

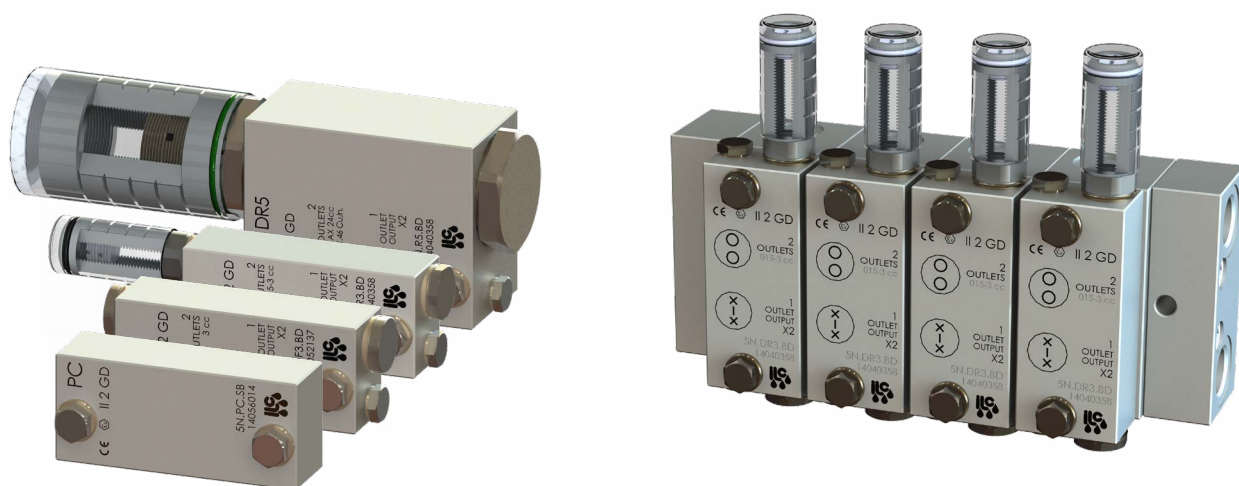
lubrication systems



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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Descrizione generale

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

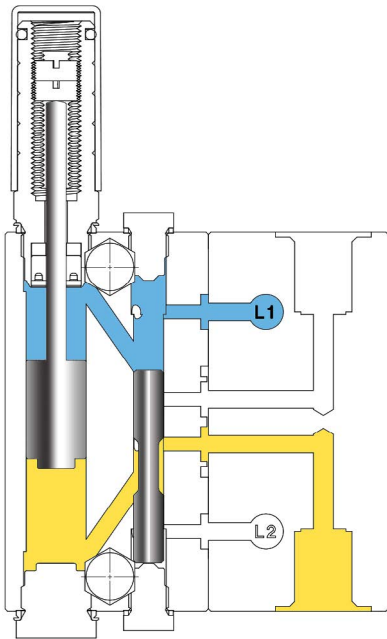
Data sheet

| | |
|------------------------------|--|
| Max pressure | 400 bar |
| Operating temperature | from -30 °C to +80 °C |
| Lubricants | Min 100 cSt 40 °C Max NLGI 2 at operating temperature |
| Cycle/minute | 100 |
| Main line connection inlet | 3/8" bsp o nptf |
| Outlet line connection inlet | 1/4" bsp o nptf |
| Material body | Carbon steel SS.316-L |

Outlet discharge/cycle

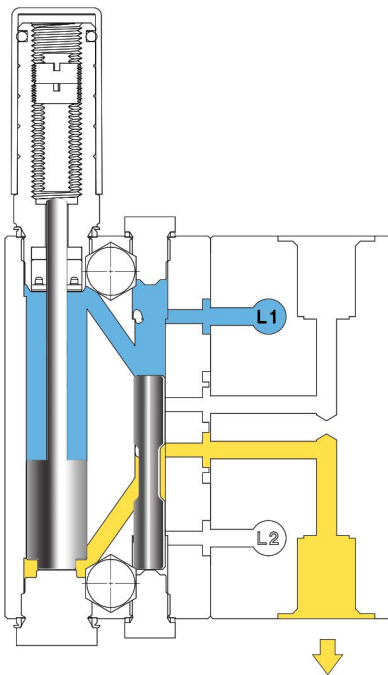
| DF-1 | DF-3 | DR-3 | DR-5 |
|------------|------------|------------------------|------------------------|
| 1 cc fixed | 3 cc fixed | 0.15 ÷ 3 cc adjustable | 0.5 ÷ 24 cc adjustable |





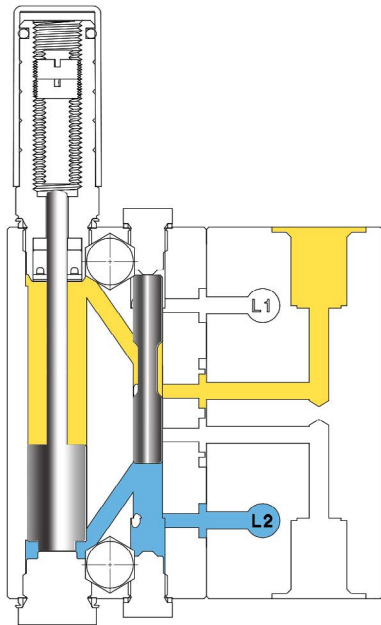
A

Lubricant from the pump discharge in L1, pressurized lubricant enters inlet at top right - pushing inlet piston down uncovering both diagonal passages and pressurizing the upper diagonal passage and the chamber above Discharge piston. Discharge piston begins to move down.



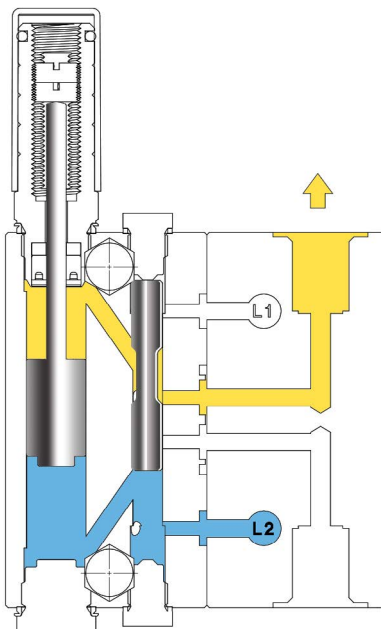
B

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.



C

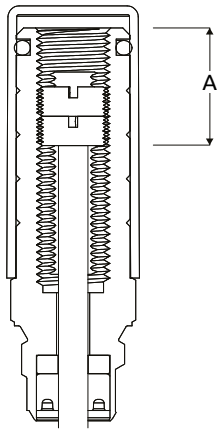
When the flow directing valve at the pump is changed over and the pressurised lubricant enters inlet at the bottom right - pushing inlet piston up uncovering both diagonal passages and pressurising the lower diagonal passage and the chamber below Discharge piston. Discharge piston begins to move up.



D

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 preliminary specified by ILC during design phase.

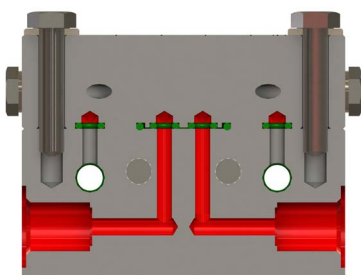
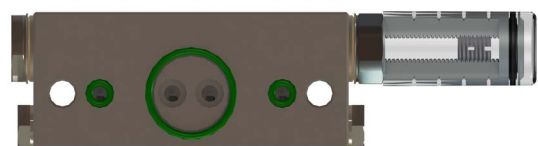
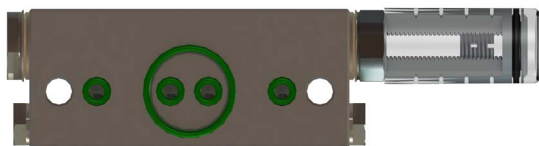
Lubricant discharge percentage is directly displayed by the visual pin position (A).

Single and double discharge outlet conversion

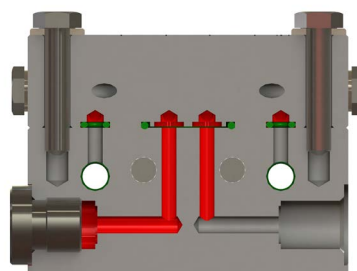
Valves are supplied by standard with double outlet discharge. To convert to single outlet discharge unscrew the two fastening screws that secure the metering device to the base. Remove then the two "O" ring inside and reassemble the valve on the base.

Important

Order the unused discharge closing cap separately (**cod. TW.107602**)

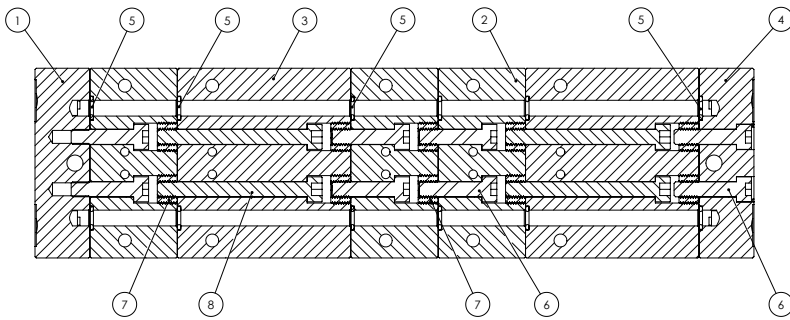
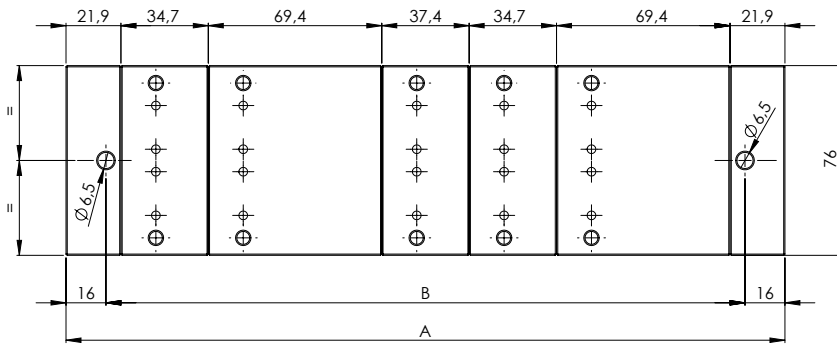


double discharge



single discharge

Assembled block with different modules



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.

| A | B |
|---|---|
|---|---|

286,7 mm 254,7 mm

| Base DR/DF-3 | Base DR-5 |
|--------------|-----------|
|--------------|-----------|

34,7 mm 69,4 mm

DR-3/DF-3 model

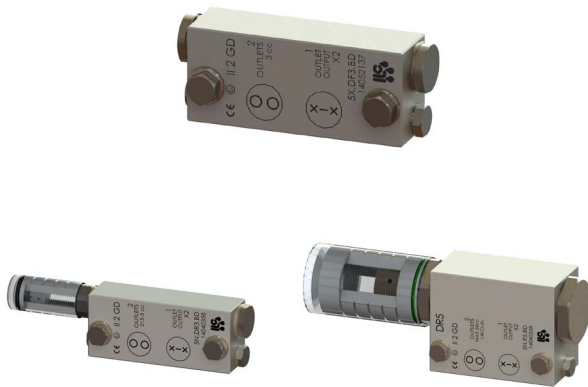
| Valves | A | B |
|--------|----------|----------|
| 1 | 78,5 mm | 46,5 mm |
| 2 | 113,2 mm | 81,2 mm |
| 3 | 147,9 mm | 115,9 mm |
| 4 | 182,6 mm | 150,6 mm |

DR-5 Model

| Valves | A | B |
|--------|----------|----------|
| 1 | 78,5 mm | 46,5 mm |
| 2 | 113,2 mm | 81,2 mm |
| 3 | 147,9 mm | 115,9 mm |
| 4 | 182,6 mm | 150,6 mm |

| Pos. | Cod. BSP Thread | Cod. NPTF Thread | Description |
|------|-----------------|------------------|--------------------------|
| 1 | 5N.BB.A.BSP | 5N.BB.A.NPTF | 3/8" Initial base |
| 2 | 5N.BB.B.BSP | 5N.BB.B.NPTF | DR-3 valve base |
| 3 | 5N.G.BB.B.BSP | 5N.G.BB.B. NPTF | DR-5 1/4" valve base |
| 4 | 5N.BB.C.BS | 5N.BB.C.NPTF | 3/8" final base |
| 5 | A92.127195 | | "O"ring 106 Viton |
| 6 | UNI5931-M6X25 | | TCE M6X25 UNI 5931 Screw |
| 7 | A51087083 | | M12X1 Threaded bushes |
| 8 | UNI5931-M6X60 | | TCE M6x60 UNI 5931 Screw |

Standard



Fixed discharge

| Line | Discharge | Steel | SS316.L |
|------|-----------|----------|----------|
| DF1 | 1 cc | 5N.F1.BD | 5X.F1.BD |
| DF3 | 3 cc | 5N.F3.BD | 5X.F3.BD |

Adjustable discharge

| Line | Discharge | Steel | SS316.L |
|------|-------------|----------|----------|
| DR3 | 0,15 - 3 cc | 5N.R3.BD | 5X.R3.BD |
| DR5 | 0,5 - 24 cc | 5N.R5.BD | 5X.R5.BD |

With cycle control



Fixed discharge

| Line | Discharge | Steel | SS316.L |
|------|-----------|--------------|--------------|
| DF1 | 1 cc | 5N.F1.BD.ICS | 5X.F1.BD.ICS |
| DF3 | 3 cc | 5N.F3.BD.ICS | 5X.F3.BD.ICS |

Adjustable discharge

| Line | Discharge | Steel | SS316.L |
|------|-------------|--------------|--------------|
| DR3 | 0,15 - 3 cc | 5N.R3.BD.ICS | 5X.R3.BD.ICS |
| DR5 | 0,5 - 24 cc | 5N.R5.BD.ICS | 5X.R5.BD.ICS |

Single control element codes

| | |
|-----------|-----------|
| DF1/3-DR3 | 5N.ICS.03 |
| DR5 | 5N.ICS.05 |



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 DI-scharge piston real movement.

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

Closing plates



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

| Steel | SS316.L |
|----------|----------|
| 5N.PC.SB | 5X.PC.SB |

DF-1

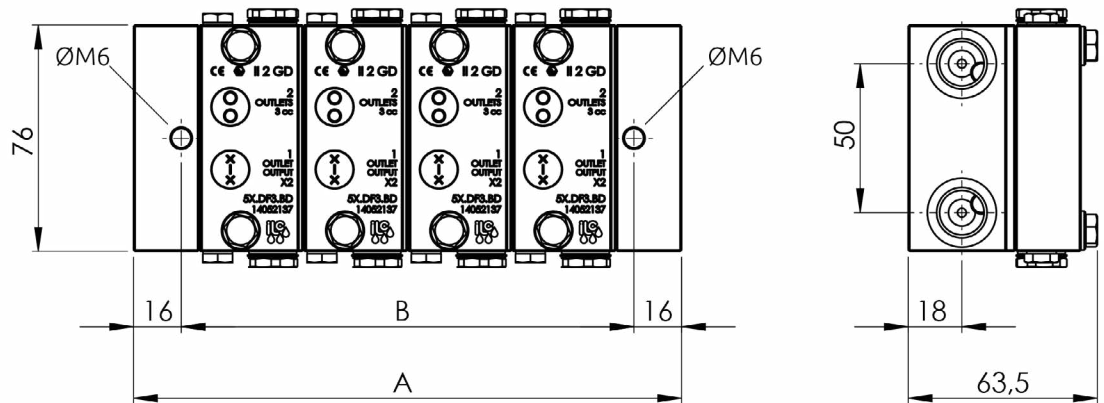
Fixed discharge 1 cc

| Steel | | SS316.L | | Outlets | A | B |
|---------------|----------------|---------------|----------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DF1.01.BSP | 5N.DF1.01.NPTF | 5X.DF1.01.BSP | 5X.DF1.01.NPTF | 2 | 78.5 | 46.5 |
| 5N.DF1.02.BSP | 5N.DF1.02.NPTF | 5X.DF1.02.BSP | 5X.DF1.02.NPTF | 4 | 113.2 | 81.2 |
| 5N.DF1.03.BSP | 5N.DF1.03.NPTF | 5X.DF1.03.BSP | 5X.DF1.03.NPTF | 6 | 147.9 | 115.9 |
| 5N.DF1.04.BSP | 5N.DF1.04.NPTF | 5X.DF1.04.BSP | 5X.DF1.04.NPTF | 8 | 182.6 | 150.6 |

DF-3

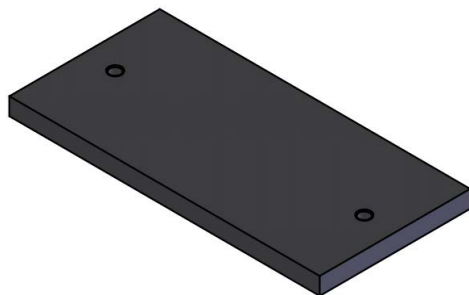
Fixed discharge 3 cc

| Steel | | SS316.L | | Outlets | A | B |
|---------------|----------------|---------------|----------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DF3.01.BSP | 5N.DF3.01.NPTF | 5X.DF3.01.BSP | 5X.DF3.01.NPTF | 2 | 78.5 | 46.5 |
| 5N.DF3.02.BSP | 5N.DF3.02.NPTF | 5X.DF3.02.BSP | 5X.DF3.02.NPTF | 4 | 113.2 | 81.2 |
| 5N.DF3.03.BSP | 5N.DF3.03.NPTF | 5X.DF3.03.BSP | 5X.DF3.03.NPTF | 6 | 147.9 | 115.9 |
| 5N.DF3.04.BSP | 5N.DF3.04.NPTF | 5X.DF3.04.BSP | 5X.DF3.04.NPTF | 8 | 182.6 | 150.6 |



Weld plates

for DF-1 / DF-3 valves



| Steel | SS316.L | Valves | A (mm) | B (mm) |
|-----------|-----------|--------|--------|--------|
| CN.FP3.01 | CX.FP3.01 | 1 | 46.5 | 75 |
| CN.FP3.02 | CX.FP3.02 | 2 | 81.2 | 109.7 |
| CN.FP3.03 | CX.FP3.03 | 3 | 115.9 | 144.4 |
| CN.FP3.04 | CX.FP3.04 | 4 | 150.6 | 179.1 |

DF-1

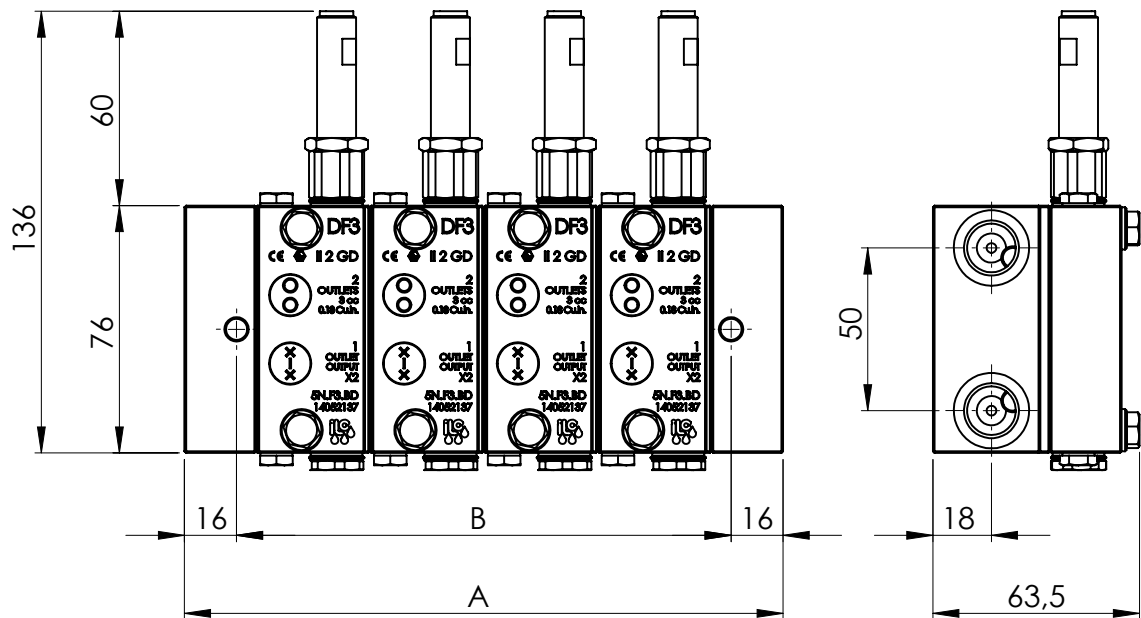
Fixed discharge 1 cc (with inductive sensor)

| Steel | | SS316.L | | Outlets | A | B |
|-------------------|--------------------|-------------------|--------------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DF1.01.BSP.ICS | 5N.DF1.01.NPTF.ICS | 5X.DF1.01.BSP.ICS | 5X.DF1.01.NPTF.ICS | 2 | 78.5 | 46.5 |
| 5N.DF1.02.BSP.ICS | 5N.DF1.02.NPTF.ICS | 5X.DF1.02.BSP.ICS | 5X.DF1.02.NPTF.ICS | 4 | 113.2 | 81.2 |
| 5N.DF1.03.BSP.ICS | 5N.DF1.03.NPTF.ICS | 5X.DF1.03.BSP.ICS | 5X.DF1.03.NPTF.ICS | 6 | 147.9 | 115.9 |
| 5N.DF1.04.BSP.ICS | 5N.DF1.04.NPTF.ICS | 5X.DF1.04.BSP.ICS | 5X.DF1.04.NPTF.ICS | 8 | 182.6 | 150.6 |

DF-3

Fixed discharge 3 cc (with inductive sensor)

| Steel | | SS316.L | | Outlets | A | B |
|-------------------|--------------------|-------------------|--------------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DF3.01.BSP.ICS | 5N.DF3.01.NPTF.ICS | 5X.DF3.01.BSP.ICS | 5X.DF3.01.NPTF.ICS | 2 | 78.5 | 46.5 |
| 5N.DF3.02.BSP.ICS | 5N.DF3.02.NPTF.ICS | 5X.DF3.02.BSP.ICS | 5X.DF3.02.NPTF.ICS | 4 | 113.2 | 81.2 |
| 5N.DF3.03.BSP.ICS | 5N.DF3.03.NPTF.ICS | 5X.DF3.03.BSP.ICS | 5X.DF3.03.NPTF.ICS | 6 | 147.9 | 115.9 |
| 5N.DF3.04.BSP.ICS | 5N.DF3.04.NPTF.ICS | 5X.DF3.04.BSP.ICS | 5X.DF3.04.NPTF.ICS | 8 | 182.6 | 150.6 |



DR-3

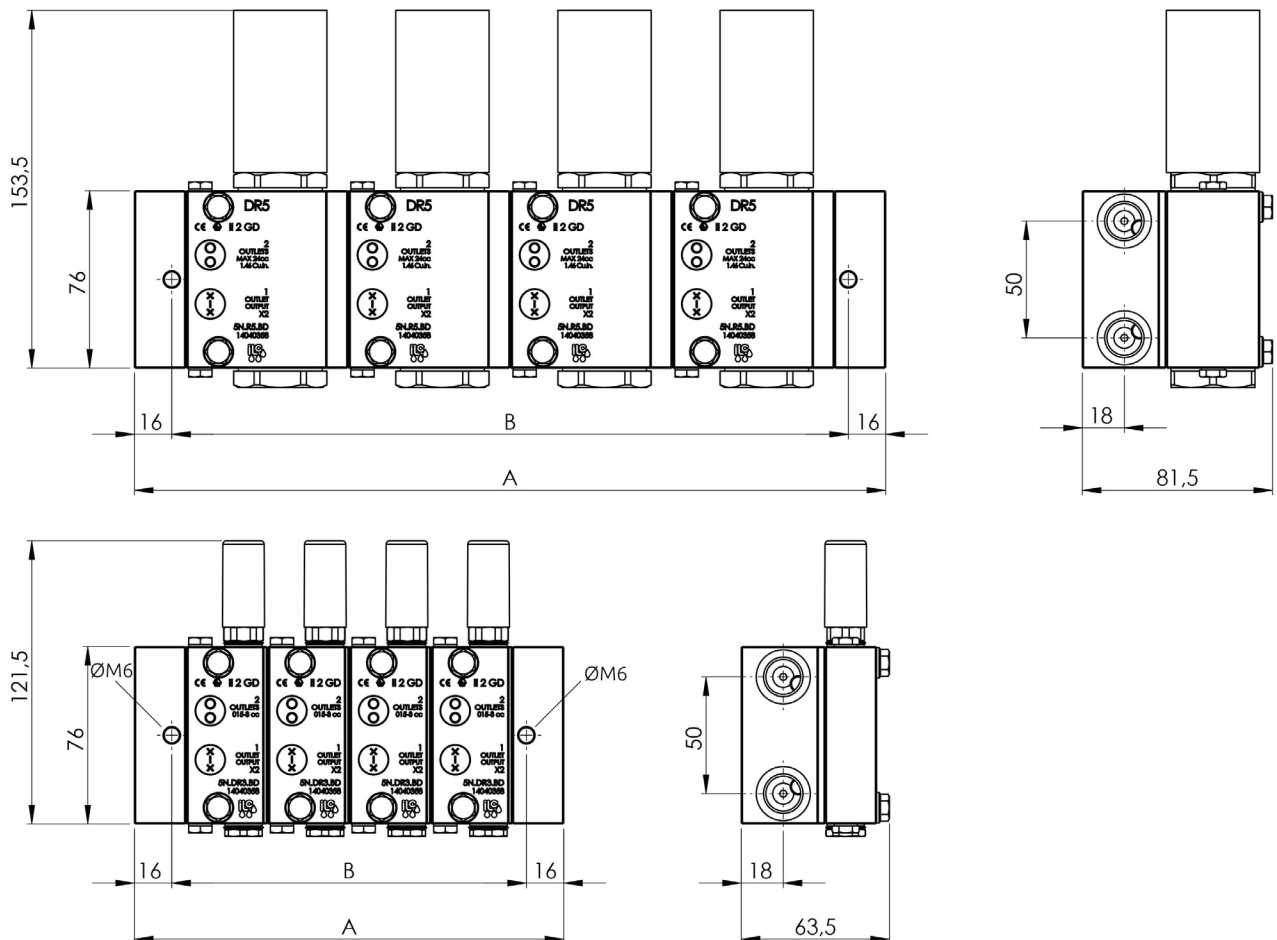
Adjustable discharge 0.15 - 3.0 cc

| Steel | | SS316.L | | Outlets | A | B |
|---------------|----------------|---------------|----------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DR3.01.BSP | 5N.DR3.01.NPTF | 5X.DR3.01.BSP | 5X.DR3.01.NPTF | 2 | 78.5 | 46.5 |
| 5N.DR3.02.BSP | 5N.DR3.02.NPTF | 5X.DR3.02.BSP | 5X.DR3.02.NPTF | 4 | 113.2 | 81.2 |
| 5N.DR3.03.BSP | 5N.DR3.03.NPTF | 5X.DR3.03.BSP | 5X.DR3.03.NPTF | 6 | 147.9 | 115.9 |
| 5N.DR3.04.BSP | 5N.DR3.04.NPTF | 5X.DR3.04.BSP | 5X.DR3.04.NPTF | 8 | 182.6 | 150.6 |

DR-5

Adjustable discharge 0.5 - 24.0 cc

| Steel | | SS316.L | | Outlets | A | B |
|---------------|----------------|---------------|----------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DR5.01.BSP | 5N.DR5.01.NPTF | 5X.DR5.01.BSP | 5X.DR5.01.NPTF | 2 | 113 | 81.2 |
| 5N.DR5.02.BSP | 5N.DR5.02.NPTF | 5X.DR5.02.BSP | 5X.DR5.02.NPTF | 4 | 182,6 | 150.6 |
| 5N.DR5.03.BSP | 5N.DR5.03.NPTF | 5X.DR5.03.BSP | 5X.DR5.03.NPTF | 6 | 252 | 220 |
| 5N.DR5.04.BSP | 5N.DR5.04.NPTF | 5X.DR5.04.BSP | 5X.DR5.04.NPTF | 8 | 321.4 | 289.4 |



DR-3

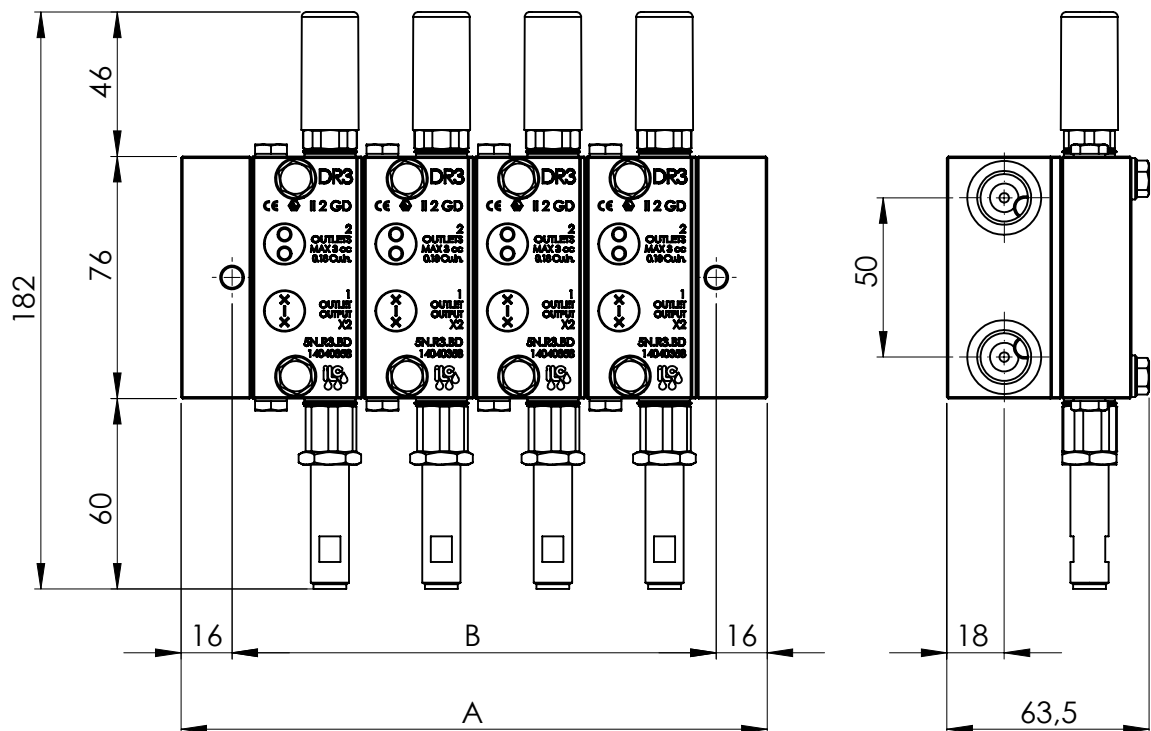
Adjustable discharge 0.15 - 3.0 cc (with inductive sensor)

| Steel | | SS316.L | | Outlets | A | B |
|-------------------|--------------------|-------------------|--------------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DR3.01.BSP.ICS | 5N.DR3.01.NPTF.ICS | 5X.DR3.01.BSP.ICS | 5X.DR3.01.NPTF.ICS | 2 | 78.5 | 46.5 |
| 5N.DR3.02.BSP.ICS | 5N.DR3.02.NPTF.ICS | 5X.DR3.02.BSP.ICS | 5X.DR3.02.NPTF.ICS | 4 | 113.2 | 81.2 |
| 5N.DR3.03.BSP.ICS | 5N.DR3.03.NPTF.ICS | 5X.DR3.03.BSP.ICS | 5X.DR3.03.NPTF.ICS | 6 | 147.9 | 115.9 |
| 5N.DR3.04.BSP.ICS | 5N.DR3.04.NPTF.ICS | 5X.DR3.04.BSP.ICS | 5X.DR3.04.NPTF.ICS | 8 | 182.6 | 150.6 |

DR-5

Adjustable discharge 0.5 - 24.0 cc (with inductive sensor)

| Steel | | SS316.L | | Outlets | A | B |
|-------------------|--------------------|-------------------|--------------------|---------|-------|-------|
| BSP | NPTF | BSP | NPTF | | | |
| 5N.DR5.01.BSP.ICS | 5N.DR5.01.NPTF.ICS | 5X.DR5.01.BSP.ICS | 5X.DR5.01.NPTF.ICS | 2 | 113 | 81.2 |
| 5N.DR5.02.BSP.ICS | 5N.DR5.02.NPTF.ICS | 5X.DR5.02.BSP.ICS | 5X.DR5.02.NPTF.ICS | 4 | 182,6 | 150,6 |
| 5N.DR5.03.BSP.ICS | 5N.DR5.03.NPTF.ICS | 5X.DR5.03.BSP.ICS | 5X.DR5.03.NPTF.ICS | 6 | 252 | 220 |
| 5N.DR5.04.BSP.ICS | 5N.DR5.04.NPTF.ICS | 5X.DR5.04.BSP.ICS | 5X.DR5.04.NPTF.ICS | 8 | 321.4 | 289.4 |



Base



Initial

| Outlet | Steel | SS316.L |
|-----------|--------------|--------------|
| 3/8" BSP | 5N.BB.A.BSP | 5X.BB.A.BSP |
| 3/8" NPTF | 5N.BB.A.NPTF | 5X.BB.A.NPTF |

DF1-DF3-DR3 base

| Outlet | Steel | SS316.L |
|-----------|--------------|--------------|
| 1/4" BSP | 5N.BB.B.BSP | 5X.BB.B.BSP |
| 1/4" NPTF | 5N.BB.B.NPTF | 5X.BB.B.NPTF |

DR5 base

| Outlet | Steel | SS316.L |
|-----------|----------------|----------------|
| 1/4" BSP | 5N.G.BB.B.BSP | 5X.G.BB.B.BSP |
| 1/4" NPTF | 5N.G.BB.B.NPTF | 5X.G.BB.B.NPTF |

End

| Inlet | Steel | SS316.L |
|-----------|--------------|--------------|
| 3/8" BSP | 5N.BB.C.BSP | 5X.BB.C.BSP |
| 3/8" NPTF | 5N.BB.C.NPTF | 5X.BB.C.NPTF |

Fixing

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

Replacement parts



| Regulator cap | Transparent | Aluminium |
|---------------|-------------|--------------|
| Line DR-3 | A83.120870 | A83.120870.A |
| Line DR-5 | A70.093625 | A70.093625.A |
| 'O'ring kit | Aluminium | |
| For base | 5N.O.RING.B | |
| For valves | 5N.O.RING.D | |

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