Dynamic Feed®
Melt Pressure Control inside Hot Runners
Product Type
Components to be added to hot runner systems in order to use them with melt pressure control:

1. Valve gate hot runner system including melt valve module
   a) Valve pin
   b) Pressure transducer
   c) Flow valve block
   d) Hydraulic actuator
   e) Connection box

2. Dynamic Feed control unit
   f) Signal line to the injection molding machine
   g) Signal line to the hot runner system
   h) Signal line to the servo valves

3. Servo valves and pressure source
   i) Pressure supply by injection molding machine
   j) Pressure supply by mobile hydraulic power unit
   k) Hydraulic line to the hot runner system

Operation principle, usage, benefits
The melt pressure control Dynamic Feed works as shown in the sketch below and offers the following possibilities:

- Melt pressure control by the flow valve changing the flow channel cross section infinitely
- Online pressure control during injection
- Individual pressure profile for each nozzle
- Optimum filling conditions for each cavity or each part of the cavity

Application:

- Optimise the filling of parts gated at several spots.
- Increase the quality of molded parts made with multi cavity molds.
- Balance the runner system inside family molds and modular molds online during production.

Illustrations simplified, schematically drawn and not to scale.
Dynamic Feed flow valve module for valve gate nozzles of class 12 E:

- Nozzle size 12: Flow bore-Ø 12 mm
- Nozzle style E: manifold nozzle, screw fit

1. DF TB 12
Flow valve block with valve pin and pressure transducer

2. HYC 4520M 04
Hydraulic actuator including position sensors

L Nozzle length
A Cut out manifold
B Cut out manifold

Values of the dimensions mentioned above depend on the selected nozzle series and the selected nozzle type. They can be found either in the related nozzle data sheet or in the Synventive Hot Runner Guide.
Dynamic Feed flow valve module for valve gate nozzles of the following class:

**Class 16 E**
- Nozzle size 16: Flow bore-Ø 16 mm
- Nozzle style E: manifold nozzle, screw fit

**Class 22 E**
- Nozzle size 22: Flow bore-Ø 22 mm
- Nozzle style E: manifold nozzle, screw fit

1. DF TB 16 / DF TB 22
   Flow valve block with valve pin and pressure transducer

2. HYC 4520M 04
   Hydraulic actuator including position sensors

L  Nozzle length
A  Cut out manifold
B  Cut out manifold

Values of the dimensions mentioned above depend on the selected nozzle series and the selected nozzle type. They can be found either in the related nozzle data sheet or in the Synventive Hot Runner Guide.
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

This actuator has position sensors mounted to it because it is used with the online melt pressure control Dynamic Feed.

### Valve Gate Pin

- **Needle Ø**: Ø 6 / Ø 8 mm
- **Attachment**: quick coupling, anti-rotation
- **Adjustment**: ±1.5 mm via adjustment threads from outside

### Valve Pin Operation

- **Operation**: hydraulic
- **Operation pressure**: 120 bar
- **Flow rate**: 3 l/min / 40 bar
- **Needle stroke**: 20 mm
- **Closing force**: 14100 N (120 bar)
- **Opening force**: 14100 N (120 bar)
- **Connections**: M 12 x 1.5 (8-L)
  - a) Closing
  - b) Opening

### Cooling

- **Medium**: Cooling water
- **Flow rate**: 6 l/min
- **Temperature**: 30...60 °C
- **Connections**: M 12 x 1.5 (8-L)
  - max. 3 actuators in a row
  - c) different positions

We recommend to cool the actuator after the end of production for 15 minutes at 30 °C to protect it against overheat due to heat flow from the manifold (No SynCool Option available).
Connection box for hot runner systems which are equipped with Dynamic Feed.

1. DF JB 4 H02
Connection box for 4 control zones

2. DF JB 8 H02
Connection box for 8 control zones

3. DF JB 4 H02 & DF JB 8 H02
Combination for 12 control zones

4. DF JB 8 H02 x 2
Combination for 16 control zones

Illustrations simplified, schematically drawn and not to scale.
Mobile PID control unit with max. 16 control zones which can be used to run hot runner systems with the online melt pressure control Dynamic Feed.

The control unit is delivered including all connection cables with a standard length of 7.5 m.

The control unit is operated by a touch screen which can be mounted in different ways.

**Technical Data**

- **Current**: 1/PE 110 / 230 V AC 50 / 60 HZ 3 A max.
- **Temperature**: 5 ... 40 °C
- **Humidity**: 0 ... 80% non condensing

1. **DF C ... S 01 (Standard)**  
   Screen inside housing
   - DF C 4 S 01: 4 control zones
   - DF C 8 S 01: 8 control zones
   - DF C 12 S 01: 12 control zones
   - DF C 16 S 01: 16 control zones
   - h x w x d: 1145 x 600 x 550 mm

2. **DF C ... S SOI 01**  
   Screen mounted on top of housing
   - DF C 4 S SOI 01: 4 control zones
   - DF C 8 S SOI 01: 8 control zones
   - DF C 12 S SOI 01: 12 control zones
   - DF C 16 S SOI 01: 16 control zones
   - h* x w x d: 1575 x 600 x 550 mm
   *including screen

3. **DF C ... R 01**  
   Remote screen mounted to wall
   - DF C 4 R 01: 4 control zones
   - DF C 8 R 01: 8 control zones
   - DF C 12 R 01: 12 control zones
   - DF C 16 R 01: 16 control zones
   - h x w x d: 1145 x 600 x 550 mm
   - DF COICAB: connection cable, standard length 15 m

4. **Connections for 4 to 8 control zones**

5. **Connections for more than 8 control zones**
   a) Injection molding machine
   b) Servo valves
   c) Hot runner system (Pressure transducer, position sensors)
1. DF CIK
Interface between the Dynamic Feed control unit and the injection molding machine:

a) Interface base
b) Jumper to operate the injection molding machine without Dynamic Feed

All data needed to set up the interface can be found in the Dynamic Feed interface specification.

2. DF CAB IMMS
Connection cable to establish the signal line between the following components:

c) Injection molding machine
d) Dynamic Feed control unit

Standard length 7.5 m

3. Connection to the injection molding machine

4. Operation without Dynamic Feed

5. DF AN PWM-030
Signal converter for screw drive at the injection molding machine, converts from analog to digital signals.
For the connection situation necessary data see at Dynamic Feed Controller Product Description.
1. DF CAB HRS
Connection cable to establish the signal line between the following components:

a) Hot runner system
b) Dynamic Feed control unit

Standard length 7.5 m

2. Connections for 4 to 8 control zones

3. Connections for more than 8 control zones
1. **DF CAB HPUS**
Connection cable to establish the signal line between the following components:

a) Servo valve block
b) Dynamic Feed control unit

Standard length 7.5 m

2. **Connections for 4 to 8 control zones**

3. **Connections for more than 8 control zones**
Servo valves to operate the flow valves of hot runner systems in which the melt pressure control Dynamic Feed has been installed.

Servo valves and oil filter are mounted to a valve block. This valve block can either be mounted to the injection molding machine or to a mobile hydraulic power unit - depending which component is used to supply pressure to the actuators in the hot runner system.

The servo Valve block is delivered with hydraulic hoses with a standard length of 2 m.

### Operating data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>120 bar</td>
</tr>
<tr>
<td>Flow rate (max.)</td>
<td>15 l/min (8 control zones)</td>
</tr>
<tr>
<td>Flow rate (more)</td>
<td>26 l/min (more than 8 control zones)</td>
</tr>
<tr>
<td>Connections</td>
<td>G3/4&quot;</td>
</tr>
<tr>
<td>Oil type</td>
<td>Hydraulic oil</td>
</tr>
<tr>
<td></td>
<td>DIN 51524-2, HLP 32</td>
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</tbody>
</table>

1. **DF VB 02 S01**  
   Valve block for 2 control zones

2. **DF VB 04 S01**  
   Valve block for 4 control zones

3. **DF VB 08 S01**  
   Valve block for 8 control zones

4. **DF VB 12 S01**  
   Valve block for 12 control zones

5. **DF HF 02**  
   Oil filter

6. **DF HFE 02**  
   Filter element
Mobile hydraulic power unit to supply pressure to the actuators of hot runner systems in which the melt pressure control Dynamic Feed has been installed.

The hydraulic power unit is delivered with the servo valve block mounted to it including hydraulic hoses with a standard length of 6 m.

**Technical Data**

| Current         | 3/PE 400 V AC  
|                 | 50 / 60 Hz 
|                 | 3 x 16 A 
| Pressure        | 120 bar 
| Flow rate       | 15 l/min (max. 8 control zones) 
|                 | 26 l/min (more than 8 zones) 
| Connections     | G3/4" 
| Oil type        | Hydraulic oil: Mineral oil based hydraulic Oil according DIN 51524-2, HLP 32 (for example: Shell Tellus S3 M46...) 
| Cooling Connections | 1/2" BSP 
| Connections     | 10 L, 90 bar 
| Connections     | 5/16" - 32 UNF 
| Scope of supply | without hydraulic oil without nitrogen 
| Weight          | 540 kg (without oil) 
| h x w x d       | 1644 x 1483 x 862 mm 

**DF HPU ...120S, available units**

- DF HPU 4 120S 4 control zones
- DF HPU 8 120S 8 control zones
- DF HPU 12 120S 12 control zones
- DF HPU 16 120S 16 control zones

**Before initial operation**

Hydraulic unit has to be filled with oil (filter pump 10 µm) and accumulator with nitrogen.
1. DF HOSE...
Hydraulic hose to establish the line between servo valves and the actuators of hot runner systems in which the melt pressure control Dynamic Feed has been installed.

DF HOSE 2 length 2 m
DF HOSE 6 length 6 m

2. Fittings
a) DF HCF 13 Quick coupling, socket
b) DF HCM 13 Quick coupling, plug
c) XAP014106 fitting
d) DIN471 (20x1.2) retaining ring
e) XAA106106 fitting
f) XAQ106000BS seal

3. Connection of servo valves to the hot runner system
HR Hot runner system (connection plate)
VB Valve block

Dynamic Feed®
Hydraulic line to the hot runner system

Illustrations simplified, schematically drawn and not to scale.