ENGINEERING
TOMORROW

Technical Information

Steering
OLS Priority Valves

www.danfoss.com

Revision history

Table of revisions

Date	Changed	Rev
May 2023	First edition	0101

Contents

Overview

A wide range of steering components

Danfoss offers steering solutions both at component and system levels.

Danfoss is one of the largest producers in the world of hydrostatic steering components on off-road vehicles. Our product range makes it possible to cover applications of many types, such as ordinary 2 wheel steering (also known as Ackermann steering) and articulated steering. Danfoss offers over 2,200 different steering units and 300 different priority valves categorized in types, variants and sizes.

Danfoss offers:

For hydrostatic steering systems

Product type	Displacement	Rated flow	Steering pressure
Steering units	40-1200 cm^3/rev [2.44 - 73.2 in^3/rev	Max. 100 l/min [26.4 US gal/min]	Max. 240 bar [3481 psi]
Priority valves	-	40, 80, 120, 160, 320 l/min [10.6, 21.1, 31.7, 42.3, 84.5 US gal/min]	See control flow (CF) data in *Maximum pressure on connections* on page 14
Pilot operated flow amplifiers (factors: 4, 5, 8, or 10)	-	240 and 400 l/min [63.4 and 105.7 US gal/min]	Max. 240 bar [3480 psi]

Characteristic features for steering units

- Low steering torque: from 0.7 to 4 N•m in normal steering situations
- Low noise level
- Low pressure drop

Overview

- Many types available: Open center Non-reaction, Open center Reaction, Power Beyond, Closed center Non-reaction, Load Sensing, Load Sensing Reaction
- One or more built-in valve functions: relief valve, shock valves, suction valves, non-return valve in P-line and LS-line
- Optional port connections according to ISO, SAE or DIN standards

Conversion factors

1 N•m = [8.851 lbf•in]

1 N = [0.2248 lbf]

1 mm = [0.0394 in]

1 cm^3 = [0.061 in^3]

1 l = [0.264 US gal]

1 bar = [14.5 psi]

°F = [1.8°C + 32]

Survey of literature on Danfoss steering components

Detailed data on all Danfoss steering components and accessories can be found in our steering component catalogs, which is divided into the following individual sub catalogs:

General information	Steering components
Technical data on open center, and closed center steering units	OSPB, OSPC, and OSPD
Technical data on load sensing steering units, priority valves and flow amplifiers	OSPB, OSPC, OSPF, OSPD, OSPDF, OSPL, OSPBX, and OSPLX
Technical data on priority valves	OLS
Technical data on priority flow amplifiers	OSQ
Technical data on valve blocks	OVPL and OVR
Technical data on load sensing steering units with amplification	OSPU
Technical data on steering units with zero dead band	OSPS
Technical data on steering units with integrated priority valve	VSPP
Technical data on hydraulic and EH pilot operated steering valves, electrical actuation modules and appropriate steering units.	EHPS, EHPS w. OLS 320, PVE for EHPS and OSPCX
Technical data on combined steering unit/EH steering valves and steering wheel sensors	OSPE
Technical data on electrohydraulic steering valves	EHi
Technical data on steering wheel sensors	SASA

For technical information on individual variants, please contact the Danfoss Sales Organization.

Types

General

Danfoss offers a wide range of priority valves inside the OLS product family.

The OLS product family includes 6 base sizes, covering the far most customer demands for performance and capacity.

The types are:

- OLSA 40/80
- OLSi 80
- OLS 120
- OLS 160
- OLS 320
- OLSP 80

Types

OLSA 40/80

The OLSA 40 and OLSA 80 “flange on” priority valves are used in load sensing steering systems, built onto OSPC LS (OLSA) and OSPD LS (OLSA) steering units.

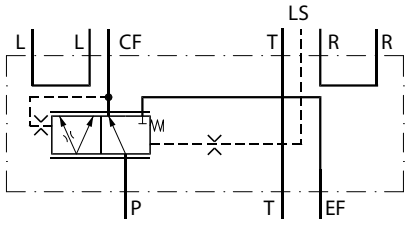
OLSA 40, OLSA 80

The program of OLSA covers:

- For max pump flow 40 and 80 l/min
- For LS static and LS dynamic steering units

Schematics

OLSA static (left); OLSA dynamic (right)



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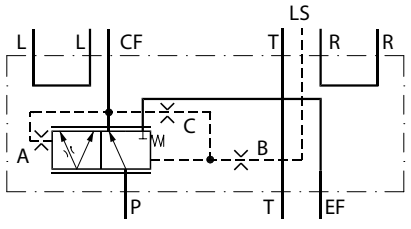

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A: PP-damping orifice

B: LS orifice

C: Dynamic orifice

Types

OLSi 80

The OLSi 80 "in-line" priority valves are used in load sensing steering systems together with OSP-variant LS static and LS dynamic steering units.

The OLSi 80 is replacing OLS 40/80 because it is more compact and easier to adapt in steering systems.

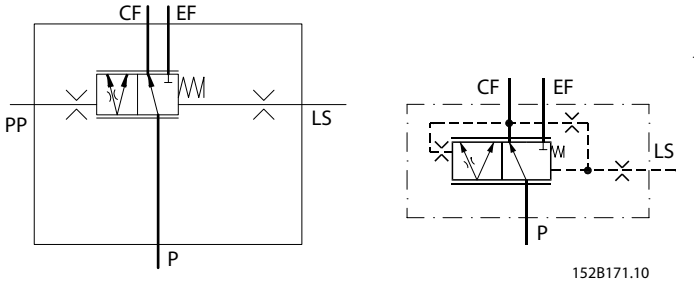
OLSi 80

The program of OLSi 80 covers:

- For max pump flow 80 l/min
- With internal or external PP

Schematics

OLS static with external PP (left); OLS dynamic with internal PP (right)



Types

OLS 120

The OLS 120 "in-line" priority valves are used in load sensing steering systems together with OSP-variant LS static and LS dynamic steering units.

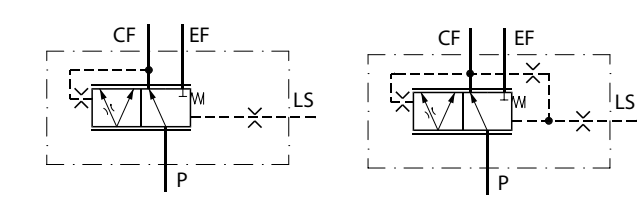
OLS 120

The program of OLS 120 covers:

- For max pump flow 120 l/min
- With internal PP

Schematics

OLS static (left); OLS dynamic (right)



Types

OLS 160

The OLS 160 “in-line” priority valves are used in load sensing steering systems together with OSP-variant LS static and LS dynamic steering units.

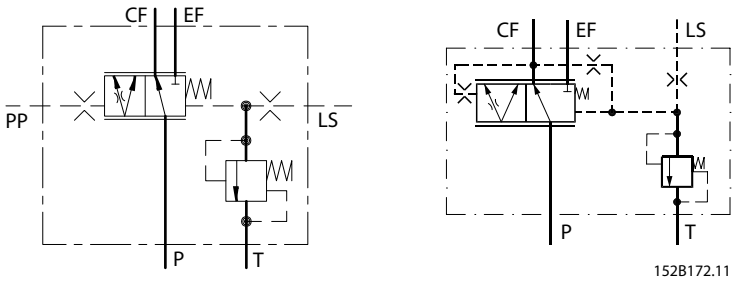
OLS 160

The program for OLS 160 covers:

- For max pump flow 160 l/min
- With or without integrated pilot relief valve
- With internal or external PP

Schematics

OLS static with external PP (left); OLS dynamic with internal PP (right)



Types

OLS 320

The OLS 320 “in-line” priority valves are used in load sensing steering systems together with OSP-variant LS static and LS dynamic steering units.

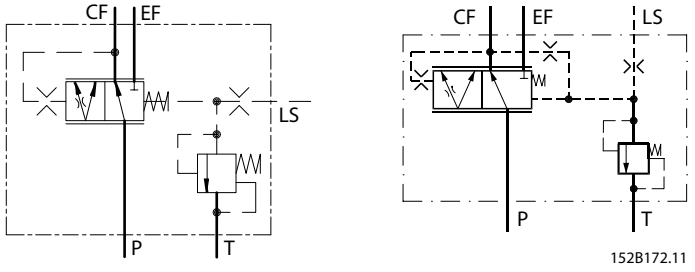
OLS 320

The program of OLS 320 covers:

- For max pump flow 320 l/min
- With or without integrated pilot relief valve
- With internal PP

Schematics

OLS 320 static (left); OLS 320 dynamic (right)



Types

OLSP 80

The priority valve OLSP 80 is to be used in steering systems with Danfoss gear pumps (Group 2, standard and shhark® and OSP-variant LS static and LS dynamic steering units.

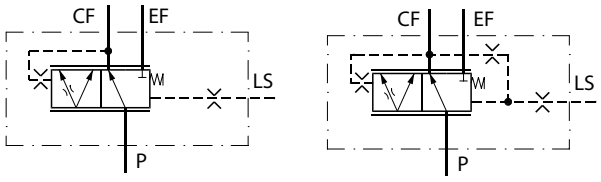
OLSP 80

The program for OLSP 80 covers:

- For max pump flow 80 l/min
- With internal PP

Schematics

OLSP 80 static (left); OLSP 80 dynamic (right)



System sizing and product selection

The steering system pump is sized so that satisfactory performance is achieved for both steering and working hydraulics - even at idle.

Before selecting a priority valve, consider the following:

- The pump flow: nominal size of priority valve must match with maximum pump flow
- The type of steering unit
  - Load Sensing static: OSPB, OSPC, OSPD, OSPL; OLS unit must be static type
  - Load Sensing dynamic: OSPB, OSPC, OSPD, OSPL; OLS unit must be dynamic type, providing dynamic flow in the 0.6-0.9 l/min range
  - Load Sensing high dynamic: OSPC LS high dynamic, OSPD LS high dynamic; OLS must be high dynamic type, providing dynamic flow in the 1.0 - 1.3 l/min range
  - Load Sensing high dynamic: all OSPU LS, all OSPF LS; OLS must be high dynamic type, providing dynamic flow in the 1.1 - 1.5 l/min range
- The displacement of the steering unit: higher displacement and higher demand for maximum steering speed requires additional control spring pressure in the priority valve.
- The application's requirement for energy optimization, initial steering response time and stability as these parameters govern the selection for control spring pressure
- Whether the priority valve should have internal PP (pilot pressure) or external PP-connection depends on the pressure drop in the pump line between the priority valve's CF-port (controlled flow) and the steering unit's P-port. With normal hose and tube dimensions and less than 5 meters distance between priority valve and steering unit, the immediate choice is typically a priority valve with internal PP.

The code numbers in section *Code numbers* on page 30 list the most frequently used priority valves used in combination with Danfoss steering unit types.

All priority valves in the code number tables (except OLS 160 static) have internal PP connection. OLS 160 static priority valves have an external PP connection.

Technical data

For common technical data, please see the General Steering Components document.

Maximum pressure on connections

Maximum pressure on connections

Priority valve	Rated flow to P	P, EF	CF	L, R	LS	T	PP
Unit	**l/min [US gal/min]**	**bar [psi]**					
OLSA 40	40 [10.57]	250 [3625]	240 [3480]	280 [4061]	240 [3480]	20 [290]	-
OLSA 80	80 [21.13]	250 [3625]	240 [3480]	280 [4061]	240 [3480]	20 [290]	-
OLSi 80	80 [21.13]	300 [4351]	280 [4061]	-	280 [4061]	-	280 [4061]
OLS 120	120 [31.70]	300 [4351]	280 [4061]	-	280 [4061]	-	-
OLS 160	160 [42.27]	350 [5076]	280 [4061]	-	280 [4061]	15 [217]	280 [4061]
OLS 320	320 [84.54]	300 [4351]	280 [4061]	-	280 [4061]	40 [580]	280 [4061]
OLSP 80	80 [21.13]	280 [4061]	240 [3480]	-	240 [3480]	-	-

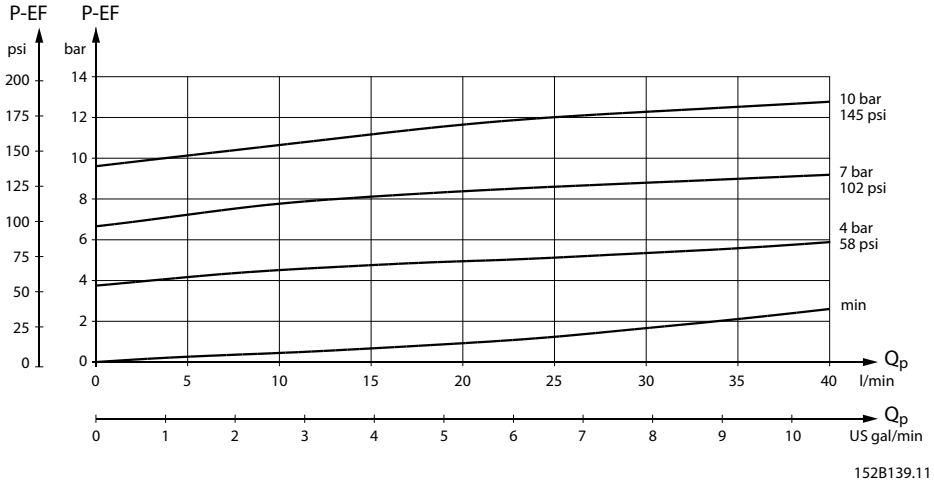
Pressure drop in priority valves

Priority valve pressure drop graphs were created using the specific parameters detailed below.

The pressure drop data is calculated from measurements on a representative sample of priority valves from production. Oil with viscosity of 21 mm^2/s at 50 °C [102 SUS at 122 °F] was used during measuring. Measurement made when pressure on the LS connection is zero (steering unit in neutral position). The minimum curves apply when the pressure on the EF connection is higher than the actual control spring pressure. The curves for control spring pressure of 4 , 7, 10 or 12 bar [58, 101, 145 or 174 psi] apply when pressure on the EF connection is zero.

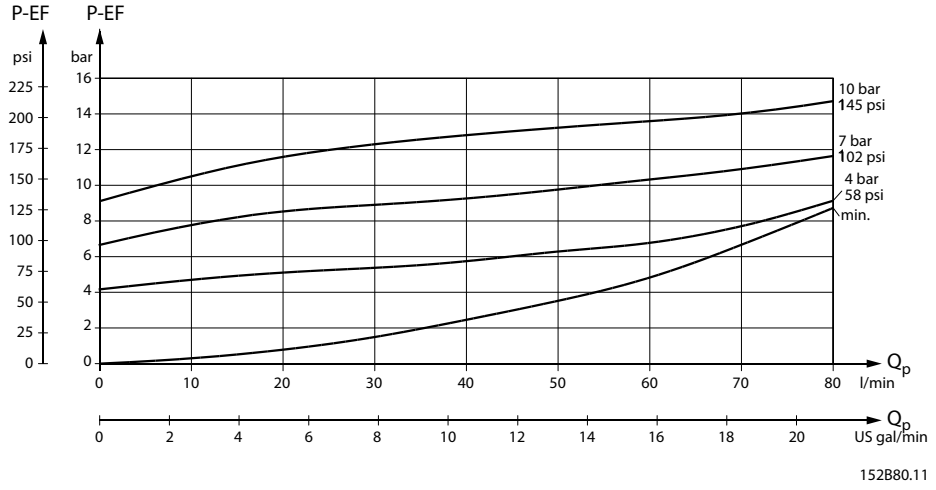
Pressure drop P-EF for static priority valves

OLSA 40

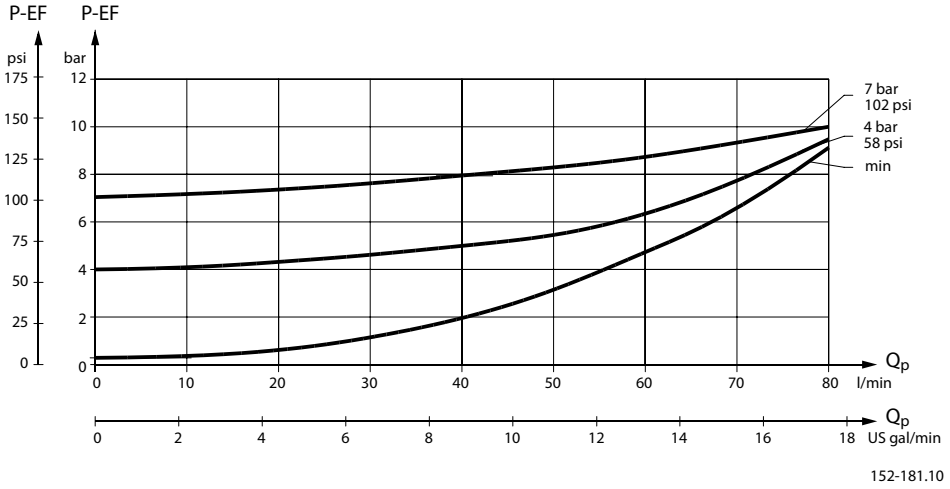


Technical data

OLSA 80

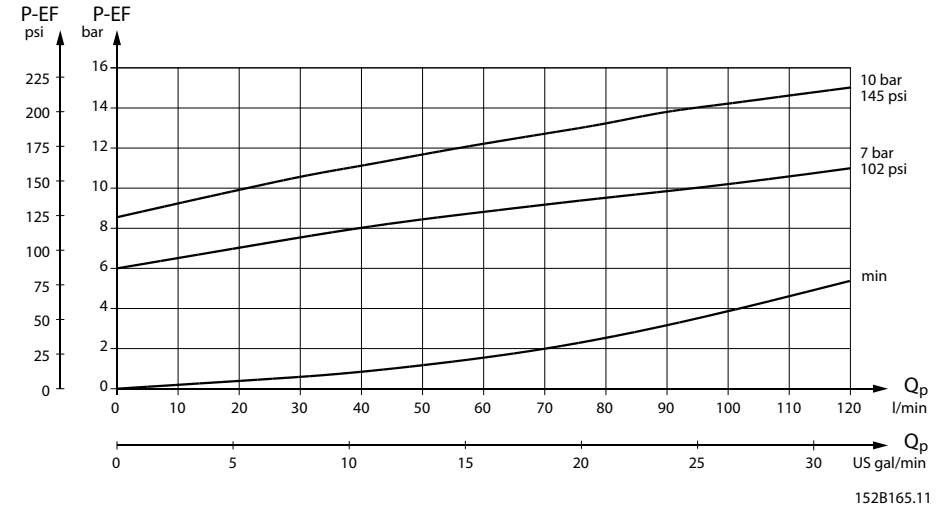


OLSi 80

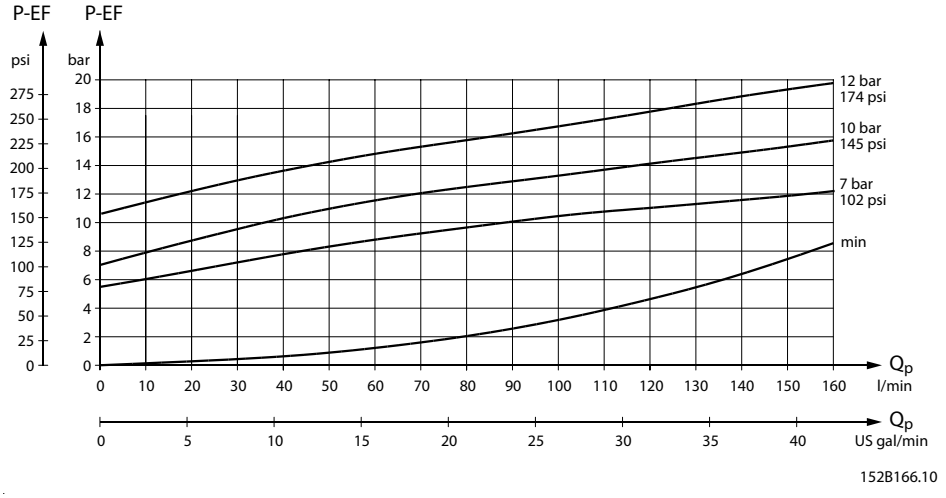


Technical data

OLS 120

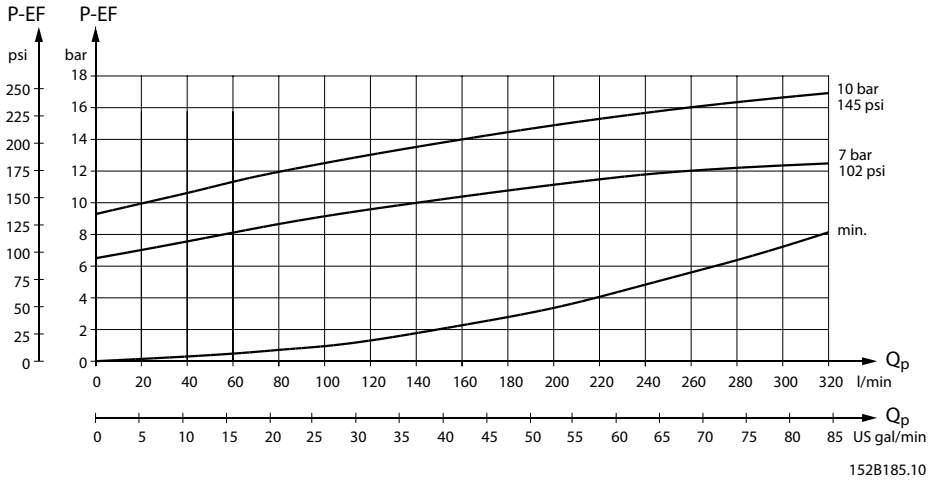


OLS 160



Technical data

OLS 320



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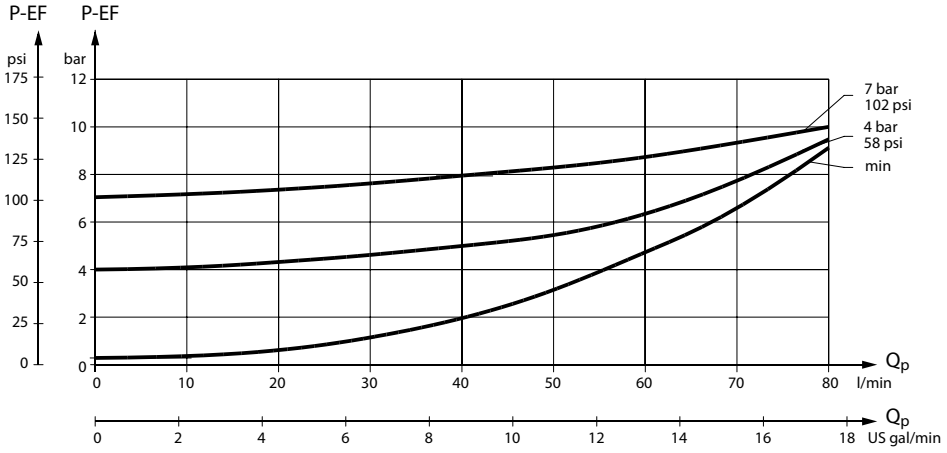
OLSP 80

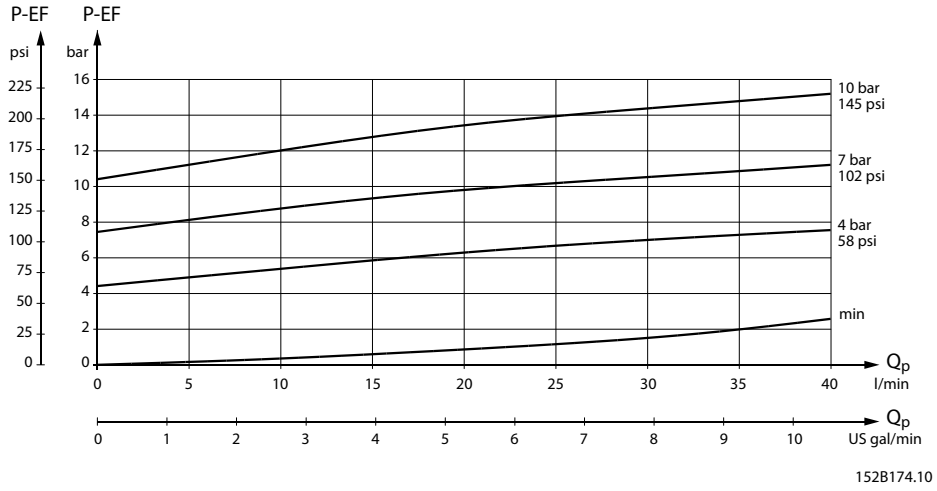


152-181.10

Technical data

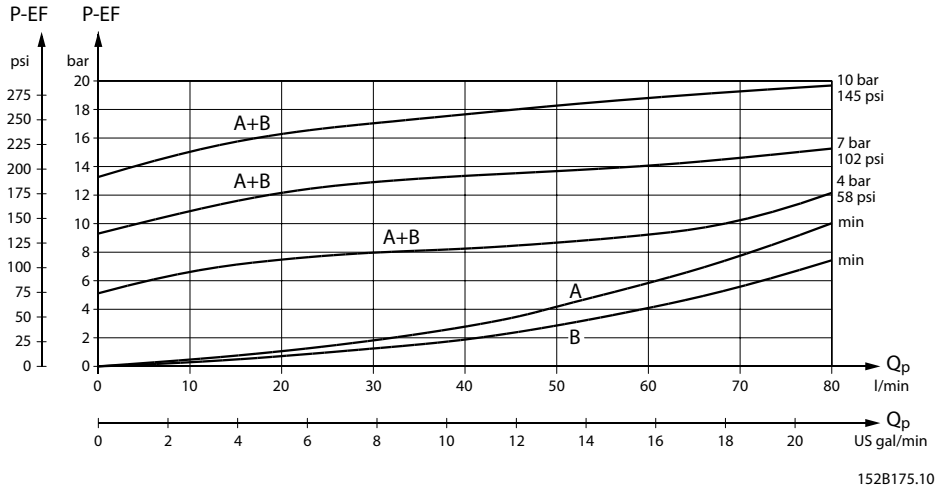
Pressure drop P-EF for dynamic priority valves

OLSA 40



Curves for OLS/OLSA 40 dynamic for OSPB, OSPC, OSPD LS dynamic

OLSA



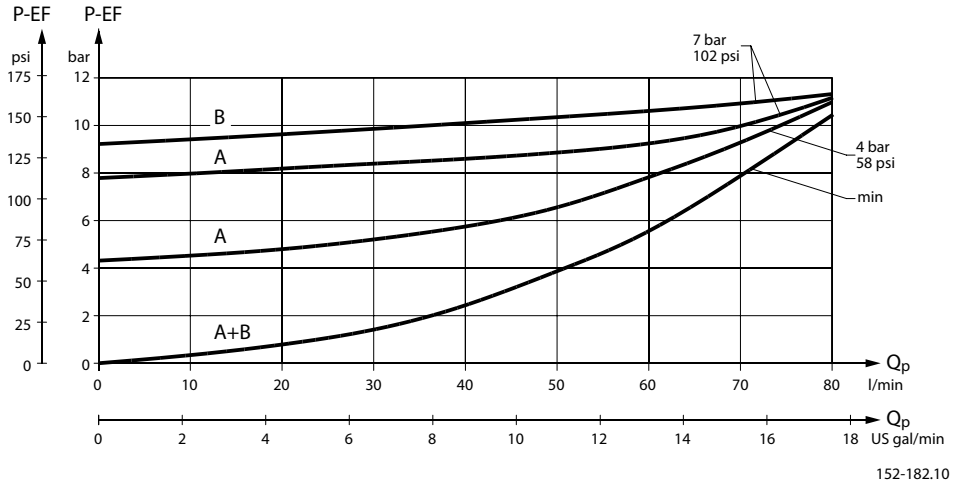
A OLSA 80 dynamic for OSPB, OSPC, OSPD LS dynamic

B OLSA 80 dynamic with low pressure drop (P-EF) spool for OSPB, OSPC, OSPD LS dynamic

Do not use OLSA for OSPF, OSPDF, OSPU and OSPL. Only use OLS in-line for these steering types.

Technical data

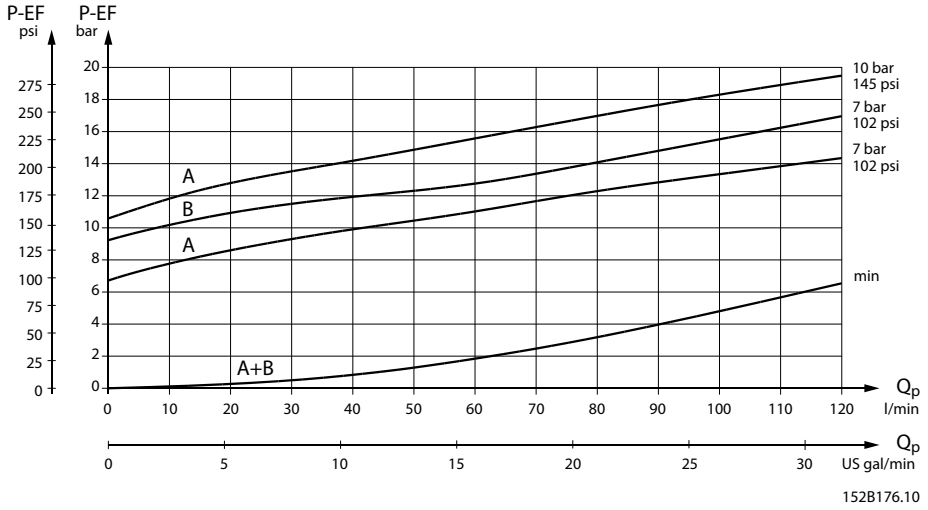
OLSi 80



A OLSi 80 dynamic for OSPB, OSPC, OSPD, OSPL LS dynamic

B OLSi 80 dynamic for OSPF LS and OSPU LS dynamic

OLS 120

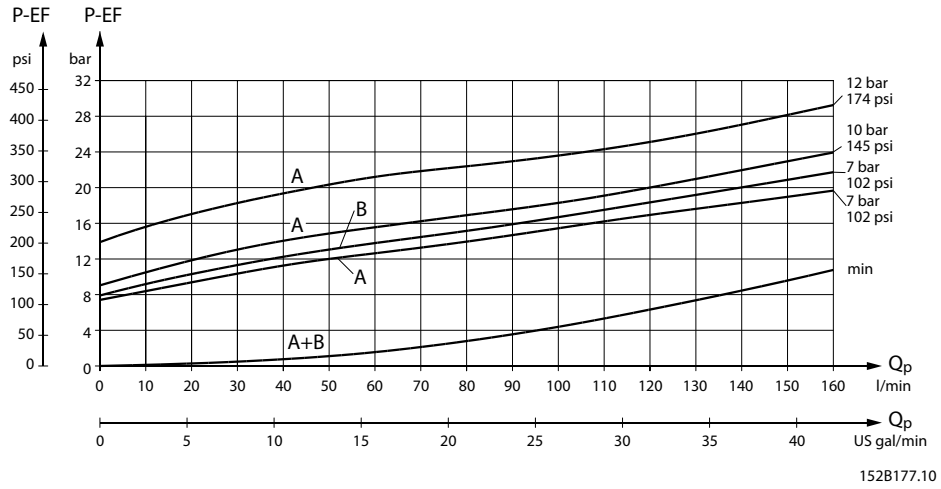


A OLS 120 dynamic for OSPB, OSPC, OSPD, OSPL LS dynamic

B OLS 120 high dynamic for OSPC/OSPD LS high dynamic, OSPF/OSPDF LS, OSPU LS

Technical data

OLS 160



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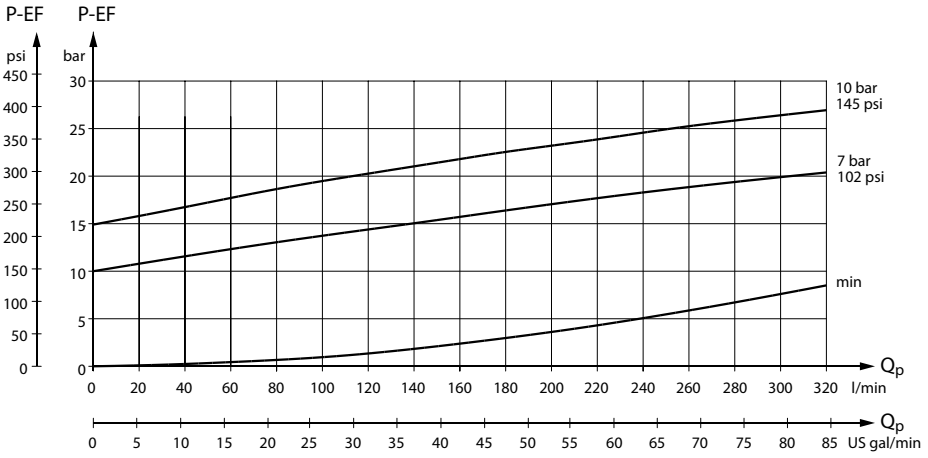
A OLS 160 dynamic for OSPB, OSPC, OSPD, OSPL LS dynamic

B OLS 160 high dynamic for OSPC/OSPD LS high dynamic, OSPF/OSPDF LS, OSPU LS

OLS 320



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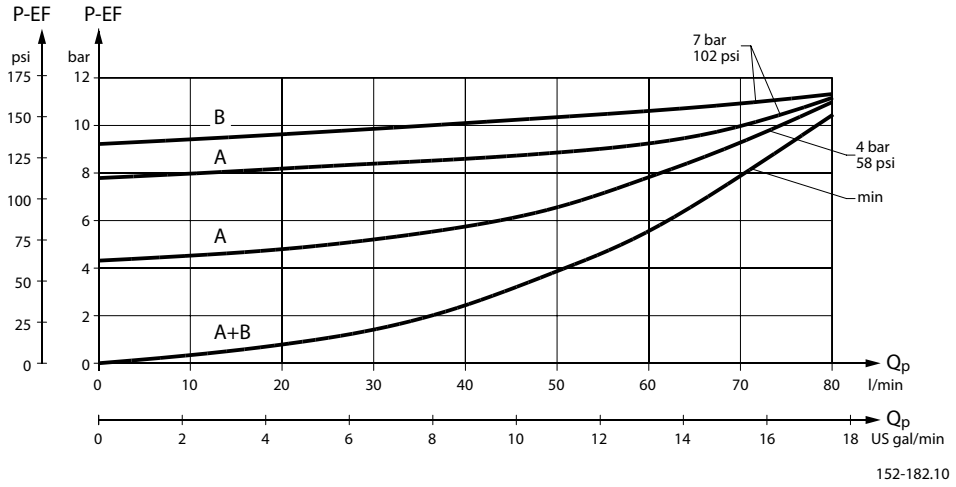
Technical data

OLSP 80



A OLSP 80 dynamic for OSPB, OSPC, OSPD, OSPL LS dynamic

B OLSP 80 high dynamic for OSPC/OSPD LS high dynamic, OSPF/OSPDF LS, OSPU LS

OLS 160 and OLS 320, pilot pressure relief valve (P - T, Qp) characteristics

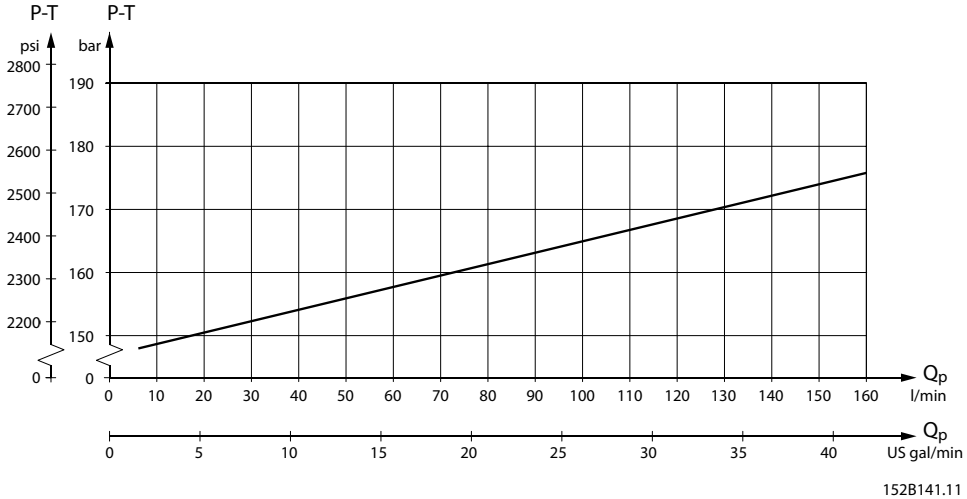
OLS 160 and OLS 320 with pilot pressure relief valves are used in connection with Danfoss steering units without pilot pressure relief valve, normally steering unit type OSPL. The pilot pressure relief valve protects the steering unit against excessive pressure. The pilot pressure relief valve in OLS 160/320 operates with the priority valve spool in the OLS 160/320 to limit the maximum steering pressure P-T measured across the steering unit ports.

OLS 160: The pilot pressure relief valve is set when an oil flow of 80 l/min [21 US gal/min] is supplied to OLS 160.

OLS 320: The pilot pressure relief valve is set when an oil flow of 40 l/min [11 US gal/min] is supplied to OLS 320.

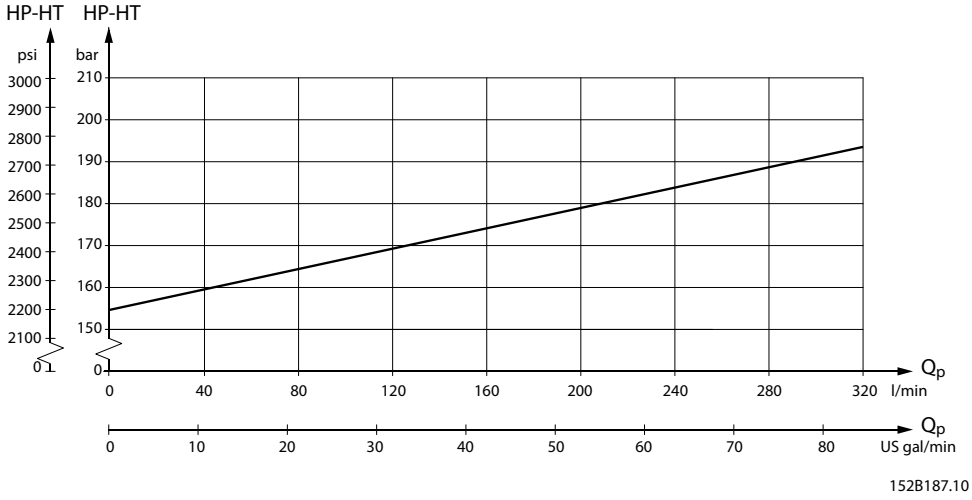
OLS 160 and OLS 320: Setting tolerance: rated value +10 bar [145 psi]

OLS 160



Technical data

OLS 320



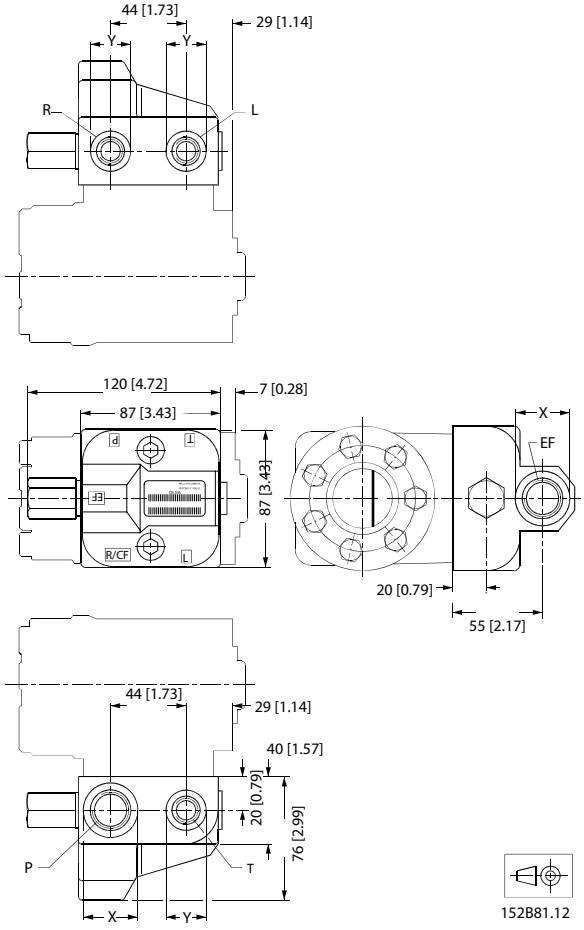
Qp = Pump flow

Weights

Type	Weight kg [lb]
OLSA 40/80	2.1 [4.63]
OLSi 80	1.15 [2.53]
OLS 120	2.1 [4.63]
OLS 160	4.4 [9.7]
OLS 320	5.9 [13.0]
OLSP 80	1.0 [2.2]

Dimensions

OLSA 40, OLSA 80 dimensions



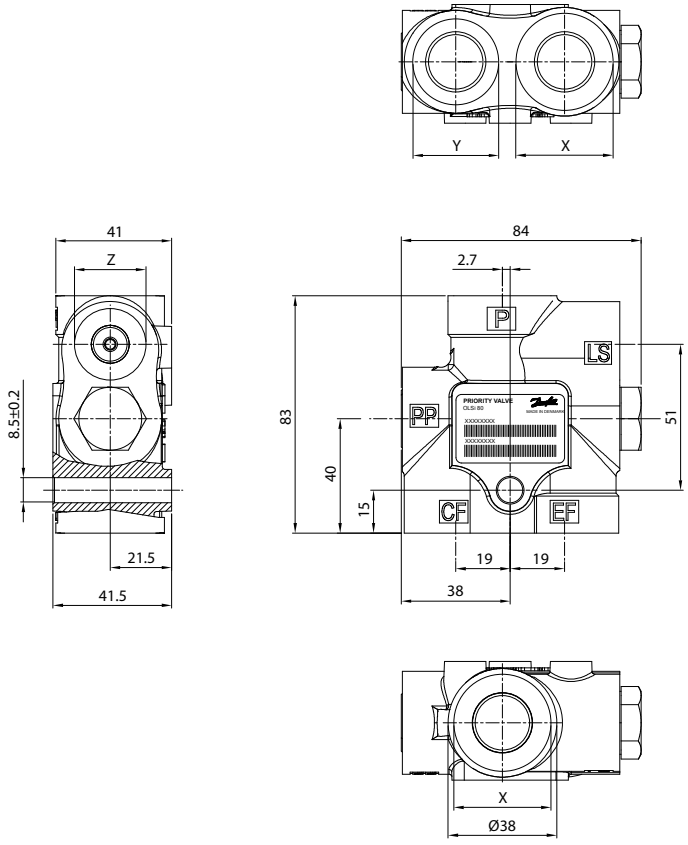
Dimensions

Dimensions and port depth

Dimension/port	Metric units	Imperial units
P, EF	G 1/2 w. spot face 14 mm [0.55 in] deep x = 34 mm [1.34 in], max. 1,5 mm [0.06 in] deep Or M18 x 1.5 ISO 6149 14.5 mm [0.57 in] deep x = 29 mm [1.14 in], max. 1.5 mm [0.06 in] deep Or M22 x 1.5 ISO 6149, 15.5 mm [0.61 in] deep x = 34 mm [1.34 in], max. 1.5 mm [0.06 in] deep	7/8-14 UNF O-ring boss 16.7 mm [0.66 in] deep x = 34 mm [1.34 in], max. 1.5 mm [0.06 in] deep
T, L, R	G 3/8 w. spot face 12 mm [0.47 in] deep y = 34 mm [1.34 in], max. 1.5 mm [0.06 in] deep Or M18 x 1.5 ISO 6149, 15 mm [0.59 in] deep y = 29 mm [1.14 in], max. 1.5 mm [0.06 in] deep	9/16 - 18 UNF O-ring boss 12.7 mm [0.50 in] deep y = 25 mm [0.98 in], max. 1.5 mm [0.06 in] deep

Dimensions

OLSi 80 dimensions

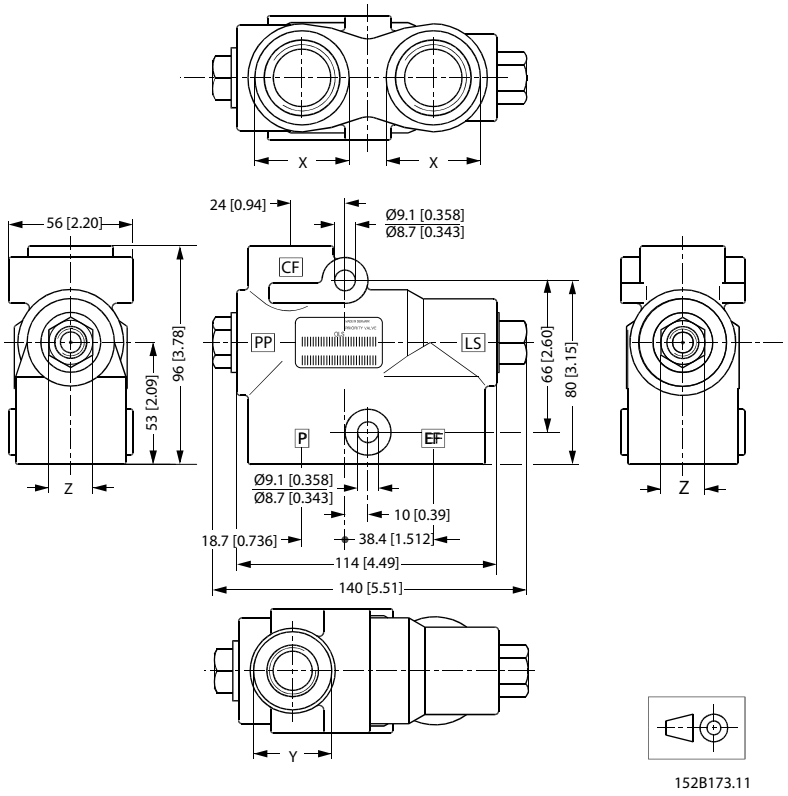


Dimensions and port depths

Dimension/port	Metric units	Imperial units
P, EF	G 1/2 w. spot face 15 mm [0.59 in] deep Or M22 x 1.5 ISO 6149-1 15 mm [0.59 in] deep, x = min. 34 mm [1.34 in], max. 1.55 mm [0.06 in] deep	P, EF: 7/8 - 14 UNF O-ring boss 15 mm [0.59 in] deep x = min. 34 mm [1.34 in], max. 1.55 mm [0.06 in] deep
CF	G 1/2 w. spot face 14 mm [0.55 in]deep Or M18 x 1,5 ISO 6149-1 12 mm [0.47 in] deep, y = min. 30 mm [1.18 in], max. 1.3 mm [0.54 in] deep	3/4-16 UNF O-ring boss 14.3 mm [0.56 in] deep y = min. 30 mm [1.18 in], max. 1.3 mm [0.05 in] deep
LS	G 1/4 w. spot face 12.5 mm [0.49 in] deep Or M12 x 1,5 ISO 6149-1 12,5 mm [0.49 in] deep, z = min. 25 mm [0.98 in] max. 0.7 mm [0.03 in] deep	LS: 7/16-20 UNF O-ring boss 12.5 mm [0.49 in] deep z = min. 25 mm [0.98 in], max. 0.7 mm [0.03 in] deep

Dimensions

OLS 120 dimensions

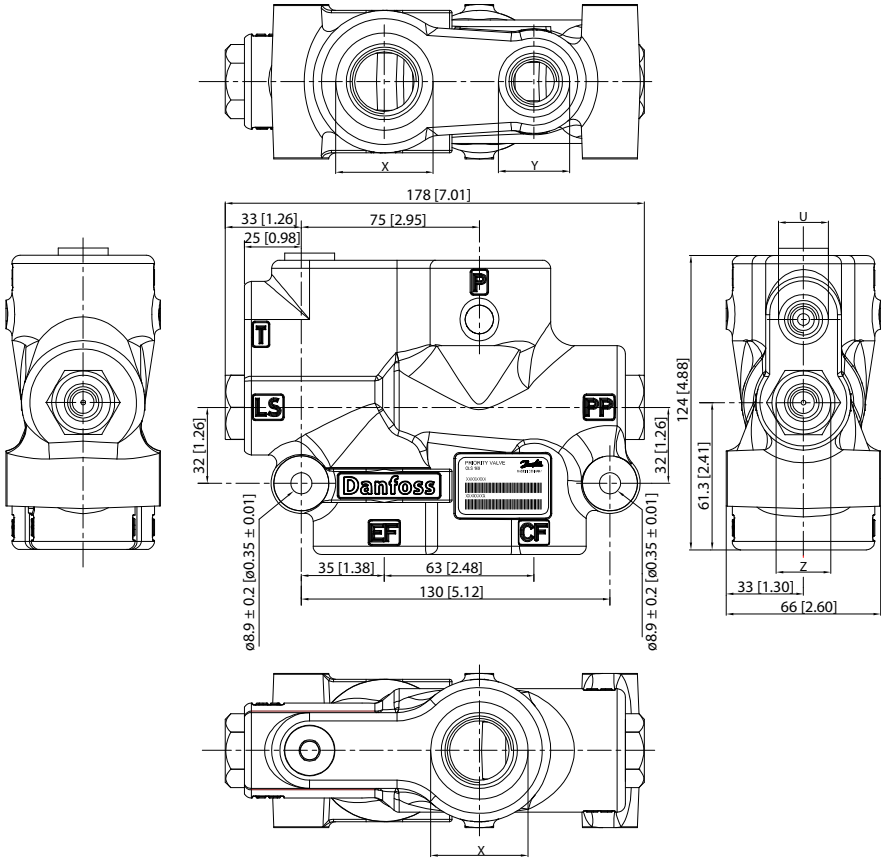


Dimensions and port depth

Dimension/port	Metric units	Imperial units
P, EF	G 3/4 w. spot face x = 42 mm [1.65 in], max. 2.5 mm [0.10 in] deep Or M27 x 2 ISO 6149 x = 40 mm [1.57 in], max. 2.5 mm [0.10 in] deep	1 1/16 - 12 UN O-ring boss x = 41mm [1.61 in], max. 1.5 mm [0.06 in] deep
CF	G 1/2 w. spot face y = 34 mm [1.34 in], max. 2.5 mm [0.10 in] deep Or M18 x 1.5 ISO 6149 y = 29 mm [1.14 in], max. 2.5 mm [0.10 in] deep	3/4 - 16 UNF O-ring boss y = 30 mm [1.18 in], max. 1.5 mm [0.06 in] deep
LS, PP	G 1/4 w. spot face 12 mm [0.47 in] deep z = 19 mm [0.75 in] 0 mm deep Or M12 x 1,5 ISO 6149 11,5 mm [0.45 in] deep, z = 19 mm [0.75 in] 0 mm deep	7/16 - 20 UNF O-ring boss 11.5 mm [0.45 in] deep z = 19 mm [0.75 in] 0 mm deep

Dimensions

OLS 160 dimensions

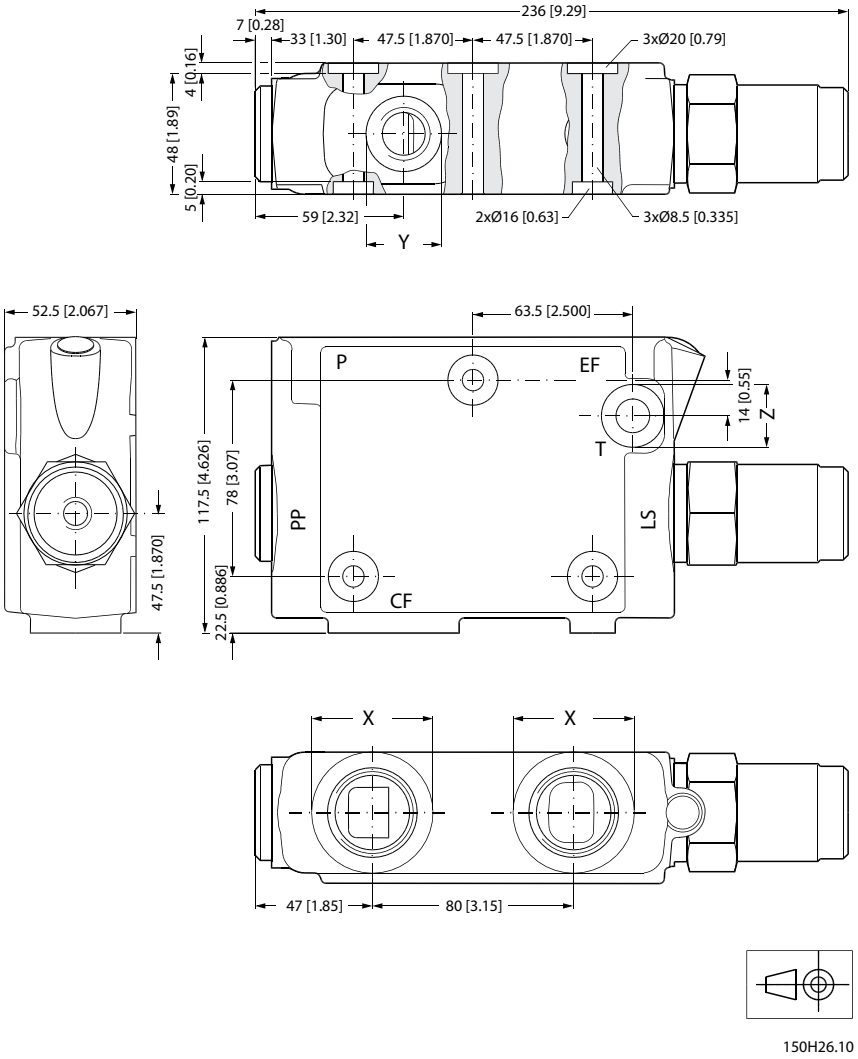


Dimensions and port depth

Dimension/port	Metric units	Imperial units
P, EF	G 3/4 w. spot face x = 42 mm [1.65 in], max. 2.5 mm [0.10 in] deep Or G 1 w. spot face x = 47 mm [1.85 in], max 2.5 mm [0.10 in] deep	1 1/16-12 UNF O-ring boss x = 41 mm [1.61 in], max. 2.5 mm [0.10 in] deep Or 1 5/16 - 12 UNF O-ring boss x = 49 mm [1.93 in], max. 2.5 mm [0.10 in] deep
CF	G 1/2 w. spot face y = 34 mm [1.34 in], max. 2.5 mm [0.10 in] deep Or G 3/4 w. spot face y = 38 mm [1.50 in], max. 2.5 mm [0.10 in] deep	3/4-16 UNF O-ring boss y = 32 mm [1.26 in], max. 2.5 mm [0.10 in] deep 7/8 - 14 UNF O-ring boss y = 30 mm [1.18 in], max. 2.5 mm [0.10 in] deep
LS, PP, T	G 1/4 w. spot face 12 mm [0.47 in] deep z = 22.8 mm [0.89 in], max. 1 mm [0.04 in] deep u = 25 mm [0.98 in] max. 1.5 mm [0.06 in] deep	7/16 - 20 UNF O-ring boss 11.5 mm [0.45 in] deep z = 22,8 mm [0.89 in], max. 1.5 mm [0.06 in] deep u = 21 mm [0.83 in], max. 1.6 mm [0.06 in] deep

Dimensions

OLS 320 dimensions

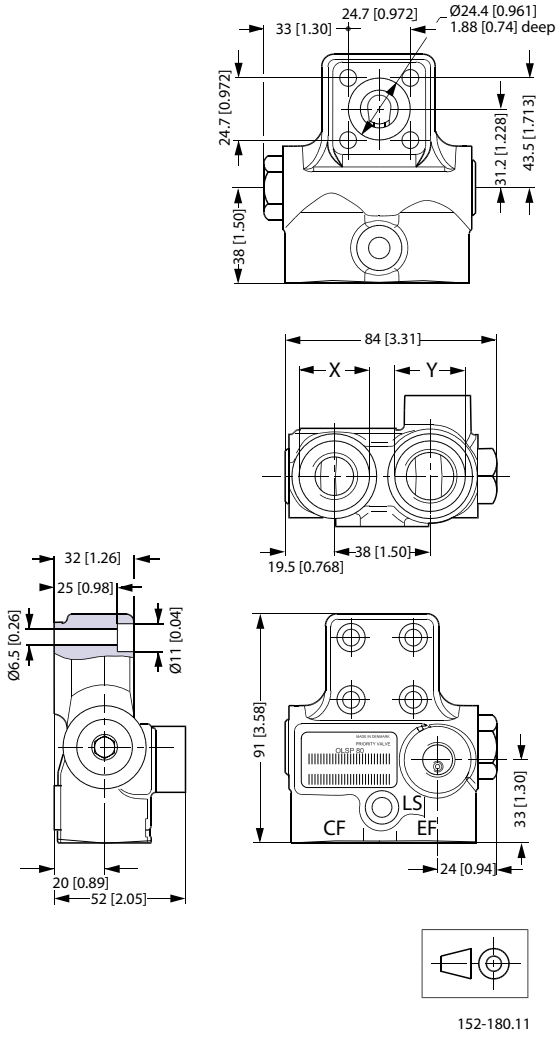


Dimensions and port depth

Dimensions/port	Metric units	Imperial units
P, EF	G 1 w. spot face x = ø47 mm [1.85 in] max 1 mm [0.04 in] deep	1 5/16-12 UN O-ring boss x = ø49 mm [1.93 in] max 0.2 mm [0.01 in] deep
CF	G 1/2 w. spot face y = ø34 mm [1.34 in] max 2.5 mm [0.10 in] deep	1 1/16-12 UN O-ring boss y = ø41 mm [1.61 in] max 0.2 mm [0.01 in] deep Or 3/4-16UNF O-ring boss y = ø30 mm [1.18 in] max 0.2 mm [0.01 in] deep
LS, PP	G 1/4 w. spot face	7/16-20 UNF O-ring boss
T	G 1/4 w. spot face z = ø25 mm [0.98 in] max 1.5 mm [0.06 in] deep	7/16-20 UNF O-ring boss

Dimensions

OLSP 80 dimensions



Dimensions and port depth

Dimension/port	Metric units	Imperial units
CF	G 3/8 w. spot face 15 mm [0.59 in] deep x = ø28, max. 1.5 mm [0.06 in] deep or M18 • 1.5 ISO 6149 15 mm [0.59 in] deep y = ø29, max. 1.5 mm [0.06 in]	3/4-16 UNF O-ring boss 15 mm [0.59 in] deep x = ø29 [1.14 in] max. 1.5 mm [0.06 in] deep
EF	G 1/2 w. spot face 15 mm [0.59 in] deep y = ø34, max. 1.5 mm [0.06 in] or M22 • 1.5 ISO 6149 15 mm [0.59 in] deep x = ø34, max. 1.5 mm [0.06 in]	7/8 - 14 UNF O-ring boss 16.7 mm [0.66 in] deep y = ø34 [1.34 in] max. 1.5 mm [0.06 in] deep
LS	G 1/4 w. spot face 12.5 mm [0.49 in] deep or M12 • 1.5 ISO 6149 12.5 mm [0.49 in] deep	7/16 - 20 UNF O-ring boss 12.5 mm [0.49 in] deep

Code numbers

OLSA static priority valves for OSPC/OSPD load sensing static steering units

OLSA 40 static and OLSA 80 static

Priority valve	Metric connections T,R,L: G 3/8 P, EF: G 1/2	Imperial connections T, R, L: 9/16 - 18 UNF P, EF: 7/8 - 14 UNF	Control spring pressure bar [psi]
OLSA 40	152B0001	-	4 [58]
OLSA 40	152B0002	152B0122	7 [101.5]
OLSA 40	152B0003	152B0124	10 [145]
OLSA 80	152B0016	152B0019	4 [58]
OLSA 80	152B0017	152B0020	7 [101.5]
OLSA80	152B0015	152B0125	10 [145]

OLS static priority valves for OSPB/OSPC/OSPD/OSPL LS static steering units

OLSi 80 static code numbers, black painted

Priority valve	Metric connections LS: G 1/4 P, EF, CF: G 1/2	Imperial connections LS: 7/16 - 20 UNF CF: 3/4 -16 UNF P, EF: 7/8 - 14 UNF	Control spring pressure bar [psi]
OLSi 80	11293538	11293532	4 [58]
OLSi 80	11293539	11293533	7 [101.5]
OLSi 80	11293540	11293534	10 [145]

OLS 120 static code numbers

Priority valve	Metric connections LS: G 1/4 CF: G 1/2 P, EF: G 3/4	Imperial connections LS: 7/16 -20 UNF CF: 3/4 - 16 UNF P, EF: 1 1/16 - 12 UNF	Control spring pressure bar [psi]
OLS 120	152B2232	152B2238	7 [101.5]
OLS 120	152B2233	152B2239	10 [145]

OLS 160 static code numbers

Priority valve	Metric connections LS, PP, T: G 1/4 CF: G 1/2 P, EF: G 3/4	Imperial connections LS, PP, T: 7/16 -20 UNF CF: 3/4 - 16 UNF P, EF: 1 1/16 - 12 UNF	Control spring pressure bar [psi]	Pilot pressure relief valve bar [psi]
OLS 160	152B1005	152B1085	7 [101.5]	170 [2465]
OLS 160	152B1006	152B1086	10 [145]	170 [2465]

OLSP 80 static code numbers

Priority valve	Metric connections LS: G 1/4 CF: G 3/8 EF: G 1/2	Control spring pressure bar [psi]
OLSP 80 static	152B5002	4 [58]

Code numbers

OLSA dynamic priority valves for OSPC/OSPD LS dynamic steering units

OLSA 40 dynamic and OLSA 80 dynamic code numbers

Priority valve	Metric connections T, R, L: G 3/8 P, EF: G 1/2	Imperial connections T, R, L: 9/16 - 18 UNF P, EF: 7/8 - 14 UNF	Control spring pressure bar [psi]
OLSA 40	152B8001	-	4 [58]
OLSA 40	152B8041	152B8042	7 [101.5]
OLSA 40	152B8046	152B8043	10 [145]
OLSA 80	152B8047	-	4 [58]
OLSA 80	152B8048	152B8044	7 [101.5]
OLSA 80	152B8049	152B8045	10 [145]

OLS dynamic priority valves for OSPB/OSPC/OSPD/OSPL LS dynamic steering units

OLSi 80 dynamic code numbers, black painted

Priority valve	Metric connections LS: G 1/4 P, EF, CF" G 1/2	Imperial connections LS: 7/16 - 20 UNF CF: 3/4 - 16 UNF P, EF: 7/8 - 14 UNF	Control spring pressure bar [psi]
OLSi 80	11293549	-	4 [58]
OLSi 80	11293545	11293656	7 [101.5]
OLSi 80	11293546	11293537	10 [145]

OLS 120 dynamic code numbers

Priority valve	Metric connections LS: G 1/4 CF: G 1/2 P, EF: G 3/4	Imperial connections LS: 7/16 -20 UNF CF: ¾ - 16 UNF P, EF: 1 1/16 - 12 UNF	Control spring pressure bar [psi]
OLS 120	152B8132	152B8143	7 [101.5]
OLS 120	152B8133	152B8144	10 [145]

OLS 160 dynamic code numbers

Priority valve	Metric connections LS, T: G 1/4 CF: G 1/2 P, EF: G 3/4	Imperial connections LS, T: 1/16 -20 UNF CF: 3/4 - 16 UNF P, EF: 1 1/16 - 12 UNF	Control spring pressure bar [psi]	Pilot pressure relief valve bar [psi]
OLS 160	152B8159	152B8154	7 [101.5]	170 [2465]
OLS 160	152B8160	152B8155	10 [145]	170 [2465]
OLS 160	152B8105	-	12 [174]	170 [2465]
OLS 160	152B8161	152B8156	7 [101.5]	210 [3045]
OLS 160	152B8162	152B8157	10 [145]	210 [3045]

OLSP 80 dynamic code numbers

Priority valve	Metric connections LS: G 1/4 CF: G 3/8 EF: G 1/2	Control spring pressure bar [psi]
OLSP 80	152B5200	7 [101.5]

Code numbers

OLS high dynamic for OSPC/OSPD high dynamic, OSPF/OSPDF/OSPU LS dynamic steering units

OLSi 80 dynamic code numbers, black painted

Priority valve	Metric connections LS: G 1/4 P, EF, CF: G 1/2	Control spring pressure bar [psi]
OLSi 80	11293547	7 [101.5]
OLSi 80	11293541	10 [145]

OLS 320 dynamic in-line/stand alone with pilot pressure relief valve, black painted

Priority valve	Metric connections LS, T: G¼ CF: G ½ P, EF: G 1	Control spring pressure bar [psi]	Pilot pressure relief valve bar [psi]
OLS 320	11006593	7 [101.5]	170 [2465]

OLS 320 dynamic in-line/stand alone without pilot pressure relief valve, black painted

Priority valve	Imperial connections LS: 7/16 - 20 UNF CF: 11/16 - 12 UN P, EF: 15/16 - 12 UN	Control spring pressure bar [psi]
OLS 320	11007475	10 [145]

OLS 320 for EHPS: look in *EHPS Steering Valve with PVE Electrical Actuation Module and OSPCX CN Steering Wheel Technical Information*, **BC152886484652**

OLSP 80 dynamic code numbers

Priority valve	Metric connections LS: G¼ CF: G 3/8 EF: G ½	Control spring pressure bar [psi]
OLSP 80	152B5201	7 [101.5]

Variants and ordering specifications

Priority valves master model code

If the needed priority valve is not included in the list of code numbers in previous section, please determine Master Model Code (MMC). Fill in the codes to specify your OLS priority valve.

Only use MMC values, which are represented for the given type of OLS.

The relevant MMC variants are listed on the next few pages.

All ports on a given OLS must be based on one and same port standard.

The example below details the model code for OLSi 80, code number 11293545.

MMC position	1	2	3	4	5	6	7
	Type	Size	P Port Size	CF Port Size	EF Port Size	L&R Port Size	LS Port Size
Example	OLSi	080	G	G	G	N	A
Your OLS							

MMC position	8	9	10	11	12	13	14
	PP Port Size	T Port Size	Port Interface	PRV, bar	Spring, bar	PP Internal Size Ømm	PP External Size Ømm
Example	N	N	E	NNN	07	C	N
Your OLS							

MMC position	15	16	17	18	19	20
	LS Size Ømm	Dynamic Size Ømm	Spool, comments	Special	Label	Paint
Example	C	B	S52	NN	DNFS	NN
Your OLS						

Variants codes for OLS MMC

Priority valve type and size

Priority valve type

MMC position 1	Description
OLSA	Priority valve for flanging on OSPC and OSPD LS steering units
OLSi	Priority valve for in-line use (OLSi 80)
OLS#	Priority valve for in-line use (OLS 120/OLS 160/OLS 320)
OLSP	Priority valve for flanging on gear pump with P-outlet square type 35

Size, max P-flow, l/min

MMC position 2	Size, max P-flow, L/min
040	40 (OLSA 40)
080	80 (OLSA 80/OLSi 80/OLSP 80)
120	120 (OLS 120)
160	160 (OLS 160)
320	320 (OLS 320)

Variants and ordering specifications

P, CF, EF, L & R ports

P port size

MMC position 3	Description
M	M18x1.5 (DIN 3852-1) (OLSA 40/OLSA 80)
B	M22x1.5 (ISO 6149-1) (OLSA 40/OLSA 80/OLSi 80)
B	M22x1.5 (DIN 3852-1) (OLSi80)
C	M27x2 (ISO 6149-1 or DIN 3852-1) (OLS 120/OLS 160 w. PRV)
D	M33x2 (ISO 6149-1) (OLS 320 for EHPS)
E	7/8"-14 UNF (ISO 11926-1) (OLSA 40/OLSA 80/OLSi 80)
Z	1 1/16"-12 UN (ISO 11926-1) (OLS 120/OLS 160)
H	1 5/16"-12 UN (ISO 11926-1) (OLS 160/OLS 320)
G	G1/2" (DIN 3852-2) (OLSA 40/OLSA 80/OLSi 80)
L	G3/4" (DIN 3852-2) (OLS 120/OLS 160)
N	G1" (DIN 3852-2) (OLS 160/OLS 320)
J	1" SAE flange (OLS 320 for EHPS)
R	For gear pump with P-outlet square type 35 (OLSP 80)

CF port size

MMC position 4	Description
M	M18x1.5 (ISO 6149-1) (OLSi 80/OLS 120)
M	M18x1.5 (DIN 3852-1) (OLSi 80/OLS 120/OLSP 80)
B	M22x1.5 (ISO 6149-1 or DIN 3852-1) (OLS 160 w. PRV)
S	9/16"-18 UNF (ISO 11926-1) (OLSi 80)
U	3/4"-16 UNF (ISO 11926-1) (OLSi 80/OLS 120/OLS 160/OLSP 80)
E	7/8"-14 UNF (ISO 11926-1) (OLS 160)
Z	1 1/16"-12 UN (ISO 11926-1) (OLS 320)
V	G3/8" (DIN 3852-2) (OLSP 80)
G	G1/2" (DIN 3852-2) (OLSi 80/OLS 120/OLS 160/OLS 320)
L	G3/4" (DIN 3852-2) (OLS 160 w. PRV)
T	Flange (OLSA for OSP and OLS 320 for EHPS)

EF port size

MMC position 5	Description
M	M18x1.5 (DIN 3852-1) (OLSA 40/OLSA 80/OLSP 80)
B	M22x1.5 (ISO 6149-1) (OLSA 40/OLSA 80/OLSi 80)
B	M22x1.5 (DIN 3852-1) (OLSi 80)
C	M27x2 (ISO 6149-1 or DIN 3852-1) (OLS 120/OLS 160 w. PRV)
D	M33x2 (ISO 6149-1) (OLS 320 for EHPS)
E	7/8"-14 UNF (ISO 11926-1) (OLSA 40/OLSA 80/OLSi 80/OLSP 80)
Z	1 1/16"-12 UN (ISO 11926-1) (OLS 120/OLS 160)
H	1 5/16"-12 UN (ISO 11926-1) (OLS 160/OLS 320)
G	G1/2" (DIN 3852-2) (OLSA 40/OLSA 80/OLSi 80/OLSP 80)
L	G3/4" (DIN 3852-2) (OLS 120/OLS 160)
N	G1" (DIN 3852-2) (OLS 160/OLS 320)
J	1" SAE flange (OLS 320 for EHPS)

Variants and ordering specifications

L and R ports

MMC position 6	Description
N	No L/R ports (OLS 40/OLS 80/OLS 120/OLS 160/OLS 320/OLSP 80)
M	M18x1.5 (DIN 3852-1) (OLSA 40/OLSA 80 w. P-port M18x1.5)
M	M18x1.5 (ISO 6149-1) (OLSA 40/OLSA 80 w. P-port M22x1.5)
S	9/16"-18 UNF (ISO 11926-1) (OLSA 40/OLSA 80)
V	G3/8" (DIN 3852-2) (OLSA 40/OLSA 80)
G	G1/2" (DIN 3852-2) (OLSA 40/OLSA 80)

LS, PP, T ports

LS port size

MMC position 7	Description
E	M12x1.5 (ISO 6149-1) (OLSi 80/OLS 120/OLS 160 w. PRV/OLS 320)
E	M12x1.5 (DIN 3852-1) (OLSi 80/OLS 120/OLS 160 w. PRV/OLSP 80)
B	7/16″-20 UNF (ISO 11926-1) (OLSi 80/OLS 120/OLS 160/OLS 320/OLSP 80)
A	G1/4" (DIN 3852-2) (OLSi 80/OLS 120/OLS 160/OLS 320/OLSP 80)
N	Blind plug (OLSA 40/OLSA 80)

PP port size

MMC position 8	Description
N	No external PP port (All versions)
E	M12x1.5 (DIN 3852-1) (OLSi 80)
B	7/16″-20 UNF (ISO 11926-1) (OLS 160)
A	G1/4" (DIN 3852-2) (OLSi 80/OLS 160)

T port size

MMC position 9	Description
E	M12x1.5 (ISO 6149-1) (OLS 160 and OLS 320 w. PRV)
E	M12x1.5 (DIN 3852-1) (OLS 160 w. PRV)
B	7/16″-20 UNF (ISO 11926-1) (OLS 160 and OLS 320 w. PRV)
A	G1/4" (DIN 3852-2) (OLS 160 and OLS 320 w. PRV)
V	G3/8" (DIN 3852-2) (OLSA 40/OLSA 80)
G	G1/2" (DIN 3852-2) (OLSA 40/OLSA 80)

Port interface, PRV setting, spring setting

Port interface

MMC position 10	Description
N	O-ring boss - Spot-face (ISO 6149-1 - Metric)
C	O-ring boss (ISO 11926-1 - UNF)
D	Spot-face (DIN 3852-1 - Metric)
E	Spot-face (DIN 3852-2 - G)

Variants and ordering specifications

Pilot relief valve (PRV) setting

MMC position 11	Description
NNN	No PRV (All versions)
175	Value for setting (175 bar), P-T. (OLS 160/OLS 320) Range OLS 160: 130 - 210 bar. Range OLS 320: 130 - 250 bar. Interval: 5 bar

Spring, bar

MMC position 12	Description
04	4 bar (OLSA 40/OLSA 80/OLSi 80/OLS 120/OLS 160/OLSP 80)
05	5.5 bar (OLSA 40/OLSA 80)
07	7 bar (All versions)
10	10 bar (All versions)
12	12 bar (OLS 160)
16	16 bar (OLS 320)

PP (internal/external), LS, dynamic orifice

PP internal size, Ømm

MMC position 13	Description
N	No Internal PP (OLSi 80/OLS 160). External PP will be needed
A	Ø0.6 mm (OLSA 40/OLSA 80/OLSi 80/OLS 120/OLS 320/OLSP 80)
B	Ø0.7 mm (OLSA 40/OLSA 80/OLSi 80/OLS 320)
C	Ø0.8 mm (All versions)
D	Ø0.9 mm (OLSA 40/OLSA 80/OLSi 80/OLS 120/OLS 320/OLSP 80)
E	Ø1.0 mm (OLSA 40/OLSA 80/OLSi 80/OLS 120/OLS 320/OLSP 80)
F	Ø1.1 mm (OLSA 40/OLSA 80/OLSi 80/OLS 320)
G	Ø1.2 mm (All versions)
H	Ø1.5 mm (OLS 120)
J	Thread bore, without PP orifices assembled to the priority valve spool (OLSA 40/OLSA 80/OLSi 80/OLS 120/OLS 320/OLSP 80)

PP external size, Ømm

MMC position 14	Description
N	No External PP (All versions)
C	Ø0.8 mm (OLSi 80 w. DIN 3852-1 – Metric and DIN 3852-2 - G)
D	Ø0.9 mm (OLS 160 w. DIN 3852-2 – G and ISO 11926-1 - UNF)
E	Ø1.0 mm (OLSi 80 w. DIN 3852-1 – Metric)
G	Ø1.2 mm (OLSi 80 w. DIN 3852-1 – Metric)

LS size, Ømm

MMC position 15	Description
A	Ø0.6 mm (OLSA 40/OLSA 80/ OLS 120 w. DIN 3852-2 – G/ OLS 320 w. ISO 11926-1 - UNF or w. DIN 3852-2 – G /OLSP 80)
B	Ø0.7 mm (OLSi 80)

Variants and ordering specifications

LS size, Ømm (continued)

MMC position 15	Description
C	Ø0.8 mm (OLSA 40/OLSA 80/OLSi 80/OLS 120/ OLS 320 w. ISO 11926-1 - UNF or w. DIN 3852-2 – G /OLSP 80)
D	Ø0.9 mm (OLSA 40/OLSA 80/OLSi 80/ OLS 160 w. DIN 3852-1 – Metric, DIN 3852-2 – G or w. ISO 11926-1 - UNF / OLS 320 w. ISO 11926-1 - UNF or w. DIN 3852-2 – G /OLSP 80)
E	Ø1.0 mm (OLSA 40/OLSA 80/ OLSi 80/ OLS 120 w. DIN 3852-2 – G or w. ISO 11926-1 – UNF/ OLS 160 w. ISO 6149-1 – Metric, DIN 3852-2 – G or w. ISO 11926-1 – UNF/ OLS 320/OLSP 80)
F	Ø1.1 mm (OLSi 80)
G	Ø1.2 mm (OLSA 40/OLSA 80/ OLSi 80/ OLS 120 w. ISO 6149-1 – Metric or DIN 3852-2 – G/ OLS 160 w. DIN 3852-2 – G/ OLS 320 w. ISO 11926-1 - UNF or w. DIN 3852-2 – G /OLSP 80)
I	Ø2.0 mm (OLS 160 w. DIN 3852-2 – G)

Dynamic orifice size, Ømm

MMC position 16	Description
N	No dynamic orifice: Static versions
A	Ø0.6 mm (OLSA 40/OLSi 80/OLS 120/OLS 160/OLS 320/OLSP 80)
B	Ø0.7 mm (OLSA 80/OLSi 80/OLS 120/OLS 160/OLSP 80)
C	Ø0.8 mm (OLSA 40/OLSi 80/OLS 120/OLS 160/OLS 320/OLSP 80)
D	Ø0.9 mm (All dynamic versions)
E	Ø1.0 mm (OLSA 80/OLSi 80/OLS 120/OLS 160/OLS 320/OLSP 80)
F	Ø1.1 mm (OLSi 80/OLS 120/OLS 160/OLSP 80)
G	Ø1.2 mm (OLSi 80/OLSP 80/OLS 120/OLS 160)

Spool

Spool

MMC position 17	Description
S01	OLSA 40 Static, M6 for Int. PP
S02	OLSA 40 Static, for Ext. PP
S03	OLSA 40 Dynamic Ø0.6mm, M6 for Int. PP. Standard
S04	OLSA 40 Dynamic Ø0.6mm, M6 for Int. PP. Low noise for low
S05	OLSA 40 Dynamic Ø0.8mm, M6 for Int. PP. Low noise for low
S06	OLSA 40 Dynamic Ø0.8mm, M6 for Int. PP. Low-low noise for
S07	OLSA 40 Dynamic Ø0.9mm, M6 for Int. PP. Standard
S08	OLSA 40 Dynamic Ø0.9mm, M6 for Int. PP. Low noise for low
S11	OLSA 80 Static, M6 for Int. PP
S12	OLSA 80 Static, for Ext. PP
S13	OLSA 80 Dynamic Ø0.7mm, M6 for Int. PP. Standard
S14	OLSA 80 Dynamic Ø0.7mm, M6 for Int. PP. Reduced pressure drop P-EF
S15	OLSA 80 Dynamic Ø0.9mm, M6 for Int. PP. Standard

Variants and ordering specifications

Spool (continued)

MMC position 17	Description
S16	OLSA 80 Dynamic Ø0.9mm, M6 for Int. PP. Low noise for low EF load
S17	OLSA 80 Dynamic Ø0.9mm, M6 for Int. PP. Low-low noise for low EF load
S18	OLSA 80 Dynamic Ø1.0mm, M6 for Int. PP. Standard
S21	OLS 120 Static, Int. PP Ø0.8mm
S22	OLS 120 M6 for Dynamic, Int. PP Ø0.8mm
S23	OLS 120 M6 for Dynamic, Int. PP Ø0.7mm
S24	OLS 120 M6 for Dynamic, Int. PP Ø1.5mm
S25	OLS 120 M6 for Dynamic, M4 for Int. PP. Low noise
S31	OLS 160 Static, Int. PP Ø0.8mm
S32	OLS 160 Static, for Ext. PP
S33	OLS 160 M6 for Dynamic, Int. PP Ø0.8mm
S34	OLS 160 M6 for Dynamic, Int. PP Ø1.2mm
S41	OLS 320 Static, M6 for Int. PP. For use with EHPS: CF edge inside EHPS
S42	OLS 320 M4 for Dynamic, M6 for Int. PP
S51	OLSP 80 Static, M4 for Int. PP
S52	OLSi 80/OLSP 80 M6 for Dynamic, M4 for Int. PP
S53	OLSi 80/OLSP 80 M6 for Dynamic, M4 for Int. PP. For low pump flow

Special features, label, paint

Special feature

MMC position 18	Description
NN	Not Applicable
XX	Special feature

Label

MMC position 19	Description
DNFS	Danfoss name tag
XXXX	Special Label

Paint

MMC position 20	Description
NN	No Paint
PB	Black, Powder, RAL 9005, Corrosion class C3

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