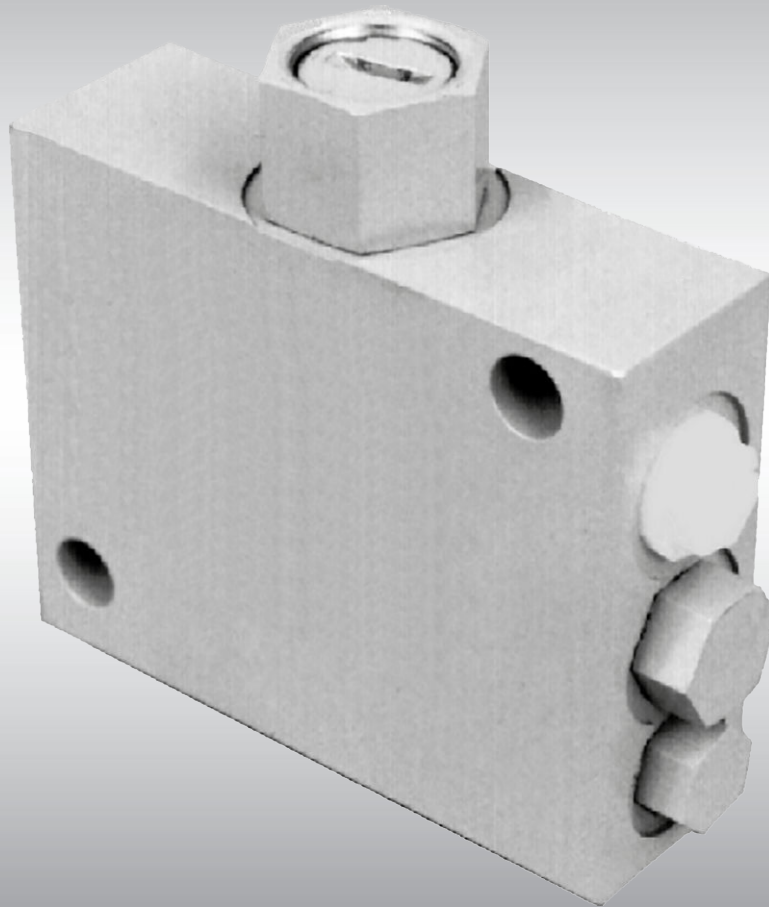




Technical Information

# Loop Flushing Valve



**Revision history***Table of revisions*

<b>Date</b>	<b>Changed</b>	<b>Rev</b>
Dec 2014	Danfoss Layout	EA
Oct 2011	Backpage updated	AB
Mar 2007	Update backpage	AA
July 2003	First edition	-

---

**Technical Information    Loop Flushing Valve**

---

**Contents****General information**

Application.....	4
Description.....	4
Specifications.....	5
Model code.....	5
Performance.....	5
Mounting.....	6

**Service Information**

Adjustment procedure.....	8
Service information.....	8

**General information**

**Application**

The loop flushing valve, applied in a hydrostatic transmission circuit, maintains high quality of the working fluid in the transmission power loop. While many transmissions can operate satisfactorily without a loop flushing valve, the addition of loop flushing improves fluid quality and generally extends transmission life.

Consider the loop flushing valve when any of these exist:

- Sustained operation at low pressure and high speed
- Operation where continuous pressure exceeds 1000 hours per year
- Cylinders in the hydrostatic circuit
- Flow restricting valves in the power loop
- Frequent operation of high pressure relief valves
- Long power loop lines
- Extraordinary life requirements

Danfoss recommends monitoring fluid quality under field operating conditions for extended periods of time to determine loop flushing requirements. For a complete discussion of loop flushing and fluid quality, refer to Danfoss bulletins BLN-9886 *Transmission Circuit Recommendations* and 520L0463 *Hydraulic Fluids and Lubricants, Technical Information*.

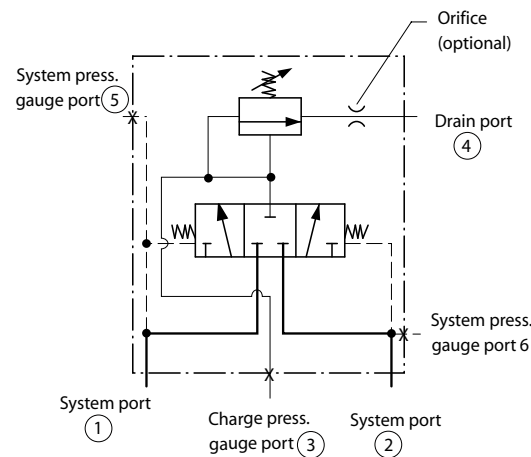
**Description**

The high pressure ports (1 and 2) of the valve are externally connected to the work or system auxiliary ports of the main hydrostatic transmission circuit. The valve drain port (4) must be externally connected to the case drain return line of the transmission — preferably at the motor so that fluid flushes through the motor case and returns to the reservoir.

The shuttle valve exposes the low pressure side of the circuit to the charge relief valve. When properly set (see [Adjustment procedure](#) on page 8) the charge relief valve flushes a desired quantity of working fluid from the transmission power loop. The charge pump replaces this fluid.

You may specify a drain orifice to limit maximum flushing flow in circuits where the low side pressure is high or varies over a large range.

*Schematic diagram*



P104 162E

## Technical Information Loop Flushing Valve

### General information

### Specifications

#### System pressure

<b>Maximum high side</b>	<b>480 bar [6961 psi]</b>
Maximum low side	70 bar [1015 psi]

#### Charge relief setting

<b>Minimum</b>	<b>15 bar [218 psi]</b>
Maximum	28 bar [406 psi]

Nominal charge relief settings are  $\pm 1.4$  bar [ $\pm 20$  psi] and are set at a flow of  $3.8 \pm 0.9$  l/min [ $1 \pm 0.25$  US gal/min] at  $49^\circ\text{C}$  [ $120^\circ\text{F}$ ]

### Model code

8800485- - -

Charge pressure \_\_\_\_\_  
15 to 28 bar, 1 bar increments

Example:

20 = 20 bar [290 psi]

Orifice \_\_\_\_\_

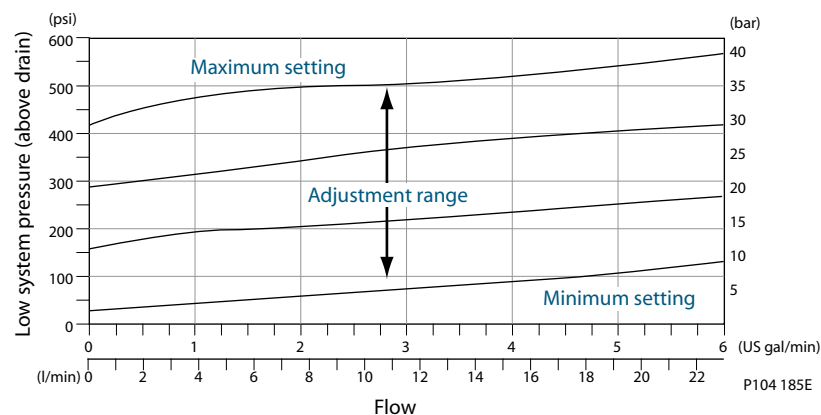
00 = None

09 =  $\varnothing$  2.40 mm [0.0945 in.]

12 =  $\varnothing$  3.19 mm [0.1255 in.]

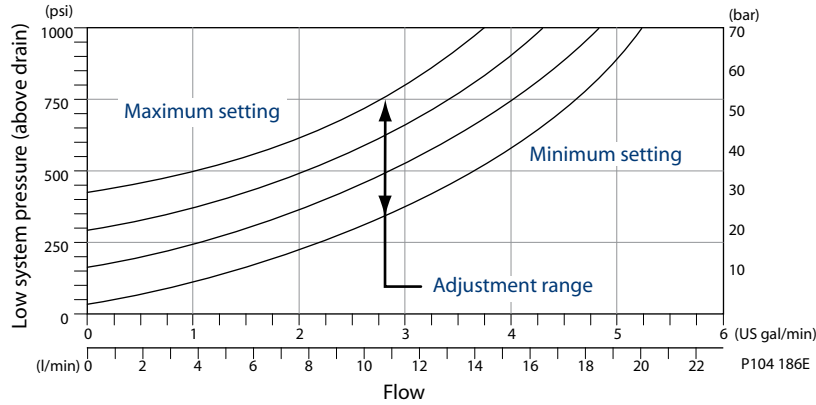
### Performance

#### Valve without orifice



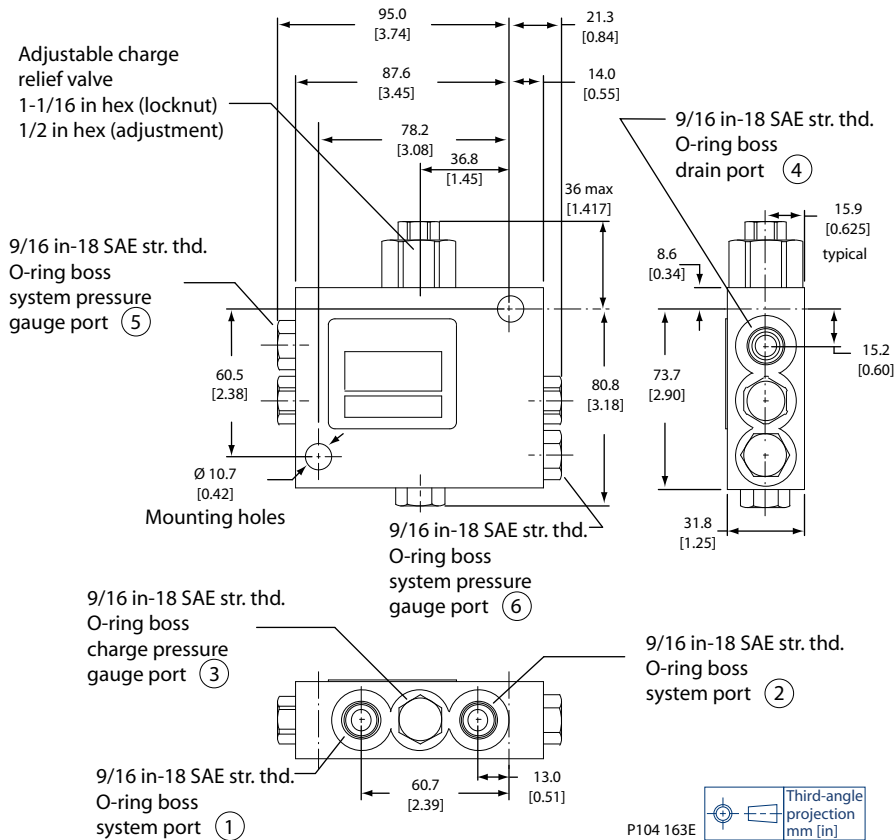
**General information**

Valve with 2.40 mm [0.0945 in.] orifice



**Mounting**

Installation drawing



Mount the loop flushing valve on any convenient flat surface that provides adequate support around the two mounting holes. Ensure the surfaces under the mounting bolts form a flat plane.

Failure to provide a flat mounting surface could create valve housing distortion when the mounting bolts are torqued. Housing distortion may bind internal components and reduce the drive and/or braking capacity of the system.

**General information**** Warning**

---

The loss of hydrostatic drive line power in any mode of operation may cause a loss of hydrostatic braking capacity. A braking system, redundant to the hydrostatic transmission, must be provided which is adequate to stop and hold the system should such a condition develop.

---

## Technical Information    Loop Flushing Valve

### Service Information

#### Adjustment procedure

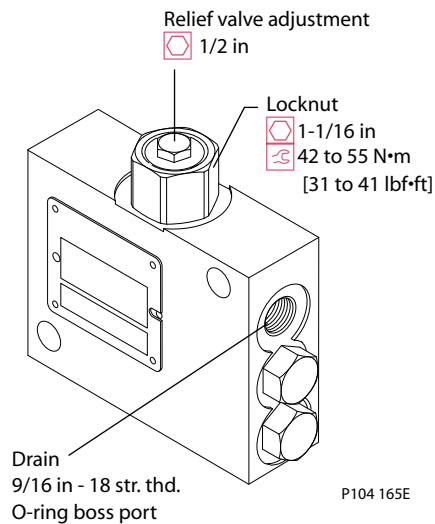
For initial setting of the valve package:

1. Plumb an in-line flow meter into the drain line.

*If a flow meter is not available, use a clean container with a known volume and a stop watch to measure flow rate.*

2. Set the brakes or otherwise restrict machine motion.
3. Stroke the transmission pump to build at least 34 bar [500 psi] differential system pressure.
4. Adjust the relief valve in the flushing valve package to obtain the desired drain flow. Typically 7.5 to 11.4 l/min [2 to 3 US gal/min] is sufficient. Rotating the adjusting screw counter-clockwise increases flow and decreases the effective pressure setting by approximately 5 bar [73 psi] per turn.
5. Torque the locknut 42 to 55 N•m [31 to 41 lbf•ft].
6. Verify that pump charge pressure is above recommended minimum.
7. Remove the flow meter from the circuit.

*Adjustment diagram*



### Service information

#### Component installation torque

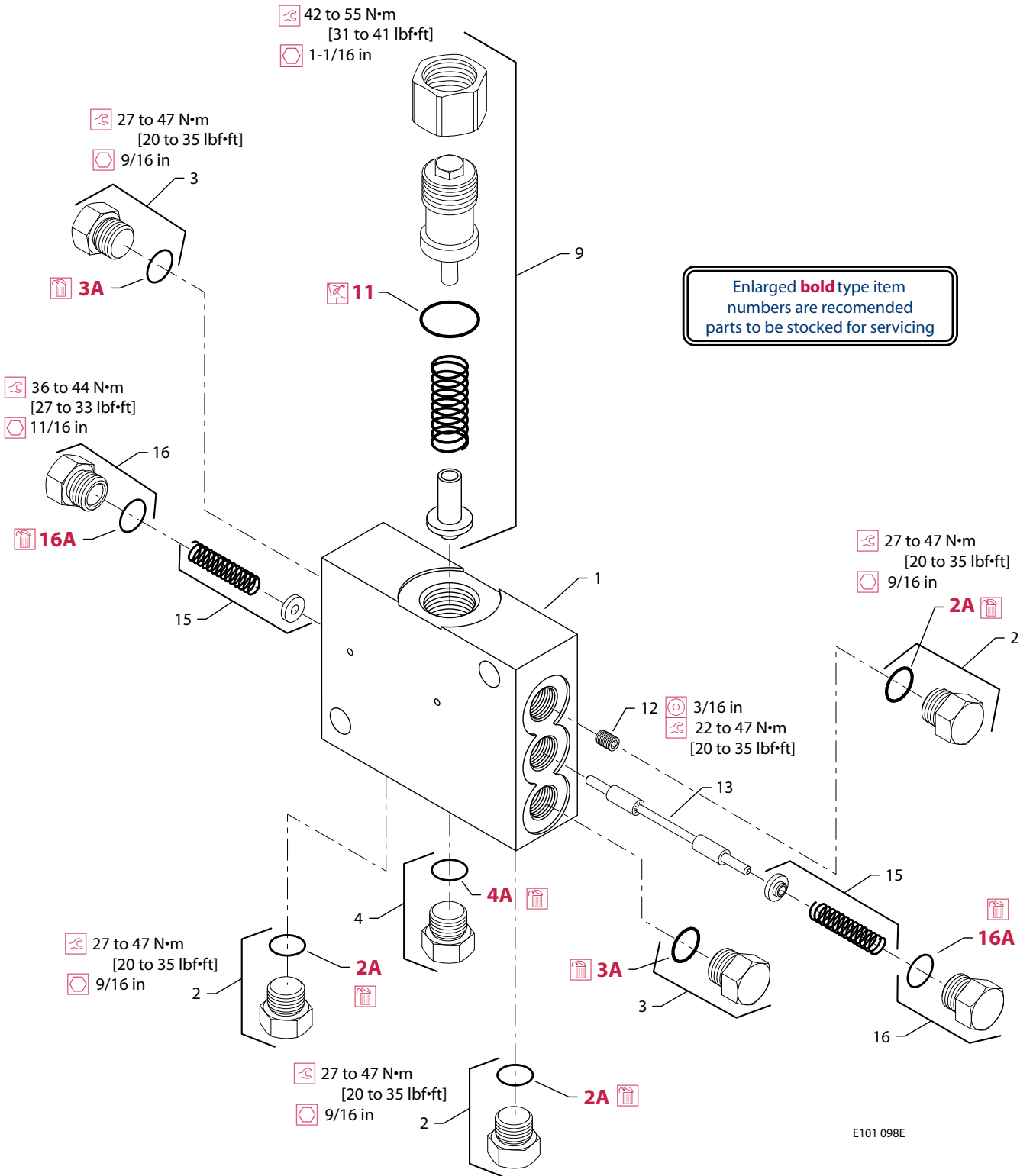
Description	Wrench size	Torque
Gauge port plugs	9/16 in hex	27 to 47 N•m [20 to 35 lbf•ft]
Charge relief lock nut	1 1/16 in hex	42 to 55 N•m [31 to 41 lbf•ft]
Orifice plug	3/16 in internal hex	22 to 27 N•m [16 to 20 lbf•ft]
Shuttle spool plugs	11/16 in	36 to 44 N•m [27 to 33 lbf•ft]
Hose/tube fittings	—	27 to 47 N•m [20 to 35 lbf•ft]



**Technical Information    Loop Flushing Valve**

**Service Information**

Exploded view



E101 098E

---

**Technical Information    Loop Flushing Valve**


---

**Service Information**
*Replacement parts*

<b>Item</b>	<b>Part Number</b>	<b>Description</b>	<b>Quantity</b>
1	8800538	Housing assembly	1
2	9005100-5600	Plug	3
2A	9004201-3700	O-ring	3
3	9005100-5600	Plug	2
3A	9004201-3700	O-ring	2
4	9005100-5600	Plug	1
4A	9004201-3700	O-ring	1
9	8510012	Charge relief valve kit	1
11	9004201-6200	O-ring	1
12	8800242-0009	Orifice plug – Ø 2.40 mm [0.0945 in]	1 (opt.)
12	8800242-0011	Orifice plug – Ø 3.19 mm [0.1255 in]	1 (opt.)
13	8800550	Shuttle spool	1
15	513596	Spring guide assembly	2
16	518016	Special plug	2
16A	9004201-3700	O-ring	2





**Products we offer:**

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
- Microcontrollers and Software
- Open Circuit Axial Piston Pumps
- Orbital Motors
- PLUS+1® GUIDE
- Proportional Valves
- Sensors
- Steering
- Transit Mixer Drives

**Danfoss Power Solutions** is a global manufacturer and supplier of high-quality hydraulic and electronic components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market. Building on our extensive applications expertise, we work closely with our customers to ensure exceptional performance for a broad range of off-highway vehicles.

We help OEMs around the world speed up system development, reduce costs and bring vehicles to market faster.

Danfoss – Your Strongest Partner in Mobile Hydraulics.

**Go to [www.powersolutions.danfoss.com](http://www.powersolutions.danfoss.com) for further product information.**

Wherever off-highway vehicles are at work, so is Danfoss. We offer expert worldwide support for our customers, ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide comprehensive global service for all of our components.

Please contact the Danfoss Power Solution representative nearest you.

**Comatrol**

[www.comatrol.com](http://www.comatrol.com)

**Schwarzmueller-Inverter**

[www.schwarzmueller-inverter.com](http://www.schwarzmueller-inverter.com)

**Turolla**

[www.turollaocg.com](http://www.turollaocg.com)

**Valmova**

[www.valmova.com](http://www.valmova.com)

**Hydro-Gear**

[www.hydro-gear.com](http://www.hydro-gear.com)

**Daikin-Sauer-Danfoss**

[www.daikin-sauer-danfoss.com](http://www.daikin-sauer-danfoss.com)

Local address:

**Danfoss Power Solutions (US) Company**  
2800 East 13th Street  
Ames, IA 50010, USA  
Phone: +1 515 239 6000

**Danfoss Power Solutions GmbH & Co. OHG**  
Krokamp 35  
D-24539 Neumünster, Germany  
Phone: +49 4321 871 0

**Danfoss Power Solutions ApS**  
Nordborgvej 81  
DK-6430 Nordborg, Denmark  
Phone: +45 7488 2222

**Danfoss Power Solutions (Shanghai) Co., Ltd.**  
Building #22, No. 1000 Jin Hai Rd  
Jin Qiao, Pudong New District  
Shanghai, China 201206  
Phone: +86 21 3418 5200

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.