Methodology:
This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain Hydraulics products and specifies installation conditions that will ensure optimum operation.
This document includes important comments concerning safety. They are indicated in the following way:

⚠️ Safety comment.

This document also includes essential operating instructions for the product and general information. These are indicated in the following way:

⚠️ Essential instructions.

💡 General information.

📅 Information on the model number.

Weight of component without oil.

Volume of oil.

Units.

Tightening torque.

Screws.

Information intended for Poclain-Hydraulics personnel.

The views in this document are created using metric standards.
The dimensional data is given in mm and in inches (inches are between brackets and italic)
CONTENT

2-WAY FLOW DIVIDER FD-M2

3-WAY AND 4-WAY FLOW DIVIDERS
2-WAY FLOW DIVIDER FD-M2

- Modular
- Compact
- Energy efficient

Operation
FD-M2 is a two-way medium-duty flow divider that assures parallel operation of wheels of the same axle or between different axles by dividing or combining the flow. It can operate in open or closed loop circuits. FD-M2 is equipped with normally opened by-pass that can be controlled electric or hydraulic.

Features

**Hydraulic**

- Max. pressure: 420 bar [6 000 PSI]
- Max. flow: 150 [39.6 gal/min]
- Dividing/combining accuracy: from +/- 5% to +/- 10% according to flow range
- Type of hydraulic connections: ISO 1179-1 (BSPP); ISO 11926-1 (UNF)
- Weight: 7.9 [17.4 lbs]
- Surface treatment: Zn plating Fe/Zn8/Cn/T2 (DIN 50979)
- Fluid temperature: -20 to +90 [°C] [-4 to +200 °F]
- Fluid viscosity: 15 to 380 [mm²/s] [75 to 1760 SSU]
- Fluid contamination: ISO 4401:1999 max 20/18/14

**Electrical**

- Solenoid supply voltage: V DC 12, 24; ±10%
- Solenoid power consumption: W 17.2 (12V DC), 16.6 (24V DC)
- Solenoid duty cycle: 100% ED
- Max. ambient temperature: 70 [°C] [158 °F]

**Pressure drop**

Measured at 50 °C [122 °F] and viscosity of 32 mm²/s [148 SUS].

**By-pass mode**

**Divider mode**

Installation

Mounting position: Indifferent

- Class: 2xM10 8.8
- N.m [lb.ft]: 49 [36]

(*) As per standard DIN 912
Dimensions - options according to model code:

(*) UNF ports connection
Dimensions - options according to model code:

- Hydraulic by-pass control with charge check valves.
- Hydraulic by-pass control with charge check and relief valves.

(*) UNF ports connection
Dimensions - options according to model code:

<table>
<thead>
<tr>
<th>Port</th>
<th>Function</th>
<th>Connection BSPP ISO 1179-1</th>
<th>UNF ISO 11926-1</th>
<th>Max. pressure bar [PSI]</th>
<th>Min. pressure bar [PSI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Main flow inlet-outlet</td>
<td>3/4”</td>
<td>1”</td>
<td>16/12</td>
<td>420 [6000]</td>
</tr>
<tr>
<td>A</td>
<td>Divided flow outlet - combined flow inlet</td>
<td>1/2”</td>
<td>7/8”</td>
<td>14</td>
<td>420 [6000]</td>
</tr>
<tr>
<td>B</td>
<td>Charge flow inlet</td>
<td>3/8”</td>
<td>3/4”</td>
<td>16</td>
<td>50 [725]</td>
</tr>
<tr>
<td>PIL</td>
<td>Pilot flow inlet (hydraulic by-pass only)</td>
<td>1/4”</td>
<td>9/16”</td>
<td>18</td>
<td>50 [725]</td>
</tr>
<tr>
<td>T</td>
<td>Drain</td>
<td>1/4”</td>
<td>9/16”</td>
<td>18</td>
<td>5 [73]</td>
</tr>
</tbody>
</table>

Dimensions - options according to model code:

- By-pass flow
  - Without by-pass
    - to 150 l/min [39.6 gal/min]
  - Division ratio (flow split %)
    - 50 - 50 A
    - 70 - 30 B
    - 60 - 40 D

- Flow range in division mode
  - 20-60 l/min [5.3-15.9 gal/min] 06
  - 25-90 l/min [6.6-23.8 gal/min] 09
  - 35-120 l/min [9.2-31.7 gal/min] 12
  - 55-150 l/min [14.6-39.6 gal/min] 15

- Optimal work is located between 40% and 60% of max. dedicated flow.

- By-pass control
  - Electric control E
  - Hydraulic control H
  - Without A

- Auxiliaries
  - Without 0

- Transfer restrictor diameter
  - Without 06
  - 0.6 mm [0.024 in] 06
  - 0.8 mm [0.032 in] 08
  - 1.0 mm [0.039 in] 10

- Contact us for other diameters.

- Max. flow always goes through port A.

- Electric connector
  - Without
  - 3 Deutsch DT04-2P
  - 4 DIN 43650
  - 5 AMP Jr. Timer

- Voltage
  - A Without solenoid
  - 1 12 V DC
  - 2 24 V DC

- Hydraulic connections
  - A UNF ports
  - 3 BSPP ports

- Charge check valves
  - A Without
  - B With

- Relief valves setting*
  - 00 Without
  - 30 300 bar [4351 PSI]
  - 35 350 bar [5076 PSI]
  - 38 380 bar [5511 PSI]
  - 40 400 bar [5807 PSI]

- *ΔP between A (B) and G at 10 l/min

* Further description on interface drawing

24/03/2016
3-WAY AND 4-WAY FLOW DIVIDERS

• Modular
• Compact
• Energy efficient

Operation
FD-M4 (FD-M3) is a four (three) way medium-duty flow divider that assures parallel operation of wheels of the same axle or between different axles by dividing or combining the flow. It can operate in open or closed loop circuits. FD-M4 (FD-M3) is equipped with normally opened by-pass that can be controlled electric or hydraulic.

If you have to add a flushing valve in a closed loop circuit equipped with a flow divider, you have to install the flushing valve between the pump and the flow divider.

Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>FD-M3</th>
<th>FD-M4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pressure bar/PSI</td>
<td>350 [5075]</td>
<td>420 [6000]</td>
</tr>
<tr>
<td>Dividing/combining accuracy from +/- 5% to +/- 10% according to flow range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of hydraulic connections</td>
<td>ISO 1179-1 (BSPP)</td>
<td>ISO 1179-1 (BSPP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISO 11926-1 (UNF)</td>
</tr>
<tr>
<td>Weight kg/lbs</td>
<td>13 [28.6]</td>
<td>21 [46.3]</td>
</tr>
<tr>
<td>Surface treatment</td>
<td>Phosphate coating</td>
<td>Zn plating Fe/Zn8/Cn/T2 (DIN 50979)</td>
</tr>
<tr>
<td>Fluid temperature °C/°F</td>
<td>-20 to +90 [-4 to +200]</td>
<td></td>
</tr>
<tr>
<td>Fluid viscosity mm²/s/SSU</td>
<td>15 to 380 [75 to 1760]</td>
<td></td>
</tr>
<tr>
<td>Fluid contamination ISO 4401:1999 max</td>
<td>20/18/14</td>
<td></td>
</tr>
</tbody>
</table>

Electrical

<table>
<thead>
<tr>
<th>Feature</th>
<th>FD-M3</th>
<th>FD-M4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid supply voltage V DC</td>
<td>12, 24; ±10%</td>
<td></td>
</tr>
<tr>
<td>Solenoid power consumption W</td>
<td>17.2 (12V DC), 16.6 (24V DC)</td>
<td></td>
</tr>
<tr>
<td>Solenoid duty cycle 100% ED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. ambient temperature °C/°F</td>
<td>70 [158]</td>
<td></td>
</tr>
</tbody>
</table>

Pressure drop
Test conditions: HV 46 hydraulic fluid at 40°C (104°F)

Measured at 50 °C [122 °F] and viscosity of 32 mm²/s [148 SUS].

By-pass mode FD-M3

![By-pass mode FD-M3 graph](image)

By-pass mode FD-M4

![By-pass mode FD-M4 graph](image)
Dimensions for FD-M3

Electric by-pass control with charge check valve

Dimensions for FD-M3

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Hydraulic components
Dimensions for FD-M4

Electric by-pass control with charge check valve
## Connections

### FD-M3

<table>
<thead>
<tr>
<th>Port</th>
<th>Function</th>
<th>Connection</th>
<th>Max. pressure bar [PSI]</th>
<th>Max. pressure bar [PSI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Main flow inlet-outlet</td>
<td>BSPP ISO 1179-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Divided flow outlet - combined flow inlet</td>
<td>3/8&quot;</td>
<td>350 [5075]</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Charge flow inlet</td>
<td>3/8&quot;</td>
<td>50 [725]</td>
<td>8 [116]</td>
</tr>
<tr>
<td>T</td>
<td>Drain</td>
<td>3/8&quot;</td>
<td>5 [73]</td>
<td></td>
</tr>
</tbody>
</table>

### FD-M4

<table>
<thead>
<tr>
<th>Port</th>
<th>Function</th>
<th>Connection</th>
<th>Max. pressure bar [PSI]</th>
<th>Max. pressure bar [PSI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Main flow inlet-outlet</td>
<td>BSPP ISO 1179-1  UNF ISO 11926-1</td>
<td>1&quot;1/16-12</td>
<td>420 [6000]</td>
</tr>
<tr>
<td>A</td>
<td>Divided flow outlet - combined flow inlet</td>
<td>3/8&quot;</td>
<td>3/4&quot;-16</td>
<td>420 [6000]</td>
</tr>
<tr>
<td>G</td>
<td>Charge flow inlet</td>
<td>3/8&quot;</td>
<td>3/4&quot;-16</td>
<td>50 [725]</td>
</tr>
<tr>
<td>T</td>
<td>Drain</td>
<td>3/8&quot;</td>
<td>3/4&quot;-16</td>
<td>5 [73]</td>
</tr>
</tbody>
</table>

## Installation

<table>
<thead>
<tr>
<th>Type</th>
<th>Class</th>
<th>N.m [lb.ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD-M3</td>
<td>4xM10</td>
<td>8.8</td>
</tr>
<tr>
<td>FD-M4</td>
<td>4xM8</td>
<td>10.9</td>
</tr>
</tbody>
</table>

(*) As per standard DIN 912
**Model code**

**Number of outlets**
- 4 outlets: 4
- 3 outlets: 3

**By-pass flow**
- Without by-pass: 0
- to 150 l/min [39.6 gal/min]: 1

**Division ratio (flow split %)**
- 25-25-25: 2
- 30-30-20-20: 3
- 33.5-33.5-16.5-16.5: 4
- 33-33-33: B*

*Division ratio available only for FD-M3

**Max. flow always goes through port A.**

**Flow range in division mode**
- 15-60 l/min [3.9-15.9 gal/min]: 06**
- 23-90 l/min [5.3-23.8 gal/min]: 09**
- 20-60 l/min [5.3-15.9 gal/min]: 06
- 30-90 l/min [7.9-23.8 gal/min]: 09
- 35-120 l/min [9.2-31.7 gal/min]: 12

*Input Q = code x10 [FD-M4 max=120 l/min; FD-M3 max=90 l/min]

**Flow range only available for FD-M3

**Optimal work is located between 40% and 60% of max. dedicated flow.**

**By-pass control**
- Electric control: E
- Without: A

**Auxiliaries**
- Without: 0
- Solenoid: 1

**Transfer restrictor diameter**
- Without: 00
- Ø 0.8 mm [0.0315 in]: AB
- Ø 0.7 mm [0.0275 in]: Al-Bi

**Contact us for other diameters.**

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**Options**
- Without: 0
- By-pass - normally closed: 1
- ZN-plating (STANDARD): B
- Special painting: D
- Specific name plate: P
- Customized*: F

*Further description on interface drawing

**Electric connector**
- Without: 0
- Deutsch DT04-2P: 3
- DIN 43650: 4
- AMP Jr. Timer: 5

**Voltage**
- Without solenoid: A
- 12 V DC: 1
- 24 V DC: 2

**Hydraulic connections**
- UNF ports*: A
- BSP ports: 3

*Hydraulic connections only available for FD-M4

**Charge check valves**
- Without: A
- With: B

**Relief valves setting**
- Without: 00
- 300 bar [4351 PSI]: 30
- 350 bar [5076 PSI]: 35
- 380 bar [5511 PSI]: 38
- 400 bar [5801 PSI]: 40

*ΔP between A (B) and G at 10 L/min

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