

INSTALLATION GUIDE

INSTALLATION VALVES



HMV
Modular installation valves

10/18
rev 1.4

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1. GENERAL

DYNASET HMV modular installation valves are designed for compact and efficient hydraulic mobile applications. HMV is modular and easy to assemble from the different valve blocks. Multiple valve blocks are available; solenoid valves, pressure relief and pressure reducing valves also different flow control valves.

Modular construction needs less hoses and connections meaning space savings, reduced risk of leaks and breakdowns and also less service. Using multiple blocks user increases the cost efficiency of his hydraulic system.

2. SAFETY

ATTENTION!

Operator and maintenance personnel must act in compliance with the laws, regulations and recommendations issued by the local work safety authorities.

 **WARNING**

HIGH PRESSURE OIL!

Can cause severe injuries.
Always wear appropriate clothing and safety equipment.



The pressure in hydraulic circuits is considerably high. Therefore the condition of your equipment are to be kept under constant observation. All couplings, valves and hoses are to be kept tight and clean. Leaks in the hydraulic system must be repaired immediately to avoid injuries caused by high pressure and oil blowouts.

 **WARNING**

RISK OF BURNS!

Parts of the unit, oil, and oil filler cap can be hotter than 80 °C!

Wear personal safety equipment!



ATTENTION!

Before beginning any maintenance, repair or disassembly to the hydraulic system and DYNASET product, ensure that the system is stopped and depressurized. Make sure that the system can not start accidentally.

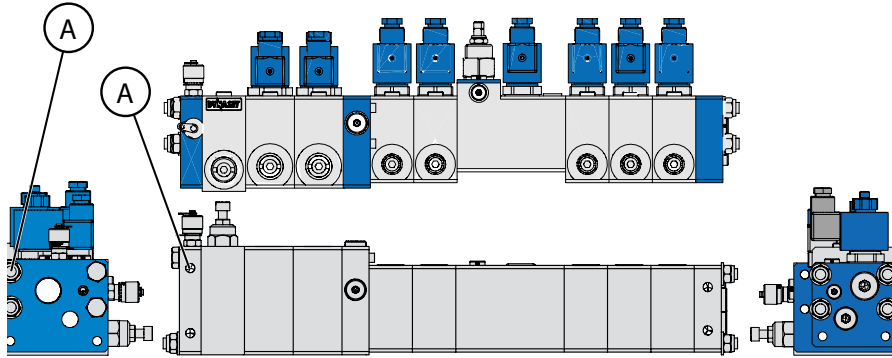
NOTE!

When carrying out any maintenance to DYNASET products keep the components clean. This is to ensure safe, reliable and longlife operation of your equipment.

When working with DYNASET products or their accessories, wear appropriate protective clothing, safety goggles, gloves, ear protection.

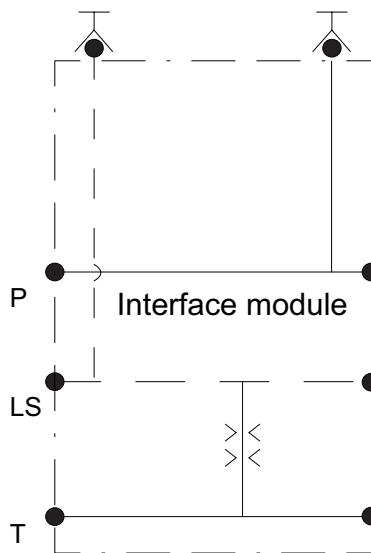
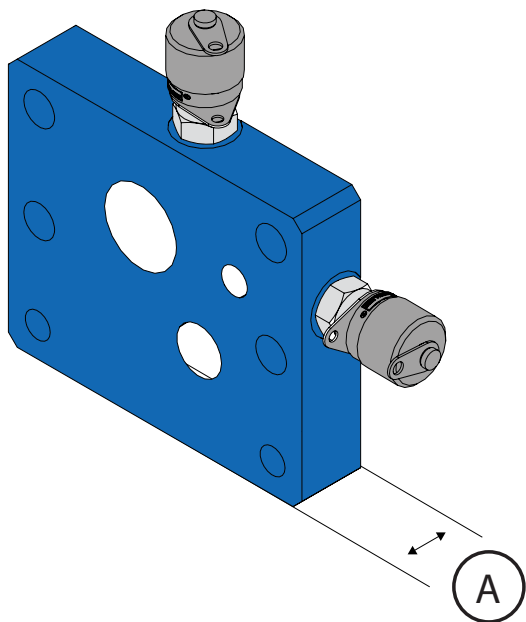
3. TECHNICAL SPECIFICATIONS

HMV modular installation valves are normally pre-assembled at Dynaset according to customer's needs. Otherwise, HMV module slices are either stacked together with standard screws or thread rods (10.9) and nuts. Recommended tightening torque for M10 bolts is 45 Nm.



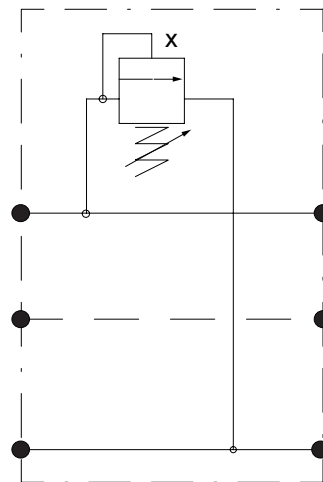
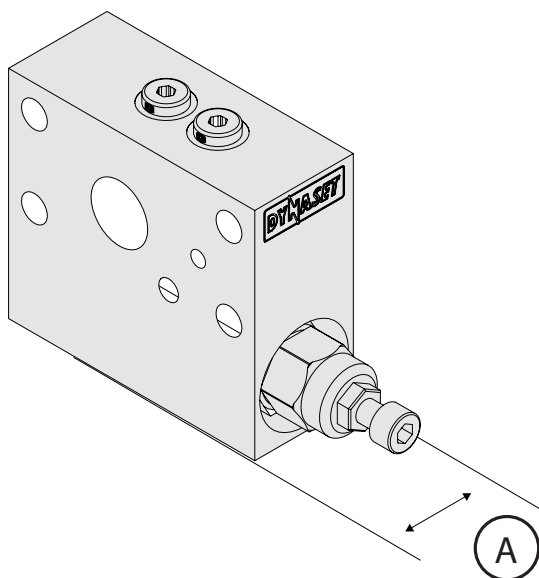
A = M10, 45 Nm

3.1. MODULES



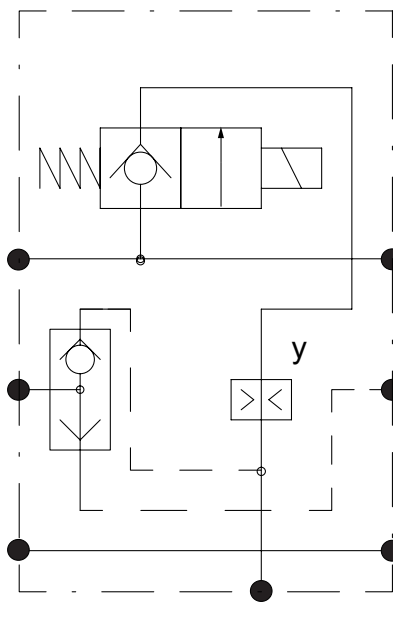
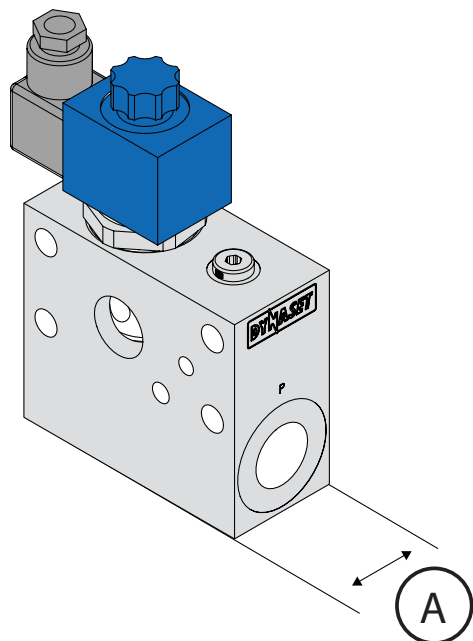
INTERFACE MODULE

D409018845 HMV 3/4 - INTERFACE MODULE - ST	
MEASUREMENTS	
A	20 mm
PORTS	
P	R3/4
T	R3/8
LS	R1/8
Measuring couplings	2x M16x2



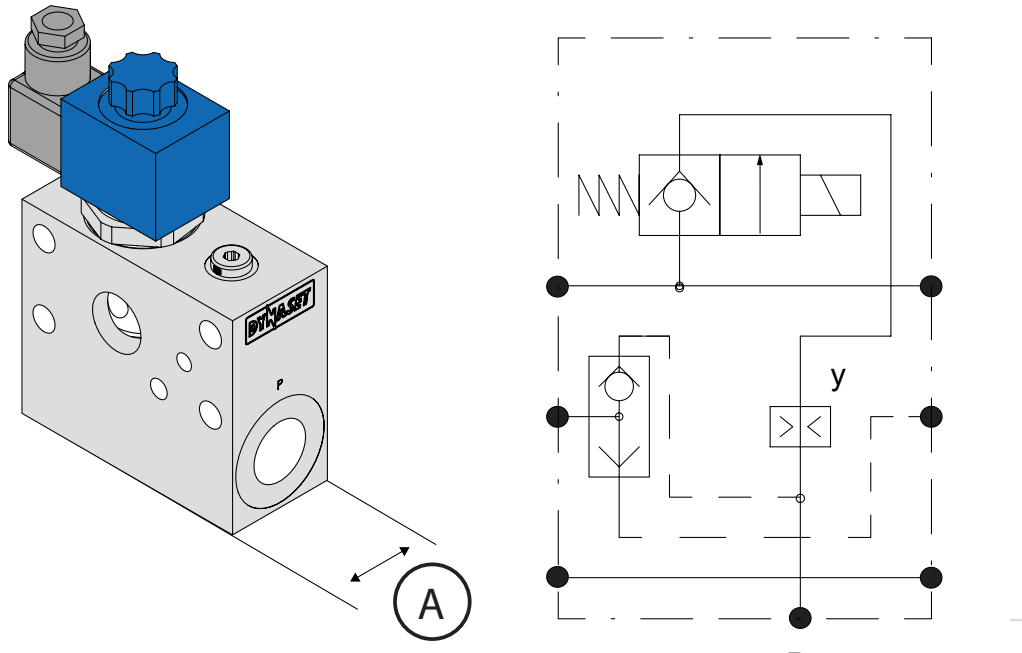
PRESSURE SHOCK RELIEF MODULE

D409017278 HMV 3/4 - PRxx - ST		
MEASUREMENTS		
A		40 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.	x	315 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Rated flow for pressure relief		40 l/min



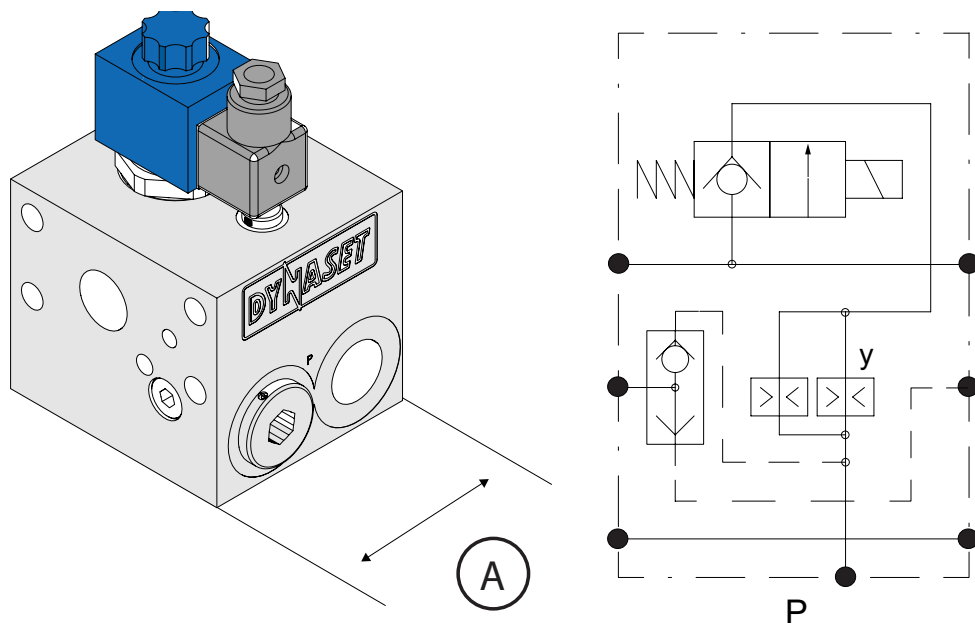
FLOW CONTROL VALVE AND 2/2 DIRECTIONAL VALVE

D409017237 HMV 3/4 - 2/2 - VRxx - xxV - ST MODULE		
MEASUREMENTS		
A		45 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		250 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Pressure drop through On/Off Valve		4,4 bar @ 90 l/min / 12,2 bar @ 150 l/min
Flow out	y	20 - 86 l/min
Coil Voltage		12/24 VDC



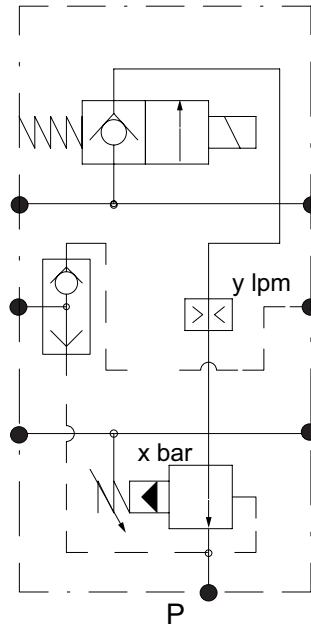
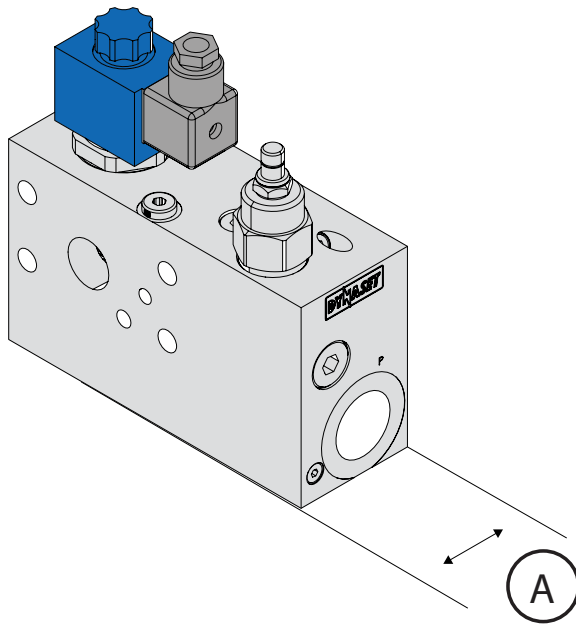
FLOW CONTROL VALVE AND 2/2 DIRECTIONAL VALVE

D409021463 HMV 3/4 - 2/2 - VRxx - xxV - ST MODULE		
MEASUREMENTS		
A		45 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		350 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Pressure drop through On/Off Valve		4,4 bar @ 90 l/min / 12,2 bar @ 150 l/min
Flow out	y	20 - 150 l/min
Coil Voltage		12/24 VDC



FLOW CONTROL AND PRESSURE REDUCING VALVE

D409019227 HMV 3/4 - 2/2 - 2x VRxx - xxV - ST		
MEASUREMENTS		
A		90 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		250 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Pressure drop through On/Off Valve		4,4 bar @ 90 l/min / 12,2 bar @ 150 l/min
Flow out	y	88 - 150 l/min (max. 172 l/min)
Coil Voltage		12/24 VDC



FLOW CONTROL AND PRESSURE REDUCING VALVE

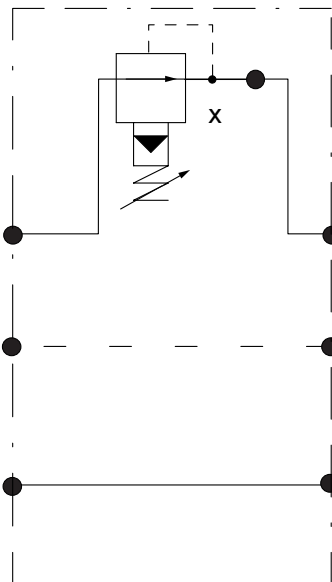
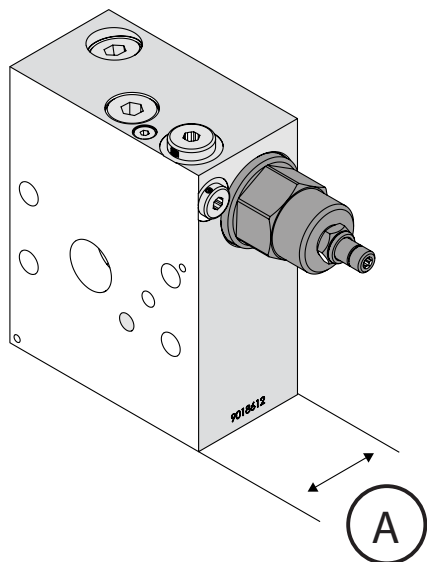
D409017683 HMV 3/4 - 2/2 - VRxx - PAxx - xxV - ST

MEASUREMENTS

A 60 mm

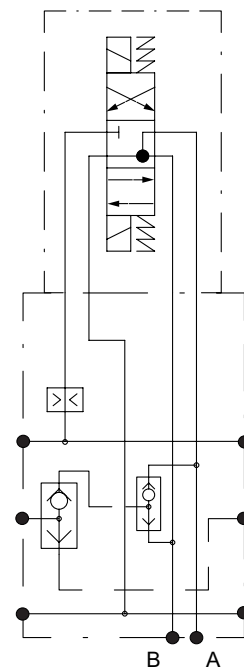
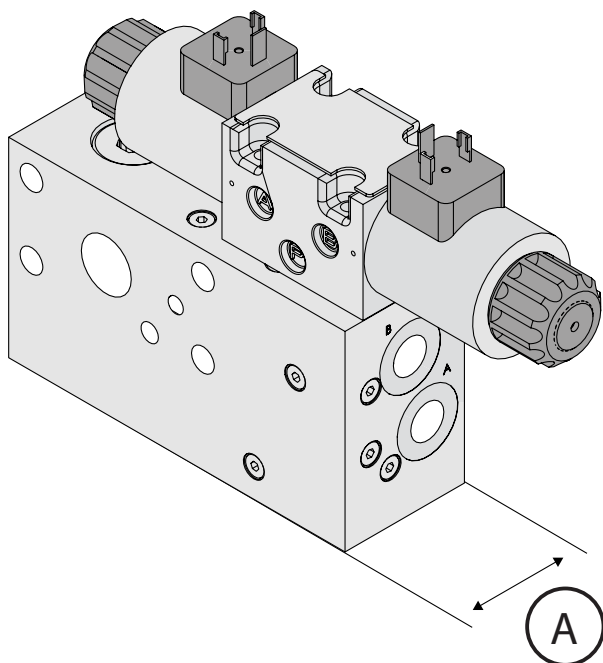
HYDRAULIC CHARACTERISTICS

Pressure max.		250 bar
Pressure adjustment	x	7 - 210 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Pressure drop through On/Off Valve		4,4 bar @ 90 l/min
Pressure drop through pressure reducing valve		16,4 bar @ 90 l/min / 12,2 bar @ 150 l/min
Flow out	y	20 - 86 l/min
Coil Voltage		12/24 VDC



FLOW CONTROL AND PRESSURE REDUCING 2/2 DIRECTIONAL VALVE

D409018613 HMV 3/4 - 2/2 - PAxx - ST		
MEASUREMENTS		
A		55 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		250 bar
Pressure adjustment	x	7 - 210 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Pressure drop through pressure reducer		16,4 bar @ 90 l/min



FLOW CONTROL AND 4/3 DIRECTIONAL VALVE

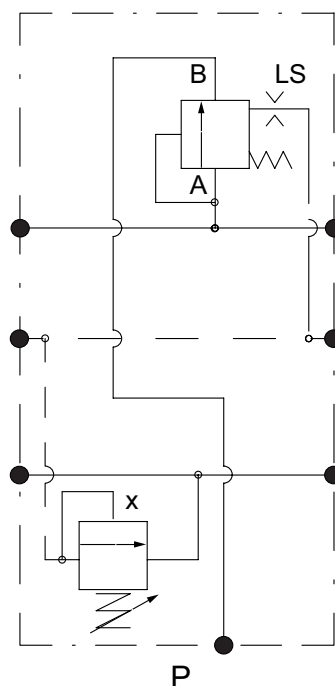
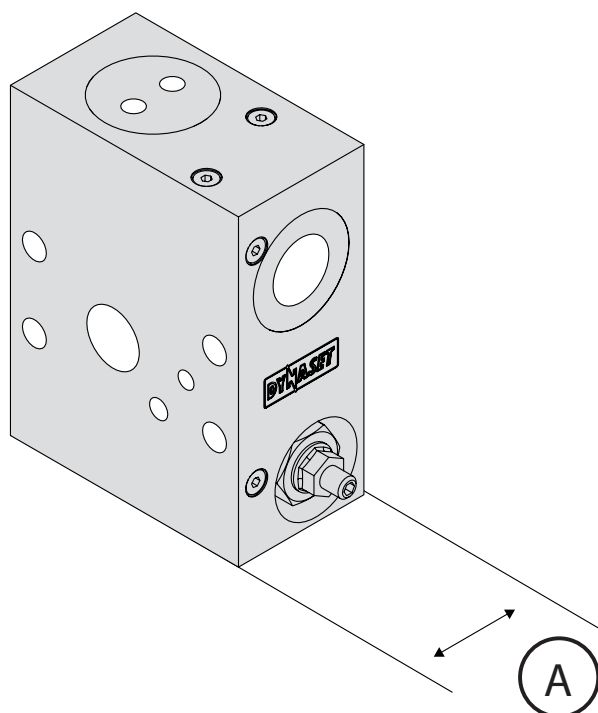
D409017746 HMV 3/4 - 4/3 CETOP 03 Y - VRxx - xxV - ST

MEASUREMENTS

A	55 mm
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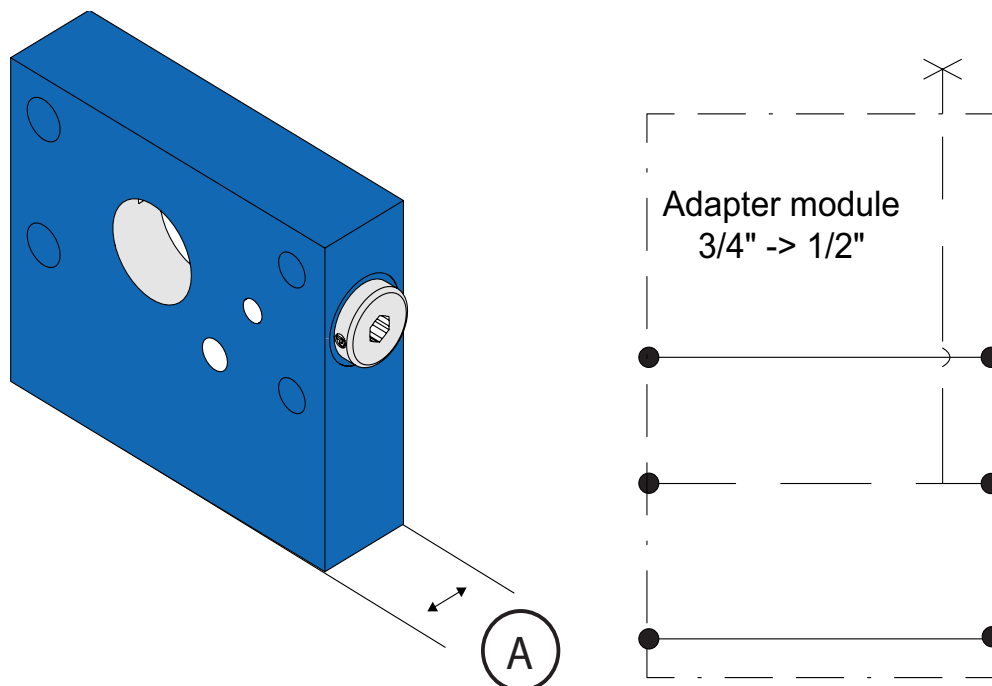
HYDRAULIC CHARACTERISTICS

Pressure max.		250 bar
Pressure drop through the block		0,3 bar @ 150 l/min
Flow out with flow limiter	y	8 - 40 l/min
Flow out without flow limiter		60 l/min
Coil Voltage		12/24 VDC
Directional valve		Different options



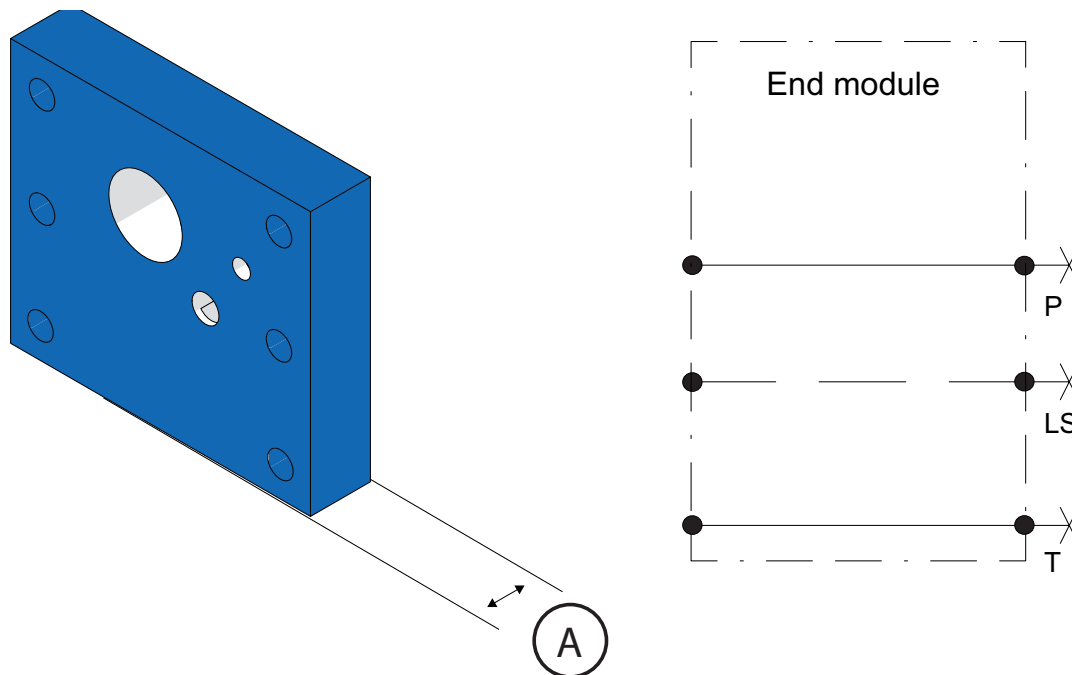
PRESSURE COMPENSATOR AND PRESSURE RELIEF VALVE

D409017978 HMV 3/4 - PC - PR - ST	
MEASUREMENTS	
A	655 mm
HYDRAULIC CHARACTERISTICS	
Pressure max.	250 bar
Pressure drop through the block	0,3 bar @ 150 l/min
Pressure difference A - B	13,5 bar
LS Pressure control	x 35 - 350 bar
Flow out	150 l/min



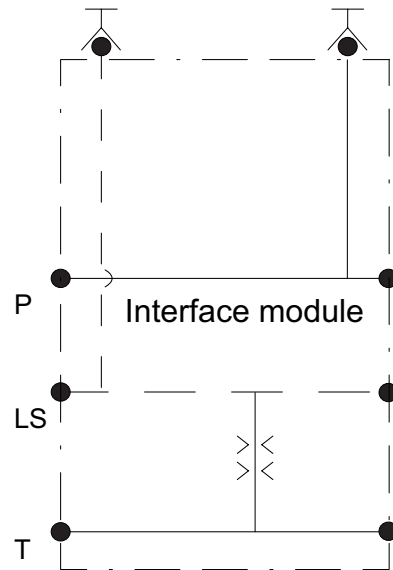
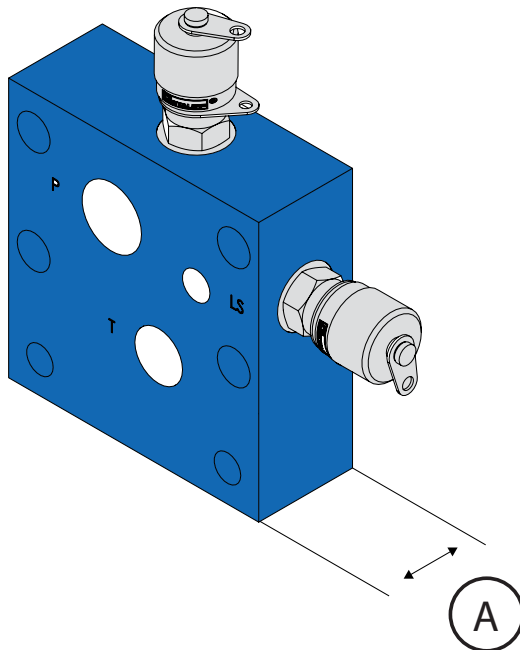
ADAPTER MODULE

D409017286 HMV 3/4 -> 1/2 - ADAPTER MODULE	
MEASUREMENTS	
A	25 mm
LS PRESSURE PORT	R1/4
HYDRAULIC CHARACTERISTICS	
Pressure max.	250 bar
Pressure drop*	0,35 bar / 150 l/min



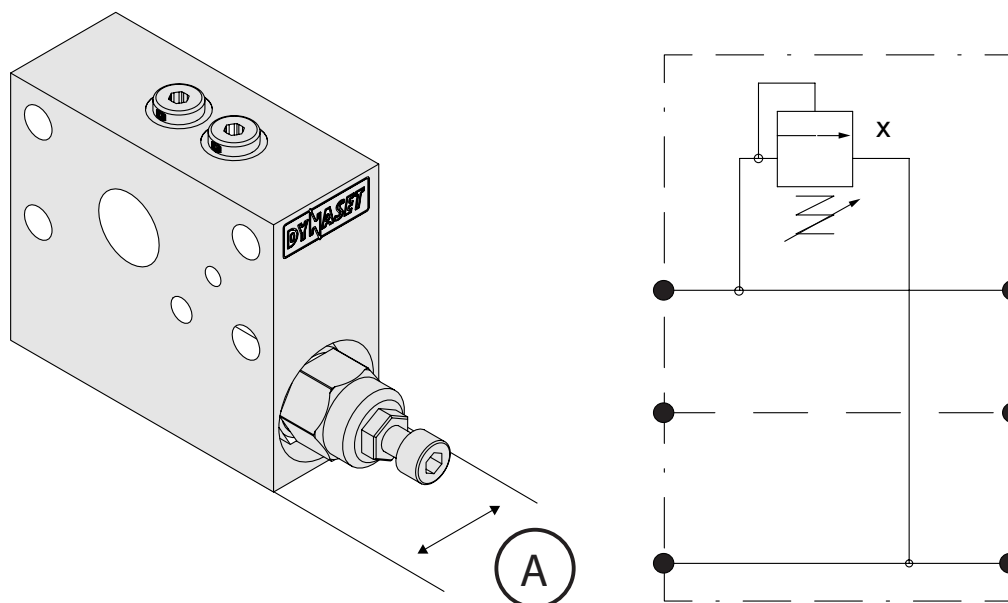
END MODULE

D409020303 HMV 3/4 - END MODULE - ST	
MEASUREMENTS	
A	20 mm
PORTS	
P	R3/4
T	R3/8
LS	R1/8



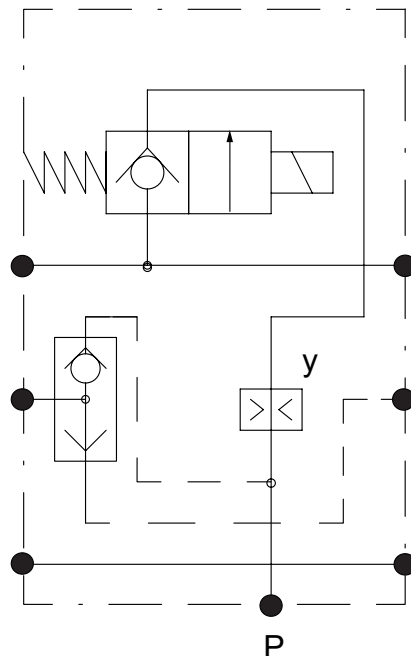
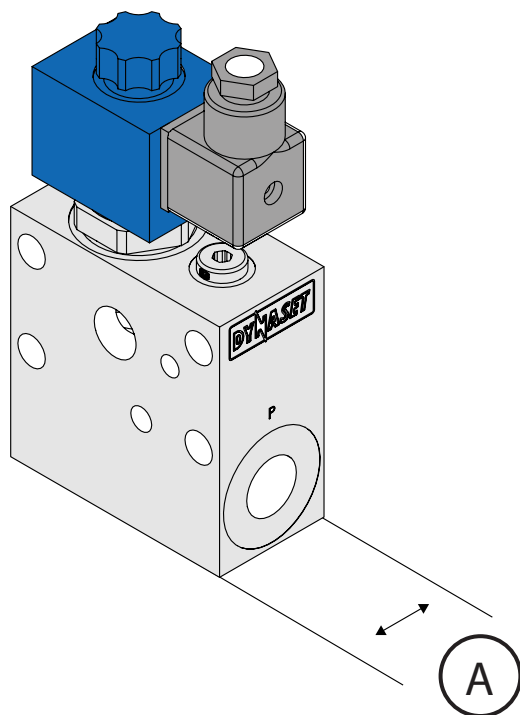
INTERFACE MODULE

D409017763 HMV 1/2 - INTERFACE MODULE - ST	
MEASUREMENTS	
A	30 mm
PORTS	
P	R1/2
T	R3/8
LS	R1/8
Measuring couplings	M16x2



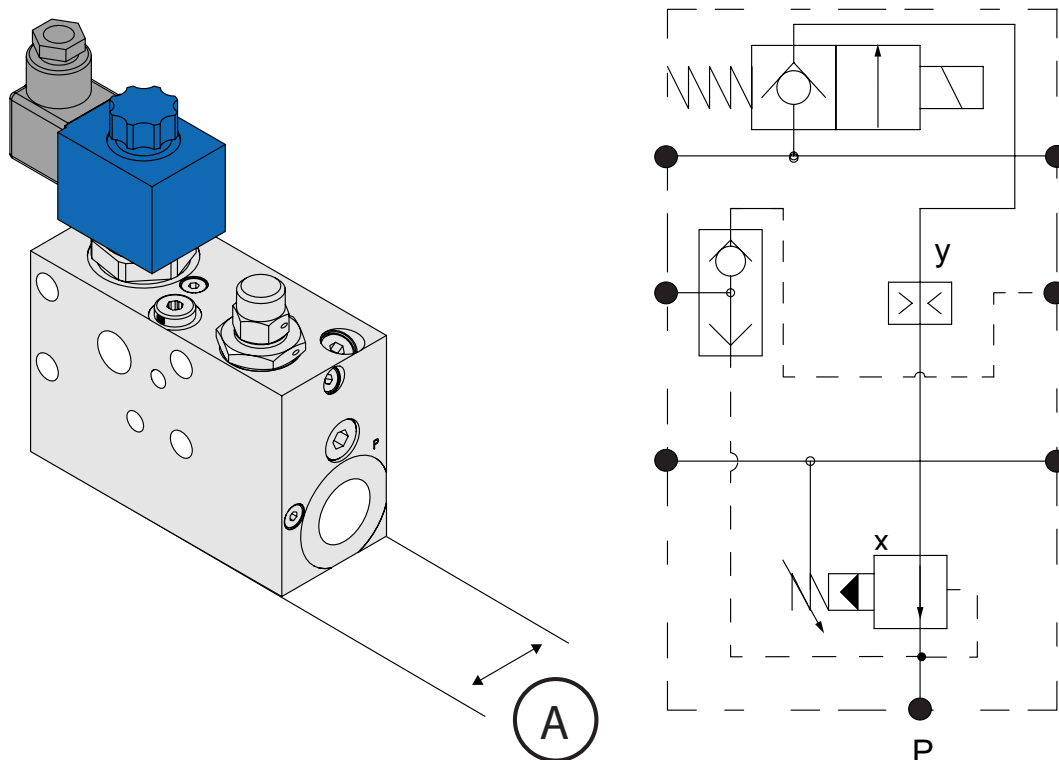
PRESSURE SHOCK RELIEF VALVE

D409017724 HMV 1/2 - PRxx - ST		
MEASUREMENTS		
A		40 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		250 bar
Pressure drop through the block		0,3 bar @ 70 l/min
Pressure adjustment	x	35 - 350 bar
Rated flow for pressure relief		20 l/min



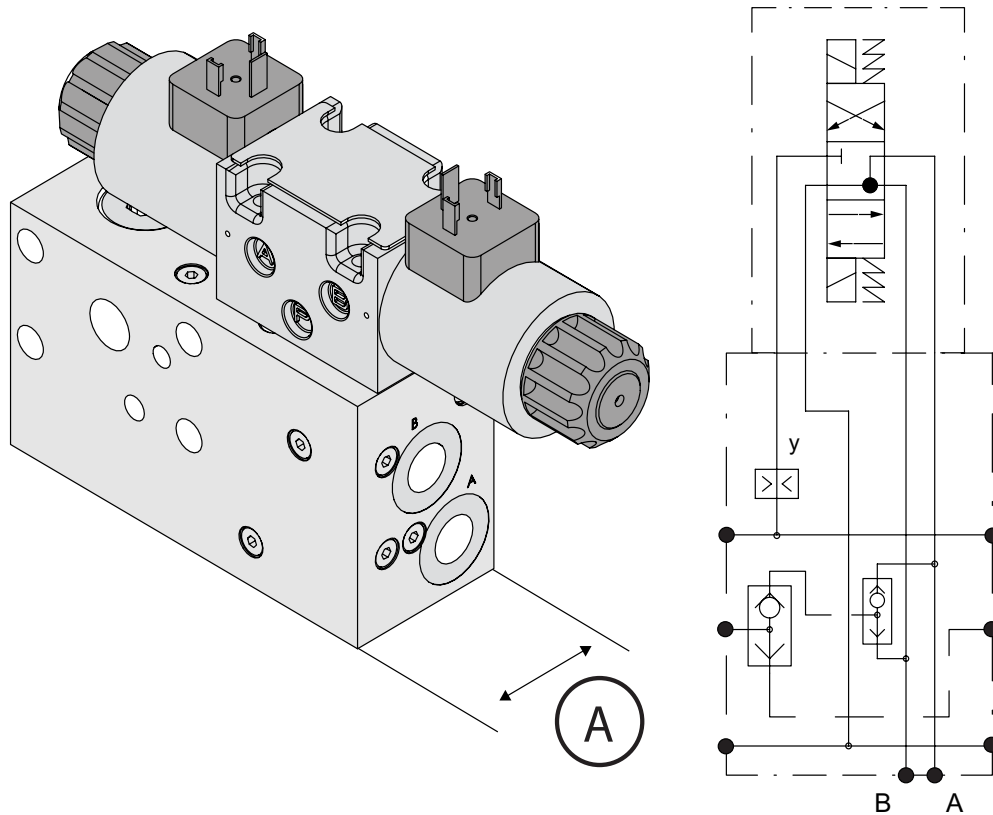
FLOW CONTROL AND 2/2 DIRECTIONAL VALVE

D409017272 HMV 1/2 - 2/2 - VRxx - xxV - ST	
MEASUREMENTS	
A	40 mm
HYDRAULIC CHARACTERISTICS	
Pressure max.	250 bar
Pressure drop through the block	0,3 bar @ 70 l/min
Pressure drop through On/Off Valve	9,5 bar @ 70 l/min
Flow out	y 8 - 40 l/min
Coil Voltage	12/24 VDC



FLOW CONTROL, PRESSURE REDUCING 2/2 DIRECTIONAL VALVE

D409017680 HMV 1/2 - 2/2 - VRxx - PAxx - xxV - ST		
MEASUREMENTS		
A		50 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		250 bar
Pressure adjustment	x	70 - 210 bar (options: 30-140 bar, 10 - 70 bar)
Pressure drop through the block		0,3 bar @ 70 l/min
Pressure drop through On/Off Valve		9,5 bar @ 70 l/min
Pressure drop through pressure reducer		7 bar @ 40 l/min
Flow out	y	8 - 40 l/min
Coil Voltage		12/24 VDC



FLOW CONTROL VALVE, PRESSURE REDUCING VALVE AND 4/3 DIRECTIONAL VALVE

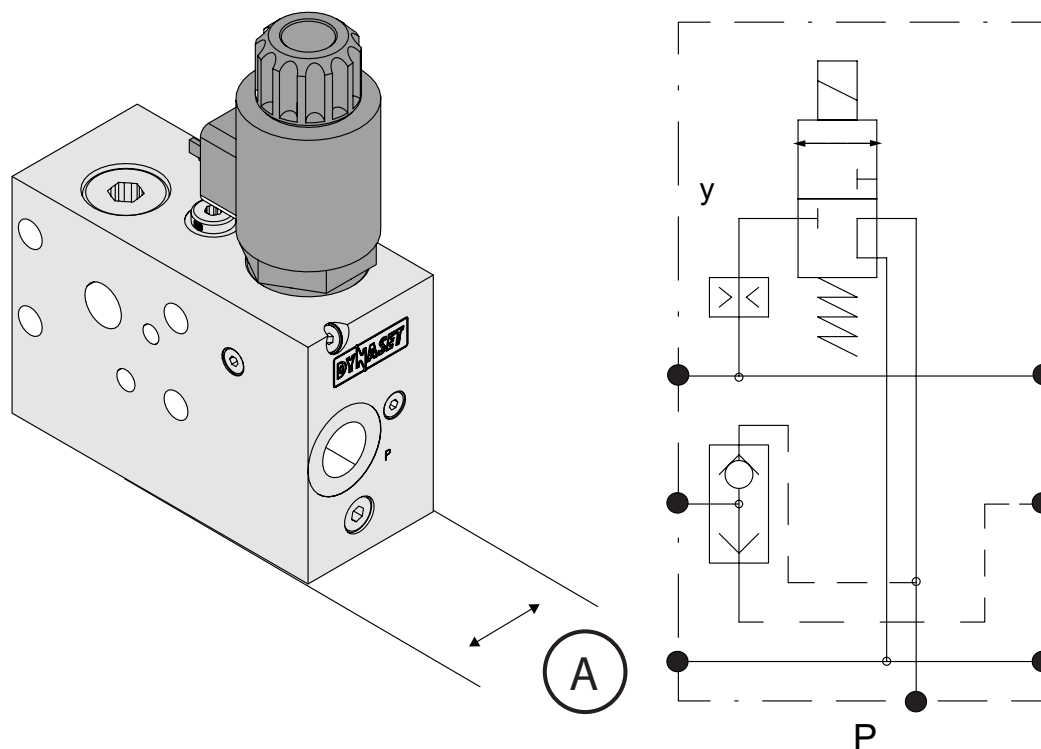
D409017734 HMV 1/2 - 4/3 CETOP 03 Y - VRxx - xxV - ST

MEASUREMENTS

A	55 mm
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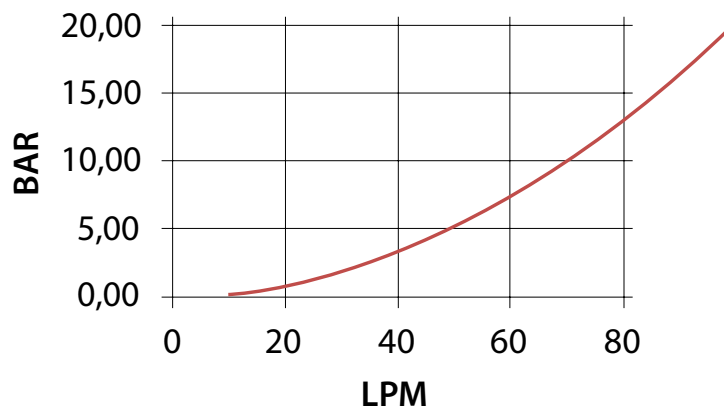
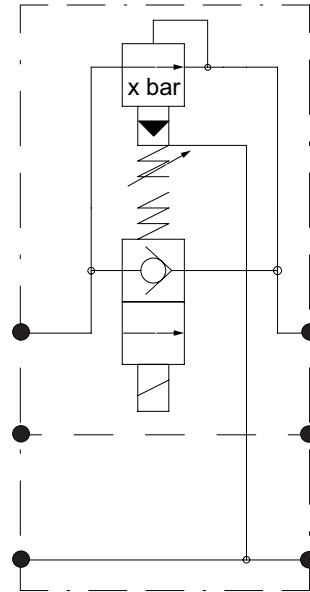
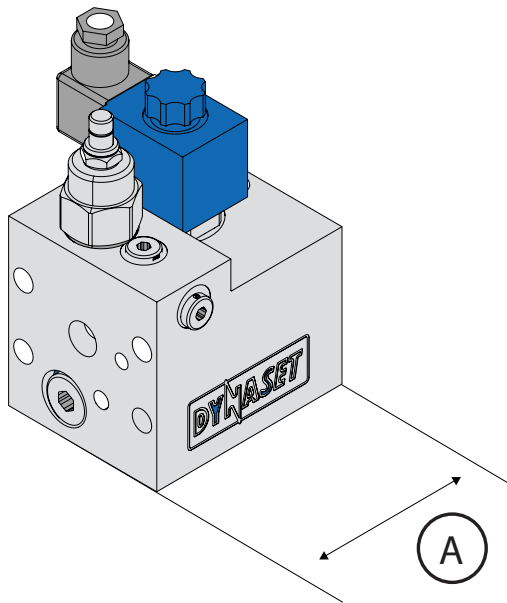
HYDRAULIC CHARACTERISTICS

Pressure max.	250 bar
Pressure drop through the block	0,3 bar @ 70 l/min
Flow out with flow limiter	y 8 - 40 l/min
Flow out without flow limiter	60 l/min
Coil Voltage	12/24 VDC
Directional valve	Different options



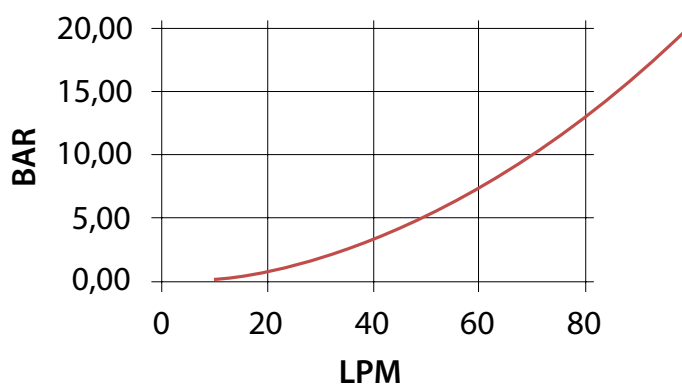
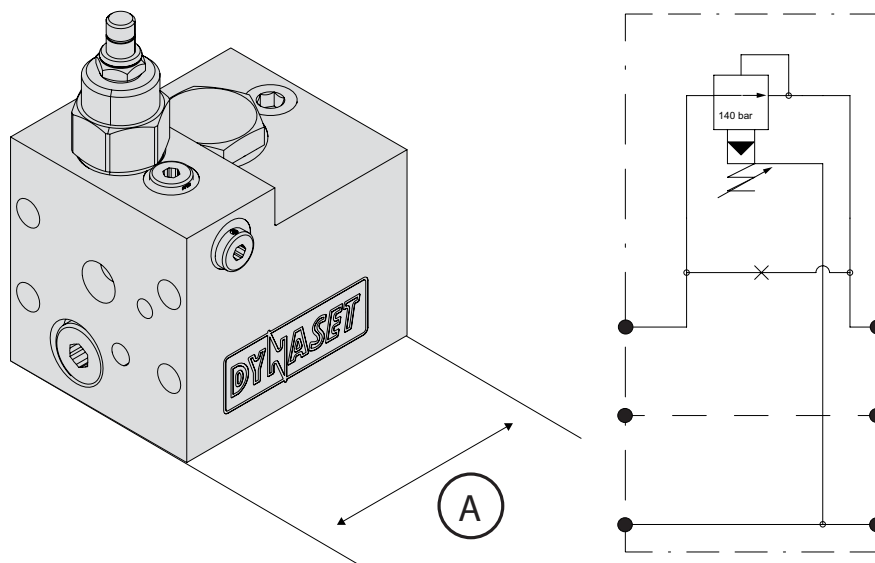
3/2 DIRECTIONAL FLOW CONTROL VALVE

D409017752 HMV 1/2 - 3/2 - VRxx - xxV - ST	
MEASUREMENTS	
A	55 mm
HYDRAULIC CHARACTERISTICS	
Pressure max.	250 bar
Pressure drop through the block	0,3 bar @ 70 l/min
Pressure drop through the directional valve	7,5 bar @ 70 l/min
Flow out	y 8 - 40 l/min
Coil Voltage	12/24 VDC



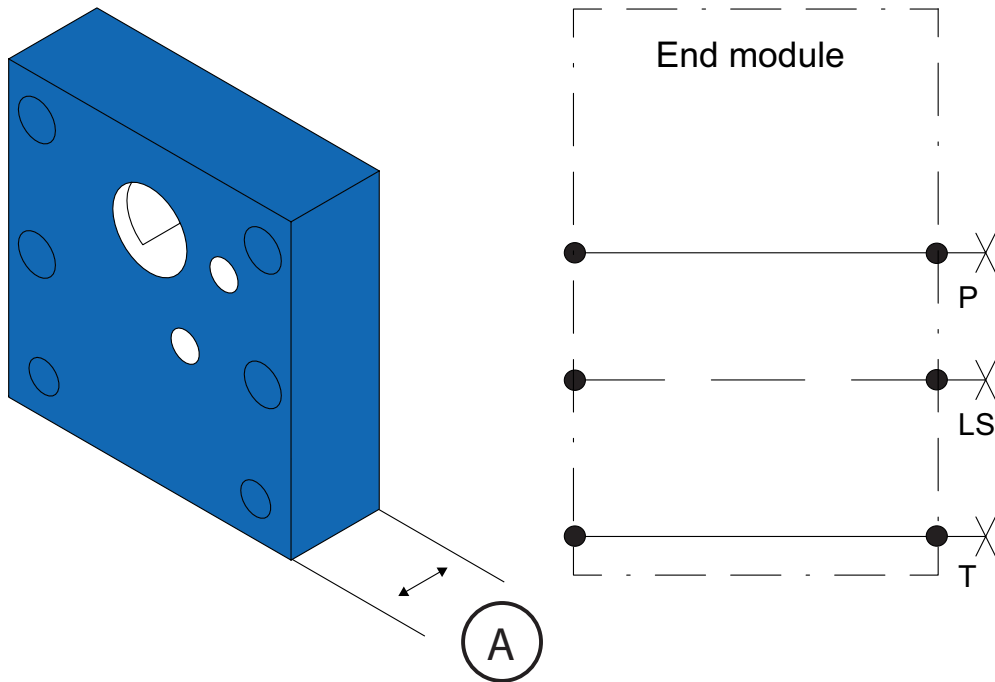
PRESSURE REDUCING 2/2 DIRECTIONAL VALVE

D409017307 HMV 1/2 - 2/2 - PAxx - xxV - ST		
MEASUREMENTS		
A		100 mm
HYDRAULIC CHARACTERISTICS		
Pressure max.		250 bar
Pressure adjustment	x	7 - 210 bar
Pressure drop through On/Off Valve		9,5 bar @ 70 l/min
Pressure drop through pressure reducer		10 bar @ 70 l/min
Coil Voltage		12/24 VDC



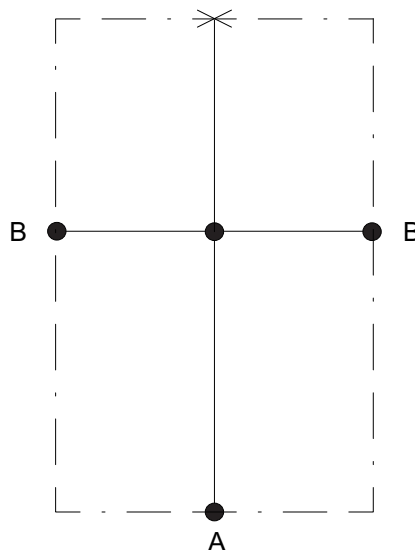
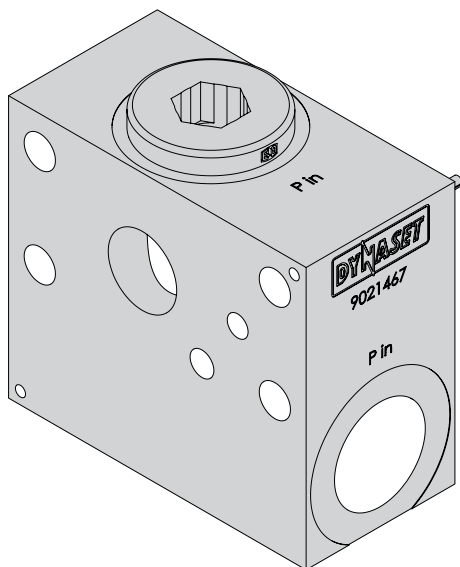
PRESSURE REDUCING VALVE

D409018048 HMV 1/2 - PAxx - ST	
MEASUREMENTS	
A	100 mm
HYDRAULIC CHARACTERISTICS	
Pressure max.	250 bar
Pressure adjustment	x 7 - 210 bar
Pressure drop through the pressure reducer	10 bar @ 70 l/min



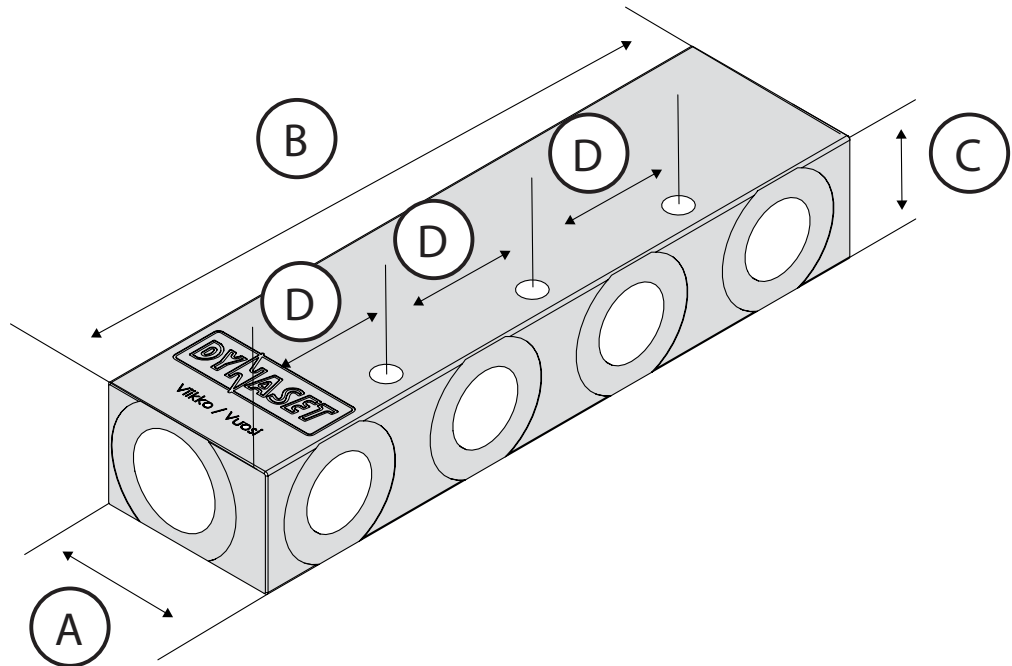
END MODULE

D409020299 HMV 1/2 - END MODULE - ST	
MEASUREMENTS	
A	25 mm
PORTS	
P	R1/2
T	R3/8
LS	R1/8



MIDDLE CONNECTION BLOCK

D409021471 HMV3/4 - MIDDLE CONNECTION BLOCK 2xR1 - ST	
MEASUREMENTS	
A	50 mm
PORTS	
Input A	1x R1
Output B	2x R1
Flow max.	300 l/min
Pressure max.	350 bar



RETURN TERMINAL BLOCK

0700031533 PLT R1-3x R3/4 RETURN TERMINAL BLOCK
 0700031534 PLT R1-4x R3/4 RETURN TERMINAL BLOCK
 0700031535 PLT R1-5x R3/4 RETURN TERMINAL BLOCK

MEASUREMENTS

A	60 mm
B	3x: 219 mm, 4x:220, 5x:275
C	38 mm
D	55 mm

PORTS

Input	3x R3/4 4 x R3/4 5x R3/4
Output	R1
Pressure max.	30 bar

Return terminal makes possible to direct all HMV module tank lines into one block guarantee reliable and centralized return piping. Optional available by request.

4. INSTALLATION

4.1. INSTALLATION TO DIFFERENT HYDRAULIC SYSTEMS

Typical installation to following hydraulic systems is described in this chapter

- Hydraulic system with variable displacement pump
- Hydraulic system with a fixed displacement pump

In need of more information about installing the HMV valves to a different hydraulic system than listed above please take contact to DYNASET for more information.

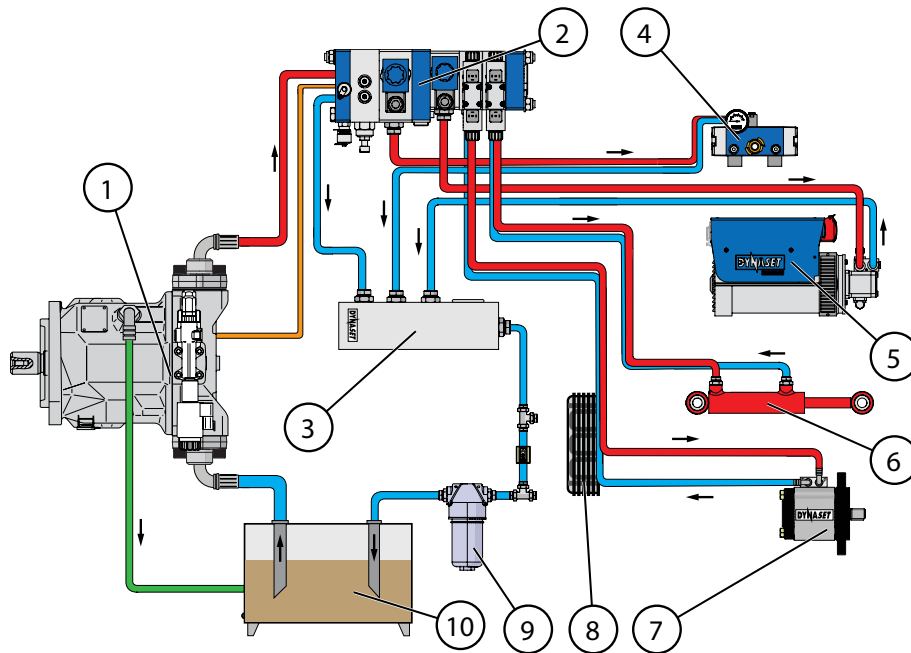
If you are unsure of the hydraulic system, please contact the manufacturer of your base machine.

Next paragraphs describe the hydraulic systems in more detail.

HYDRAULIC SYSTEM WITH LOAD SENSING VARIABLE DISPLACEMENT PUMP

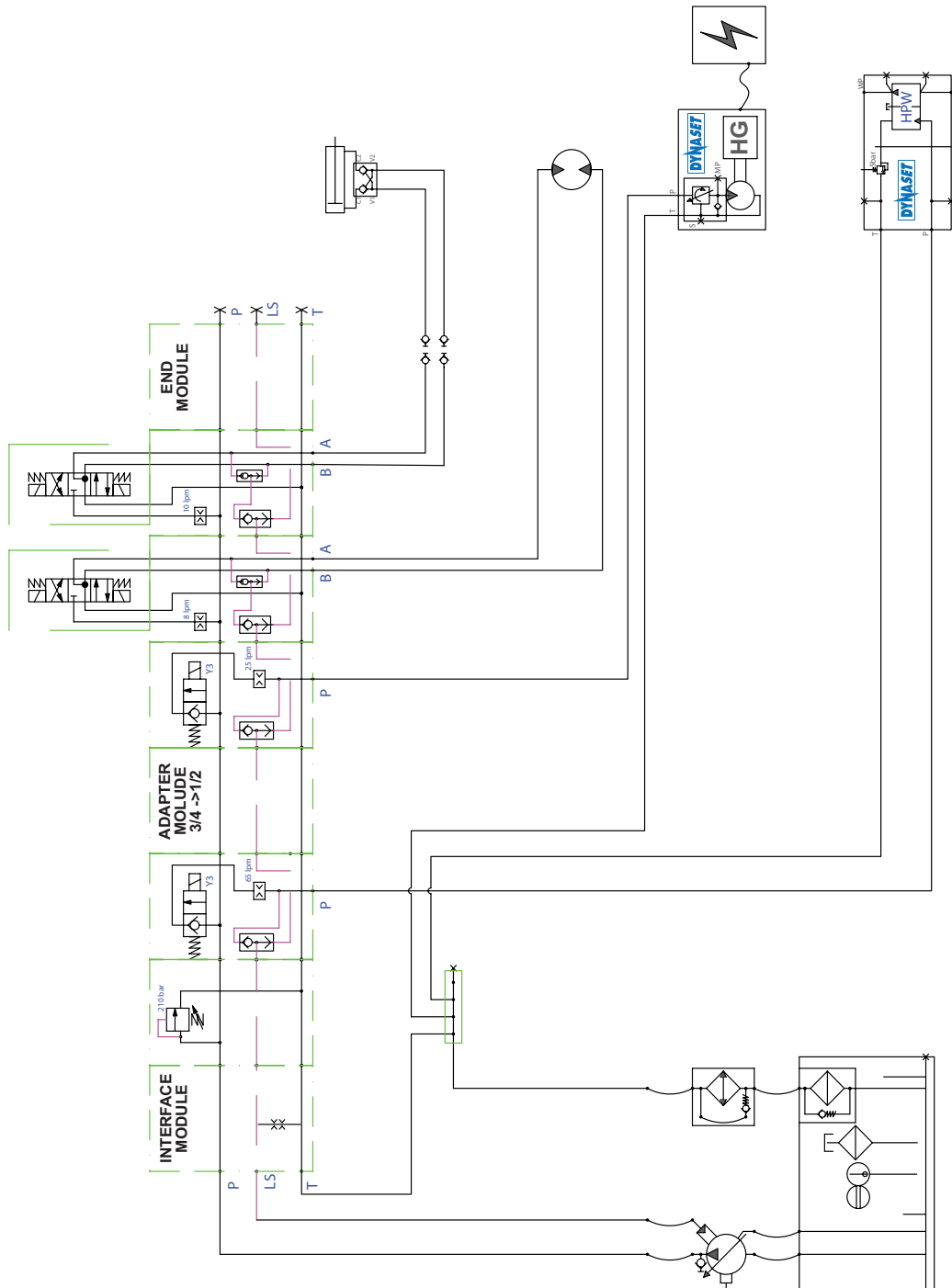
Hydraulic system that has a variable-displacement pump the flow rate and output pressure adjusts automatically based on the load of the hydraulic system.

Placement of the HMV in described system:



- | | |
|---|-----------------------------------|
| 1. Base machine's variable displacement pump | 5. DYNASET HG hydraulic generator |
| 2. DYNASET HMV installation valves | 6. Hydraulic cylinder |
| 3. DYNASET PLT return block | 7. DYNASET hydraulic equipment |
| 4. DYNASET HPW Hydraulic high pressure water pump | 8. Oil cooler |
| | 9. Oil filter |
| | 10. Oil tank |

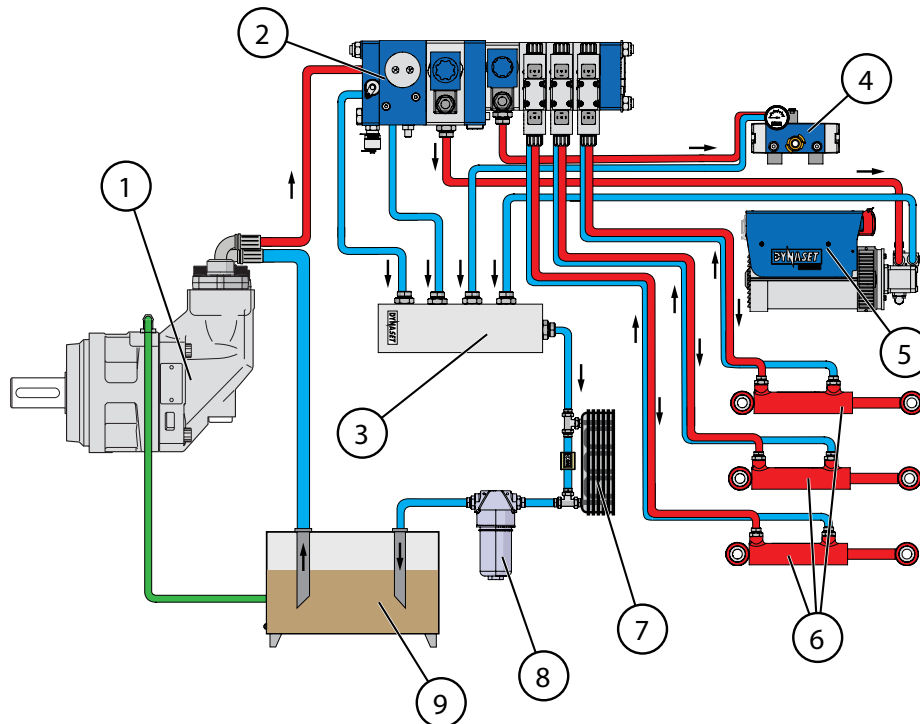
HYDRAULIC SYSTEM WITH LOAD SENSING VARIABLE DISPLACEMENT PUMP



HYDRAULIC SYSTEM WITH FIXED DISPLACEMENT PUMP

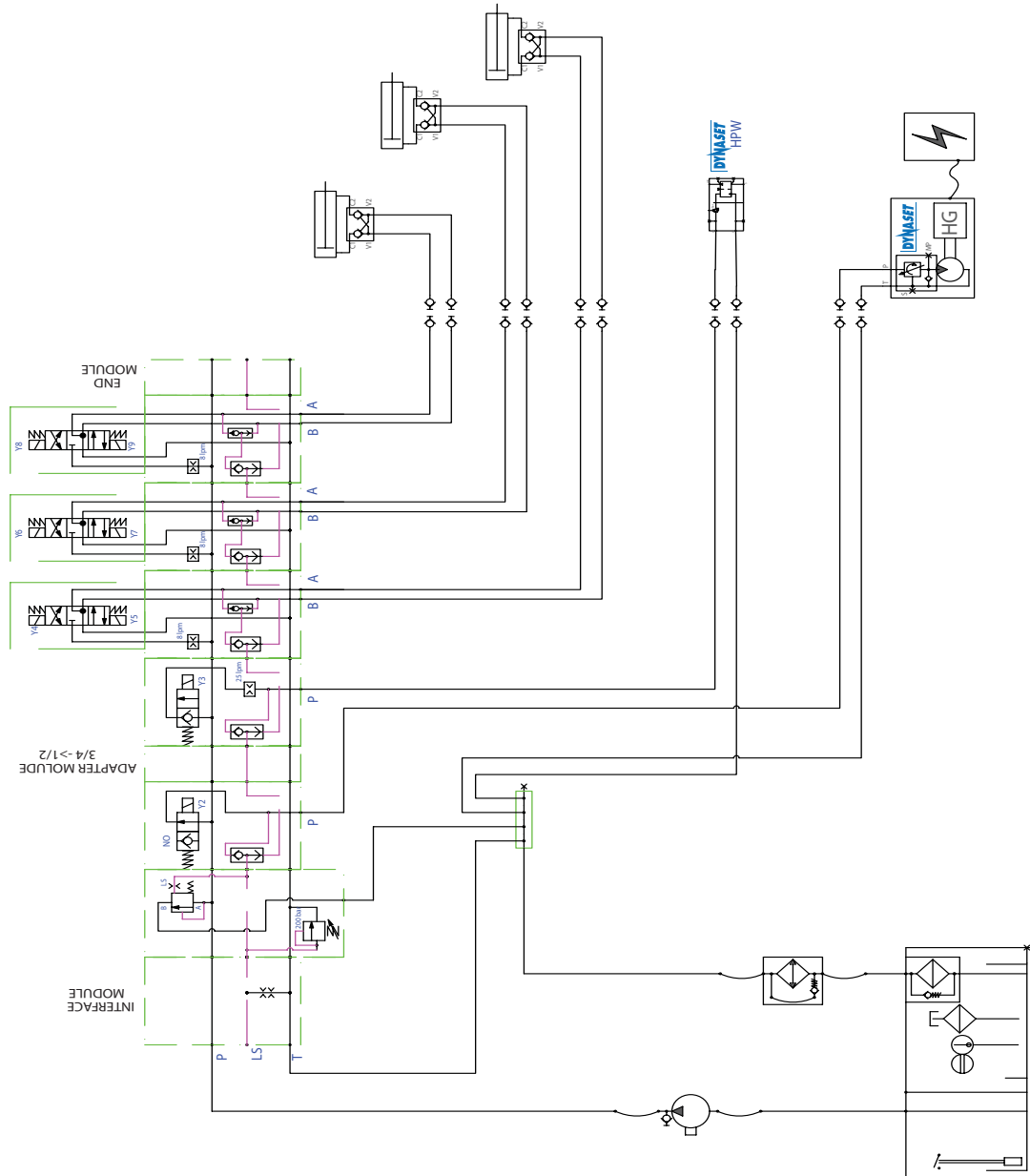
Hydraulic system that has the fixed displacement pump the oil flow from the pump is fixed. Every stroke of the hydraulic motor moves the same amount of oil. The output flow is function of the motor's rpm and pump's displacement.

Placement of the HMV in the described system:



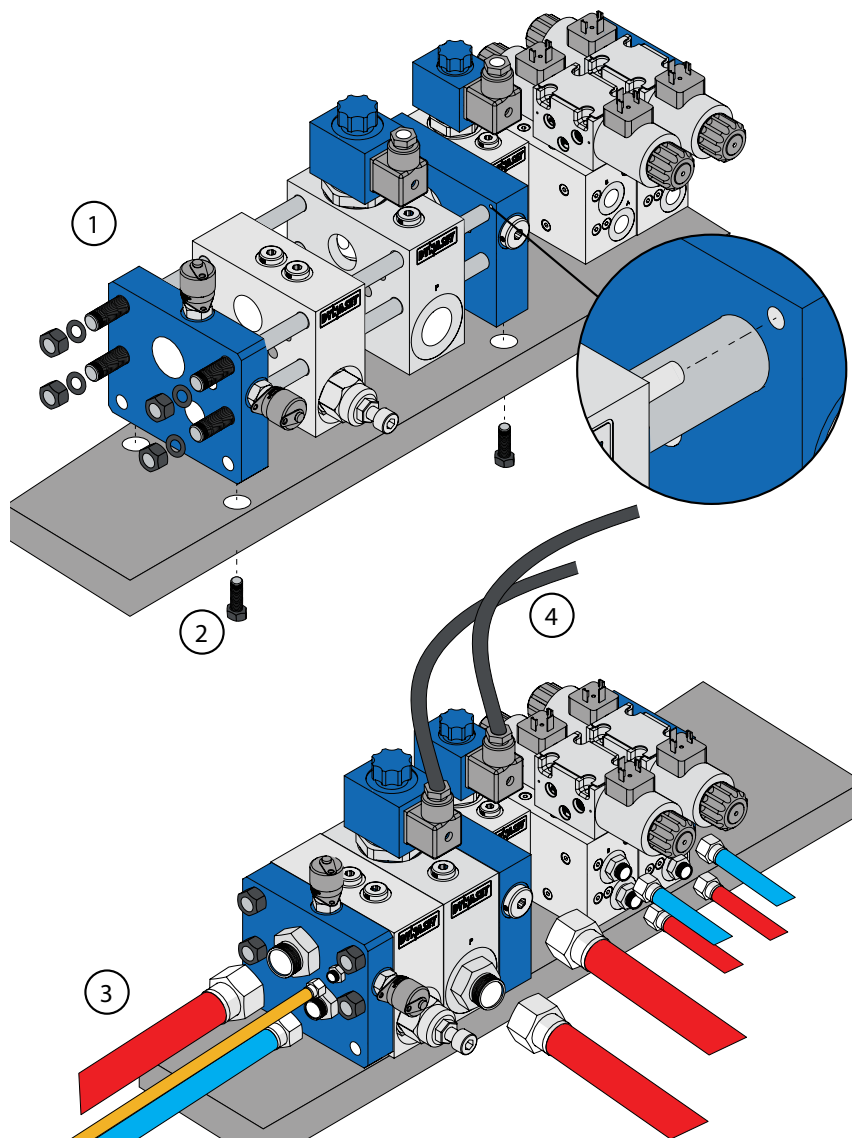
- | | |
|---|-----------------------------------|
| 1. Base machine's fixed displacement pump | 5. DYNASET HG hydraulic generator |
| 2. DYNASET HMV installation valves | 6. Hydraulic cylinder |
| 3. DYNASET PLT return block | 7. Oil cooler |
| 4. DYNASET HPW Hydraulic high pressure water pump | 8. Oil filter |
| | 9. Oil tank |

HYDRAULIC SYSTEM WITH FIXED DISPLACEMENT PUMP



4.2. INSTALLATION OF THE HMV VALVES

1. Assemble the HMV valves accordingly. The guide tabs help in pre-assembling the unit. Make shure you insert all the seals and tighten the connection bolts, thread rods and screws to the recommended torque.
2. Install the HMV to its place in the base machine. Use M10x15mm bolts.
3. Connect the Pressure (P), Tank (T) and LS-lines (if LS is requires) to the HMV valves and to the PLT return block (if included).
4. Connect the control voltages to the solenoid valves (if included).



5. After installing the HMV valves start the base machine's engine and turn on the hydraulic system.
6. Check all the connections and the blocks in the HMV valve asseby to ensure there are no leaks.

4.3. HYDRAULIC FLUIDS

Wide range of standard hydraulic fluids can be used with the DYNASET hydraulic equipment. Depending on the operating temperature, following mineral hydraulic oils are recommended:

MINERAL HYDRAULIC OIL	OPERATION TEMPERATURE UP TO
ISO VG 32S	60 °C (140 °F)
ISO VG 46S	70 °C (158 °F)
ISO VG 68S	80 °C (176 °F)

Synthetic and bio oils can also be used if their viscosity characteristics and lubricating efficiency are corresponding to the mineral oils.

Automatic transmission fluids and even engine oils can be used, provided that they are allowed to be used in the hydraulic system of your base machine.

Hydraulic fluid change interval is according to the base machine's maintenance instructions. To use special hydraulic fluid with DYNASET equipment, please contact nearest DYNASET representative for an advice.

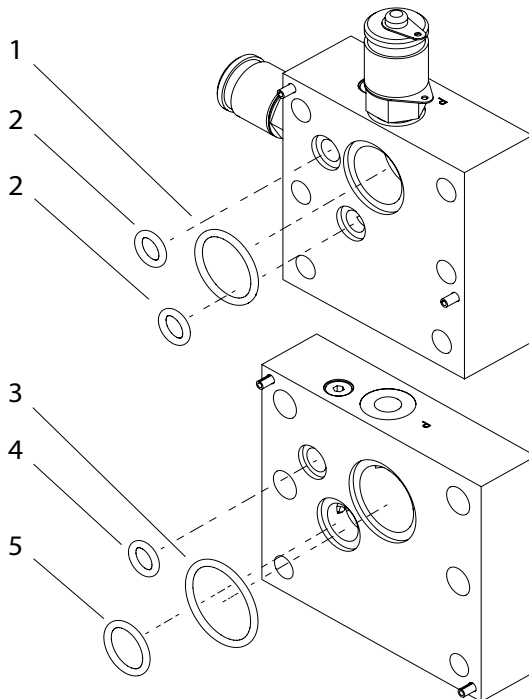
5. SPARE PARTS

	PART NO.	DESIGNATION	DETAILS
HMV VALVES	V100416010*	HMV 1/2 HMV 3/4 front interface HMV 3/4	Universal Seal kit
	V100416140	HMV	Quick coupler for measurement gauge
	V100416150	HMV 3/4 - PR	Pressure relief valve
	V100416155	HMV 1/2 - 12V	Valve cartridge kit**
	V100416160	HMV 3/4- 24V	Valve cartridge kit**
	V100416165	HMV 1/2 - 12V	Valve cartridge kit**
	V100416170	HMV 3/4 - 24V	Valve cartridge kit**

* 1 Seal kit / block

** Includes connector

5.1. SEAL KIT INSTALLATION



POS.	PART NUMBER	QTY	DESCRIPTION	DETAILS 1	DETAILS 2
	V100416010				Includes Pos. 1-5
1	*	1	O-RING	22.30 x 2.40	HMW 1/2 Front interface
2	*	2	O-RING	8.30 x 2.40	HMW 1/2 Front interface
3	*	1	O-RING	27.30 x 2.40	HMW 3/4 Front interface
4	*	1	O-RING	8.30 x 2.40	HMW 3/4 Front interface
5	*	1	O-RING	15.30 x 2.40	HMW 3/4 Front interface

6. MANUFACTURERS LIMITED WARRANTY

1. Warranty coverage

All hydraulic accessories manufactured by DYNASET OY are subject to the terms and conditions of this limited warranty. Products are warranted to the original purchaser to be free from defects in materials or workmanship. Exclusions from warranty are explained in item Exclusions from warranty.

2. Beginning of warranty period

Warranty period begins from the delivery date of the product. Delivery is considered to be done on the date when installation has been accomplished or purchaser has taken the product in use. Product is considered as taken in use at the date when DYNASET OY has delivered the product to purchaser, unless separately agreed otherwise by written agreement.

3. Warranty period

Warranty period is twenty four (24) months based on maximum of 2000 hours usage during this time period. In cases where the system is provided complete with certain special components (e.g. drive unit), those components are considered as a subject to their manufacturer's warranty.

4. Warranty procedures

Immediately upon identifying a problem which purchaser believes to be a failure subject to the product's limited warranty, purchaser must contact primary to the seller of the product. Contact must be made as soon as possible, latest thirty (30) days after the problem was identified. Seller and/or manufacturer technical staff determines the nature of the problem primarily by phone or e-mail. Purchaser commits to give necessary information and to perform routine diagnostic procedures in order to determine the nature of the problem and necessary procedures.

5. Warranty repairs

If the product is found to be defective during the warranty period, DYNASET OY will, at its option, either repair the product, author it to be repaired at its authorized workshop or exchange the defective product. If the product must be repaired elsewhere than premises of DYNASET OY or authorized workshop, all costs excluded from this warranty (traveling and waiting hours, daily allowance, traveling expenses and uninstallation/reinstallation costs) will be charged from the purchaser.

If the problem is not covered by this limited warranty, DYNASET OY has the right to charge purchaser of troubleshooting and repairing.

6. Delivery terms of warranty repair

If the product is found possible to be defective under this limited warranty and it needs to be repaired, DYNASET OY gives Warranty Return Number (WRN). Items being returned must be shipped, at the purchaser's cost, adequately packed for shipment, to the DYNASET OY or to other location authored by DYNASET OY.

Shipment documents must contain:

Purchaser's name and contact information

Receipt of original purchase

WRN code

Problem description

7. Warranty of repaired product

Warranty period of the product repaired under this limited warranty continues to the end of original warranty period.

8. Exclusions from warranty

This warranty shall not apply to:

- Failures due to normal wear and tear, improper installation, misuse, abuse, negligence, purchaser selection of improper product to intended use, accident, improper filtration of hydraulic oil or intake water or lack of maintenance.
- Cost of maintenance, adjustments, installation or startup.
- Coating, hydraulic oil, quick couplings and interconnection hoses (internal or external to system assemblies).
- Products altered or modified in a manner not authorized by DYNASET OY in writing.
- Products which have been repaired during warranty period by others than DYNASET OY or its authorized workshop.
- Costs of any other damage or loss, whether direct, indirect, incidental, special or consequential, arising out of the use of, or the inability to use, the product.
- Telephone or other communications expense.
- Product that is used in exceptional conditions, considered to cause excessive wear and tear.
- Faults caused by nature phenomenon's like flood, thunder, etc.

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7. PRODUCT DISPOSAL

Dispose and recycle all the DYNASET products and their packaging environmentally responsible way.

Do not dispose used oils, electrical components, batteries or any other hazardous waste with normal waste. They are harmful for the environment and can be recycled for re-use.

Contact your local waste recycling facility for more information about recycling hazardous waste.

 **NOTE!**

Always act according to the waste legislation, regulations and recommendations in waste disposal and waste recycling issued by your local authorities.

8. DECLARATION OF CONFORMITY

We hereby declare that the design and manufacture of the product stated below are in conformity with the provisions of the European Parliament and Councils on the harmonization of the laws of Member States on the safety of machine's.

Machine directive 2006/42/EC

LVD directive 2014/35/EU

EMC directive 2014/30/EU

RoHS directive 2011/65/EU

Applied conformity standards:

CEN EN ISO 4413: EN ISO 4413:2010 Hydraulic fluid power - General rules and safety requirements for systems and their components.

EN60204-1 Safety of machinery – Electrical equipment of machine's.

Manufacturer: **DYNASET Oy**
Menotie 3, FI-33470 Ylöjärvi, Finland

Product group: INSTALLATION VALVES

Product: HMV modular installation valves

If the device has been modified by someone other than the manufacturer or without the manufacturer's permission, this declaration is not valid.



Timo Nieminen
R&D Manager
Ylöjärvi, Finland 20.04.2016



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ELECTRICITY

HG Hydraulic Generator
HGV POWER BOX Variable Hydraulic Generator System
HGV Variable Hydraulic Generator System
HWG Hydraulic Welding Generator
HGG Hydraulic Ground Power Generator



HIGH PRESSURE WATER

HPW Hydraulic High Pressure Water Pump
HPW Hydraulic Power Washer
KPL High Pressure Street Washing Unit
HPW-DUST High Pressure Dust Suppression System
PPL High Pressure Pipe Cleaning Unit
HPW-FIRE High Pressure Firefighting System
FP Fire Fighting Piercing Kit
HDF Hydraulic Drilling Fluid Pump
JPL High Pressure Bin Washing System
HSP Hydraulic Submersible Pump



COMPRESSED AIR

HK Hydraulic Piston Compressor
HKL Hydraulic Rotary Vane Compressor
HKR Hydraulic Screw Compressor



MAGNET POWER

HMG PRO Hydraulic Magnet Generator
MAG Lift Magnet
HMAG PRO Hydraulic Magnet



VIBRATION

HVB Hydraulic Vibra
HVD Hydraulic Directional Vibra
HRC Hydraulic Reversal Cylinder



POWER BOOSTING

HPI Hydraulic Pressure Intensifier
HPI-C Hydraulic Pressure Intensifier for Cylinder



KNOW-HOW

Hydraulic Power Take-off (PTO)
Hydraulic Power Unit Technology
De-Icing Technology
Installation Valves
HHK Hydraulic Grinder
HV/HVY Hydraulic Winch / Winch Unit

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