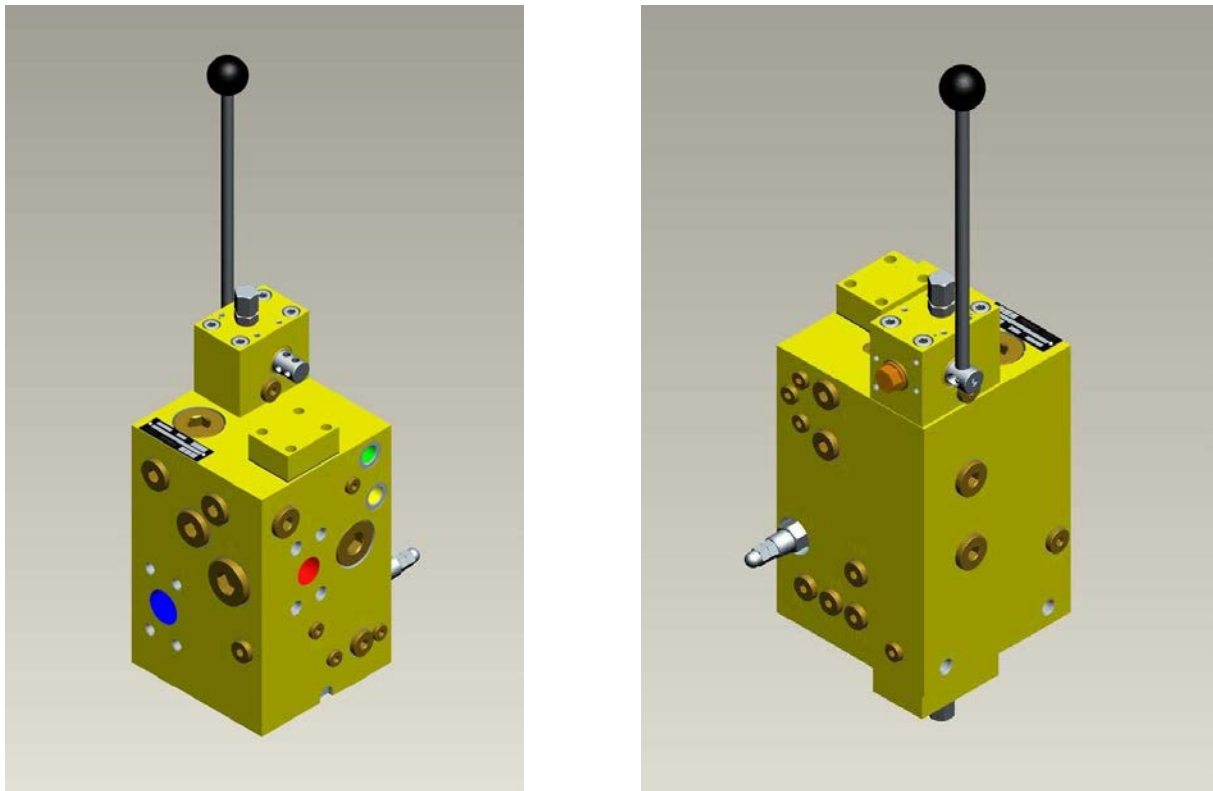


Modular Unit 11MB

MODULAR UNIT 11MB

GENERAL DESCRIPTION



*Figure 1 General Arrangement 11MB-***-**-2C-L**

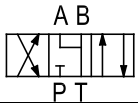
The Modular Unit 11MB is a basic unit for controlling of hydraulically driven winches and other hydraulic equipment. The unit has the following improved characteristics:

- Extremely compact design.
- Pressure compensated flow control system, which gives excellent metering.
- Designed to withstand marine surroundings.
- Hand lever with 39° control movement in each direction.

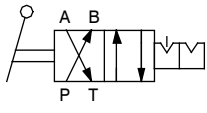
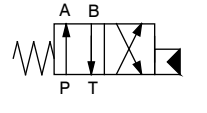
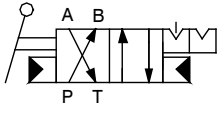
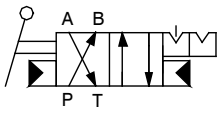
For more details about types and options, please refer to section 'MODULAR CODE'.

Modular Unit 11MB

MODULAR CODE

Options	Remarks	Design Code	Fill in
<i>Standard</i>			
- Main block		11MB	
- Directional valve			
- Pressure compensated flow control			
<i>Size</i>			
Pressure drop at Q = 150 l/min 15 bar	Flow area 130-175 l/min	150	
Pressure drop at Q = 300 l/min 15 bar	Flow area 175-300 l/min	300	
P: 1 ¼" SAE 6000	315bar	4	
A, B: 1" SAE 6000			
T: 1 ¼" SAE 3000			
<i>Directional Control Valve 4/3</i>			
Manually operated		1	
Manually/remote operated		37	
Prop. Electrical remote control		37ER	
<i>Spool type</i>			
	No option	2C	
<i>Manual control safety lock</i>			
0 position only		L	
0 + 30% in A		L3	

Modular Unit 11MB

Two-speed valve			
Manual operated		T	
Manual operated with reduced pressure		TR	
Hydraulic operated		TH	
Hydraulic operated with reduced pressure		THR	
Manual/hydraulic operated		TMH	
Manual/hydraulic operated with reduced pressure		TMHR	
Pressure reducing valve only		R	
Lever placement			
Standard mounting		No code	
Standard mounting, lever inside cover		.1X	
Cover 90°, right, lever standard		.7E	
Cover 90°, right, lever inside cover		.7E.1X	
Modification			
		(001-999)	

In example a 10MB intend for flow 300 l/min, manually operated main directional control valve: **11MB-300-1-2C**

Modular Unit 11MB

VALVE DESCRIPTION 11MB, HYDRAULIC.

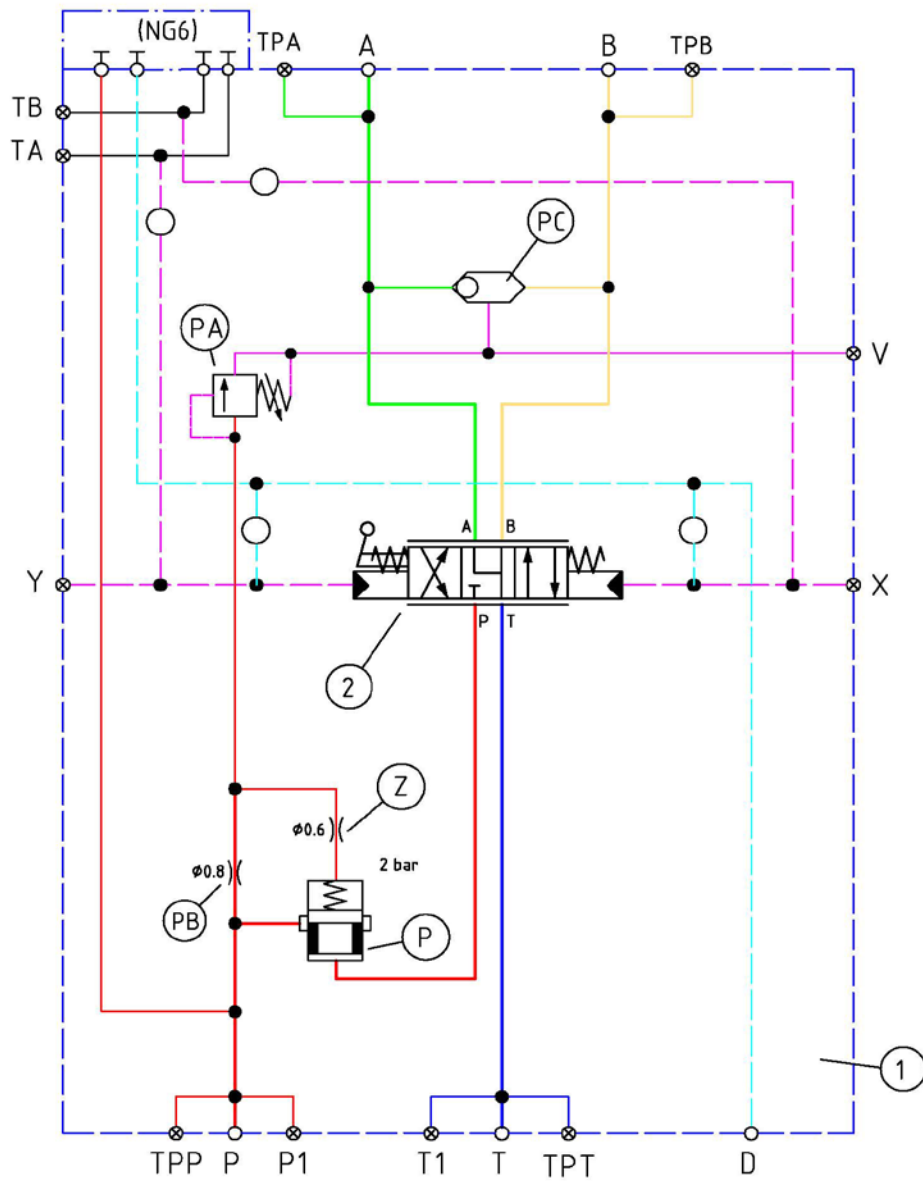


Figure 2 Hydraulic Schematic 11MB-300-1-2C

Modular Unit 11MB

Item 1 Main block.

Item 2 Directional control valve 4/3.

This is a three position directional spool valve with hand lever. When activating the directional valve handle, the operator controls the direction and drive speed of the drum. Throttling grooves in the main spool open progressively for flow either to A or B port.

Option code 37:

The directional valve is prepared to be hydraulically proportional remote controlled. Pilot pressure 5-20 bar.

Generally about the pressure compensator system.

This is a load independent system, which means that a given spool stroke on the directional valve will give equal flow independent of the motor/drum load.

The main directional spool (2) in conjunction with the pressure compensator flow control system (P, PA, PB, PC and Z), regulates the proportional oil flow to either A (Heave rotation) or B (Lower rotation) by sensing the pressure either in A or B line through the shuttle valve (PC). When operating directional valve (2), the spool will open progressively to A or B. The pressure compensation element will maintain equal an Δp across the directional valve. Maximum flow over the main directional valve is depending on the force induced on the pressure compensator element (P). This force is made up of a spring force in the compensator element item (P), and an adjustable spring force in the compensator pilot valve (PA) and the load pressure sensing in A or B via (PC). When the setting is altered on the compensator pilot valve (PA), the flow will change.

When adjusting pressure relief valve PA, the Δp through the directional valve will alter, and thus maximum flow to the hydraulic motor.

Item PC Shuttle valve for the pressure compensator.

Port V can be used for load sensing or in some applications for a hydraulically operated brake release valve.

Item P Pressure compensator element.

Normally open modulating element, which acts as a pressure compensator to maintain a constant pressure drop across the directional valve (together with PC, PB, PA and Z).

Item Z Dampening nozzle for the pressure compensator element.

Item PB Nozzle.

Maintains flow to compensator pilot valve PA.

Item PA Compensator pilot valve.

The spring is rather weak. Therefore, pressure created by an adjustable pressure relief valve is added to the spring force.

Modular Unit 11MB

DIMENSIONS

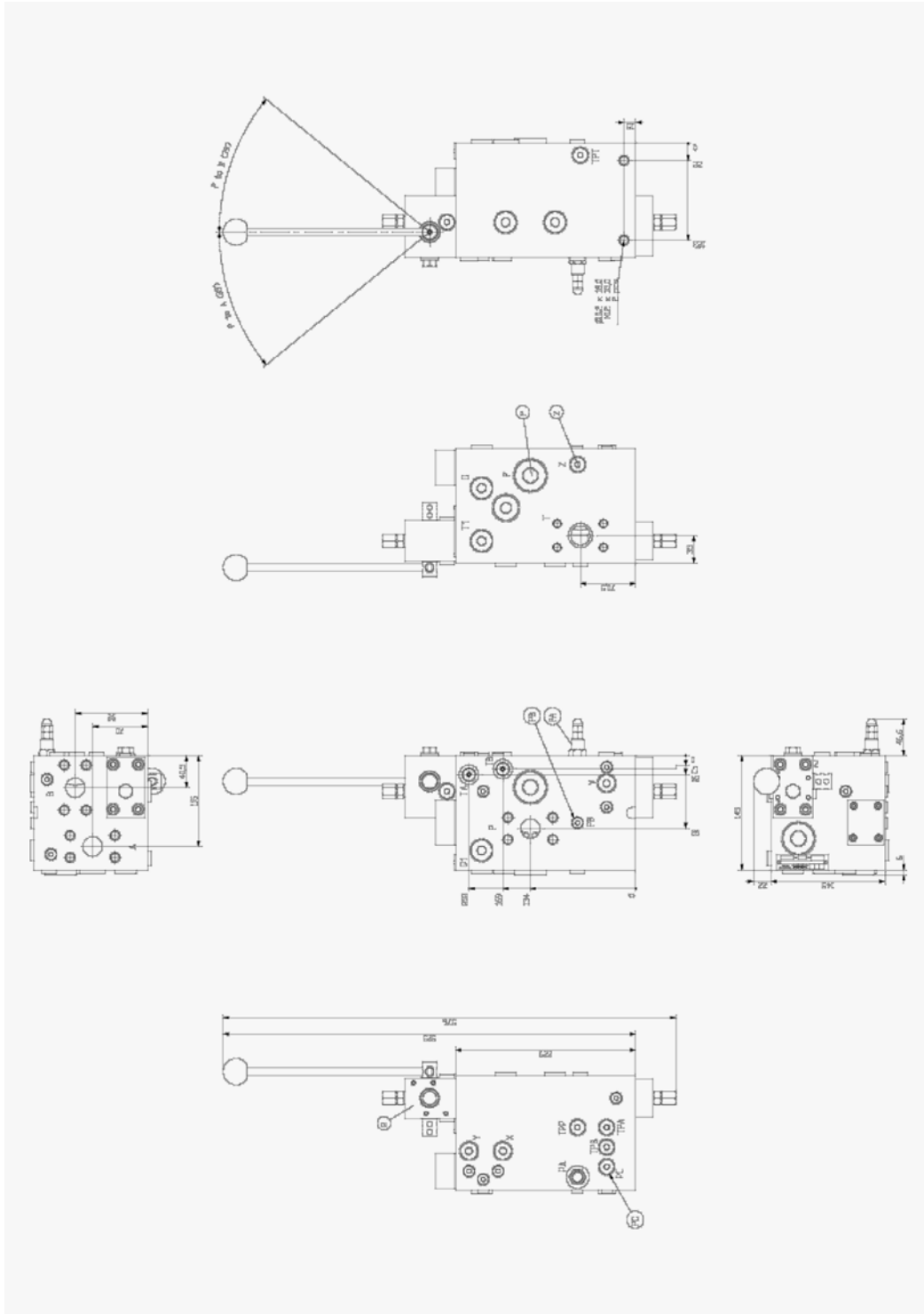
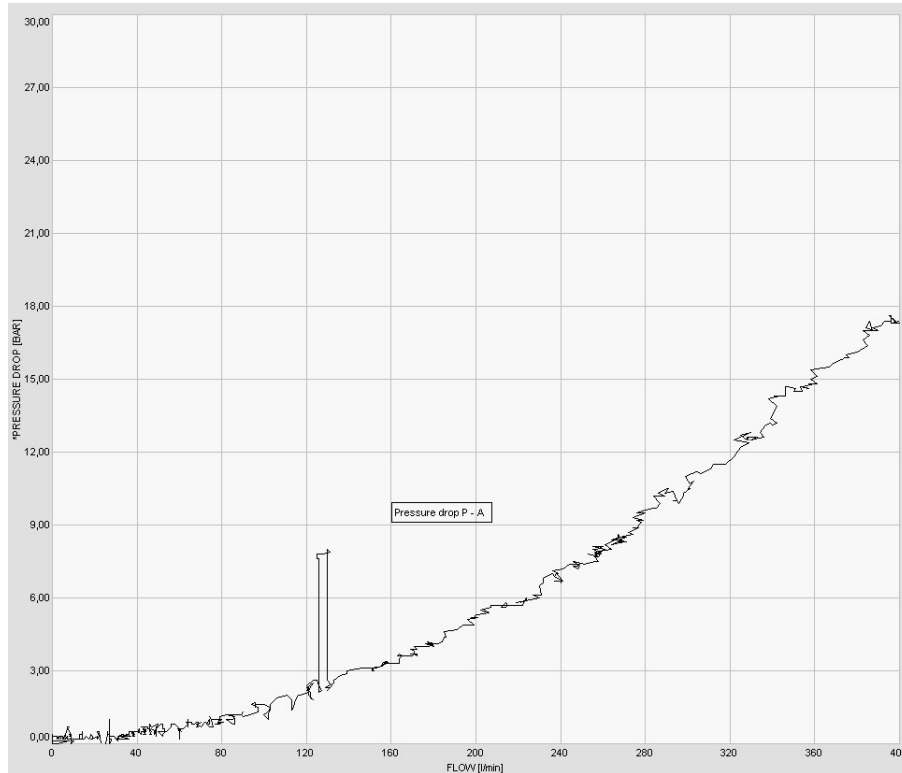


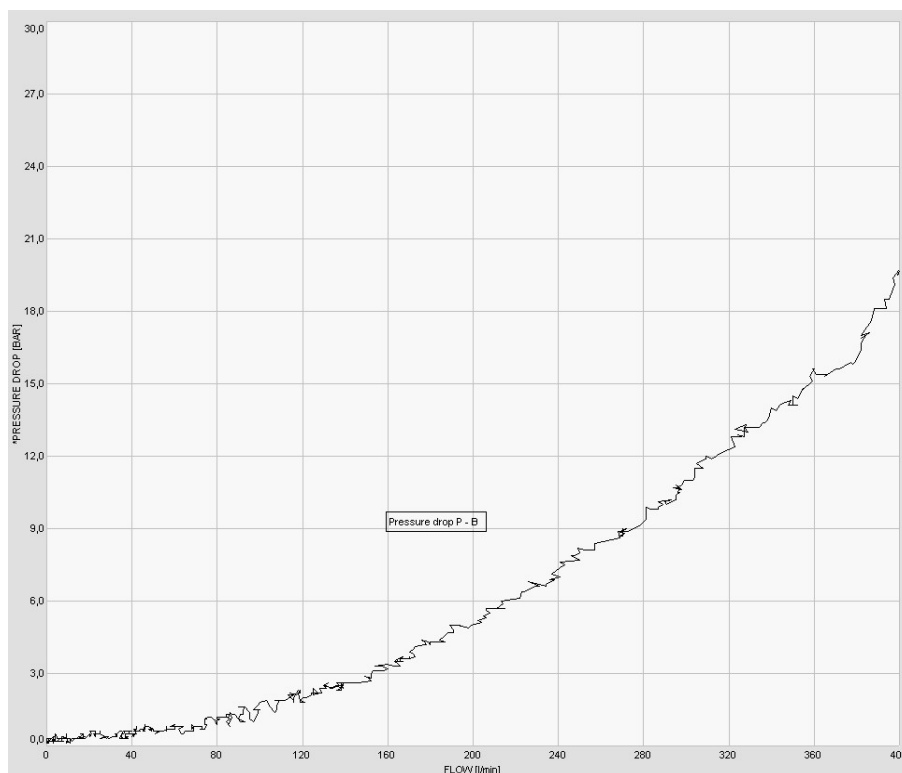
Figure 4 Dimensions 11MB-300-**-2C

Modular Unit 11MB
PRESSURE DROP 11MB

*Figure 5 11MB-300-**-2C pressure drop P - A*



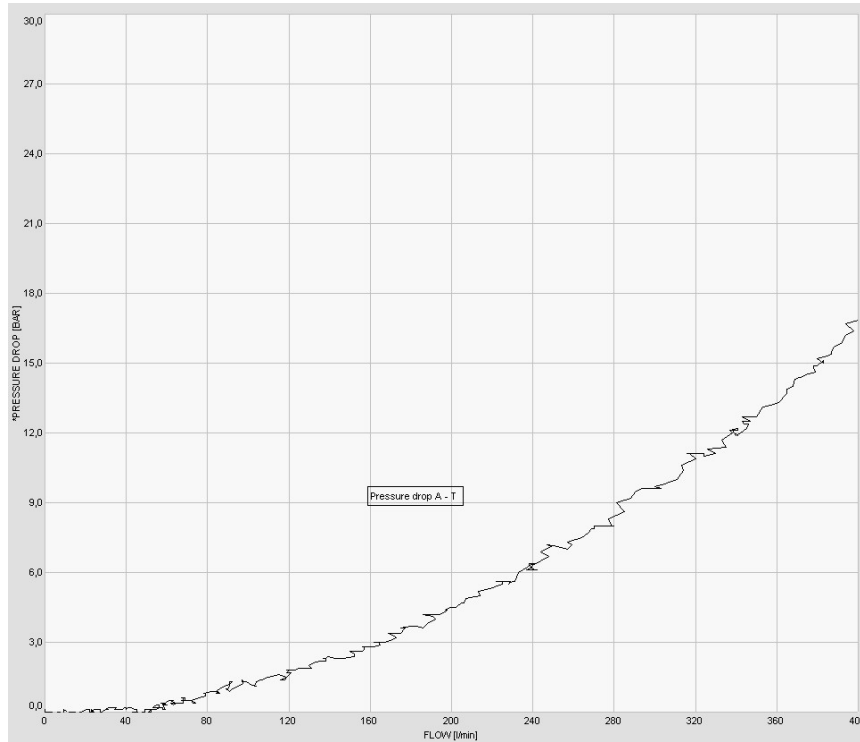
*Figure 6 11MB-300-**-2C pressure drop P - B*



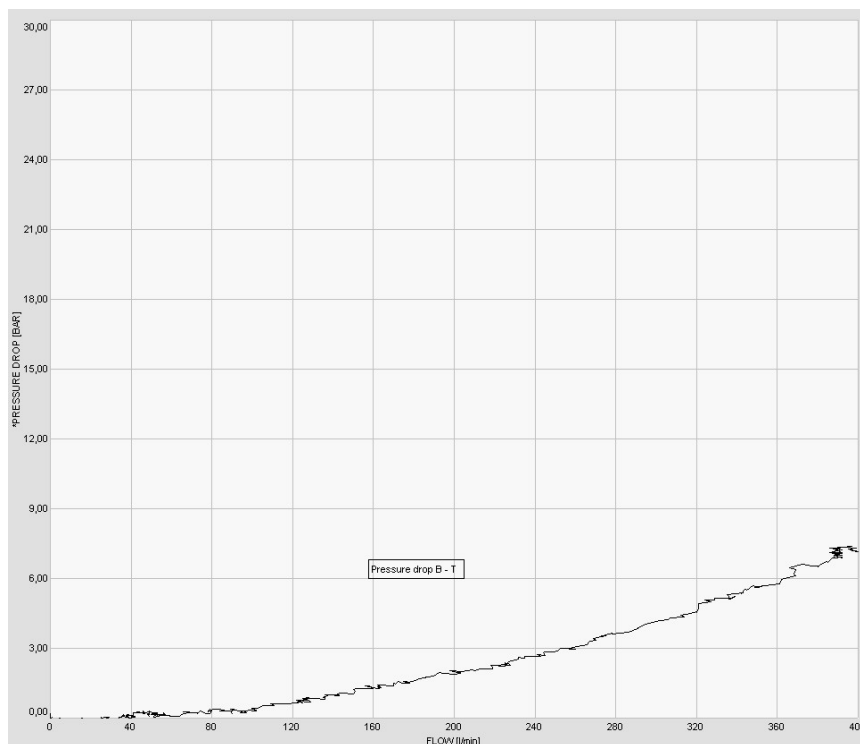
Modular Unit 11MB

PRESSURE DROP 10MB

*Figure 7 11MB-300-**-2C pressure drop A - T*



*Figure 8 11MB-300-**-2C pressure drop B - T*



Modular Unit 11MB

CONTROL 11MB

Figure 9 11MB-300-**-2C, Compensator .

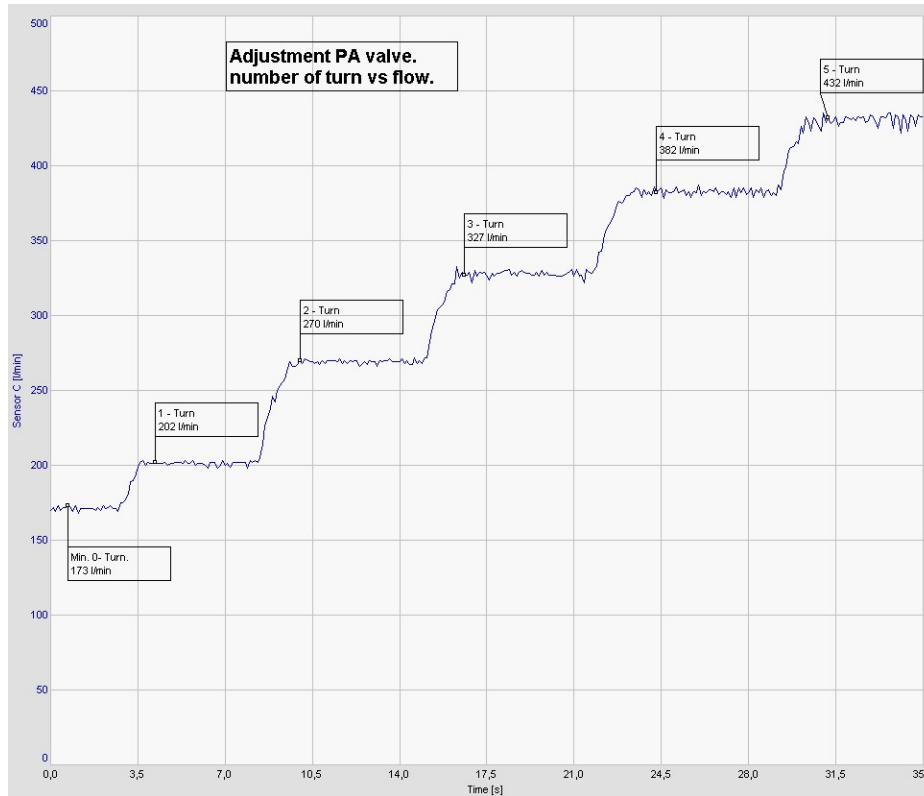
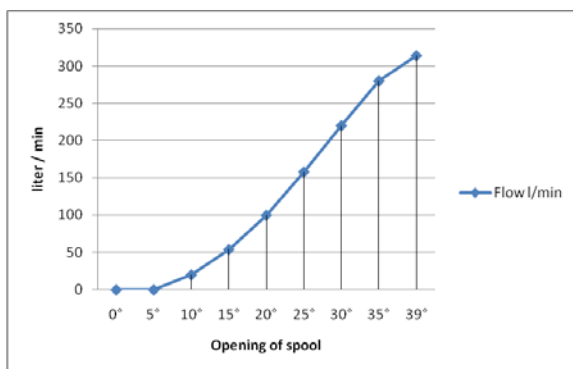


Figure 10 11MB-300-**-2C, Spool opening



Modular Unit 11MB

TECHNICAL DATA

Description	Symbol	Unit	Value	
			11MB-150	11MB-300
Flow (Δp 15 bar)	Q_{max}	l/min	11MB-150	11MB-300
Flow area		l/min	130-175	175-300
Max. operating pressure	P_{max}	Bar	315 bar	
Recommended max. pressure in port T. See Note 1.	T_{max}	Bar	20	
Directional valve pilot pressure	P	Bar	5-20	
Weight basic version	m	Kg	≈ 27	
Hydraulic fluid			Mineral oils for hydraulic system	
Viscosity range:	v	m ² /s	10 to 350 (cST)	
Viscosity index:	VI		> 120	
Filtration, recommended filter with $\beta_{20} \geq 100$			Class 9 according to NAS 1638, 18/15 according to ISO 4406	
Fluid temperature range:	T		-20°C to + 70°C	
Ambient temperature range	T		-20°C to + 50°C	
Standard Body Material			GJS-400-15 (GGG 40)	
Standard O-rings			Nitrile shore 70	

Note1: Pressure peaks in T port can influence on the stability of the system, particular proportional remote control of main directional valve.

Interfaces:

Ports	Port dimension
P	1" sae 6000
T	1 1/4" SAE 3000
A, B	1 1/4" SAE 6000
Y, X	3/8" BSPP
D	1/2" BSPP
V, TPP, TPT, TPA and TPB	1/4" BSPP
Mounting Screws:	2 off M 12 (Thread depth 20 mm)

Modular Unit 11MB

INSTALLATION

The Modular unit 11MB is installed with 2 off screws with thread dimension M12x20 on the side off the valve body. Please refer to 'Interfaces' in section 'TECHNICAL DATA', for details about screws and o-rings.

OPERATION

Manual control is performed by the hand lever. The valve is delivered with a centring spring, which means that the main spool will return to the neutral position after operating the hand lever.

Option 37 (Manual/remote operated):

Directional valve is prepared to be hydraulic proportional remote controlled. An external pilot pressure moves the spool to the requested position Pilot pressure 5-20 bar. The valve is equipped with a hand lever to override the pilot pressure.

MAINTENANCE

Check the valve for proper function. Visually check the valve and if required, paint unpainted (damaged) areas.

CAUTION: Do not paint the hand levers shaft seals.

SPARE PART

Seal Kit Set is available.

STORAGE

If storage longer than 6 months is expected, the valve must be kept in a dry room, free from dust and protected against sudden large temperature variations. For storage longer than 12 months, the valve must be filled with inhibition oil. Before use check all visible seals and flush with clean oil.

MARKING

Inlets and outlets are marked; refer to figure in section 'GENERAL DESCRIPTION'.