Nordhydraulic
HYDAC INTERNATIONAL

Directional control valve RS 270

Solutions that power your visions

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31-02-RS270-03/04.09

Data sheet
Directional control valve / RS 270

RS 270

Make use of the Nordhydraulic expertise

Our skilled and experienced design and application engineers are at your disposal, helping you to specify the valve configuration that meets your application requirements.

Key valve features

RS 270 is a sectional valve designed for system pressures up to 350 bar and a pump flows up to 160 l/min.

It is available with 1 to 10 working sections per valve assembly.

RS 270 is designed with an open centre for fixed displacement pumps.

The valve can be operated manually, by pneumatic, electro-pneumatic or hydraulic remote control.

The valve offers excellent operating characteristics because of the specially designed spools for different applications.

Low and uniform spool forces are the result of careful balancing of the flow forces.

Applications

RS 270 is especially suitable in applications where simultaneous operation of several functions is necessary. Typically applications are truck loaders, back hoe loaders, forest machines and excavators, but also for a number of other machine- and vehicle types.

Further RS 270 properties and possibilities

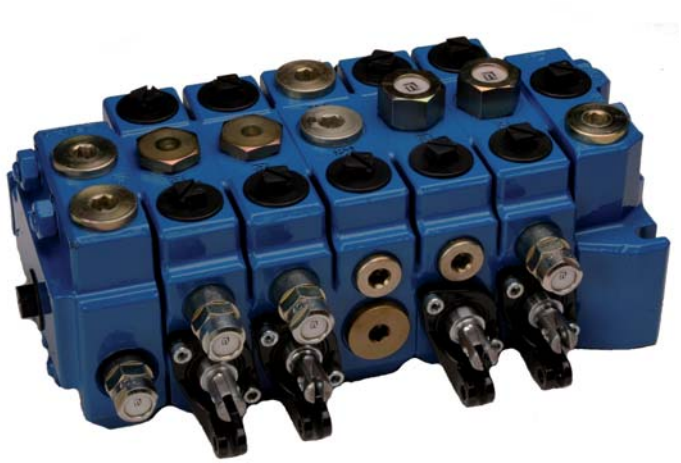
• Many varieties of spools and spool controls make the valve suitable for a wide range of applications.

• Regenerative function.

• Possibility of limiting the flow to the service ports in a separate section.

• With combination of an intermediate section there is the opportunity to realize different system alternatives, such as tandem circuit, independent or interactive two- or multi circuit systems, supplementary main relief valve etc.

• Possibility of high pressure carry-over.



Data sheet

This data sheet presents a selection of standard components and how to specify these in a valve assembly according to your application requirements. For further information on RS 270 and available components, please contact Nordhydraulic.

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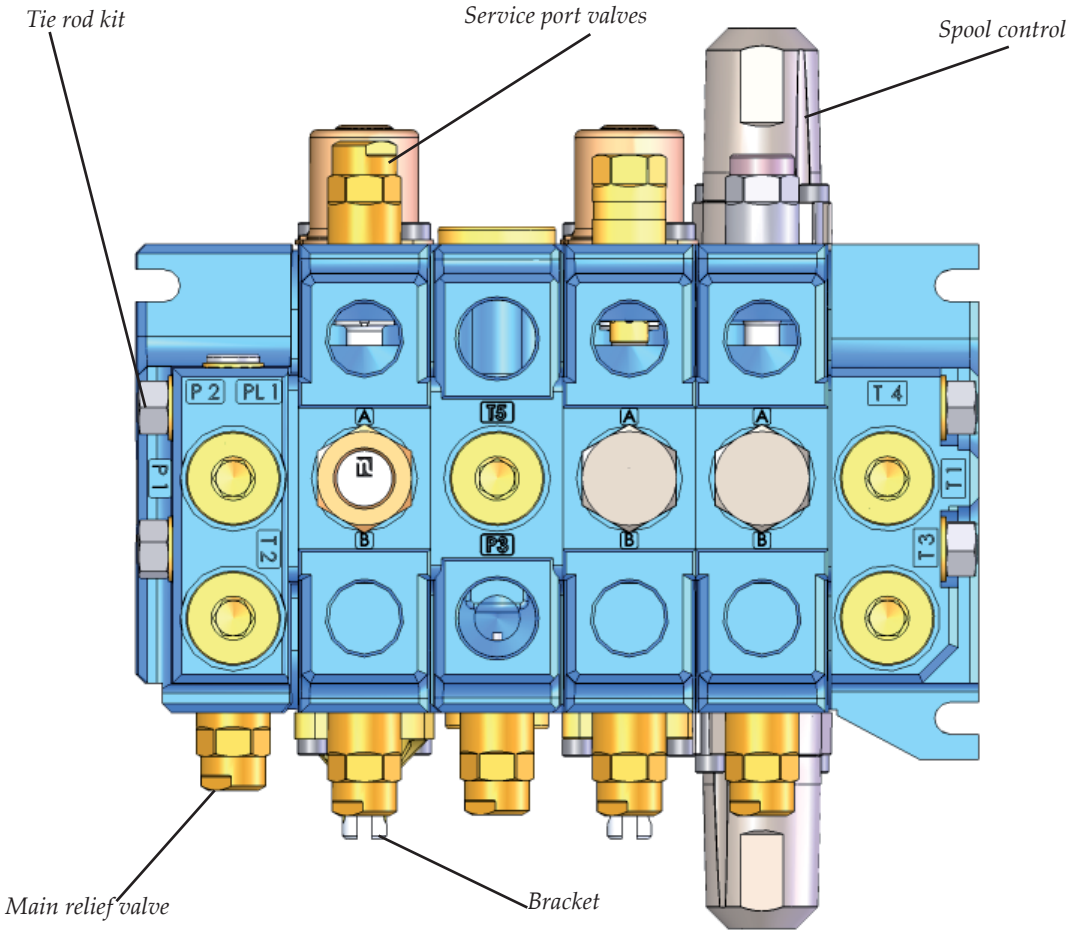


Technical data

Pressures / flow

Max. system pressure* ..... 350 bar (35,0 MPa)
Max continuous return line pressure..... 20 bar (2,0 MPa)
Rated pump flow..... 120 l/min
* depending on application

Further data

Spring force for spool control 9 in neutral position: 110 N (11,0 kp).
Spring force for spool control 9 with fully selected spool: 140 N (14,0 kp).

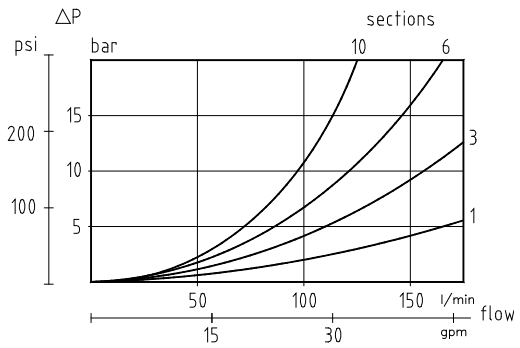
Recommended contamination level at normal duty: equal to or better than 18/14 as per ISO 4406.

Hydraulic fluid viscosity range at continuous operation: 10-400 mm^2/s(cSt). Higher viscosity allowed at start up.

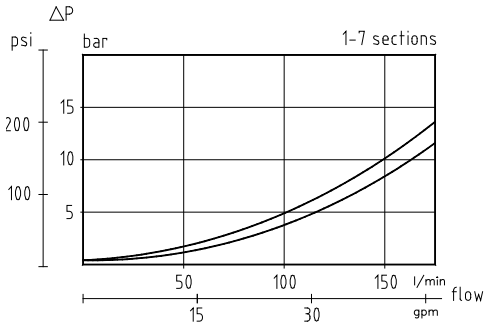
Mineral oil and synthetic oil based on mineral oil are recommended.

Max. hydraulic fluid temperature range for continuous operation: -15°C - + 80°C.

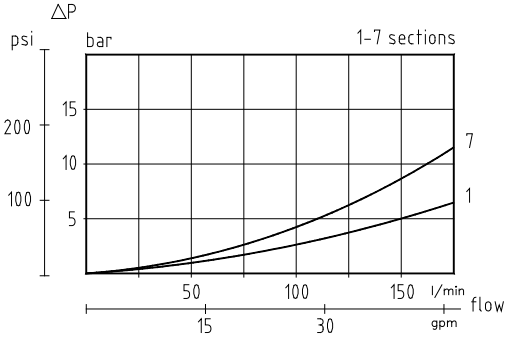
Spool leakage at 100 bar, 32 cSt and 40°C: < 18 cm^3/min.



Pressure drop P-T



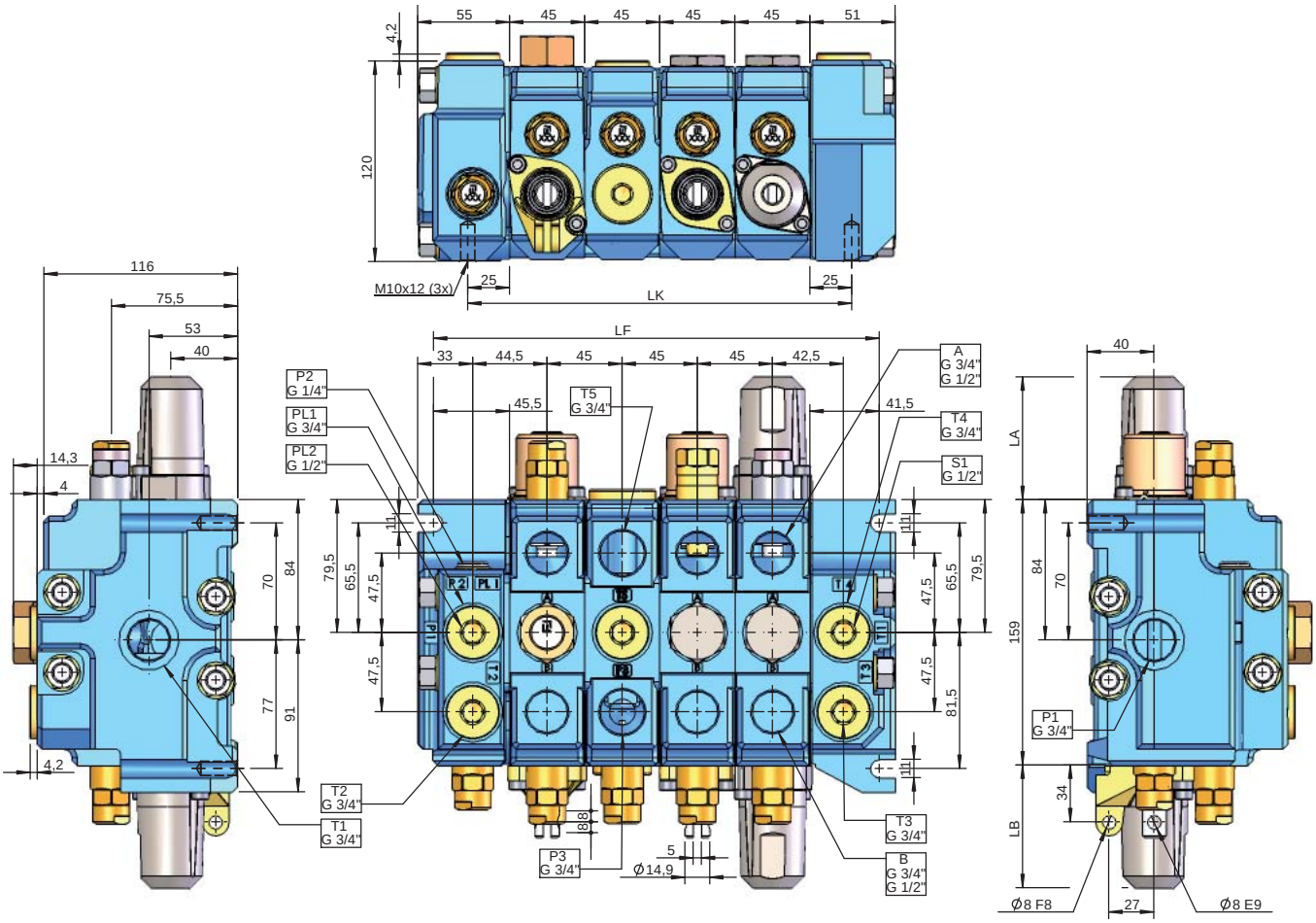
Pressure drop P - A/B



Pressure drop A/B - T

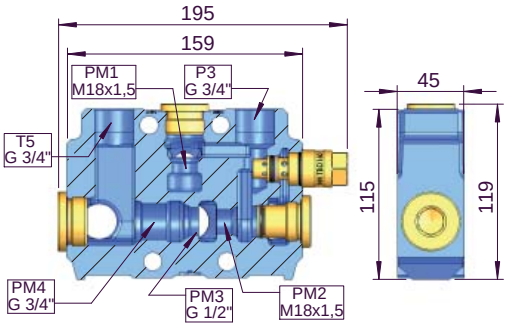
Oil temperature/viscosity for all graphs: + 50°C / 32 cSt

Technical data - Dimensions, weight

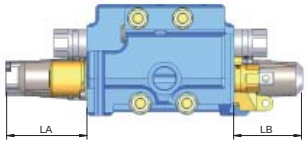


Weights, complete valve:

Inlet section ..... 4,4 kg
Outlet section ..... 4,2 kg
Working section ..... 5,0 kg
Intermediate section ..... 4,4 kg



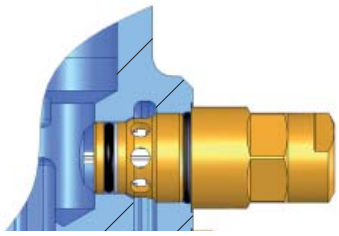
Measurements			
No. of sections	**L mm**	**LF mm**	**LK mm**
1	151	132	95
2	196	177	140
3	241	222	185
4	286	267	230
5	331	312	275
6	376	357	320
7	421	402	365
8	466	447	410
9	511	492	455
10	556	537	500



Type	LA mm	Type	LB mm
9	40,5	M1	42
10	87	M2	15
11	**87**	M3	52
13	**87**	3W	92
14	**87**	4W	102
L81-83	**105**	HPD1B	72
P	101		
EP	101		
HPD1A	72		
HPD405	107,5		

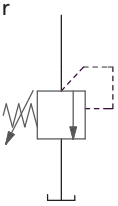
Main relief valves, service port valves

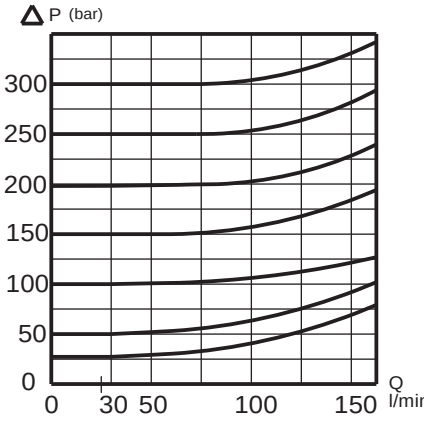
Main relief valve TBS400



TBS400 is a pilot operated relief valve for the inlet and intermediate sections. It is adjustable and sealable.

Setting range: 35 - 350 bar (3,5 - 35,0 MPa).
Setting range step: 5 bar.

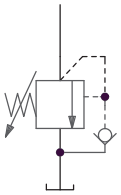




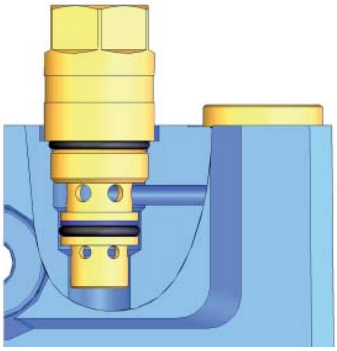
Service port valves

Port relief and anticavitation valve TBS400

See main relief valve and anticavitation valve for functional principle.

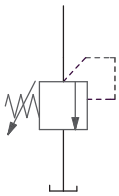


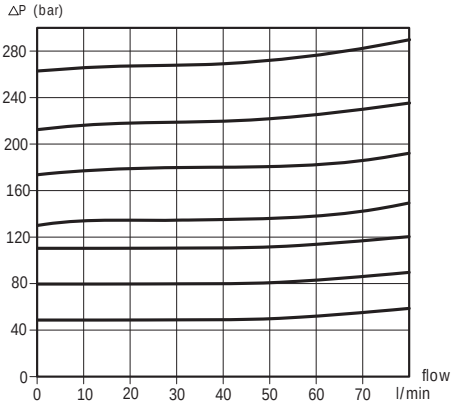
Port relief valve TBD160



TBD160 is a differential area, direct acting relief valve for the secondary circuit. TBD160 is adjustable and sealable.

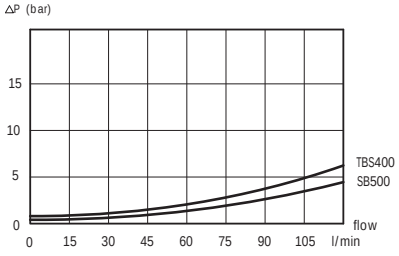
Setting range: 35 - 300 bar (3,5 - 30,0 MPa).
Setting range step: 5 bar.





Anticavitation valve SB500

The anticavitation valve service to ensure that, in the event of a lower pressure in the cylinder port than in the tank, oil can be drawn from the system oil tank to the consumer.

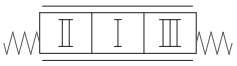


Anticavitation characteristics TBS400 and SB500

Spool controls - A-side

Spool control 9

910 Spring centering.

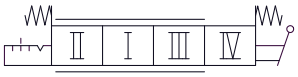


Spool control 10

Detents at positions 1, 2 and 3.

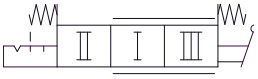
Spool control 11

Spring centering with detent at position 4.



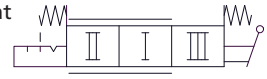
Spool control 13

Spring centering with detent at position 2.



Spool control 14

Spring centering with detent at position 3.



Spool control P

Pneumatic*.

Spool control EP

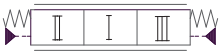
Electro/pneumatic on/off**.

**

Power consumption.....4,8 W
Rated voltage .....24 V
Max voltage variation .....+/- 10%
Duty factor 100%
Connection ..... according to EN175301-803/B
Protection class..... IP65

Spool control HPD1

Hydr. proportional. Pilot pressure 6-16 bar, max pilot pressure 25 bar***.



Spool control HPD405

Hydraulic proportional spool control with float in 4:th position***.

Spool control L81

External hydraulic kick-out from inserted spool***.

Spool control L82

External hydraulic kick-out from extended spool***.

Spool control L83

External hydraulic kick- out from inserted and extended spool***.

* Connection G 1/8" BSP

*** Connection G 1/4" BSP

Spool controls - B-side

Bracket M1

Bracket for 3-position spool.

Bracket M2

Bracket for 3-position spool without ear.

Bracket M3

Bracket for 4-position spool.

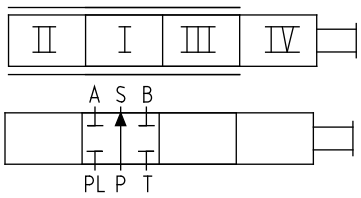
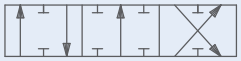
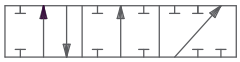
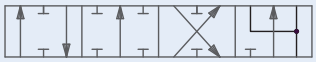
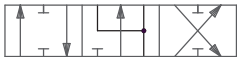
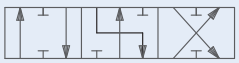
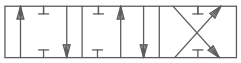
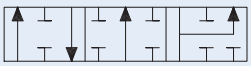
3W

Cap for 3-pos. spool controlled by cable.

4W

Cap for 4-pos. spool controlled by cable.

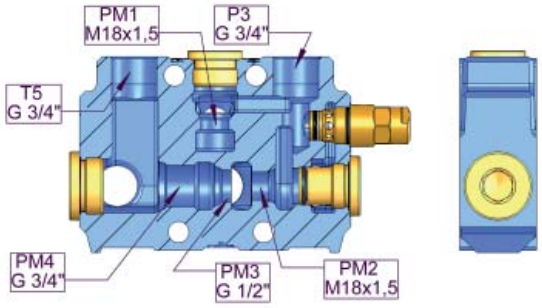
Spools

	**Spools for general use** **Function**	**Code**
	Double acting spool	**1X**
	Single acting spool P -B	**2X**
	Double acting spool with 4th pos. for float	**3X**
	Motor spool	**4X**
	Motor spool A - T	**4XA**
	Motor spool B - T	**4XB**
	Regenerative spool	**8XB**

The RS 270 spools are available in variety of flows and styles to accomodate most design requrements. Since the development of spools is a continous process and all available spools are not described in this data sheet, contact Nordhydraulic for advice on choosing spools in order to optimize your valve configuration.

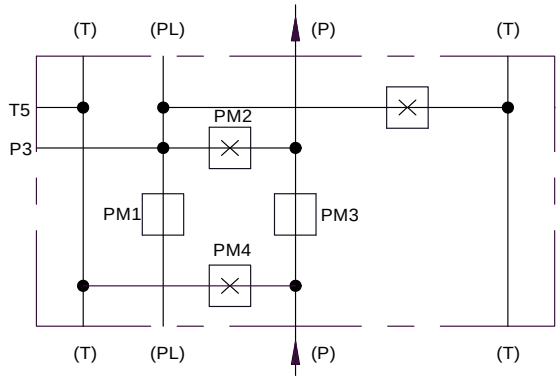
Generally the spools are divided in 6 different flow ranges. The letter indicating flow ranges is replaced by X. D = 60 l/min, F = 70 l/min, H = 80 l/min, G = 90 l/min, K= 120 l/min, Q = 160 l/min. In the table only the accessibility of different functions are shown.

System alternatives



The intermediate section allows a number of different internal and external system alternatives.

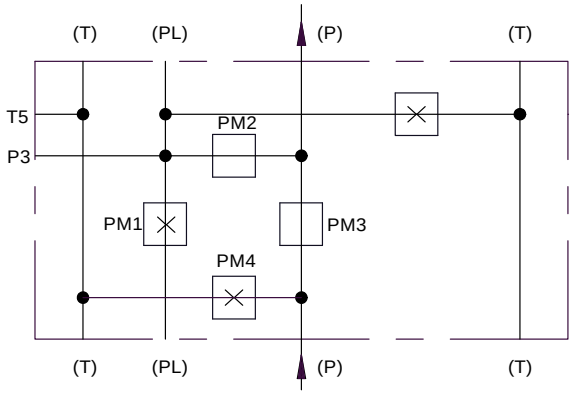
Existing valve equipped with the intermediate section can easily be altered to other system configurations without dismantling the valve.



K1, Single circuit

Valve internally parallel coupled.

Main relief valve for the system can be positioned in the intermediate section.



K2, Single circuit

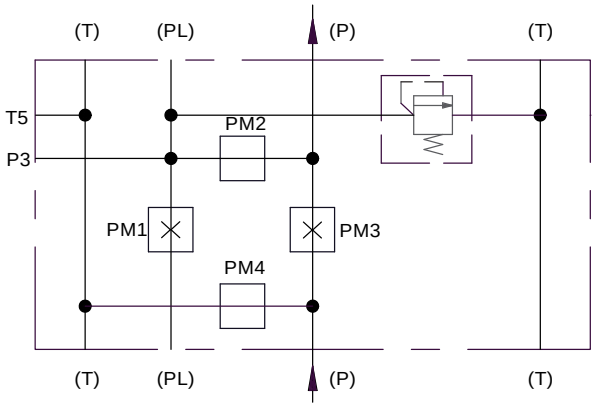
Valve internally tandem coupled, i.e. working sections upstream of the intermediate section with fully selected spools have complete priority as far as flow supply is concerned in relation to working sections downstream of the intermediate section.

A second main relief valve, positioned in the intermediate section, can be used to reduce the pressure to working sections downstream from the intermediate section.

K3, Dual circuit

The intermediate section divides the valve into two completely separated circuits. The tank gallery is common.

Multicircuit operation is possible according to the same pattern.

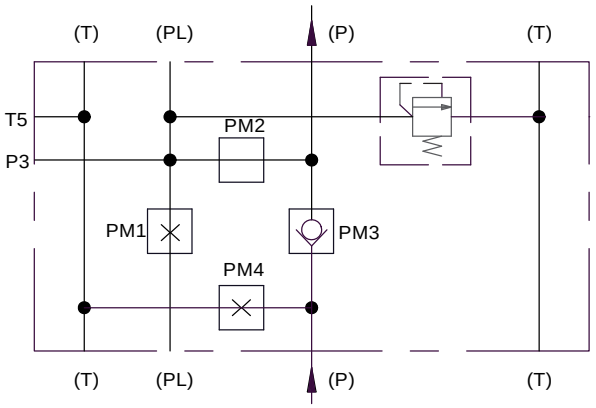


K5, Dual circuit

Tandem coupling between first and second circuit.

The first circuit is always solely supplied from the first pump. The second circuit is is always supplied from the second pump. When the first circuit is inactive then the second circuit is supplied from both pumps.

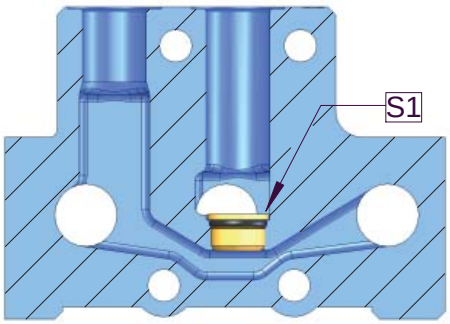
Multicircuit operation is possible according to the same pattern.



High pressure carry-over

High pressure carry-over plug PS28

Plug PS28, mounted in S1 allows carry-over function.



Typical hydraulic circuit diagrams

Diagram 1: High pressure carry-over

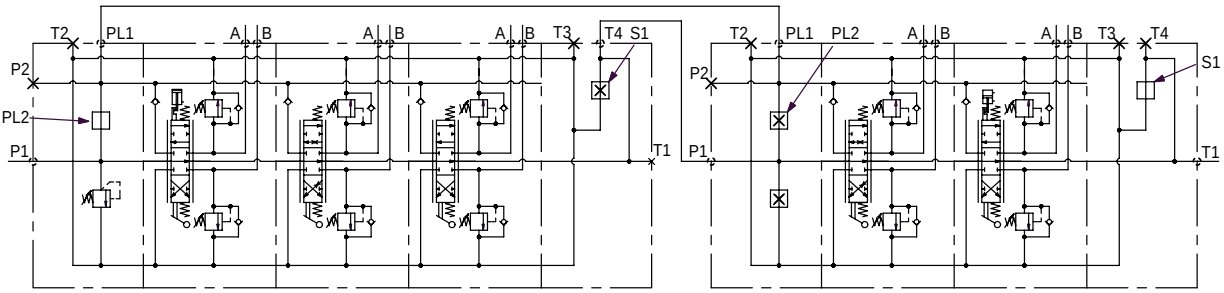


Diagram 2: Two pump circuit with intermediate section (K3)