

Products for mobile hydraulic applications

Mechanical and Electric Cartridge Valves

Pressure control valves	p_{max}	350 bar
Counter balance valves	Q_{max}	300 L/min
Directional control valves	Ports	up to SAE 20
Flow control valves		



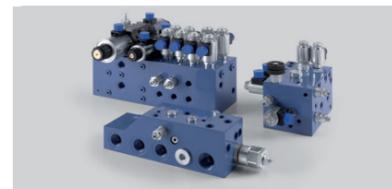
Parts-in-Body Valves

Load holding / Motion control valves	p_{max}	420 bar
Boom lowering control valves	Q_{max}	500 L/min
PO check valves	Ports	up to 1 1/4 SAE6000
Pressure control valves		
Flow control valves		



Hydraulic Integrated Circuits

Weight lifting	p_{max}	350 bar
Earth moving	Q_{max}	200 L/min
Agricultural vehicles		
Industrial vehicles		



Directional Control Valves

Flow sensing	p_{max}	350 bar
Load sensing	Q_{max}	70 L/min
Load independent	Ports	BSP 3/8"



Directional control valves catalogue NVD2



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Company profile

NEM, founded in 1995, is a valve manufacturer specialising in the development of hydraulic solutions for mobile, agricultural and industrial applications.

Our goal is to be a reliable partner, providing for our customers a state of the art service, delivered by highly qualified technical staff, to achieve customized solutions.

At NEM we are aware that the future of the hydraulic industry is in system engineering. We are therefore developing and manufacturing top quality products, which can be fully integrated into many different applications. NEM components ensure the highest level of performance and safety in any application; this, together with our focus on innovation, has gained us the trust and appreciation of leading machine manufacturers worldwide.

NEM firmly believes that its internal synergy ensures that all customers receive the most efficient and effective service. This is why, each and every day, we explore advances in industry related knowledge, discuss solutions, and bring into play all our expertise to ensure we are utilizing the most advanced technologies.

In order to provide our customers with the highest possible quality, NEM employs some of the most skilled professionals within the industry, who work state of the art equipment and processes. This guarantees perfect functionality of components and systems produced at our facilities.

NEM's philosophy has always been quality driven, with the customer first in mind. At NEM we understand that human capital is the most important resource and main reason for our joint success. Our company believes in people, in their talents and their personal expertise.

We source raw material and parts, develop and design components and systems, machine them using processes such as turning, grinding, lapping, drilling, honing, heat treatment, assemble and test and finally deliver to our customer's specifications.

It's our responsibility to take care of our customers as well as ensure total quality.

NEM's capabilities cover a wide spectrum of control technologies by combining mechanics, electrics and electronics to supply perfect hydraulic operating components and systems.

Hundreds of customers in many industries trust us and have taken advantage of our expertise. Our applications can be found all over the globe, under the heaviest working conditions.

It goes without saying that in NEM people go the extra mile in order to satisfy our customers and the customer of our customers.

You are kindly invited to meet the people at NEM who listen and who deliver for the benefit of our customers.

Mechanical and Electrical Cartridge Valves

Pressure control valves
Counterbalance valves
Directional control valves
Flow control valves

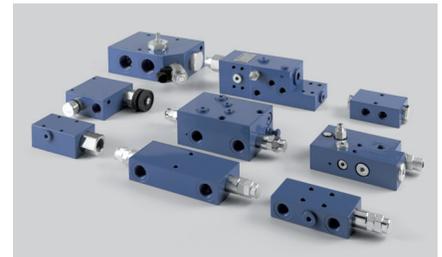
p_{\max} 350 bar
 Q_{\max} 300 L/min
Cavity up to SAE 20



Parts-in-Body Valves

Load holding / Motion control valves
Boom lowering control valves
PO check valves
Pressure control valves
Flow control valves

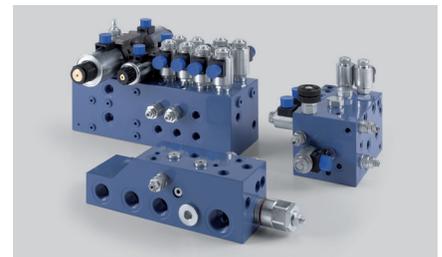
p_{\max} 420 bar
 Q_{\max} 500 L/min
Ports up to 1 $\frac{1}{4}$ SAE6000



Hydraulic Integrated Circuits

Weight lifting
Earth moving
Agricultural vehicles
Industrial vehicles

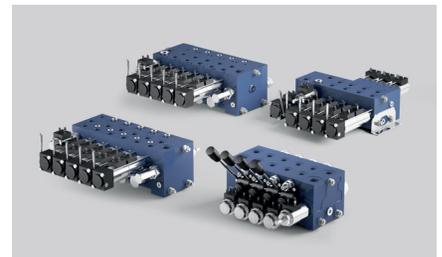
p_{\max} 350 bar
 Q_{\max} 200 L/min



Directional Control Valves

Flow sensing (patented)
Load sensing
Load independent

p_{\max} 350 bar
 Q_{\max} 70 L/min
Ports BSP 3/8"



General features	NVD2	NVE3	NVE4	NVS3
BODY MATERIAL				
Steel		(x)	x	
Cast iron	x			
Aluminum		x	x	x
Working section number	1-10	1-10	1-10	1-10
MAXIMUM PRESSURE				
Maximum working pressure (bar)	350	250 (350) ¹⁾	250 (350) ¹⁾	210
Maximum back pressure on port T	10	20	20	20
MAXIMUM FLOW				
Maximum inlet flow (L/min)	50	50	70	30
Maximum regulated flow on port A & B (L/min)	40	30	35	30
PUMP				
Configuration for fixed displacement pump	x	x	x	x
Configuration for variable displacement pump	x	x	x	(x)

Option chart	NVD2	NVE3	NVE4	NVS3
LS signal pressure relief valve			x	
Pump pressure relief valve	x	x	x	x
LS signal dump valve			x	
Pump electric dump valve (electric 12/24 Vdc)	x	x	x	x
Pump hydraulic dump valve	x	x	x	
SPOOL				
Manual levers	x	x	x	x
Proportional electro-hydraulic actuation 12-24 Vdc	x	x	x	x
On/off electro-hydraulic actuation 12-24 Vdc	x	x	x	x
Open centre spools (A/B to T in neutral position)	x	x	x	x
Closed centre spools (A/B closed in neutral position)	x		x	x
Spools displacement sensor	x	under development	under development	under development
CAN BUS interface actuation	under development	under development	under development	under development
PORT RELIEF VALVE				
Direct operated antishock valve	x	x	x	x
Plug	x	x	x	x

x = available

(x) = available on request

1) Maximum working pressure 350 bar for steel body



NVD2 Flow sensing directional control valve

NVD2 general features

- Flow sensing (patented)
- Cast iron
- Maximum inlet flow 50 L/min
- Maximum regulated flow 40 L/min
- Modular design
- Load independent flow regulation
- Simultaneous movements
- Maximum working pressure 350 bar
- Electro-proportional and on-off actuation
- Port relief valves
- Manual levers
- Levers sensor switches
- Dump valve built in outlet section
- Open center and LS configurations:
 - Open center for fixed displacement pump
 - LS for variable displacement pump

Advantages

- Compact design
- Good stability combined with counterbalance valves
- Up to 10 work sections
- Flexible hydraulic circuit configuration
- Safety options



NVD2 is a highly innovative (Directional Control Valve), which paves the way into the world of proportional valves.

NVD2 technology (patented) impressively joins constructive simplicity and high functional performance, a simple compact design, typical of the more traditional open-centre directional control valves.

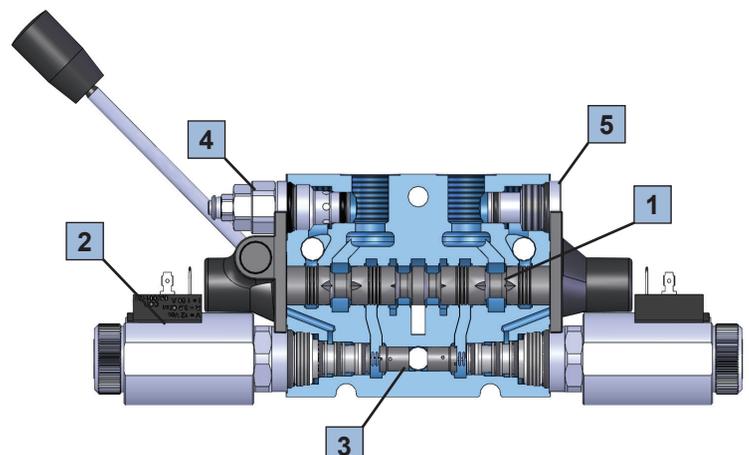
It is associated with an extremely precise control, independent from the load conditions and simultaneous movements. The flow sensing principle is efficient when electrically operated. It reaches its maximum potential when used in combination with radio remote control or electronic control devices.

In flow sensing system, flow control and regulation is carried out by directly monitoring the oil flow instead of interpreting it by controlling differential pressures. The flow sensing principle is based on hydro-mechanical feedback realized by the equilibrium between the metered oil flow and the electro-proportional actuation forces, so this direct feedback makes the flow control independent from loads and simultaneous movements.

Directional control valve NVD2 is available in its standard version for fixed displacement pumps, and in the LS configuration for variable displacement pumps.

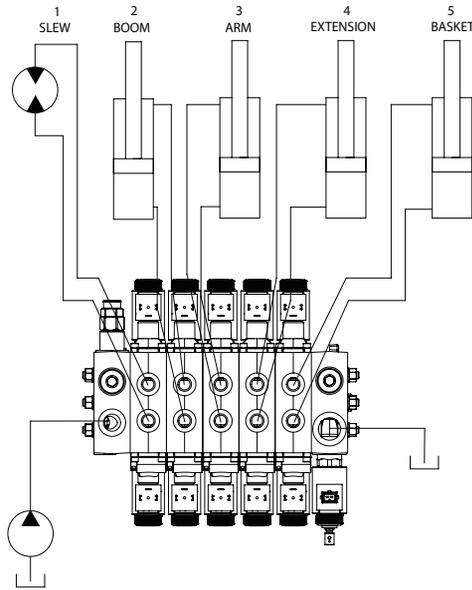
With fixed displacement pumps, the open centre architecture allows a very low system pressurization at stand-by condition.

1. Spool
2. Electro-proportional or on/off hydraulic control
3. Flow control poppet
4. Anti-shock valve
5. Plug for anti-shock valve replacement



Applications

NVD2 typical application



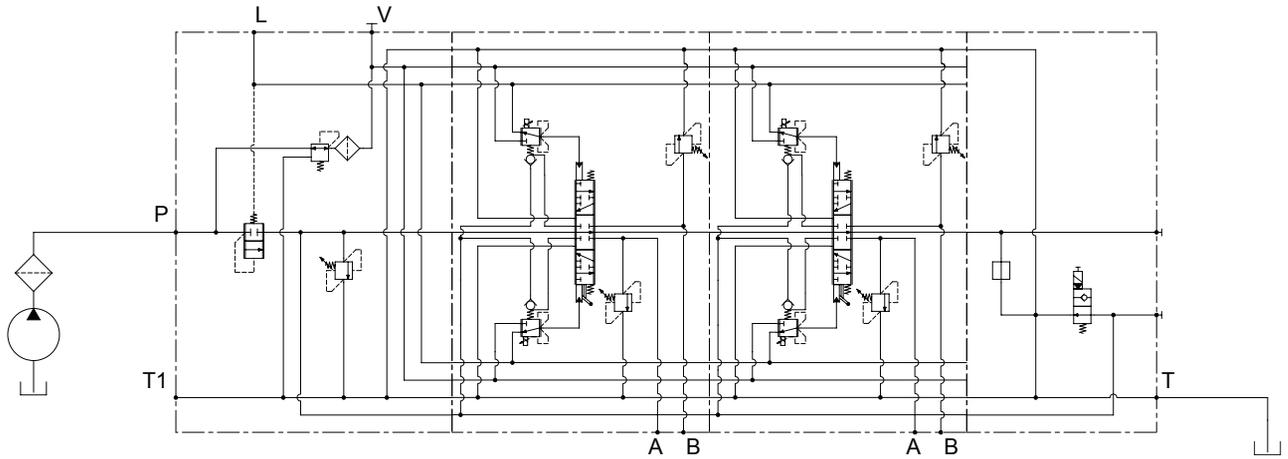
Technical data

Maximum inlet flow	L/min	50
Maximum regulated flow on ports A & B	L/min	40
Maximum working pressure	bar	350
Maximum back pressure on port T	bar	10
Maximum back pressure on port L	bar	1
Work sections		10 max.
Mounting type		With or without mounting brackets with fixing holes
Mounting position		Any
Ambient temperature	°C	-20 to 50
Seals		NBR or PTFE
Hydraulic fluid		Mineral oil HLP to DIN 51524
Fluid temperature range	°C	-20 to 90
Viscosity range	mm/s ²	15 to 250
Contamination level		NAS 1638 class 9 (20/18/15 ISO 4406:1999)
Filtration degree	µm	20
Filtration level	β ₂₀	≥ 75



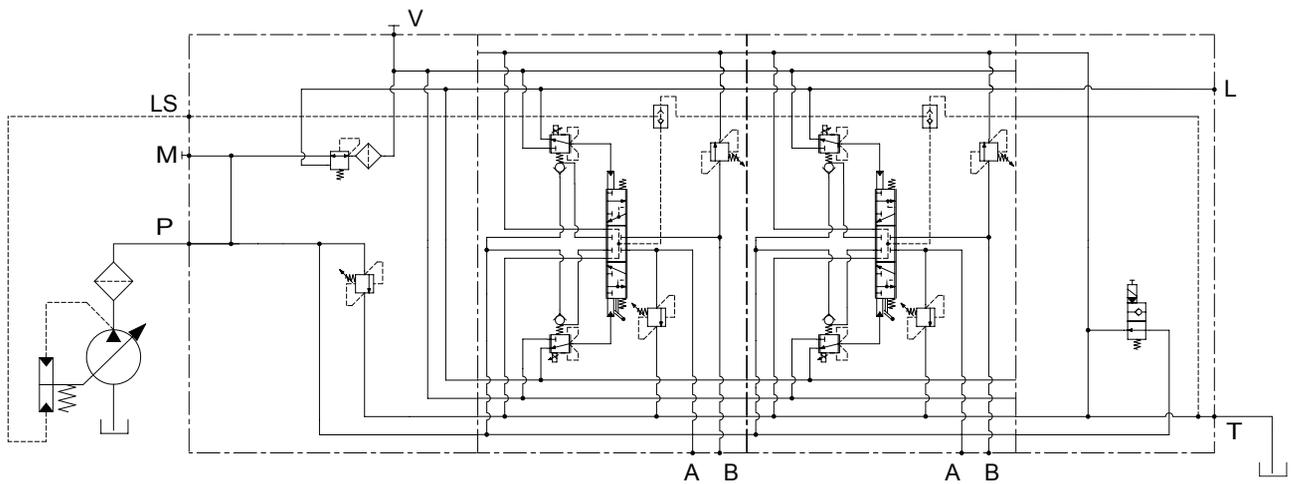
NVD2

Configuration for fixed displacement pump



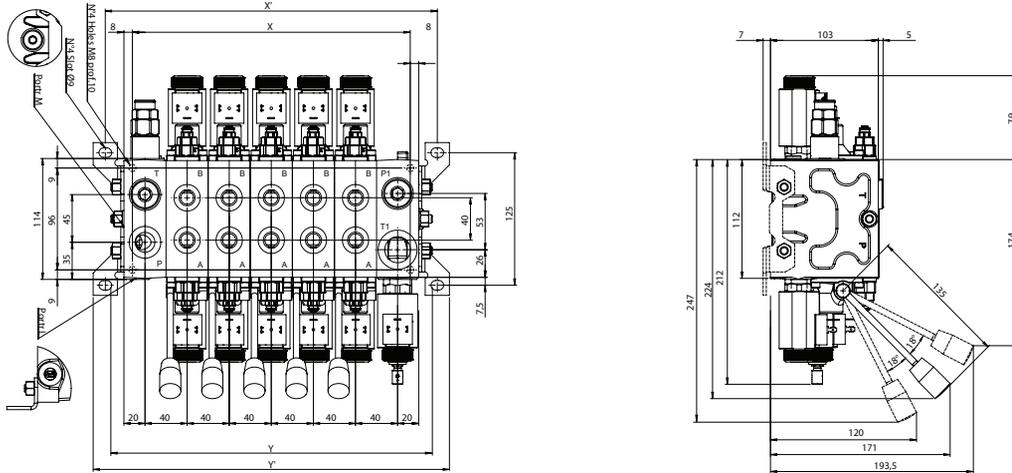
NVD2 LS

Configuration for variable displacement pump



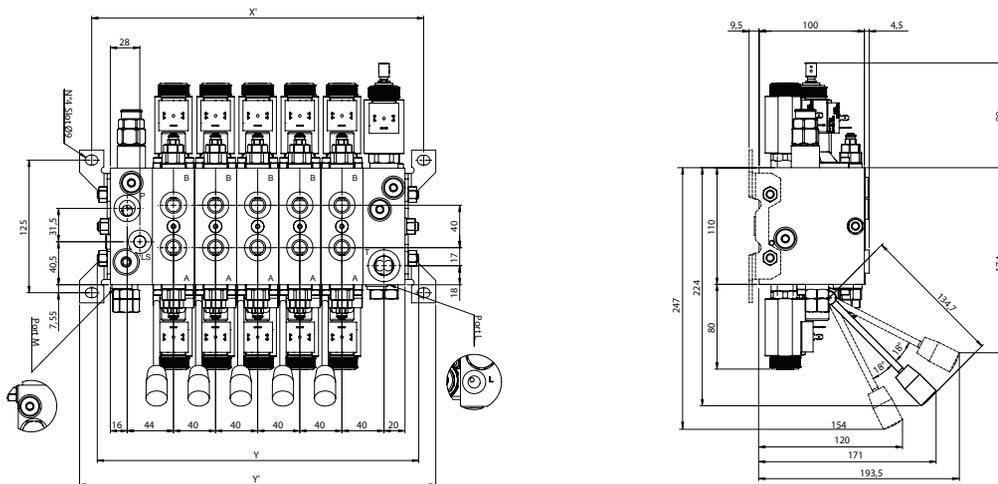
NVD2

Configuration for fixed displacement pump



NVD2 LS

Configuration for variable displacement pump



TOTAL SIZE [mm]

	NVD2/1	NVD2/2	NVD2/3	NVD2/4	NVD2/5	NVD2/6	NVD2/7	NVD2/8
With brackets [Y']	178,5	218,5	258,5	298,5	338,5	378,5	418,5	485,5
Without brackets [Y]	145	185	225	265	305	345	385	430

FIXING HOLES INTERAXIS [mm]

	NVD2/1	NVD2/2	NVD2/3	NVD2/4	NVD2/5	NVD2/6	NVD2/7	NVD2/8
With brackets [X']	155,5	195,5	235,5	275,5	315,5	355,5	395,5	435,5
Without brackets [X]	104	144	184	224	264	304	344	384

SINGLE SECTION WEIGHT [kg]

Inlet	Working	Outlet
2,8	3,8	3,3

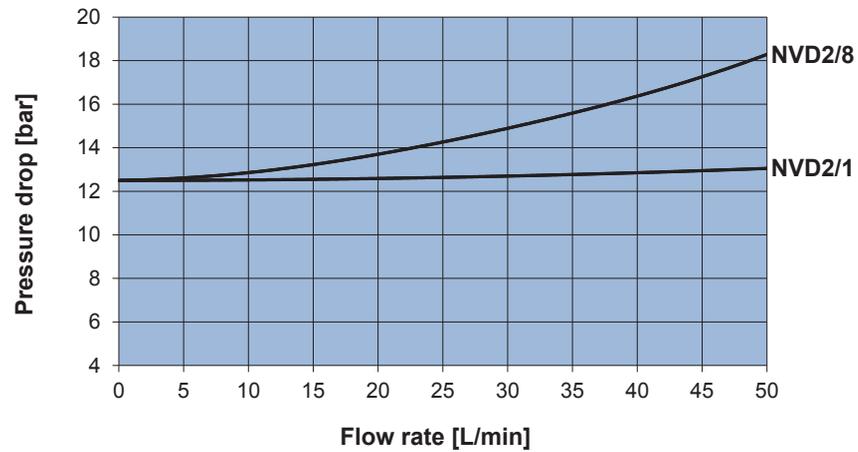
TOTAL WEIGHT [kg]

NVD2/1	NVD2/2	NVD2/3	NVD2/4	NVD2/5	NVD2/6	NVD2/7	NVD2/8
10,2	13,2	17,2	20,7	24,2	27,7	31,2	34,7

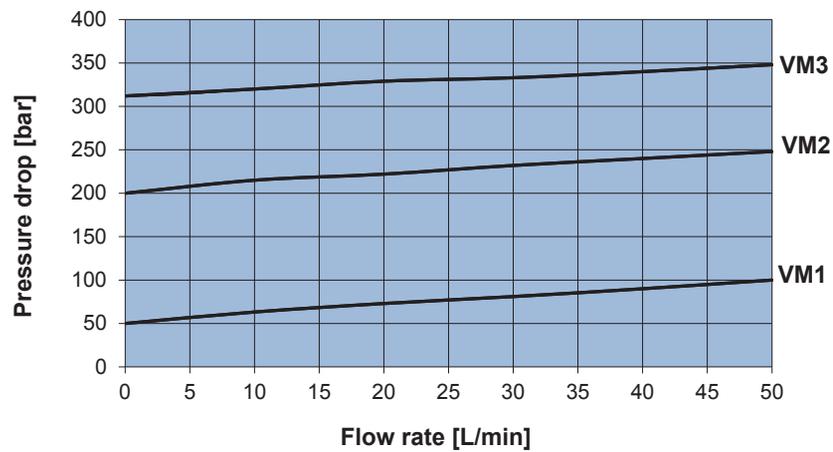
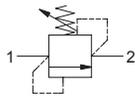


General performance characteristics

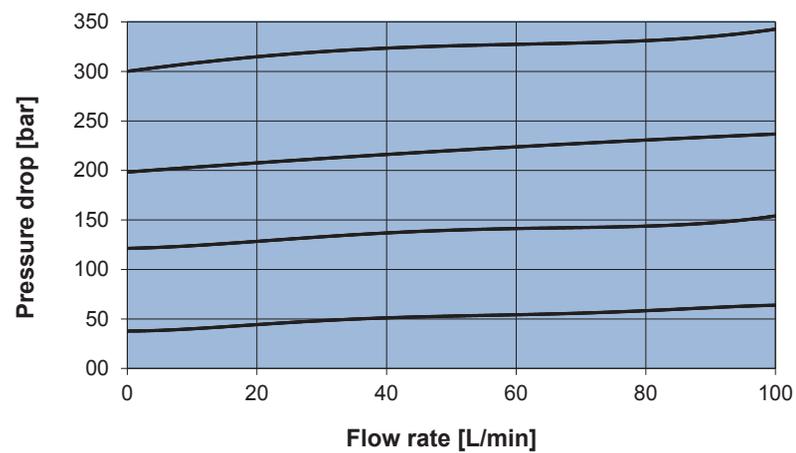
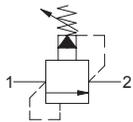
PRESSURE DROP (P-T) or (P-T1)



MAIN RELIEF VALVES PRESSURE DROP CHARACTERISTICS



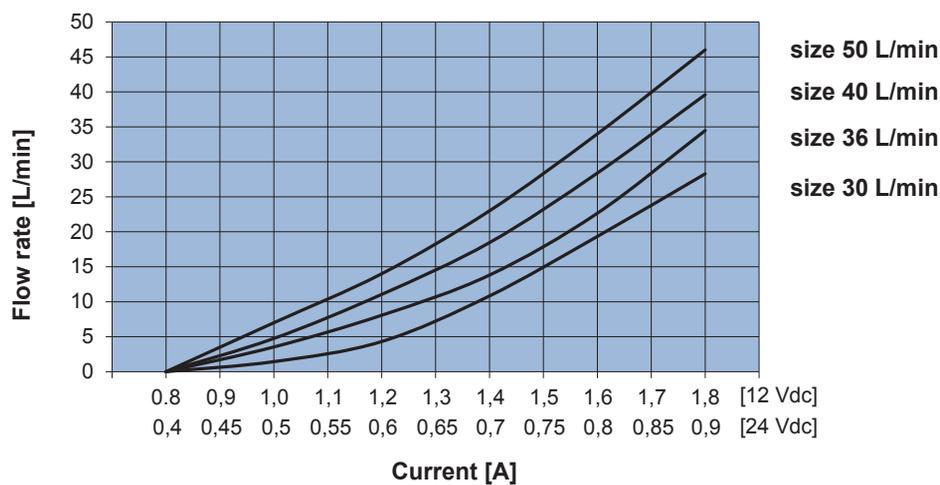
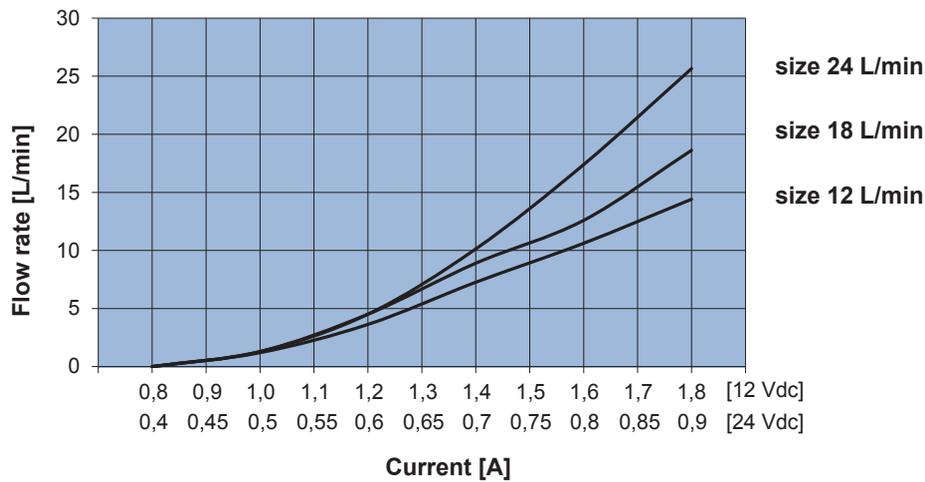
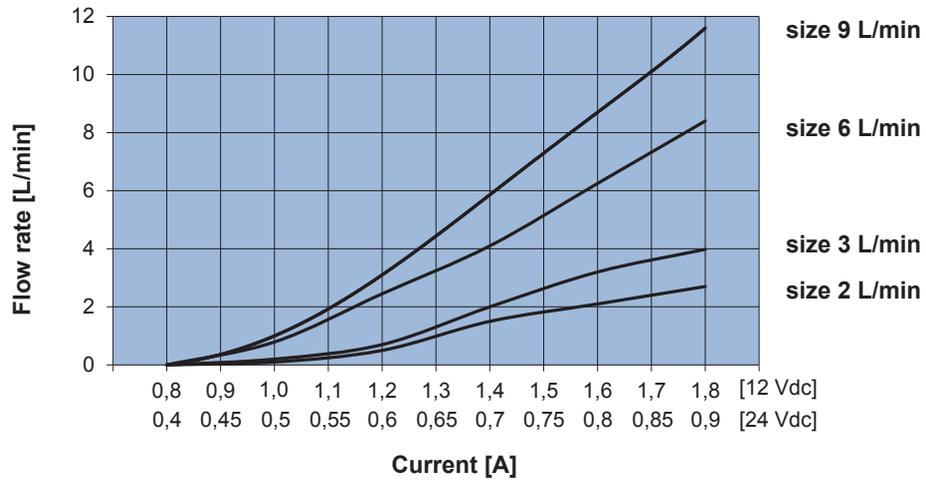
ELECTRIC RELIEF VALVE



Note:
Technical data and diagrams are measured with mineral oil HLP to DIN 51524 of 46 cSt and at 40 °C oil temperature.



Poppet flow control graphs

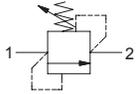


Note:

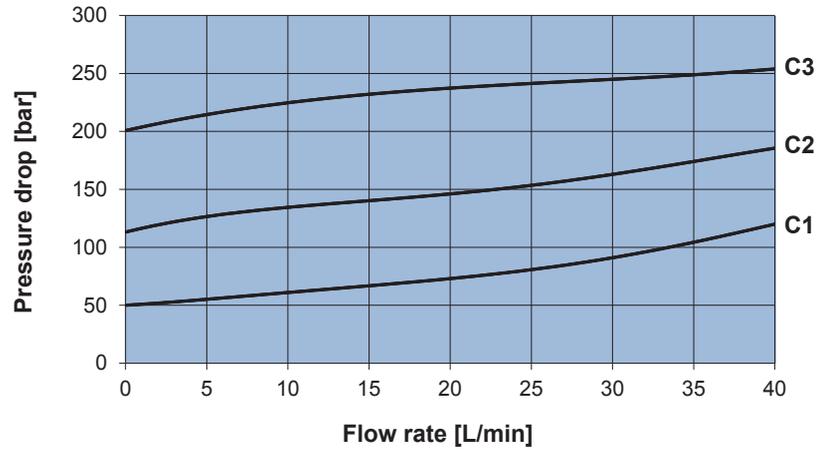
Technical data and diagrams are measured with mineral oil HLP to DIN 51524 of 46 cSt and at 40 °C oil temperature.



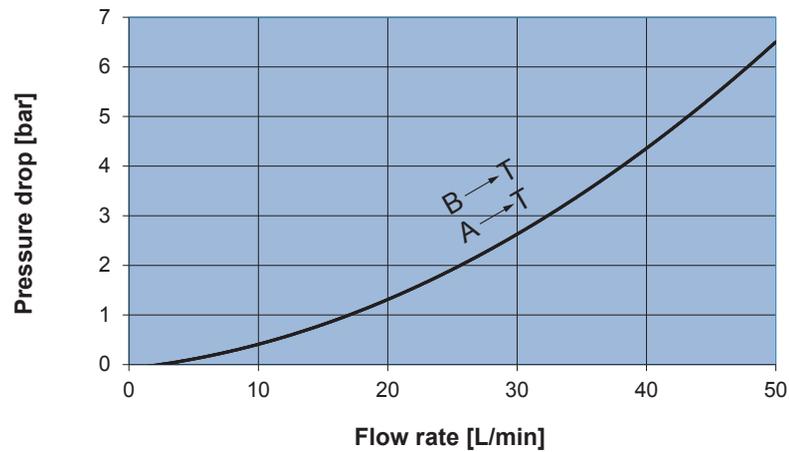
Work section performance characteristics



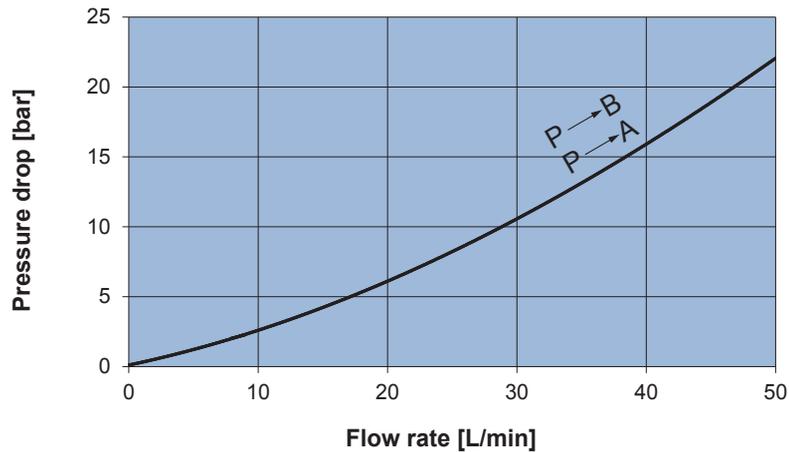
ANTI-SHOCK CHARACTERISTICS



SPOOL METERING CHARACTERISTICS



SPOOL METERING CHARACTERISTICS



Note:
Technical data and diagrams are measured with mineral oil HLP to DIN 51524 of 46 cSt and at 40 °C oil temperature.



Ordering string example

NVD2/3

→ **PRODUCT TYPE:**

NVD2 or NVD2 LS
/3

Product type and configuration
Working section number

page 7

1 IL - VM2(210) - VP - VR

→ **INLET ARRANGEMENT:**

page 13

2 D2 - W002A - A12/B24 - XE - M12D - H05 - F01 - A/C2(180P) - B/C2(150P)

→ **WORK SECTION ARRANGEMENT:**

page 18

3 ZN - EV5 - C12D

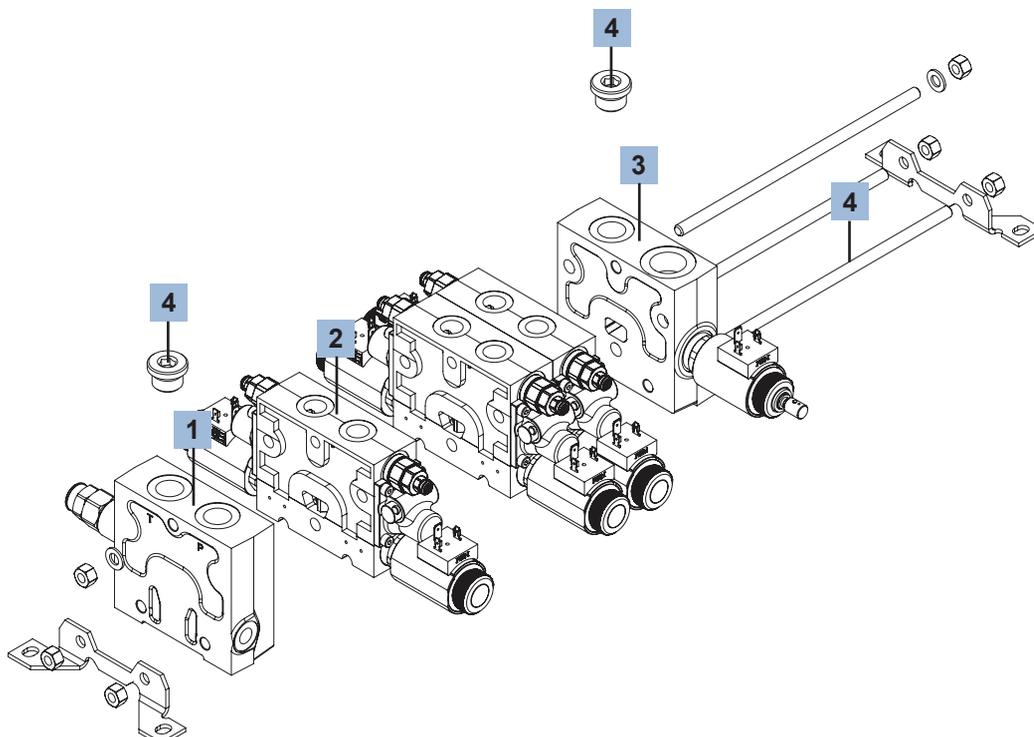
→ **OUTLET ARRANGEMENT:**

page 27

4 U1 - G - CS

→ **MOUNTING and PORT CONFIGURATION:**

page 31



Note: order row 2 must be repeated for each work section

Inlet section arrangement

IL - VM2 (210) - VP - VR

1 HOUSING

page 14

IL	Left inlet module for fixed displacement pump
IR	Right inlet module for fixed displacement pump
I1	Left inlet module for variable displacement pump (NVD2 LS)
I2	Right inlet module for variable displacement pump (NVD2 LS)

2 PRESSURE RELIEF VALVE

page 15

VM1(...)	Pressure relief valve with setting range 40 to 140 bar
VM2(...)	Pressure relief valve with setting range 120 to 250 bar
VM3(...)	Pressure relief valve with setting range 220 to 410 bar
SVM	Pressure relief valve plug

3 PRE-LOADING VALVE

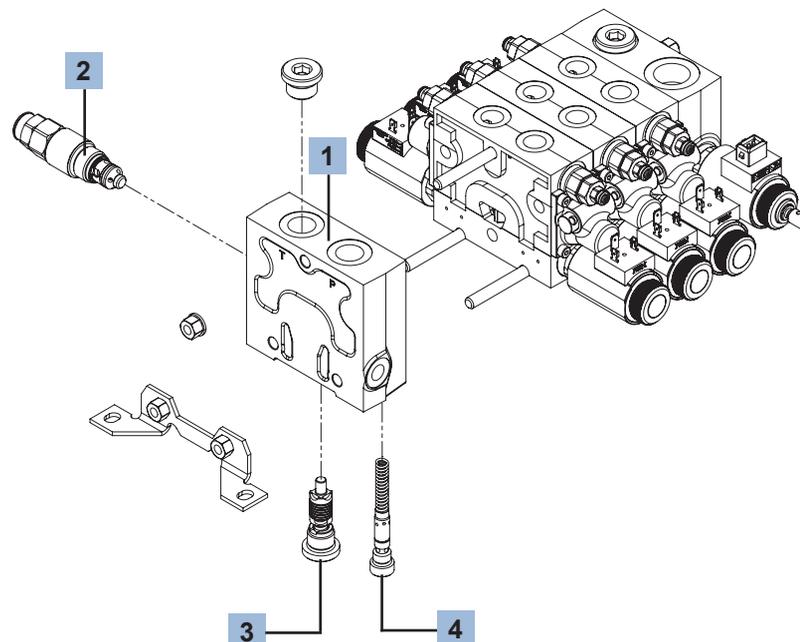
page 16

VP	Pre-loading valve
TP	By-pass plug

4 REDUCING VALVE

page 17

VR	Reducing valve (18 bar)
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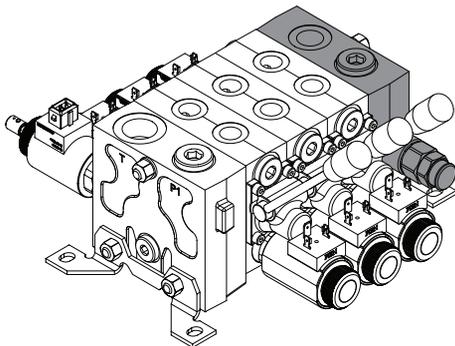


1. Housing

IL - VM2 (210) - VP - VR

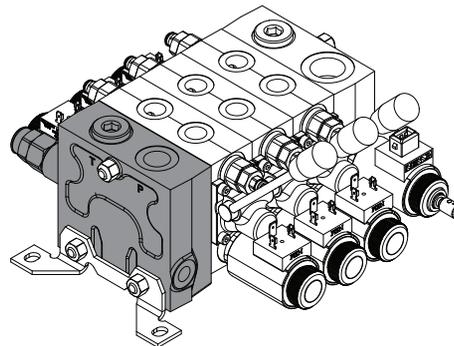
IL

LEFT inlet section for fixed displacement pump (with respect to the lever side)



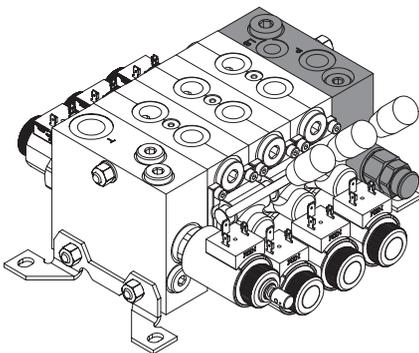
IR

RIGHT inlet section for fixed displacement pump (with respect to the lever side)



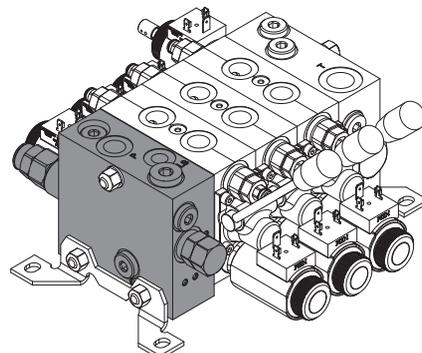
I1

LEFT inlet section for variable displacement pump (NVD2 LS) (with respect to the lever side)

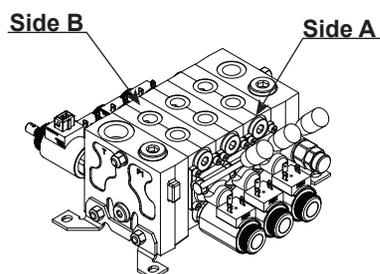


I2

RIGHT inlet section for variable displacement pump (NVD2 LS) (with respect to the lever side)



Note: Port A is on the lever side



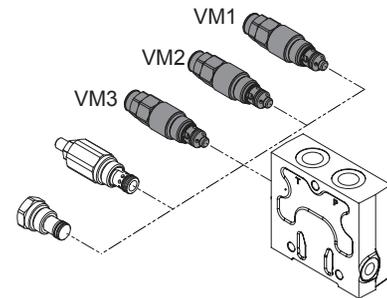
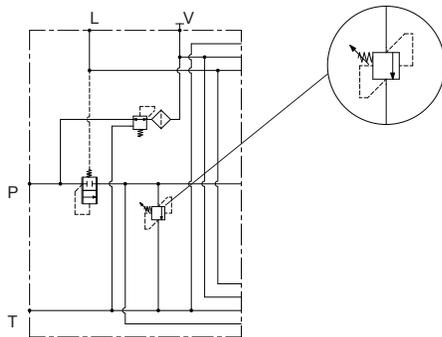
3. Pressure relief valve

IL - VM2 (210) - VP - VR

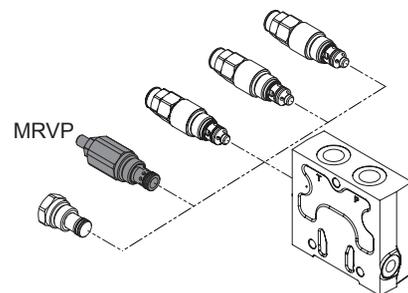
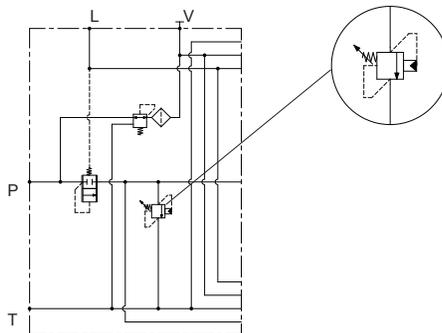
VM1(...) Relief valve with spring 1, cracking pressure (40÷140)

VM2(...) Relief valve with spring 2, cracking pressure (120÷250)

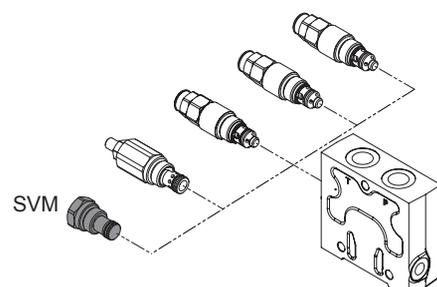
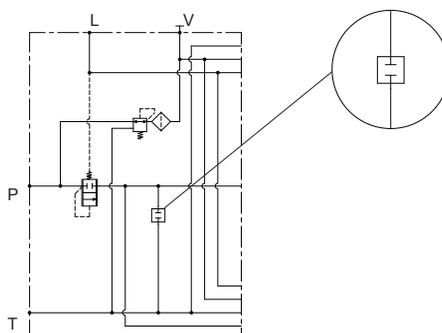
VM3(...) Relief valve with spring 3, cracking pressure (220÷410)



MRP Hydraulic pilot relief valve



SVM Plug, all port closed

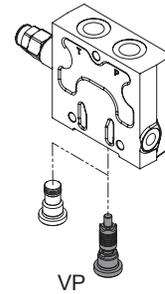
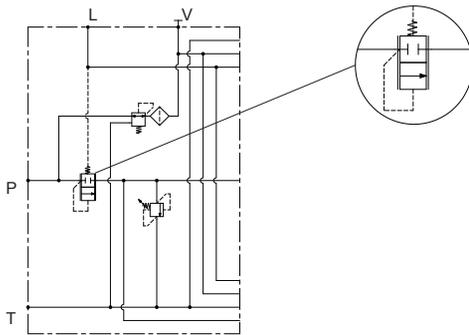


4. Preloading valve

IL - VM2 (210) - **VP** - VR

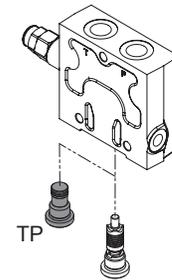
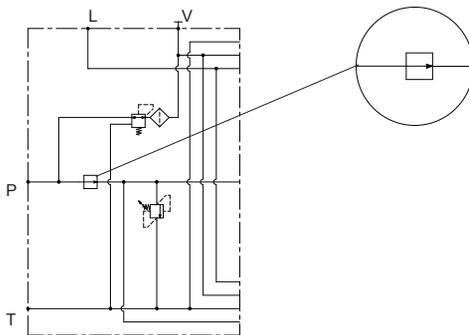
VP

Preloading valve
Recommended for inlet flow less than 25 L/min



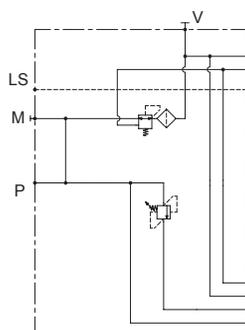
TP

Without pre-loading valve

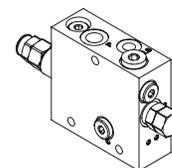


Preload valve not present for variable displacement pump configuration (**NVD2 LS**)

For correct operation, guarantee the minimum stand-by pressure of the LS pump of 12,5 bar



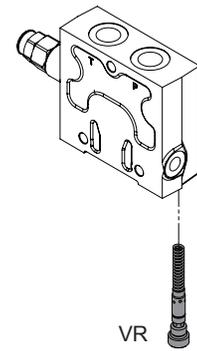
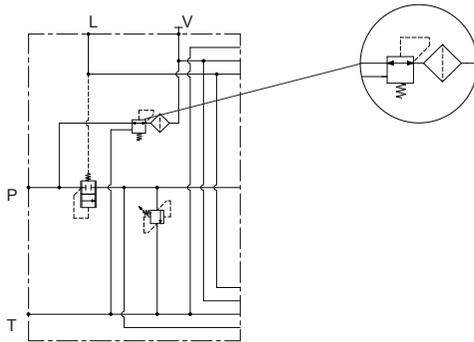
I1 - VM2 (210) - VR



5. Pressure reducing valve

IL - VM2 (210) - VP - **VR**

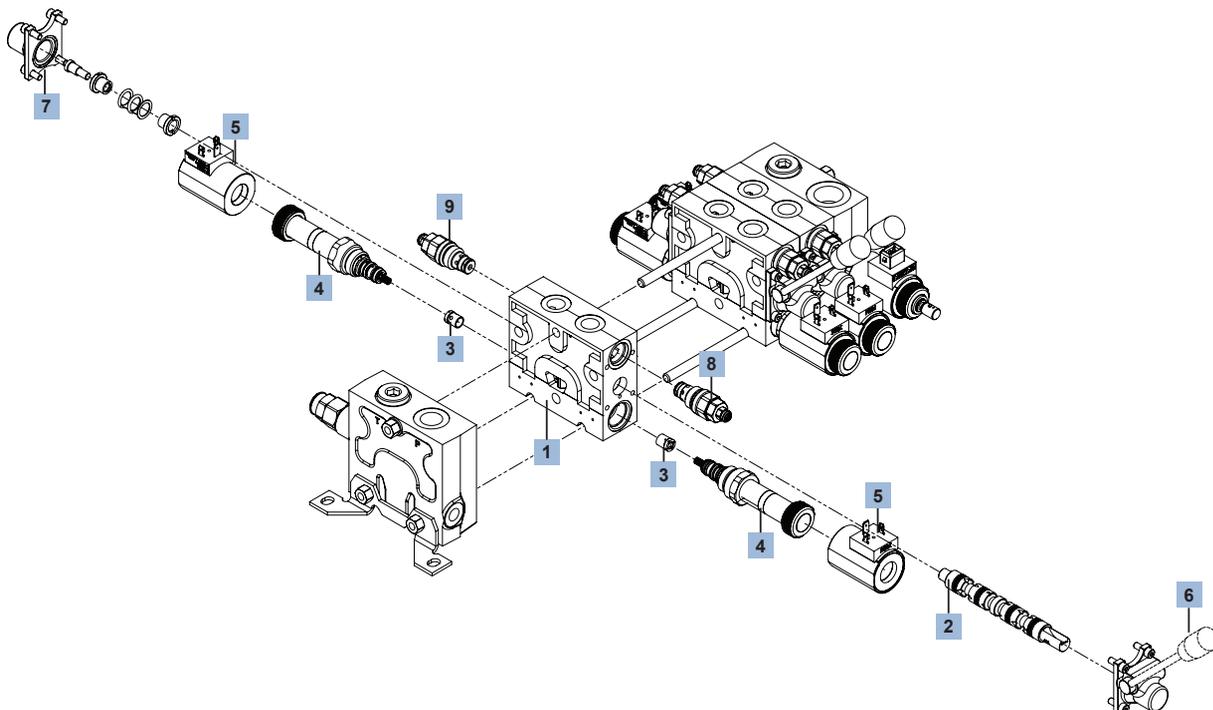
VR Reducing valve



Work section

D2 - W002A - A12 / B24 - XE - M12D - H05 - F01 - A/ C2(180P) - B/ C2(150P)

1	HOUSING		page 19
	D1	Work section without auxiliary valves for fixed displacement pump	
	D4	Work section with auxiliary valves for variable displacement pump (NVD2 LS)	
	...		
2	SPOOL		page 20
	W001A	Double effect spool, 3 positions with A and B closed in central position	
	W002A	Double effect spool, 3 positions with A and B discharging in central position	
	...		
3	POPPET		page 21
	A03	Flow poppet control for capacity up to 3 L/min on port A	
	B09	Flow poppet control for capacity up to 9 L/min on port B	
	...		
4	ELECTRIC CONTROL VALVE		page 22
	XE	Proportional valve for electro-hydraulic control	
	XO	On/off valve for electro-hydraulic control	
	XT	Plug for valve replacement	
5	COIL		page 23
	M12D	Proportional coil 12V, connector DIN 43650	
	M24A	Proportional coil 24V, connector AMP-JUNIOR, circuit with diode	
	C12S	On/off coil 12V, connector DEUTSH DT4, circuit with diode	
	...		
6	CONTROL TYPE		page 24
	H10	Control with high 45° fixed lever	
	...		
7	SPOOL CENTERING		page 25
	F01	3 position spring centering kit	
	F03	3 position spring centering kit with on/off position sensor	
	...		
8+9	AUXILIARY VALVE SIDE A / AUXILIARY VALVE SIDE B		page 26
	A/C2(...)	Anti-shock valve side A	
	B/C2(...)	Anti-shock valve side B	
	...		

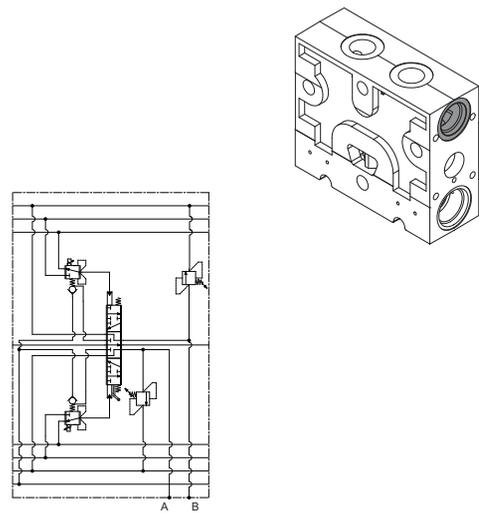
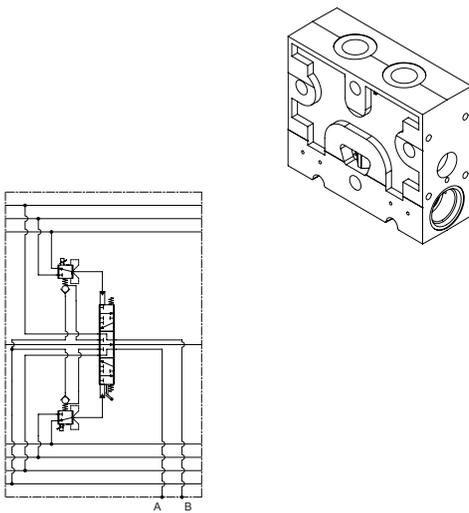


1. Housing

D2 - W002A - A12 / B24 - XE - M12D - H05 - F01 - A/ C2(180P) - B/ C2(150P)

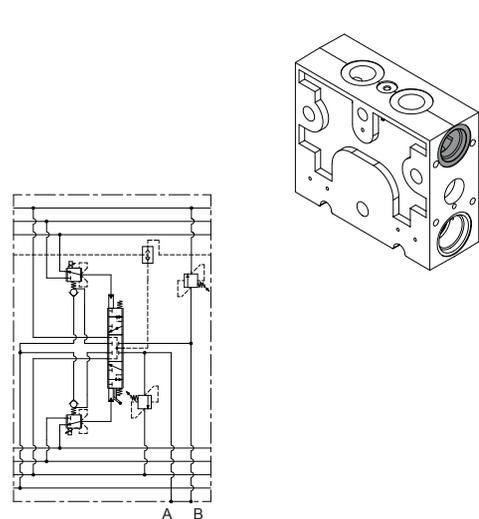
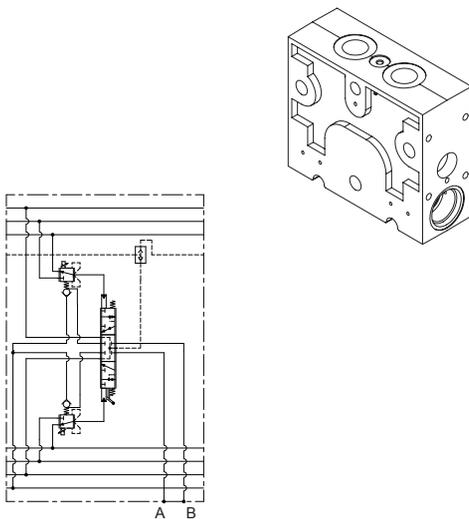
D1 Housing **WITHOUT** anti-shock valve cavities, for fixed displacement pump

D2 Housing **WITH** anti-shock valve cavities, for fixed displacement pump



D3 Housing **WITHOUT** anti-shock valve cavities, for variable displacement pump (NVD2 LS)

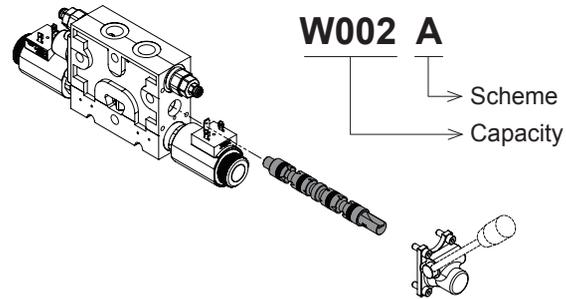
D4 Housing **WITH** anti-shock valve cavities, for variable displacement pump (NVD2 LS)



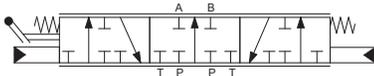
2. Spool

D2 - **W002A** - A12 / B24 - XE - M12D - H05 - F01 - A/ C2(180P) - B/ C2(150P)

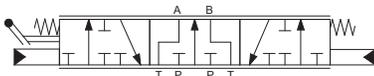
Scheme



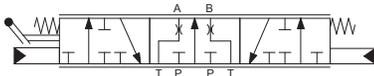
W001 Spool with A and B closed in central position



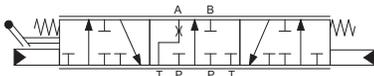
W002 Spool with A and B discharging in central position



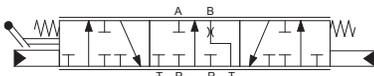
W002J Spool with A and B partially discharging in central position



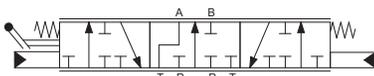
W002K Spool with A partially discharging and B closed in central position



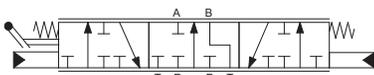
W002Y Spool with B partially discharging and A closed in central position



W003 Spool with A discharging and B closed in central position

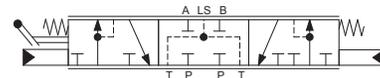


W004 Spool with B discharging and A closed in central position

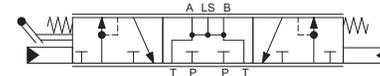


Scheme for NVD2 LS

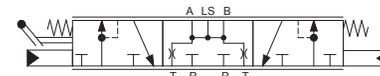
W101 Spool with A and B closed in central position



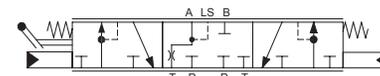
W102 Spool with A and B discharging in central position



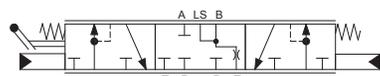
W102J Spool with A and B partially discharging in central position



W102K Spool with A partially discharging and B closed in central position



W102Y Spool with B partially discharging and A closed in central position



Capacity

The spool capacity has to be the same as the pump capacity, ± 5 l/min.
(i.e.: 13 litre pump, 10 litre cursor.)

A 40 L/min

B 20 L/min

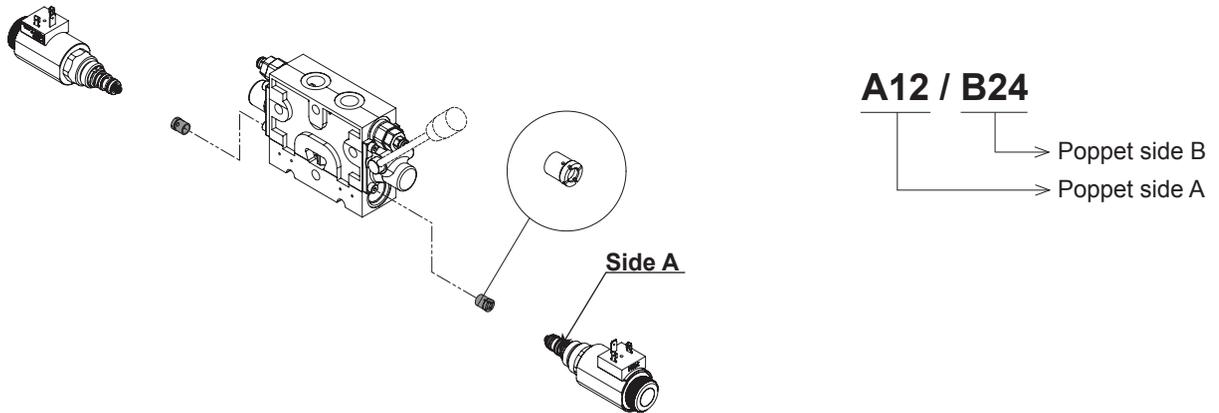
C 10 L/min

D 30 L/min



3.Poppet

D2 - W002A - **A12 / B24** - XE - M12D - H05 - F01 - A/ C2(180P) - B/ C2(150P)



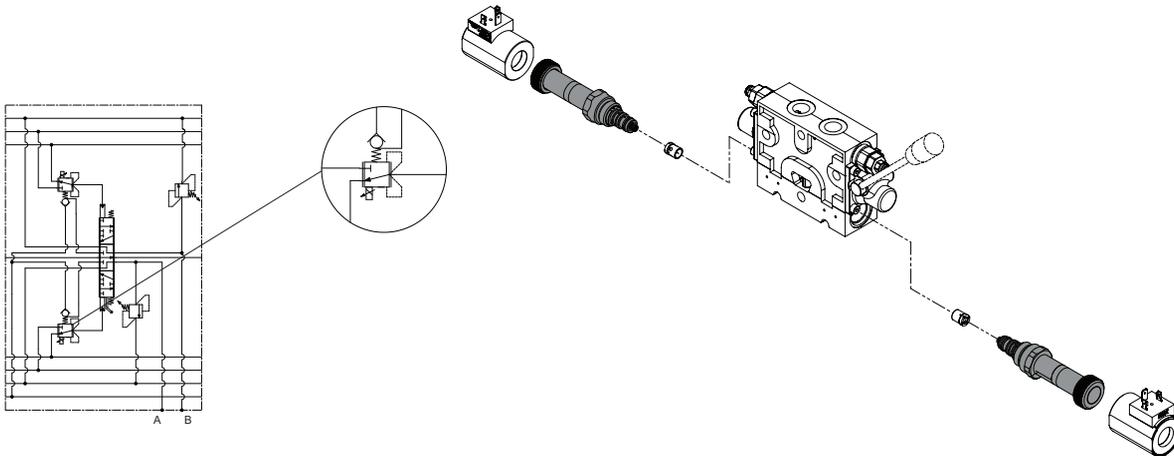
Regulated flow size

A02	Flow rate up to 2 L/min on port A	B02	Flow rate up to 2 L/min on port B
A03	Flow rate up to 3 L/min on port A	B03	Flow rate up to 3 L/min on port B
A06	Flow rate up to 6 L/min on port A	B06	Flow rate up to 6 L/min on port B
A09	Flow rate up to 9 L/min on port A	B09	Flow rate up to 9 L/min on port B
A12	Flow rate up to 12 L/min on port A	B12	Flow rate up to 12 L/min on port B
A18	Flow rate up to 18 L/min on port A	B18	Flow rate up to 18 L/min on port B
A24	Flow rate up to 24 L/min on port A	B24	Flow rate up to 24 L/min on port B
A30	Flow rate up to 30 L/min on port A	B30	Flow rate up to 30 L/min on port B
A36	Flow rate up to 36 L/min on port A	B36	Flow rate up to 36 L/min on port B
A40	Flow rate up to 40 L/min on port A	B40	Flow rate up to 40 L/min on port B
A50	Flow rate up to 50 L/min on port A	B50	Flow rate up to 50 L/min on port B



4. Electro-hydraulic control valve

D2 - W002A - A12 / B24 - **XE** - M12D - H05 - F01 - A/ C2(180P) - B/ C2(150P)



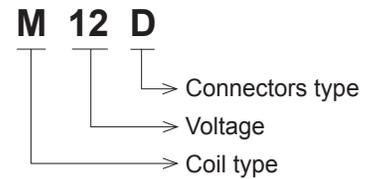
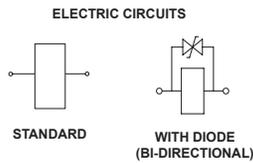
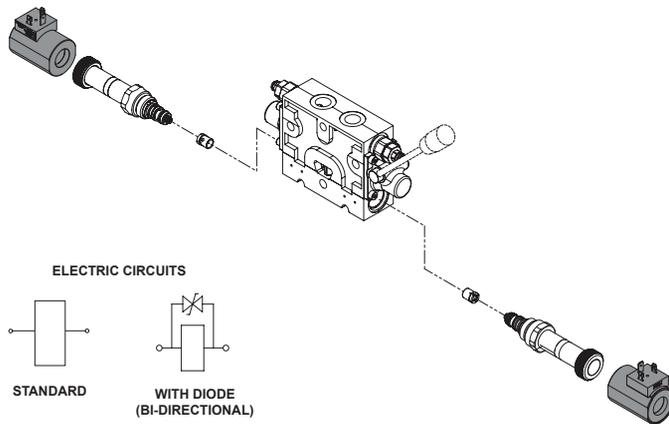
XE	Proportional valve for electro-hydraulic control on both ports (A and B)
XO	On/off valve for electro-hydraulic control on both ports (A and B)
XT	Plug for manual control
EO	Proportional valve on port A On/off valve on port B
OE	On/off valve on port A Proportional valve on port B
OT	On/off valve on port A Plug for manual control on port B
TO	Plug for manual control port A On/off valve on port B
ET	Proportional valve on port A Plug for manual control on port B
TE	Plug for manual control on port A Proportional valve on port B

NB:

- With the on/off control, the adjusted flow corresponds to the size of the poppet (see page 18).
- With manual control the flow sensing action is lost and therefore the independent load flow control. (the circuit becomes a hydraulic parallel)

5. Coil

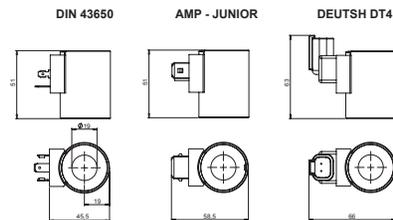
D2 - W002A - A12 / B24 - XE - **M12D** - H05 - F01 - A/ C2(180P) - B/ C2(150P)



Proportional coil

Available only for proportional electro-hydraulic control valve

Wire insulation class	H(>185 °C)
ED	100%
Coil power at 20 °C	36 W
Max current at 24 Vdc	0,9 A
Max current at 12 Vdc	1,8 A
PWM	120 Hz
Ambient temperature	-20 +40 °C
Weight	0,28 Kg

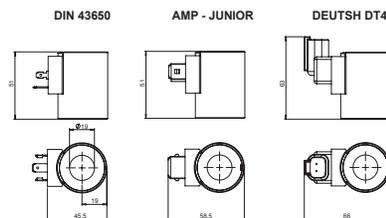


Order code	Connector	Protection class	Coil thermal insulation class	Voltage [V]	Resistance [Ω]	Circuit	NEM code
M12D	DIN 43650	IP65	H	12	3,9	STANDARD	095001191
M24D				24	14,5		095002191
M12S	DEUTSCH DT4	IP67	H	12	3,9	STANDARD	095011190
M24S				24	14,5		095102190
M12A	AMP - JUNIOR	IP67	H	12	3,9	STANDARD	095201190
M24A				24	14,5		095202190

On-off coil

Available only for on-off electro-hydraulic control valve

Wire insulation class	H(>185 °C)
ED	100%
Coil power at 20 °C	24 W
Ambient temperature	-20 +40 °C
Weight	0,28 Kg

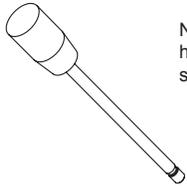


Order code	Connector	Protection class	Coil thermal insulation class	Voltage [V]	Resistance [Ω]	Circuit	NEM code
C12D	DIN 43650	IP65	H	12	6,8	STANDARD	098011190
C24D				24	24		098012190
C12S	DEUTSCH DT4	IP67	F	12	6,8	WITH DIODE	098111190
C24S				24	24		098112190
C12A	AMP - JUNIOR	IP65	F	12	6,8	WITH DIODE	098211190
C24A				24	24		098212190

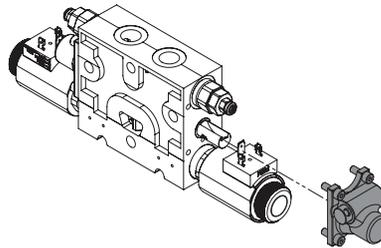


6. Control type

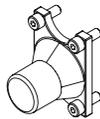
D2 - W002A - A12 / B24 - XE - M12D - **H05** - F01 - A/ C2(180P) - B/ C2(150P)



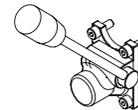
NB: For **H05 H08 HXP** the handle rod must be ordered separately (cod.9032061200)



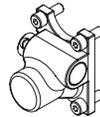
H00 Control without lever



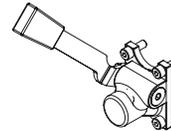
H09 Control with high 45° threaded M6 lever. Right handle



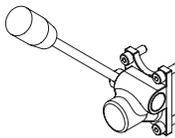
H05 Control with high 45° threaded M6 lever, it can be disassembled. Left handle



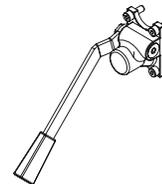
H10 Control with high 45° fixed lever. Left handle



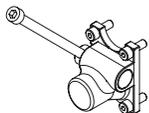
H06 Control with high 45° threaded M6 lever. Left handle



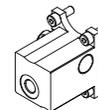
H15 Control with low 45° fixed lever. Left handle



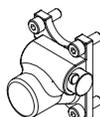
H07 Control with high 45° threaded M6 screw, it can be disassembled. Left handle



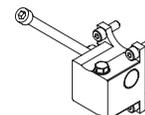
HXP Control with high 45° threaded M6 lever. With signal withdrawal GAS 1/8". Left handle



H08 Control with high 45° threaded M6 lever, it can be disassembled. Right handle

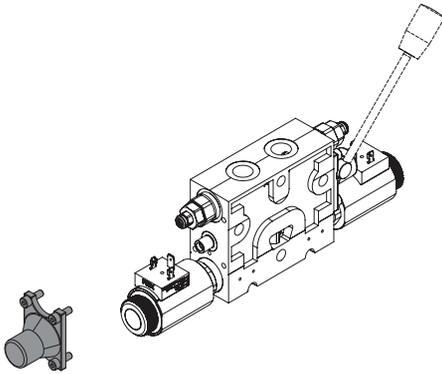


HXX Control with high 45° threaded M6 lever. With bleeding. Left handle

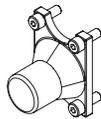


8. Spool centering

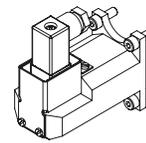
D2 - W002A - A12 / B24 - XE - M12D - H05 - **F01** - A/ C2(180P) - B/ C2(150P)



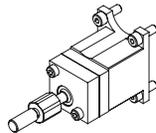
F01 3 position, spring centering kit



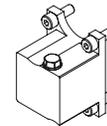
F04 3 position, spring centering kit with proportional position control (hall effect)



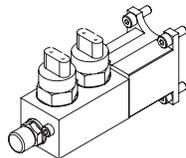
F02 3 position, spring centering kit with rod for double control



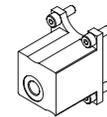
F05 3 position, spring centering kit with bleeding



F03 3 position, spring centering kit with on/off position control

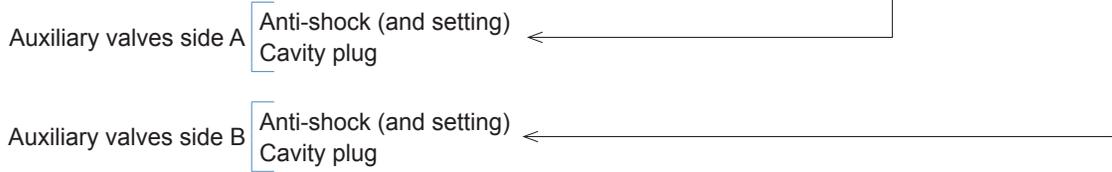


FXP 3 position, spring centering kit with signal withdrawal GAS 1/8"



8-9. Auxiliary valves

D2 - W002A - A12 / B24 - XE - M12D - H05 - F01 - **A/ C2(180P) - B/ C2(150P)**

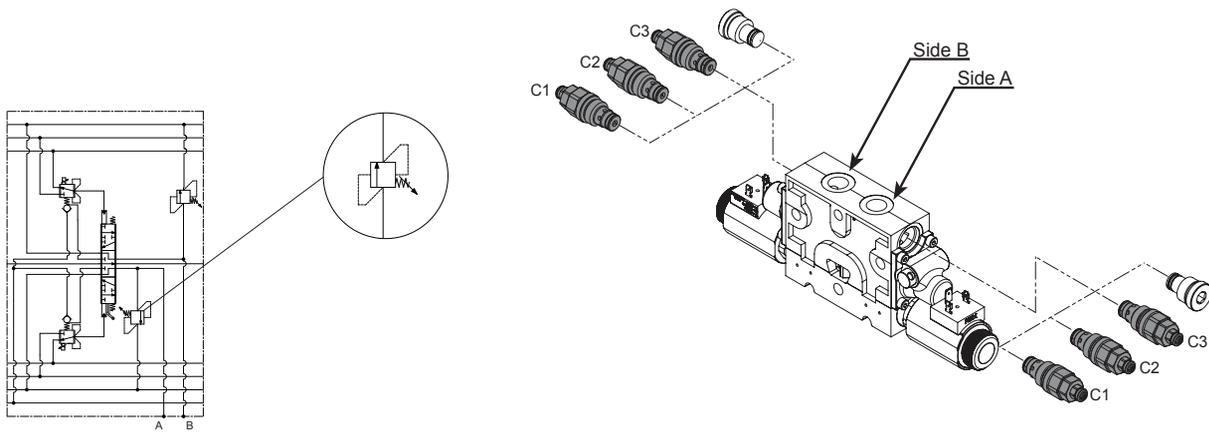


Anti-shock

C1(...)	Cracking pressure (20÷120 P ¹⁾ or full flow setting (60÷100 Q ¹⁾)
C2(...)	Cracking pressure (121÷170 P) or full flow setting (101÷180 Q)
C3(...)	Cracking pressure (171÷350 P) or full flow setting (181÷ 350 Q)

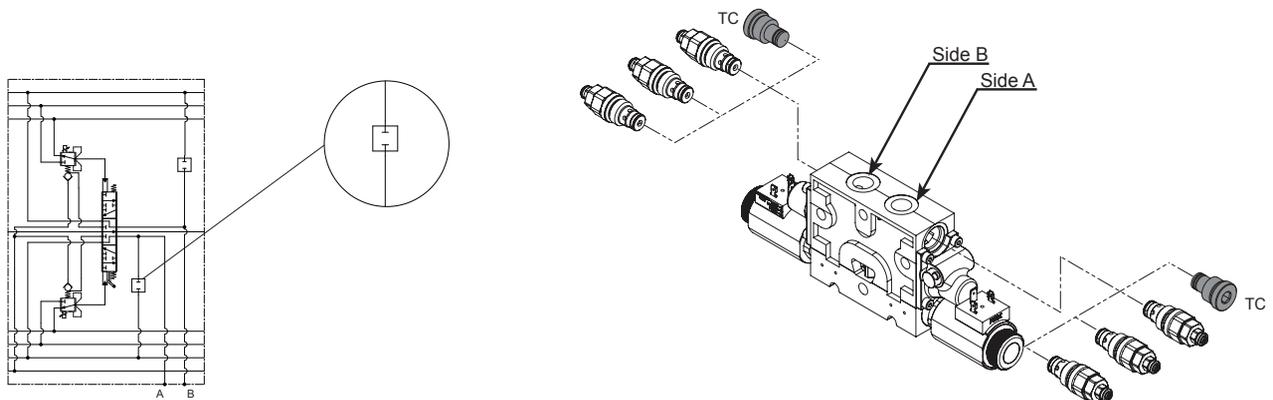
Setting type¹⁾	Specify the setting type
P	Cracking pressure
Q	Full flow ²⁾

²⁾ Referred to the maximum capacity of the flow control valve



Cavity plug

NP	Plug (without valve)
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Outlet section

ZN - EV5 - C12D

1 HOUSING

page 28

ZN	Outlet section for fixed displacement pump
ZD	Outlet section with drainage of the L line for fixed displacement pump
ZL	Outlet section for variable displacement pump

2 AUXILIARY VALVE

page 29

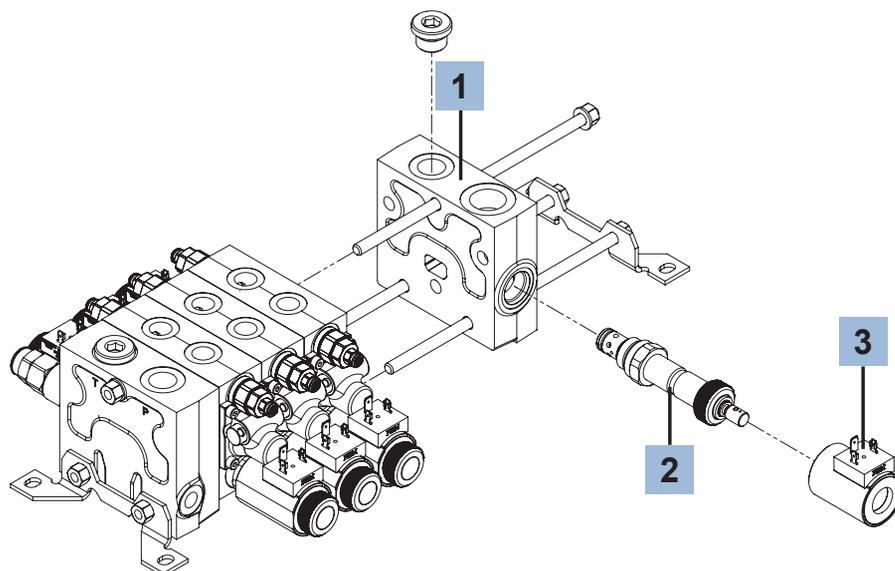
ET	Plug, without dump valve
EV0	Electric dump valve without emergency operation
EV4	Electric dump valve with emergency push button
EV5	Electric dump valve with emergency push and twist button
EV6	Hydraulic pilot operated dump valve
EM2H	Electric relief valve with spring 2
EM3H	Electric relief valve with spring 3

3 DUMP VALVE COIL

page 30

C12D	Coil 12 V, connector DIN 43650
C12A	Coil 12 V, connector AMP-JUNIOR, circuit with diode
C12S	Coil 12 V, connector DEUTSCH DT4, circuit with diode
C24D	Coil 24 V, connector DIN 43650
C24A	Coil 24 V, connector AMP-JUNIOR, circuit with diode
C24S	Coil 24 V, connector DEUTSCH DT4, circuit with diode
S12D	Proportional coil 12 V, connector DIN 43650
S24D	Proportional coil 24 V, connector DIN 43650

...

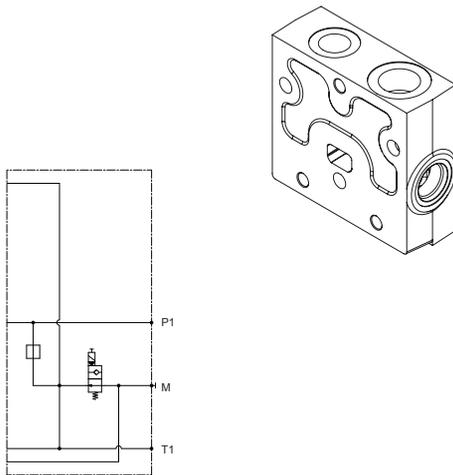


1. Housing

ZN - EV5 - C12D

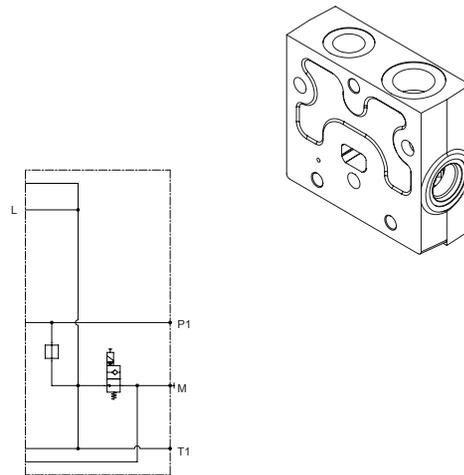
ZN

Standard outlet housing
for fixed displacement pump



ZD

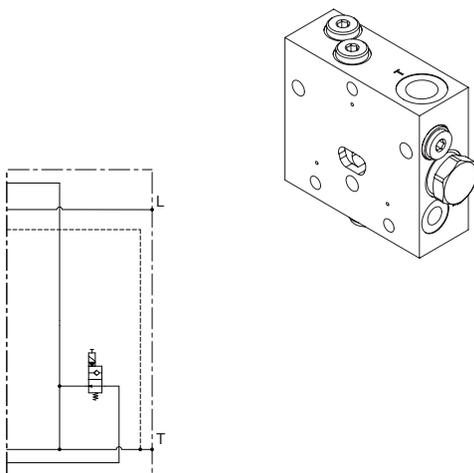
Outlet housing with internal drainage of the
L line
for fixed displacement pump



For correct operation, guarantee a maximum
back pressure on port T (or T1) of 1 bar

ZL

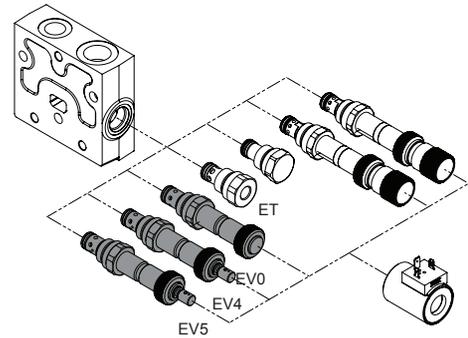
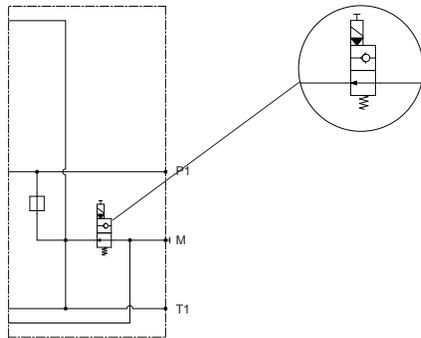
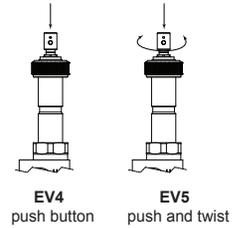
Outlet housing for variable displacement
pump (NVD2 LS)



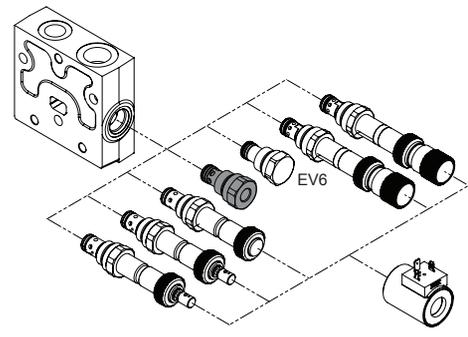
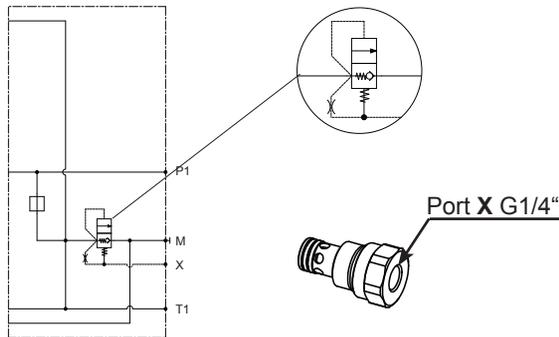
2. Dump valve

ZN - EV5 - C12D

EV0	Electric dump valve without emergency operation
EV4	Electric dump valve with push button emergency
EV5	Electric dump valve with push and twist emergency
ET	Plug, without dump valve

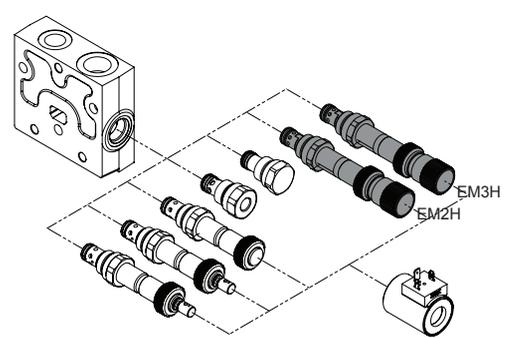
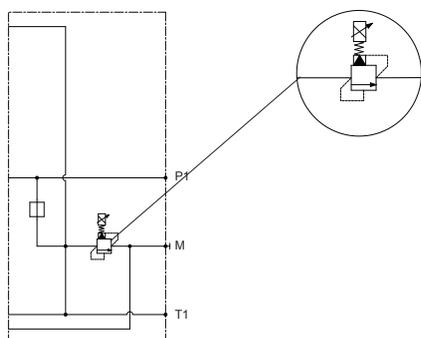


EV6	Hydraulic pilot operated dump valve
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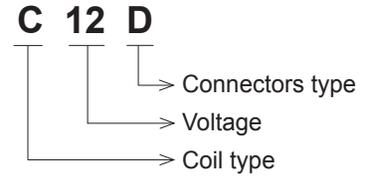
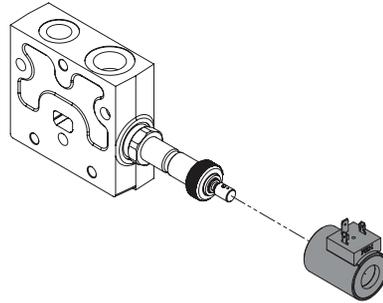
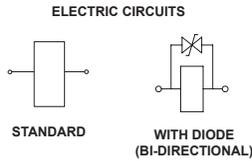
EM2H	Electric relief valve with pressure setting range (0 ÷ 250)
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EM3H	Electric relief valve with pressure setting range (0 ÷ 350)
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3. Dump valve coil

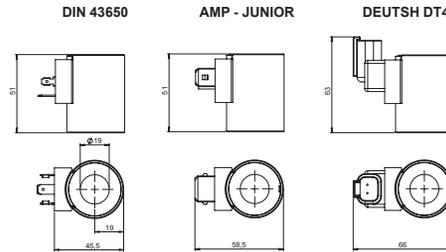
ZN - EV5 - C12D



Proportional coil

Available only for electric relief valve

Wire insulation class	H(>185 °C)
ED	100%
Coil power at 20 °C	36 W
Max current at 24 Vdc	0,9 A
Max current at 12 Vdc	1,8 A
PWM	90 ÷ 120 Hz
Ambient temperature	-20 +40 °C
Weight	0,28 Kg

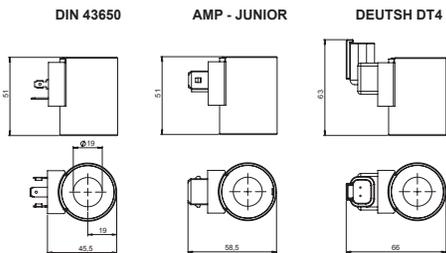


Order code	Connector	Protection class	Coil thermal insulation class	Voltage [V]	Resistance [Ω]	Circuit	NEM code
S12D	DIN 43650	IP65	H	12	3,9	STANDARD	098001190
S24D				24	14,5		098002190
S12S	DEUTSCH DT4	IP67	F	12	3,9	WITH DIODE	098101190
S24S				24	14,5		098102190
S12A	AMP - JUNIOR	IP65	F	12	3,9	WITH DIODE	098201190
S24A				24	14,5		098202190

On-off coil

Available only for dump valve

Wire insulation class	H(>185 °C)
ED	100%
Coil power at 20 °C	24 W
Ambient temperature	-20 +40 °C
Weight	0,28 Kg

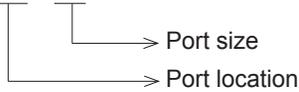


Order code	Connector	Protection class	Coil thermal insulation class	Voltage [V]	Resistance [Ω]	Circuit	NEM code
C12D	DIN 43650	IP65	H	12	6,8	STANDARD	098011190
C24D				24	24		098012190
C12S	DEUTSCH DT4	IP67	F	12	6,8	WITH DIODE	098111190
C24S				24	24		098112190
C12A	AMP - JUNIOR	IP65	F	12	6,8	WITH DIODE	098211190
C24A				24	24		098212190

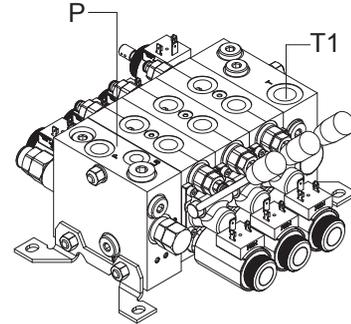


Position and port size

U1 G

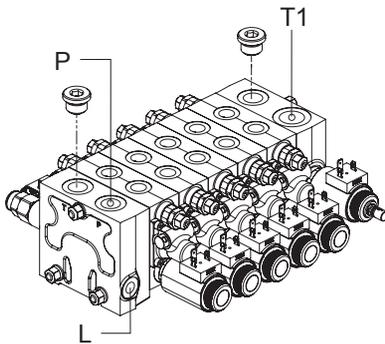


NB: For variable displacement pump (NVD2 LS), U1 is the only available configuration



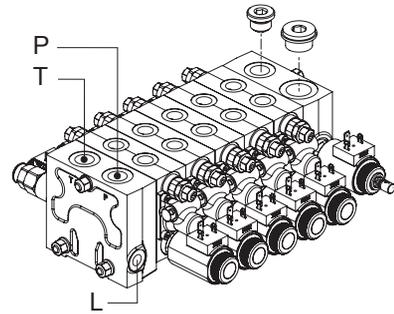
U1

Delivery on (P),
discharge on (T1)



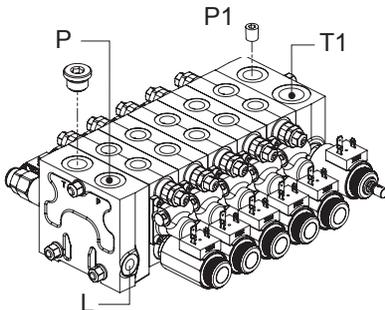
U2

Delivery on (P),
discharge on (T),



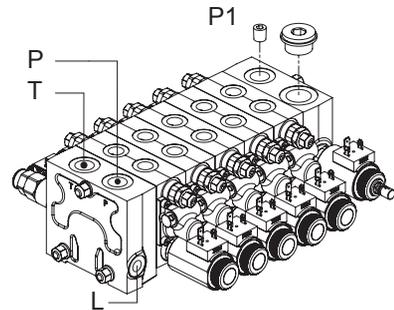
U3

Delivery on (P),
discharge on (T1),
Carry-over on (P1)



U4

Delivery on (P),
discharge on (T),
Carry-over on (P1)



PORT SIZE NVD2 (fixed displacement pump)

Orde code	Port type	Inlet port P	Inlet port P1	User port A-B	Outlet port T	Port T1	Port L
G	BSPP (ISO-228)	1/2" BSPP	1/2" BSPP	3/8" BSPP	1/2" BSPP	3/4" BSPP	1/4" BSPP
S	SAE (ASME B1.1-2003)	7/8-14 UNF-2B (SAE 10)	7/8-14 UNF-2B (SAE 10)	3/4-16 UNF-2B (SAE 8)	7/8-14 UNF-2B (SAE 10)	3/4-16 UNF-2B (SAE 8)	5/8-18 UNF-2B (SAE 6)

PORT SIZE NVD2 LS (variable displacement pump)

Orde code	Port type	Inlet port P	User port A	User port B	Outlet port T	Port LS	Port L
G	BSPP (ISO-228)	3/8" BSPP	3/8" BSPP	3/8" BSPP	1/2" BSPP	1/4" BSPP	1/4" BSPP
S	SAE (ASME B1.1-2003)	3/4-16 UNF-2B (SAE 8)	3/4-16 UNF-2B (SAE 8)	3/4-16 UNF-2B (SAE 8)	7/8-14 UNF-2B (SAE 10)	5/8-18 UNF-2B (SAE 6)	5/8-18 UNF-2B (SAE 6)

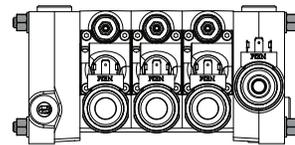
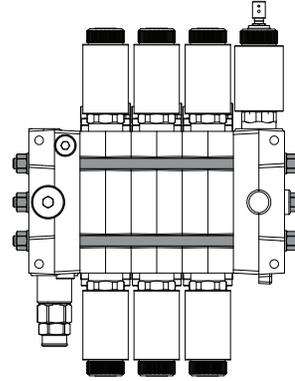
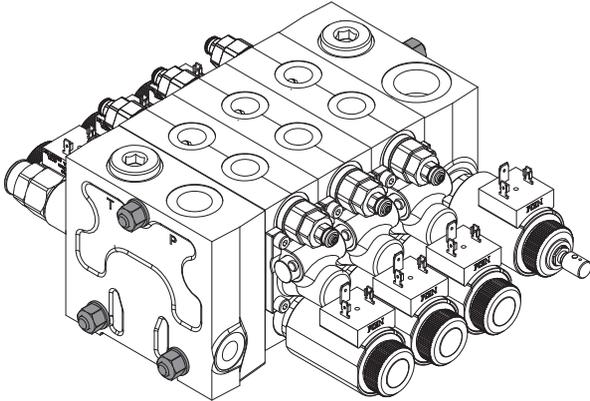


Mounting type

SS

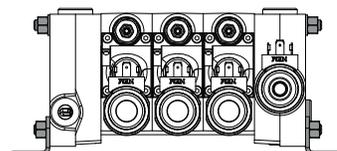
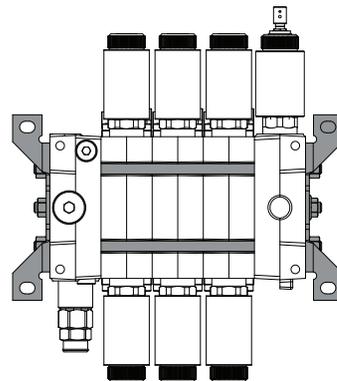
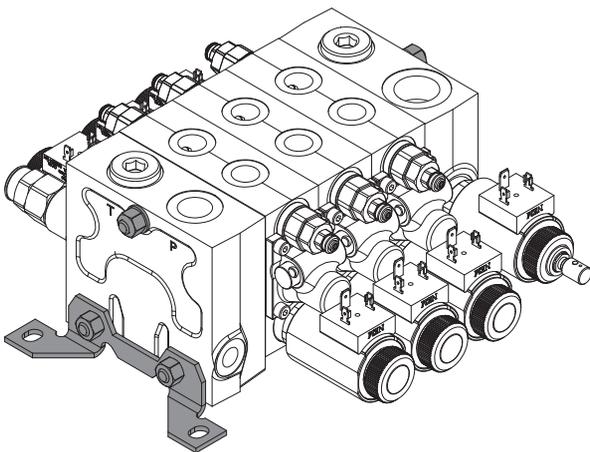
Without brackets¹⁾

¹⁾Not available for variable displacement pump configuration (NVD2 LS)



CS

With brackets



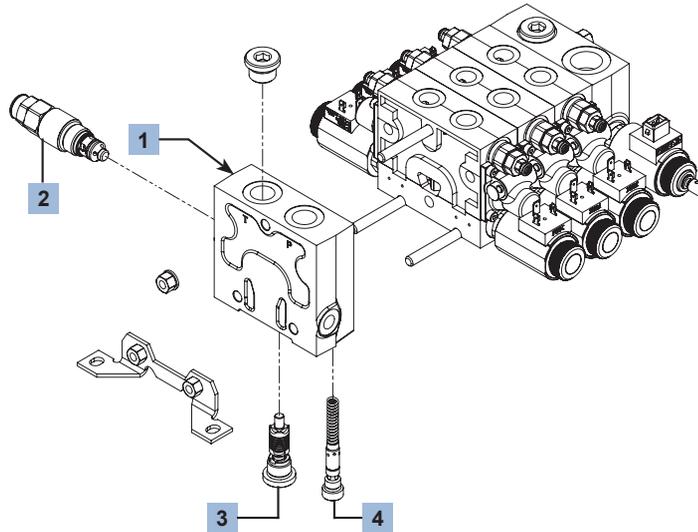


NVD2

SPARE PARTS



Inlet section - spare parts

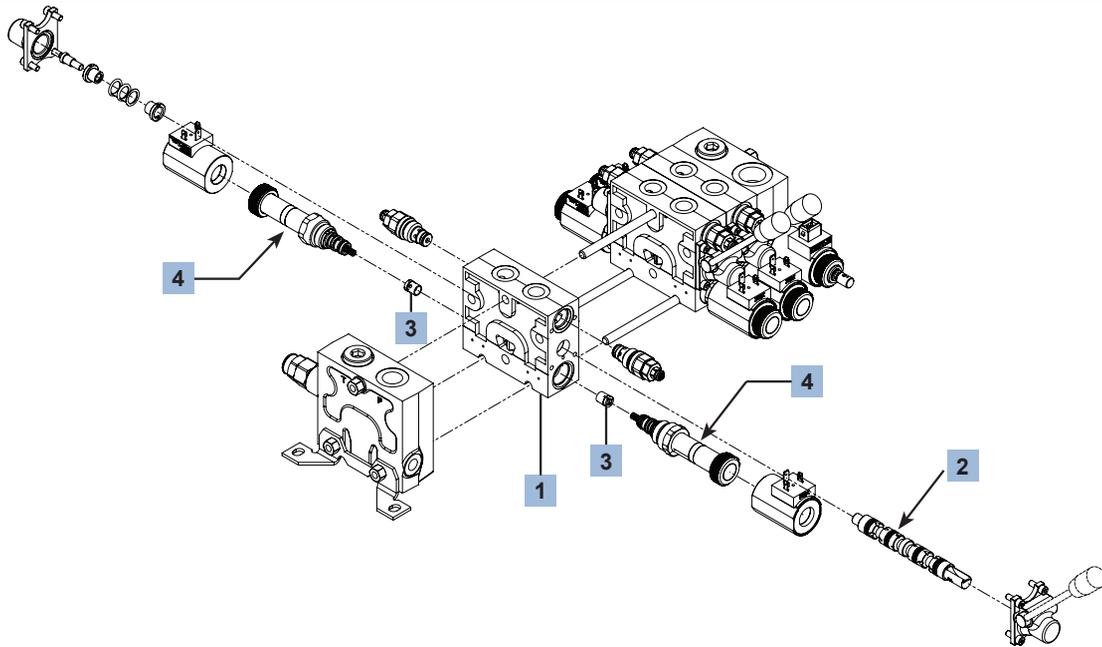


Inlet ordering code example : IL-VM2(210)-VP-VR

		<u>Ordering code</u>
1 Inlet module	Right inlet (port P GAS 1/2", port T1 GAS 3/4" BSPP)	IR 913NEM4011
	Left inlet (port P GAS 1/2", port T1 GAS 3/4" BSPP)	IL 913NEM4011
2 Pressure relief valve (spring type and setting)	Plug (w/o pressure relief valve)	SVM 9273274600
	Pressure setting range 50 to 120 bar, setting at (...)	VM1(...) 0023310000
	Pressure setting range 120 to 200 bar, setting at (...)	VM2(...) 0023320000
	Pressure setting range 200 to 350 bar, setting at (...)	VM3(...) 0023330000
	Hydraulic pilot relief valve	MRP 0033030000
<small>Note: the Main Relief Valve setting is referred to the selected Inlet flow</small>		
3 Pre-loading valve	Plug (without preloading valve)	TP N320271003
	Preloading valve	VP N320271002
4 Reducing valve	Reducing valve (setting 18 bar)	VR N320271001
Plug	Plug port T1 (GAS 3/4" BSPP)	4275211802
	Plug port P (GAS 1/2" BSPP)	4275211802
	Plug port M (GAS 1/4" BSPP)	4275101001
Mounting	Without brackets for 1 section NVD2	SS/1 9296081401
	Without brackets for 2 section NVD2	SS/2 9296081801
	Without brackets for 3 section NVD2	SS/3 9296082201
	Without brackets for 4 section NVD2	SS/4 9296082601
	Without brackets for 5 section NVD2	SS/5 9296083001
	Without brackets for 6 section NVD2	SS/6 9296083401
	Without brackets for 7 section NVD2	SS/7 9296083801
	Without brackets for 8 section NVD2	SS/8 9296084201
	With brackets for 1 section NVD2	CS/1 9296081402
	With brackets for 2 section NVD2	CS/2 9296081802
	With brackets for 3 section NVD2	CS/3 9296082202
	With brackets for 4 section NVD2	CS/4 9296082602
	With brackets for 5 section NVD2	CS/5 9296083002
	With brackets for 6 section NVD2	CS/6 9296083402
	With brackets for 7 section NVD2	CS/7 9296083802
	With brackets for 8 section NVD2	CS/8 9296084202



Work section - spare parts



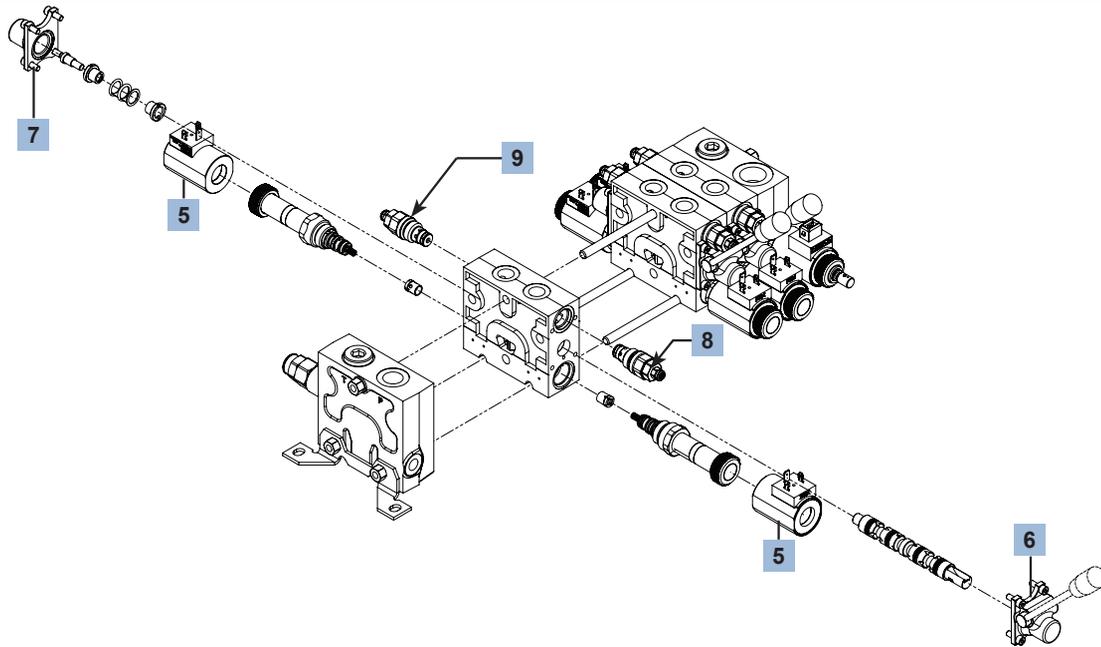
Work ordering code example: D2-W002A-A12/B24-XE-M12D-H05-F01-A/C2(180P)-B/C2(150P)

Ordering code

1 Work module		
Work section without auxiliary valves (port A and B GAS 3/8"BSPP)	D1	913NEM5000
Work section with auxiliary valves (port A and B GAS 3/8"BSPP)	D2	913NEM5010
2 Spool		
Spool with A and B closed in central position 40 L/min	W001A	3114160101
Spool with A and B closed in central position 20 L/min	W001B	3114160107
Spool with A and B closed in central position 10 L/min	W001C	3114160106
Spool with A and B closed in central position 30 L/min	W001D	3114160100
Spool with A and B discharging in central position 40 L/min	W002A	3114160105
Spool with A and B discharging in central position 20 L/min	W002B	3114160111
Spool with A and B discharging in central position 10 L/min	W002C	3114160110
Spool with A and B discharging in central position 30 L/min	W002D	3114160103
Spool with A and B partially discharging in central position 40 L/min	W002JA	3114160102
Spool with A and B partially discharging in central position 20 L/min	W002JB	3114160109
Spool with A and B partially discharging in central position 10 L/min	W002JC	3114160108
Spool with A and B partially discharging in central position 30 L/min	W002JD	3114160104
Spool with A partially discharging and B closed 40 L/min	W002KA	3114160128
Spool with A partially discharging and B closed 20 L/min	W002KB	3114160127
Spool with A partially discharging and B closed 10 L/min	W002KC	3114160124
Spool with A partially discharging and B closed 30 L/min	W002KD	3114160113
Spool with B partially discharging and A closed 40 L/min	W002YA	3114160130
Spool with B partially discharging and A closed 10 L/min	W002YB	3114160129
Spool with B partially discharging and A closed 20 L/min	W002YC	3114160123
Spool with B partially discharging and A closed 30 L/min	W002YD	3114160125
Spool with A discharging and B closed 30 L/min	W003A	3114160132
3 Flow control valve		
2 L/min flow control poppet	Side A A02	Side B B02 3207111310
3 L/min flow control poppet	A03	B03 3207111307
6 L/min flow control poppet	A06	B06 3207111306
9 L/min flow control poppet	A09	B09 3207111309
12 L/min flow control poppet	A12	B12 3207111300
18 L/min flow control poppet	A18	B18 3207111308
24 L/min flow control poppet	A24	B24 3207111301
30 L/min flow control poppet	A30	B30 3207111312
36 L/min flow control poppet	A36	B36 3207111302
40 L/min flow control poppet	A40	B40 3207111304
50 L/min flow control poppet	A50	B50 3207111305
4 Electro-hydraulic control valve		
Plug for manual control	XT	9275225000
Proportional electro-hydraulic control valve	XE	0PNV200004
On/off electro-hydraulic control valve for low flow (≤ 12 L/min)	XO(L)	0PNV200007
On/off electro-hydraulic control valve for high flow (>12 L/min)	XO(H)	0PNV200008



Work section - spare parts

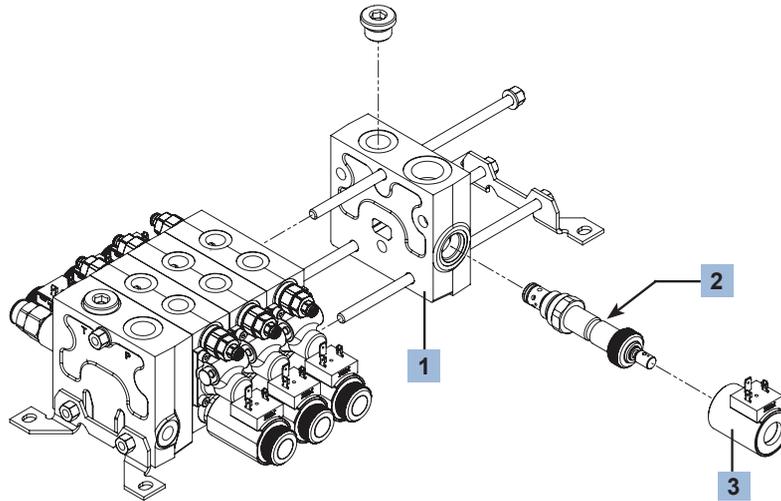


Work ordering code example: D2-W002A-A12/B24-XE-M12D-H05-F01-A/C2(180P)-B/C2(150P)

		<u>Ordering code</u>		
5	Coil			
	12 V, connector DIN 43650	M12D	095001191	
	24 V, connector DIN 43650	M24D	095002191	
	12 V, connector DEUTSCH DT4	M12S	095011190	
	24 V, connector DEUTSCH DT4	M24S	095102190	
	12 V, connector AMP-JUNIOR	M12A	095201190	
	24 V, connector AMP-JUNIOR	M24A	095202190	
		<u>Proportional</u>		
	12 V, connector DIN 43650	C12D	098011190	
	24 V, connector DIN 43650	C24D	098012190	
	12 V, connector DEUTSCH DT4, circuit with diode	C12S	098111190	
	24 V, connector DEUTSCH DT4, circuit with diode	C24S	098102190	
	12 V, connector AMP-JUNIOR, circuit with diode	C12A	098112190	
	24 V, connector AMP-JUNIOR, circuit with diode	C24A	098212190	
6	Control type			
	Control without lever	H00	9231400340	
	Control with high 45° M6 lever predisposition, left handle	H05	9228130357	
	Control with high 45° M6 threaded lever, left handle	H06	9228130356	
	Control with high 45° M6 threaded screw, left handle	H07	9228130355	
	Control with high 45° M6 lever predisposition, right handle	H08	5NVD20800001	
	Control with high 45° M6 threaded lever, right handle	H09	5NVD20800000	
	Control with high 45° fixed lever, left handle	H10	9038031322	
	Control with low 45° fixed lever, left handle	H15	9038031522	
	Control with lever predisposition and signal withdrawal GAS 1/8"	HXP	9228130360	
	Control with lever predisposition and bleeding	HXX	9228130359	
	Handle rod		9032061200	
	7	Spool centering		
		Spring centering kit	F01	9NVD20900000
Spring centering kit with rod for double control		F02	9231400501	
Spring centering kit with on/off position control		F03	9231400504	
Spring centering kit with proportional position control (hall effect)		F04	9231400503	
Spring centering kit with bleeding		F05	9231400505	
Spring centering kit with on/off position control (optical transducer)		F06	RS17095602	
Spring centering kit with signal withdrawal GAS 1/8"	FXP	92314050002		
8-9	Auxiliary valves			
		<u>Side A</u>	<u>Side B</u>	
	Anti-shock with spring 1 setting range (20 P÷ 120 P) or (60 Q÷ 100 Q)	C1(...)	C1(...)	0022010000
	Anti-shock with spring 2 setting range (121 P÷170 P) or (101 Q÷180 Q)	C2(...)	C2(...)	0022020000
	Anti-shock with spring 3 setting range (171 P÷ 350 P) or (181 Q÷ 350 Q)	C3(...)	C3(...)	0022030000
Plug	TC	TC	9273193600	



Outlet section - spare parts



Outlet ordering code example: **ORG12-CC16-OC2**

Ordering code

1	Outlet module		
	Standard outlet housing	ZN	913NEM6010
	Outlet housing with internal drainage of the L line	ZD	913NEM6011
2	Dump valve		
	Plug, without dump valve	ET	9273274600
	Electric dump valve without emergency operation	EV0	0553010000
	Electric dump valve with push button emergency	EV4	0553010400
	Electric dump valve with push and twist button emergency	EV5	0553010500
	Hydraulic pilot operated dump valve	EV6	0203002600
	Electric relief valve with spring 2	EM2H	0063020700
	Electric relief valve with spring 3	EM3H	0063030700
3	Dump valve coil		
	12 V, connector DIN 43650	S12D	098001190
	24 V, connector DIN 43650	S24D	098002190
	12 V, connector DEUTSCH DT4, circuit with diode	S12S	098101190
	24 V, connector DEUTSCH DT4, circuit with diode	S24S	098102190
	12 V, connector AMP-JUNIOR, circuit with diode	S12A	098201190
	24 V, connector AMP-JUNIOR, circuit with diode	S24A	098202190
		<u>Proportional</u>	
	12 V, connector DIN 43650	C12D	098011190
	24 V, connector DIN 43650	C24D	098012190
	12 V, connector DEUTSCH DT4, circuit with diode	C12S	098111190
	24 V, connector DEUTSCH DT4, circuit with diode	C24S	098112190
	12 V, connector AMP-JUNIOR, circuit with diode	C12A	098211190
	24 V, connector AMP-JUNIOR, circuit with diode	C24A	098212190
		<u>On/off</u>	
	Port location		
	Open center layout, discharge on (T1), GAS version	U1	5NVD21000000
	Open center layout, discharge on (T), GAS version	U2	5NVD21000001
	Closed center layout, discharge on (T1), GAS version	U3	5NVD21000002
	Closed center layout, discharge on (T), GAS version	U4	5NVD21000003
	Plug		
	Plug port T + washer		4275272000+ 4343272500
	Plug port P1		4275211802
	Plug for Carry-over function		4293130130



Seals kit

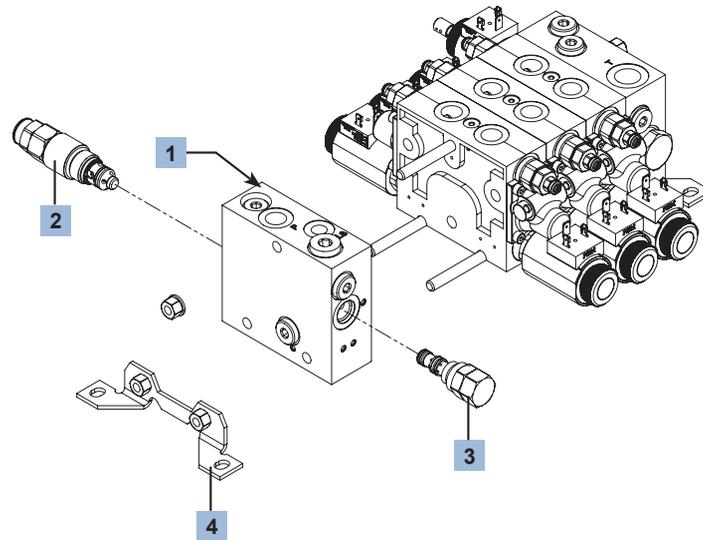
Seals kit for inlet section	9NVD20000001
Seals kit for work section	9NVD20000003
Seals kit for general relief valve	9NVD20000004
Seals kit for anti-shock valve	9NVD20000005
Seals kit for all closef 10/2 cap replacement	9NVD20000006
Seals kit for pilot valve	9NVD20000007
Seals kit for pilot valve replacement cap	9NVD20000008
Seals kit for electric dump valve	9NVD20000009
Seals kit for hydraulic dump valve	9NVD20000025
Seals kit for spool centering and control kit	9NVD20000010
Seals kit for anti-shock replacement cap	9NVD20000022
	9NVD20000023



NVD2 LS
SPARE PARTS



Inlet section - spare parts

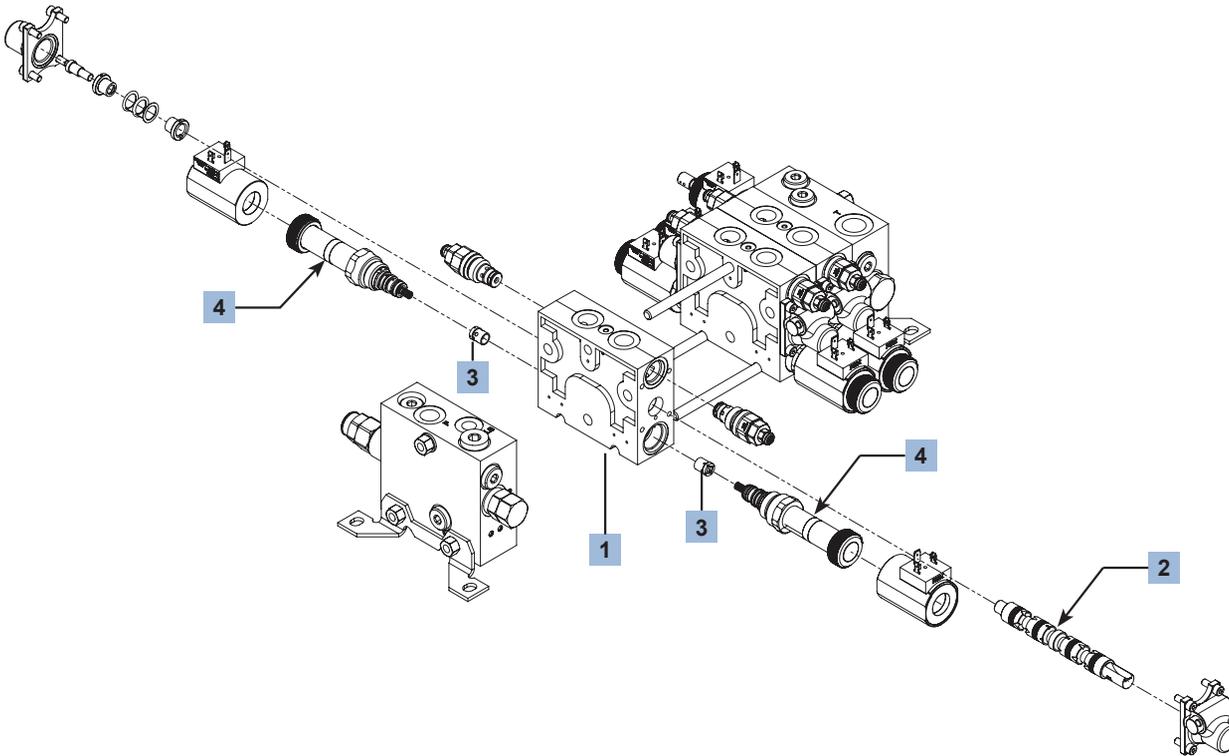


Inlet ordering code example: I1-VM2(210)-VR

Ordering code

1 Inlet module		
Left inlet (port P GAS 1/2", port T1 GAS 3/4" BSPP)	I1	913NEM4005
Right inlet (port P GAS 1/2", port T1 GAS 3/4" BSPP)	I2	913NEM4005
2 Pressure relief valve (spring type and setting)		
Plug (w/o pressure relief valve)	SVM	9273274600
Pressure setting range 50 to 120 bar, setting at (...)	VM1(...)	0023310000
Pressure setting range 120 to 200 bar, setting at (...)	VM2(...)	0023320000
Pressure setting range 200 to 350 bar, setting at (...)	VM3(...)	0023330000
Hydraulic pilot relief valve	MRP	0033030000
<small>Note: the Main Relief Valve setting is referred to the selected Inlet flow</small>		
3 Reducing valve		
Reducing valve (setting 18 bar)	VR	0121200300
4 Mounting		
Mounting for 1 section NVD2	CS/1	9296081402
Mounting for 2 section NVD2	CS/2	9296081802
Mounting for 3 section NVD2	CS/3	9296082202
Mounting for 4 section NVD2	CS/4	9296082602
Mounting for 5 section NVD2	CS/5	9296083002
Mounting for 6 section NVD2	CS/6	9296083402
Mounting for 7 section NVD2	CS/7	9296083802
Mounting for 8 section NVD2	CS/8	9296084202



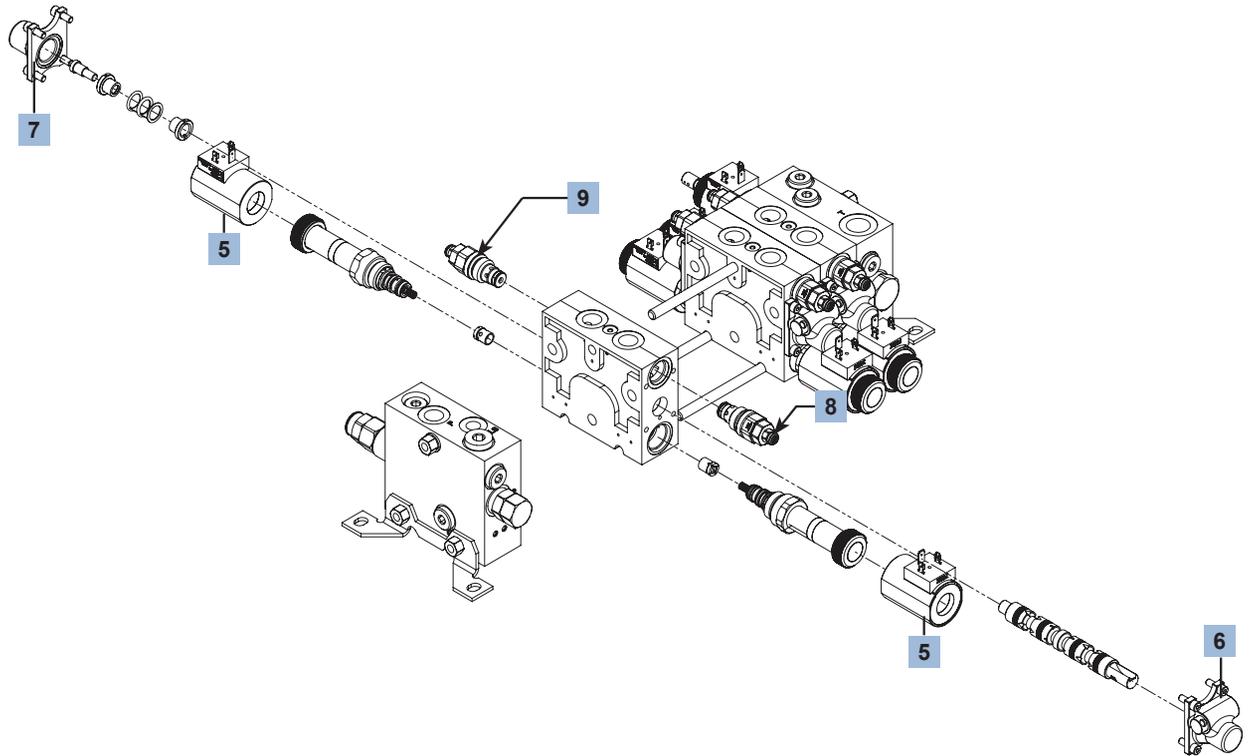


Work ordering code example: D4-W102A-A12/B24-XE-M12D-H05-F01-A/C2(180P)-B/C2(150P)

Ordering code

1 Work module	Work section without auxiliary valves (port A and B GAS 3/8"BSPP)	D3	913NEM5020
	Work section with auxiliary valves (port A and B GAS 3/8"BSPP)	D4	913NEM5030
2 Spool	Spool with A and B closed in central position 40 L/min	W101A	5114160114
	Spool with A and B closed in central position 20 L/min	W101B	5114160115
	Spool with A and B closed in central position 10 L/min	W101C	5114160121
	Spool with A and B discharging in central position 40 L/min	W102A	5114160119
	Spool with A and B discharging in central position 20 L/min	W102B	5114160120
	Spool with A and B discharging in central position 10 L/min	W102C	5114160122
	Spool with A and B partially discharging in central position 40 L/min	W102JA	5114160116
	Spool with A and B partially discharging in central position 20 L/min	W102JB	5114160117
	Spool with A partially discharging and B closed 20 L/min	W102KB	5114160131
3 Flow control valve	2 L/min flow control poppet	Side A A02	Side B B02 3207111310
	3 L/min flow control poppet	A03	B03 3207111307
	6 L/min flow control poppet	A06	B06 3207111306
	9 L/min flow control poppet	A09	B09 3207111309
	12 L/min flow control poppet	A12	B12 3207111300
	18 L/min flow control poppet	A18	B18 3207111308
	24 L/min flow control poppet	A24	B24 3207111301
	30 L/min flow control poppet	A30	B30 3207111312
	36 L/min flow control poppet	A36	B36 3207111302
	40 L/min flow control poppet	A40	B40 3207111304
	50 L/min flow control poppet	A50	B50 3207111305
4 Electro-hydraulic control valve	Plug for manual control	XT	9275225000
	Proportional electro-hydraulic control valve	XE	0PNV200004
	On/off electro-hydraulic control valve for low flow (≤ 12 L/min)	XO(L)	0PNV200007
	On/off electro-hydraulic control valve for high flow (>12 L/min)	XO(H)	0PNV200008



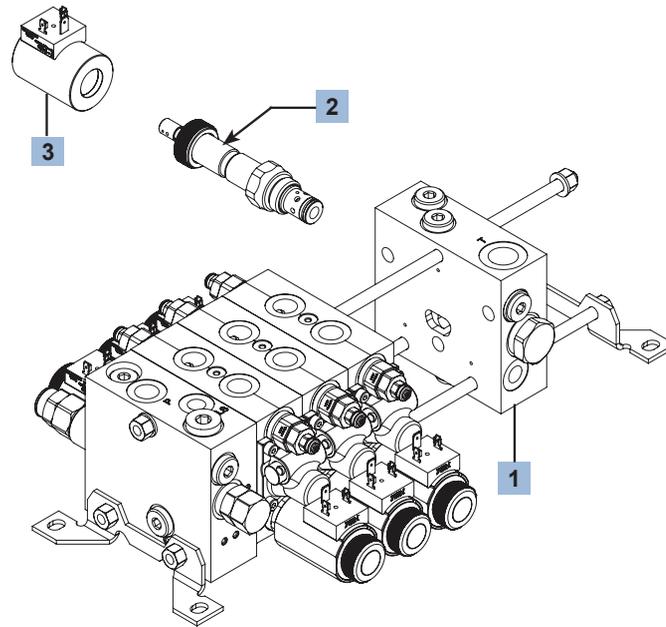


Work ordering code example: D4-W102A-A12/B24-XE-M12D-H05-F01-A/C2(180P)-B/C2(150P)

		Ordering code	
5 Coil	12 V, connector DIN 43650	M12D 095001191	
	24 V, connector DIN 43650	M24D 095002191	
	12 V, connector DEUTSCH DT4	M12S 095011190	
	24 V, connector DEUTSCH DT4	M24S 095102190	
	12 V, connector AMP-JUNIOR	M12A 095201190	
	24 V, connector AMP-JUNIOR	M24A 095202190	
	12 V, connector DIN 43650	C12D 098011190	
	24 V, connector DIN 43650	C24D 098012190	
	12 V, connector DEUTSCH DT4, circuit with diode	C12S 098111190	
	24 V, connector DEUTSCH DT4, circuit with diode	C24S 098102190	
	12 V, connector AMP-JUNIOR, circuit with diode	C12A 098112190	
	24 V, connector AMP-JUNIOR, circuit with diode	C24A 098212190	
	6 Control type	Control without lever	H00 9231400340
		Control with high 45° M6 lever predisposition, left handle	H05 9228130357
Control with high 45° M6 threaded lever, left handle		H06 9228130356	
Control with high 45° M6 threaded screw, left handle		H07 9228130355	
Control with high 45° M6 lever predisposition, right handle		H08 5NV20800001	
Control with high 45° M6 threaded lever, right handle		H09 5NV20800000	
Control with high 45° fixed lever, left handle		H10 9038031322	
Control with low 45° fixed lever, left handle		H15 9038031522	
Control with lever predisposition and signal withdrawal GAS 1/8"		HXP 9228130360	
Control with lever predisposition and bleeding		HXX 9228130359	
Handle rod		9032061200	
7 Spool centering		Spring centering kit	F01 9NVD20900000
	Spring centering kit with rod for double control	F02 9231400501	
	Spring centering kit with on/off position control	F03 9231400504	
	Spring centering kit with proportional position control (hall effect)	F04 9231400503	
	Spring centering kit with bleeding	F05 9231400505	
	Spring centering kit with on/off position control (optical transducer)	F06 RS17095602	
	Spring centering kit with signal withdrawal GAS 1/8"	FXP 92314050002	
8-9 Auxiliary valves	Anti-shock with spring 1 setting range (20 P÷ 120 P) or (60 Q÷ 100 Q)	Side A C1(...) 0022010000	
	Anti-shock with spring 2 setting range (121 P÷ 170 P) or (101 Q÷ 180 Q)	Side B C1(...) 0022010000	
	Anti-shock with spring 3 setting range (171 P÷ 350 P) or (181 P÷ 350 Q)	C2(...) 0022020000	
		C2(...) 0022020000	
		C3(...) 0022030000	
		C3(...) 0022030000	



Outlet section - spare parts



Outlet ordering code example: ZL-EV5-C12D

Ordering code

1	Outlet module (with respect to the lever side) Outlet housing	ZL	913NEM6002
3	Auxiliary valve Plug, without dump valve Electric dump valve without emergency operation Electric dump valve with push button emergency Electric dump valve with push and twist button emergency Hydraulic pilot operated dump valve Electric relief valve with pressure setting range (0÷250) Electric relief valve with pressure setting range (0÷350)	ET EV0 EV4 EV5 EV6 EM2H EM3H	9273274600 0553010000 0553010400 0553010500 0203002600 0063020700 0063030700
5	Directional cartridge coil 12 V, connector DIN 43650 24 V, connector DIN 43650 12 V, connector DEUTSCH DT4, circuit with diode 24 V, connector DEUTSCH DT4, circuit with diode 12 V, connector AMP-JUNIOR, circuit with diode 24 V, connector AMP-JUNIOR, circuit with diode 12 V, connector DIN 43650 24 V, connector DIN 43650 12 V, connector DEUTSCH DT4, circuit with diode 24 V, connector DEUTSCH DT4, circuit with diode 12 V, connector AMP-JUNIOR, circuit with diode 24 V, connector AMP-JUNIOR, circuit with diode	S12D S24D <u>Proportional</u> S12S S24S S12A S24A <u>On/off</u> C12D C24D C12S C24S C12A C24A	098001190 098002190 098101190 098102190 098201190 098202190 098011190 098012190 098111190 098112190 098211190 098212190

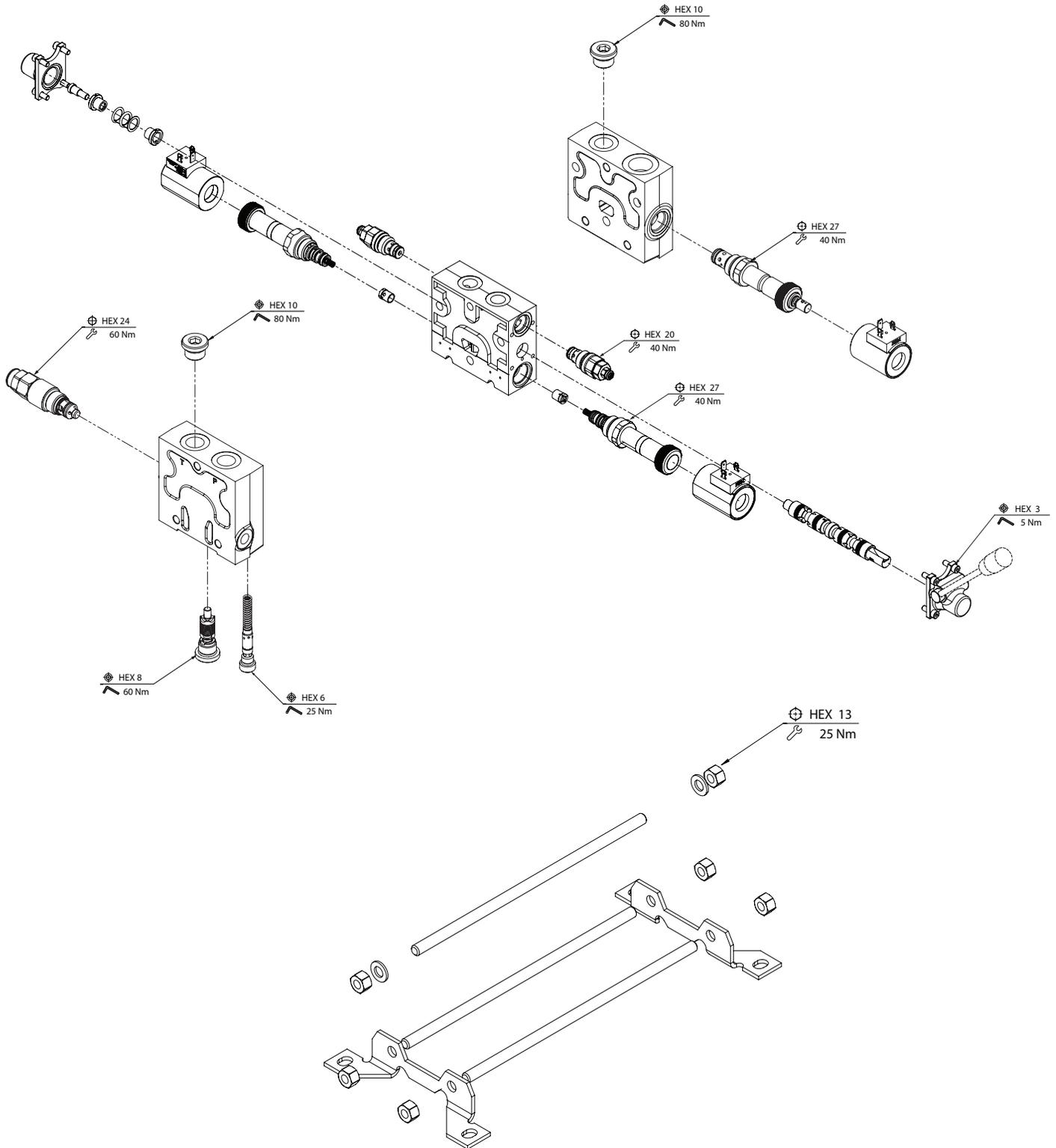


Seals kit

Seals kit for inlet section	9NVD20000026
Seals kit for work section	9NVD20000027
Seals kit for general relief valve	9NVD20000004
Seals kit for anti-shock valve	9NVD20000005
Seals kit for all closef 10/2 cap replacement	9NVD20000006
Seals kit for pilot valve	9NVD20000007
Seals kit for pilot valve replacement cap	9NVD20000008
Seals kit for electric dump valve	9NVD20000009
Seals kit for hydraulic dump valve	9NVD20000025
Seals kit for spool centering and control kit	9NVD20000010
Seals kit for anti-shock replacement cap	9NVD20000022
	9NVD20000023



General tightening torques



NVD2 configuration

Number of sections

Inlet flow

Port location

Customer

Mounting type

Application

Inlet section

Housing	Pressure relief valve	Pressure setting	Pre-loading valve	Reducing valve
-	()	-	-	-

Work sections

N°	Housing	Spool	Flow poppets side A	Flow poppets side B	control valve type	Coil	Control type	Spool centering	Aux valve side A	Aux valve side B
1	-	-A	/B	-	-	-	-	-	-A/ ()	-B/ ()
2	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()
3	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()
4	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()
5	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()
6	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()
7	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()
8	-	-A	/B	-	-	-	-	-	-A/ ()	B/ ()

Outlet section

Housing	Auxiliary valve	Auxiliary valve coil
-	-	-

Number of handle rod¹⁾



¹⁾ For **H05 H08 HXP** the handle rod must be ordered separately (cod.9032061200): specify the number of handle rod you want to order



**TECHNICAL SPECIFICATIONS
AND GENERAL CONDITIONS**

Technical specifications

Filtration

The state of oil used for hydraulic systems and machines is one of the main factors for proper use and performance. Use of excessive dirty oil may lead to earlier wearing of parts and components, faster hardening and thus functional troubles of your equipment. Due Filtration is a must to assure top efficiency and life of your hydraulic equipment. Selection of the most suitable filtration systems must be done according to the technical features of your equipment. However, the following table provides most current oil recommendations.

Disposal indications

All products, protections, plugs and packaging material at the end of their utilization have to be disposed in according with the regulations in force.

Temperature limits

Ambient temperature:
from -20° C to +40° C

Oil temperature:
from -20° C to +90° C

Polluting class ISO 4406

With two figures respectively showing the quantity of 5 and 15µ or larger particles in 1 ml oil.

Polluting class NAS 1653

Expressed with one figure showing the quantity of variable size particles in 100 ml oil.

Back up rings

Made out of poly-tetrafluoroethylene (PTFE).

Q - RINGS: special sealing gaskets with 4 shaped lobes designed to prevent gaskets pull-off chances in case of dynamic applications. All O-rings are made out of Acrylonitril-Butadiene (NBR).

Test curves

All diagrams in this catalogue report performance curves obtained by use of mineral oil at ISO viscosity VG46 and at 40° C temperature.

Hydraulic oils

The use of mineral based oil is recommended (like HLP to DIN 51524). All performances and calibrations are carried out by using hydraulic oil with approximate viscosity of 46 cSt at 40° C.

Viscosity class

Normally expressed as ISO-VG in accordance to ISO DIN standards. Average viscosity is figured at 40° C (mm²/s or centistokes - cSt). Recommended oil viscosity for NEM parts is: from 10 cSt to 460 cSt.

Design and installation work

Valves and manifolds in this catalogue are very versatile. In fact, the use on equipment complying with the European regulation no. 89/392 and following amendements is strictly recommended. No installation should be done on equipment without above mentioned European approval.

All NEM valves and manifolds are tested after assembly. Technical features and operation limits are statistically verified.

The customer is always ultimately responsible for the choice and final use of the product.

Materials

The valves are made out high quality steel, while all movable parts are hardened and rectified.

Manifolds are produced in steel or aluminum in relation to the max working pressure

Sealing

O-RING. made out of butadiene/acrylonitril(BUNA N or NBR according to ASTM standards). The ASTM standards D76 set a brittleness safety temperature of -30° C +125° C. For use at higher temperature consult our technical office.

Cartridge valve installation

PLEASE CAREFULLY READ THESE INSTRUCTIONS BEFORE VALVE INSTALLATION

Check-up general valve conditions and make sure there is no dirt. Check-up gaskets and seals conditions identifying their exact location. Lubricate the seals. First hand screw the cartridge in. Tightening should be performed according to the technical data listed for each product.

Storage

Keep valves away and protected from the sunlight and any other heat/ozone source. Make sure that an ideal storage temperature of -20 :+40° C is available.



1. General

1.1 These general conditions are applicable to all the supplies which NEM s.r.l. will carry out, on the base of purchasing orders forwarded from the Customer.

1.2 Terms like EXW, DDP and so on are referred to the so called Incoterms published by the International Chamber of Commerce, current at the date of conclusion of these General Conditions.

2. Purchasing orders management

2.1 Purchasing orders are binding for NEM s.r.l. only if confirmed in writing with order confirmations.

2.2 NEM s.r.l. engages itself to supply goods up to the order confirmations.

2.3 Any complaints regarding the content of the order confirmation must be notified in writing to NEM s.r.l. by 5 days and no later the forwarding of the order confirmation.

2.4 The Customer undertakes to pay the goods supplied by NEM s.r.l., according to the prices listed on the order confirmation.

3. Payment conditions

3.1 The Parties agree upon the payment conditions at the beginning of the supply.

3.2 In case of delay of payment, NEM s.r.l. will have the right to request of moratory interests equal to the Euribor, increased by 2 points.

3.3 In case of delay of payment, NEM s.r.l. will have the right to not execute the eventual purchasing orders in progress, even if confirmed.

4. Delivery and shipment

4.1 The supply of the goods will always be Ex-Works, even in the case that NEM s.r.l. had agreed with the Customer that NEM s.r.l. takes care of the shipment, or part of it.

4.2 In any case, the risks about perishment or damage of the goods will pass to the Customer, at latest, when the goods are delivered to the first carrier.

5. characteristics of products

5.1 NEM s.r.l. engages itself to supply good quality products, up to the technical specifications contained in technical schedules or in the catalogue.

5.2 NEM s.r.l. reserves the exclusive right to make any change to the products, which, without altering their essential features, appear to be necessary or suitable.

6. Complaints

6.1 The complaints regarding the apparent defects of the Products (such as, for instance, the packing, quantity, number or exterior features of the Products) must be notified in writing to NEM s.r.l. by 7 days and no later upon the receipt of the goods. Failing such notification, the Customer's right to claim the above defects will be forfeited.

6.2 The hidden defects (defects which cannot be discovered by the Customer on the basis of a careful inspection upon the receipt) shall be notified in writing to NEM s.r.l. by 7 days and no later from the discovery of the defects, and in any case no later than 18 months from the delivery of the Goods. Failing such notification, the Customer's right to claim the above defects will be forfeited.

6.3 It's agreed that, even in case of any complaint or objection, the Customer will not have the right to suspend or delay the payments due to NEM s.r.l., as well as payment of any other supplies.

7. Warranty

7.1 In case of any defects, lack of quality or non-conformity of the supplied Products, NEM s.r.l., at its exclusive choice, engages itself to replace or repair the defective Products provided such defects or non-conformity have been timely notified in writing to NEM s.r.l., in accordance to point nr. 6, by 18 months from the delivery of the Goods and no later.

7.2 Products repaired or replaces under warranty as above described are submitted to the same guarantee, for a period of 18 months from the date of repair or replacement.

7.3 Except in case of fraud or gross negligence, in case of defects, lack of quality or non- conformity, NEM s.r.l. undertakes only to repair or replace the defective Products, in accordance to what above described.

7.4 This guarantee (i.e. the obligation of repairing or replacing the Products) is in lieu of any other legal guarantee or liability of the Supplier, with the exclusion of any other guarantee or liability – whether contractual or non-contractual – in connection with the Products supplied (i.e. compensation for damages, loss of profit, recall campaigns, ...).

7.5 NEM s.r.l. is covered by appropriate policy of Product Legal Liability.

8. Retention of title

8.1 The Goods supplied by NEM s.r.l. remain property of NEM s.r.l. until the complete payment of the supply is received.

9. Secrecy bond

9.1 NEM s.r.l. engages itself to treat as highly confidential all the technical or commercial information should learnt from the Customer, which are not already of public divulgence.

10. Patents

10.1 Except preventive written authorization of NEM s.r.l., the Customer cannot use the supplied Products, or part of them, or the descriptions or the drawings of them – whether registered patented or not – to project or make similar goods.

10.2 Even in case of preventive written authorization of NEM s.r.l., all the patents, labels and registered design, royalties and intellectual property rights related or in connection with Products supplied by NEM s.r.l., are and remain property of NEM s.r.l. The Customer undertakes to treat all of them as highly confidential.

11. Applicable law and jurisdiction

11.1 The supplies carried out by NEM S.r.l. are governed by these present General Conditions and, for what here not expressly provided, by the Italian Law.

11.2 The competent Law Courts of Reggio Emilia have the exclusive jurisdiction in any controversies regarding the supplies of Products by NEM s.r.l., or from the supplies arising out or to the supplies connected, in which NEM s.r.l. is part.

