



Nordhydraulic

Solutions that power your visions

Directional control valve / RS 280



Data sheet

Directional control valve / RS 280

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RS 280

Use the Nordhydraulic expertise at an early stage, in your design work....

Nordhydraulic skilled and experienced design and application engineers are at your disposal to help specify optimal valve configurations that meet your application requirements.

The RS 280 is a sectional valve, designed for system pressure up to 300 bar and pump flow of 160 l/min, depending on application, and is available with 1 to 10 sections to be used in hydraulic circuits with fixed pumps. Above 10 sections after factory approval.

The valve body is made of high grade pressure tight casting alloy, and our advanced methods guarantee uniform high quality throughout.

The valve features gentle operating characteristics, a very low pressure drop and minimal internal leakage.

Low and uniform forces are the result of careful balancing of the flow forces acting on the spool, during the flow controlling portion of the spool movement.

Each section can be provided with a pressure relief valve, an anti-cavitation or a combination of these.

There are many varieties of spools and spool controls which make the valve suitable for a wide range of applications.

The inlet section of RS 280 provides both, inlet and outlet ports with an additional pressure gauge port P2.

The outlet section is equipped with three alternative outlet ports. By using of a plug fitted through T4 into connection S1, high pressure carry over is achieved.

The RS 280 is simply usable for one or two pump circuits.

With combination of an intermediate section there is the opportunity to realize different system alternative built in one compact valve.

Typical applications for RS 280 are cranes, tippers, truck loaders, backhoe loaders and wheel loaders.

Typical spool controls are manual, pneumatic, electro-pneumatic, hydraulic and hydraulic with float position.

Data sheet

This data sheet presents the variety of standard components available, and how to specify these in a valve assembly according to your application requirements.

Technical data

Pressures / flow

Max. system pressure300 bar 30 (MPa)
(depending on application)
Max continuous return line pressure ..20 bar (2,0)
MPa
Rated flow120 l/min

Hydraulic fluid viscosity range at continuous
operation 10-400 mm²/s(cSt)
Hydraulic viscosity at start up...≤2000 mm²/s(cSt)
Mineral-based oil, synthetic and environmentally
friendly oil can be used.

Further data

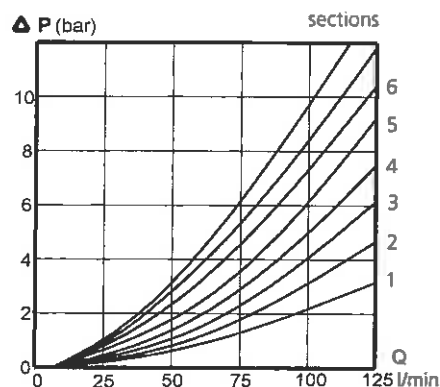
Spring force, spool control 9 in neutral position
110 N
Spring force, spool control 9 full spool stroke 140
N
Acceptable contamination level, at normal duty,
equal to or better than 18/14 as per ISO 4406.

Max. hydraulic fluid temperature range for con-
tinuous operation -15°C - + 80°C

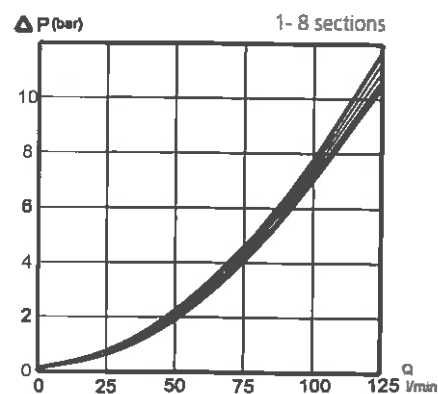
Spool leakage at 100 bar,
32 cSt and 40°C< 15 cm³/min

Internal pressure drop

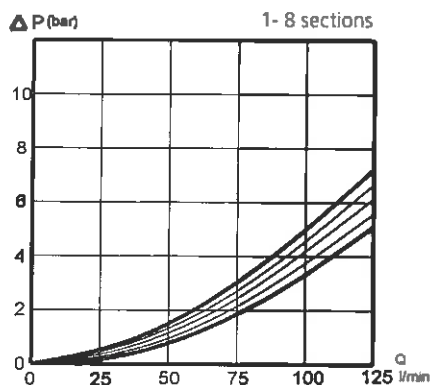
P - T



P - A/B

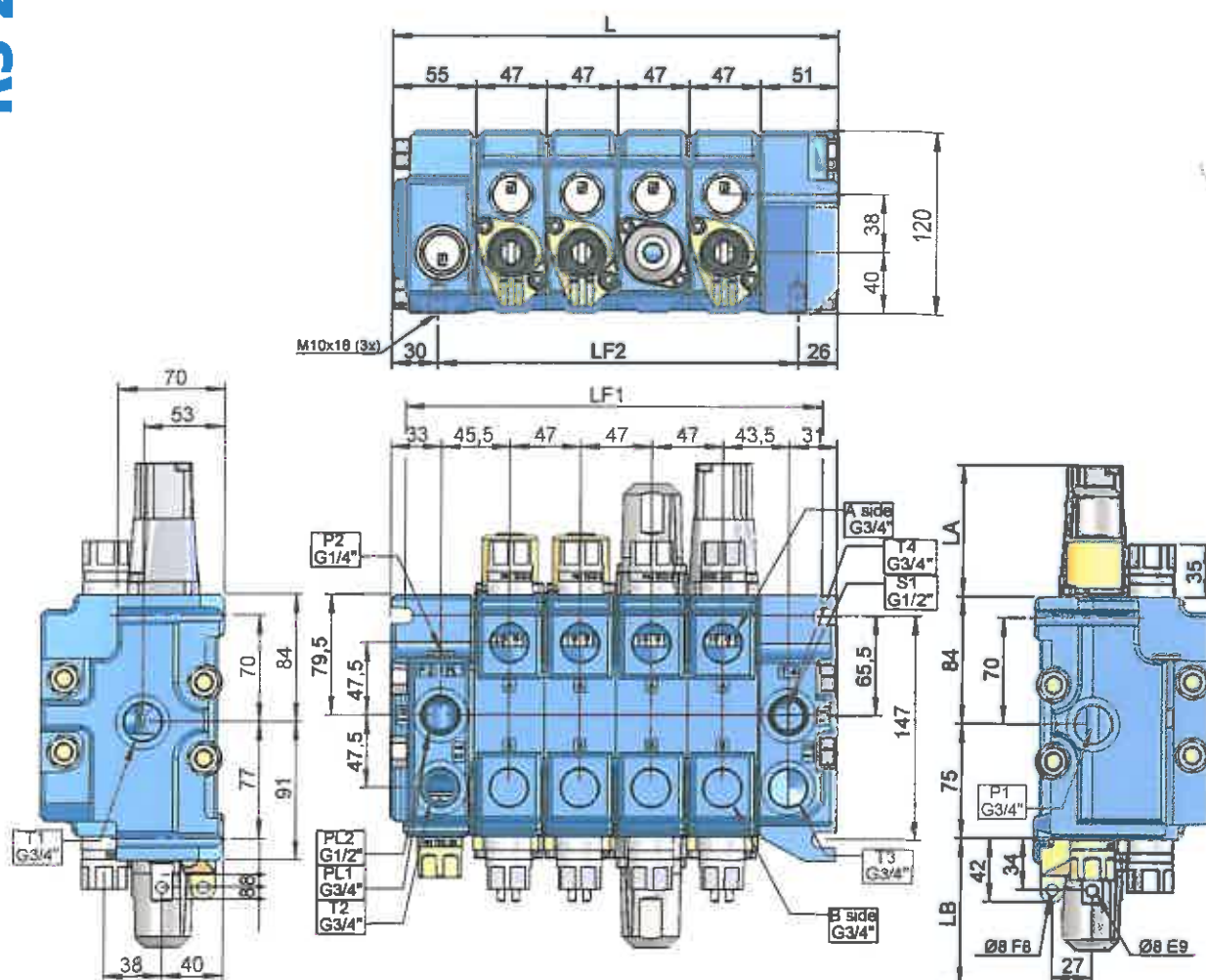


A/B - T



Oil temperature for
all graphs + 50°C
and viscosity = 32 cSt

RS 280 Technical data - Dimensions, weight



Measurements			
No. of sections	L mm	LF1 mm	LF2 mm
1	153	134	97
2	200	181	144
3	247	228	191
4	294	275	238
5	341	322	285
6	388	369	332
7	435	416	379
8	482	463	426
9	529	510	473
10	576	557	520

Weights, complete valve:

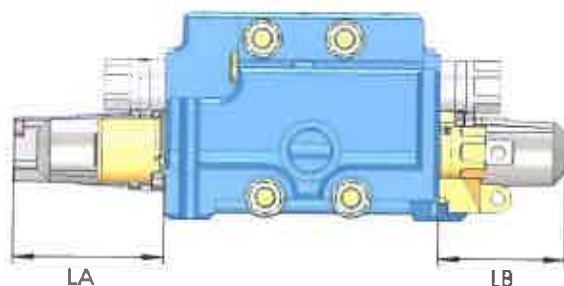
Inlet section.....	4,4 kg
Outlet section	5,0 kg
Working section.....	5,0 kg
Intermediate section	4,4 kg

Technical data - Dimensions, weight

**RS
280**

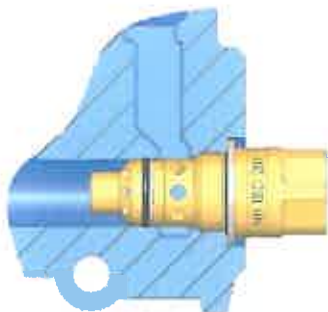
Type	LA mm	Type	LB mm
9	40,5	M1	42
9M	72	M2	15
10	87	M3	52
11	87	MM	92
13	87	3W	92
14	87	4W	102
L81-83	105	HPD1B	72
P	103		
EP	134		
HPD1A	72		
HPD405	107,5		

The measurements given apply to the valve housing and spool control positions. The length of the spool controls is given where: LA is the length of the spool control on the A-side of the side of the valve. LB is the length of the spool control on the B-side of the valve. Spool control types refer to page 8.



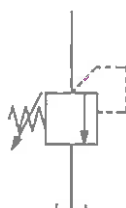
Main relief valves

Main relief valve TBD201



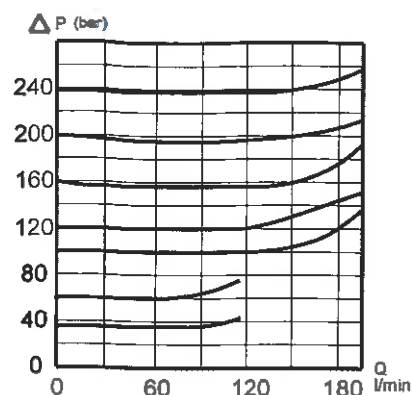
The TBD201 is a differential area, direct acting relief valve, for the main circuit. It is adjustable.

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



Setting range

Pressure bar	Spring colour
35 - 65	Blue
70 - 90	Green
95 - 125	Red
130 - 155	White
160 - 210	Black
215 - 270	Pink
275 - 300	Orange

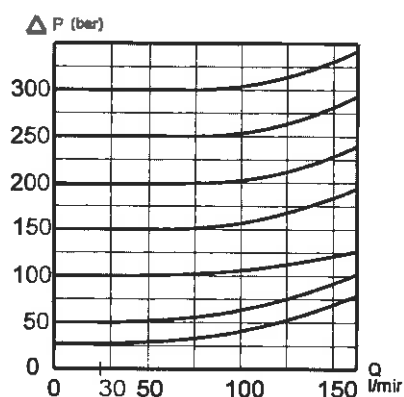
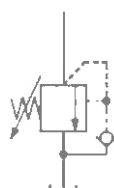


Main relief valve TBS400



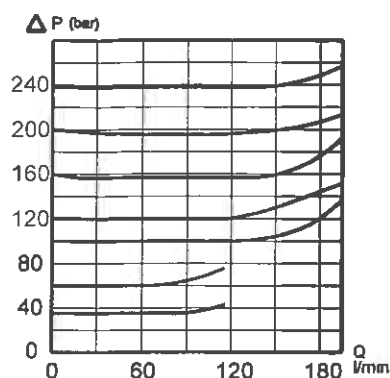
Pilot operated relief valve for the intermediate section. It is sealable.

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



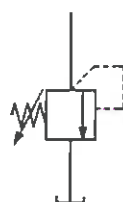
Service port valves

Port relief valve TBD202



The TBD202 is a differential area, relief valve, for the secondary circuit. It is adjustable but temperproof sealed.

Setting range 35 - 300 bar
(3,5 - 30 MPa)



Setting range

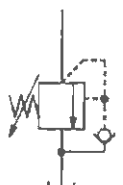
Pressure bar	Spring colour
35 - 65	Blue
70 - 90	Green
95 - 125	Red
130 - 155	White
160 - 210	Black
215 - 270	Pink
275 - 300	Orange

Port relief and anticavitation valve TBSD202

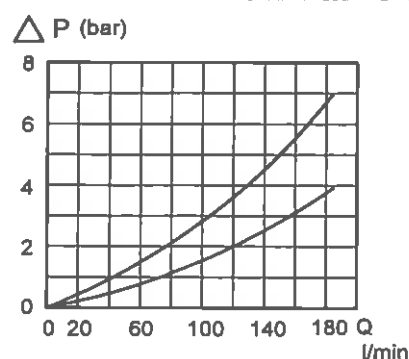
Characteristics: See particulars of the port relief valve and the anti-cavitation valve.

The TBSD202 is a differential area, direct acting relief, and anti-cavitation valve, for the secondary circuit. It is adjustable, but tamperproof sealed.

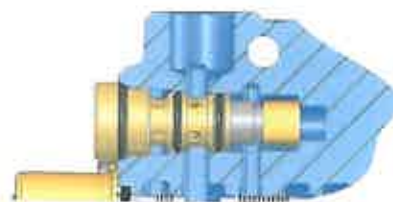
Setting range 35 - 300 bar
(3,5 - 30 MPa)



Anti-cavitation valve SB250



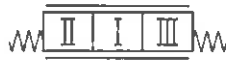
Check valve for equalising vacuum in the secondary circuit.



Spool controls - A-side

Spool control 9

9 Spring centering,
9M marine version,



Spool control 10

Detents at positions 1,
2 and 3



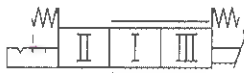
Spool control 11

Spring centering with
detent at position 4



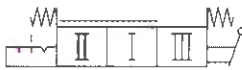
Spool control 13

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



Spool control HPD1

Hydr. proportional. Pilot
pressure 6-16 bar Max
pilot pressure 40 bar



Spool control HPD405

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



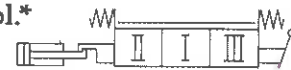
Spool control L81

External hydraulic
kick-out from in-
serted spool. *



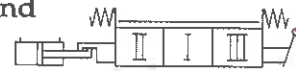
Spool control L82

External hydraulic kick-out
from extended spool.*



Spool control L83

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



* Connection 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

Lever MM

Encapsulated lever with drained cap.

3W

Cap for 3-pos. spool controlled by cable

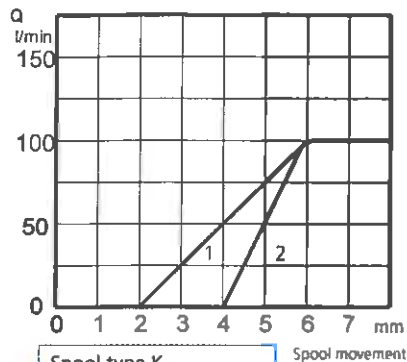
4W

Cap for 4-pos. spool controlled by cable.

Spool

Control characteristics

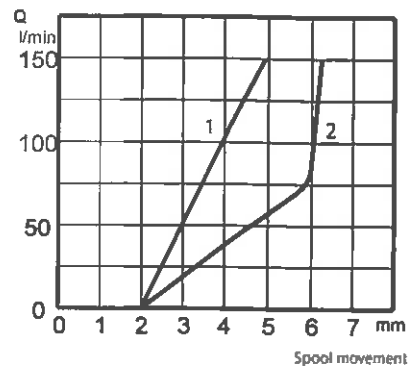
P - A/B



Spool type K
Pump flow: 100 l/min
1. load pressure 50 bar
2. load pressure 250 bar

Oil temperature +50°C
Viscosity = 30 cSt

A/B - T

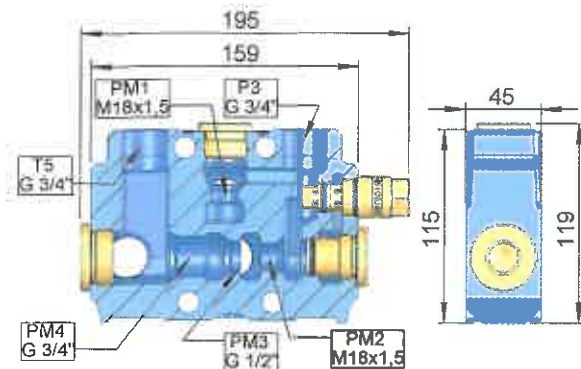


	<p>Spool for general use Recommended pump flow range, 50 -160 lpm*</p>	
	Function	Code
	Double acting spool	1X
	Single acting P - A	2X
	Double acting spool with 4th pos. for float	3X
	Motor spool	4X
	Motor spool A - T	4XA
	Motor spool B - T	4XB

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.

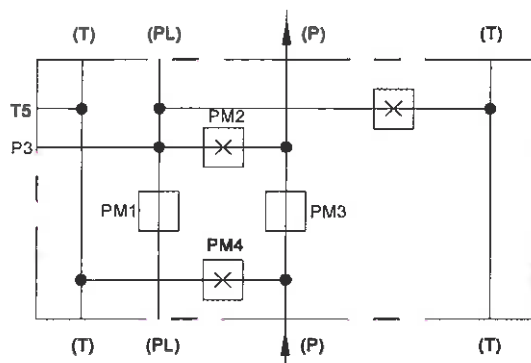
RS 280

System alternatives



The intermediate section for RS 280, allows a number of different internal and external system alternatives.

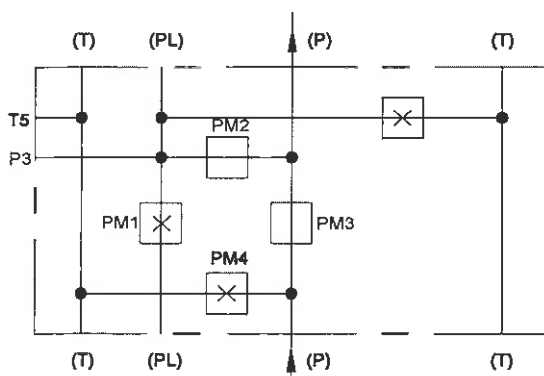
Existing valve equipped with the intermediate section, without dismantling, can easily be altered to other system configurations.



K1, Single circuit

Valve internally parallel coupled.

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



K2, Single circuit

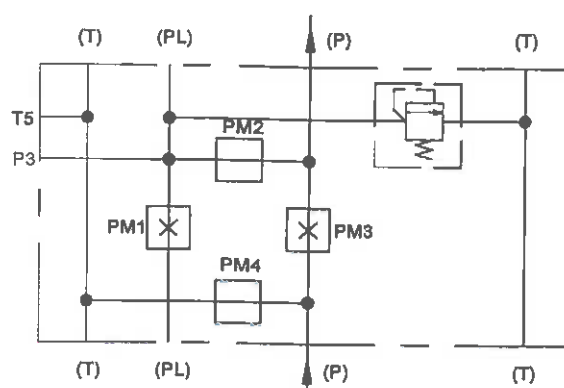
Valve internally tandem coupled, i.e. working sections upstream of the intermediate section with fully selected spools have complete priority as far as flow supply is concerned in relation to working sections downstream of the intermediate section

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. Tank gallery is common.

Multi circuit operation is possible according to the same pattern.

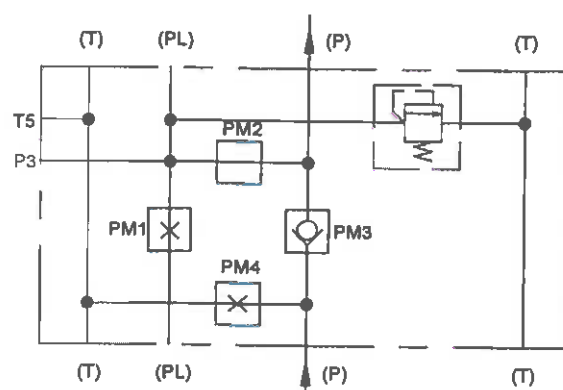


K5, Dual circuit

Tandem coupling between first and second circuit.

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

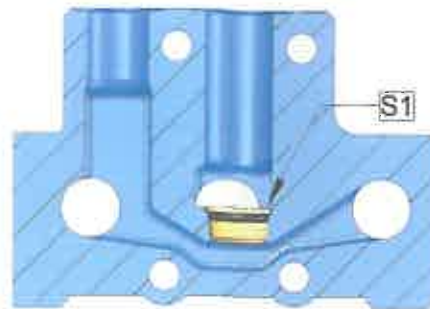
Multicircuit operation is possible according to the same pattern.



RS 280

High pressure carry over

Plug PS28, mounted in S1 allows carry over function.



Typical hydraulic circuit diagrams

Diagram 1, One pump circuit without intermediate section

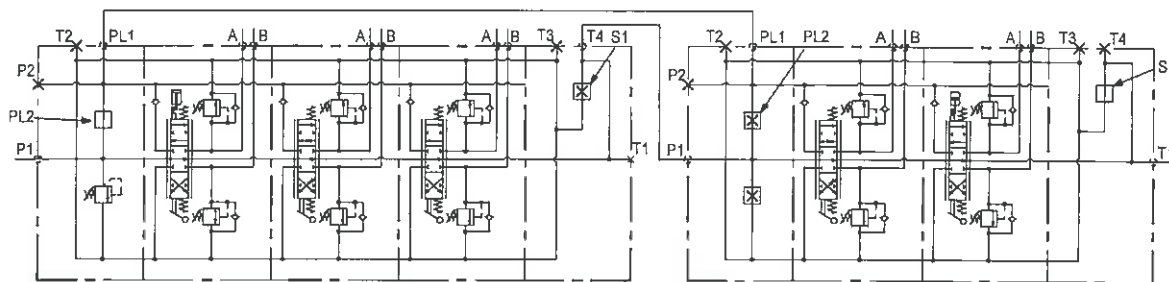


Diagram 2, Two pump circuit with intermediate section (K3)

