | B | C | D |
|----------------------------------------|----------------|----------------|----------------|---------------|
| RDFG-201 | 24.4" (618) | 8.4" (213) | 8.0" (213) | 3.4" (29) |
| RDFG-301 | 25.5" (646) | 8.4" (213) | 11.0" (279) | 4.4" (111) |
| RDFG-401 | 27.0" (686) | 8.4" (213) | 12.8" (325) | 4.5" (114) |
| RDFG-601-510 (26 sq. in. Top Works) | 35.8" (910) | 8.4" (213) | 14.5" (367) | 7.7" (196) |
| RDFG-601-510 (65 sq. in. Top Works) | 36.3" (922) | 12.5" (318) | 14.5" (367) | 7.7" (196) |

Dimensions



Notes:

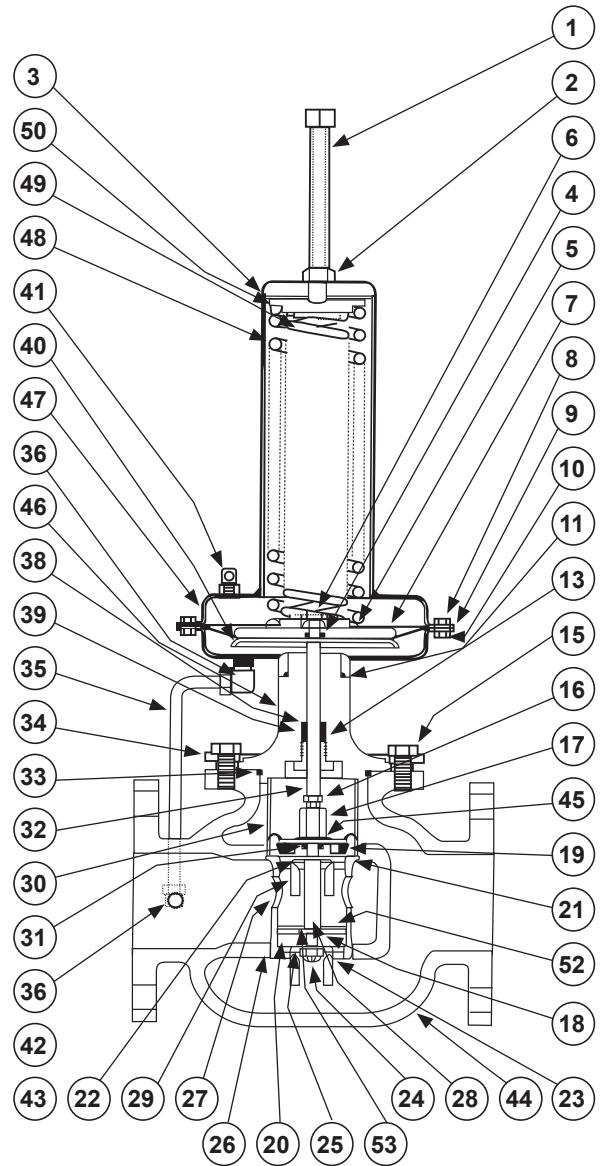
* Clearance to remove adjusting screw

1. Refer to valve engineering section for valve sizing charts
2. Cg:1,200 - Cv:36 is for fully opened valve
3. Part numbers valid only if valve desired is exactly as described

Dimensions – Inches to the nearest tenth (millimeters to the nearest whole mm), each independently dimensioned from engineering drawings.

Parts 2", 3" and 4" Valves

| Item | N | Description | Qty. | Part No. | |
|------|----|----------------------------------|------|-----------|-----------|
| | | | | 2" | 3" & 4" |
| 1 | | Screw 5/8-11x5-1/2 SQHSS | 1 | 65015572 | 65015572 |
| 2 | | Nut 5/8-11 Hex | 1 | 65002136 | 65002136 |
| 3 | | Upper Diaphragm Case | 1 | 48004283 | 48004283 |
| 4 | * | O-Ring BUN-012-90 | 1 | 67102312 | 67102312 |
| 5 | | Lower Spring Rest | 1 | 45003992 | 45003992 |
| 6 | | Nut 3/8-24 Flexloc | 1 | 65001401 | 65001401 |
| 7 | | Upper Diaphragm Plate | 1 | 45005496 | 45005496 |
| 8 | | Screw 5/16-18x3/4 HHCS | 12 | 65002073 | 65002073 |
| 9 | * | Diaphragm | 1 | 45003465 | 45003465 |
| 10 | | Nut 5/16-18 Hex | 12 | 65002100 | 65002100 |
| 11 | * | O-Ring BUN-225-90 | 1 | 67101099 | 67101299 |
| 13 | | Packing Nut | 1 | 45001939 | 45001939 |
| 15 | | Screw 3/8-16x7/8 HHCS | 4 | 65003440 | ---- |
| | | Screw 1/2-13x1 HHCS | 4 | ---- | 65002852 |
| 16 | | Nut 2" (3/8-24 Hex Jam) | 1 | 65002513 | 65005386 |
| | | 3" and 4" (1/2-20 Hex Jam) | 1 | | |
| 17 | @ | Stem Connector | 1 | 45010518 | 45010521 |
| 18 | @ | O-Ring BUN-110-90/ BUN-112-90 | 2 | 67101532 | 67101408 |
| 19 | @ | Upper Seal | 1 | 45002423 | 45003359 |
| 20 | @ | Lower Seal | 1 | 45002424 | 45003359 |
| 21 | @ | O-Ring BUN-228-90 | 1 | 67101530 | ---- |
| | *@ | O-Ring BUN-234-90 | 1 | ---- | 67101736 |
| 22 | @ | Upper Seal Retainer | 1 | 45002432 | 45003392 |
| 23 | @ | Lower Stem Guide | 1 | 45002435 | 45003386 |
| 24 | @ | Nut 3/8-24 | 1 | 65003075 | ---- |
| | @ | Nut 1/2-20 Flexloc | 1 | ---- | 65003402 |
| 25 | @ | Lower Valve Plug | 1 | 45002436 | 45003395 |
| 26 | *@ | O-Ring BUN-228-90 | 1 | 67101530 | ---- |
| | *@ | O-Ring BUN-233-90 | 1 | ---- | 67102331 |
| 27 | @ | Seat Cage | 1 | 45016100 | 45016102 |
| 28 | @ | Lower Stem | 1 | 45002429 | 45003385 |
| 29 | @ | Upper Stem Guide | 1 | 45002434 | 45003384 |
| 30 | @ | Cage Spacer | 1 | 45002431 | 45003389 |
| 31 | @ | Upper Valve plug | 1 | 45002436 | 45003390 |
| 32 | | Upper Stem | 1 | 45010519 | 45010520 |
| 33 | * | O-Ring BUN-230-90 | 1 | 67101540 | ---- |
| | * | O-Ring BUN-237-90 | 1 | ---- | 67102334 |
| 34 | | Clamp Ring | 1 | 45003128 | 45003413 |
| 35 | | Tubing 3/8 304 SS | 16 | 11032059 | 11032059 |
| 36 | | Elbow 1/4 NPT x 3/8 Tubing | 2 | 45016252 | 45016252 |
| 38 | * | Packing Ring 1/2" x 1" Flat | 1 | 45001948 | 45001948 |
| 39 | | Packing Ring 1/2" x 1" Reg. | 3 | 45001947 | 45001947 |
| 40 | | Lower Diaphragm Plate | 1 | 45003466 | 45003466 |
| 41 | | 1/4" Bleeder Filter | 1 | 45002612 | 45002612 |
| 42 | | Coupling 1/4" NPT | 1 | 50100001 | 50100001 |
| 43 | | Nipple 1/4" NPT | 1 | 45006875 | 45006875 |
| 44 | | Body RDFG-201-510 | 1 | 45012099 | ---- |
| | | Body RDFG-301-510 | 1 | ---- | 45012100 |
| | | Body RDFG-401-510 | 1 | ---- | 45012101 |
| 45 | @ | Washer 3/8" Lock | 1 | 65004401 | ---- |
| | @ | Washer 1/2" Toothlock | 1 | ---- | 65005389 |
| 46 | | Body Cover | 1 | 45015533 | 45015639 |
| 47 | | Lower Diaphragm Case | 1 | 45004018 | 48004018 |
| 48 | * | Outer Spring | | 2nd Chart | 2nd Chart |
| 49 | * | Inner Spring | | 2nd Chart | 2nd Chart |
| 50 | | Upper Spring Rest | | 45003991 | 45003991 |
| 52 | @ | Lower Seal Retainer | 1 | 45002433 | 45003392 |
| 53 | *@ | Shim .005 (Not Shown) | 6 | 45012494 | 45012496 |



Spring Chart

| Setting Range (psi) | Item 48 Outer Spring | Item 49 Inner Spring |
|---------------------|----------------------|----------------------|
| 0 - 25 | 45003086 | ---- |
| 20 - 40 | 45003086 | 45003421 |
| 40 - 60 | 45003941 | ---- |
| 60 - 100 | 45003941 | 45003940 |

Parts Key

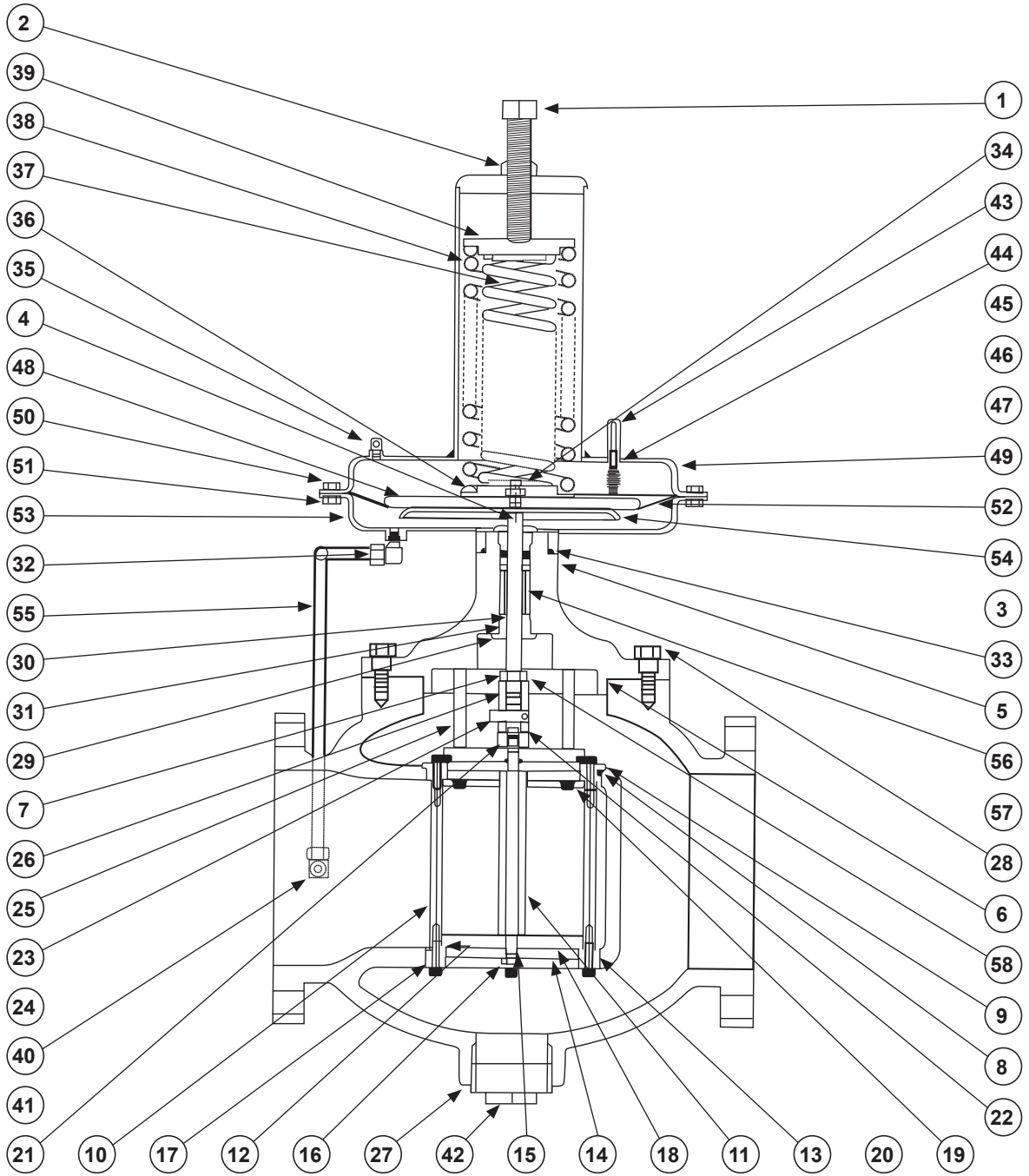
*Recommended spare parts.

@ These items included in Valve Trim Kit. (2" Kit P/N 83000112, 3" and 4" Kit P/N 83000113)

| Parts 6" Valves | | | | |
|-----------------|----|--------------------------|------|----------|
| Item | N | Description | Qty. | Part No. |
| | | | | 6" Valve |
| 1 | | Screw 5/8-11x5-1/2 SQHSS | 1 | 65015572 |
| 2 | | Nut 5/8-11 Hex | 1 | 65002136 |
| 3 | * | O-Ring BUN-012-90 | 1 | 57102312 |
| 4 | | Stem | 1 | 45006446 |
| 5 | | Body Cover | 1 | 45012567 |
| 6 | * | O-Ring BUN-437-90 | 1 | 67106179 |
| 7 | | Nut 1/2-20 Hex Jam | 1 | 65005386 |
| 8 | *@ | O-Ring BUN-254-90 | 1 | 67106178 |
| 9 | @ | Upper Seat | 1 | 45006269 |
| 10 | @ | Seat Spacer | 4 | 45006274 |
| 11 | @ | Stem | 1 | 45006272 |
| 12 | *@ | O-Ring VIT-346-75 | 2 | 67306345 |
| 13 | *@ | O-Ring BUN-243-90 | 1 | 67106265 |
| 14 | @ | Plug Washer | 2 | 45006271 |
| 15 | @ | O-Ring BUN-110-90 | 2 | 67101532 |
| 16 | @ | Nut 3/8-24 Flexloc | 1 | 65003075 |
| 17 | @ | Lower Seat | 1 | 45006268 |
| 18 | @ | Valve Plug Body | 2 | 45006270 |
| 19 | @ | Screw 1/4 20x7/8 SHCS | 12 | 65006180 |
| 20 | @ | 1/4" Lock washer | 8 | 65006386 |
| 21 | @ | 3/8" Lock washer | 1 | 65004401 |
| 22 | @ | Stem Adapter | 1 | 45006273 |
| 23 | | Hinge Pin | 1 | 45006265 |
| 24 | | Cotter Pin | 1 | 79006147 |
| 25 | @ | Hold Down Pin | 4 | 45006275 |
| 26 | | Stem Connector | 1 | 45006447 |
| 27 | | Body, 6" Flanged Globe | 1 | 45011187 |
| 28 | | Screw 1/2-13x1-1/4 HHCS | 8 | 65000176 |

| Parts 6" Valves (continued) | | | | |
|-----------------------------|---|----------------------------------------|------|----------|
| Item | N | Description | Qty. | Part No. |
| | | | | 6" Valve |
| 29 | | Packing Nut (Pre-1998) | 1 | 45015532 |
| | | Packing Nut (Post-1988) | 2 | 45001939 |
| 30 | | O-Ring BUN-112-90 (Pre-1998) | 1 | 67101408 |
| 31 | * | Gasket, (Pre-1998) | | 45007261 |
| 32 | | Elbow 1/4 NPTx3/8 Tubing | 2 | 45016252 |
| 33 | * | O-Ring BUN-225-90 | 1 | 57101299 |
| 34 | | Nut 3/8-24 Flexloc | 1 | 65001401 |
| 35 | | 1/4" Bleeder Filter | 1 | 45002612 |
| 36 | | Lower Spring Rest | 1 | 45003992 |
| 37 | * | Inner Spring (20-40 & 60-100 Range) | 1 | 45003940 |
| 38 | * | Outer Spring | 1 | 45003941 |
| 39 | | Upper Spring Rest | 1 | 45003991 |
| 40 | | 1/4" NPT Coupling | 1 | 50100001 |
| 41 | | 1/4" NPT Nipple, 2-3/4" Long | 1 | 45006289 |
| 42 | | 2" Steel Pipe Plug | 1 | 45011095 |
| 43 | # | Sight Glass, (Pre-1998) | 1 | 45004223 |
| 44 | # | Nut 3/8-16 Hex | 1 | 65001966 |
| 45 | # | Bushing, (Pre-1998) | 1 | 45003129 |
| 46 | # | Spring (Pre-1998) | 1 | 45004315 |
| 47 | # | Indicator Pin, (Pre-1998) | 1 | 45005273 |
| 55 | | Tubing 3/8 304 SS | 18" | 11032059 |
| 56 | * | Packing Ring 1/2-1 Regular (Post-1998) | 2 | 45001947 |
| 57 | * | Packing Ring 1/2-1 Flat (Post-1998) | 2 | 45001948 |
| 58 | @ | Washer 1/2 Tooth Lock | 1 | 65005389 |

| 26 & 65 Square Inch Top Range | | | | | |
|-------------------------------|------------------------|-------|----------------------------------------|-------|--------------------------------------|
| Item | Description | Qty. | 26 sq.in. Top 40-60 & 60-100 lb. Range | Qty. | 65 sq.in. Top 0-25 & 20-40 lb. Range |
| | | | Part No. | | Part No. |
| 45 | Upper Diaphragm Plate | 1 | 45005496 | 1 | 45002776 |
| 49 | Upper Diaphragm Case | 1 | 48004283 | 1 | 48006248 |
| 50 | Screw 5/16-18x3/4 HHCS | 12 | 65002073 | ----- | ----- |
| | Screw 3/8-16x7/8 HHCS | ----- | ----- | 16 | 65003440 |
| 51 | Nut 5/16-18 Hex | 12 | 65002100 | ----- | ----- |
| | Nut 3/8-16 Hex | ----- | ----- | 16 | 65001966 |
| 52* | Diaphragm | 1 | 45003465 | 1 | 45003460 |
| 53 | Lower Diaphragm Case | 1 | 48004018 | 1 | 48003459 |
| 54 | Lower Diaphragm Plate | 1 | 45003466 | 1 | 45001789 |



Parts Key

*Recommended spare parts.

@ These items included in Valve Trim Assembly Kit - P/N 83000162

Furnished on 65 sq. in. Topworks Models only

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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TechnipFMC
FMC Technologies
Measurement Solutions, Inc.
13460 Lockwood Road
Building S01
Houston, Texas 77044 USA
P:+1 281.591.4000

USA Operation
1602 Wagner Avenue
Erie, Pennsylvania 16510 USA
P:+1 814.898.5000

Germany Operation
Smith Meter GmbH
Regentstrasse 1
25474 Ellerbek, Germany
P:+49 4101.304.0