DR-DF
Dual-line metering valve system

Designed to work all the day, every day in extreme condition and difficult environments.
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<th>Page</th>
</tr>
</thead>
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<td>14</td>
</tr>
</tbody>
</table>

ReliaMAX - LubeTechnologies.com
Dual-line lubrication systems are designed to be used on large industrial structures, facilities and systems.

DF and DR modular valves specifically designed for dual-line lubrication systems, up to 400 bar pressures. They are available with up to 8 outlets. They have many benefits over traditional monoblock dividers. DF-DR are Zi-Ni plated.

A mix of double and single discharge modules can be fitted to each base. Every module is available in two different flow rates.

DF valves come with fixed discharge and DR valves with adjustable discharge. These modules are fitted to bases which are fitted and piped to the centralized lubrication system.

- Steplessly adjustable module lubricant discharge
- Reduced failing components maintenance cost
- Visual indicator for system control
- Modular design to adapt to any system needing
- Closing plates for future system expansion
- Always supplied complete with standard ‘O’ rings and fixing screws
## Technical data

### Data sheet

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max pressure</td>
<td>400 bar</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>from -30 °C to +80 °C</td>
</tr>
<tr>
<td>Lubricants</td>
<td>Min 100 cSt 40 °C Max NLGI 2 at operating temperature</td>
</tr>
<tr>
<td>Cycle/minute</td>
<td>100</td>
</tr>
<tr>
<td>Main line connection inlet</td>
<td>3/8&quot; bsp o nptf</td>
</tr>
<tr>
<td>Outlet line connection inlet</td>
<td>1/4&quot; bsp o nptf</td>
</tr>
<tr>
<td>Material body</td>
<td>Carbon steel SS.316-L</td>
</tr>
</tbody>
</table>

### Outlet discharge/cycle

<table>
<thead>
<tr>
<th>Model</th>
<th>DF-1</th>
<th>DF-3</th>
<th>DR-3</th>
<th>DR-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cc fixed</td>
<td>3 cc fixed</td>
<td>0.15 +3 cc adjustable</td>
<td>0.5 +24 cc adjustable</td>
<td></td>
</tr>
</tbody>
</table>
Lubricant from the pump discharge in L1, pressurized lubricant enters inlet at top right - pushing inlet piston down uncovering both diagonal passages and pressurising the upper diagonal passage and the chamber above Discharge piston. Discharge piston begins to move down.

The pressurized lubricant forces the Discharge piston to the end of its stroke, and the full measured charge is delivered to the bearing. Further application of pressure on the upper supply line will have no effect.
When the flow directing valve at the pump is changed over and the pressurised lubricant enters inlet at the bottom right - pushing inlet piston up uncovering both diagonal passages and pressurising the lower diagonal passage and the chamber below Discharge piston. Discharge piston begins to move up.

The pressurised lubricant from the lower port forces the Discharge piston to the end of its stroke and the full measured charge is delivered to the bearing. Further application of pressure on the lower supply line will have no effect.
Discharge adjustment

Every valve is equipped with a visual indicator for lubricant discharge adjustment.

The valve discharge can be adjusted on site to suit the application needs or preliminarily specified by ILC during design phase.

Lubricant discharge percentage is directly displayed by the visual pin position (A).

Single and double discharge outlet conversion

Valve are supplied by standard with double outlet discharge. To convert to single outlet discharge unscrew the two fastening screws that secure the metering device to the base. Remove then the two "O" ring inside and reassemble the valve on the base.

Important
Order the unused discharge closing cap separately (cod. TW.107602)
The two different bases grant an array of different configurations.

In the picture an example of an assembled block made with different module size.

We can get A and B size from single modules size.

### DR-3/DF-3 model

<table>
<thead>
<tr>
<th>Valves</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>78,5 mm</td>
<td>46,5 mm</td>
</tr>
<tr>
<td>2</td>
<td>113,2 mm</td>
<td>81,2 mm</td>
</tr>
<tr>
<td>3</td>
<td>147,9 mm</td>
<td>115,9 mm</td>
</tr>
<tr>
<td>4</td>
<td>182,6 mm</td>
<td>150,6 mm</td>
</tr>
</tbody>
</table>

### DR-5 Model

<table>
<thead>
<tr>
<th>Valves</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>78,5 mm</td>
<td>46,5 mm</td>
</tr>
<tr>
<td>2</td>
<td>113,2 mm</td>
<td>81,2 mm</td>
</tr>
<tr>
<td>3</td>
<td>147,9 mm</td>
<td>115,9 mm</td>
</tr>
<tr>
<td>4</td>
<td>182,6 mm</td>
<td>150,6 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Cod. BSP Thread</th>
<th>Cod. NPTF Thread</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SN.BB.A.BSP</td>
<td>SN.BB.A.NPTF</td>
<td>3/8” Initial base</td>
</tr>
<tr>
<td>2</td>
<td>SN.BB.B.BSP</td>
<td>SN.BB.B.NPTF</td>
<td>DR-3 valve base</td>
</tr>
<tr>
<td>3</td>
<td>SN.G.BB.B.BSP</td>
<td>SN.G.BB.B.NPTF</td>
<td>DR-5 1/4” valve base</td>
</tr>
<tr>
<td>4</td>
<td>SN.BB.C.BS</td>
<td>SN.BB.C.NPTF</td>
<td>3/8” final base</td>
</tr>
<tr>
<td>5</td>
<td>A92.127195</td>
<td></td>
<td>&quot;O&quot;ring 106 Viton</td>
</tr>
<tr>
<td>6</td>
<td>UNIS931-M6X25</td>
<td></td>
<td>TCE M6X25 UNI 5931 Screw</td>
</tr>
<tr>
<td>7</td>
<td>A51087083</td>
<td></td>
<td>M12X1 Threaded bushes</td>
</tr>
<tr>
<td>8</td>
<td>UNIS931-M6X60</td>
<td></td>
<td>TCE M6x60 UNI 5931 Screw</td>
</tr>
</tbody>
</table>
## Metering valves ordering codes

### Standard

**Fixed discharge**

<table>
<thead>
<tr>
<th>Line</th>
<th>Discharge</th>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF1</td>
<td>1 cc</td>
<td>5N.F1.BD</td>
<td>5X.F1.BD</td>
</tr>
<tr>
<td>DF3</td>
<td>3 cc</td>
<td>5N.F3.BD</td>
<td>5X.F3.BD</td>
</tr>
</tbody>
</table>

### Adjustable discharge

<table>
<thead>
<tr>
<th>Line</th>
<th>Discharge</th>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR3</td>
<td>0,15 - 3 cc</td>
<td>5N.R3.BD</td>
<td>5X.R3.BD</td>
</tr>
<tr>
<td>DR5</td>
<td>0,5 - 24 cc</td>
<td>5N.R5.BD</td>
<td>5X.R5.BD</td>
</tr>
</tbody>
</table>

### With cycle control

**Fixed discharge**

<table>
<thead>
<tr>
<th>Line</th>
<th>Discharge</th>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF1</td>
<td>1 cc</td>
<td>5N.F1.BD.ICS</td>
<td>5X.F1.BD.ICS</td>
</tr>
<tr>
<td>DF3</td>
<td>3 cc</td>
<td>5N.F3.BD.ICS</td>
<td>5X.F3.BD.ICS</td>
</tr>
</tbody>
</table>

**Adjustable discharge**

<table>
<thead>
<tr>
<th>Line</th>
<th>Discharge</th>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR5</td>
<td>0,15 - 3 cc</td>
<td>5N.R3.BD.ICS</td>
<td>5X.R3.BD.ICS</td>
</tr>
<tr>
<td>DR5</td>
<td>0,5 - 24 cc</td>
<td>5N.R5.BD.ICS</td>
<td>5X.R5.BD.ICS</td>
</tr>
</tbody>
</table>

### Single control element codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF1/3-DR3</td>
<td>5N.ICS.03</td>
</tr>
<tr>
<td>DR5</td>
<td>5N.ICS.05</td>
</tr>
</tbody>
</table>

### Closing plates

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN.PC.SB</td>
<td>SX.PC.SB</td>
</tr>
</tbody>
</table>

Fixed or adjustable discharge valves can be equipped with a inductive sensor (M12 x 1) for cycle control.

This solution is applied where is necessary to monitor discharge piston real movement.

The element can be ordered already equipped with control or expanded later removing the closing cap.

Closing plates can be installed in view of additional elements being added or unused points BSP-NPTF being removed.
### DF-1

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
</tr>
<tr>
<td>5N.DF1.01.BSP</td>
<td>5N.DF1.01.NPTF</td>
</tr>
<tr>
<td>5N.DF1.02.BSP</td>
<td>5N.DF1.02.NPTF</td>
</tr>
<tr>
<td>5N.DF1.03.BSP</td>
<td>5N.DF1.03.NPTF</td>
</tr>
<tr>
<td>5N.DF1.04.BSP</td>
<td>5N.DF1.04.NPTF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outlets</th>
<th>A (mm)</th>
<th>B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>78.5</td>
<td>46.5</td>
</tr>
<tr>
<td>4</td>
<td>113.2</td>
<td>81.2</td>
</tr>
<tr>
<td>6</td>
<td>147.9</td>
<td>115.9</td>
</tr>
<tr>
<td>8</td>
<td>182.6</td>
<td>150.6</td>
</tr>
</tbody>
</table>

### DF-3

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
</tr>
<tr>
<td>5N.DF3.01.BSP</td>
<td>5N.DF3.01.NPTF</td>
</tr>
<tr>
<td>5N.DF3.02.BSP</td>
<td>5N.DF3.02.NPTF</td>
</tr>
<tr>
<td>5N.DF3.03.BSP</td>
<td>5N.DF3.03.NPTF</td>
</tr>
<tr>
<td>5N.DF3.04.BSP</td>
<td>5N.DF3.04.NPTF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outlets</th>
<th>A (mm)</th>
<th>B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>78.5</td>
<td>46.5</td>
</tr>
<tr>
<td>4</td>
<td>113.2</td>
<td>81.2</td>
</tr>
<tr>
<td>6</td>
<td>147.9</td>
<td>115.9</td>
</tr>
<tr>
<td>8</td>
<td>182.6</td>
<td>150.6</td>
</tr>
</tbody>
</table>

---

**Fixed discharge 1 cc**

**Fixed discharge 3 cc**

**Weld plates for DF-1 / DF-3 valves**

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
<th>Valves</th>
<th>A (mm)</th>
<th>B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN.FP3.01</td>
<td>CX.FP3.01</td>
<td>1</td>
<td>46.5</td>
<td>75</td>
</tr>
<tr>
<td>CN.FP3.02</td>
<td>CX.FP3.02</td>
<td>2</td>
<td>81.2</td>
<td>109.7</td>
</tr>
<tr>
<td>CN.FP3.03</td>
<td>CX.FP3.03</td>
<td>3</td>
<td>115.9</td>
<td>144.4</td>
</tr>
<tr>
<td>CN.FP3.04</td>
<td>CX.FP3.04</td>
<td>4</td>
<td>150.6</td>
<td>179.1</td>
</tr>
</tbody>
</table>
## Assembled blocks (DF-1 / DF-3)

### DF-1

**Fixed discharge 1 cc (with inductive sensor)**

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
</tr>
<tr>
<td>5N.DF1.01.BSP.ICS</td>
<td>5N.DF1.01.NPTF.ICS</td>
</tr>
<tr>
<td>5N.DF1.02.BSP.ICS</td>
<td>5N.DF1.02.NPTF.ICS</td>
</tr>
<tr>
<td>5N.DF1.03.BSP.ICS</td>
<td>5N.DF1.03.NPTF.ICS</td>
</tr>
<tr>
<td>5N.DF1.04.BSP.ICS</td>
<td>5N.DF1.04.NPTF.ICS</td>
</tr>
</tbody>
</table>

### DF-3

**Fixed discharge 3 cc (with inductive sensor)**

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
</tr>
<tr>
<td>5N.DF3.01.BSP.ICS</td>
<td>5N.DF3.01.NPTF.ICS</td>
</tr>
<tr>
<td>5N.DF3.02.BSP.ICS</td>
<td>5N.DF3.02.NPTF.ICS</td>
</tr>
<tr>
<td>5N.DF3.03.BSP.ICS</td>
<td>5N.DF3.03.NPTF.ICS</td>
</tr>
<tr>
<td>5N.DF3.04.BSP.ICS</td>
<td>5N.DF3.04.NPTF.ICS</td>
</tr>
</tbody>
</table>

---

**Diagram:**

- **DF-1**
- **DF-3**

- **Steel:** SS316.L
- **Outlets:** 2, 4, 6, 8
- **Dimensions:**
  - **DF-1:** 136 x 76 x 60 mm
  - **DF-3:** 16 x 50 x 18 mm
# Assembled blocks (DR-3 / DR-5)

## DR-3

### Adjustable discharge 0.15 - 3.0 cc

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
</tr>
<tr>
<td>5N.DR3.01.BSP</td>
<td>5N.DR3.01.NPTF</td>
</tr>
<tr>
<td>5N.DR3.02.BSP</td>
<td>5N.DR3.02.NPTF</td>
</tr>
<tr>
<td>5N.DR3.03.BSP</td>
<td>5N.DR3.03.NPTF</td>
</tr>
<tr>
<td>5N.DR3.04.BSP</td>
<td>5N.DR3.04.NPTF</td>
</tr>
</tbody>
</table>

## DR-5

### Adjustable discharge 0.5 - 24.0 cc

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
</tr>
<tr>
<td>5N.DR5.01.BSP</td>
<td>5N.DR5.01.NPTF</td>
</tr>
<tr>
<td>5N.DR5.02.BSP</td>
<td>5N.DR5.02.NPTF</td>
</tr>
<tr>
<td>5N.DR5.03.BSP</td>
<td>5N.DR5.03.NPTF</td>
</tr>
<tr>
<td>5N.DR5.04.BSP</td>
<td>5N.DR5.04.NPTF</td>
</tr>
</tbody>
</table>

---

**ReliaMAX - LubeTechnologies.com**
Assembled blocks (DR-3 / DR-5)

**DR-3**

Adjustable discharge 0.15 - 3.0 cc (with inductive sensor)

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
<th>Outlets</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN.DR3.01.BSP.ICS</td>
<td>SN.DR3.01.NPTF.ICS</td>
<td>2</td>
<td>78.5</td>
<td>46.5</td>
</tr>
<tr>
<td>SN.DR3.02.BSP.ICS</td>
<td>SN.DR3.02.NPTF.ICS</td>
<td>4</td>
<td>113.2</td>
<td>81.2</td>
</tr>
<tr>
<td>SN.DR3.03.BSP.ICS</td>
<td>SN.DR3.03.NPTF.ICS</td>
<td>6</td>
<td>147.9</td>
<td>115.9</td>
</tr>
<tr>
<td>SN.DR3.04.BSP.ICS</td>
<td>SN.DR3.04.NPTF.ICS</td>
<td>8</td>
<td>182.6</td>
<td>150.6</td>
</tr>
</tbody>
</table>

**DR-5**

Adjustable discharge 0.5 - 24.0 cc (with inductive sensor)

<table>
<thead>
<tr>
<th>Steel</th>
<th>SS316.L</th>
<th>Outlets</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSP</td>
<td>NTPF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN.DR5.01.BSP.ICS</td>
<td>SN.DR5.01.NPTF.ICS</td>
<td>2</td>
<td>113</td>
<td>81.2</td>
</tr>
<tr>
<td>SN.DR5.02.BSP.ICS</td>
<td>SN.DR5.02.NPTF.ICS</td>
<td>4</td>
<td>182.6</td>
<td>150.6</td>
</tr>
<tr>
<td>SN.DR5.03.BSP.ICS</td>
<td>SN.DR5.03.NPTF.ICS</td>
<td>6</td>
<td>252</td>
<td>220</td>
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<td>SN.DR5.04.BSP.ICS</td>
<td>SN.DR5.04.NPTF.ICS</td>
<td>8</td>
<td>321.4</td>
<td>289.4</td>
</tr>
</tbody>
</table>

Steel: SS316.L

Assembled blocks (DR-3 / DR-5)

- **DR-3**
  - Adjustable discharge 0.15 - 3.0 cc (with inductive sensor)
  - Steel: SS316.L

- **DR-5**
  - Adjustable discharge 0.5 - 24.0 cc (with inductive sensor)
  - Steel: SS316.L
### Base ordering codes

**Initial**

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Steel Type</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot; BSP</td>
<td>SN.BB.A.BSP</td>
<td>5X.BB.A.BSP</td>
</tr>
<tr>
<td>3/8&quot; NPTF</td>
<td>SN.BB.A.NPTF</td>
<td>5X.BB.A.NPTF</td>
</tr>
</tbody>
</table>

**DF1-DF3-DR3 base**

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Steel Type</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; BSP</td>
<td>SN.BB.B.BSP</td>
<td>5X.BB.B.BSP</td>
</tr>
<tr>
<td>1/4&quot; NPTF</td>
<td>SN.BB.B.NPTF</td>
<td>5X.BB.B.NPTF</td>
</tr>
</tbody>
</table>

**DR5 base**

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Steel Type</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; BSP</td>
<td>SN.G.BB.B.BSP</td>
<td>5X.G.BB.B.BSP</td>
</tr>
<tr>
<td>1/4&quot; NPTF</td>
<td>SN.G.BB.B.NPTF</td>
<td>5X.G.BB.B.NPTF</td>
</tr>
</tbody>
</table>

**End**

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Steel Type</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot; BSP</td>
<td>SN.BB.C.BSP</td>
<td>5X.BB.C.BSP</td>
</tr>
<tr>
<td>3/8&quot; NPTF</td>
<td>SN.BB.C.NPTF</td>
<td>5X.BB.C.NPTF</td>
</tr>
</tbody>
</table>

**Fixing**

All metering valves and bases are provided with fixing screws, washers and assembling threaded bushes.

### Replacement parts

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator cap</td>
<td>Transparent</td>
</tr>
<tr>
<td>Line DR-3</td>
<td>A83.120870</td>
</tr>
<tr>
<td>Line DR-5</td>
<td>A70.093623</td>
</tr>
<tr>
<td>‘O’ring kit</td>
<td>Aluminium</td>
</tr>
<tr>
<td>For base</td>
<td>SN.O.RING.B</td>
</tr>
<tr>
<td>For valves</td>
<td>SN.O.RING.D</td>
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</tbody>
</table>