HYDAC INTERNATIONAL

Directional Control Valve
DM 160

Key valve features

DM 160 is a Monoblock open center valve in a modular design that together with the wide range of standard parts offers maximum flexibility.

The valve is designed for high performance applications mainly in systems with fixed pumps but also for systems with variable pumps.

Two or more valves can be connected to each other in a range of different circuits.

The valve is very robust and well suited for demanding mobile applications. The sections are designed to meet the most stringent requirements on controllability.

Applications

DM 160 is designed as a flexible valve for a wide range of applications, but typical applications are cranes, utility and agriculture applications within the flow range for the valve.

Technical data

Pressures / Flows		
Max. operating pressure per port:		
P1, P2, PM, A, B:	3,625 psi	250 bar
Typical Nominal Inlet Flow:	11.8 gpm	45 Lpm
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		
Recomended temperature range for continuous operation:	5°F up to 176°F	-15°C up to +80°C
Spool leakage at 100 bar, 32 cSt and 40°C:	<10 cm^3/min	

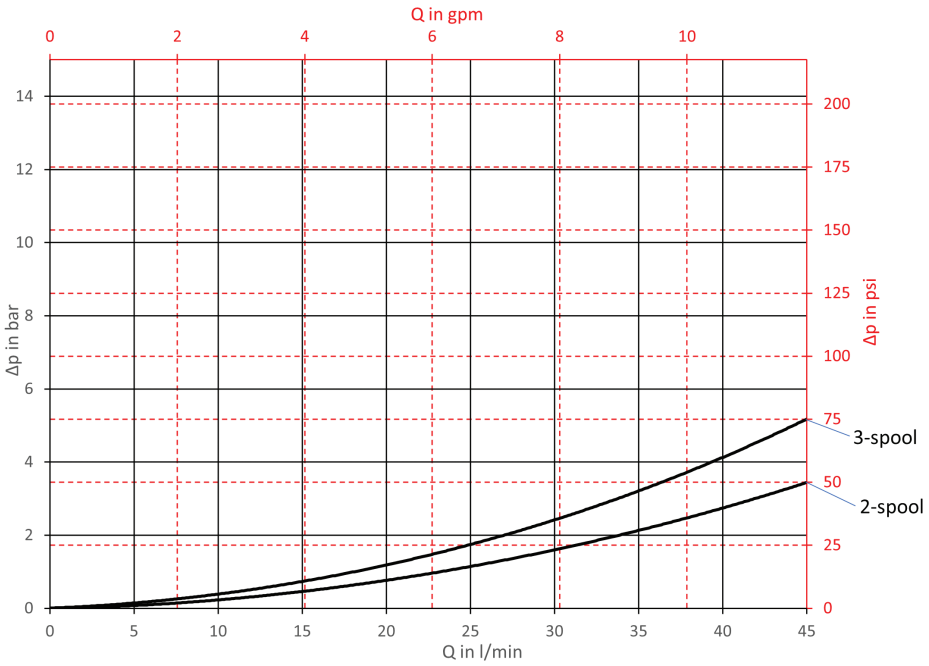
Higher values are possible, depending on application. For applications with demands that exceed stated data above, please contact us for consideration.

MTTFd value after consultation with HYDAC.

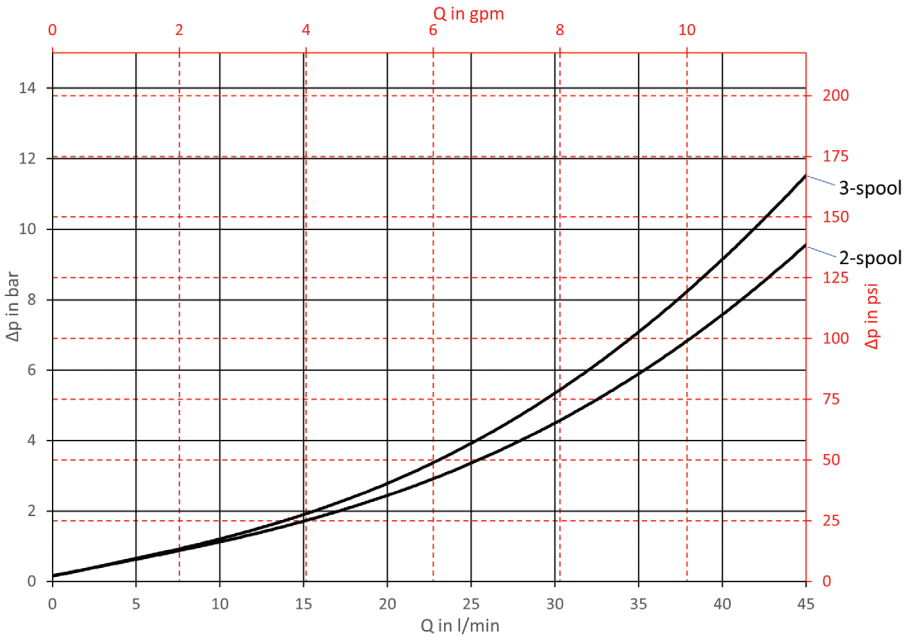
Pressure drop

Oil temperature/viscosity for all graphs: 104°F (40 °C / 32 cSt)

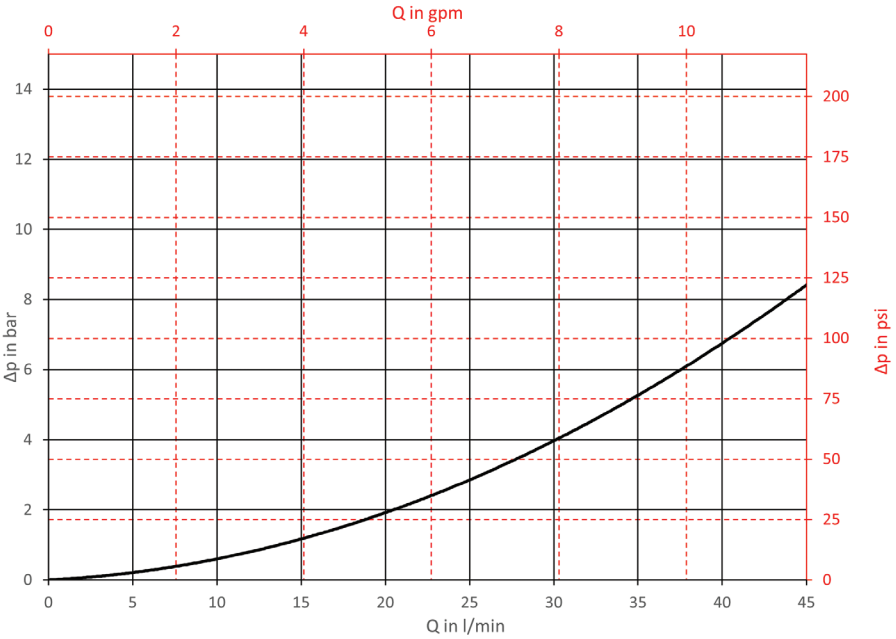
Pressure drop P – T



Pressure drop P – A/B

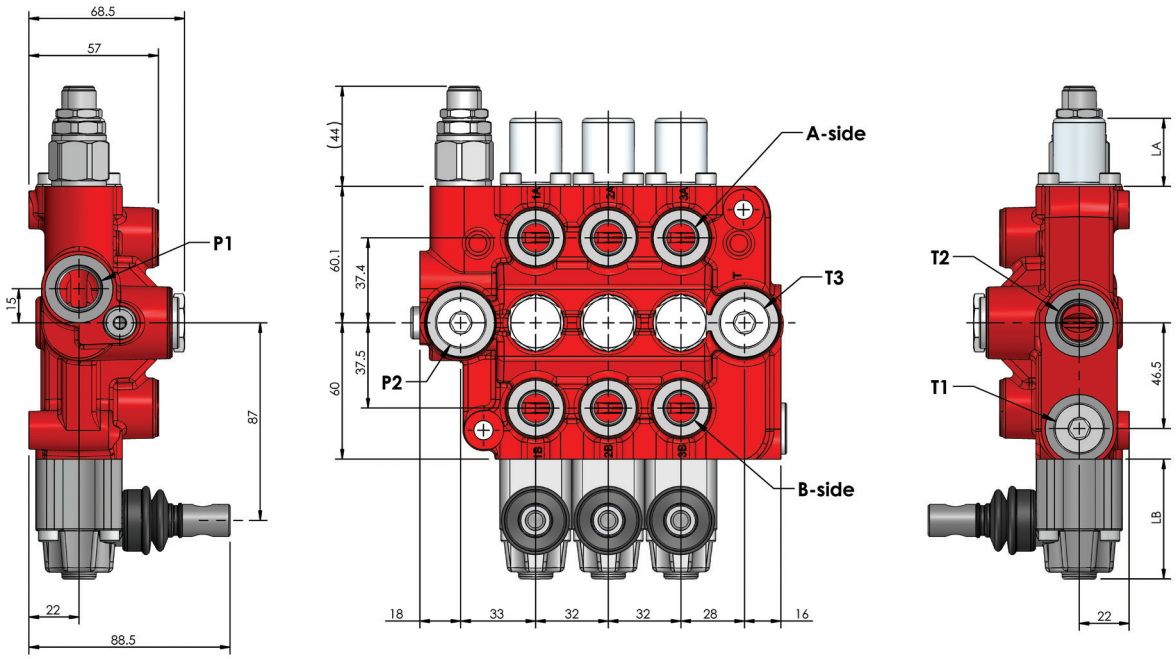


Pressure drop A/B-T

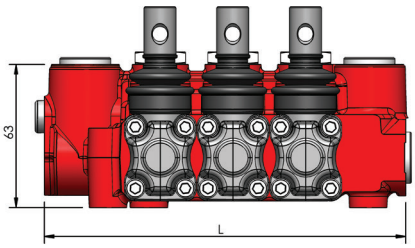


Dimensions and weight

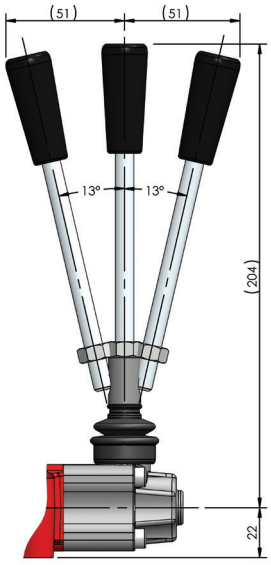
SAE ports are shown in the table.

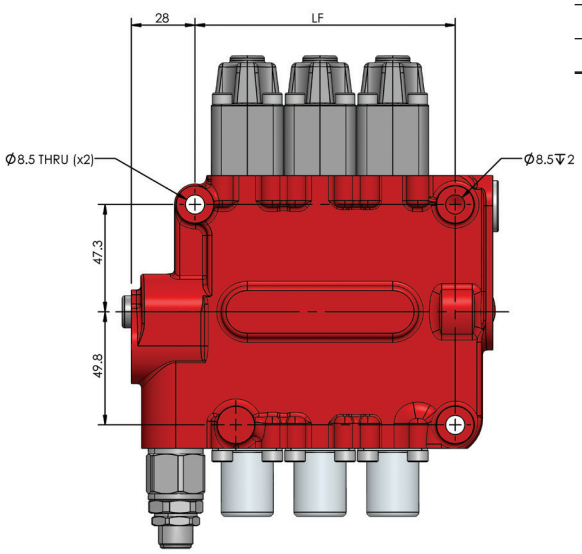


Spools	L (in)	L (mm)	LF (in)	LF (mm)
2	5.7	145	4.6	117
3	7.0	177	5.9	149



Type	LA (in)	LA (mm)	LB (in)	LB (mm)
M1			2.1	53
M2			2.8	72
9	1.2	30		
10	1.4	36		
11	2.9	74		
3W			3.4	86
4W			4.1	104





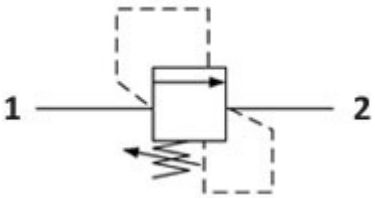
Main relief

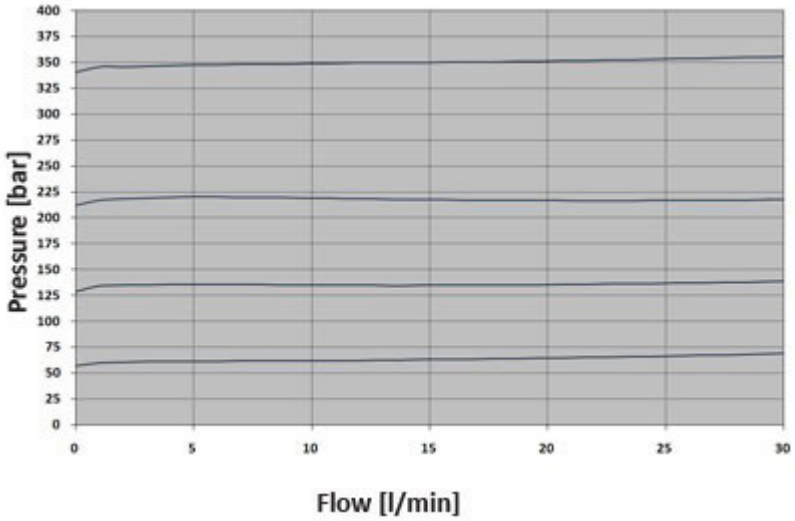
Oil temperature / viscosity for all graphs: 104°F (+40 °C / 32 cSt)

Main relief

The adjustable type main relief valve.

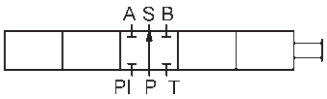
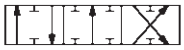
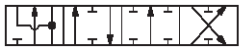
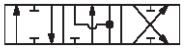
- Setting range: 100-4,500 psi (10-300 bar)



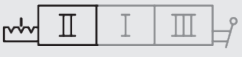


Pressure drop characteristics relief valve function

Spools

 	**Metering Spools for general use**	
	Function	**45 l/min**
	Double acting spool	14AA
	Double acting spool with 4th pos. for float	34AA
	Motor spool	44AA

Spool control A-side

Spool control 9 Spring centered spool control on A-side	
Spool control 10 Detents at positions 1, 2 and 3	
Spool control 11 Spring centering with detent at position 4	

Spring force for spool control 9 in neutral position: 12.4 lbs (55 N).
Spring force for spool control 9 with fully selected spool: 22.5 lbs (100 N).

Spool control B-side

Spool control M1

Lever cup and lever mechanism
for 3-positional spools

Spool control M2

Lever cup and lever mechanism
for 4-positional spools

Spool control 3W

Cable attachment for 3-positional spools

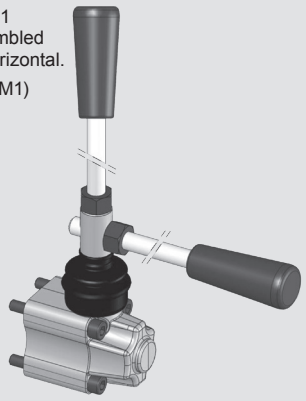
Spool control 4W

Cable attachment for 4-positional spools

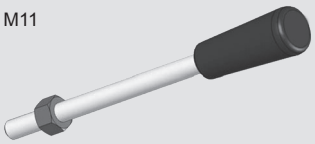
Lever M11

The lever M11 can be assembled vertical and horizontal for spool control M1 or M2. Includes a jam nut and a plastic knob. Length 135 mm. The lever M11 is sold separately.

The lever M11
can be assembled
vertical or horizontal.
(shown with M1)



Lever M11



Model Code

DM16 __ 120 / 14 - 09 - M1 / __ - __ - __ / __ - __ - __ / __

Monoblock Valve

Number of Spools
2 - Two Spool monoblock valve
3 - Three Spool monoblock valve

Inlet Setting
X - Not Machined for Relief Valve
P - Inlet Relief Valve Plugged
_ _ _ - Required Pressure Setting for relief Valve in bar.

Spool for Section
14 - 3-positional cylinder spool
34 - 4-positional cylinder spool with float in position 4
44 - 3-positional motor spool

Spool Control A Side
09 - 3-positional spool control, spring centered
11 - 4-positional spool control, spring centered and detent in pos 4
10 - Detent in 3 positions

Spool control B-Side
M1 - Lever cap including lever mechanism for 3-positional spool
M2 - Lever cap including lever mechanism for 4-positional spool
3W - Cable attachment for 3-positional spool
4W - Cable attachment for 4-positional spool

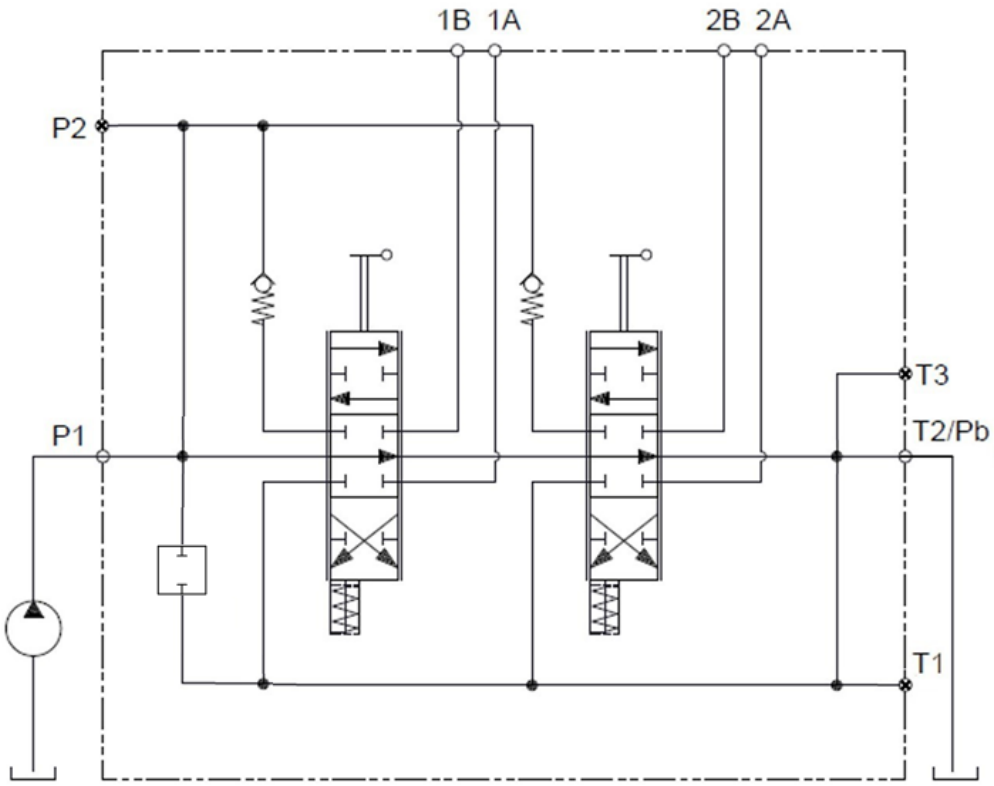
Second Section Options
See First Section For Model Code Options

Third Section Options
See First Section For Model Code Options

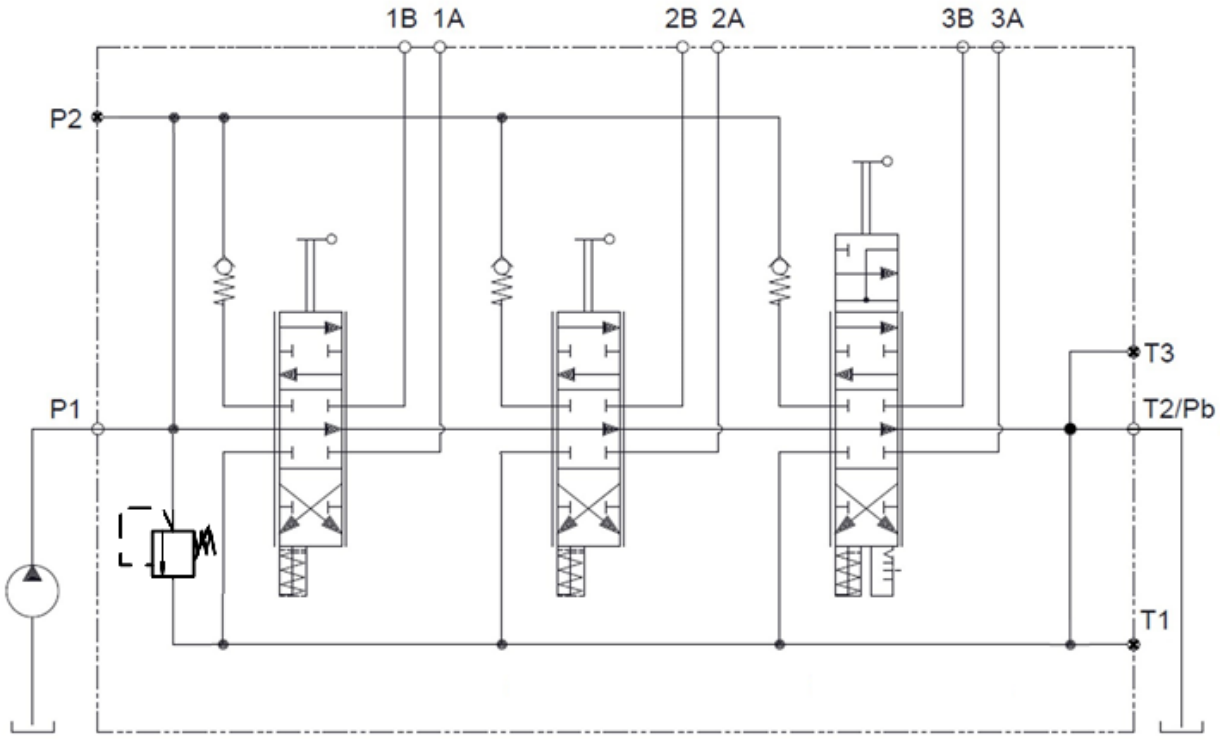
Power Beyond Option
(blank) - No Power beyond required
PB - High Pressure Carry over function
First Second Third

Typical hydraulic circuit diagrams

Hydraulic diagram - 2 spool with out inlet RV



Hydraulic diagram - 3 spool with inlet RV



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Note

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.