Nordhydraulic
HYDAC INTERNATIONAL

Directional control valve / RM 270

Solutions that power your visions

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Data sheet
Directional control valve / RM 270

RM 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

The RM 270 is a monoblock valve, designed for system pressures up to 350 bar and pump flows up to 160 l/min.

It is available with 1, 2, 3, 4, and 6 sections per valve.

The valve is designed with an open centre for fixed displacement pumps.

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

The "SuperRapid"-range of the valve is optimized for maximum lowering flow of 185 l/min and allows lowering at the same time as another function is pressurized.

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

Typical applications are cranes, tippers, refuse trucks, multi-bucket systems and roller container vehicles. Several special versions of RM 270 fulfil many other applications.

Further RM 270 properties and possibilities

• Each section can be provided with a pressure relief valve, an anticavitation valve 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.

• Two or more blocks can be connected in series.

• The valve can be supplied with a built-in unloading valve, which in an emergency situation makes it possible to let all the pump flow go to tank at a very low pressure drop.

• A combination of built-in flow control-, unloading- and counter pressure valves gives a compact solution and less mounting parts for refuse trucks.

• Possibility for built-in load holding valves.

• In systems with demand for both high and low flows the valve can be combined with RS 210. The adapter between the valves includes a flow control valve for reduced flow to the RS 210 working sections.

Table of contents

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 RM 270 and available components, please contact Nordhydraulic.

Technical data

Pressures / flow

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

Further data

Spring force for spool control 9 in neutral position:
130 N (13,0 kp).
Spring force for spool control 9 with fully selected spool:
155 N (15.5 kp).

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

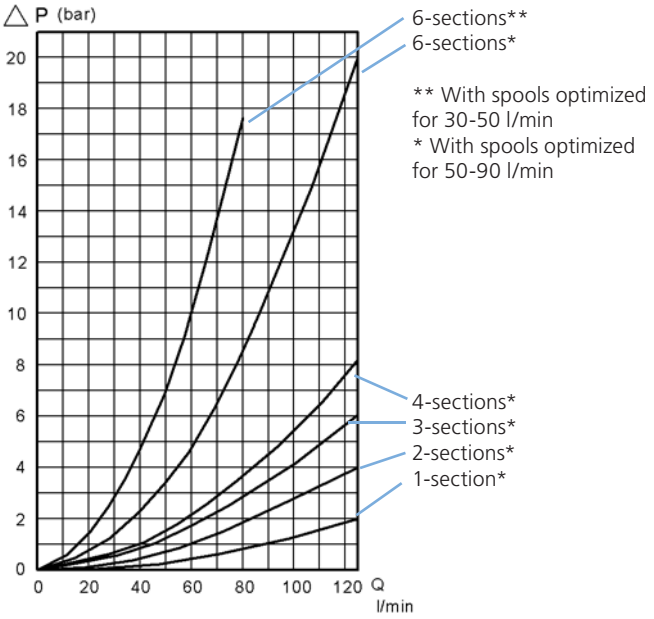
Hydraulic fluid viscosity range at continuous operation:10-400 mm^2/s(cSt). Higher viscosity allowed at start up.

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

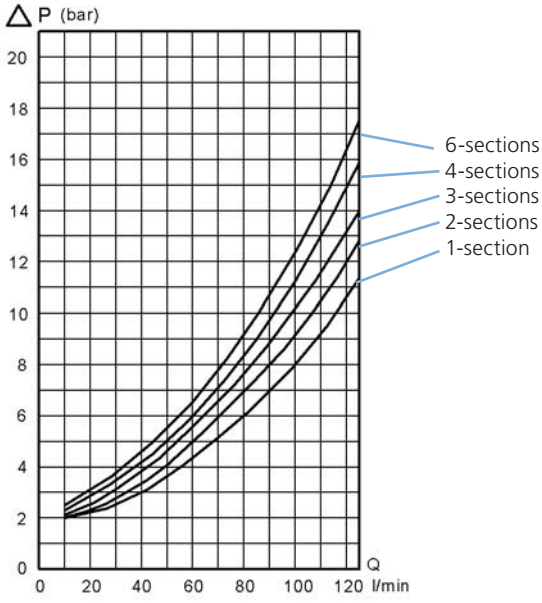
Max. hydraulic fluid temperature range for continuous operation: -15°C - + 80°C.

Spool leakage at 100 bar, 32 cSt and 40°C: <20 cm^3/min.

Pressure drop

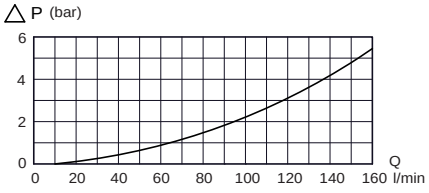


Pressure drop P-T

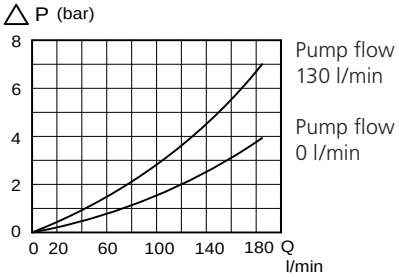


Pressure drop P - AB

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

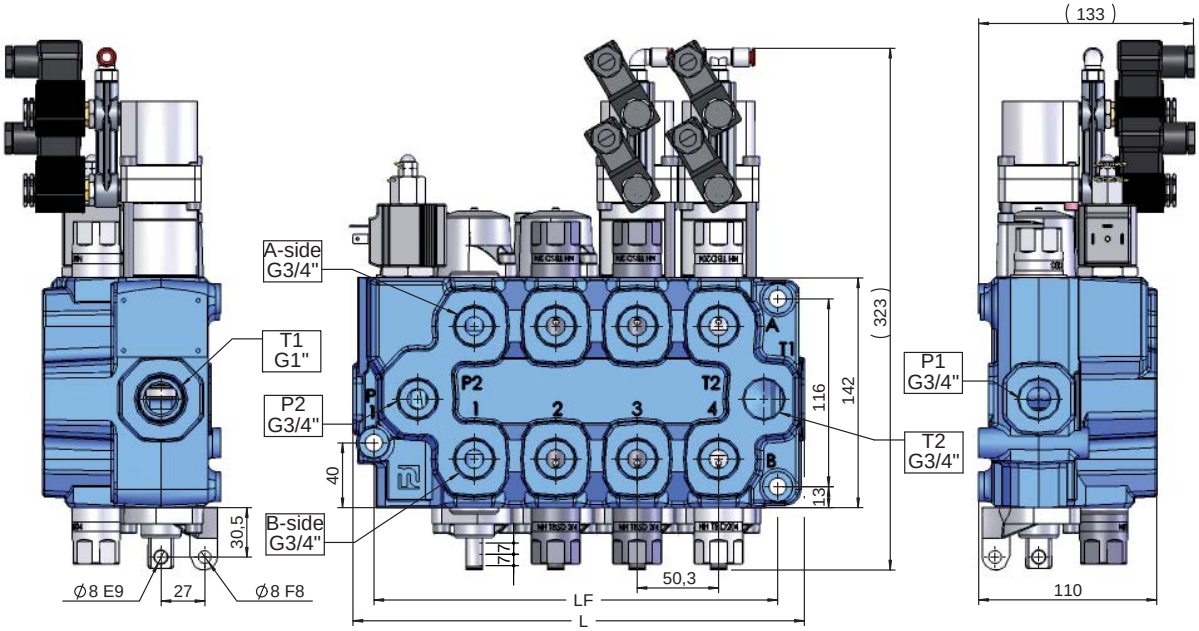


Pressure drop P-T unloaded



Pressure drop A-T Valve Super Rapid 1-section valve

Technical data - Dimensions, weight



Spool stroke +/- 7 mm
Float position 7 mm

Weights, complete valve:

1 section ..... 11 kg
2 sections..... 15 kg
3 sections..... 19 kg
4 sections..... 23 kg
6 sections..... 31 kg

Measurements	L mm	LF mm
1 section	128	100
2 sections	178,3	150
3 sections	228,6	200
4 sections	278,9	250
6 sections	379,5	350

Type	LA mm	LB mm
9	43	
10	43	
11	75	
13	75	
14	75	
P	109	
P5	157	
EP	109	
MSLA	48,5	
M19		38,5
M211		32
M212		55,5

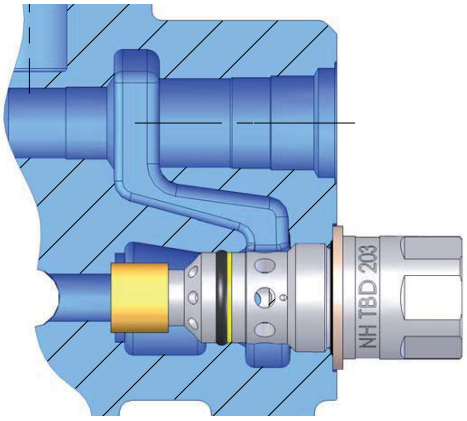
Main relief valve

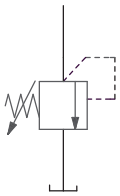
Main relief valve TBD203

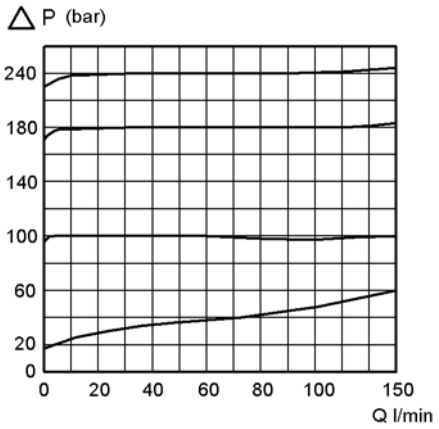
The TBD203 is a differential area, direct acting relief valve for the main circuit. It is adjustable and sealable.

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

Setting range step: 5 bar.







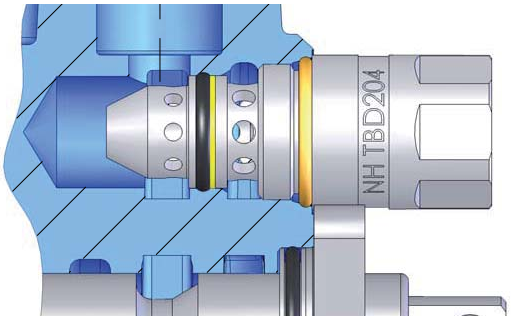
Service port valves

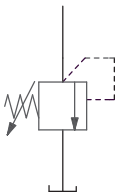
Port relief valve TBD204

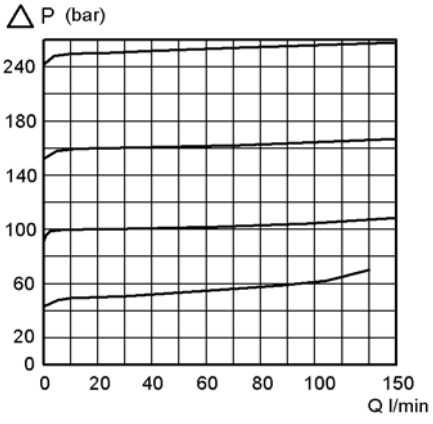
The TBD204 is a differential area, direct acting relief valve for the secondary circuit. It is adjustable and sealable.

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

Setting range step: 5 bar.







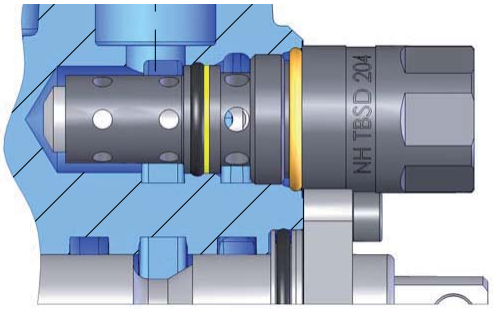
Service port valves

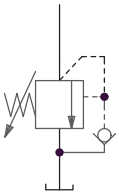
Port relief and anticavitation valve TBSD204

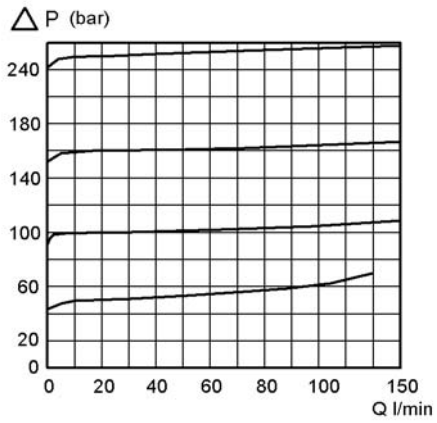
The TBSD204 is a differential area, direct acting relief and anticavitation valve for the secondary circuit. It is adjustable and sealable.

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

Setting range step: 5 bar.

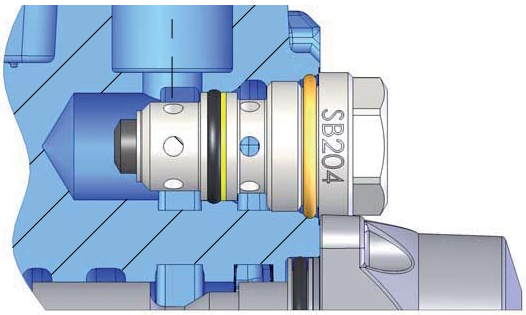


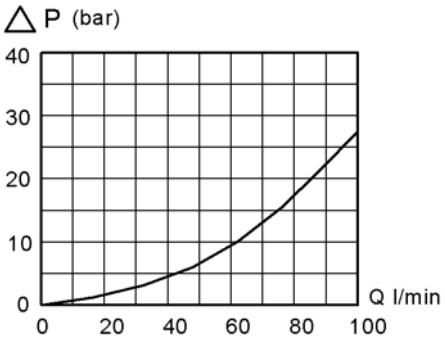




Anticavitation valve SB204

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.

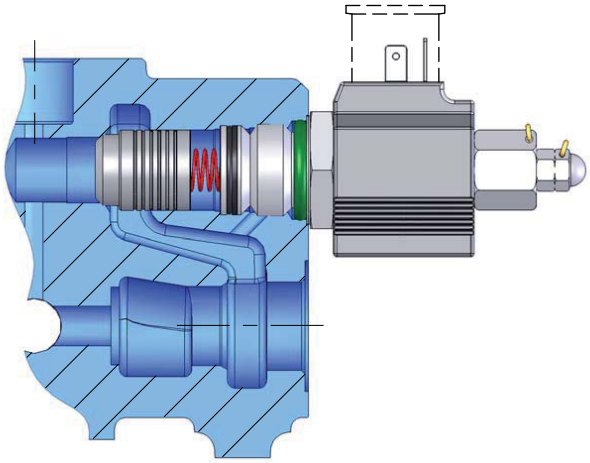




Electrical unloading valve

Data

Power consumption.....14 W
Rated voltage ..... 12 and 24 V
Max voltage variation .....+/- 10%
Duty factor 100%
Connection .....Hirschmann ISO 4400-DIN 43650
Protection class..... IP65



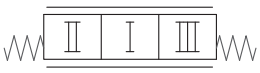
IS12
manual override with push operation 12V.

IS24
manual override with push operation 24V.

Spool controls - A-side

Spool control 9

9 Spring centering.
9W for cable control.

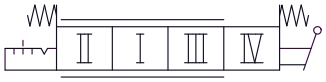


Spool control 10

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

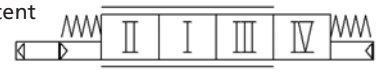
Pneumatic*.

Spool control EP

Electro/pneumatic on/off**.

Spool control P5

Pneumatic control with detent at position 4*.



Spool control EP5

Electro/pneumatic on/off with detent in position 4**.

Spool control MSLA

Spool control, stroke limitation.

*

Connection ..... G 1/8" BSP

**

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 controls - B-side

Bracket M19

Bracket for 3-pos. spool.

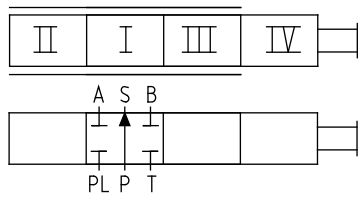
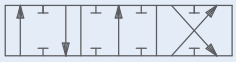
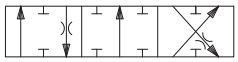
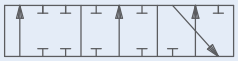
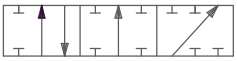
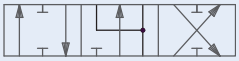
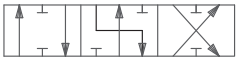
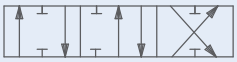
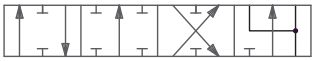
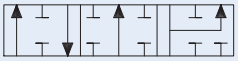
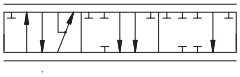
Bracket M211

Bracket for 4-position spool and for 4-pos EP-spool control.

Bracket M212

Bracket for 4-position spool with manual control.

Spools

	**Spools for general use** **Function**	**Code**
	Double acting spool	10XAA1
	Slewing spool, gentle operating	10XKS1
	Single acting spool P - A	20XAA1
	Single acting spool P - B	20XAA2
	Motor spool	40XAA1
	Motor spool A - T	50XAA2
	Motor spool B - T	60XAA1
	Double acting spool with 4th pos. for float	30XAA1
	Regenerative spool	80XAA1
	Single acting “SR” *185 lpm lowering flow	**713TA1**

The RM 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.

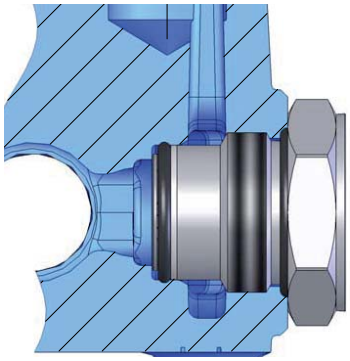
Generally the spools are divided in 5 different flow ranges. In the table only the accessibility of different functions are shown. The letter indicating flow range is replaced with X, as some spool functions are available in several flow ranges.
3 = 20 - 40 lpm
4 = 30 - 50 lpm
5 = 40 - 60 lpm
7 = 50 - 90 lpm
12 = 90 - 130 lpm

High pressure carry-over

High pressure carry-over nipple SG25

The type SG25 series nipple is used for series mounting of valve blocks when pipe or hose is used between the blocks.

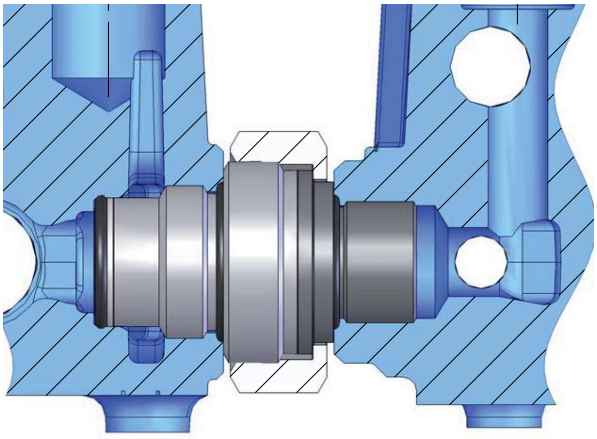
For RM 270 Super Rapid see page 12.



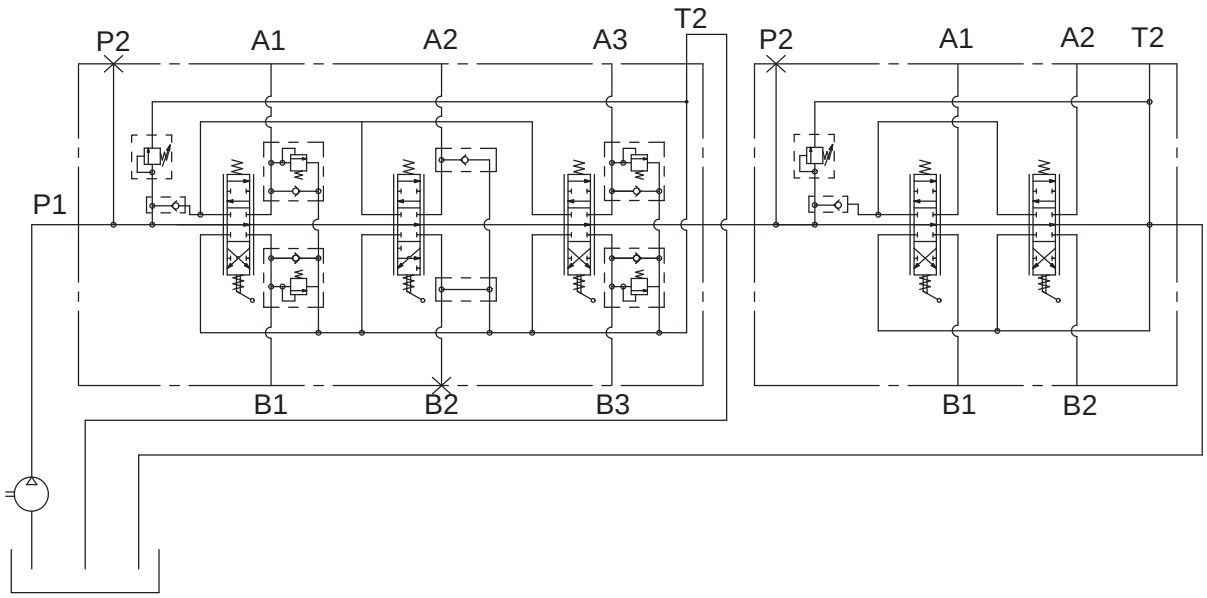
High pressure carry-over flange kit SC250

The type SC250 flange kit is used to connect valve blocks in series, without any pipe or hose.

For RM 270 Super Rapid see page 12.



High pressure carry-over



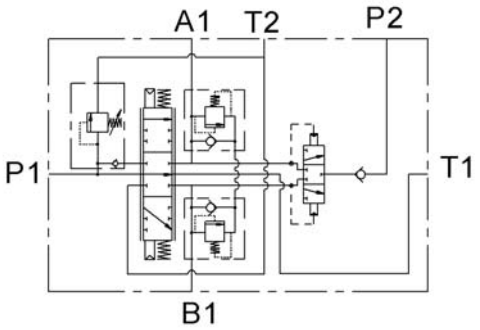
When high pressure carry over SG25 or SC250 is used for series mounting, the tank connection T2 for the first valve must always be connected to the tank (see diagram above). Valve blocks connected in series give priority of flow to the first block in the series. This means that there will be no flow at block 2 if block 1 is fully activated.

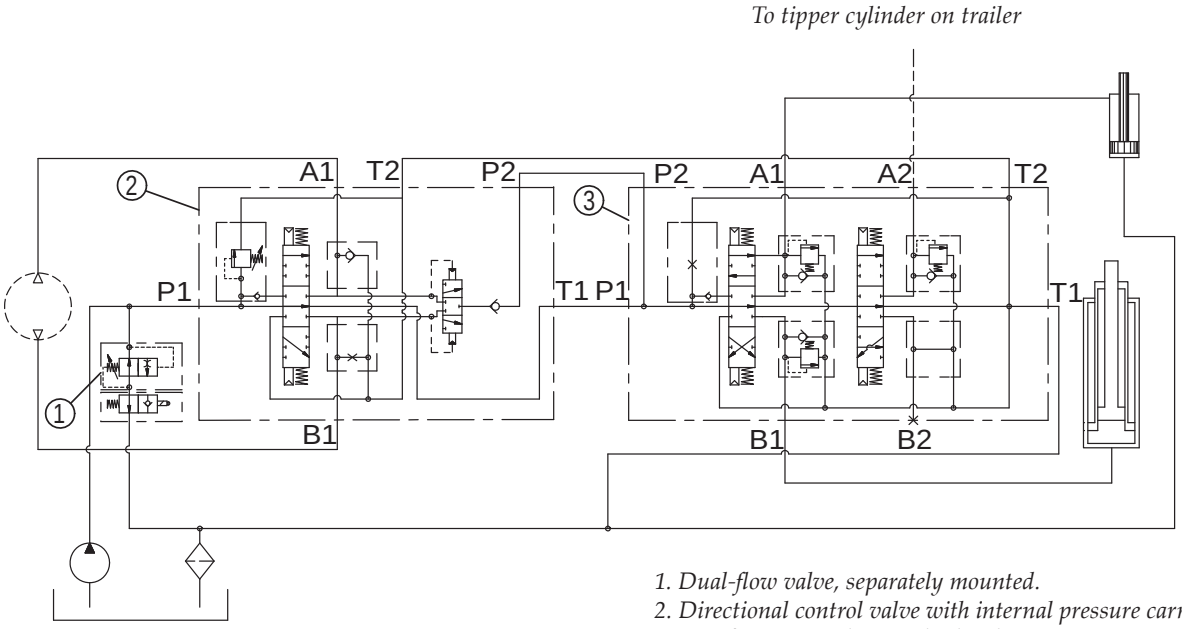
Integrated pressure carry-over function and extra check valve

The valve is made from a 1 section valve with a shuttle spool to create the pressure carry-over function, and an extra check valve in the pressure line. Carry-over pressure can be obtained from both A and B port, depending of which is used.

The built in shuttle spool makes it possible to use the return flow from, for instance, a hydraulic winch motor on a cable lift, to regulate the downward movement of the tipper cylinder at the same time as the winch pulls the platform on the frame.

The extra check valve prevents the oil from running backwards in the system when only the tipper valve is used.





1. Dual-flow valve, separately mounted.
2. Directional control valve with internal pressure carry-over function and extra check valve.
3 . Directional control valve for tipper function.

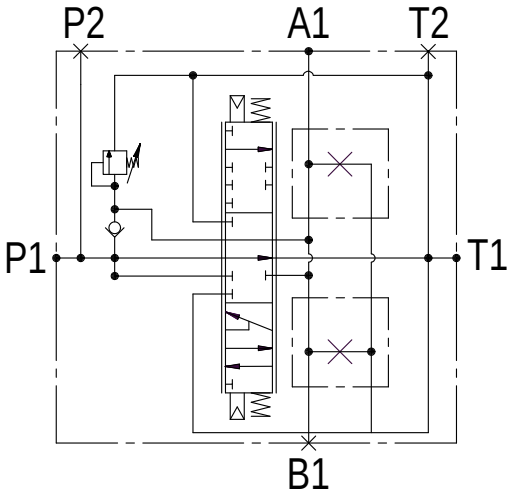
”Super Rapid” - tipping valve configuration

The ”Super Rapid” tipping valve is optimized for maximum lowering flow. The multi section valves allows lowering at the same time as an other function is pressurised. The valve can be equipped for variable pump operation. Due to a strengthening of the valve body the valve permits high continuous working pressure. The valve is available with 1, 2 and 3 sections.

It is not possible to use a high pressure carry-over nipple SG25 or flange kit SC250 in a RM 270 Super Rapid valve with only one section.

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

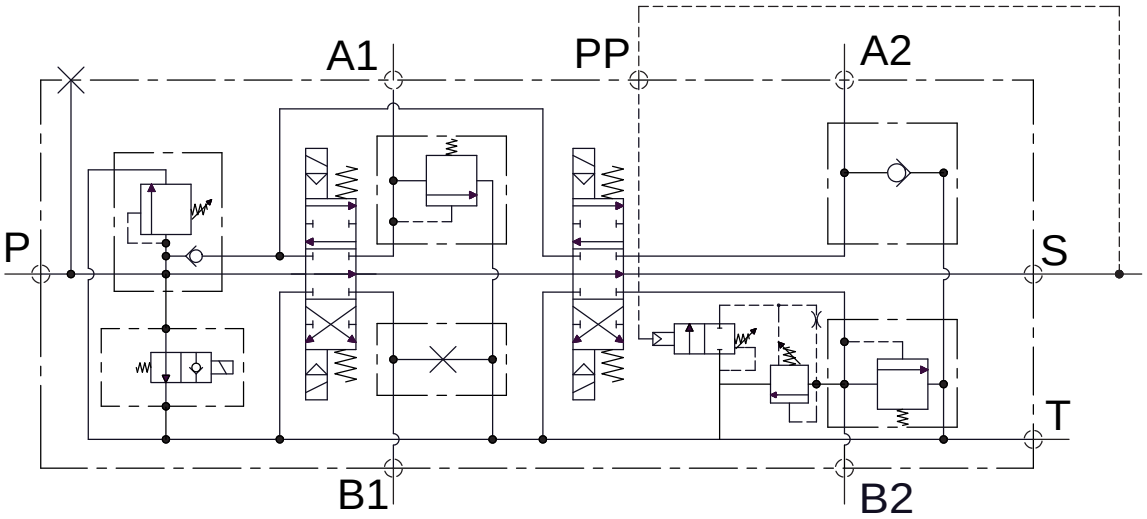
The valve can be provided with pneumatic or electro/ pneumatic spool control.



Technical data

Max. system pressure ..... 350 bar (35,0 MPa)
Max return pressure ..... 25 bar (2,5 MPa)
Lowering flow ..... 185 l/min

Valve configuration for refuse truck application



The valve can be configured for refuse vehicles. Typical is 1 four-sectional valve or 2 two-sectional valves for the functions tail gate, packing and exhaust. The pressure to the exhaust cylinder is controlled of the packing pressure so that the pressure is low during the packing cycle but high during exhaust. The circuit shows a two sectional valve with the functions tailgate on section 1 and exhaust on section 2. The valve for the packing functions is supplied from port S.