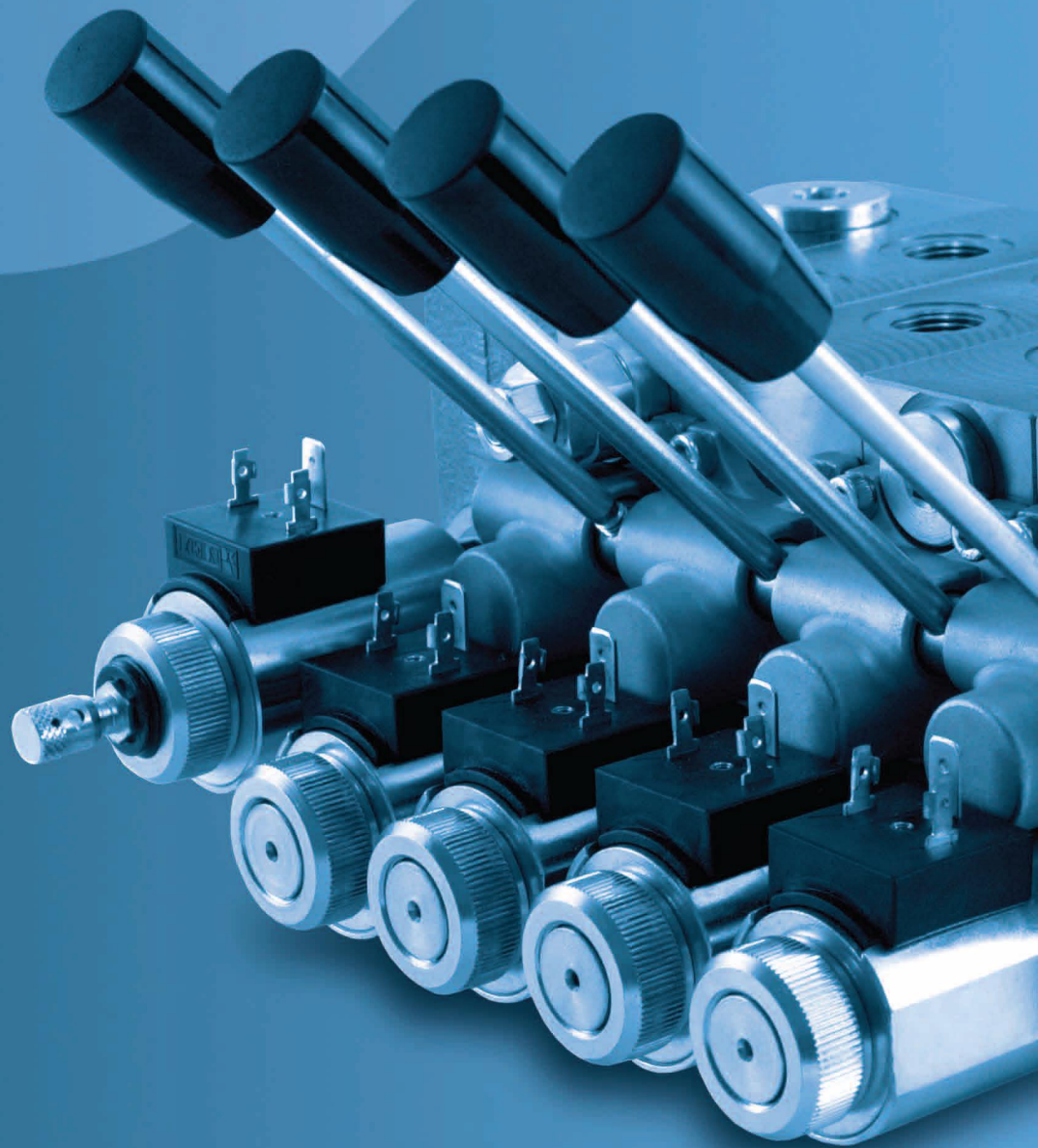


NVD2

Flow Sensing Valves
(PATENTED)



GENERAL CONTENTS

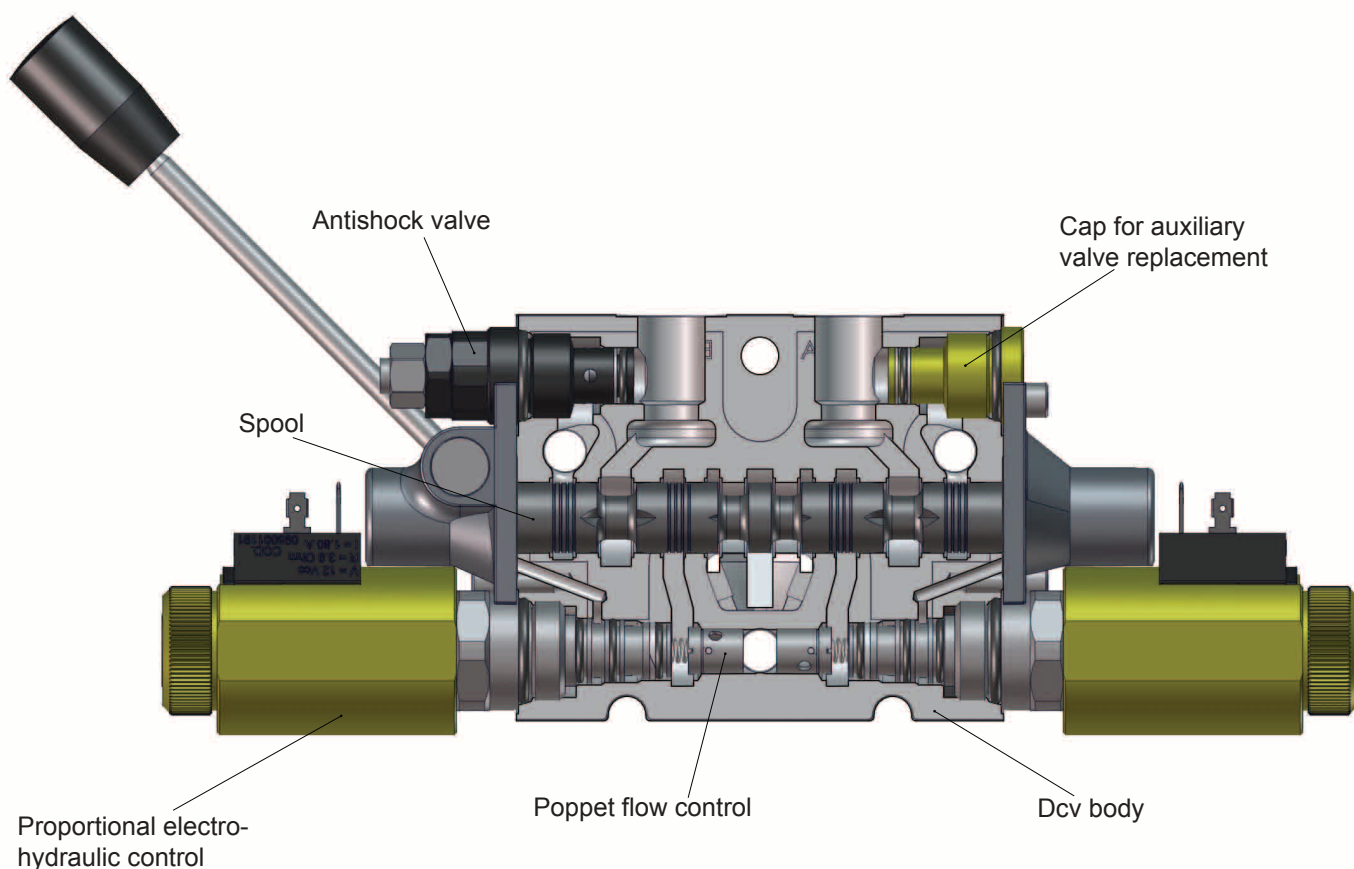
Functional concept.	Pag: 3
Technical features.	Pag: 5
Overall dimensions and ports size.	Pag: 6
Diagrams	Pag: 7
Order example.	Pag: 8
Inlet module.	Pag: 9
Work section.	Pag: 13
Outlet module.	Pag: 22
Spare parts order codes	Pag: 26
General work conditions and patents	Pag: 28



FUNCTIONAL CONCEPT

Universal products and solutions for lifting machine

NVD2 is a highly innovative DCV (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 and compact design, typical of the more traditional open-centre directional valves, it is associated with an extremely precise control, independent from the loading conditions and simultaneous movements. This DVC is especially efficient if electrically operated. It reaches its maximum potentials when used in combination with radio control or electronic control devices. NVD2 distributor is sold either in its version for fixed-cc pump (standard version on the catalogue) or in its version for variable-cc pumps (ask NEM S.p.A. for further information). In case of fixed-cc pump, the typical structure with neutral channel allows, differently from Load Sensing systems, to have less loading losses at stand-by conditions. The geometry of NVD2, compact and robust, ensures its high reliability and a considerable reduction of failures.



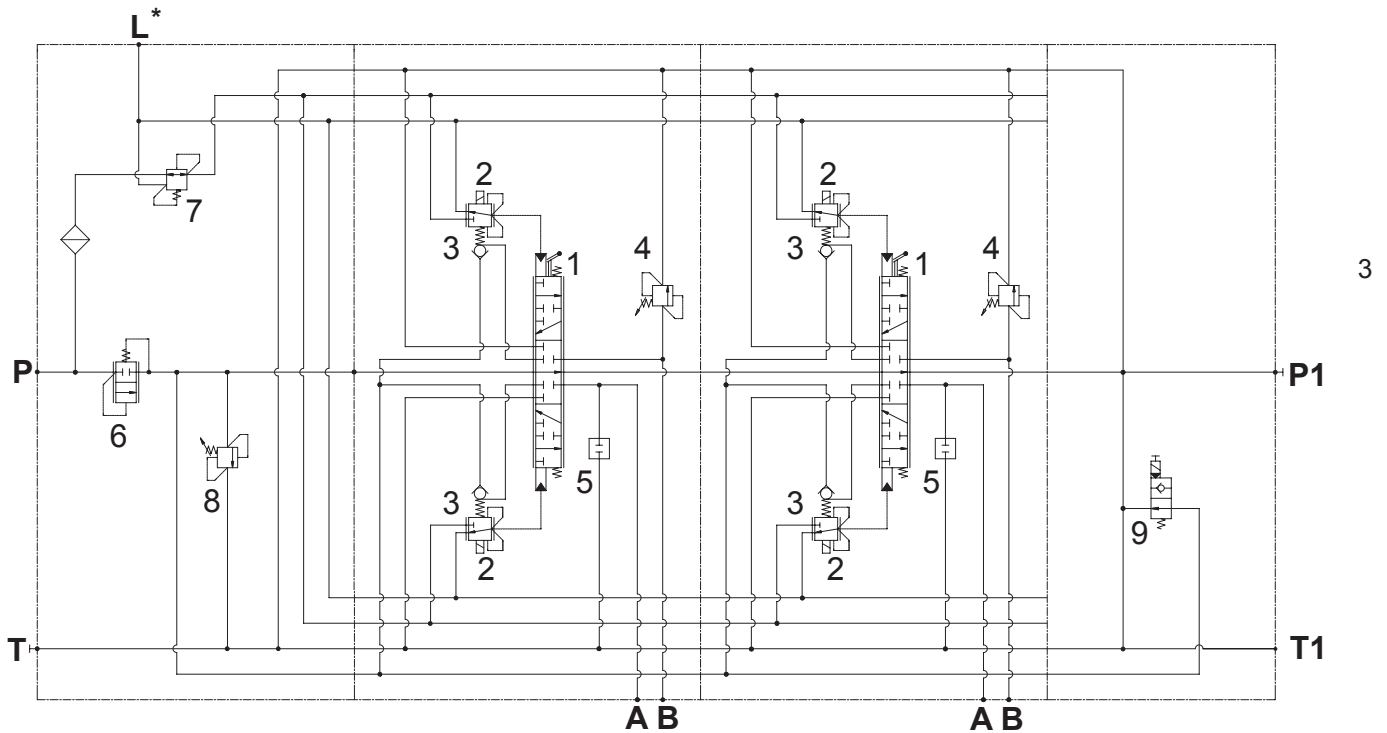
FUNCTIONAL CONCEPT

Hydraulic layout

The hydraulic layout of NEM-NVD2 proportional DCV is similar to any open-center directional control valve.

The technological feature that makes its operational concept similar to a Load Sensing directional control valve is the fact that, being electrically operated, it controls its flow independently from loading conditions and the simultaneous movements it is performing.

Manual actuator device is provided as emergency solution in case of malfunction of the electro-hydraulic proportional control device: so that, in case of malfunction, NVD2 directional control valve acts as a normal Open-center one.



- 1 – Spool activated by proportional electro-hydraulic control
- 2 – Proportional electro-hydraulic control
- 3 – Poppet control flow on the section
- 4 – Antishock valve

- 5 – Cap for antishock valve replacement
- 6 – Pre-loading valve
- 7 – Pressure-reducing valve
- 8 – General relief valve
- 9 – Electric dump valve

*Note: Connect L to tank



GENERAL TECHNICAL FEATURES

General technical features

- Rated capacity in P, P1. **50 l/min**
- Working section capacity (A-B). **40 l/min**
- Maximum operating pressure. **350 bar**
- Maximum back pressure. **20 bar**
- Maximum work sections **1 - 8**
- Spool stroke. **5.5 + 5.5 mm**
- Lever adjustment **+19° / -19°**
- Dead band **.1 + 1 mm**
- Cursor span **40 mm**
- Work temperature **-25°C / +80°C**
- Kinematic viscosity **10 mm² /s - 460 mm²/s**
- Degree of contamination. **NAS1638 class 9 (19/16 ISO-4406)**
- Recommended filtering level. **β 10[°]75**
- 4 • Internal filter (reducing valve). **30 μm**
- Spool operating force. **8 - 28 daN**
- Working temperature. **-25°C / +80°C**
- General filtering. **see page 30**
- Internal leakage from A/B to T. **20 cc/min**

Installation requirements



For a proper operation of directional control valve NVD2, Nem s.p.a recommends to install a filter on feeding line (P), with a 20 μm (β₂₀≥75) filtration degree.

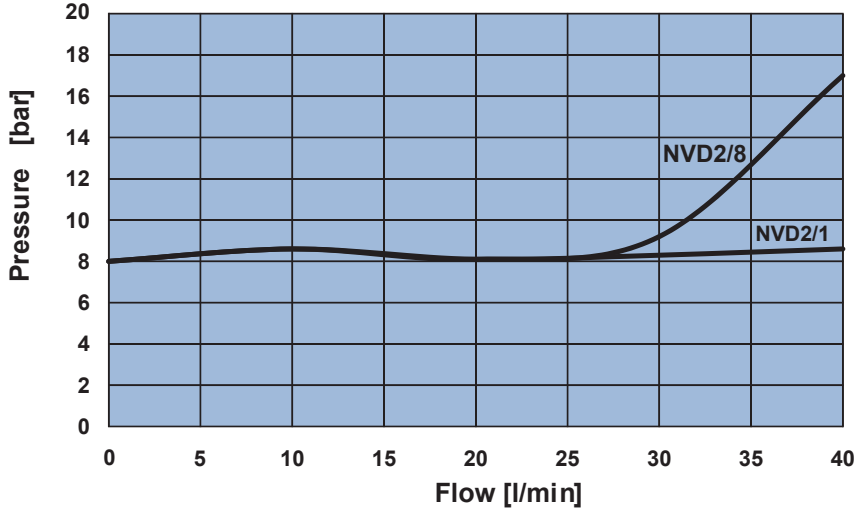
Features of proportional electro-hydraulic control

- Power supply pressure. **18 bar**
- Maximum back pressure on L (connect to tank) **1 bar**
- Recommended PWM frequency **60 - 90 Hz**
- Voltage. **12 VDC / 24 VDC**
- Coil resistance. **3.9 Ω / 15.5 Ω**
- Maximum current supply: duty-cycle 100%. **1.8 A / 0.9 A**

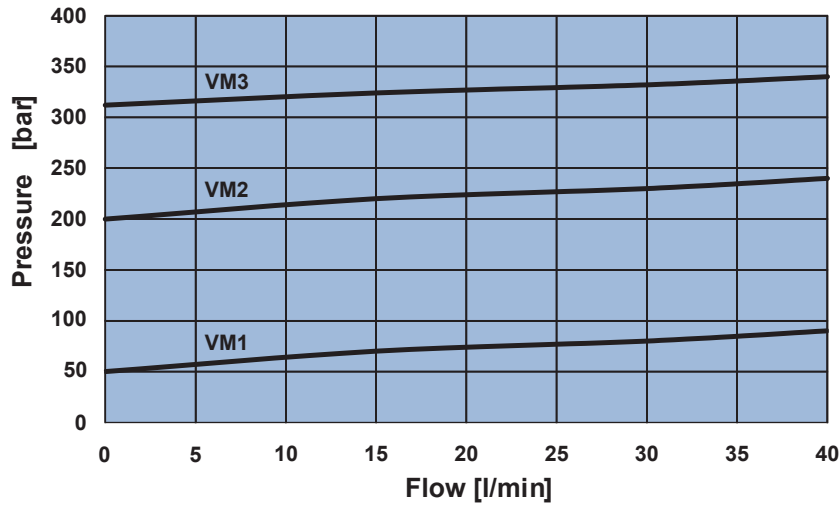
CHARTS

PRESSURE DROP (P/ T)

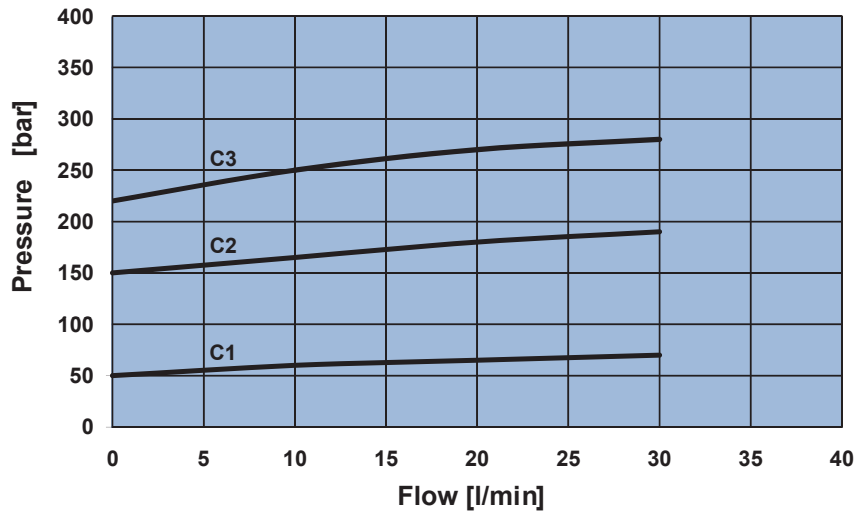
curve of Δp (P-T1) or (P-T)



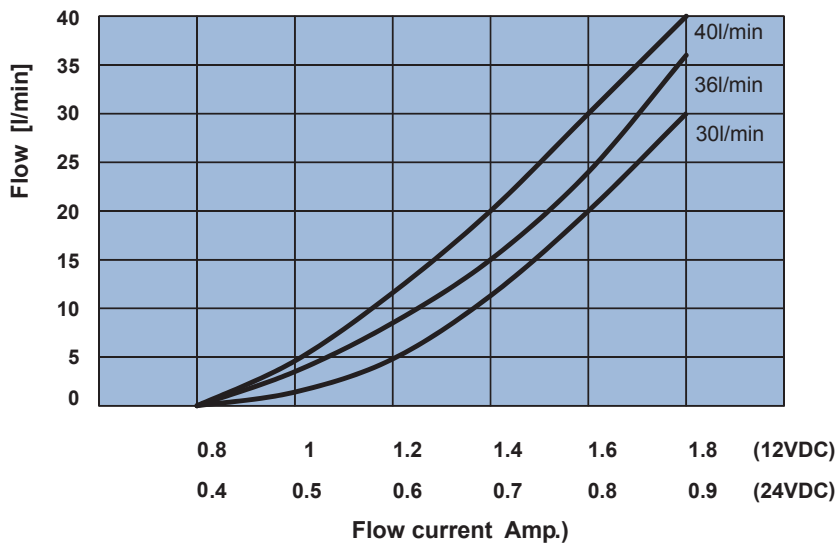
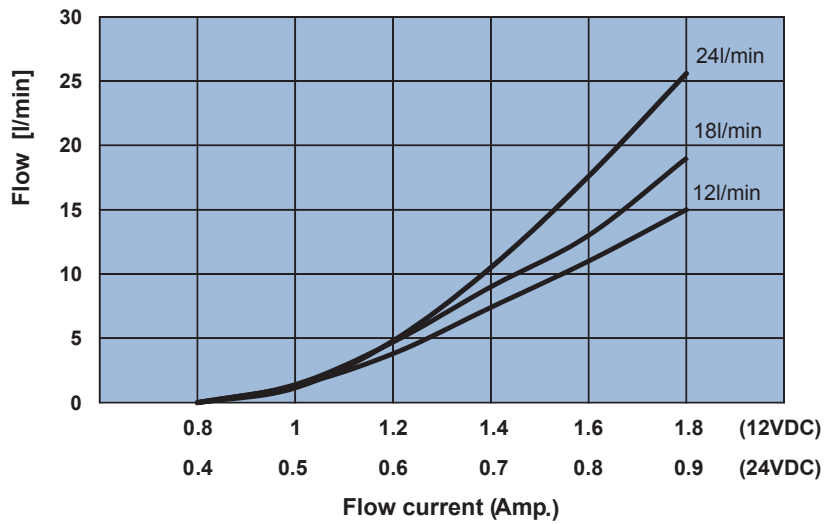
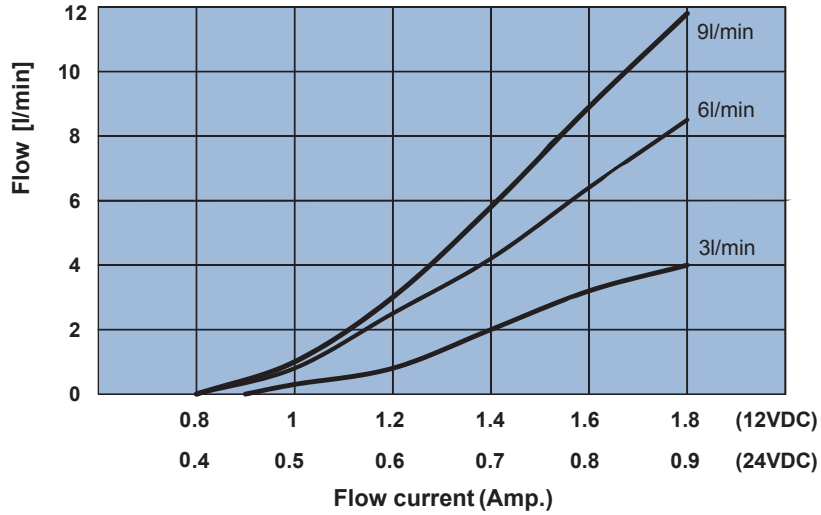
RELIEF VALVE FEATURES



ANTISHOCK VALVE FEATURES

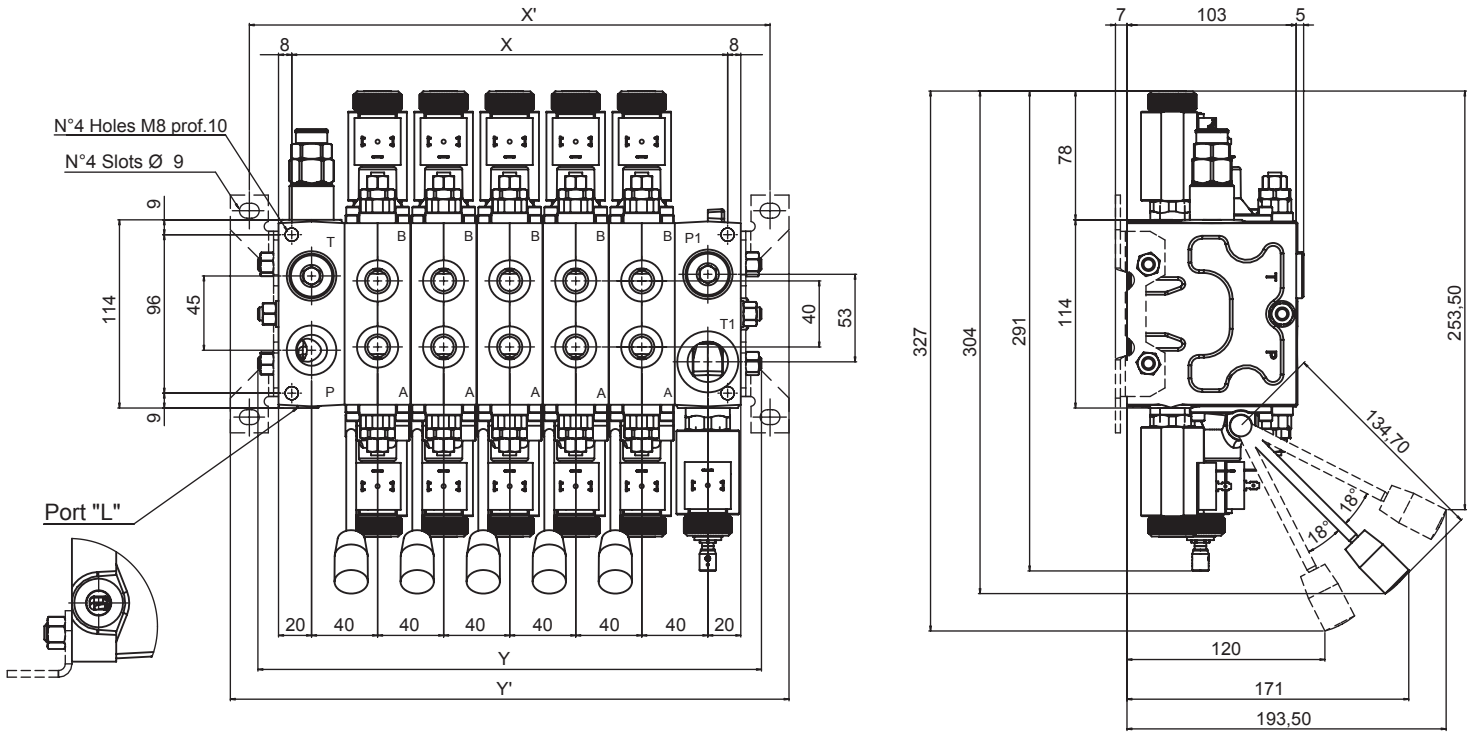


POPET FLOW CONTROL CHARTS



6

OVERAL DIMENSIONS AND PORTS SIZE



7

Note: L (drain line for proportional control valves)

To be necessarily connected to tank with maximum back-pressure 1 bar

THREADING

Acronym	Use	Input (P)	Use (A-B)	Carry Over (P1)	Discharge (T)	Discharge (T1)	Drainage (L)
G	filettature (BSP) ISO-228	1/2" BSP	3/8" BSP	1/2" BSP	1/2" BSP	3/4" BSP	1/4" BSP

DIMENSIONS WITHOUT BRACKETS

TYPE	NVD2/1	NVD2/2	NVD2/3	NVD2/4	NVD2/5	NVD2/6	NVD2/7	NVD2/8
X (mm)	104	144	184	224	264	304	344	384
Y (mm)	145	185	225	265	305	345	385	430

DIMENSIONS WITH BRACKETS

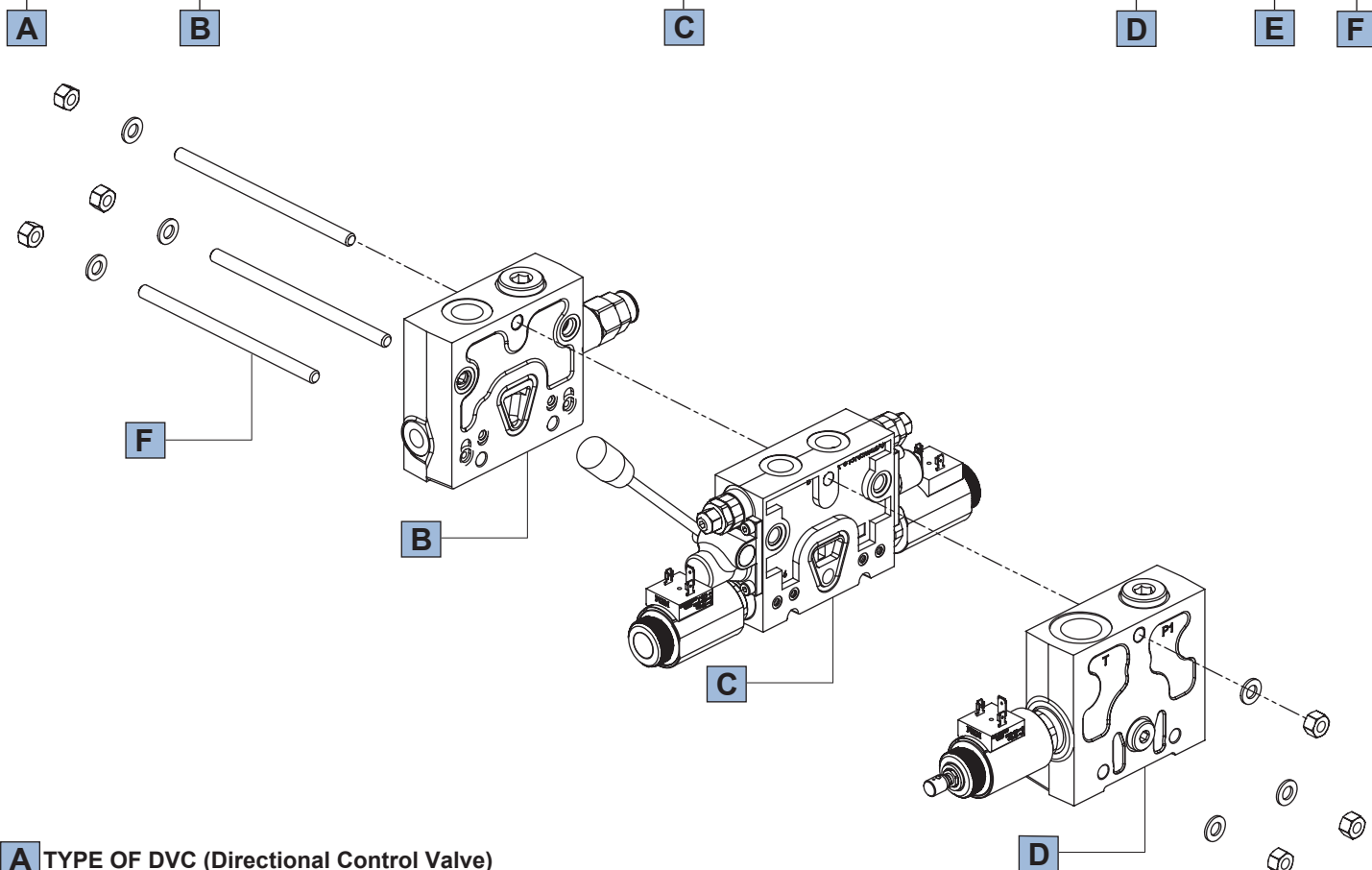
TYPE	NVD2/1	NVD2/2	NVD2/3	NVD2/4	NVD2/5	NVD2/6	NVD2/7	NVD2/8
X' (mm)	155.5	195.5	235.5	275.5	315.5	355.5	395.5	435.5
Y' (mm)	178.5	218.5	258.5	298.5	338.5	378.5	418.5	458.5

WEIGHTS

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

ORDER EXAMPLE

NVD2/1 IL-VM2 (180)-VP-VR D2-W001A - A12/B24 - XE - M12D - H05 - F01 - C2A (180)/TCB ZN - EV - C12D U1-G SS



8

A TYPE OF DVC (Directional Control Valve)

NVD2 = product name
/1 = number of work sections

B SELECTION OF INLET MODULE

IL =inlet side. page10
VM2 (180) = type and calibration of general relief valve (180 bar) page 11
VP = pre-loading valve. page 12
VR = reducing valve. page 12

C SELECTION OF WORK SECTION*

D2 = setting of work section. page 14
W001A = cursor. page 15
A12/B24 = shutters. page 16
XE = electro-hydraulic control valve. page 17
M12D = proportional coil. page 18
H05 = level control page 19
F01 = centering kit. page 20
C2A (180)/TCB = auxiliary valves. page 21

D SELECTION OF OUTLET MODULE

ZN = closure module
EV = dump valve. page 23
C12D = on/off coil. page 23

E SELECTION OF INLET - OUTLET AND PORTS SIZE

U1 = input and output positions page 25
G = threading. page 25

F TYPE OF FIXING

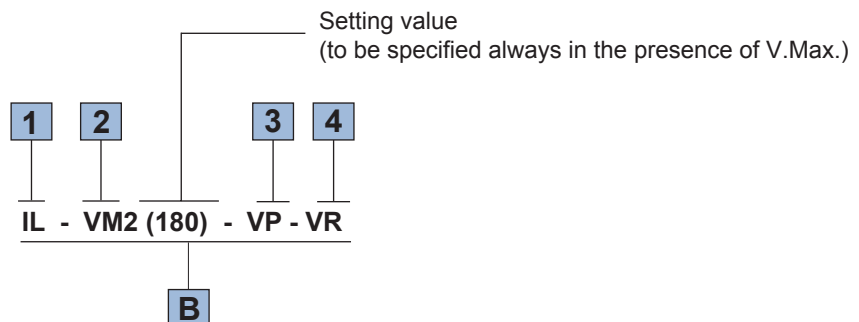
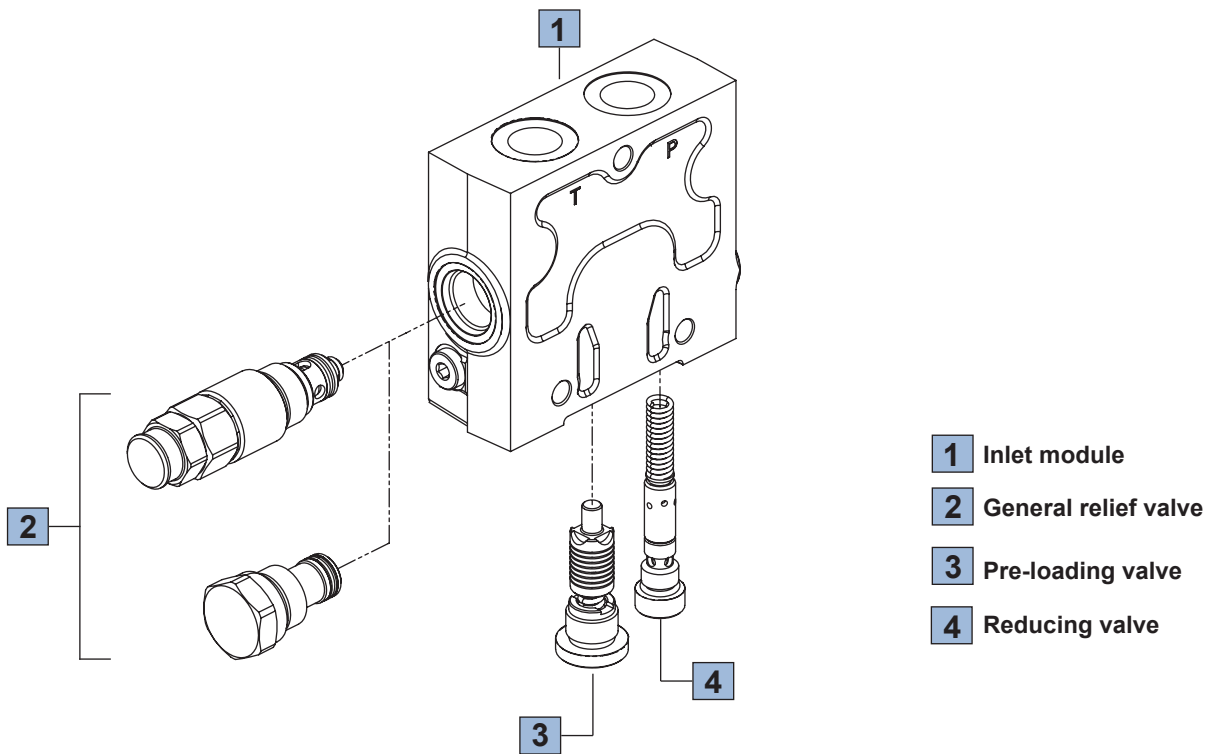
SS = without brackets page 26
CS = with brackets page 26

* "C" ACRONYM MUST BE REPEATED, STARTING FROM THE INPUT MODULE, AS MANY TIMES AS THE SECTIONS COMPOSING THE DISTRIBUTOR.

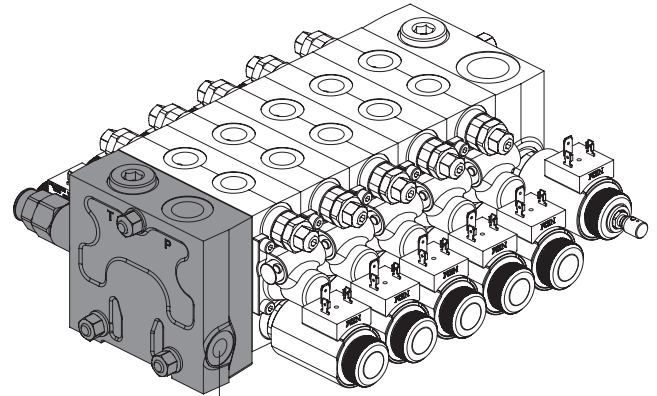
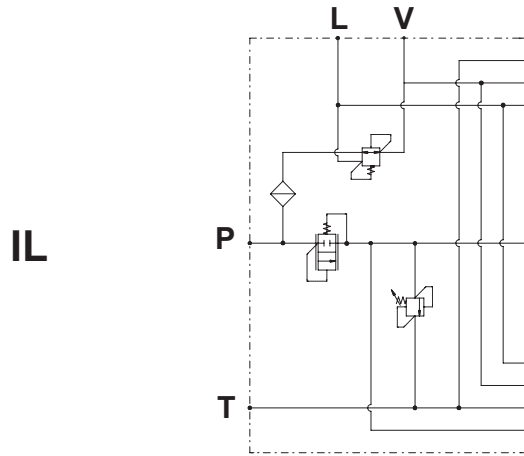
DESCRIPTION

NVD2 inlet module has a P power supply connection and a T connection so that the connection to the tank can be easily chosen either at the DCV inlet or outlet. The module is equipped with a general relief valve and it integrates the pressure reducing valve (18 bar) for power supply to the proportional electro-hydraulic controls. The pressure-reducing valve is equipped with a 30 µ filter for the protection of proportional electro-valves. At user's choice, the input module can host a pre-loading valve. This device is used to keep the standby pressure at a suitable level in order to have a quick reaction by the proportional electro-hydraulic controls.

Order example:

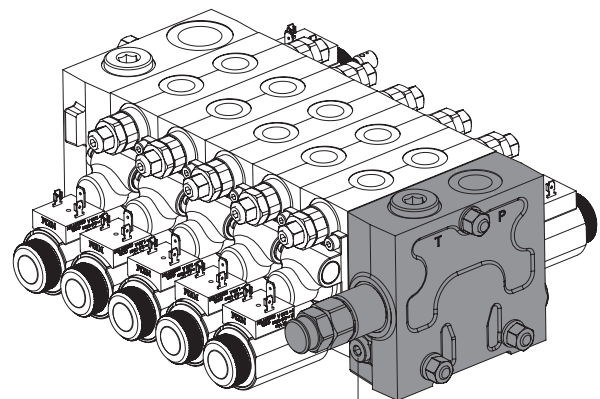
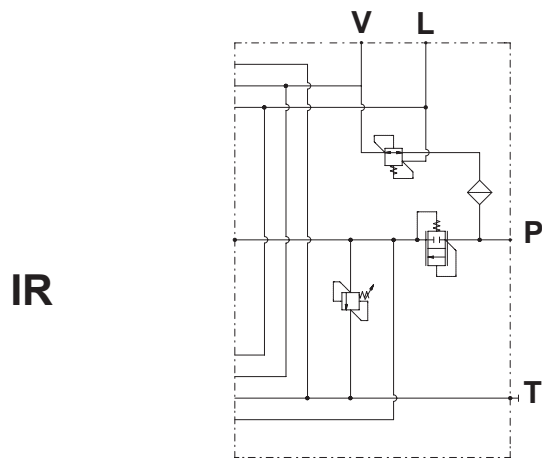


1. SIDE INLET MODULE



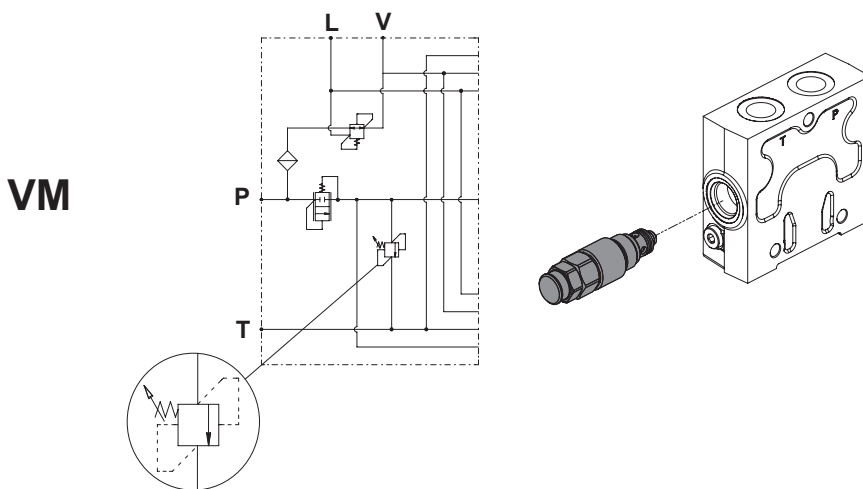
L port
(drain line connected to tank G 1/4)

10



V port
(reduced-pressure G 1/8)

2. TYPE AND SETTING OF GENERAL RELIEF VALVE



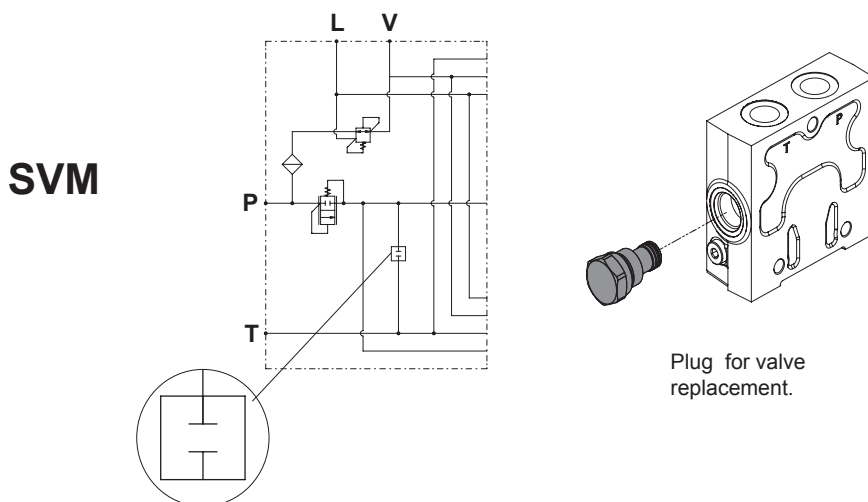
ACRONYM	DESCRIPTION	SETTING RANGE
VM1	Direct relief valve	Spring 1 40-140 bar
VM2	Direct relief valve	Spring 2 120-250 bar
VM3	Direct relief valve	Spring 3 220-410 bar

Tamper proof cap code 9021030190

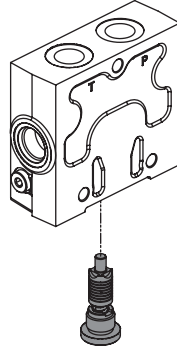
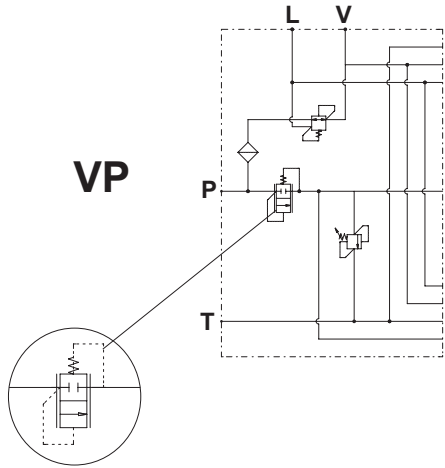
Note:

- For the general features of the relief valve, see page 1.01.004a of the general catalogue of NEM valves NEM.
- Tamper proof caps to be ordered separately.

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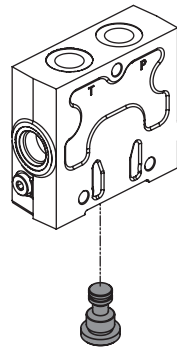
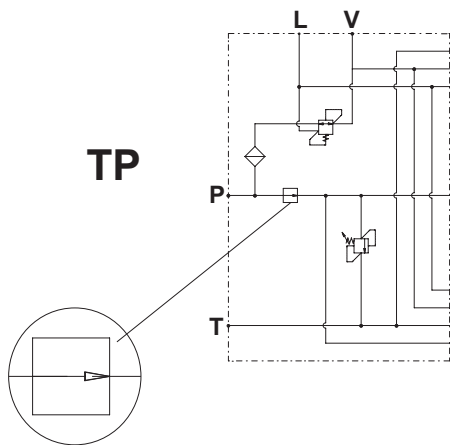
3. PRELOADING VALVE



Inlet module with preloading valve

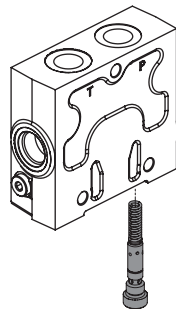
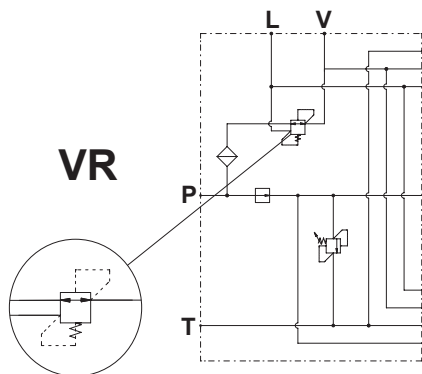
Recommended for inlet flow less than 25 l/min.

12



Inlet module without preloading valve

4. PRESSURE REDUCING VALVE

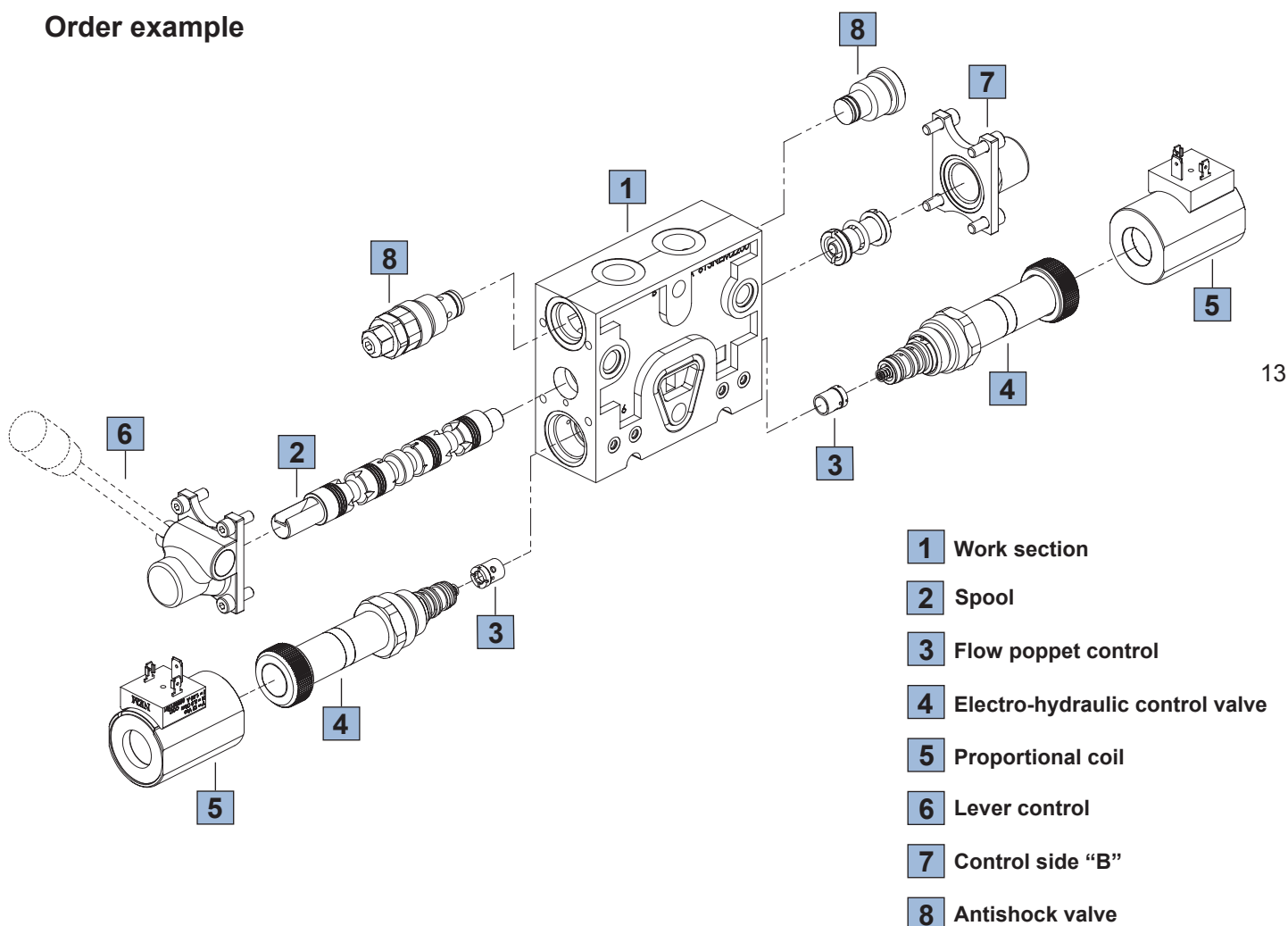


Inlet module with reducing valve

DESCRIPTION

NVD2 work section consists of a spool and the electro proportional valves are related lever-kit, control-kit, antishock valves and electro-hydraulic control valves. The latter are placed in the lower part of the section and the flow poppet control can be reached by disassembling them. In order to guarantee maximum functionality, the parts must be duly chosen according to the features of the system. The spool must be proportional to the pump capacity, while the flow poppet must be proportional to the desired flow capacity on A and B ports, which may be different along the same section (i.e. A12/ B24).

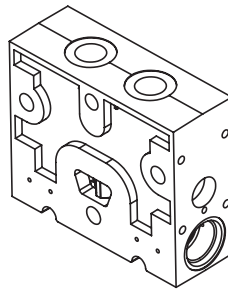
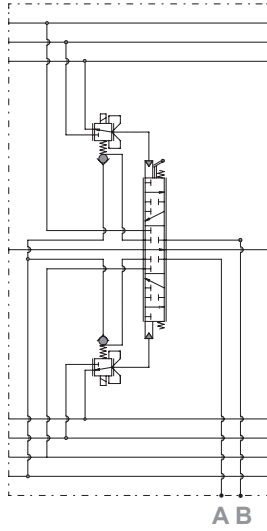
Order example



1 **2** **3** **4** **5** **6** **7** **8**
 D2-W001A - A12/B24 - XE - M12D - H05 - F01 - C2A (180)/TCB
C

1. SETTING OF WORK SECTION

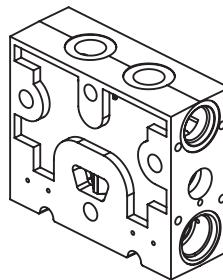
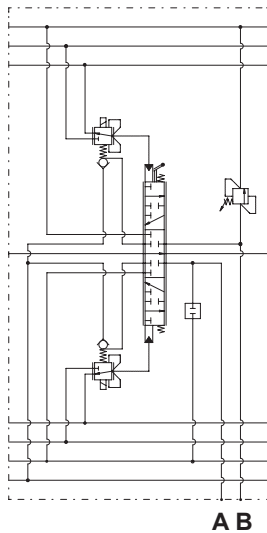
D1



Work section without
antishock valves

14

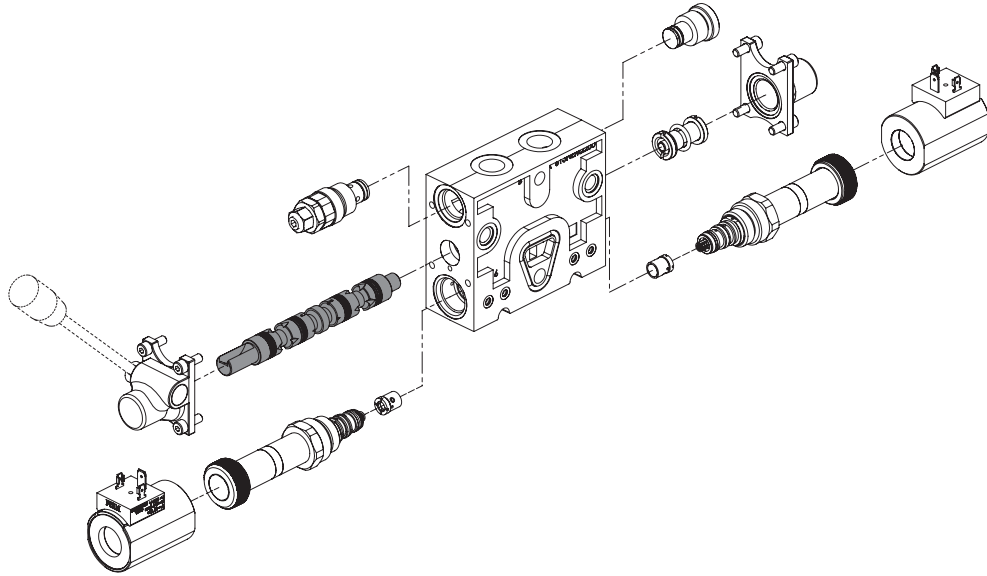
D2



Work section with
antishock valves

2. SPOOL

W001 **A**
Layout Capacity



Spool layout

W001		Double effect spool, 3 positions with A and B closed in central position
W002		Double effect spool, 3 positions with A and B discharging in central position
W002J		Double effect spool, 3 positions with A and B partially discharging in central position
W002K		Double effect spool, 3 positions with A partially discharging and B closed in central position
W002Y		Double effect spool, 3 positions with A closed and B partially discharging in central position
W003		Double effect spool, 3 positions with A discharging and B closed in central position
W004		Double effect spool, 3 positions with A closed and B discharging in central position

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Spool capacity

A Capacity 40 litres

B Capacity 20 litres

C Capacity 10 litres

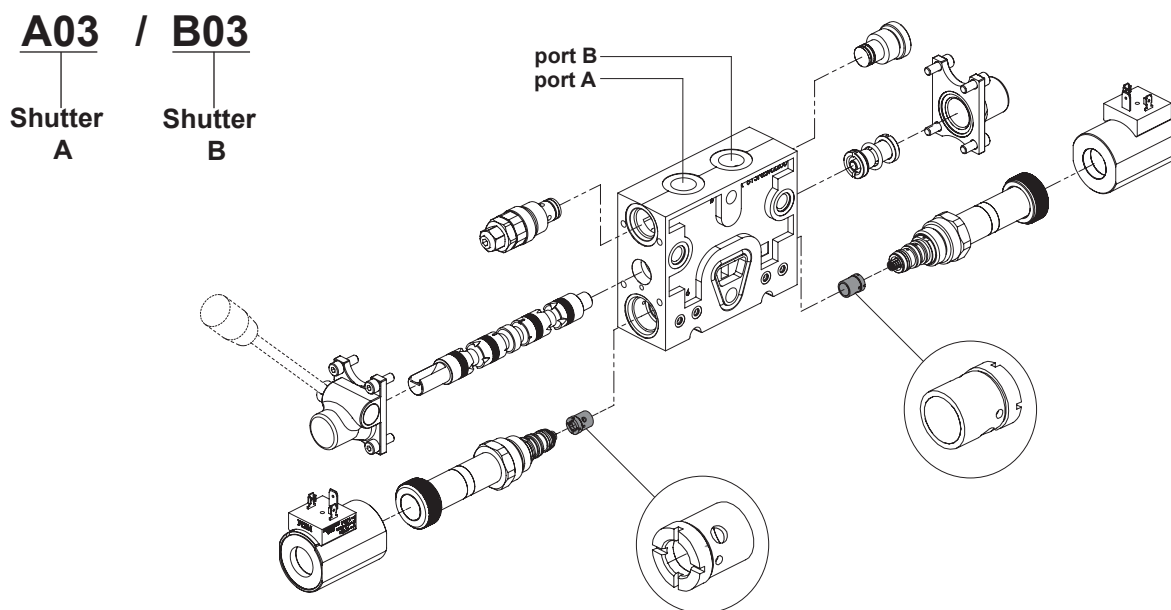
F Capacity 30 litres

Note:

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



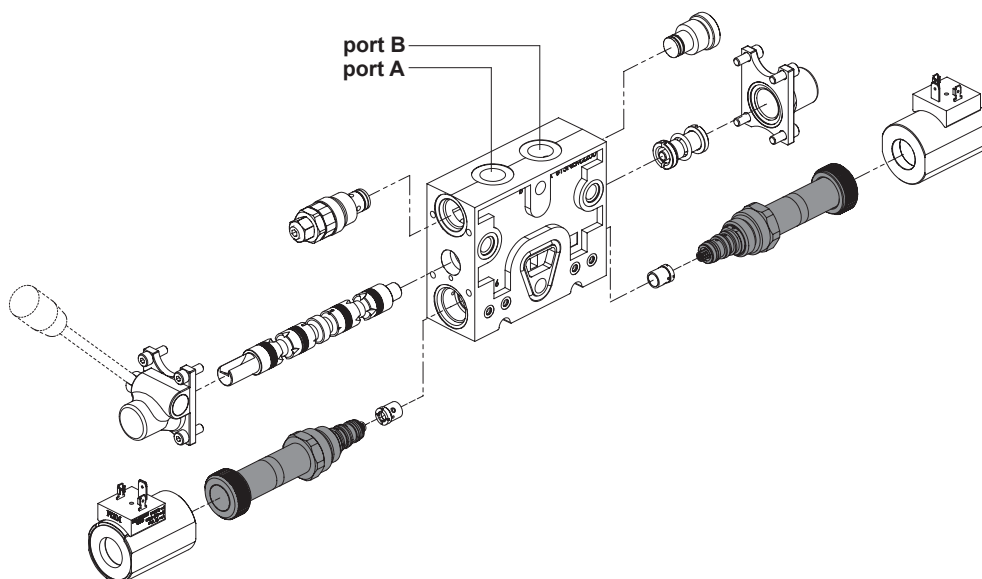
3. SHUTTERS



A03	Flow poppet control for capacity up to 3 l/min on port A
B03	Flow poppet control for capacity up to 3 l/min on port B
A06	Flow poppet control for capacity up to 6 l/min on port A
B06	Flow poppet control for capacity up to 6 l/min on port B
A09	Flow poppet control for capacity up to 9 l/min on port A
B09	Flow poppet control for capacity up to 9 l/min on port B
A12	Flow poppet control for capacity up to 12 l/min on port A
B12	Flow poppet control for capacity up to 12 l/min on port B
A18	Flow poppet control for capacity up to 18 l/min on port A
B18	Flow poppet control for capacity up to 18 l/min on port B
A24	Flow poppet control for capacity up to 24 l/min on port A
B24	Flow poppet control for capacity up to 24 l/min on port B
A30	Flow poppet control for capacity up to 30 l/min on port A
B30	Flow poppet control for capacity up to 30 l/min on port B
A36	Flow poppet control for capacity up to 36 l/min on port A
B36	Flow poppet control for capacity up to 36 l/min on port B
A40	Flow poppet control for capacity up to 40 l/min on port A
B40	Flow poppet control for capacity up to 40 l/min on port B

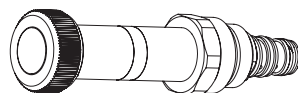
Note: Choose the shutters whose capacity is as close as possible to the capacity required for A and B; it is possible to choose different capacity for the two ports (i.e. A12/B24)

4. ELECTRO-HYDRAULIC CONTROL VALVE



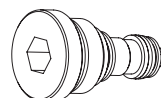
XE

Proportional valve for electro-hydraulic control on both ports (A and B)



XT

Plug for valve replacement on both ports (A and B)



XA

Proportional valve on port A
Replacement plug on port B

XB

Replacement plug on port A
Proportional valve on port B

Proportional electro-hydraulic control

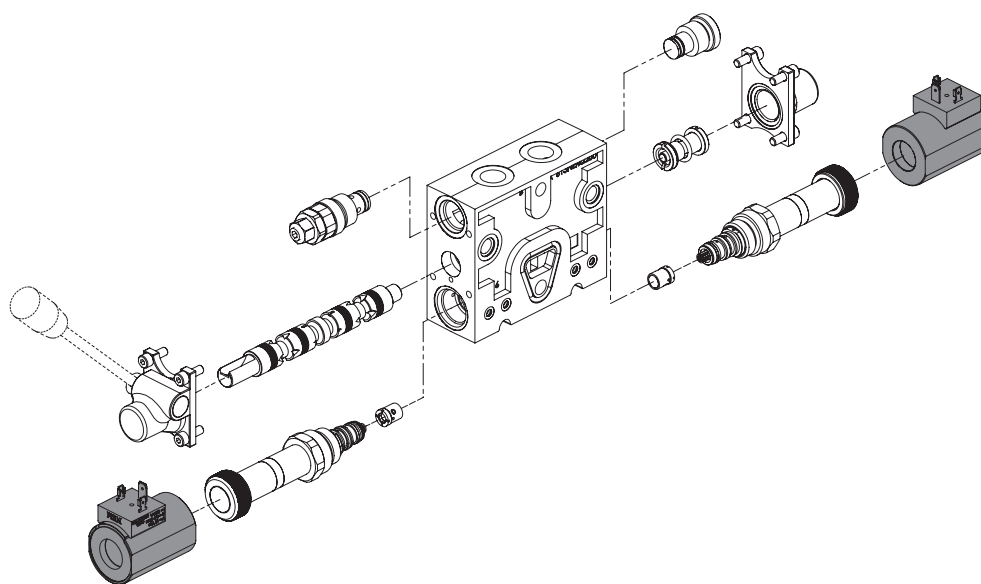
Proportional electro-valves of NVD2 must be supplied with PWM. By adjusting the maximum current value, it is possible to finely set the maximum flow to be supplied to each port. In order to reduce control hysteresis as much as possible and guarantee the most reactive operation, it is recommended to set the PWM carrier frequency at 60 Hz and anyhow not exceed 90 Hz.

Note: For electrical characteristics see page 4.



5. PROPORTIONAL COIL

- Wire insulation class.....H (>185°C)
- ED..... 100%
- Coil power at 20° C..... 36 W
- Maximum current 1,8 ± 10% A (12 V dc)
0,9 ± 10% A (24 V dc)
- Room temperature -20 +40° C
- Weight 0,28 Kg



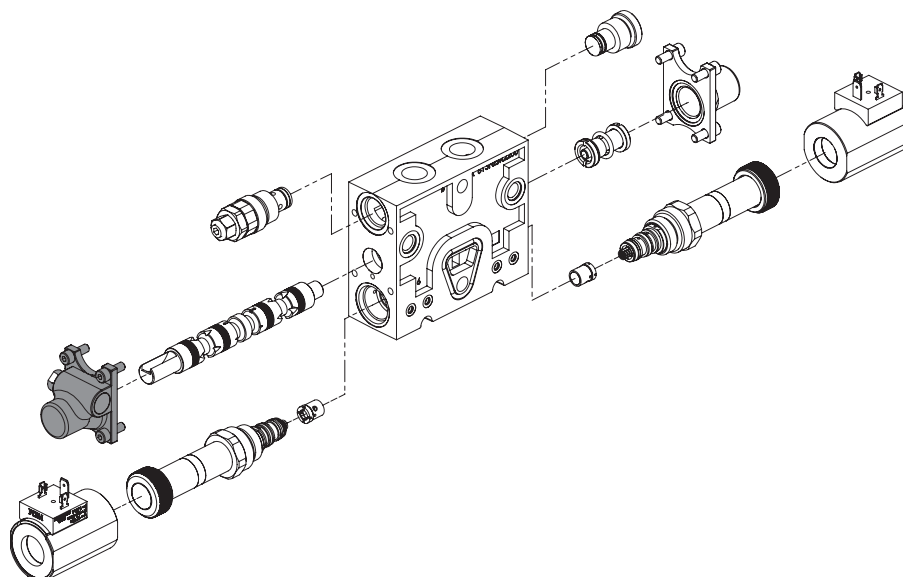
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ACRONYM	CONNECTOR	PROTECTION DEGREE	CLASS OF COIL THERMAL INSULATION	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT
M12D	DIN 43650	IP65*	H	12 V dc	3,9	STANDARD
M24D	DIN 43650	IP65*	H	24 V dc	14,5	STANDARD
M12S	DEUTSCH	IP67*	H	12 V dc	3,9	STANDARD
M24S	DEUTSCH	IP67*	H	24 V dc	14,5	STANDARD
M12A	AMP JUNIOR	IP67*	H	12 V dc	3,9	STANDARD
M24A	AMP JUNIOR	IP67*	H	24 V dc	14,5	STANDARD

* Protection degree with connector assembled

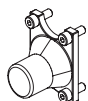
Note: For different type of connectors ask NEM S.p.a Technical Department

6. LEVER



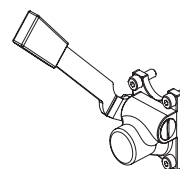
19

H00



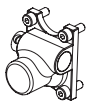
Control without lever

H10



Control with high 45° fixed lever

H05

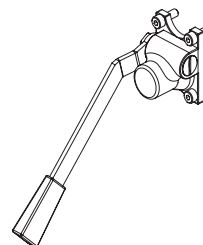


Control with high 45° threaded M6 lever, it can be disassembled



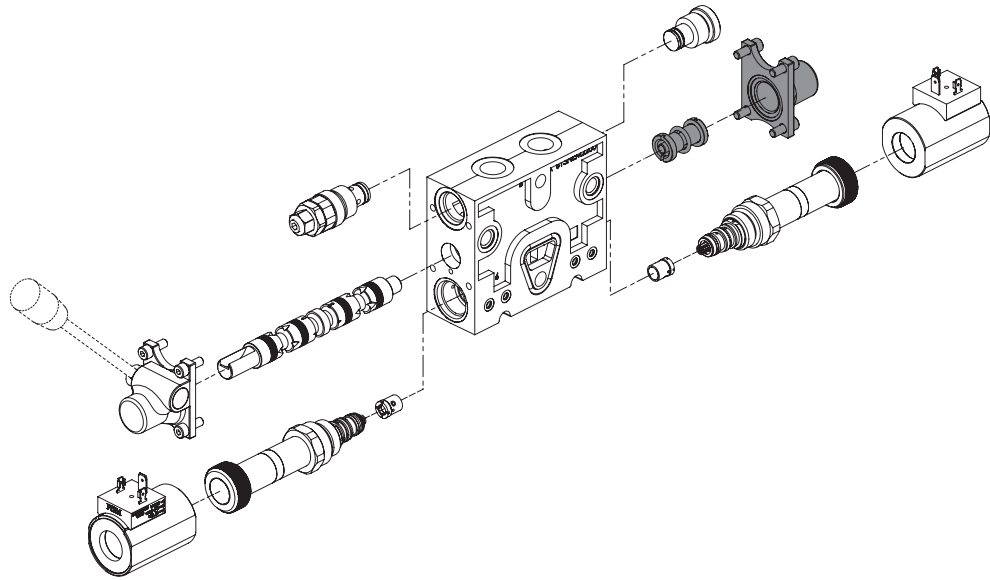
NB: the handle rod has to be ordered separately
(cod.9032061200)

H15



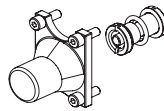
Control with low 45° fixed lever

7. SPOOL CENTERING



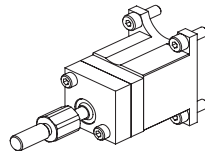
20

F01



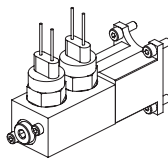
3 positions,
spring centering kit

F02



3 positions,
spring centering
kit with rod for
double control

F03

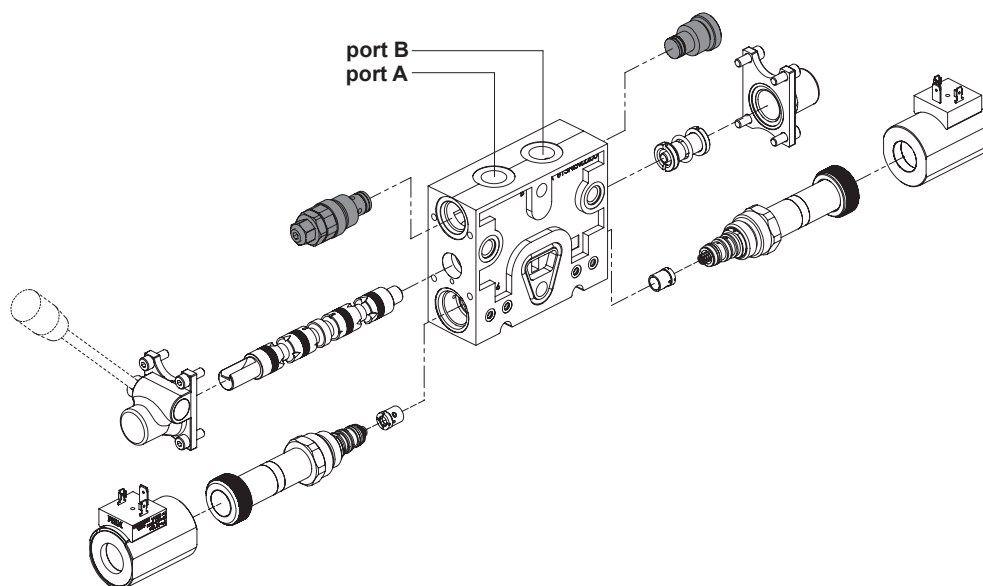


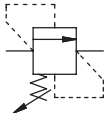
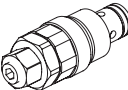
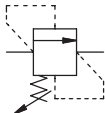
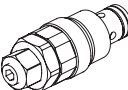
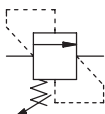
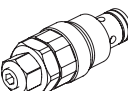
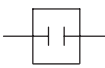

3 positions spring
centering with on/off
position sensors*

* Sensors Features: *Sphere-shaped position sensor, usually closed with Packard Metri-pack wires and male connect*

- current range: 0.1-5.0 Amp DC
- voltage range: 5.0-24.0 Vdc
- temperature range: -30 a + 120 °C
- connector: Packard Metri-pack
- NC contact

8. ANTISHOCK VALVE



C1			Spring 1 20-100 bar.
C2			Spring 2 40-220 bar.
C3			Spring 3 50-350 bar.
TC			Plug for valve replacement

Tamper-proof cap code 9021015101

Note :

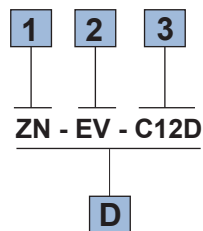
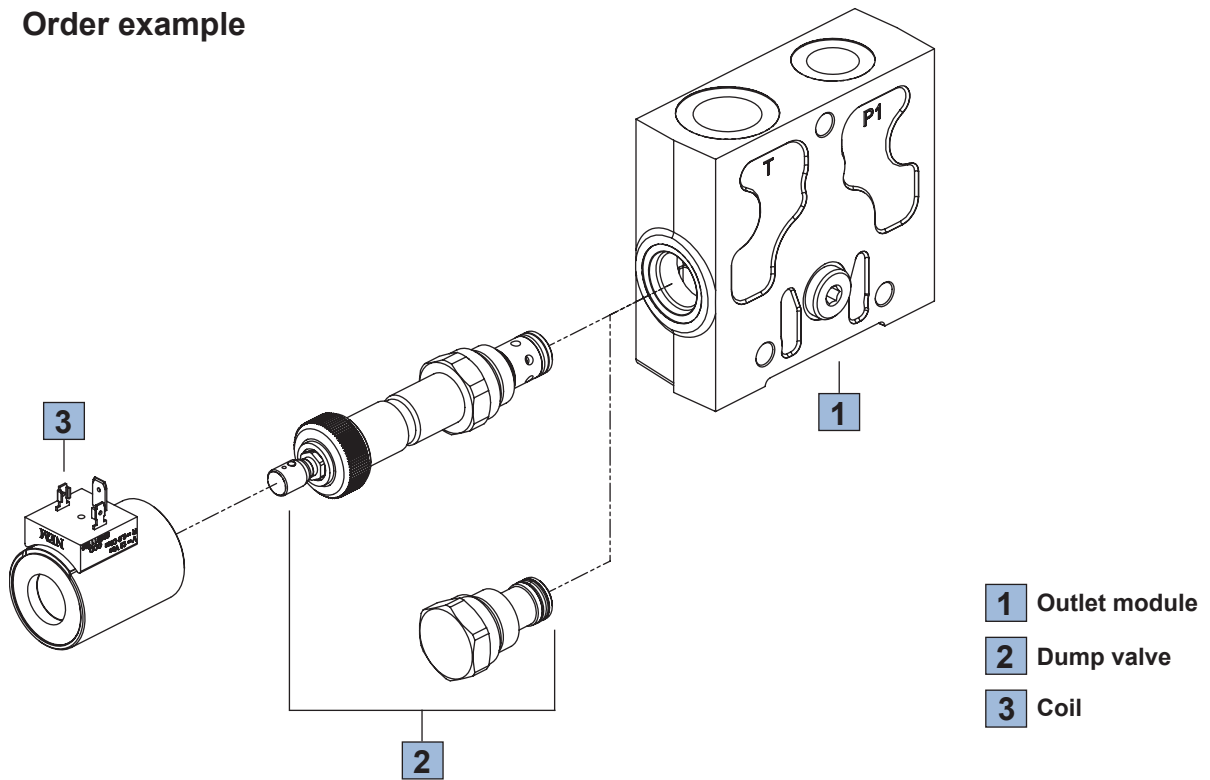
- Show the desired calibration for both inlets into brackets (Is. C1A(50) / TCB).
- Tamper proof caps to be ordered separately.
- For the general features of the auxiliary valve, see page 1.01.002 NEM general catalogue



DESCRIPTION

The NVD2 output side, as well as having two doors for distributor discharge, gives the possibility to insert a general dump electrovalve that, in the absence of power supply, ensures that the entire distributor does not operate. Besides, the module can be reset in order to have double output (carry-over connection with other hydraulic devices).

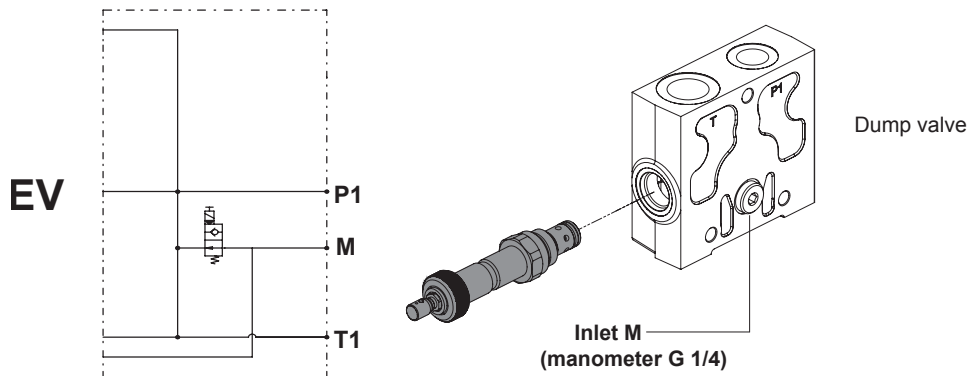
Order example



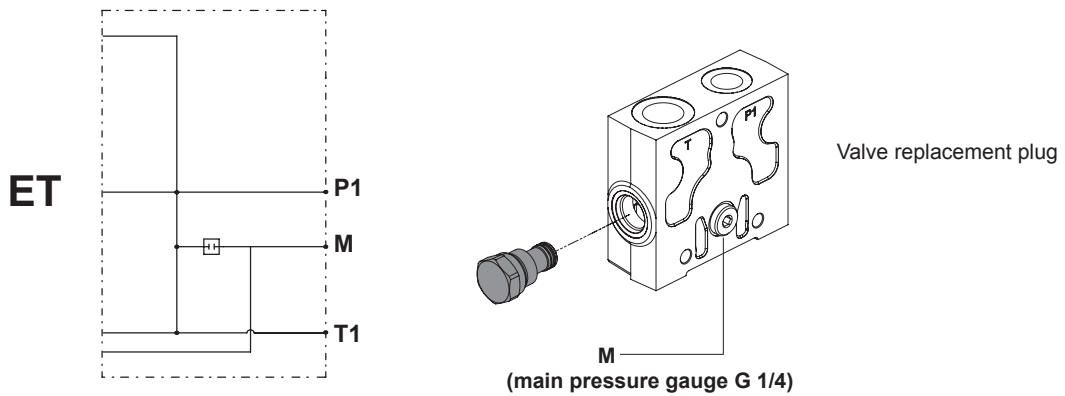
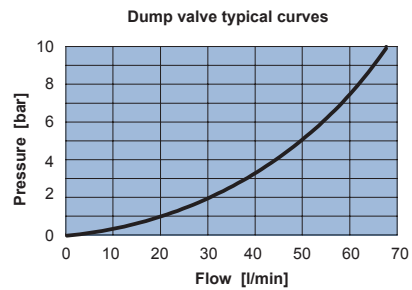
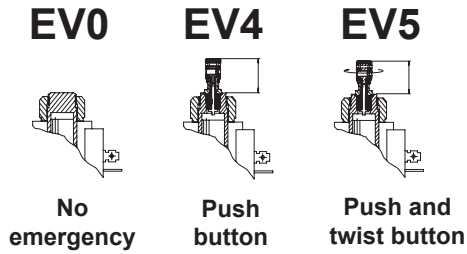
1. OUTLET MODULE

ZN Closure module for settings with external drainage (page 10)

2. DUMP VALVE

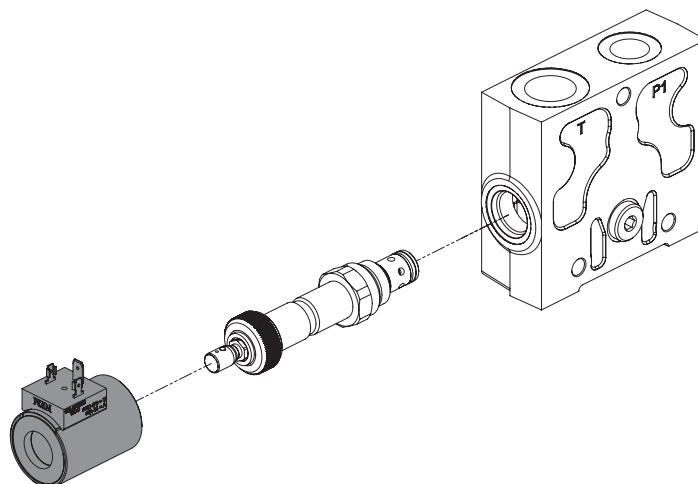


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3. COIL

- Wire insulation classH (>185°C)
- ED. 100%
- Coil power at 20° C 24 W
- room temperature -20 +40° C
- Weigth.....0,28 Kg



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ACRONYM	CONNECTOR	DEGREE OF PROTECTION	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT
C12D	DIN 43650	IP65*	H	12 V dc	6,8	STANDARD
C24D	DIN 43650	IP65*	H	24 V dc	24	STANDARD
C12S	DEUTSCH	IP67*	H	12 V dc	6,8	STANDARD
C24S	DEUTSCH	IP67*	H	24 V dc	24	STANDARD
C12A	AMP JUNIOR	IP67*	H	12 V dc	6,8	STANDARD
C24A	AMP JUNIOR	IP67*	H	24 V dc	24	STANDARD

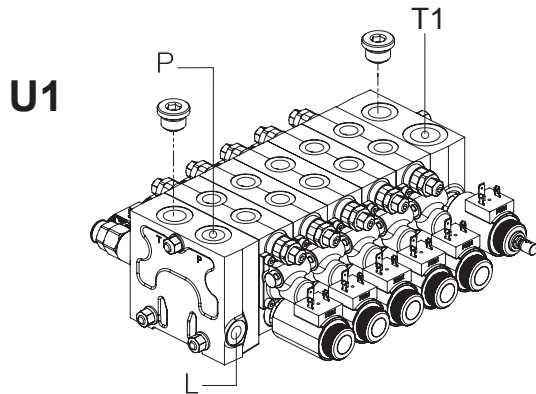
* Degree of protection with connector assembled

Note: For different type of connectors ask NEM S.p.A. technical Department

POSITIONS AND PORT SIZE

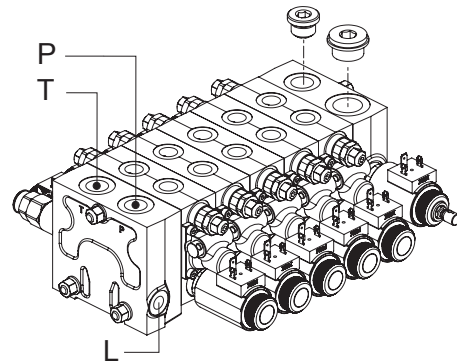
U1
Connection
P-T

G
Port size



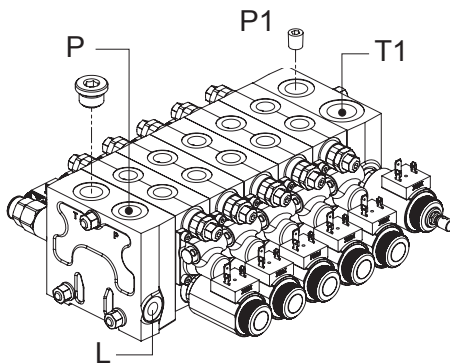
Delivery on (P)
Discharge on (T1)

U2



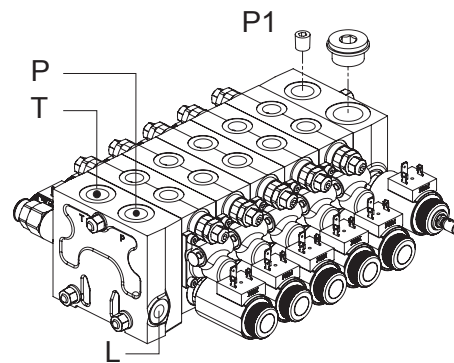
Delivery (P)
Discharge on (T)

U3



Delivery (P)
Discharge (T1)
Carry-over (P1)

U4



Delivery (P)
Discharge (T)
Carry Over (P1)

25

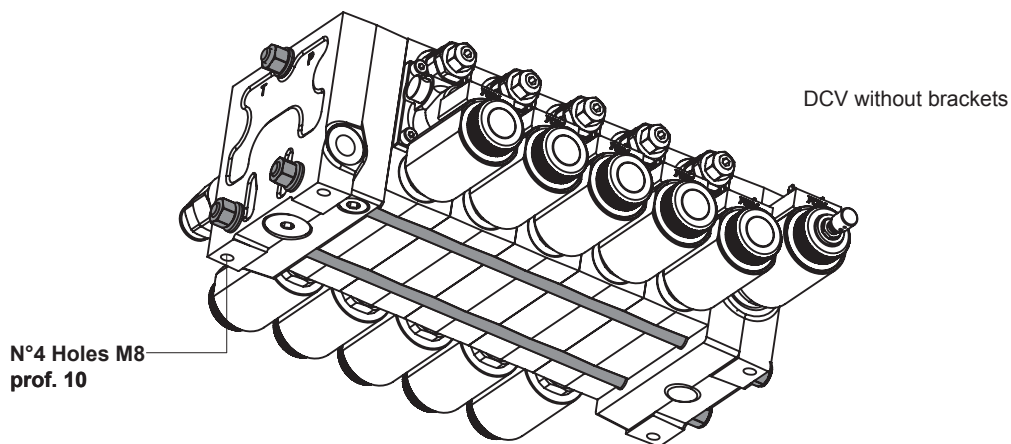
THREADING

ACRONYMS	EMPLOYEMENT	Input (P)	Inlets (A-B)	Carry Over (P1)	Discharge (T)	Discharge (T1)	Drainage (L)
G	threading (BSP) ISO-228	1/2" BSP	3/8" BSP	1/2" BSP	1/2" BSP	3/4" BSP	1/4" BSP



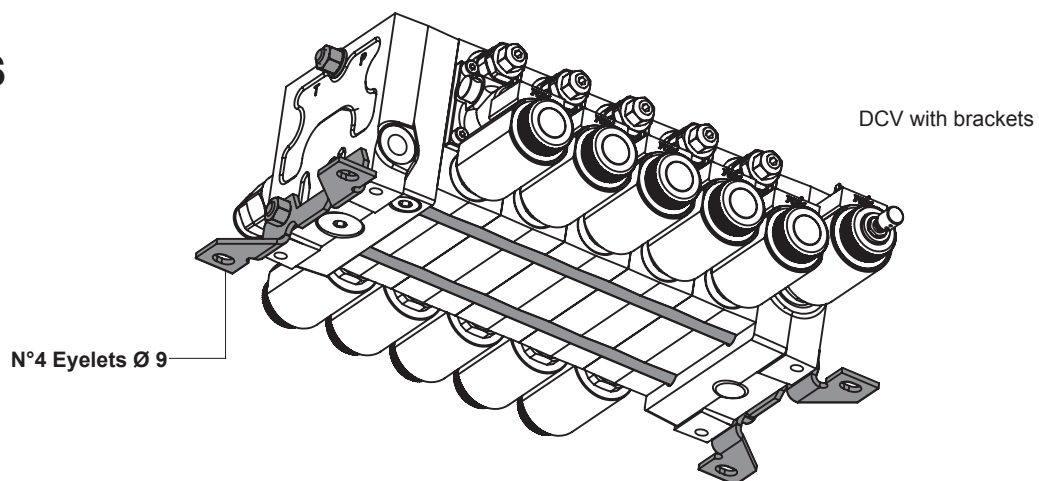
TYPE OF FIXING

SS



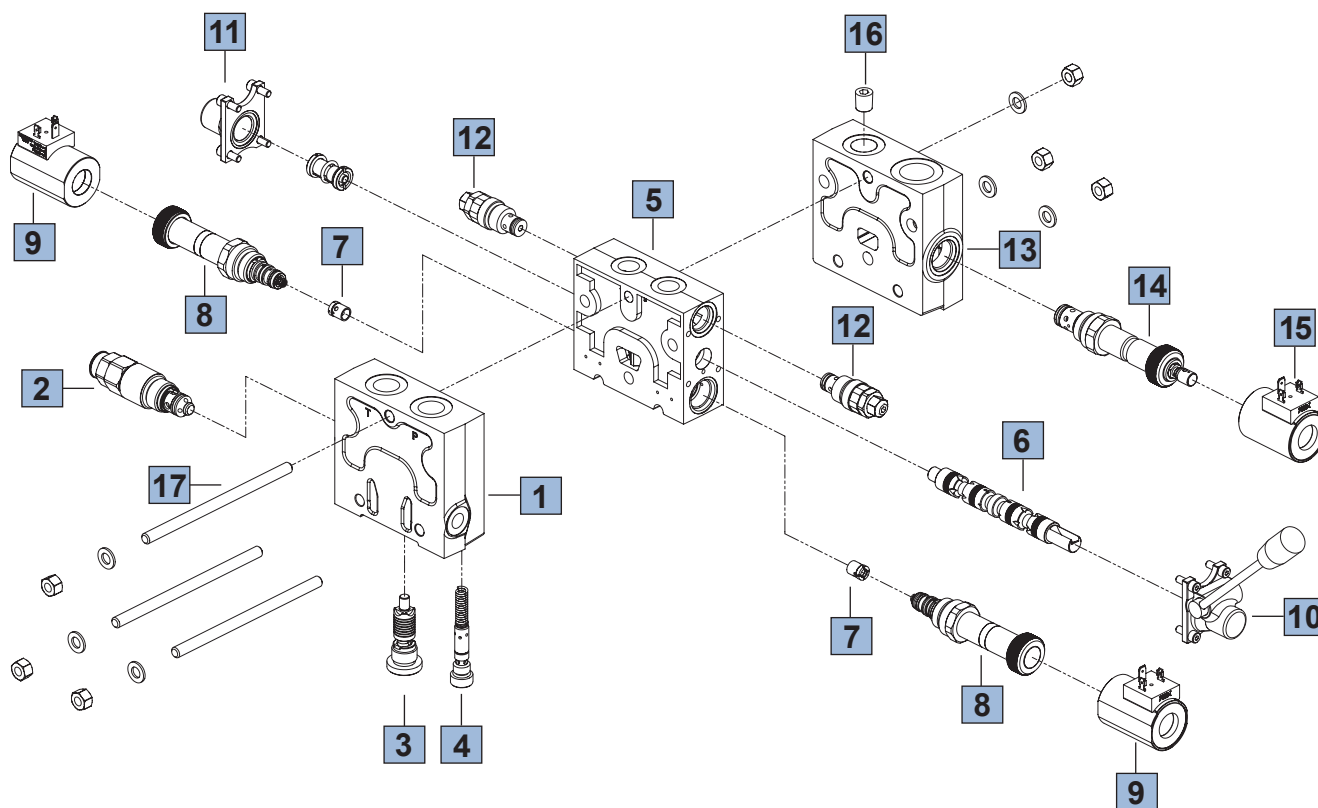
26

CS



Note: You can see distances size of fixing hole at page nr.7

SPARE PARTS CODE



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INLET MODULE

1. INLET MODULE

TYPE	CODE	DESCRIPTION
IL	913NEM4010	Left-input module Kit
IR	913NEM4010	Right-input module Kit

2. GENERAL RELIEF VALVE

TYPE	CODE	DESCRIPTION
VM1	0023310000	Relief valve 40-140 bar
VM2	0023320000	Relief valve 120-250 bar
VM3	0023330000	Relief valve 220-410 bar
SVM	9273274600	Kit with plug for relief valve replacement

3. PRECHARGE VALVE

TYPE	CODE	DESCRIPTION
VP	N320271002	Precharge valve
TP	N320271003	Kit with plug for replacement of precharge valve

4. REDUCING VALVE

TYPE	CODE	DESCRIPTION
VR	N320271001	Reducing valve

WORK SECTION

5. WORK SECTION

TYPE	CODE	DESCRIPTION
D1	913NEM5000	Kit for work section without antishock valve
D2	913NEM5010	Kit for work section with antishock valve

6. CURSOR

TYPE	CODE	DESCRIPTION
W001A	3114160101	Double effect spool, 3 positions with A and B closed in neutral position 40 l/min flow.
W001B	3114160107	Double effect spool, 3 positions with A and B closed in neutral position 20 l/min flow.
W001C	3114160106	Double effect spool, 3 positions with A and B closed in neutral position 10 l/min flow.
W001F	3114160100	Double effect spool, 3 positions with A and B closed in neutral position 30 l/min flow.

SPARE PARTS CODE

6. SPOOL

TYPE	CODE	DESCRIPTION
W002A	3114160105	Double effect cursor, 3 positions with A and B open in central position for 40 l/min flow.
W002B	3114160111	Double effect cursor, 3 positions with A and B open in central position for 20 l/min flow.
W002C	3114160110	Double effect cursor, 3 position with A and B open in central position 10 l/min flow.
W002F	3114160103	Double effect cursor, 3 position with A and B open in central position 30 l/min flow.
W002JA	3114160102	Double effect cursor, 3 position with A and B partially open in central position for 40 l/min flow.
W002JB	3114160109	Double effect cursor, 3 position with A and B partially open in central position for 20 l/min flow.
W002JC	3114160108	Double effect cursor, 3 position with A and B partially open in central position for 10 l/min flow.
W002JF	3114160104	Double effect cursor, 3 position with A and B partially open in central position for 30 l/min.

7. SHUTTERS

TYPE	CODE	DESCRIPTION
03	3207111307	Poppet flow control 3 l/min
06	3207111306	Poppet flow control 6 l/min
09	3207111309	Poppet flow control 9 l/min
12	3207111300	Poppet flow control 12 l/min
18	3207111308	Poppet flow control 18 l/min
24	3207111301	Poppet flow control 24 l/min
30	3207111312	Poppet flow control 30 l/min
36	3207111302	Poppet flow control 36 l/min
40	3207111304	Poppet flow control 40 l/min

8. ELECTROHYDRAULIC VALVE

TYPE	CODE	DESCRIPTION
XE	OPNV200004	Electrohydraulic valve
XT	9275225000	Kit of electrohydraulic replacement cap

9. COIL

TYPE	CODE	DESCRIPTION
M12D	095001191	Coil CT9500 12Vdc DIN
M24D	095002191	Coil CT9500 24Vdc DIN
M12S	095111190	Deutsch DT A
M24S	095112190	Deutsch DT A
M12A	095211190	AMP Junior
M24A	095212190	AMP Junior

10. LEVER

TYPE	CODE	DESCRIPTION
H00	9231400340	Kit without lever
H05	9228130357	Kit ready for M6 lever
	9032061200	Auction with handle
H10	9038031322	Kit with 45° high lever
H15	9038031522	Kit with 45° low lever

11. CONTROL FOR "B" INLET

TYPE	CODE	DESCRIPTION
F01	9231400340	Kit standard
	9290050231	Kit spring+bushings+screw
F02	9231400501	Kit double control
F03	9231400504	Kit position sensors

12. AUXILIARY VALVES

TYPE	CODE	DESCRIPTION
C1	0022010000	Relief valve 20-100 bar
C2	0022020000	Relief valve 40-220 bar
C3	0022030000	Relief valve 50-350 bar
TC	9273193600	Kit with plug for replacement of antishock valve

OUTLET MODULE

13. CLOSURE MODULE

TYPE	CODE	DESCRIPTION
ZN	913NEM6010	Closure module kit for external drainage

14. DUMP VALVE

TYPE	CODE	DESCRIPTION
EV0	0553010000	Dump valve No emergency
EV4	0553010400	Dump valve Em. Push
EV5	0553010500	Em. dump valve Push & Twist
ET	9273274600	Kit with plug for dump valve replacement

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SPARE PARTS CODE

15. COIL

TYPE	CODE	DESCRIPTION
C12D	098011190	Coil CT9801 12Vdc din 24W
C24D	098012190	Coil CT9801 24Vdc din 24W
C12D	098111191	Deutsch DT A
C24D	098112190	Deutsch DT A
C12D	098211191	AMP Junior
C24D	098212190	AMP Junior

16. CARRY OVER

CODE	DESCRIPTION
4293130130	Plug for Carry-over function

CONNECTION CAPS

CODE	DESCRIPTION
4275211802	Plug for P - T - P1 connections
4275161402	Plug for A - B connections
4275272000 + 4343272500	Plug + Washer for T1 connection
4275131501	Plug for L connection

SEALS KIT

CODE	DESCRIPTION
9NVD20000001	Seals kit x input section
9NVD20000003	Seals kit x intermediate section
9NVD20000004	Seals kit x general relief valve
9NVD20000005	Seals kit x reducing valve and precharge valve
9NVD20000006	Seals kit x antishock valve
9NVD20000007	Seals kit x all closed 10/2 cap replacement
9NVD20000008	Seals kit x pilot valve
9NVD20000009	Seals kit x pilot valve replacement cap
9NVD20000010	Seals kit x dump valve

17. TIE ROD KIT

CODE	DESCRIPTION
9296081401	Tie rod kit N°1 section without brackets
9296081801	Tie rod kit N°2 section without brackets
9296082201	Tie rod kit N°3 section without brackets
9296082601	Tie rod kit N°4 section without brackets
9296083001	Tie rod kit N°5 section without brackets
9296083401	Tie rod kit N°6 section without brackets
9296083801	Tie rod kit N°7 section without brackets
9296084201	Tie rod kit N°8 section without brackets
9296081402	Tie rod kit N°1 section with brackets
9296081802	Tie rod kit N°2 section with brackets
9296082202	Tie rod kit N°3 section with brackets
9296082602	Tie rod kit N°4 section with brackets
9296083002	Tie rod kit N°5 section with brackets
9296083402	Tie rod kit N°6 section with brackets
9296083802	Tie rod kit N°7 section with brackets
9296084202	Tie rod kit N°8 section with brackets



GENERAL FEATURES

FILTERING

The conditions of the fluid used in oil hydraulic systems are very important. If too contaminated, it will wear the parts, make the oil age more rapidly and therefore the machine will not work efficiently. Filtering is important in order to guarantee the best operations and long life of oil hydraulic equipment. Filtering devices must be chosen according to the characteristics of the system. In general, follow the table underneath for choosing the filters.


HYDRAULICS OILS

It is recommended to use **mineral-base oils** with physical-chemical properties suitable for oil hydraulic systems (i.e. HLP in accordance with DIN 51524). All functional tests and calibrations are performed with 46 CSt viscosity oil at 40° C temperature.

VISCOSITY CLASS

According to ISO DIN standards, it is expressed with ISO - VG, which defines average viscosity at 40° C (mm²/s or centistokes - cSt). The viscosity recommended for the correct operations of NEM parts is: **from 15 cSt to 250 cSt.**

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 NEM-HYDRAULICS.COM		Table: Choosing the type of filtration		
		Nominal filtration micron	Absolute filtering (β _s ≥75) secondo ISO 4572	Contamination class
Tipy of system			ISO4406	NAS1653
High pressure (>200 bar), proportional valves, vulnerable to contamination	5	X=5-10 micron	17/14	8
Average pressure systems (<200 bar)	10	X=10-15 micron	18/14	9

CONTAMINATION CLASS IN ACCORDANCE WITH ISO 4406

These two numbers respectively define the quantity of particles with diameter more than 5 and 15 micron in 1 ml of oil.

MATERIALS

The valves are made of high-quality steel, with the moving parts hardened and grinded or lapped. The bodies are made of aluminium or steel, depending on the maximum operating pressure.

CONTAMINATION CLASS IN ACCORDANCE WITH NAS

This number defines the quantity of particles, of different size, contained in 100 ml of oil.

TYPES OF WASHER

O - RING. These are mixes of butadiene/acrylonitrile (BUNA - N or NBR in accordance with ASTM standard). The ASTM D 76 standard defines embrittlement temperature (-30° C +125°C). For higher temperature contact our technical Department.

The data defined on the catalogue refer to our standard products. Special applications are possible and must be previously agreed with our Technical Department. This catalogue cannot be integrated and, in case of doubts, ask NEM S.p.A. Commercial and Technical Department for clarifications. The data shown on this catalogue are not binding for NEM S.p.A. and NEM S.p.A. reserves to make changes and improvements without any notice.

The manufacturer will not be liable in case of damages to people or things due to improper use of the product.

GENERAL CONDITIONS

1. INTRODUCTION

1.1 These general conditions apply to all general supplies from Nem s.p.a., after receiving orders from the Customer.

1.2 Should commercial terms such as EXW, DDP, etc be mentioned, of course the Incoterms of the International Chamber of Commerce must be referred to, according to the test existing when the general supply conditions are agreed on.

2. MAGNAMENT OF ORDERS

2.1 No Customer's order is binding to Nem s.p.a. if Nem s.p.a. has not confirmed the order in writing.

2.2 Nem s.p.a. commits to supplying the orders in compliance with the order confirmation that has been issued.

2.3 Any disagreement with the content of the order confirmation must be communicated in writing to Nem s.p.a. within and no later than 5 days from the delivery of the order confirmation.

2.4 The Customer commits to paying for the goods supplied by Nem s.p.a., according to the prices indicated on the order confirmation.

3. PAYMENT CONDITIONS

3.1 The Parties agree on the payment terms at the beginning of the supply. The terms will be indicated on the order confirmation.

3.2 Should the Customer be late with the payments, Nem S.p.a. will be entitled to require the payment of interests on arrears based on the exiting Prime Rate increased by 2%

3.3 Should there be any payment delay, Nem s.p.a. will be entitled not to process the Customer's purchase order, even if it has already been confirmed.

4. DELIVERY AND SHIPMENT

4.1 The goods are always supplied Ex Works, even when Nem s.p.a. agrees with the Customer that the shipment, or a part of it, will be arranged by Nem s.p.a.

4.2 It is agreed that the Customer will bear the risk of goods deterioration or damaging from the moment the goods are handed by Nem s.p.a. to the first carrier.

5. PRODUCT CHARACTERISTICS

5.1 Nem s.p.a. commits to supplying good quality products, compliant with the technical specifications declared on the technical tables and on the catalogue.

5.2 Nem s.p.a. even without notice, at its own discretion, reserves the right to modify the products as necessary, without these changes altering the main characteristics of the products.

6. CLAIMS

6.1 Any claims about defects on delivered products (just as an example: claims about the packaging, the number, the quantity or the external product characteristics) will have to be notified to Nem s.p.a. in writing, within and no later than 7 days from reception of the goods, otherwise the claims will be considered as null and void.

6.2 Occult defects (the defects of the goods that cannot be spotted with a careful control of the goods received by the Customer), will have to be notified in writing to Nem s.p.a. within 7 days from the discovery of the defect, and anyhow no later than 18 months from the delivery of the goods, otherwise the claim will be considered as null and void.

6.3 Even in case of claim or objection, the Customer will never be entitled to suspend or delay the payments to Nem s.p.a. for the products subject to claim or objection nor for any other supply.

7. WARRANTY

7.1 Should the products supplied by Nem not be compliant or have the required quality and should this defect be due to Nem, Nem s.p.a. commits, at its choice, to replace or repair the faulty products, as long as the defect or lack of compliance is notified to Nem s.p.a. in writing, as specified at point 6, within and no later than 18 months from product delivery.

7.2 On the products that have been fixed or replaced in accordance with what specified above, the above-mentioned warranty applies. 31
The 18-month duration starts from the date of repair or replacement.

7.3 In case of defects, lack of quality or in case of lack of compliance for the supplied products, with the exception of fraud or serious offence, Nem s.p.a. only commits to repairing or replacing the faulty products, according to what specified above.

7.4 This warranty replaces any other Supplier's warranty or liability established by the law. This warranty excludes any other liability – contractual or extra-contractual – by Nem s.p.a. on the products supplied by Nem (as a mere example: damage refund, loss of profit, product recall campaign, etc).

7.5 Nem s.p.a. has signed a product civil liability police, with a suitable maximum coverage.

8. OWNERSHIP RETENTION

8.1 The products supplied by Nem s.p.a. will be owned by the latter until Nem receives the complete payment for the supplied goods.

9. OBLIGATION CONFIDENTIALITY

9.1 Nem s.p.a. commits to not disclosing the technical and commercial information it receives from the Customer, unless this information has already been publicly disclosed.

GENERAL CONDITIONS

10. PATENTS

10.1 The Customer is not allowed to use the provided Products, or a part of them, their descriptions or drawings – protected or not protected by Patent or registered trademark – in order to design or make similar products, unless Nem s.p.a. previously issues its written authorization.

10.2 Should Nem s.p.a. give its written authorization, all patents, trademarks, registered designs, copyrights and intellectual property rights related or connected to the Products provided by Nem s.p.a. will stay Nem s.p.a.'s property. The Customer commits to respecting the highest confidentiality.

11. APPLICABLE LAW AND COURT OF JURISDICTION

11.1 Nem s.p.a.'s supplies are regulated by these General Supply Conditions and, for anything not defined here, by the Italian law.

11.2 Any controversy related, generated or connected to the supply of Products by Nem s.p.a., where Nem s.p.a. is involved, will be exclusively dealt with by the Court of Reggio Emilia.