

# VB25 AND VB30 CONTROL VALVE

# **GENERAL DESCRIPTION**



Figure 1 VB25 General Arrangement





Figure 2 VB30 General Arrangement

The Modular Units VB25 and VB30 are complete units for controlling of hydraulically driven winches and are designed for fixed pump systems. On the VB25 and VB30 all valves are integrated in one unit. Advantages with the new design are several:

- Considerably more compact unit.
- Fewer leakage points
- Cost efficiency because of less machining.
- Decreased pressure drop.

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

# MODULAR CODE

Options	Remarks	Design Code	Fill in			
Standard						
- Main block						
- Directional Valve						
- Counterbalance valve in A		VB	VB			
- Pressure relief valve A to B		12	12			
- Pressure relief valve B to A						
- Anti-cavitation valves to A and B						
Size						
Rated flow $Q = 240 $ l/min		25				
Rated flow $Q = 450 $ l/min		30				
Directional Control Valve 4/3						
Manually operated with spring return		OMIT				
Manually operated, with detent in A- 0-B position		4				
Manually/hydraulically remote operated	Pilot pressure 8-30 bar	R				
Manually operated with brake release 4BA3		В				
Manually/hydraulically remote operated with brake release 4BA3		BR				
Pressure relief valve						
Pressure relief A to B and B to A	No option	D2	D2			
Spool type						
	No option	01	01			
Anti-cavitation valves						
Boosting T to A and B		AC				
Remote control tension valve						
Tension valve A to B (standard VB30)		MA				

In example a VB25, manually/remote operated main directional control valve will have modular code: **VB25-R-D2-01.** 



# VALVE DESCRIPTION VB25 AND VB30



*Figure 3* VB25 Hydraulic Diagram, manual operated directional valve.



*Figure 4* VB30 Hydraulic Diagram, hydraulic remote controlled main directional valve



#### 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 groves in the main spool open progressively for flow either to A or B ports.

#### Item 3 Counterbalance valve $A \rightarrow T$ .

The counter balance valve keeps the load under control during lowering operations. Throttling groves in the counter balance spool open progressively for flow from  $A \rightarrow T$  port, and thus give a smooth lowering operation and low pressure rise with full flow. The pilot pressure controls the counterbalance spool.

VB25: Load reactive counter balance valve with integrated pressure relief function and free flow  $A \rightarrow T$ , pilot ratio: 4.5:1. Pilot pressure taken from line *B* and load side. Recommended presetting for the counterbalance valve is 1.3 times the maximum load pressure.

VB30: Load independent counter balance valve. Pilot pressure only taken from line B, controls the counter balance spool. The counterbalance valve is preset to 40 bar opening pressure, which is the minimum recommended opening pressure.

# Item 4Pilot operated Pressure relief valve A→B<br/>Option item 4 on VB25. This is standard valve in VB30.<br/>An extra pilot port MX for remote operated pressure in A will often be used as<br/>a mooring valve, to keep a constant tension on the drum, or for freewheeling<br/>the hydraulic motor to increase the speed when lowering.<br/>If presetting is not stated in the order, the pressure relief valve is set to its<br/>minimum.

# Item 5Pressure relief value $B \rightarrow A$ Pilot operated pressure relief value for securing the hydraulic motor.If presetting is not stated in the order, the pressure relief value is set to its<br/>minimum.

Item 6/7Anti-cavitation check valves (boosting to A and B)<br/>Measures must be taken to ensure that cavitation cannot occur in a hydraulic<br/>system. Therefore, a certain flow must be applied to A or B to replace leakage.

# Item 8Adjustable throttling. (Only for VB30)

Throttling for the counter balance pilot channel.

#### Item 9 Check-valve free flow $P \rightarrow A$ (Only for VB30, ref. diagram) Bypassing counter balance valve in Heave.



# DIMENSIONS

**VB25** 



Figure 5 VB 25 Dimensions



#### **VB30**



Figure 6 VB 30 Dimensions

# PRESSURE DROP VB25 AND 30



Figure 7 VB25 pressure drop



Figure 8 VB30 pressure drop

# **TECHNICAL DATA**

Description	Symbol	Unit	Value	
Max. Flow	Q <sub>max</sub>	l/min	VB 25	<b>VB 30</b>
			240	450
Max. operating pressure Ports P, T, A, B	P <sub>max</sub>	bar	210	
Max. permissible drain line pressure port L	L <sub>max</sub>	bar	30	
Directional valve pilot pressure	Р	bar	8-30	
Weight basic version			VB 25	<b>VB 30</b>
	m	kg	37	80
Hydraulic fluid			Mineral oils for hyd	raulic system
Viscosity range:	v	m <sup>2</sup> /s	10 to 350 (cST)	
Viscosity index:	VI	> 120		
Filtration, recommended filter with $\beta 20 \ge 100$		Class 9 according to NAS 1638, 18/15 according to ISO 4406		
Fluid temperature range:	Т	-20°C to + 70°C		
Ambient temperature range	Т	-20°C to + 50°C		
Standard Body Material		EN-GJS-400-15 (GGG40)		
Seals		Nitrile shore 70		

Be aware that pressure in leakage port L is direct additive to valve setting for pressure relief valve and counterbalance valve item C. Pressure peaks in L port can influence on the stability of the system.

#### **Interfaces:**

Size	Description	Data		
	Connections:	Dimensions		
VB 25	P, T, A and B	1 ¼" SAE 3000		
	L	3/8" BSPP		
	TPP, TPT	<sup>1</sup> / <sub>4</sub> " BSPP		
	SA, SB (Option, remote control conn.)	3/8" BSPP		
<b>VB 30</b>	P, T, A and B	1 ½" SAE 3000		
	L	<sup>1</sup> /2" BSPP		
	MX	3/8" BSPP		
	TPP, TPT, TPA, TPB	<sup>1</sup> / <sub>4</sub> " BSPP		
	SA, SB (Option, remote control conn.)	3/8" BSPP		
Mounting Screws:				
VB25	M 10 (2 off) -Thread depth 17 mm			
<b>VB30</b>	M 16 (2 off) -Thread depth 20 mm			

# INSTALLATION

The Modular unit VB25 are installed with 2 screws with thread depth M10x17 to a bracket. The Modular unit VB30 are installed with 4 screws with thread depth M16x20 to a bracket.

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 centring spring, which means that main spool will return to the neutral position after operating the hand lever.

*Option R* (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 8-30 bar. The valves are equipped with a hand lever for override of the pilot pressure.

# VALVE ADJUSTMENTS

If no presetting is stated in the order, the pressure relief valves item 4 and 5 are set to their minimum.

VB25: Counterbalance valve opening pressure is minimum 1.3 x load pressure.

VB30: Minimum recommended opening pressure for the counterbalance valve is 40 bar.

#### 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

VB25 and VB30 inlets and outlets are marked, refer to figures in section 'GENERAL DESCRIPTION'.